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Thailand: Appraisal of the Minburi (Lat Krabang) Industrial Estate Project

September 16, 1977

Industrial Projects Department

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CURRENCY EQUIVALENTS

US\$1	=	Bht 20.0
Bht 1	=	US\$0.05
Bht 1 million	=	US\$50,000

WEIGHTS AND MEASURES

1 rai	=	1,600 sq. m.
"	=	0.16 ha
"	=	17,204 sq. ft.
"	=	0.395 acres
1 ha	=	6.2 rai
1 acre	=	2.5 rai

ABBREVIATIONS

BOI	-	Board of Investment
EPZ	-	Export Processing Zone
IEAT	-	Industrial Estate Authority of Thailand
MEA	-	Metropolitan Electricity Authority
NESDB	-	National Economic and Social Development Board
NHA	-	National Housing Authority
TOT	-	Telephone Organization of Thailand

Fiscal Year (Thailand) - October 1 to September 30

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THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

SUMMARY AND CONCLUSIONS

i. This report analyzes a project to establish an industrial estate at Lat Krabang, 35 kms east of Bangkok, on 1,007 rai (162 ha) of former rice paddy land at an estimated cost of Bht 198 million (US\$9.9 million). When completed in 1980, the project will provide fully serviced industrial sites for some 120 medium-scale factories employing up to 12,000 workers and standard factory buildings suitable for subdividing and rental to between 20 and 30 small and medium-scale industries.

ii. Industry in Thailand has grown rapidly in the 1960s and '70s, acting as the leading economic sector during most of that period. An equal or better performance is needed in the future to complement the labor absorptive capacity of the agricultural sector which is approaching saturation. Thailand has a large and varied natural resource base. Its products are competitive on the international market and export earnings have increased more rapidly than import costs, despite Thailand's dependence on imported oil for the major share of its energy requirements. Since 1972, manufacturing investment has shifted emphasis from import substitution to export and this trend is expected to continue. Although manufacturing growth and investment during the 1977-1980 period may decline from the peak rates experienced in 1973/74, it is expected to be comparable to the sustained high levels of the 1960s. Therein lies one of the basic justifications for the project at this time. Industrial estates are needed to respond effectively and economically to the anticipated demand for factory sites and services; at the same time, by facilitating a more rapid and less costly factory planning and construction cycle, industrial investment is further stimulated.

iii. The majority of new factories will continue to gravitate to the greater Bangkok area as in the past and the project analyzed in this report, as well as others to be initiated over the near-term, is designed to attract industry away from the congested center of Bangkok to outlying sites zoned and prepared for industrial use. In a later phase of the long-term national industrial estate development plan, sites and services for industry will be established in the Northern, Northeastern and Southern regions of Thailand to help disperse industry more evenly throughout the nation.

iv. Thailand's first industrial estate was established in the late 1960s at Bang Chan, under the management of the Department of Industrial Works, Ministry of Industry. Based in part on the Bank's recommendations as well as on the experience accumulating at this first estate, the creation of an autonomous business-oriented Government agency to develop and manage a planned national program became the first goal in the early 1970's. In October 1973, the Industrial Estate Authority of Thailand (IEAT) inaugurated

operations under a decree of the National Executive Council. After preliminary studies, Minburi was selected as the highest priority location for Thailand's second Government-sponsored industrial estate and, with UNIDO technical assistance, a feasibility study was completed in August 1974 and appraised by the Bank in late 1974. However, IEAT experienced difficulties in acquiring the proposed site and another plot, located at Lat Krabang, some 15 km south of Minburi was acquired in late 1976. This reappraisal confirms the essential soundness of the project at the new location.

v. The project consists of the acquisition of land and its development into suitable industrial sites by the construction of dikes to control flooding, and the provision of power, water, telephones, sewage treatment and other facilities. About 12% of the area will be allocated to an Export Processing Zone (EPZ) to test the demand for such facilities by national and international firms producing entirely or primarily for the export market. Standard factory buildings will be constructed for sub-division and rental to small- and medium-scale industries. Technical assistance will be provided to strengthen IEAT's management, planning and project execution capabilities not only for this project but also for the long-range national program of industrial estate and EPZ development.

vi. Financing required for the project amounts to US\$9.9 million equivalent (Bht 198 million) and consists of: (i) equity of Bht 103 million (US\$5.2 million) to be provided partly by a national treasury commitment of Bht 77.4 million (US\$3.9 million) and partly through internal cash generation of Bht 25.7 million (US\$1.3 million) from the sale of estate land; and (ii) long-term debt of US\$4.75 million equivalent from the Bank. The Bank loan, corresponding to 48% of total project investment, would be made directly to IEAT for 20 years including 5 years grace at 7.9% interest and would finance land development, standard factory buildings and technical assistance. Direct and indirect foreign exchange (FE) costs are estimated at approximately 46% of project cost, or US\$4.6 million, so that the Bank loan would cover 100% of the FE component plus \$150,000 equivalent of LC costs.

vii. Based on the planned construction schedule, the estimated prices for land sales and factory rentals and the forecasted rates of occupancy, the financial return in real terms over 25 years is 11.5% and the economic rate of return 14%. Land sale prices and factory rentals will be based on the two principles: (i) maintaining competitiveness with off-estate alternatives; and (ii) insuring a minimum 10% financial return in real terms on the estate investment. Prices will be reviewed annually and revised, if considered necessary, in consultation with the Bank. Among the benefits to be generated by the project by the early 1980s, are the estimated 12,000 permanent factory jobs plus 1,500 temporary construction jobs (between 1977 and 1980), investment of about US\$150 million in productive facilities generating gross output of some US\$200 million and added value of US\$60 million per annum, all in current terms. The Export Processing Zone will contribute to increased export earnings but there is no way of quantifying this factor in advance, even as a rough estimate. In order to further stimulate employment creation, IEAT will, wherever feasible, give priority for estate occupancy to firms whose operations

are labor-intensive. The project will contribute to the dispersion of industry away from the congestion of Bangkok's core and, as Government's first organized attempt to control industrial pollution by providing adequate common waste treatment facilities, will serve as a model for all future projects in this respect. Finally, the growing concentration of industrial activity at Lat Krabang/Bang Chan justifies a major workers' housing project in the area and the eventual creation of a planned satellite new-town complete with all social infrastructure needed to enhance the quality of life for an estimated local population of up to 100,000.

viii. On the basis of the agreements reached and summarized in this report, the project is suitable for a Bank loan of US\$4.75 million on the terms indicated in para. vi.

I. INTRODUCTION

1.01 Thailand's first industrial estate was established in the late 1960's at Bang Chan, 30 kms east of Bangkok, under the management of the Department of Industrial Works, Ministry of Industry. It was the first project of a long range program to construct industrial estates and export processing zones designed to provide needed sites and services for industry away from the congested center of Bangkok in a first phase and additional facilities at more distant regional locations in a second phase.

1.02 Since 1970, the Bank has been cooperating with the Thai Government in analyzing policy and institutional instruments needed in support of efficient industrial estate development. Based in part on the Bank's recommendations as well as on the experience gained at Bang Chan, the creation of an autonomous business-oriented Government agency to manage the planned national program became the first goal and in October 1973 the Industrial Estate Authority of Thailand (IEAT) was set up under powers granted by Decree No. 339 of the National Executive Council. Shortly thereafter, in consultation with the Bank, it was concluded that construction of a second estate at Minburi, some 5 kms east of Bang Chan, was one of the higher priorities of the several alternative estate projects under consideration. With UNDP/UNIDO technical assistance, IEAT completed a feasibility study of the estate project in August 1974 and a Bank mission led by Mr. C. Goderez of the Industrial Projects Department appraised the project in late 1974. However IEAT was not able to acquire the proposed site and another plot, located at Lat Krabang some 15 km south of Minburi, was acquired in 1976. The project was reappraised in November 1976 by a mission consisting of Messrs. E. Siou and J. Kuroda also of the Industrial Projects Department.

II. THE THAI SETTING

A. General

2.01 With a total land area of 514,000 sq. kms. and a population of over 40 million, Thailand is the largest, and economically one of the most important, countries in the Indochina peninsula. Industry is the second largest segment of the economy after agriculture with a 26% contribution to GDP, employing about 6% of the estimated total labor force and accounting for a 22% share of total merchandise exports in 1975 (Annex 1).

2.02 Thailand had been less vulnerable than many other developing countries to world economic fluctuations in the 1960's. Earnings from its principal export commodities -- rice, rubber, maize, tin, tapioka, kenaf, teak and tobacco -- have been stable and substantial (Annex 2). Between 1972 and 1975, however, the country's terms of trade deteriorated, as shown in Annex 3, mainly due to the oil price hike in 1973/74 and some decline in export prices in 1975. Given this situation, the Government recognizes the need to stimulate the expansion and diversification of exports.

2.03 With a population growth rate of 3.1%, which ranks among the highest in the world, the annual increment to the labor force is expected to grow from some 450,000 at present to around 650,000 by 1985. As the availability of virgin land suitable for cultivation will progressively be exhausted during the remainder of this decade, agriculture will have difficulty in absorbing as many new workers as it has done previously, and new employment opportunities will have to be created increasingly in the non-agricultural sectors.

3. The Industrial Sector - Structure, Performance and Growth Prospects

2.04 In its current stage of development, Thailand's industrial production is characterized by a heavy bias in favor of consumer goods such as food processing, textiles, tobacco and footwear. According to Ministry of Industry statistics for 1975, of some 45,000 registered manufacturing enterprises, about 32,000 (73%) produced consumer goods, about 6,700 (15%) produced capital goods, and about 5,300 (12%) intermediate goods (Annex 4). Manufacturing industry as a whole achieved an annual growth of 12.4% in the decade 1960-69 and 18.2% in the years 1970-76 at current market prices (Annex 5).

2.05 Because of market concentration, proximity to the Government administrative center, superior infrastructure, easy access to imports and inter-industry linkages, most industries, especially the larger modern plants, have located in and around Bangkok (Annex 6). The Central Region (including Bangkok) generates approximately 80% of total value-added in manufacturing and absorbs some 60% of the manufacturing work force.

2.06 Incremental value added in manufacturing averaged 11% per year in real terms through the 1960s, and although the rate of increase slowed to about 7% in the early seventies, it still exceeded that of the economy as a whole. As shown in Annex 5, this growth was largely due to the expansion of: (i) intermediate goods industries such as paper, leather and rubber products, chemicals and refined petroleum products, and the processing of nonmetallic minerals; (ii) new durable consumer goods industries, including the assembly of radio and television sets, motor vehicles, and electrical appliances; (iii) the textile and beverage industries; and (iv) capital goods industries, including basic metal and metal products.

2.07 Since 1973, a shift in emphasis from import substitution towards export oriented manufacture has indeed become noticeable. For some industries e.g., cement, textiles, garments, furniture, plywood and metal products, this trend has been accelerated because they have gained both markets and international competitiveness through increases in world demand and international prices while domestic prices have remained relatively stable. Although world economic dislocations in 1974 and 1975 reduced the export demand for some of these products, manufacturing exports as a whole continued to increase. The value of manufactured exports was US\$39 million in 1970, US\$280 million in 1973 and US\$494 million in 1975; and their shares in the total merchandise exports of the country was 5.2%, 17.2% and 20.3% respectively (Annex 7).

2.08 In the early seventies, capacity utilization improved steadily (Annex 8), and this in turn stimulated capital investment in new facilities. One indicator of the investment trend is the number of promotion certificates granted by the Board of Investment (BOI) to industrial projects 1/, summarized below from Annex 9:

Promoted Industrial Investment 1971-1976

	<u>Applications</u> (No.'s)	<u>Prom. Cert. Issued</u> (No.'s)	<u>Indicated Investment</u> (Bht Million)
1971	103	59	1,496
1972	180	70	4,005
1973	552	115	7,773
1974	228	251	18,021
1975	111	86	4,633
1976 (9 months)	88	47	1,384

The sharp increase in applications in 1973 reflected the remarkable industrial buoyancy of the early 1970s, and the number of promotion certificates issued in 1974 resulted from this peak. However, the number of applications and the number of approvals have decreased thereafter, reflecting in part the political instability prevailing within the country which discouraged both domestic and foreign investors. A rising trend in industrial investment is expected to take place under the current improved domestic and international situations. A recent Bank study 2/ projected the overall economic growth rate for Thailand over the Fourth Economic and Social Development Plan period (1977-81) at 6.2% p.a., and industrial sector growth at 9.4% p.a. provided that a suitable climate for private investment is maintained and demand for manufactured exports grows as in the past. The study projects gross capital investment in 1981 of the order of Bht 94 billion at 1962 constant prices, which implies a doubling of the Bht 42 billion of investments which took place in 1975.

C. Government Policy and Investment Incentives

2.09 After the political instability of the previous three years, the newly established Government (October 1976) is firmly committed to helping

1/ Promotion certificates designate the industrial projects granted incentives by BOI under terms of the Investment Promotion Act of 1972; details of this Act are given in para 2.09 and Annex 10. Since 1971, according to BOI statistics, about 60% of total manufacturing investment has been granted "promoted" status and benefits; the balance consists of "other" or "non-promoted" projects.

2/ "Economic Memorandum on the Current Economic Situation and Prospects of Thailand," IBRD Report No. 1280a - TH, October 1976.

restore investors' confidence and accelerate growth. As detailed in Annex 10, under the Investment Promotion Act of 1972, BOI is empowered to grant investment guarantees and incentives. In selecting investments for promotion, BOI takes into account the country's general development objectives, including regional development, export growth, employment creation, skill upgrading and encouragement of Thai participation with foreign capital in joint ventures. BOI provides two kinds of incentives: (i) standard investment incentives consist of guarantees against nationalization and competition by new state enterprises; authorizations to own land, to transfer funds abroad, and to hire foreign experts; tax reductions or exemptions from import duties and business taxes on machinery and equipment, and exemption from corporate income tax; and (ii) special promotional incentives relate to the geographic dispersal of investments and export oriented industries which include reduction of import duties and business taxes, accelerated depreciation and reduction of corporate income tax after expiration of standard income tax holiday.

D. Foreign Investment

2.10 Foreign direct investment has made substantial contributions to the Thai economy, especially in textiles, metal products, transport equipment and chemicals. Joint ventures of Thai and foreign partners accounted for 69% of the registered capital (Bht 13,900 million or US\$695 million) of all enterprises which obtained promotional privileges between October 1960 and September 1976, with foreign investors providing about 41% of the joint venture capital (Annex 11). Japan is by far the principal source of Thailand's foreign direct investment, followed by the U.S., the Republic of China, Hong Kong and the U.K.

2.11 Prior to the enactment of the Alien Business Act in November 1972, foreign investors were allowed to engage in any business activity in Thailand. As detailed in Annex 12, this Act imposed restrictions on foreign investment in some activities, e.g. rice farming, domestic trade in agricultural products, construction and several service professions. Existing foreign firms engaged in other agricultural production, light industry, handicrafts, most retail trades, domestic transportation and heavy industry and mining are permitted to continue operations, but are not allowed to increase their annual production or sales by more than 30% over their 1972 level. Enterprises granted privileges under the Investment Promotion Act, however, are exempted from this restriction. Another law, the Alien Occupation Act, which reserves to Thai nationals certain occupations including accounting, was approved in December 1972 but has not been administered rigidly and, presumably, will continue to be administered reasonably under the present Government policy in favor of attracting foreign investment.

E. Programs for Regional Development and Industrial Estates

2.12 The Government has been trying to disperse industries to the various regions of the country through administrative decentralization, land reform and establishment of growth poles in the Northeast, the North, the East and

the South (Annex 13). However, regional development is still in its early stage and, over the short- to medium-term, it is expected that investment will gravitate, as in the past, mainly to the Bangkok area. A feasible first phase solution is to guide industry away from the congested urban center to the rural periphery of the Greater Bangkok area. This will require a firmly administered land use plan (Annex 14), and the provision of prepared sites and services, housing and other facilities as incentives to attract both industry and its work force to the outer locations. Although the official land use plan under the Town and Country Planning Act, 1973, has been approved by both the Cabinet and the National Assembly, its enforcement in the Bangkok urban area has not as yet been very effective. During negotiations, however, IEAT submitted satisfactory evidence of steps taken under the Cabinet Resolution on Industrial Zoning of August 10, 1976 to enforce more effectively the relocation of industry outside the congested center of Bangkok.

2.13 Industrial estates not only contribute to more rapid industrialization but help maintain a balance between industrial growth and the planning and implementation of infrastructure. By concentrating a number of firms in one prepared area, as opposed to haphazard locational decisions by individual investors, they can provide both offsite (external) and on-site (internal) infrastructure more efficiently and at less cost. The Lat Krabang Industrial Estate project will also include an area designated as an Export Processing Zone (EPZ). This EPZ will be physically similar in all respects to the general industrial estate. It will, however, be fenced and controlled by the customs authorities so that the export-oriented industries located within the EPZ will enjoy easy tariff-free entry of raw and intermediate materials and reexport of finished products.

2.14 The project has been located in keeping with the zoning objectives of the Bangkok Master Plan and is the first of several proposals under study by the Industrial Estate Authority of Thailand (IEAT) for the greater Bangkok area. These proposals are part of a long range plan which will include the establishment of industrial estates in the Northern and Northeastern regions as well as in the Bangkok area (Annex 15), as specified in the Fourth Five-Year Plan (1977-81) published in January, 1977.

III. MARKET

A. Comparative Advantages of the Greater Bangkok Area

3.01 As already noted, it is likely that most new manufacturing facilities will continue to be attracted to the Bangkok area for some years to come. Bangkok is the capital and Government administrative center as well as the country's major port and its financial and commercial center. Its concentration of population (4.3 million) and relative wealth provide the largest

market for goods and labor in Thailand. Physical infrastructure, while deficient in many respects, is superior to that available in other parts of the country.

B. Demand for Industrial Land - Greater Bangkok Area

3.02 Growth of manufacturing investment in Thailand has been projected to 1981 by Bank staff (Annex 16). Assuming conservatively that 65% of all new organized manufacturing investment will take place in the Greater Bangkok area, demand for industrial land has been estimated, using historical data on capital investment/land ratios obtained from BOI, as detailed in Annex 16. According to this analysis, between 1977 and 1981 effective demand for industrial sites in and near Bangkok is forecast to total 890 ha. The Lat Krabang project will provide some 116 ha of land for sale/lease during this period, or only 13% of forecasted total demand.

C. Availability of Industrial Land - Greater Bangkok Area

3.03 The Bangkok Master Plan defines areas encompassing a total of 9,655 ha reserved for industry in the municipality and the surrounding chang-wats (provinces). At the end of 1976, about half of this land was already occupied by industry. The table below summarizes land availability, including existing industrial zones and planned estates, from the detailed tabulation of Annex 17. It will be noted that only 470 ha of the 4,850 ha available are intended to be developed as planned industrial estates.

Industrial Land Availability - Greater Bangkok Area, 1976

<u>Industrial Zones</u> (changwat)	<u>Area</u> (ha)	<u>Amt. Occupied</u> <u>at end-1976</u> (%)	<u>Land Available</u> <u>After 1977</u> (ha)
Phra Nakhon (incl. Bangkok City)	4,490	70	1,365
Thonburi	405	80	80
Samutprakan	<u>4,760</u>	28	<u>3,405</u>
Total	9,655	50	4,850

<u>Planned Industrial Estates</u> (town or site)	<u>Area</u> (ha)	<u>Amt. Occupied</u> <u>at end of 1976</u> (ha)	<u>Amt. Available</u> <u>up to 1981</u> (ha)	<u>Land</u> <u>Available</u> <u>after 1981</u> (ha)
Bang Chan (complete)	55	55	-	-
Lat Krabang	116	-	116	-
Nava Nakorn	113	-	113	-
Bang Poo	160	-	80	80
Klong Dan	<u>26</u>	-	-	<u>26</u>
Total	470	55	309	106

3.04 An evaluation of these various sites, using as criteria their size, physical characteristics, ease of access to the port and airport, availability of labor, utilities and transportation and cost of development, suggests that while the Lat Krabang estate does not achieve the highest rating in every criterion taken individually, its characteristics overall place it at or very close to the top of the list. Proximity and good access to the seaport, airport and railway, and the absence of local urban congestion are among its most attractive features.

D. Prospects for the Lat Krabang Industrial Estate

3.05 Many factors affect investors in selecting suitable locations for factories. The price and terms of sale of developed industrial estate land are important considerations in comparison with the alternative costs of acquiring raw land individually and then bearing all development expenditures. Assuming competitive pricing, foreign investors are likely to favor an industrial estate on account of the complex and difficult procedures for acquiring land from private smallholders, and this bias has been set at 65% for purposes of forecasting demand. ^{1/} Fully Thai-owned industries might be relatively less biased in favor of estate sites, partly on account of local land ownership interest, and the "capture ratio" for this class of enterprise has been set at 50%. Using BOI data on past investments and land requirements for different categories of industry, the demand for estate land is projected as follows:

Projected Demand for Industrial Estate Land
Greater Bangkok Area, 1977-1981

<u>Category</u>	<u>Land Requirement</u>		<u>Capture Ratio</u> (%)	<u>Estimated Demand for Estate Land</u>	
	(ha)	(%)		<u>1977-81</u> (ha)	<u>Annual</u> (ha)
Promoted Projects					
-with foreign equity	267	60	65	174	35
-fully Thai-owned	178	40	50	89	18
Sub Total	445	100		263	53
Non-promoted Projects					
-with foreign equity	27	6	65	18	4
-fully Thai-owned	418	94	50	209	42
Sub Total	445	100		227	46
Total	890	100		490	99

^{1/} The history of a similar Bank supported project in Indonesia indicates that a 65% "capture ratio" is conservative. Among medium-scale factories, it is higher; only very large factories tend to favor independent locations.

The projected demand for 490 ha of estate sites exceeds by 58% the total planned availability of estate sites which (as noted in para. 3.03) is estimated at 309 ha by 1981. Not all of the planned estate construction will in fact be completed by 1981, so that demand is likely to exceed supply by a larger margin than here indicated.

3.06 The projected sale/lease of the Lat Krabang estate land is only about 36 ha in 1979, 26 ha in 1980, 27 ha in 1981 and 27 ha in 1982-1983 for a total of 116 ha. In 1981, the land sold/leased by the project will be 89 ha, which is only 18% of the demand and 29% of the planned supply. As shown in Annex 18, compared with the land sale prices set for the Nava Nakorn estate, which is being privately developed, the sale/lease prices projected for the Lat Krabang estate are conservative. The demand for space in the EPZ, for which 20 ha have been allocated in the project site (about 12% of the plot), is expected to be substantial, although an accurate demand forecast for the EPZ cannot be made with presently available data. The historical rate of growth in Southeast Asia of manufactured exports incorporating imported components suggests that the EPZ will not face substantial difficulty in disposing of its sites. Given Thailand's comparative advantages such as low labor cost, geographic location and Government incentives, readily available factory space at reasonable cost will provide an additional attraction to industries of the types operating in Singapore, Malaysia, Hongkong, Taiwan and Korea. This conclusion is supported by the interest that 19 firms have already shown in occupying land within the EPZ at Lat Krabang.

E. Industries Expected on the Lat Krabang Industrial Estate

3.07 The estate will be open to industries of all types with the exception of those with very heavy pollutive activities, which cannot be handled by the planned treatment facilities on the estate. It is expected, however, that the occupancy pattern will be heavily biased towards medium-scale, relatively clean factories, engaged in light manufacturing activities, as has already occurred at Bang Chan. Consumer goods industries (such as textiles, furniture, electrical appliances, toys, shoe-manufacturing and leather products) are expected to be well represented; also intermediate goods (packaging materials, electrical and electronic components), construction materials, light metal-working and some chemical processing industries. The EPZ would accommodate assembly type industries (e.g., textiles, electronics, watch making) based on imported raw and intermediate materials.

IV. INDUSTRIAL ESTATE AUTHORITY OF THAILAND (IEAT)

4.01 IEAT, the executing agency for the project, is an autonomous government institution created under National Executive Council Decree No. 339, promulgated December 13, 1972 (Annex 19), and responsible for planning and executing all Government supported industrial estates and EPZs in Thailand. Operations were initiated in October 1973 when the Bang Chan Estate was turned over to IEAT by the Department of Industrial Works. Organizationally,

a governing Board appointed by the Cabinet is responsible for policy and overall supervision while operating management is headed by a Director General, who is also ex-officio member of the Board. Functionally, there are five departments: (i) Office of the Director General - responsible for policy planning and overall control of operations, (ii) Technical and Projects - preparation of new projects, (iii) Operations-construction and management of industrial estates and EPZs, (iv) Finance, and (v) Administration.

4.02 Details of IEAT's history, organization, operations and Board composition are given in Annex 20 which also contains the Authority's financial history, briefly summarized below:

IEAT - Summary of Financial Results, 1974-1976
(Bht million)

	<u>FY 1974</u>	<u>FY 1975</u>	<u>FY 1976</u>
<u>Income</u>			
Revenue (land rent, maint. & service charges)	1.6	2.1	2.8
Expense (staff, adm., repairs, deprec.)	<u>3.3</u>	<u>4.9</u>	<u>6.5</u>
Net Income (Loss)	(1.7)	(2.8)	(3.7)

Selected Balance Sheet Data

Current Assets	2.4	4.9	21.8
Net Fixed Assets	28.5	28.2	54.1
Long-Term Debt	11.6	11.2	11.7
Current Ratio	2.7	5.1	17.8
L.T. Debt: Equity	39:61	35:65	16:84

4.03 Revenues covered less than half of the expenses (including provision for depreciation) in 1975, and the deficit became even larger in 1976. This is primarily the result of two factors: (i) all land at Bang Chan had been leased at low uneconomic rates by the former owner, the Department of Industrial Works (Annex 21); and (ii) the full administrative costs of IEAT have so far been charged to the Bang Chan estate, its sole existing operation, even though most of these costs are connected with planning and development of new projects. Deficits are covered by national budget appropriations and this situation will of necessity continue until future estate operations begin to generate sufficient income to close the gap. Nevertheless, measures should be taken to bring central office expenses more in line with operating requirements. The number of headquarters staff could be reduced from the current level of 95 without detriment either to Bang Chan or the overall operations of IEAT. IEAT has agreed to undertake measures to improve its financial performance both at headquarters and at Bang Chan and will to this end present to the Bank by December 31, 1977 a suitable plan of action. Possible measures to be considered would include; (i) adjusting contracts at Bang Chan to charge more economic rates for rentals and all services provided to estates' occupants, (ii) charging more economic fees to private estates and other organizations

for services rendered to them and (iii) reduction of headquarters staff by redeployment of some of the existing personnel to the Lat Krabang project.

4.04 Although IEAT has gained experience in estate planning and operations since its inception in October 1973, technical assistance will be required to strengthen its management, engineering and commercial skills. To this end, a technical assistance component has been included in the project as outlined in the next chapter.

V. THE PROJECT

A. Project Scope

5.01 The project consists of: (i) the acquisition by IEAT, the estate owner, of 1,007 rai (162 ha) of raw land at Lat Krabang, 35 kms. east of Bangkok; (ii) development of serviced industrial sites suitable for some 120 medium-scale factories to be built by their owners; (iii) the construction of standard factory buildings for rental to between 20 and 30 small- and medium-scale industries; and (iv) establishment of an Export Processing Zone (EPZ) on 120 rai (20 ha) of the land. Additionally, technical assistance will be provided to IEAT by both UNIDO and IBRD for purposes of project execution and also to assist in planning future projects. More specifically, the components of the project are:

- (1) Acquisition of 1,007 rai (162 ha) of raw land at Lat Krabang.
- (2) Land fill and dike construction.
- (3) Construction of about 10 kms of internal roads and a surface drainage system.
- (4) Installation of an internal power and street lighting distribution system connecting with an external 25 MW substation.
- (5) Installation of a water supply and distribution system, including fire hydrants.
- (6) Installation of sewage disposal and waste treatment facilities.
- (7) Installation of a radio telephone system connected to an automatic branch exchange with a minimum of 200 lines.
- (8) Construction of an administration building and a maintenance workshop.
- (9) Construction of five standard factory buildings of 2,160 m² each, of which four will be located within the Export Processing Zone.
- (10) Construction of 2,500 m² of housing for IEAT staff.
- (11) Engineering/Architectural Services and Technical Assistance.

5.02 The project will be carried out in two contract phases covering a four-year period with approximately half of the development taking place during 1977-79 and the other half during 1979-80.

B. Detailed Features

5.03 The essential features of the project are discussed below; additional details are given in Annex 22.

1. Site Location, Characteristics and Acquisition

5.04 The 1,007 rai site (Map IBRD 11324R) has already been purchased for Bht 25 million (US\$1.25 million) 1/, a price that is reasonable and competitive with other locations in the Greater Bangkok area. The site is served by two main highways, providing easy access to the city and harbour of Bangkok and is 38 kms northeast of Bangsue Railway Station connecting to the North and Northeast of the country and 40 kms southeast of the international airport. The size of the estate is to some extent arbitrary, but does represent a reasonable compromise between the forecasted demand, which could justify a larger project, and financial and technical limitations of IEAT, which dictate a cautious step-by-step approach toward larger and more complex projects. The shortest route from the estate to Bangkok harbor (30 km) is along the Pharakhanong-Lat Krabang road, of which about 10 km need resurfacing. IEAT has requested the Bangkok Metropolitan Authority to accelerate the resurfacing and widening program (already under way) so that work will be completed by end-1978 and expects there will be no difficulty in meeting this schedule.

5.05 As a direct result of the Bang Chan estate project, located 15 kms north of Lat Krabang, where the 700 rai developed in 1968-1971 were fully leased by late-1974, Minburi has become an industrial "growth pole" with infrastructure (roads, power and telecommunications) available for a greatly expanded industrial community. Labor will be drawn from both Bangkok, by bus and canal transport, and the adjacent rural area including the town of Minburi (estimated population - 20,000). Workers' housing and other social infrastructure are planned for construction by the National Housing Authority (NHA) on Huamak Housing Estate situated some 6 km from the estate site. Satisfactory evidence has been submitted confirming that NHA is accelerating planned housing development at Huamak as well as at Bang Chan.

2. Site Development

5.06 Land Fill and Dike Construction: In the vicinity of Bangkok, developing paddy land into industrial sites requires either raising the average level of terrain by up to 1.5 meters (adding fill, compacting and

1/ Land was purchased from several land owners who made arrangements with the tenant farmers occupying the land to vacate the premises by mid-March 1977. This was accomplished without difficulty and perimeter dike construction was started shortly thereafter.

levelling) or the less costly alternative of building dikes (bunds) around the boundary and installing pumps for removal of sewage and excess rainfall. IEAT has opted for the second alternative. Pending completion of the topographic study and engineering design of flood control measures it has been assumed for purposes of financial analysis that bunding along the estate boundaries will average 1.75 m in height after compaction. Only a small amount of land fill will be needed in a few selected areas.

5.07 Roads and Surface Drainage: The preliminary plot plan of the feasibility study (Map IBRD 16973) shows 10.2 kms of macadamized road averaging 8.5 m wide laid out in a rectangular pattern providing access to every factory plot. Detailed layout and specifications together with those for the surface drainage system, which will consist of channels and culverts paralleling the roads, are to be prepared as part of the detailed engineering design. Meanwhile, for purposes of cost estimation, standard macadamized roads built by the Department of Highways (DH) have been assumed.

5.08 Power: The maximum power demand at full occupancy has been estimated at 25 MW and will be drawn from a 22-kv high tension transmission line running close to the estate. A 25 MW transformer substation has been installed by the Metropolitan Electricity Authority (MEA) about 5 km west of the project which will connect with an internal overhead distribution network for power and street lighting. The internal distribution network will also be built by MEA but its cost will be advanced by IEAT and repaid by MEA in early eighties.

5.09 Water: Water demand at full occupancy for all industrial and sanitary purposes is estimated at 6,000 m³/day average with peak loads of 10,000 m³/day and will be supplied by four deep wells tapping a known aquifer at a depth of 150 to 200 meters. Based on the water flow realized from the same aquifer at Bang Chan, the four wells are expected to yield a minimum of 800 m³/hr which, with two ground level reservoirs of 5,000 m³ capacity and two overhead storage tanks of 300 m³ capacity each are adequate to supply the average and peak demands foreseen. The water storage system also ensures a reserve at all times for fire fighting purposes.

5.10 Sewage Disposal and Other Environmental Considerations: A central liquid waste treatment plant is planned as part of the estate infrastructure to handle all normal industrial and sanitary waste effluents. Aggressive wastes such as acid, alkali, oils or solvents will be required to go through pre-treatment at the factory point of origin before entering the collection system. The investment in the central treatment plant will be self-liquidating as its capital cost will be recovered in the sale price/lease rent of land, and a separate charge will be made for operating and maintenance expenditures. Gaseous and liquid pollution of individual estate enterprises will be controlled through the standard rules and regulations (still to be prepared) governing factory operations on the estate; these will specify

allowable limits of contaminating matter in gases and liquids to be discharged. It has been agreed that the waste treatment facilities will be designed and operated in accordance with generally accepted standards and that suitable estate rules and regulations, including guidelines on industry suitability and factory building design standards, will be prepared by IEAT and submitted to the Bank by June 30, 1978 for review and approval. This will be the first Government attempt to control industrial pollution and should serve as a model for the future.

5.11 Telephones: At the full occupancy, the estate and its occupants would need 500 telephone lines. The Government and the Telephone Organization of Thailand (TOT) have agreed to IEAT utilizing of a 36 circuit radio telephone system connected to an automatic branch exchange with a minimum of 200 lines. The cost of this system will be shared by both TOT and IEAT. TOT expects no difficulty to have 120 telephone extensions by end 1978 and the remaining extensions as and when they are required.

3. Building Construction

5.12 Administration Building and Workshop: Two buildings are planned for the administration and maintenance of the estate but detailed designs have not yet been prepared. For financial analysis purposes it has been assumed that the administration building (1,000 m²) will be a reinforced concrete structure, and the estate maintenance workshop and stores (500 m²) will be a less expensive construction with cinder block walls and pilasters supporting trusses and a corrugated asbestos roofing, both designed for easy expansion if required at a later stage.

5.13 Standard Factory Buildings: The project includes preconstructed standard factory buildings to be rented to small and medium-scale enterprises. There is no way of forecasting accurately the effective demand for such industrial space, but initially land has been allocated for five buildings of 2,160 m² each to accommodate together from 20 to 30 enterprises. Even this modest commitment will be carried out in phases in order to reduce the investment risk while testing the market. If the buildings are rapidly occupied and there appears to be, in fact, higher demand for such facilities than presently forecast, additional land can be allocated for further construction.

5.14 Housing: Since most of IEAT's employees to be transferred to Lat Krabang presently reside in Bangkok center, it has been decided to construct some twelve to fifteen housing units totalling 2,500 m² to house them on site in order to facilitate their transfer to the new estate.

4. Export Processing Zone (EPZ)

5.15 As noted in para. 3.06, some 20 ha will be delineated as an EPZ with the necessary fencing and gates for customs control. Firms will have the options of building their own factories, renting IEAT's standard factory buildings or negotiating with IEAT to build factories to their specific needs for long-term lease or hire-purchase.

5. Engineering/Architectural Services and Technical Assistance

5.16 This component of the project provides for: (a) engineering/architectural services and (b) technical assistance and training fellowships, to help IEAT in the implementation of the project and to enhance its capabilities in planning, executing and operating industrial estates and EPZs:

- (a) Engineering/Architectural Services: Under an engineering/architectural contract (para 6.04) responsibilities of the firm will include: (i) detailed engineering design and specifications for all civil works, (ii) preparation of tenders and evaluation of bids and (iii) supervision of civil works contractors.
- (b) Technical Assistance and Training Fellowships: A cooperative arrangement has been considered with UNIDO under which a 4-man advisory staff of consultants will be attached to IEAT for a period of about 2 years, funded by UNIDO. Selection of consultants will be carried out in consultation with the Bank. The team will consist of: (i) two Industrial Estate Advisors with complementary experience in project analysis, design and management of industrial estates and EPZ's; (ii) an Industrial Economist with experience in analyzing the locational, sectoral and marketing aspects of new estate project development; (iii) an Environmental Control Expert. A small allocation of Bank loan funds under the project (para. 6.05) is intended to supplement the large UNIDO contribution and will cover foreign exchange costs of specialized short term consultants, as needed, and training fellowships for IEAT key personnel.

5.17 IEAT's professional staff will, in the normal course of negotiating land sales and lease contracts and later monitoring factory operations, advise firms on building design, pollution control and other aspects of industrial operations. As a Government agency, it is entirely appropriate for IEAT to concern itself also with one of the major objectives of the Third Plan, i.e. employment growth. Whenever possible, in reviewing applications for estate occupancy, IEAT will advise applicants to focus on the potential benefits of labor intensive technology. It was confirmed during negotiations that IEAT will in fact pursue this objective by giving priority for estate occupancy to labor intensive industries.

6. Project Management

5.18 IEAT will appoint by December 1977, in consultation with the Bank, a Project Manager and an Advisor who will be responsible for project execution on a full-time basis. The Project Manager will be a senior staff employee with executive-level experience and qualifications in public and/or private sector construction projects. The Advisor will be a qualified civil engineer who will function as a planning and development expert and liaise directly with the Engineering/Architectural Contractor and civil

works contractors during project execution. It has been agreed that if suitable Thai personnel are assigned to these positions, Bank funds will be disburseable against that portion of expenditures which would have been foreign exchange costs if expatriates had been hired.

7. Land Use Pattern

5.19 According to the Consultants' preliminary study (Lay-out Plan, Map IBRD 16973), some 142 ha will be allocated to the general estate area and 20 ha to the EPZ as detailed below:

Lat Krabang Estate - Land Use Pattern

	<u>General</u>		<u>Export</u>		<u>Combined EPZ & General</u>		
	<u>Industrial Estate</u>		<u>Processing Zone</u>		<u>Industrial Estate</u>		
	(ha)	(rai)	(ha)	(rai)	(ha)	(rai)	(%)
Industrial Plots	100	618	12	75	112	693	68.8
Rights of Way	18	114	5	29	23	143	14.2
Utilities	6	40	3	16	9	56	5.6
Landscaping & Recreational	11	71	-	-	11	71	7.0
Commercial Units	4	24	-	-	4	24	2.4
Maintenance Units & Others	<u>3</u>	<u>20</u>	<u>-</u>	<u>-</u>	<u>3</u>	<u>20</u>	<u>2.0</u>
Total	142	887	20	120	162	1,007	100.0

Of the 693 rai (112 ha) allocated to industrial plots, about 46% are expected to be sold and 54% leased to some 120 firms building their own factories on sites averaging about 6 rai each or renting space in standard factory buildings. Some 24 rai have been reserved for lease for commercial uses which might include stores, restaurants and banks.

C. Project Execution Schedule

5.20 As noted in para. 5.02, construction will be carried out in two contract phases, each phase planned so as to execute about half of the total civil works program. Phased development of industrial estates is useful in maintaining capital investment more or less in line with actual demand for sites and services, which, given the uncertainties, could differ from the forecast. The planned construction schedule is given in the bar chart Annex 23 and is based on: (i) selection of the engineering/architectural contractor by the second quarter of calendar 1977, (contract was signed in second quarter); (ii) starting of the engineering design by mid 1977; (iii) initiation of civil works by the fourth quarter of calendar 1977, (actually, dike construction began in the second quarter of 1977); (iv) completion of phase one construction by mid-1979 and (v) completion of phase two construction by end-1980. To help ensure realization of this timetable, it has been agreed that the Project Manager and an Assistant, who will function as a Planning and Development Advisor, will be appointed no later than December 31, 1977.

VI. COST ESTIMATES AND FINANCIAL ARRANGEMENTS

A. Project Cost

6.01 Estimated capital cost of the project in current terms is summarized below from Annex 24:

	<u>Capital Cost Estimate</u>						<u>%</u>
	<u>Local</u> ----(Bht million)----	<u>Foreign</u>	<u>Total</u>	<u>Local</u> ----- (US\$ million)-----	<u>Foreign</u>	<u>Total</u>	
Land Acquisition	25.0	-	25.0	1.25	-	1.25	15.4
Land Development & Site Equipment	42.6	50.6	93.2	2.13	2.53	4.66	57.5
Buildings	17.4	18.6	36.0	0.87	0.93	1.80	22.2
Engineering/Architectural Services	4.0	2.0	6.0	0.20	0.10	0.30	3.7
Technical Assistance & Training <u>a/</u>	<u>0.6</u>	<u>1.4</u>	<u>2.0</u>	<u>0.03</u>	<u>0.07</u>	<u>0.10</u>	<u>1.2</u>
Base Cost	89.6	72.6	162.2	4.48	3.63	8.11	100.0
Contingencies:							
Physical (10%)	6.5	7.2	13.7	0.33	0.36	0.69	8.4
Price (av. 8% p.a.)	<u>10.5</u>	<u>11.7</u>	<u>22.2</u>	<u>0.52</u>	<u>0.59</u>	<u>1.11</u>	<u>13.7</u>
Installed Cost	106.6	91.5	198.1	5.33	4.58 <u>b/</u>	9.91	122.1

a/ Excluding Technical Assistance financed by UNIDO.

b/ Of which it is estimated that 85% is the direct and 15% the indirect foreign exchange components.

Costs were estimated during the November 1976 field mission but in the light of the modified layout proposed by the consultants to whom the engineering/architectural contract has been awarded, there have been some changes and a cost reduction of US\$4.6 million. A comparison between the mission's estimates and those by the consultants is given in Annex 22, Addendum 1. The cost reduction is due to a shorter execution period, one central waste treatment plant instead of two, power and telephone costs being mainly met by the utility companies, technical assistance primarily funded by UNIDO and, most important, interest during construction being treated as an operating cost instead of capitalized.

6.02 Physical contingency of 10% of base line cost, not including cost of raw land, is considered a reasonable and safe assumption since cost estimates are based on recent construction experience in Bangkok. Price escalation composed of 9% p.a. for civil works and 7.5% p.a. for equipment has been provided for during 1977-79, declining to 8 and 7% in 1980 respectively.

B. Financing Plan

6.03 Financing of the project will consist of (i) Government funds contributed to IEAT as equity, (ii) the project's internally generated funds from the sale of industrial sites and services and (iii) a Bank loan, as summarized below:

<u>Financing Plan</u>			
(Millions)			
	<u>Bht</u>	<u>US\$</u>	<u>%</u>
<u>Equity</u>			
Treasury Contribution	77.4	3.87	39.1
Internal Cash Generation	<u>25.7</u>	<u>1.29</u>	<u>12.9</u>
Total Equity	103.1	5.16	52.0
<u>Long-Term Debt</u>			
Bank Loan	<u>95.0</u>	<u>4.75</u>	<u>48.0</u>
Total Financing	198.1	9.91	100.0

The Government's equity investment of Bht 77.4 million will be made during project implementation. Part of this equity has already been paid in for land purchase (Bht 25 million) and part for land development expenditures. Internal cash generation will derive from the sale of industrial sites as projected in para 7.01. The Bank loan will be made directly to IEAT for 20 years including 5 years grace at an interest of 7.9% per annum. In keeping with past practice in Thailand the usual guarantee fee of 1-1/2% will be waived. Interest and commitment fee on the Bank loan during the grace period will be met from internal cash generation or from the Government contribution.

C. Procurement, Use of Bank Loan and Rate of Disbursement

6.04 All Bank financed procurement, i.e., all project components with the exception of land acquisition, will be tendered internationally in accordance with Bank guidelines. For the engineering/architectural services contract, IEAT has already awarded the contract to a consortium of consultants consisting of four Thai consulting firms in association with a US firm. 1/ Qualified local bidders for equipment and materials will, for purposes of bid evaluation, receive a preference margin of the lower of either the prevailing duty on comparable imported products or 15% of the c.i.f. price of the imported product.

1/ The Bank agreed to the selection based on a comparative evaluation of 9 proposals by Thai-based engineering/architectural firms; no Bank funds will be allocated to this project component.

6.05 Percentage disbursements of Bank funds are tabulated below:

<u>Allocation of Bank Loan</u> (US\$ million)				
	<u>Total Expenditure</u>	<u>FE Component</u>	<u>Bank Allocation</u>	<u>Ratio of Bank/FE (%)</u>
Land Acquisition	1.25	-	-	-
Land Development, Site Equipment and Buildings	8.16	4.38	4.15	94.7
Eng./Arch. Services, Technical Assistance and Training <u>1/</u>	0.50	0.20	0.20	100.0
Unallocated	<u>-</u>	<u>-</u>	<u>0.40</u>	<u>-</u>
Total	9.91	4.58	4.75	

1/ Including US\$300,000 for architectural/engineering services and US\$200,000 for technical assistance and training. As noted in para 5.16, the bulk of technical assistance and training (estimated at about US\$400,000) will be funded by UNIDO.

Annex 25 shows the estimated quarterly disbursement schedule. In order to ensure that the project can be carried out without financial constraints, assurances were obtained that: (i) Government equity of Bht 77.4 million would be made available as needed for the project execution schedule (para. 6.03); (ii) internal cash generation of the project, primarily on account of land sales, would be reserved for reinvestment as equity in the project as and to the extent needed by the project execution schedule; and (iii) any additional funds that may be needed to complete the project, to the extent not available from IEAT's resources, would be provided promptly by the Government on terms satisfactory to the Bank.

VII. FINANCIAL ANALYSIS

A. Revenue

7.01 Based on the expected demand for industrial plots on the estate, land sales and lease are projected as shown in the following table:

Projected Land Sales and Lease Schedule, 1979-1983
(rai)

<u>Land Sales</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>Total</u>
Industry						
- Cash	80	60	60	56	0	256
- 4-Year Term	<u>20</u>	<u>15</u>	<u>15</u>	<u>14</u>	<u>0</u>	<u>64</u>
Sub-total	100	75	75	70	0	320
 <u>Land Lease</u>						
Industry	125	80	80	76	0	361
Commercial Units	0	6	6	6	6	24
Standard Factory Bldgs.	0	0	3	2	2	7
Warehouse and Others	<u>0</u>	<u>2</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>5</u>
Sub-total	125	88	91	85	8	397
Total	225	163	166	155	8	717 <u>a/</u>

a/ Total land sold/leased of 717 rai is less than total area of 1,007 rai by: 143 rai for rights of way, 71 rai for landscaping, 56 rai for utilities and 20 rai for maintenance units and others.

Although in Thailand deferred payments on land purchases are not customary, IEAT plans to offer a four-year payment scheme besides cash sales. In this way, it is hoped to expand the market for industrial sites by making them available more easily to smaller firms whose operations, while sound and profitable, may be subject to liquidity constraints. The best estimate of the future split between cash and deferred payment sales 1/, therefore, projects in the above table an 80:20 sales pattern. Should the ratio shift in favor of more term sales, cash flow problems are still not anticipated since land mortgages can be financed in Thailand and the interest paid by IEAT will be offset by the interest charged to estate occupants. According to IEAT, many entrepreneurs might prefer to lease land rather than to purchase and, as indicated in the above table, some 360 rai are earmarked for disposal on a 20-year lease basis.

7.02 Two basic factors must be taken into account in setting land prices; (i) they must be competitive with alternative sites in the area, and (ii) they should provide a minimally suitable financial return on total funds invested.

1/ Judgment arrived at in consultation with IEAT, mortgage bankers and the Association of Thai Industries in Bangkok.

The only comparable developed industrial land available in the Bangkok area is the Nava Nakorn project where sites are more expensive than those proposed at Lat Krabang, as shown in Annex 18. Apart from Nava Nakorn, an entrepreneur may opt for setting up his factory on a plot purchased as raw rice-paddy land, and then undertake all development costs for fill, grade, dike construction, access roads, and water supply at his own expense, while negotiating power and telephone connections with the public utilities. Analysis of these alternatives led to a base price of Bht 250,000/rai 1/ in 1979 in current terms, when land sales will be initiated, with an annual increment of 10% thereafter for new purchasers. It is assumed that four-year land purchase contracts will be offered at a flat price of Bht 313,000/rai in 1979 and increase by 10% each year thereafter. The deferred payment plan assumes a down payment of 20% and four equal annual installments of 20% each thereafter with an interest charge of 12% on unpaid balances imputed in the contract price.

7.03 The projected prices for land will yield a financial return of 11.5% in constant 1976 terms (para 7.12). As with all projects of this type, land prices must be kept under constant review and revised in accordance with such factors as realized rates of land sales, general trends in land values, competition and financial considerations.

7.04 IEAT has agreed that land prices and terms will be based on the two principles: (i) maintaining competitiveness with off-estate alternatives; and (ii) insuring a minimum 10% financial return in real terms on the estate investment. Prices will be reviewed annually and revised, if considered necessary, in consultation with the Bank.

7.05 Annual rental for lease of industrial plots is assumed to average 10% of the respective sale price. For commercial plots (e.g. bank, restaurant and stores), the established Thai practice for commercial leasing is an initial payment as premium for the leased land, followed by an annual rental for a period of 20 years. At the end of this period, a new premium and terms of rental will be negotiated between IEAT and the commercial developers. For purposes of financial analysis, it has been assumed that a premium equivalent to about 80% of the selling price for an equivalent industrial plot will be charged, with 5% of the premium charged as annual rental payments. The commercial plots occupy the best locations in the estate and would command up to twice the price of estate industrial plots of similar size if sold outright.

7.06 The first five standard factory buildings -- one general purpose and four for the EPZ -- are scheduled for completion by end-1980 and initial

1/ This is estimated to be at least 10% below the cost for a company to purchase and develop its own plot, without taking into account the time factor which strongly favors estate sites.

occupancy by 1981. Annual rental has been set at Bht 370/m² or Bht 285,000 per factory unit of 770 m² on leases signed in 1980 for both general purpose and EPZ buildings. As with the land lease pricing formula, the starting rental is assumed to increase 10% per annum thereafter, for new tenants. As yet, IEAT has no firm policy on the lease period which can range from 1, 2 or 3 years up to 5 or even 10 years, with provision for periodic rent adjustments. For purposes of financial analysis, it has been assumed that all rental income will reflect an annual 6% increment, paralleling the anticipated general inflation trend. IEAT has agreed that: (i) the standard lease contracts adopted for land (both industrial and commercial) and factory rental will be formulated by June 30, 1978 in consultation with the Bank and will specify inter alia the starting lease and rental rates, duration of contracts and adjustment formulae and (ii) terms of new land lease and building rental contracts will be reviewed at yearly intervals and revisions, if necessary, will be adopted in consultation with the Bank. Maintenance and service charges will be assessed against factory owners to cover the cost of water supply, sewage treatment, grounds and road maintenance and security.

7.07 Revenues from all sources are forecast as summarized below from Annex 26.

<u>Revenue Buildup, 1979-85</u>							
<u>(Current Bht million)</u>							
	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
Land Sales	26.3	21.7	23.9	24.5	-	-	-
Land Lease	3.1	7.7	10.8	14.2	15.6	14.0	15.2
Factory Rental	-	-	1.7	3.0	4.5	4.7	5.0
Warehouse Rental	-	0.5	1.2	1.6	1.7	1.8	1.9
Maintenance Charges	0.2	0.3	0.4	0.6	0.6	0.7	0.7
Water & Sewage Charges	4.0	7.4	11.2	15.2	16.3	17.3	18.3
Repayment by MEA	-	-	-	-	2.0	2.8	-
Total	33.6	37.6	49.2	59.1	40.7	41.3	41.1

The revenue forecast assumes the 80/20 split between cash and deferred payment terms on land sold as projected in para 7.01. As is customary in land development accounting practice, revenue from land sales is booked as income in the year the sales contracts are signed even when deferred payments are made. Thus, while revenue from land sales appears to end in 1983, on a cash flow basis this revenue will continue, although at a declining rate, until 1986 as mortgages are paid off.

B. Income and Cash Flow Forecasts

7.08 Projected operating costs, income and cash flow to 1983 are summarized below from Annexes 27, 28 and 29.

Summarized Income and Cash Flow Forecast, 1976-84
(Current Bht million) /a

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
<u>Income</u>									
- Gross Revenue	-	-	-	33.6	37.6	49.2	59.1	40.7	41.3
<u>Less</u>									
- Cost of Land Sold	-	-	-	20.7	15.5	15.5	14.5	-	-
- Operating Costs	-	-	4.7	4.0	8.9	9.3	11.8	11.5	12.2
- Depreciation	-	-	-	-	1.9	3.9	3.9	3.9	3.9
- Interest & Com. Fee	-	-	1.6	4.5	7.1	7.5	7.6	7.5	7.0
- Tax on Land Sale	-	-	-	0.6	0.5	0.5	0.5	-	-
Net Income	-	-	(6.3)	3.8	3.7	12.5	20.8	17.8	18.2
<u>Cash Flow</u>									
<u>Sources of Funds</u>									
- Net Income	-	-	(6.3)	3.8	3.7	12.5	20.8	17.8	18.2
- Depreciation	-	-	-	-	1.9	3.9	3.9	3.9	3.9
- Cost of Land Sold /b	-	-	-	20.7	15.5	15.5	14.5	-	-
- Govt. Contribution	25.0	21.5	20.0	10.9	-	-	-	-	-
- Loan Increase (IBRD)	-	-	23.0	60.0	10.0	2.0	-	-	-
- Decrease in Mort. Rec.	-	-	-	(5.0)	(2.9)	(2.3)	(1.2)	4.5	3.3
Total Sources	<u>25.0</u>	<u>21.5</u>	<u>36.7</u>	<u>90.4</u>	<u>28.2</u>	<u>31.6</u>	<u>38.0</u>	<u>26.2</u>	<u>25.4</u>
<u>Uses of Funds</u>									
- Project Investment	25.0	10.9	45.6	90.2	26.3	-	-	-	-
- Loan Repayment (IBRD)	-	-	-	-	-	-	-	3.2	6.4
Total Uses	<u>25.0</u>	<u>10.9</u>	<u>45.6</u>	<u>90.2</u>	<u>26.3</u>	<u>-</u>	<u>-</u>	<u>3.2</u>	<u>6.4</u>
Surplus (Deficit)	-	10.6	(8.9)	0.2	1.9	31.6	38.0	23.0	19.0
Cumulative Surplus	-	10.6	1.7	1.8	3.7	35.3	73.3	96.3	115.3
Debt Service Coverage	-	-	-	-	-	-	-	3.2	2.4

/a Occasional discrepancies in addition are caused by rounding of numbers.

/b Cost of land sold is an estimated average for the whole project and normally varies from the realized land development expenditures in any given year. In the cash flow statement, it is treated as a source of funds since the actual expenditures on land development for each year are included in the uses of funds. If cost of land sold were not added back in the sources of funds, there would be double debiting.

The operating costs shown above are detailed in Annex 27, and include a 10% share of IEAT's central office staff and overhead costs. Salaries and overhead are assumed to escalate by 6% per annum in line with the general inflation rate assumed throughout this report. IEAT is exempted from payment of income taxes, but certain business taxes on land and other assets as well as land sale tax will be assessed and these are included in general administrative costs of the project. Annual straight line depreciation rates prevailing in Thailand have been applied - 2.5% for roads and drainage, 4.0% for buildings, 5.0% for capitalized engineering costs, 7.5% for water, power and sewage disposal facilities and 10% for miscellaneous equipment.

7.09 As is seen from the cash flow projection, the project may have a transitory cash flow difficulty especially if land disposal were to be sluggish in 1979 and 1980. Since the bulk of capital investment expenditures has to be made in these years and these expenditures have to be financed in part by internal cash generation, IEAT will have to activate its promotional activities so that adequate internal resources are available. Should internal cash generation not be enough, additional Government contribution will be required.

7.10 IEAT has agreed to undertake whatever action is necessary to maintain a liquidity ratio of at least 1.25:1, a debt:equity ratio of no higher than 65:35 and minimum debt service coverage of 1.5:1 during the period 1983-1997. The overall IEAT financial projections show not only no problem in meeting these specified ratios, but assure the provision of substantial cash flow for investments in other projects now under review. (Annex 20, Addendum 6).

C. Balance Sheets and Audit

7.11 Proforma balance sheets to 1998 are given in Annex 30. They indicate that the current ratio is over 16 in 1983 (assuming no reinvestment of earned surplus) and increases thereafter throughout the period of repayment of debt. The debt:equity ratio starts at 28:72 in 1978, increases during the ensuing years reaching 51:49 in 1981 but improves quickly thereafter. Both the current ratio and debt:equity ratio projections do not take into account the reinvestment of earned surplus in new projects which, to the extent compatible with maintaining necessary liquid reserves (para. 7.10), is one of IEAT's prime objectives. An interesting feature of the assets growth pattern is the project's ability to carry mortgage receivables rather than having recourse to bank finance. This means, in effect, that should the project investment demands exceed available cash resources, substantial additional cash could be generated by financing mortgage receivables. As a government agency, IEAT's books will be audited annually by the National Audit Council (under the jurisdiction of the Prime Minister); this is satisfactory to the Bank.

D. Financial Return

7.12 The financial return over 25 years in constant 1976 terms, calculated in Annex 31, is 11.5%. This is satisfactory and is close to the

assumed 11% opportunity cost of capital in Thailand and higher than the 10% return which has been assumed in this project as the minimum acceptable limit. The land remaining in the possession of IEAT (about 415 rai) has been assumed to have a residual value of Bht 62.1 million (1976 prices); this is conservative since land values will certainly increase in real terms over the 25-year period because of land scarcity in the Bangkok area. With suitable maintenance, buildings and other assets (e.g., water supply system) will have substantial value at the end of the period but no residual values were assumed for these facilities in the calculation. In view of these assumptions, the financial return calculation is considered conservative.

E. Risk Analysis

7.13 If we assume an extended period of international uncertainty and economic stagnation, more pessimistic assumptions may be made to test what might be termed the "worst case". A prolonged period of economic decline could retard industrial investment to the point where demand for industrial sites would actually be lower than the modest 30 ha a year to be made available at Lat Krabang between 1979 and 1982. We have therefore assumed a "worst case" based on a slowdown in occupancy so that in 1979/80 IEAT would decide to stretch out the construction to 1981 (1 year longer than originally planned) with project costs increasing according to the assumed price escalation and full occupancy being achieved only in 1984. On this basis, the financial return of the project would be 7.7%. This would still be acceptable in view of the economic benefits discussed below.

VIII. ECONOMIC AND SOCIAL BENEFITS

A. Economic Rate of Return

8.01 The project's direct net benefit to the national economy is illustrated by deriving the economic rate of return. This is done by revaluing the financial costs and benefits by valuing tradables at border prices and using conversion factors to obtain the economic values of non-tradables. The base case economic rate of return is 14% (Annex 32). The sensitivity of the economic rate of return to changes in conversion factors and key variables was examined. Even in the worst case of one year delay in construction and two year delay in sales, the economic rate of return is still a satisfactory 8%.

B. Acceleration of Industrial Investment

8.02 Prepared industrial sites and services ready for factory construction can significantly reduce the time interval between project conception and startup of operations. In Jakarta, for example, as part of the market survey for the Bank-supported Pulo Gadung estate, firms actively planning new factories were interviewed. It was concluded that, on average, developed estate land ready for construction would reduce the time between approval of a factory investment by a firm and startup of operations by 1 to 1.5 years. It was further concluded that perhaps one out of five potential projects would

either be aborted or seriously delayed for years if no viable alternative (an industrial estate) were available to the discouraging task of finding and developing a suitable factory site independently. The problem is equally acute in Thailand. Inadequate or non-existent land ownership records, obscure rules concerning land use, arbitrary time limits on tenure, lethargic bureaucratic processing of land purchase agreements and applications for power, water and telephone services, problems generated by squatters and/or sub-marginal small farmers, all operate to retard industrial development. Specifically, with respect to small- to medium-scale factories which are the prime market for this estate, these deterrants are greatly magnified since these firms do not normally have the resources - management, legal, capital - to persist in their objectives as do large-scale operations. Under the conditions noted above, without the Lat Krabang project all of the estimated 120 factories expected on the estate would be delayed and some of them might never be built.

C. Incremental Investment, Output and Employment

8.03 If we assume an average factory investment of US\$1.25 million, or US\$150 million in toto, and 12,000 jobs, the Lat Krabang project over 5 years of land sales and lease would foster annual investment of US\$30 million and creation of 2,400 jobs from 1 to 1.5 years sooner than otherwise; also, some US\$30 million of investment (20% of the total) and 3,000 jobs might never appear if the project were not to be carried out. Based on available data for factories of the types expected at Lat Krabang, capital investment of US\$150 million should generate gross output of about US\$200 million of which some US\$60 million would be added value. In addition to direct factory employment, during the construction of the estate, an average of about 1,500 construction workers will be continuously employed to 1980. These figures, while admittedly judgmental and approximate, do lend further support to the proposed investment of US\$9.9 million.

D. Internal and External Economies

8.04 The concentration of industries on the estate, as opposed to the haphazard and dispersed pattern which would occur otherwise, greatly facilitates rational planning and installation of external infrastructure (power, water, telephones, sewage, and roads). Costs will be lower since the external network will be less dispersed and time schedules for both planning and implementation can be compressed. Within the estate, there will be internal economies resulting from lower capital cost per factory because of common utilities and services. While no attempt has been made to quantify these project-induced savings in both public and private resources, they are real and significant.

E. Social Benefits

8.05 The managed environment at Lat Krabang will result in a general improvement in factory building standards and working conditions, waste disposal control and greater attention to social infrastructure needs such as housing, clinics, schools and recreation facilities. In keeping with

the Greater Bangkok Plan governing land use planning to 1990, this project coupled with the earlier Bang Chan project has focused Government attention on the possibilities of a future satellite "new-town" in the area of Minburi and Lat Krabang which could serve as a model for similar developments in other regions. To the extent industries are attracted to Lat Krabang and away from Bangkok proper, the project will contribute directly to relieving the critical congestion and overloading of utilities in the city core; more importantly, as IEAT gains management and technical experience in executing this project, additional needed projects will be implemented more rapidly and the beneficial impact on the Greater Bangkok Area will become increasingly apparent over time.

F. Development of Indigenous Entrepreneurship

8.06 The estate will assist Thai entrepreneurs in two ways: (i) by offering land for lease or on 4-year payment terms, medium-scale factories with limited financial resources (usually 100% Thai ownership) will be enabled to acquire factory sites more easily than otherwise, and (ii) space in standard factory buildings will be rented to smaller factories and shops (usually employing 10 to 50). IEAT also plans to cooperate closely with the Small Industries Finance Office in assisting small-scale enterprises in other ways since the environment of an industrial estate is a particularly effective matrix in which to channel assistance to all types of industries, particularly small-scale enterprise. By providing suitable factory space and utilities, the estate makes it possible for expert advice on factory layout, machinery, operations and maintenance to be rapidly implemented and effectively supervised.

IX. AGREEMENTS

9.01 Agreements and assurances were obtained from the Government and IEAT as listed below:

- (a) Government is undertaking appropriate measures to enforce the Town and Country Planning Act of 1973 with respect to industrial zoning (para. 2.12);
- (b) IEAT is undertaking suitable measures to improve its operating efficiency and financial performance and will to this end present to the Bank by December 31, 1977 a detailed plan of action (para. 4.03);
- (c) Necessary road improvements to the Phrakhanong - Lat Krabang Road will be implemented by end-1978 (para. 5.04);
- (d) Suitable housing development in the general area of Lat Krabang is being implemented by NHA (para. 5.05);
- (e) Waste treatment facilities will be designed and operated in accordance with generally accepted standards and suitable estate rules and regulations, which among others will set gaseous and liquid effluent standards for individual estate factories, will be submitted to the Bank by June 30, 1978 for its review and approval (para. 5.10);

- (f) Comprehensive rules and regulations governing the operation of the estate, including guidelines on industry suitability and factory design standards will be submitted to the Bank no later than June 30, 1978 (para. 5.10);
- (g) Government will cause TOT to provide by December, 1978 a 36 circuit radio telephone system connected to an automatic branch exchange with a minimum of 200 telephone lines for the estate (para. 5.11);
- (h) In reviewing applications for estate occupancy, IEAT will help applicants to focus on the potential benefit of labor intensive technology and give priority for estate occupancy to labor intensive industries (para. 5.17);
- (i) The engineering/architectural contractor, the Project Manager and the Planning and Development Advisor will be appointed no later than December 1977 (para. 5.20);
- (j) Government equity funds (Bht. 77.4 million) will be advanced as needed to finance land development expenditures; internal cash generation of the project will be reserved for reinvestment as equity in the project as needed; any additional funds required to complete the project will be provided by the Government on terms satisfactory to the Bank (para. 6.05);
- (k) Land prices and terms will be based on maintaining competitiveness and insuring a minimum financial return of 10% and will be reviewed annually; necessary price revisions will be undertaken in consultation with the Bank (para. 7.04);
- (l) Standard lease contracts for factory building and land (both industrial and commercial) rentals will be prepared by IEAT no later than June 30, 1978 in consultation with the Bank and reviewed annually; necessary revisions for new contracts will be undertaken in consultation with the Bank (para. 7.06);
- (m) IEAT has agreed that it will, during the debt service period, 1983-1998, maintain the following financial ratios for IEAT as a whole: (i) a liquidity ratio of at least 1.25:1, (ii) a debt:equity ratio of no higher than 65:35 and (iii) the minimum debt service coverage of 1.5:1 (para. 7.10).

9.02 Based on the above agreements and assurances, the project is suitable for a Bank loan of US\$4.75 million equivalent, with a 20 year maturity and 5 years grace, at 7.9% interest.

THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTEMPLOYMENT ESTIMATES ^{1/}
('000)

	<u>1960</u>	<u>1970</u>	<u>1976</u>	
	(No's)	(No's)	(No's)	(%)
Agriculture	11,332	13,202	14,245	78.5
Mining & Quarrying	30	87	87	0.5
Manufacturing	470	683	935	5.2
Construction	69	182	187	1.0
Electricity, Gas, Water & Sanitary Services	16	25	40	0.2
Commerce	779	876	956	5.3
Transport, Storage & Communication	166	268	352	1.9
Services	654	1,184	1,345	7.4
Unknown	234	146	-	-
Total Workforce	13,750	16,653	18,147	100.0
Total Population	26,392	34,397	42,957	

Note: These figures should be used with caution as the 1970 census, which was published in mid-1974, apparently underestimated the population, perhaps, also the work force. The census figures differ significantly from those given in the annual labor force surveys for 1969 and 1971. In addition, sectoral employment reported in the 1969 and 1971 to 1973 surveys shows improbably large annual fluctuations.

^{1/} Economically active population, age 11 years and older, employed in April.

Source: for 1960 and 1970, Census Report;
for 1976, NESDB estimate.

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THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

PRINCIPAL MERCHANDISE EXPORTS

	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975 ^P
1. Rice											
Value (millions of Baht)	4,324	4,001	4,653	3,775	2,945	2,517	2,909	4,437	3,594	9,778	5,851
Volume ('000 of t)	1,895	1,508	1,482	1,068	1,023	1,064	1,576	2,112	848	1,029	952
Unit value (Baht per t)	2,287	2,654	3,139	3,534	2,878	2,366	1,846	2,101	4,235	9,361	6,141
2. Rubber											
Value (millions of Baht)	1,999	1,861	1,574	1,816	2,664	2,232	1,905	1,862	4,573	5,035	3,463
Volume ('000 of t)	211	203	211	252	276	276	308	318	390	362	337
Unit value (Baht per t)	9,480	9,189	7,456	7,200	9,639	8,098	6,188	5,861	11,710	13,877	10,273
3. Maize											
Value (millions of Baht)	1,004	1,577	1,431	1,647	1,767	1,969	2,286	2,085	2,969	6,078	5,703
Volume ('000 of t)	831	1,262	1,146	1,558	1,545	1,448	1,873	1,844	1,386	2,301	2,153
Unit value (Baht per t)	1,208	1,250	1,249	1,057	1,144	1,360	1,220	1,131	2,142	2,639	2,648
4. Tin (metal)											
Value (millions of Baht)	399	1,291	1,820	1,510	1,631	1,618	1,569	1,664	2,035	3,097	2,247
Volume ('000 of t)	4.8	17.6	27.0	24.0	23.4	22.2	21.9	21.8	22.6	20.7	16.7
Unit value (Baht per t)	83,475	73,381	67,415	62,872	69,609	72,732	71,738	76,190	89,762	151,028	134,842
4a. Tin (concentrates)											
Value (millions of Baht)	767	25	2	-	-	-	-	-	-	-	-
Volume ('000 of t)	15.7	1.3	0.1	-	-	-	-	-	-	-	-
Unit value (Baht per t)	48,782	19,157	18,182	-	-	-	-	-	-	-	-
5. Tapioca Products											
Value (millions of Baht)	676	644	726	772	876	1,223	1,240	1,547	2,537	3,836	4,600
Volume ('000 of t)	719	689	781	889	975	1,327	1,123	1,311	1,836	2,395	2,387
Unit value (Baht per t)	940	935	929	869	898	922	1,104	1,180	1,381	1,602	1,927
6. Kenaf and Jute											
Value (millions of Baht)	1,102	1,614	866	674	780	719	935	1,087	1,054	845	642
Volume ('000 of t)	317	473	317	289	256	258	272	255	264	247	157
Unit value (Baht per t)	3,476	3,410	2,731	2,328	3,047	2,790	3,442	4,261	3,991	3,406	4,076
7. Sugar											
Value (millions of Baht)	100	82	37	-	47	94	382	1,264	1,161	3,757	5,696
Volume ('000 of t)	84	55	15	-	16	55	175	408	275	444	595
Unit value (Baht per t)	1,193	1,495	2,465	-	2,919	1,671	2,188	3,102	4,216	8,444	9,566
8. Shrimp											
Value (millions of Baht)	109	191	259	278	270	224	247	340	803	602	888
Volume ('000 of t)	4.9	7.9	8.8	7.3	8.1	6.4	5.6	6.7	14.8	10.3	13.5
Unit value (Baht per t)	22,336	24,232	29,335	38,134	33,198	34,886	44,162	50,558	53,983	58,932	65,566
9. Teak											
Value (millions of Baht)	201	243	194	169	166	156	183	208	422	402	445
Volume ('000 of t)	45	49	36	29	29	29	38	40	52	35	44
Unit value (Baht per t)	4,444	4,913	5,432	5,739	5,724	5,424	4,868	5,161	8,168	11,430	10,001
10. Tobacco Leaves											
Value (millions of Baht)	89	115	147	199	149	197	236	284	309	445	567
Volume ('000 of t)	6	8	9	10	9	11	13	18	17	15	17
Unit value (Baht per t)	14,720	14,594	17,169	19,181	17,464	18,266	17,936	15,639	18,761	29,707	32,689
Value of Principal Exports	10,780	11,644	11,709	10,840	11,295	10,949	11,892	14,778	19,457	33,875	30,102
Other Exports	2,161	2,455	2,457	2,839	3,427	3,823	5,389	7,713	12,769	16,371	18,485
Total Merchandise Exports	12,941	14,099	14,166	13,679	14,722	14,772	17,281	22,491	32,226	50,246	48,587
Adjustments for B/P	-277	-282	-358	-451	-455	-502	-583	-741	-974	-	-67
Merchandise Exports, fob	12,664	13,817	13,808	13,228	14,267	14,270	16,698	21,750	31,252	50,245	48,520

1/ Including maize groat & meal

P/ = preliminary

Source: Bank of Thailand

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THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTTRADE INDICES AND TERMS OF TRADE

(1958 = 100)

Year	Exports			Imports			Terms of Trade
	Volume	Unit Value	Value	Volume	Unit Value	Value	
1969	206.6	110.5	228.3	336.1	86.1	315.2	128.3
1970	218.8	104.7	229.1	352.2	93.1	327.9	112.5
1971	267.8	100.1	268.1	332.3	97.9	325.3	102.2
1972	332.3	105.0	348.9	362.5	103.4	374.8	101.5
1973	303.3	164.8	499.9	424.3	120.7	512.1	136.5
1974	332.3	234.9	780.6	374.5	207.6	777.5	113.2
1975 <u>1/</u>	353.7	212.8	752.6	376.8	213.1	802.9	99.8

1/ PreliminarySource: Bank of ThailandIndustrial Projects Department
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THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTNUMBER OF REGISTERED FACTORIES BY INDUSTRY GROUP AND LOCATION, DECEMBER 1975

	<u>Bangkok</u>		<u>Other</u>		<u>Total</u>	
	<u>Thonburi</u>		<u>Provinces</u>			
	(No.)	(%)	(No.)	(%)	(No.)	(%)
<u>Consumer Goods:</u>						
Food Industries	825	2.9	28,040	97.1	28,865	100.0
Beverages	24	40.7	35	59.3	59	100.0
Tobacco	16	5.6	268	94.4	284	100.0
Textiles	709	59.6	480	40.4	1,189	100.0
Footwear	68	98.5	1	1.5	69	100.0
Printing and Publishing	<u>1,031</u>	<u>85.9</u>	<u>169</u>	<u>14.1</u>	<u>1,200</u>	<u>100.0</u>
Subtotal	2,673	8.4	28,993	91.6	31,666	100.0
<u>Intermediate Goods:</u>						
Wood and Wood Products	986	44.9	1,211	55.1	2,197	100.0
Paper and Paper Products	153	82.3	33	17.7	186	100.0
Leather and Leather Products	24	20.2	95	79.8	119	100.0
Rubber and Rubber Products	255	58.9	178	41.1	433	100.0
Chemicals & Chemical Products	1,054	80.1	262	19.9	1,316	100.0
Nonmetallic Minerals	138	13.6	875	86.4	1,013	100.0
Petroleum & Petroleum Products	<u>22</u>	<u>41.5</u>	<u>31</u>	<u>58.5</u>	<u>53</u>	<u>100.0</u>
Subtotal	2,632	49.5	2,685	50.5	5,317	100.0
<u>Capital Goods:</u>						
Basic Metals	199	65.3	106	34.7	305	100.0
Metal Products	1,859	84.5	340	15.5	2,199	100.0
Machinery, except el. machinery	886	44.2	1,120	55.8	2,006	100.0
Electric Machinery & Components	518	77.2	153	22.8	671	100.0
Transport Equipment	<u>917</u>	<u>58.5</u>	<u>651</u>	<u>41.5</u>	<u>1,568</u>	<u>100.0</u>
Subtotal	4,379	64.9	2,370	35.1	6,749	100.0
Miscellaneous	328	81.4	75	18.6	403	100.0
Total	<u>10,012</u>	<u>22.7</u>	<u>34,123</u>	<u>77.3</u>	<u>44,135</u>	<u>100.0</u>

Source: Ministry of Industry

Industrial Projects Department
January 1977

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

GROSS DOMESTIC PRODUCT ORIGINATING FROM MANUFACTURING AT CURRENT MARKET PRICE

	<u>1960</u>	<u>1970</u>	<u>Growth Rate 1960 - 1970 (% p.a.)</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976^{b/}</u>	<u>Growth Rate 1970 - 1976^{c/} (% p.a.)</u>
<u>Consumer Goods</u>										
Food	2,309	4,967	7.5	5,271	5,028	6,655	9,374	11,216	12,952	17.2
Beverages	588	2,224	14.3	2,179	2,488	3,135	3,903	4,034	4,604	12.9
Tobacco and snuff	981	1,984	7.3	2,441	2,622	2,921	2,828	3,929	4,526	14.7
Textiles	319	1,705	18.3	2,318	3,393	4,063	4,613	4,622	5,136	20.3
Wearing apparel & made-up text.goods	536	1,148	7.1	1,644	1,789	2,451	3,086	3,577	4,353	24.8
Printing, publishing & allied ind.	266	552	7.6	621	719	956	1,449	1,982	2,552	29.1
Furnitures and fixtures	92	316	13.1	294	301	372	535	577	667	13.6
Subtotal	5,086	12,896	9.8	14,768	16,340	20,553	25,788	29,937	34,790	18.0
<u>Intermediate Goods</u>										
Wood and cork	257	597	8.8	640	729	974	1,589	1,752	2,157	23.7
Paper and paper products	18	161	24.0	195	227	215	271	238	246	7.1
Leather and leather products, not footwear	32	137	16.0	194	219	264	249	214	215	7.8
Rubber and rubber products	56	359	21.0	480	545	643	774	875	1,043	19.5
Chemicals and chemical products	491	1,509	11.6	1,599	1,755	2,016	2,521	2,743	3,200	13.7
Petroleum refining and coal	3	1,622	50.0 ^{a/}	2,136	2,404	2,965	4,224	4,930	5,704	23.3
Non-metallic mineral products	268	1,418	18.0	1,490	1,576	1,957	2,508	2,639	2,896	12.4
Subtotal	1,125	5,803	17.9	6,734	7,455	9,034	12,136	13,391	15,461	17.7
<u>Capital Goods</u>										
Basic metal industries	27	277	27.0	327	434	752	755	745	787	19.1
Metal products, not machinery and transport equipments	51	508	26.0	602	728	1,096	1,371	1,196	1,248	16.1
Repairing of non-electrical machinery	36	429	28.0	490	559	705	893	947	1,040	15.8
Electrical machinery and supplies	39	314	23.2	339	400	475	602	663	781	16.2
Transport equipment	329	1,078	12.7	1,095	1,384	2,270	3,052	3,585	4,434	26.2
Subtotal	482	2,606	18.8	2,853	3,505	5,298	6,673	7,136	8,290	21.3
Miscellaneous	65	507	22.8	551	566	729	773	893	987	11.5
Total Value Added	6,759	21,814	12.4	24,908	27,864	35,614	46,372	51,358	59,529	18.2
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====

a/ 1964 - 1970.

b/ NESDB's preliminary figures.

c/ Tentative estimates by the Bank.

Source: NESDB.

Industrial Projects Department
January 1977

THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTREGISTERED MANUFACTURING FIRMS BY LOCATION, DECEMBER 1975

<u>Location</u>	<u>Rice Mill</u>		<u>Others</u>		<u>Total</u>	
	(No.)	(%)	(No.)	(%)	(No.)	(%)
Greater Bangkok Area	342	1.3	11,418	62.5	11,760	26.6
Central Region	3,149	12.2	3,370	18.4	6,519	14.8
Northeast Region	12,074	46.7	1,272	7.0	13,346	30.2
Northern Region	6,306	24.4	1,190	6.5	7,496	17.0
Southern Region	3,997	15.4	1,017	5.6	5,014	11.4
	25,868	100.0	18,267	100.0	44,135	100.0

Source: Factory Control Division, Ministry of Industry

Industrial Projects Department
January 1977

THAILAND
APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

EXPORTS BY INDUSTRIAL CATEGORIES
(Bht million)

	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
<u>Agricultural Products</u>	<u>883</u>	<u>1,013</u>	<u>829</u>	<u>882</u>	<u>933</u>	<u>1,091</u>	<u>1,303</u>	<u>1,521</u>	<u>2,181</u>	<u>2,544</u>	<u>2,296</u>
Mungbeans and black matpe beans	110	131	122	132	215	255	255	277	374	454	464
Soybeans	5	15	15	9	13	16	17	23	77	47	133
Sorghum	61	113	108	56	62	103	157	138	240	426	482
Kapok fibre	112	101	99	132	102	134	141	149	178	195	169
Castor seeds	66	96	83	83	86	93	124	97	272	215	103
Seedlac and stick lac	64	56	37	38	43	36	60	107	193	287	95
Hides and skins	59	72	39	47	56	52	47	102	99	70	34
Cattle	103	100	93	62	65	73	91	115	189	120	111
Other agricultural products	295	329	233	323	291	329	411	513	609	730	705
<u>Fishery Products</u>	<u>37</u>	<u>43</u>	<u>27</u>	<u>31</u>	<u>51</u>	<u>141</u>	<u>242</u>	<u>431</u>	<u>781</u>	<u>788</u>	<u>1,155</u>
Cuttle fish, fresh	)	)	)	)	)	)	)	141	274))
Cuttle fish, salted in brine	)37	)43	)27	)31	)51	)38	)96	68	55	)788	)1,155
Other fishery products	)	)	)	)	)	103	146	222	452))
<u>Forestry Products</u>	<u>92</u>	<u>67</u>	<u>53</u>	<u>50</u>	<u>62</u>	<u>63</u>	<u>77</u>	<u>108</u>	<u>298</u>	<u>213</u>	<u>296</u>
<u>Mineral Products</u>	<u>207</u>	<u>315</u>	<u>440</u>	<u>341</u>	<u>336</u>	<u>441</u>	<u>794</u>	<u>673</u>	<u>746</u>	<u>1,173</u>	<u>788</u>
Flouride	20	30	56	116	158	222	311	222	225	290	195
Tungsten	5	22	44	44	32	83	329	322	258	467	361
Iron ores and concentrates	123	124	79	52	71	8	1	-	-	)416	)232
Other mineral products	59	139	261	129	75	128	153	129	263))
<u>Manufacturing Products</u>	<u>379</u>	<u>463</u>	<u>440</u>	<u>573</u>	<u>667</u>	<u>782</u>	<u>1,371</u>	<u>2,620</u>	<u>5,590</u>	<u>7,353</u>	<u>9,874</u>
Pineapple, canned	-	-	6	29	37	55	44	51	81	280	348
Garments	10	22	19	21	16	18	67	257	652	845	1,039
Molasses	38	35	38	16	32	45	86	91	312	500	533
Cements	41	17	17	19	38	83	90	218	303	650	488
Petroleum Products	40	50	78	15	38	36	132	248	366	303	230
Spinning	-	-	-	-	1	5	27	112	157	-	-
Silk, Fabrics	32	37	37	31	39	34	30	29	38	34	26
Textiles	1	12	14	25	29	23	64	270	1,097	786	796
Jute yarn, jute fabrics, twine cordage rope, cable of jute	-	2	2	10	2	16	63	81	169	485	312
Hemp yarn and thread	-	-	-	-	35	19	5	-	-	-	-
Gunny bags	1	48	46	74	74	63	178	170	312	330	289
Iron and steel products	3	4	9	17	33	41	46	112	174	335	162
Household utensils of wood	1	2	4	5	10	18	33	72	135	-	-
Precious stones and jewelry	71	97	93	142	150	130	228	383	632	769	786
Other manufacturing products	135	137	77	169	133	196	278	526	1,162	2,036	4,865
<u>Others</u>	<u>536</u>	<u>554</u>	<u>668</u>	<u>962</u>	<u>778</u>	<u>1,306</u>	<u>1,600</u>	<u>2,360</u>	<u>3,257</u>	<u>4,300</u>	<u>4,076</u>
<u>Total</u>	<u>2,161</u>	<u>2,455</u>	<u>2,457</u>	<u>2,839</u>	<u>3,427</u>	<u>3,824</u>	<u>5,387</u>	<u>7,713</u>	<u>12,863</u>	<u>16,371</u>	<u>18,485</u>
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====

Source: Bank of Thailand

Industrial Projects Department
February 1977

ANNEX 7

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

PRODUCTION AND CAPACITY OF SELECTED MANUFACTURING INDUSTRIES

	Production							Production Capacity			
	1965	1969	1970	1971	1972	1973	1974	1975	1972	1973	1974
Sugar (1,000 metric tons)	320.0	318.1	406.6	580.0	585.6	725.0	968.0	1,105.8	675.0	988.0	1,666.0
Beer (million litres)	14.4	39.2	36.3	32.1	33.9	43.2	44.5	61.3	100.0	100.0	100.0
Tobacco (1 000 metric tons)	10.1	14.4	15.3	16.1	16.8	19.4	20.2	22.6	22.4	n.a.	n.a.
Man-made fabrics (million sq. yds.)	2.7	51.5	77.4	145.4	208.5	287.0	278.0	300.0	n.a.	n.a.	n.a.
Cotton fabrics (million sq. yds.)	227.9	344.0	365.5	450.2	481.3	566.9	511.4	540.0	610.0	645.0	710.0
Cotton yarn (1,000 metric tons)	21.7	34.4	42.4	50.4	56.5	70.2	58.8	67.0	72.1	n.a.	n.a.
Gunny bags (million units)	40.4	44.9	52.7	63.7	81.6	91.2	110.1	107.4	84.0	150.0	150.0
Knitting (million sq. yds.) / <u>1</u>	-	43.8	53.0	70.4	110.5	168.7	203.7	250.0	n.a.	n.a.	n.a.
Plywood (million sheets)	n.a.	2.7	3.0	3.2	3.5	3.6	3.1	3.0	10.8	10.8	10.8
Paper (100 metric tons)	n.a.	30.2	31.7	37.7	42.4	39.7	33.8	25.1	43.3	45.0	45.0
Cement (million metric tons)	1.2	2.4	2.6	2.8	3.4	3.7	3.9	4.0	4.2	4.2	4.2
Glass sheets (1,000 metric tons)	n.a.	29.7	31.0	24.1	44.2	46.2	45.0	38.7	59.4	62.0	62.0
Galvanized iron sheets (1,000 metric tons)	65.5	94.6	85.5	97.3	103.8	86.1	72.1	83.1	192.0	192.0	192.0
Detergents (1,000 metric tons)	n.a.	27.2	27.1	32.2	40.0	46.6	37.2	44.6	54.3	54.3	54.3
Chemical fertilizers (1,000 metric tons)	n.a.	17.0	39.8	38.0	31.1	23.2	30.6	153.3	88.2	n.a.	n.a.
Acetylene (metric tons)	n.a.	112.0	79.0	143.0	131.0	110.0	55.0	80.0	380.0	n.a.	n.a.
Sulphuric acid (1,000 metric tons)	n.a.	17.7	15.0	14.3	47.3	47.1	46.9	45.2	48.0	n.a.	n.a.
Carbon dioxide (million kg.)	n.a.	3.8	3.4	3.6	4.6	4.3	2.2	n.a.	12.4	12.4	12.4
Petroleum products (billion litres)	n.a.	3.6	3.9	5.4	6.6	7.8	6.8	7.6	7.9	8.7	8.7
Motor vehicle assembly (1,000 units)	10.1	12.1	10.6	15.0	19.4	17.4	27.1	31.8	53.0	53.0	53.0
Motor cycle assembly (units)	-	-	-	-	34.4	56.6	66.8	83.9	68.0	68.0	68.0

n.a. = not available.

1 Total man-made and cotton fabrics

Sources: Ministry of Industry and Bank of Thailand

Industrial Projects Department
January, 1977

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

STATISTICS OF PROMOTED INVESTMENT ^{1/}

OCTOBER 26, 1960 - SEPTEMBER 1976

	Number of Applications Received	Number of Applications Approved ^{2/}	Number of Promotion Certificates Issued ^{3/}	Number of Promoted Firms ^{4/}			Investment ^{2/} (million baht)	Registered Capital of Promoted Firms (in million baht)					Number of Projects Starting Operations	Number of New Firms Starting Operations	
				Thai Firms	Foreign Firms	Joint Venture Firms		Thai Owned	Japan	USA	China ^{5/}	Others			Total
October 1960 - December 1967	n.a.	n.a.	340	122	7	168	297	2,626.8	1,144.9					3,771.7	n.a.
1968	252	149	93	38	8	36	82	2,561.8	336.4					615.2	73
1969	242	121	67	24	1	25	50	4,157.2	801.2					1,245.7	80
1970	117	94	78	22	2	29	53	2,604.7	589.5					852.1	56
1971	103	52	59	29	-	21	50	1,496.4	409.6	72.5	40.5	21.0	44.3	587.9	43
1972	180	116	70	33	-	27	60	4,004.7	760.3	115.1	-	35.9	76.6	987.9	36
1973	552	325	115	47	1	49	97	7,772.8	988.4	105.9	111.9	37.1	40.7	1,284.0	40
1974	228	176	251	121	3	53	177	18,621.0	2,731.0	532.0	72.0	51.0	291.0	3,677.0	84
1975	111	83	86	11	-	7	18	4,633.0	907.0	21.0	8.0	9.0	273.0	1,218.0	52
January - September 1976	88	47	47	10	-	7	16	1,384.0	603.0	11.0	75.0	26.0	37.0	752.0	69

n.a.: Not available.

^{1/} Includes hotels and service industries such as cold storage and, in recent years, mineral exploration. Over the past ten years, such non-manufacturing investments have accounted for 8.7 percent of total investment in promoted industries.

^{2/} When an application for investment promotion has been approved, the applicant is notified in writing of the privileges and conditions under which promotion is granted. The letter of notification will usually specify a six months' time limit for the applicant to satisfy the qualifying conditions (incorporation of the company, commercial registration, etc.). Two months are generally required, after submission of application, to be notified of the Board's decision.

^{3/} The Promotion Certificate, which is in effect the contract for investment promotion between the investor and the Royal Thai Government, is issued to the investor once he has complied with all the terms and conditions specified in the notification of approval. A two-year period is usually allowed to start operations. If operations do not start during this period, the certificate may be withdrawn.

^{4/} Refers to firms having been granted a promotion certificate.

^{5/} Refers to projects approved and granted a promotion certificate; figures for investment projects actually implemented are not available.

^{6/} Republic of China.

Source: Board of Investment.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

INVESTMENT POLICIES AND INCENTIVES

1. The program of industrial investment promotion during the 1960s was based on the 1962 Promotion of Industrial Investment Act which was amended in 1965 and 1968. In order, however, to achieve the more diversified objectives of the Third Development Plan (1972-76), a revised Investment Promotion Act (National Executive Council Announcement No. 227) was promulgated in October 1972. Investment guarantees and benefits were improved, and promotion was made more flexible. The revised Act applies to both foreign and domestic investors.

2. The Board of Investment (BOI), the Government agency responsible for implementing the Act, is now empowered to designate the investments eligible for promotion (Addendum 1) for which Cabinet approval was previously required. The Board also decides on the amount of investment of the individual projects to be promoted and on the length of corporate tax holidays to be granted with the standard incentive package. In selecting investments for promotion, BOI takes into account the country's general development objectives including: regional development, stimulation of exports, employment creation, skill upgrading, and encouragement of local participation in joint ventures with foreign investors. Investment in agro-industries and non-manufacturing sectors is to receive greater encouragement than in the past. In order to broaden the ownership of industries, promoted enterprises now have to be organized in the form of a limited company or a cooperative. The new Act also provides a basis for technical support to private investors by BOI. 1/

I. Investment Promotion Act (N.E.C. No. 227) - Main Features

A. Standard Investment Incentives

3. Promotional entities are granted certain guarantees and privileges briefly summarized as follows:

- (i) The Government guarantees not to establish a new state enterprise which would compete with a promoted firm; (Any existing state enterprise engaged in the same line of activity as the promoted firm would naturally continue to operate)

1/ BOI's capabilities for technical advice and assistance to investors are limited. Insofar as industries entering the Lat Krabang estate are concerned, IEAT plans to develop specialized staff to advise on factory design, pollution control, worker training and other operational elements of industrial production.

- (ii) The Government promises not to nationalize a promoted firm;
- (iii) A promoted firm is allowed to own land needed to carry out its industrial activity; 1/
- (iv) A promoted firm is guaranteed that it will be free to remit foreign currency from Thailand in order to recover equity investment, repay foreign loans, remit profit and interest and discharge any obligations contracted for the use of rights and services related to its activity, unless the economic situation requires temporary restrictions on foreign exchange outflows. Even under such circumstances, the Bank of Thailand must allow each year at least 20% of the foreign capital to be repatriated (provided two years have elapsed since its introduction) and may not restrict annual remittance of profits to an amount less than 15% of the foreign paid-in capital;
- (v) A promoted firm may export its products, unless deemed contrary to the national security and economic interests of Thailand;
- (vi) The Board of Investment may authorize a promoted firm to employ qualified foreign experts or skilled workers. These foreign employees may enter Thailand with their families, irrespective of the nationality quotas imposed by the Immigration Law. The Board will actually assist the firm in obtaining the necessary permits required by the Immigration Law and Aliens Occupation Act.

It may be noted that the firm is also protected, given the existing tariff structure, through the Board's policy of suspending promotional privileges to avoid creating excess capacity in an industry where there are sufficient firms to supply local needs.

4. The basic fiscal incentive that is granted to a promoted firm is the exemption from import duties and/or business tax on machinery and equipment. The Board of Investment may, at its discretion, also grant full exemption from corporate income tax for a period of three to eight years,

1/ Under the Land Code, aliens are prohibited from owning land in Thailand except under permission from the Minister of Interior pursuant to treaties between Thailand and their home countries. At the present time, bilateral treaty provisions relating to land ownership have all expired, and only aliens who acquired land before the expiration date of the applicable treaty may continue to own land. This privilege is, therefore, of particular interest to foreign investors as it allows a fully alien owned firm to own land outright.

beginning when income is first derived from the operations of the business. (Generally, firms are given a five-year exemption.) In addition, as a special incentive, the Board may recommend to the Ministries of Finance and Commerce that imports competing with the products of a promoted firm be prohibited or subjected to increased tariff duties. If such a recommendation is approved, firms receiving these privileges may be submitted to special compulsory price controls administered by BOI.

B. Additional Special Purpose Incentives

5. To promote exports and induce new investment to locate outside the Greater Bangkok area, special benefits are available for export industries and firms locating in the designated development zones (see paras. 7 and 8 below).

(a) Incentives to Encourage Exports

6. The Investment Promotion Act provides four special benefits to eligible export oriented firms. The first two grant exemption from import duties and business tax on imported raw materials and components used in the processing and assembling of products to be exported. An exemption from business tax on raw materials and other commodities supplied by a domestic producer for further processing into an export product is also available. A third incentive consists of exemption from export duty and business tax on items produced for export. Given that export taxes are imposed mainly on rice, teak, scrap iron, rubber, sugar and hides and leather, the exemption from export tax has actually little effect on exporters of industrial products. The business tax exemption is more significant as business tax rates on distribution and processing of goods range from 1.5% to 30.0%; as a result, an export price may be lowered as much as 23% below its domestic retail price. Finally, the law provides for a small export subsidy in the form of an allowance against taxable income. This allowance is equal to 2% of each year's increase in corporate income derived from export sales in f.o.b. terms. In addition to these fiscal measures, the BOI renders technical assistance to manufacturers interested in export opportunities. A few general studies identifying products suitable for export and analyzing foreign markets are available to them. This aspect of BOI's export promotion activities should be further enhanced in the near future by the establishment of the Board's two first trade and investment centers abroad, in Frankfurt and New York, from which better market intelligence is expected to derive.

(b) Investment Promotion Zones and Associated Incentives

7. The Investment Promotion Act, when introduced in November 1972, listed five "special privileges" available to investors locating their projects in regional promoted investment zones to be designated by BOI. The privileges, which BOI may grant in total or in part (depending on whichever is deemed appropriate), include:

- (i) a maximum reduction of 50% of import duties and/or business taxes on raw materials for a period up to five years from the start of operations;
- (ii) a maximum reduction of 90% of business tax on the sale of products for a period not exceeding five years from the date income is first derived from the investment;
- (iii) permission to double expenditures for transportation, electricity and water supply to be charged against corporate taxable income for a period and under conditions left to BOI's discretion;
- (iv) permission, in addition to the normal rate of depreciation of assets, to deduct from net profits (in a single year or in several years over a maximum ten-year period) an amount not exceeding 25% of the value of investment in the construction costs of infrastructure; and,
- (v) an additional reduction of 50% of corporate income taxes for 5 years starting from the expiration date of the approved standard income tax holiday.

8. In December 1973, following the recommendation presented by BOI, the Government selected ten areas to serve as "Investment Promotion Zones". A distinction is made between areas designed for general industry, agro-industries and export oriented industries. The special promotional privileges just described are available for general industry in any of the development zones and to agro-industries anywhere outside the Bangkok area. In the case of export oriented industries, all 10 zones are open for investment, in addition to the Bangkok metropolis.

II. General Export Incentives

9. In addition to the special benefits offered under the Investment Promotion Act to export oriented firms, the following general export incentives are available to both promoted and non-promoted firms, though these are mainly of interest to the latter category since they are similar to those provided to promoted export firms. The two most important fiscal incentives for exports are: (i) the tax rebate or "credit" scheme, and (ii) the drawback or refund of import duties paid on raw materials used in export production. In addition, an exporter may discount his letters of credit at his commercial bank at a rate lower than the market rate of interest because of the special rate at which the Bank of Thailand will rediscount these notes.

A. The Export Tax Rebate System

10. Under this scheme introduced in 1971, all indirect taxes on raw materials, equipment, parts, machinery, fuel and energy used in manufacturing

the export products are paid in full at the time the goods are brought into the country. These indirect taxes include excise taxes, business taxes, import duties, local municipal tax, and other levies and fees. When the imported goods incorporated in the manufacturer's export products are re-exported, the exporter applies for a refund of the corresponding taxes paid. Upon Government approval of the amount of taxes, the refund is paid to the exporter in the form of a tax credit which may be used to offset future tax payments (such as excise taxes, corporate income taxes, export duties, and business taxes excluding those levied on imports). The tax certificates issued to the approved exporter are valid for a period of three years from the date of issue. Under certain conditions, the validity period may, however, be extended for one or two additional three-year periods.

11. To obtain this tax credit, a manufacturer must submit production cost data to the Ministry of Finance (Tax Rebate Committee), where it is reviewed and the indirect tax content of the exported commodity is determined. A refund formula is established that sets forth the tax rebate in terms of unit of output exported for all firms exporting this product. Each year, the Ministry of Finance establishes a budgetary ceiling for the amount of tax rebate that is to be made available to exporters. This tax credit scheme applies only to manufactured exports. Exports of minerals, agricultural and livestock products, gold, silver, precious and semi-precious stones are specifically excluded.

B. The Drawback System

12. According to customs regulations, goods which are imported with the intention that they will be processed, mixed, or assembled into products for export, are liable for customs assessment at only 10% of the rate specified in the Customs Tariff Schedule, provided such raw materials are exported within 12 months from the date of obtaining Customs clearance on entry. Upon import of the raw materials, the importer has to provide securities covering this reduced amount. These may be in the form of cash, Government bonds, or a Bank guarantee. The securities are later refunded upon export of the industrial goods that embody the equivalent of the imported raw materials. Should the importer fail to export the raw materials within the stipulated 12 months period, he is required to pay the full tariff as laid down in the Customs Tariff Schedule. The 90% unpaid duty has to be paid within one month of the expiration of the time limit for export, and, if the security was not in the form of cash, an additional payment of 1% of the full rate is required for the 13th month after import, and 2% per month thereafter until all outstanding duties are paid in full.

C. Discount Facilities

13. The Bank of Thailand provides an incentive to exporters through its special credit policy which lowers the cost of borrowing for exporters of manufactured goods. Under the rediscount facility, commercial banks, which lend to manufacturers of export goods, are able to rediscount the promissory

notes with the Bank of Thailand at the rate of 5%. This enables commercial banks to lend to exporting firms at 7% p.a. (180 days) which is considerably below the prevailing market rate of interest (15% p.a. for 180 day notes in June 1974).

14. Commercial banks wishing to use the Bank of Thailand's export credit rediscounting facility must apply for prior approval and assure the Bank of Thailand that the issuers of each type of promissory note are credit-worthy customers. Each bank is then assigned a line of credit based on its liquidity position, while its customers are given credit lines based mainly on their financial status and need for revolving export funds. Depending on the type of promissory note that is discounted in export transactions, the commercial banks do not accept requests for the total face value of the letters of credit, sales contract, purchase orders, or warehouse receipts but cover 70% - 90% of the promissory notes.

15. The Bank of Thailand's export credit rediscount facility finances the export of agricultural, industrial, mineral, and other goods. In the past six years, Bank of Thailand export credits for the manufacturing sector rose rapidly from Bht. 195.3 million (US\$9.8 million) in 1970 to Bht. 7.3 billion (US\$365 million) in 1975, so that they now account for about half of the total export credits under the Bank's rediscounting facilities. ^{1/} Nevertheless, export credits rediscounted by the Bank of Thailand finance only a small share of industrial exports and represents a very small fraction of total commercial bank credits.

BANK OF THAILAND EXPORT CREDIT

	<u>Rediscount Facilities</u>					
	(million baht)					
	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>
1. Agriculture	681.6	1,313.7	1,373.6	1,494.4	3,010.5	2,783.2
2. Industry	195.3	342.3	1,141.5	1,520.1	4,212.2	7,295.3
3. Minerals	6.4	68.5	76.1	99.0	434.8	207.8
4. Petroleum Products	-	-	4.6	2.9	124.2	102.0
5. Others	20.1	17.9	44.6	43.7	((
Total	<u>903.4</u>	<u>1,742.4</u>	<u>2,640.4</u>	<u>3,160.1</u>	<u>7,781.7</u>	<u>10,388.3</u>

Source: Bank of Thailand.

^{1/} The big increase in rediscount in industrial bills is due to the revision of rediscount regulations in 1975 coupled with the efforts made by various industries to reduce production expenses during this period of increasing production cost and recession.

16. While the various incentives offered have no doubt contributed to the development of exports, their actual effectiveness is difficult to determine as the increase in world market prices for Thailand's major export commodities was the main factor in the rapid growth of exports. A detailed assessment of the incentive system and its revision are being considered by the Thai authorities, including BOI and Ministry of Finance.

17. As shown in Annex 9, the number of promoted industries by BOI has shown a sharp decline in 1975. This is due mainly to the general slump in the economy in that year. However, BOI is considering measures to restore and increase active foreign investments in the country. More liberal treatment of foreign investments may, therefore, be expected.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

LIST OF INDUSTRIES ELIGIBLE FOR PROMOTION
(as of 7/16/74)

The list of industries eligible for promotion under the Investment Promotion Act is presented below in a summary form.

Agricultural Products and Commodities

1. a. Large-scale cultivation for export or for use in or sale to industrial enterprises.
- b. Processing of agricultural products: natural rubber, coconut products, rattan or bamboo products, wood carving, curing and re-dyeing, and fuel from agricultural products.
- c. Processing and preservation of food: edible flour, instant tea and coffee, canning, fruit juice and animal feed.
- d. Oil production from agricultural products: vegetable oil and essences.
- e. Fishing and seafood processing.
- f. Animal husbandry and meat products.
- g. Animal products industry: tanning and gelatin production.
- h. Cultivation of mulberry trees and sericulture.
- i. Bee raising and bee products.

Minerals, Metals and Ceramics

- a. Mineral ore prospecting.
- b. Mining or dressing of ores.
- c. Smelting
- d. Metal or metal alloy production: iron, steel and copper.

- e. Processing of metals and metal alloys: casting, rolling, galvanizing or coating, and all other methods of processing.
- f. Metal or metal alloy products: containers.
- g. Ceramic industries: materials used to produce ceramics, bone china, glazed and non-glazed mosaic tiles, glazed insulators, low temperature glazed earthenware, heat-resistant materials, sheet glass, optical glass, heat-resistant glass, crystal ware, glass bulbs and tubes, and glass wool.

Chemicals and Chemical Products

- 3.
 - a. Chemical production: soda ash, ammonia, nitric acid, tannin, aluminum silicate, carbon black, activated carbon, zinc chloride and destructive distillation of wood.
 - b. Processing of petroleum: crude oil refining and grease.
 - c. Petrochemicals: petrochemicals, plastics, plasticizers and synthetic resins.
 - d. Pharmaceutical production: pharmaceuticals, fungicides and insecticides.
 - e. Chemical fertilizer production.
 - f. Paper or paper pulp production.
 - g. Rubber products production: hard rubber products, reclaimed rubber, elastic braids and conduct.
 - h. Paints or similar products: dyes, printing inks, pigments, lacquers, varnishes and wood-treating liquids.

Mechanical and Electrical Equipment

- 4.
 - a. Engines and component parts: combustion engines.
 - b. Mechanical equipment including components and parts: agricultural machinery, construction machinery, mining equipment, tractors, water pumps, woodwork machinery, welding machinery, air pumps or vacuum pumps, air or gas compressors, air conditioners and bicycles.

- c. Electrical equipment including components and parts: generators, electric motors, transformers and electrical appliances.
- d. Electronic equipment or parts: radio transmitters and receivers, television transmitters, telephone equipment, electronic calculators and electronic components.
- e. Machine tools or parts: factory machine tools and industrial machinery.
- f. Tools, appliances, components: agricultural tools and equipment, blacksmith and carpenter tools, household appliances using electricity (except for refrigerators), gas (except for gas stoves) or gasoline, sewing machines, typewriters and medical instruments or equipment.
- g. Measuring and testing equipment and components: electric meters.
- h. Component parts of: vehicles, machine or engines and weaving machines.
- i. Ship building and repairs.

Construction Materials

- 5.
 - a. Stone products: marble and marble products.
 - b. Gypsum products: gypsum board and plaster.
 - c. Asbestos products: insulators.
 - d. Wood processing for construction: drying, curing and preserving.
 - e. Composite board production: pressed board made from wood waste and/or agricultural products.
 - f. Building hardware manufacture.
 - g. Components for pre-fabricated buildings.

Textiles

- 6.
 - a. Synthetic fiber (except for polyester fiber, polyester filament yarn and nylon filament yarn).

- b. Cotton, natural fiber or synthetic fiber products:
ladies' stockings, mens' socks and gloves.
- c. Spinning: weaving or knitting yarn.
- d. Weaving or knitting: towels.
- e. Bleaching, dyeing and printing or finishing of yarns or
textiles.

Services and Miscellaneous Activities

- 7.
 - a. Industrial estate (an area of not less than 500 rai).
 - b. Export trading.
 - c. Hotel industry.
 - d. Cold storage or refrigerated vehicles: cold storage
facilities, refrigerated trucks or ships.
 - e. Sea transportation: international and domestic transport.
 - f. Land transportation.
 - g. Repair service for vehicles, machinery or engines.
 - h. Product standard testing services.
 - i. Warehousing.
 - j. Low-income family housing projects.
 - k. Hospitals.
 - l. The production and transportation of essential materials
and common services for the production of petrochemical
products.

Other Products

- 8.
 - a. Clocks, watches and their components.
 - b. Cameras and lensed apparatus.
 - c. Stationery and educational equipment: pencils and pens.
 - d. Adhesive sheet and tape.

- e. Sporting equipment, musical instruments and toys.
- f. Medical supplies.
- g. Scale ice.
- h. Sheet abrasives.
- i. Packing materials.
- j. Plastic or plastic-coated products.
- k. Export industry: knitted garments, poultry and swine raising.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

PRINCIPAL INSTITUTIONS ASSISTING INDUSTRIAL DEVELOPMENT

National Economic and Social Development Board (NESDB)

1. NESDB is the national planning agency responsible for macro-economic planning and review of sector and project plans of ministries, departments and state enterprises. NESDB also participates in the formulation of fiscal policy, reviews the annual budget, gathers data on the economy and updates the national accounts.

Ministry of Industry

2. The Ministry of Industry is responsible for initiating and implementing policy for the development of industry in general; it monitors the performance of industry, issues licenses to industrial enterprises and administers various programs of technical assistance. Within the Ministry, the Department of Industrial Promotion renders assistance specifically to the small-scale sector.

Industrial Service Institute (ISI)

3. ISI's main function is to provide technical extension and advisory services to small private industrialists, and to train managers and skilled workers of small industries. As a secondary role, ISI performs economic studies and market surveys, collects and disseminates economic information, and carries out limited activity in industrial design and testing of technical products.

Small Industries Finance Office (SIFO)

4. The Small Industries Finance Office of the Department of Industrial Promotion, Ministry of Industry, extends long and medium-term loans of less than Baht 1 million (US\$50,000) to small industries in the private sector. SIFO may finance purchases of machinery and equipment, plant construction, acquisition of industrial land and working capital. It receives its funds from the Government through annual budget allocations and from the Krung Thai Bank, a Government commercial bank, in the proportion of 1 to 3.

Office of the Board of Investment (BOI)

5. The Board of Investment, under the Office of the Prime Minister, is the government agency responsible for implementing the Investment Promotion

Act (Annex 10). BOI is empowered to determine the list of investments eligible for promotion and decides what incentives are granted to individual projects. To promote investment, BOI also analyzes the potential for development of particular industrial sub-sectors in Thailand, and conducts surveys of foreign markets to identify products suitable for export.

Industrial Finance Corporation of Thailand (IFCT)

6. IFCT is the only institution in Thailand which specializes in extending medium and long-term loans to private industrial enterprises. The minimum size of IFCT's loans is Baht 1 million (US\$50,000); since this is SIFO's loan ceiling, IFCT refers loan applicants to SIFO if the size of the required loan is less than this amount, and SIFO reciprocates.

Industrial Estates Authority of Thailand (IEAT)

7. See Annex 20.

THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTREGISTERED CAPITAL OF PROMOTED INDUSTRIES BY NATIONALITY
AND TYPE OF OWNERSHIP

October 26, 1960 - September, 1976

Nationality of Ownership	Registered Capital Solely Owned by One Nationality		Registered Capital of Joint Ventures (Thai-Foreign)		Total Registered Capital ^{1/}		Percent of Total Foreign Registered Capital
	(Bht.million)	(%)	(Bht.million)	(%)	(Bht.million)	(%)	
Thailand	4,758.3	94.3	5,754.4	60.2	9,823.2	70.8	-
Japan	194.2	3.8	1,335.1	13.9	1,521.0	11.0	37.7
USA	39.8	0.7	589.4	6.2	621.9	4.5	15.4
Republic of China	3.0	0.1	475.1	4.9	470.0	3.4	11.6
UK	11.0	0.2	187.1	1.9	189.3	1.4	4.7
Malaysia	-	-	103.9	1.0	96.9	0.7	2.4
Israel	-	-	80.7	0.8	80.7	0.6	2.0
Hong Kong	-	-	226.2	2.3	223.2	1.6	5.5
France	-	-	60.0	0.6	60.0	0.4	1.5
Singapore	11.1	0.2	35.3	0.3	38.4	0.3	0.9
West Germany	16.7	0.3	54.9	0.5	71.7	0.5	1.8
Netherlands	-	-	79.0	0.8	79.0	0.6	2.0
India	8.0	0.2	44.4	0.4	52.4	0.4	1.3
Switzerland	-	-	88.7	0.9	88.7	0.6	2.2
Panama	-	-	32.2	0.3	32.2	0.2	0.8
Philippines	-	-	19.2	0.2	19.2	0.1	0.5
Australia	-	-	22.8	0.2	22.8	0.1	0.6
Denmark	-	-	15.9	0.1	15.9	0.1	0.4
Portugal	-	-	12.6	0.1	12.6	0.1	0.3
Others	-	-	340.9	3.6	340.9	2.5	8.4
Total	5,042.1	100.0	9,557.8	100.0	13,860.1	100.0	100.0

^{1/} Total registered capital includes the capital withdrawn accompanied by the certificate withdrawal.

Source: Board of Investment

Industrial Projects Department
January 1977

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

LIST OF BUSINESS ACTIVITIES ANNEXED TO THE ALIEN BUSINESS ACT

CATEGORY A

Business in Agriculture

1. Rice farming
2. Salt farming including manufacture of efflorescent salt but excluding rock salt mining.

Business in Commerce

1. Internal trade concerning local agricultural products.
2. Trade in real property.

Business in Services

1. Accountancy
2. Attorneyship
3. Architecture
4. Advertisement
5. Brokerage or Agency
6. Auction
7. Hair-cutting, hairdressing and beauty treatment

Other Services

1. Building Construction

CATEGORY B

Business in Agriculture

1. Farming
2. Gardening
3. Livestock farming including cocoon raising
4. Forestry
5. Fishery

CATEGORY B

Business in Industry and Handicrafts

1. Rice milling
2. Manufacture of flour from rice and field crops
3. Manufacture of sugar
4. Manufacture of beverage, with and without alcoholic blending
5. Manufacture of ice
6. Manufacture of drugs
7. Cold storage
8. Wood processing
9. Manufacture of products from gold, silver, niello and bronze
10. Manufacture and casting of Buddha images and manufacture of alms bowls
11. Manufacture of wood carving
12. Manufacture of lacquerware
13. Manufacture of all types of matches
14. Manufacture of lime, cement or cement by-products
15. Stone blasting or crushing
16. Manufacture of plywood, wood veneer, chipboard or hardboard
17. Manufacture of garment or shoes for export
18. Printing press
19. Newspaper publication
20. Silk combing, silk weaving or printing of pattern on silk material
21. Manufacture of products from silk, silk yarn or silk cocoons

Business in Commerce

1. Retailing of all products except those specified in Category C
2. Sale of mining products except those specified in Category C
3. Sale of all types of food and beverage except those specified in Category C
4. Sale of antiques, heirlooms or works of art

CATEGORY C

Business in Commerce

1. Wholesale of all types of products within the country except those specified in Category A
2. Export of all types of products
3. Retail of machines, engines and tools
4. Sale of food and beverage for the promotion of tourism

Business in Industry and Handicrafts

1. Manufacture of animal feeds
2. Extraction of vegetable oil
3. Manufacture of embroidering and knitting products including weaving, dyeing and pattern printing
4. Manufacture of glass containers including light bulbs
5. Manufacture of crockery
6. Manufacture of writing and printing paper
7. Rock salt mining
8. Mining

Business in Services

1. Except for those specified in Category A and Category B

Other Business

1. Other construction businesses except those specified in Category A.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

REGIONAL DEVELOPMENT PLANS

1. One of the objectives of the Third Plan is to "raise the income and living standard of the rural people in various regions." To help achieve this goal, considerable efforts including administrative decentralization have been devoted over the last several years to regional planning for the Northeast, the North and the South. Some knowledge and experience has been gained in the regional planning process, but to date, little has directly resulted from the first two of these plans (para. 2 and 3 below).

Development Plan for the Northeast

2. With the help of technical assistance from USAID, the National Economic and Social Development Board (NESDB) prepared a development plan for the Northeast. This plan, however, was general in nature and did not translate priorities into clearly identified and formulated projects. It also had only limited support from the various ministries and departments that would have had to implement it. Hence, although the plan was "incorporated" in the Third Plan, it has had little effect on subsequent ministerial actions and policy decisions.

Northern Regional Planning Study

3. Only the first phase of the regional planning study for the north, carried out by a team of consultants financed by UNDP, has been completed. The remaining phases have been delayed by inadequate contractor performance and inaction and then reorganization at NESDB. However, steps are now being taken by NESDB to complete the planning study for the Fourth National Development Plan in 1977-1981.

Southern Regional Planning Study

4. In part because of what has been learned from the earlier regional planning exercises, the Southern Regional Planning Study, which was carried out for NESDB by consultants financed under a technical assistance project of the U.K.'s Overseas Development Administration, is expected to be more successful in implementation. The study has focused on sectoral reviews leading to identification and preparation of specific projects. Steps have also been taken to involve the operating departments, which must implement proposed projects, in their formulation and preparation. Consequently, this study is likely to lead to the implementation of a significant number of projects many with external financing.

5. With respect to industrial estate development, the study has identified the Hat Yai/Singkhla area as a possible site for the setting up of an industrial estate and/or an export processing zone. The study team intends to carry out a prefeasibility study following completion of its sectoral reviews.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE

DEVELOPMENT PLAN FOR THE GREATER BANGKOK AREA

1. The Greater Bangkok area covers 3,157 square kilometers and comprises three Changwats (provinces): Phra Nakorn/Thonburi (the Metropolitan Municipality), Nonthaburi and Samut Prakan. The roughly rectangular area stretches about 65 kilometers east to west, and 50 kilometers north to south. Slightly west of the center line, the Chao Phraya River winds through the area until it reaches the Gulf of Thailand.
2. While peripheral parts of the area are still thinly populated, the urban center manifests all of the ills of over-congestion - traffic paralysis, utility breakdowns, pollution, inadequate and unsanitary housing. The population of 4.3 million (1976) is expected to expand to a minimum of 7 million, and may surpass 9 million with high migration from outlying regions, by 1990. This will double the population density in the area, which is already one of the highest in the world. What is more important, the labor force is expected to increase from 1.5 million in 1971 to 4.1 million in 1990.
3. To achieve efficient area development, the central and local governments have been proposing various plans. The first of such plans, the "Greater Bangkok Plan, 1990" was prepared with the assistance of American consultants and published in 1960. However, this plan was not officially approved and only served as a more or less informal working guide for Government ministries. The Government revised the Plan in 1971, taking into account changes since 1960, and again revised it in 1973. This 1973 plan and the 1975 Town and Country Planning Act have been approved by the Cabinet.
4. While the 1973 plan covers the entire Greater Bangkok Area, it foresees staged implementation starting with limited sections needing urgent attention. The first stage plan was for the period from 1972 to 1976 and covers about two-thirds of the area. It includes housing and infrastructure programs with government subsidies for priority needs. Regarding industry, the Plan's basic policy is to distribute it together with residential, commercial and social facilities to satellite centers removed from the urban core. One major component of this program is to establish an industrial development pole in Samut Prakan to provide 300,000 job opportunities. Four smaller industrial development poles are planned for Cholburi, Samuthsakorn, Klong Dan and Nakorn Pathom which in total should eventually provide 132,000 jobs. The Lat Krabang estate and others being prepared are fully consistent with the guidelines of the Plan. Both Bang Chan and Lat Krabang fall within one of the designated industrial zones.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

NATIONAL INDUSTRIAL ESTATES DEVELOPMENT PROGRAM

1. Thailand has been developing a detailed long-range national industrial estates plan. The outline of such a plan is gradually taking shape as a result of (i) the findings and recommendations of a Japanese study team which conducted in late 1969 an extensive search for potential industrial estate sites throughout the Kingdom; 1/ (ii) the regional planning exercises currently underway (Annex 13); and (iii) the tentative development program drafted by the Industrial Estates Authority of Thailand (IEAT).

Japanese Study on Industrial Estates Development

2. The principal recommendations of the study were that, while estates should initially be introduced in the Central Region where most industrial investment was choosing to locate, opportunities existed also to develop industrial estates inland, in the northern and northeastern areas as well as in coastal areas in the South.

3. Using such criteria as topographic conditions, transportation facilities, available labor force, energy, markets and telecommunications the study team selected 17 sites throughout the country as suitable locations for industrial development, and, therefore, the establishment of industrial estates. The Changwat (province) of Phra Nakhon, which includes Bangkok, was ranked in first position, with urban areas centering around the capital city within a 100 km. radius (Ayutthaya and Saraburi to the north, Nakhon Pathom and Samut Sakorn to the west) in second to fifth positions. Areas ranked sixth to tenth are within the 300 km. zone; they include Kohn Kaen in the northeast, Chol Buri in the southeast, and Phitsanuloke to the north. Among the other sites selected, but located still further away from Bangkok were Chiang Mai and Lampang in the north, Udon Thani and Ubon Ratchathani in the northeast, and Surat Thani and Songkhla in the south.

4. More precise attention was given by the study team to site selection for industrial estates in the Greater Bangkok area and to the prospects for industrial development along the southeastern coast (Leam Chabang, Sriracha). For the Bangkok area, two types of location were selected:

- (i) sites comparable to Minburi, within a 30 km. radius from the city center, to serve as fixation points and growth poles for the development of light industries, and
- (ii) areas along the Chao Phraya river and on the seaside, in Samutprakarn changwat, such as the ones defined in the Greater Bangkok Master Plan - 1990, to accommodate more

1/ Report on "Industrial Estates Development in Thailand" prepared for the Overseas Technical Cooperation Agency, Government of Japan, March 1970.

specifically export industries. The southeastern coastline was considered suitable for locating heavy industries (steel, petrochemicals), should a second port be developed in this area.

IEAT's Industrial Estate Development Program

5. IEAT has proposed to NESDB a tentative program for industrial estates development to be included in the Fourth Plan (1977-1981). In general terms, the pattern of estates development is similar: first priority is given to the Greater Bangkok area in addition to the Lat Krabang project and special attention is paid to the southern region where industrial viability is considered to exist. The following is the list of projects the IEAT wishes to carry out either alone or on joint venture basis during the Fourth Plan (1977-1981).

List of Industrial Estates Proposed

<u>Greater Bangkok Area</u>	<u>Priority Rating</u>
1. Lat Krabang	1
2. Samutsakorn	1
3. Klong Dan	1
4. Nakhon Pathom	3
5. Nontaburi	3
6. Thanyaburi	3
7. Navanakorn*	1
8. Bang Poo*	1
9. Samutprakarn EPZ*	3
<u>Southeastern Coast</u>	
10. Cholburi	2
<u>South</u>	
11. Songkhla	1
<u>Northeast</u>	
12. Udon Thani or Khonkhaen	2
<u>North</u>	
13. Lampang	2

* Joint Venture
Source: IEAT

6. This list is very ambitious; IEAT is still a young organization (Annex 20) and such a program would exceed present and near-term resource availability. It is believed, therefore, that a maximum of six projects might be started, market conditions and resource availability permitting, over the period 1977-81. At least four of these estates would be located within a 50 km. radius from Bangkok (Lat Krabang, Nava Nakorn, Bang Poo and the Samut Prakarn EPZ), and perhaps one each in Chol Buri Province and an outlying region.

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APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT
PROJECTED GROWTH OF INDUSTRY AND LAND REQUIREMENTS 1972 - 1981
 (Amounts in billion baht, 1962 constant prices)

	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	Total 1972-1976	Total 1977-1981	
	←----- actual ----->			----- estimated ----->		----- projected ----->							
1. Whole Kingdom													
Investment (amount) ^{1/}	5.4	6.6	7.8	8.3	8.9	10.1	11.5	12.6	13.7	15.0	37.0	62.9	
of which promoted investment ^{2/}	1.1	2.8	4.9	3.1	2.2	5.0	5.8	6.3	6.9	7.5	14.1	31.5	
Number of Promoted Projects Implemented ^{3/}	47	58	108	69	71	91	105	115	125	136	353	572	
2. Bangkok Area													
Investment ^{4/}	3.6	4.4	5.2	5.5	5.9	6.7	7.7	8.4	9.1	10.0	24.6	41.9	
of which promoted investment ^{5/}	0.7	1.9	3.3	2.1	1.5	3.3	3.8	4.2	4.5	5.0	9.5	20.8	
Number of Promoted Projects Implemented ^{6/}	31	39	73	47	48	61	70	77	83	91	238	379	
Total Number of Projects Implemented ^{7/}	159	90	115	123	148	122	140	154	166	182	635	764	
Average Land Required per Project (ha)	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	-	-	
Land Required (ha)	143	90	115	123	163	134	154	185	199	218	634	890	
of which for promoted project	28	39	73	47	53	67	77	92	100	109	240	445	

- ^{1/} As projected by Bank staff; actual figures for 1972, 1973, and 1974; estimated for 1975 and 1976 and projected thereafter; the model used assumes an overall growth of 9.4% per annum over the period.
- ^{2/} Figures for 1972, 1973, and 1974 are estimated by (1) factoring the investments approved in the previous year (Annex 9) by the realization rate assumed equal to the ratio of projects starting operations in the current year to promotion certificates granted in the previous year, and (2) deflating this figure to constant price. The projection from 1977 and onward is based on that the half of total investment will be promoted investment.
- ^{3/} Actual number of projects starting operations in 1972, 1973, and 1974 (Annex 10); from 1975 and thereafter estimated from the amount of promoted investment, assuming an average investment of B 55 million (US\$2.75 million).
- ^{4/} Estimated assuming two thirds of the investment in the whole Kingdom located in the Bangkok area.
- ^{5/} Assuming the same ratio of promoted/total investment as for the whole Kingdom.
- ^{6/} Estimated assuming the same ratio of promoted/total investment as for the whole Kingdom.
- ^{7/} Assuming the ratio of total number of projects implemented/number of promoted projects is equal to the corresponding ratio for investment amounts (for the purpose of estimating land requirements only).

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APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

INDUSTRIAL LAND AVAILABILITY - GREATER BANGKOK AREA

1/

A. Zoned Industrial Land

Changwat	Locations		Area (ha)	Amount Occupied at end 1976(est). 2/ %	Available Land after 1977 (est.) (ha)	
	Amphur	Site				
<u>Phra Nakhon</u>	Minburi	Bang Chan/Lat Krabang	655 ^{a/}	23	505	
		(Phra Khanong	East Phetburi Road	540	5	515
		(Phra Khanong	Klong Toey	1,255	90	126
	Bangkok Municipality	(Bang Khen	Rama V Rd. & Patiphat Rd.	195	30	135
		(Dusit	Riverside	495	85	75 ^{b/}
	(Yannava	Riverside	1,350 ^{c/}	55	- ^{c/}	
<u>Thonburi</u>	Rat Burana	) Riverside	195	80	39 ^{b/}
	Bang Khun Thian					
Thonburi Municipality	(Thonburi (Klong San	) Riverside	210	80	41 ^{b/}
<u>Samutprakan</u>	Phra Pradang	Riverside-West Bank	510	10	480	
		Riverside-East Bank	2,245	40	1,345	
	Muang Samutprakan	Riverside-West Bank	1,195	10	1,075	
		South of City Seaside - Hua Lamphu Thong	450	35	290	
		360	35	235		
<u>Total</u>			9,655	50	4,850	

B. Planned Industrial Estates

Changwat	Locations		Area (ha)	Amount Occupied at end of 1976	Amount avail- able up to 1981	Land available after 1981 (ha)
	Amphur	Site				
<u>Phra Nakhon</u>	Minburi	Bang Chan	55	55	-	-
		Lat Krabang	116	-	116	-
<u>Pathum Thani</u>	Pathum Thani	Nava Nakorn	113	-	113	-
<u>Samutprakan</u>	Muang Samut- prakan	Bang Poo	160	-	80	80
		Klong Dan	26	-	-	26
<u>Total</u>			470	55	309	106

a/ Includes the Bang Chan and Lat Krabang estates.

b/ Given present land use, only small plots available.

c/ This area is earmarked for warehouses only.

d/ Bang Poo Phase I. Total planned area is 1280 ha.

1/ As defined in the Master Plan prepared by the Department of Town and Country Planning, Ministry of Interior, with, in addition, the Minburi estate area.

2/ Present land occupation rate for the industrial zones was estimated using maps assembled by the Planning Division of the Bangkok Metropolitan City Municipality.

THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTPrice Comparison with Nava Nakorn Industrial Estate Project

1. The Nava Nakorn Industrial Estate forms part of the "Nava Nakorn New Town" which is being developed by a private company, including as shareholder and executing agency, the Commonwealth Development Corporation of the United Kingdom.

2. The site is located about 50 km north of Bangkok covering some 800 ha, including 113 ha reserved for the estate. Both standard factory buildings and developed sites will be offered for sale or lease. In November 1976, building rental rates were not available, but prices for developed plots were quoted at Bht 400,000 per rai (1976 prices). A comparison of prices per rai, in current Bht, between Nava Nakorn and Lat Krabang estates, is given below:

<u>Year</u>	<u>Nava Nakorn</u>	<u>Lat Krabang</u>	
	(Bht '000/rai) /1	Sales Against Cash (Bht '000/rai) /2	Sales on 4-year Terms (Bht '000/rai) /2
1976	400	-	-
1977	424	-	-
1978	449	-	-
1979	476	250	313
1980	505	275	345
1981	535	303	379
1982	567	333	417

/1 Assumed inflation rate of 6% p.a.

/2 Assumed increase of 10% p.a. for starting contracts.

As can be seen from above Lat Krabang's prices are competitive both for sales against cash as well as for sales on 4-year terms.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

NATIONAL EXECUTIVE COUNCIL ANNOUNCEMENT NO. 339, DECEMBER 13, 1972

NEC Decree no. 339 authorized the creation of an autonomous government agency to develop, own and manage industrial estates and export processing zones in Thailand. The more important articles governing organization and operations have been translated and are given below:

Preamble

The various problems connected with location of factory sites and the free choice of private enterprises to set up industrial plants have caused nuisances to the public and pollution of water with the emitted waste, noise, dust, odors, and fumes. All these factors have contributed to a nonuniformity in expansion of industries and the authorities concerned have thus been unable to render efficient services to them. As the suitability of establishment of Export Processing Zones can also be justified by the need to promote utilization of local labor, the Chairman of the National Executive Board hereby decrees that:

Article 2. (Objectives of IEAT) An Industrial Estate Authority shall be established under the name of "Industrial Estate Authority of Thailand", abbreviated as IEAT, and shall be a juristic person, having the following objectives:

- (1) Procurement of lands suitable for establishing industrial estates.
- (2) Improvement of land under (1) including building roads, factory waste water disposal facilities or other necessary installations as well as providing other facilities and services to enable the smooth working of industrial operations.
- (3) Provision for hire, hire-purchase, and sale of immovable properties or movable properties in industrial estates.
- (4) Entering into joint investments with private enterprises in establishing industrial estates.
- (5) Undertaking other related business connected with or for the benefit of industrial estates.

Article 5. (Activities of IEAT) Industrial Estate Authority of Thailand is empowered to undertake activities in accordance with the objectives laid down in Article 2 including the following:

- (1) Surveying, planning, designing, and constructing all facilities in industrial estates.
- (2) Designation of categories and sizes of industrial activities to be permitted in industrial estates.
- (3) Permitting and supervising construction of factories, installation of machinery, and registration of factories in the industrial estates.
- (4) Inspection of the living condition of workers in the industrial estates.
- (5) Control of activities of industrial operators in the industrial estate in accordance with established rules and regulations.
- (6) Inspection and certification of kinds and quantities of raw materials or products in the case where issuance of certificates is necessary, or in the case of bringing them into or taking out of the industrial estates.
- (7) Acquiring and giving out loans or investment.
- (8) Issuing bonds or other instruments of investment.
- (9) Prevention, inspection and control of tax evasions in the industrial estates.
- (10) Providing necessary services and facilities to industrial operators in industrial estate.

Article 6. (Capital of IEAT) Capital fund of Industrial Estate Authority of Thailand shall comprise:

- (1) Assets as per Article 4. (Note - the properties of the Bang Chan Estate).
- (2) Money or other properties received from government or from other persons.

Article 9. (Board) There shall be a Board called the Board of Industrial Estate Authority of Thailand consisting of the Chairman and other members not exceeding ten including the Director of Industrial Estate Authority of Thailand who is ex-officio member of the Board. The cabinet shall nominate the Chairman and other board members with the exception of the ex-officio Board member.

Article 10. (Power of Board) The Board is empowered to lay down policy and supervise generally the activities of Industrial Estate Authority of Thailand.

Article 11. (Policy of rental fee) In fixing of rental fees for immovable or movable properties and for service charges for other facilities, the industrial estate shall base its fees on obtaining sufficient income for:

- (1) Provision as necessary to cover its operating costs, including interest, depreciation, bonuses, pensions, welfare funds or others for the welfare of workers and their families
- (2) Repayment of loans
- (3) Provision of reserve funds as necessary for expansion of the activities and investment.

Article 13. (Disposition of profit) The annual income, after deducting all the expenses, shall be remitted to the Government treasury. However, if the income is not sufficient to cover the expenses, with the exception of reserve fund as per Article 11 (3) and if IEAT cannot obtain income from other sources, the Government will pay whatever amounts are necessary to cover the deficit.

Article 41. (Types of industrial estate) There are two types of industrial estates, namely,

- (1) General Industrial Estate,
- (2) Export Processing Zone.

Establishment of General Industrial Estates shall be announced in the Government Gazette.

Establishment of Export Processing Zones in any area shall be made effective by Royal Decrees to be issued together with maps illustrating the areas of the Export Processing Zones.

Article 42. (Committee) In each industrial estate there shall be a Committee in charge as described under:

- (1) For the General Industrial Estate, the Committee shall comprise the Director of Industrial Estate Authority of Thailand as Chairman, representatives of the Ministry of Commerce, Ministry of Industry, Office of the Board of Investment, Local Municipality, or Public Works Department...
- (2) For the Export Processing Zone, the Committee shall comprise the Director of Industrial Estate Authority of Thailand as Chairman, representatives of the Ministry of

Commerce, Ministry of Industry, Revenue Department, Excise Department, Customs Department, Police Department, Office of the Board of Investment, Local Municipality or Public Works Department...

The Industrial Estate Committee shall discharge duties as may be assigned by the Board and act in an advisory capacity to the Board in regard to the operation of that Industrial Estate, having other authority and functions as prescribed in this NEC Announcement.

Article 45. (Ownership of Land) An industrial operator, who is a limited company registered in Thailand, may be granted permission to hold the ownership of land in the General Industrial Estate to enable him to operate the industry in area of the size as may be considered appropriate by the Board, even if this has exceeded the total permitted in other laws.

Article 48. (Activities in the Export Processing Zones) The industrial activities permitted in the Export Processing Zones are production, mixing, or assembling of products including packing, storage, transportation, loading and unloading, sale or distribution of aforementioned products, as well as necessary repairs of same within the area of the Export Processing Zone, and shall be limited to the following:

- (1) business which is a wholly new investment.
- (2) business which will not affect or damage other local industries which have been already exporting their products.
- (3) raw materials, semi-finished products, or finished products of the types of which inspection and control can be made easily.
- (4) the business shall not be hazardous to physical or personal health of people.

The category of industrial activity which is permitted in an Export Processing Zone shall be in accordance with the ministerial regulations.

Article 49. (Privileges on Export Processing Zone) License to operate a business in the Export Processing Zone entitles one to the privilege of exemption of import duty and/or business tax for the machinery, or raw materials necessary for use in the licensed business, and the machinery as are necessary for use in construction of factory must be approved by the Board, but the machinery or raw materials must not be of similar types which can be produced in the country, whose price is near to that of imported product inclusive of import duty with quality comparable to those produced in foreign countries, and whose supply is adequately available locally. The import of such machinery or raw materials into the Kingdom shall observe the conditions laid down by the Board.

In case the licensee operating a business in the Export Processing Zone purchases machinery which is locally made, per Paragraph 1, the producer or seller of such goods shall be exempted from payment of duty on such goods.

Article 50. (Further Privileges) In case the licensee operating a business in the Export Processing Zone is unable to comply with the conditions laid down by the Board governing the import of machinery or raw materials into the Kingdom, or exemption of import duty, and/or business tax on machinery or raw materials, the Board is empowered to make amendment to those conditions if the Board considers it appropriate. And, if the machinery has already been brought in, conforming in every respect with the law on Customs, the Board may make any change to those conditions to come retroactive to the date of its import, regardless of whether the date of import being before or after the date of enforcement of this Announcement.

Article 51. (Sales to Local Markets) The industrial operator in the Export Processing Zone is prohibited from bringing the products out of the said zone for sale in the country unless prior permission is granted by the Board.

Application for license, permission and fees thereon shall observe the principles, procedures and conditions as will be prescribed by the ministerial regulations.

In case of bringing the products out of the Export Processing Zone for sale in the country with the permission granted by the Board, per Paragraph 1, the industrial operator shall pay duty on the products and produce in accordance with the Customs Act and the law on Customs Tariff.

Article 52. (Permission of Foreign Workers) Under the provisions of the Immigration Act which does not mention otherwise, the industrial operator in the Export Processing Zone will be granted permission to bring alien skilled workers or experts into Thailand, whose number and period of stay in the country shall be determined by the Board -- including their spouses and other dependents although they may exceed the immigration quota and period of stay in the country under the provisions of the Immigration Act.

Article 53. (Remittance) The industrial operator in the Export Processing Zone has the right to take or remit money out of the country in foreign currency, provided that such money represents capital brought into the Kingdom by the industrial operator, foreign loan, profit derived from such investment capital, interest on foreign loan or obligations assumed by the industrial operator under contract relating to the exercise of rights and services in the Export Processing Zone; the exemption being that during any period when the nation's balance of payments may be such as to require reservation of foreign currencies in a reasonable amount, the industrial operator may be restricted on a temporary basis to take or remit such money for the said purpose, but he will not, however, be subjected to limiting foreign capital

out of this country at lower rate than 20% of total annually if the remittance is made after two years from date of bringing in such capital. On the other hand, the industrial operator will not be restricted in the remittance of profit out of the country at a lower rate than 15% of paid-up capital which is brought in from a foreign country.

Proposed Amendments to the IEAT Establishing Decree 1/

IEAT has proposed amendments to the Establishing Decree (NEC Announcement No. 339) for the purpose of achieving more efficient operations in fulfilling its assigned objectives, as follows:

1. The IEAT is empowered to expropriate suitable industrial estate land when purchasing negotiation cannot be reached.
2. Private sector can invest on establishing the general industrial estate. In such cases, by the IEAT approval, the IEAT is empowered to declare the aforesaid industrial estate establishment in Government Gazette if the establishing process is properly carried out.
3. Limitations on types and categories of industries admissible in EPZ (as indicated in Article 48 of the NEC Announcement No. 339) is cancelled. The IEAT Board is empowered to consider, case by case, on the types and categories of industries as suitable.
4. The IEAT is empowered to be exempted from taxes, duties, fees related to land, assets, buildings and any structures in the industrial estate.
5. For the operation of the general industrial estates, all taxes, duties and fees which entrepreneurs have to pay to Bangkok Municipality, local municipality and Department of Industrial Works including fees for license issuance and industrial operation will be collectively paid to the IEAT and become the IEAT revenue.
6. Although other laws and regulations have been effective, the IEAT is empowered on construction control, license issuance for industrial establishment, operation and production to provide such facilities to entrepreneurs in the general industrial estate and EPZ including the entrepreneurs who are granted promotion incentives from BOI.

1/ These proposed amendments were tentatively translated from Thai to English by IEAT staff.

7. The IEAT Board is authorized to use the enforcement of regulations of Ministry of Industry in facilitating procedures of granting tax exemption and cutting down red tape in import and export, by means of all procedures being carried out as "one-stop-service". Consequently, the provision of these facilities shall induce foreign investment in the general industrial estate and EPZ.
8. The IEAT Board is empowered to appoint, by approval of the Minister of Industry, members of sub-committees attached to the general industrial estates and EPZ.

What these proposed amendments imply is, aside from the benefits which may accrue to the IEAT, a realignment of administrative responsibilities in such a manner that the IEAT would be able to provide more services and incentives than at present for entrepreneurs within the estate. If these amendments are approved by the relevant Government agencies, the IEAT would provide a "one-stop service" to entrepreneurs entering the estate, instead of their having to contact numerous agencies individually.

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

INDUSTRIAL ESTATE AUTHORITY OF THAILAND - ORGANIZATION

MANAGEMENT AND OPERATIONS

Historical Background

1. The Industrial Estate Authority of Thailand (IEAT) was created by the National Executive Council Decree No. 339, dated December 13, 1972. ^{1/} Since the early 1960s, the Government has stressed industrial estate development as a means of accelerating the rate of industrialization and to help solve the problem of urban congestion. To this end, the Department of Industrial Works, Ministry of Industry, was assigned program responsibility; but progress was disappointing. After years of planning and preparation, the first estate was started at Bang Chan in 1968 and substantially completed in 1972. Despite very attractive land prices, occupancy of the estate was slow; by the end of 1972, only 11 factory plots (of 35) had been leased. It became apparent that the Department of Industrial Works, while technically competent, had been unable to provide the promotional stimulus needed. It was decided that an autonomous business-oriented agency to manage the Bang Chan project as well as to plan and execute additional projects was needed and this decision led to the creation of IEAT.

Functions

2. IEAT's area of responsibility encompasses the development of industrial estates and Export Processing Zones (EPZs) throughout the nation. It is empowered to undertake feasibility studies, acquire and develop land, invest in infrastructure, sell or lease the developed land, and provide various services to the occupant industries (see Annex 19). Thus, for estate occupants IEAT has been authorized to issue industrial licenses based on the Factory Act and can also grant exemptions of import duties and business taxes for companies admitted into EPZs. IEAT can participate in joint ventures with public and private sector groups and two such participations are being prepared at Bangpoo and Nava Nakorn. As the responsible central industrial estate authority, IEAT is also preparing a long range master plan to submit to NESDB, i.e. a national plan for industrial estate and EPZ development.

^{1/} Selected excerpts are given in Annex 19.

Management and Organization

3. The Cabinet appoints the Chairman and other members of the governing Board of the Industrial Estate Authority of Thailand, a body whose functions are to establish policy and generally supervise operations similar to the powers and responsibilities of a Western corporate Board of Directors. Members of the current Board are listed in Addendum 1.

4. The Board in turn appoints the Director General who is the top executive in charge of day-to-day operations. On August 1, 1973, Mr. Prakaipet Indhusophon, a well-known Thai businessmen, became IEAT's first Director General. In June 1974, however, he was appointed Deputy Minister of Industries and Mr. Soonthorn Nivasnanda, Director of Administration Department, carried the title of Acting Director General until February 21, 1976, when the Board appointed Mr. Chamroon Vajrabhaya, former Director General of the Telephone Organization of Thailand, as Director General.

5. The IEAT Organization has been revised by the new Director General and effective July 1, 1976, four functional departments headed by directors and the Office of the Director General have been organized and staffed. (See Addendum 2 - Organization Chart) with functions as listed below:

Office of the Director - General - Policy planning and expediting, inspection, evaluation and public relations.

Technical and Projects - Programming and planning; feasibility studies; engineering design; economic evaluations.

Operations - supervision of estate construction, operations and maintenance. (Most of the staff in this department are located on site at Bang Chan. As more estates are built, the number of field operating staffs will increase and only a few liaison people will be at IEAT Headquarters).

Financial - maintenance of books and accounts; financial planning and budgets. (Future liaison with the Bank on loan disbursements will be through this department).

Administration - general office administration; liaison with other government agencies; factory licensing and inspections; sales contract supervision; legal.

6. The important function missing is "Sales and Marketing". Up to now, sales promotion has been handled (apparently quite successfully, since the available land at Bang Chan has been fully committed) by IEAT's top management on an ad hoc basis. Future sales of the larger parcel of land at Lat Krabang and other estates, however, will require a better organized program of national and international promotion. According to the current organization chart, IEAT has a marketing section in its Technical and Projects Department. Promotional activity has to be more intensive; in the future, a separate department may be justified.

7. Staff now total 95 and IEAT had intended to increase this up to 165 during 1977; but after consultation with the appraisal mission, it has been agreed that IEAT will keep its staff to the minimum required and will transfer some of the present staff to operation of the Lat Krabang estate. As IEAT pays about 40% more than civil service standards for professionals and 25% more for other staff, it has been able to attract relatively high caliber people.

Operations

8. Since taking over Bang Chan on October 1, 1973, IEAT has achieved full occupancy of the estate. The table below shows the rate of land leasing since 1970:

Bang Chan - Land Leases, 1970-1977

<u>Calendar Year</u>	<u>Firms Committed</u>
1970	5
1971	1
1972	5
1973	8
1974	16
1975	-
1976	<u>4</u>
Total	39

Details of manufacturing companies and their status are shown in Annex 21, Addendum 1.

9. Besides operating Bang Chan, IEAT has moved ahead in preparing new projects as shown by the work done to date listed below:

- (a) Completion of the Lat Krabang feasibility study;
- (b) Completion of a prefeasibility study covering a proposed 8,000 rai joint venture with private interests at Bang Poo (fee paid by the private interests);
- (c) Negotiation of a minority stock interest in a privately financed new town project at Nava Nakorn; technical assistance will be provided by IEAT for the industrial estate component of the project;
- (d) Technical assistance to the Ministry of Industry in carrying out a prefeasibility study of an agro-industrial estate proposed at Cholburi;

- (e) Preparation of a prefeasibility study on the Industrial Estate in the South with proposed funding from ADB.

Studies, engineering drawings and cost estimates related to the work listed above and examined by the mission were found to be of adequate quality generally and it was concluded that IEAT has already achieved a substantial capability to plan and carry out pre-investment studies. With appropriate technical support during the next 2 to 3 years, the staff should achieve a level of competence such that only occasional outside assistance would be needed thereafter, limited in all likelihood, to design of power systems, sewerage and other specialized items of infrastructure. In other words, all planning and pre-investment studies including full feasibility analyses would in the future be carried out entirely by IEAT staff while detailed engineering design would require additional outside technical help.

10. IEAT's project execution capabilities, on the other hand, are still untested. It can be assumed that the experience gained in building Bang Chan between 1968 and 1972 has been carried over to some extent from the Department of Industrial Works to IEAT. This accumulated know-how (files and personnel) will be useful in executing the current project since, even though Lat Krabang is a larger project, the differences are quantitative rather than qualitative, i.e., no new project implementation problems are involved. The qualifications and experience of the Directors and the work already performed by them and the staff technicians encourage the judgment that, with the technical assistance recommended under terms of the project, IEAT will be able to execute the project in a suitable manner.

Finance

11. Government budget support which is obligatory under Decree No. 339 will be needed for some years to come to cover: (i) operating deficits, and (ii) equity investments in new projects. Eventually, it is hoped that cash flow from financially profitable estate operations and EPZs will provide an operating surplus and this in turn will permit IEAT to raise additional capital directly through bond issues and other debt instruments. At present, Government policy envisages treating treasury funds advanced to IEAT as sunk costs with no payback obligation, and additionally, allowing IEAT to retain all profits for purposes of reinvestment in further development.

12. The Balance Sheet, Income Statement and Cash flow for FY 1974, 1975 and 1976 are given in Addendum 3. FY 1974 corresponds to the IEAT's first operating year starting with the takeover of Bang Chan from the Department of Industrial Works. With this transfer, IEAT acquired Bht 28.5 million in fixed assets (mainly) and 11.9 million in liabilities (of which the major part is a long-term loan from the Alcohol Department with payback still to be negotiated) plus Bht 16.6 million in equity. The Office of the National Audit Council had certified in September 1974 that IEAT had Bht 12.5 million in liabilities plus Bht 18.4 million in equity.

13. An operating loss of Bht 1.7 million was recorded in FY 1974, Bht 2.8 million in 1975 and another Bht. 3.7 million in FY 1976. The primary reason is the low revenue derived from Bang Chan leases (see Annex 21). IEAT is examining the possibilities of putting Bang Chan on a sounder financial basis through increases in rental rates and service charges, applicable to the new contracts, and negotiation of revised rentals and service charges on existing contracts. Offering to sell land to occupants (who are all leasing) at the current market price less some reasonable discount to make the transaction attractive should be tested because it would, by converting IEAT's major asset (developed land) into cash, provide a substantial cash flow for investment in other projects.

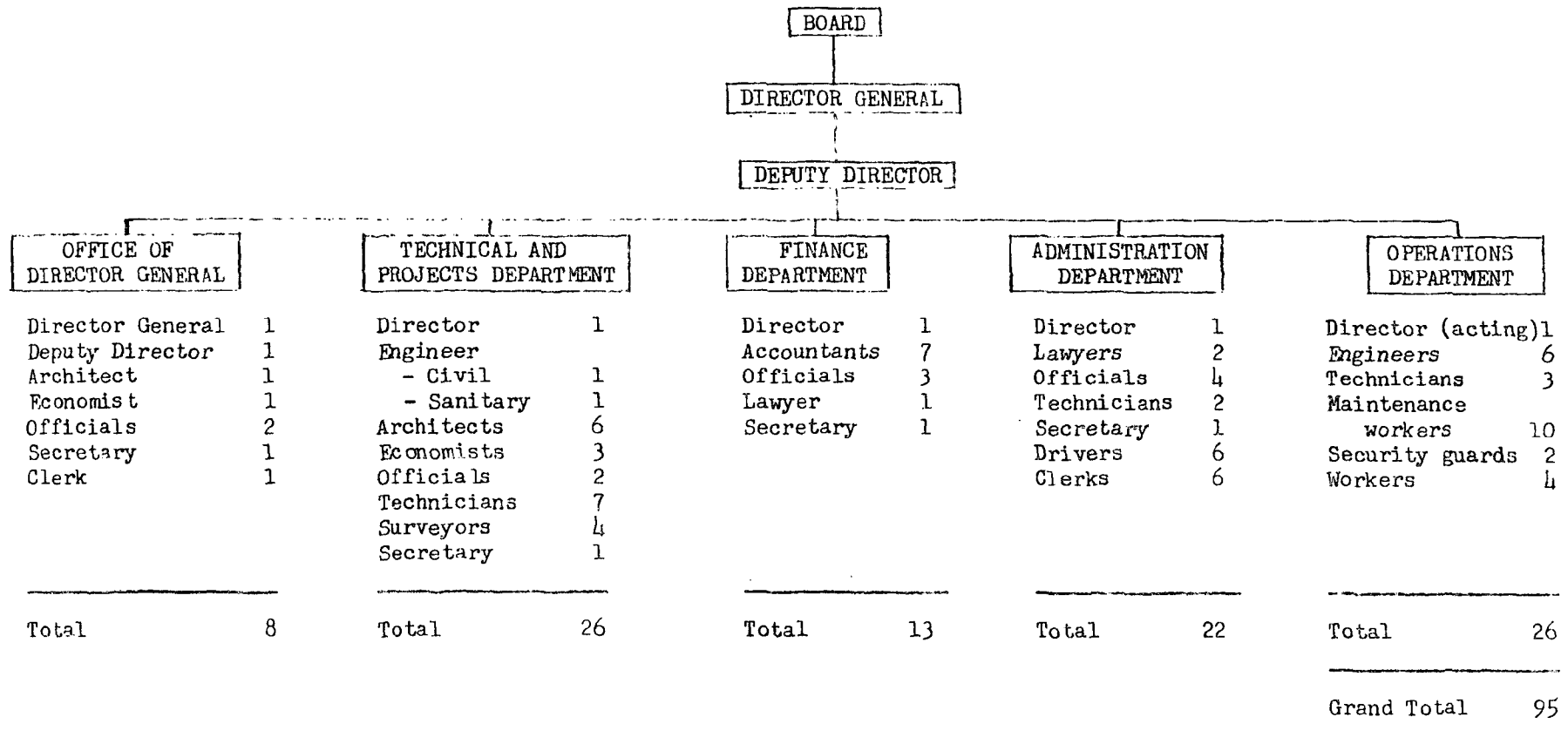
Industrial Projects Department
January 1977

INDUSTRIAL ESTATE AUTHORITY OF THAILAND

List of Board Members
(June 1976)

Chairman:	Mr. Praphas Chakkaphak	Director-General Department of Industrial Promotion Ministry of Industry
Members:	Mr. Charoen Panthong	Deputy Under Secretary of State Ministry of Interior
	Mr. Staporn Kavitanon	Director, Economic Projects Division National Economic and Social Development Board (NESDB)
	Mrs. Valai Juangpanich	Director, Division 2 Budget Bureau
	Mr. Kamchorn Sathirakul	Director, Assessment Division Customs Department Ministry of Finance
	Mr. Danai Tulalumpa	Commercial Councillor The Office of Under Secretary of State Ministry of Commerce
	Mr. Chira Panupong	Deputy Director General Board of Investment (BOI)
	Mr. Vira Susangkarakan	Deputy Director-General Industrial Works Department Ministry of Industry
	Mr. Chumsai Hasdin	Hons. Secretary - General Association of Thai Industries
	Mr. Narong Sri Sa-an	Director & Senior Vice President Thai Farmers Bank Thai Bankers Association
	Mr. Chamroon Vajarabhaya	Director General Industrial Estate Authority of Thailand (IEAT)

INDUSTRIAL ESTATE AUTHORITY OF THAILAND
ORGANIZATION CHART
(as of October 1976)



Industrial Projects Department
January 1977

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INDUSTRIAL ESTATE AUTHORITY OF THAILAND

SUMMARIZED BALANCE SHEET
(Bht '000)

	OCT.1 <u>1973</u>	SEPT.30 <u>1974</u>	SEPT.30 <u>1975</u>	SEPT.30 <u>1976</u>
<u>Assets</u>				
<u>Current Assets</u>				
Cash	214	2,350	4,610	21,208
Receivables	<u>45</u>	<u>79</u>	<u>242</u>	<u>551</u>
Total	259	2,429	4,852	21,759
<u>Fixed Assets</u>				
Land and Roads	22,330	22,294	21,736	46,024
Buildings	1,719	2,027	2,056	2,070
Water Supply	1,292	1,246	1,500	2,958
Electric System	1,629	1,466	1,303	1,140
Vehicles	(1,265	450	620	825
Others	(977	977	944	1,058
Total	<u>28,235</u>	<u>28,460</u>	<u>28,159</u>	<u>54,075</u>
<u>TOTAL ASSETS</u>	<u>28,494</u>	<u>30,889</u>	<u>33,011</u>	<u>75,834</u>
<u>Liabilities and Equity</u>				
<u>Current Liabilities</u>				
Short-term Debt	421	827	856	982
Accrued Payable	<u>25</u>	<u>61</u>	<u>104</u>	<u>333</u>
Total	446	888	960	1,315
<u>Long-Term Liabilities</u>				
Loan from Alcohol Dept.	10,687	10,687	10,687	10,687
Provident Fund	-	112	491	1,011
Miscellaneous Payable	<u>809</u>	<u>809</u>	<u>-</u>	<u>-</u>
Total	11,496	11,608	11,178	11,698
<u>Equity</u>				
Government Contributions	16,552	20,107	25,435	71,135
Cumulative Loss	<u>-</u>	<u>(1,714)</u>	<u>(4,562)</u>	<u>(8,314)</u>
Total	16,552	18,393	20,873	62,821
<u>TOTAL LIABILITIES AND EQUITIES</u>	<u>28,494</u>	<u>30,889</u>	<u>33,011</u>	<u>75,834</u>
<u>Current Ratio</u>	0.58	2.73	5.05	17.84
<u>Long Term D/E Ratio</u>	29:71	39:61	35:65	16:84

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INDUSTRIAL ESTATE AUTHORITY OF THAILAND

INCOME STATEMENT FOR FY1974-76
 (Bht '000)

	<u>FY1974</u>	<u>FY1975</u>	<u>FY1976</u>
<u>Revenue</u>			
Land Rent	1,150	1,437	1,555
Maintenance Charge	64	80	88
Sales of Water	146	218	491
Miscellaneous	<u>235</u>	<u>322</u>	<u>644</u>
Total	1,595	2,057	2,778
<u>Expenses</u>			
Cost of Staff	1,502	2,900	3,945
Administration Expense	750	842	1,210
Maintenance Repair	126	117	31
Depreciation	<u>931</u>	<u>1,046</u>	<u>1,344</u>
Total	3,309	4,905	6,530
(Loss)	(1,714)	(2,848)	(3,752)
Cumulative	(1,714)	(4,562)	(8,314)

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INDUSTRIAL ESTATE AUTHORITY OF THAILAND

CASH FLOW STATEMENT 1974-1976
 (Bht '000)

	<u>FY1974</u>	<u>FY1975</u>	<u>FY1976</u>
<u>Sources of Funds</u>			
Net Revenue	(1,714)	(2,848)	(3,752)
Depreciation	931	1,046	1,344
Government Contribution	3,555	5,328	45,700
Increase in Credits	<u>520</u>	<u>(521)</u>	<u>566</u>
Total	3,292	3,005	43,858
<u>Uses of Funds</u>			
Investment in Facilities			
at Estate	<u>1,156</u>	<u>745</u>	<u>27,260</u>
Total	1,156	745	27,260
<u>Cash Surplus</u>	2,136	2,260	16,598
<u>Cumulative Cash Surplus</u>	2,350	4,610	21,208

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APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

IMPLICATIONS OF IEAT CENTRAL OFFICE OPERATING COSTS

1. Since IEAT's inception in 1973, its capital and most of operating expenses have been provided by budgetary appropriation from the Government. Presently, IEAT central office expenses exceed its revenue, as discussed in paras. 11 to 13 of Annex 20. The total expenses of Bht. 4.7 million in 1976 were covered by (1) budgetary appropriation of Bht. 3.8 million, (2) revenues of Bht. 0.6 million from rendering architectural and engineering services for other Governmental agencies and private enterprises, and (3) appropriation of Bht. 0.3 million from the Bang Chan estate, which is the balance between its revenue of Bht. 2.1 million and operating expenses of Bht. 1.8 million. The contribution of the Bang Chan estate to the central office overheads is, thus, 6.5%.

2. For the Lat Krabang project, it is estimated that approximately 10% of the central office costs could reasonably be charged to the estate operation. An optimal share of contribution by each estate to the overhead of central office, which is mostly engaged in planning future estates, will have to be studied and decided later. For financial projections, however, a 10% share contribution by the project after full occupancy is considered reasonable. This is the percentage which the project can afford without causing itself financial difficulty.

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APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

INCOME PROJECTION OF IEAT
(Current Bht '000)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1997	1998
REVENUES												
(i) Head Office ^{1/}	644	683	724	767	813	862	913	968	1026	1088	2188	2319
(ii) Bang Chan ^{2/}	2134	2262	2397	2542	2694	2856	3027	3209	3401	3605	7254	7689
(iii) Lat Krabang ^{2/}	-	-	-	33597	37576	49197	59100	40670	41309	41109	82719	87682
TOTAL	2778	2945	3121	36906	41083	52915	63040	44847	45736	45802	92161	97690
COSTS												
(1) Operating Costs												
(i) Head Office ^{1/}	4667	4947	5244	5558	5892	6245	6620	7017	7438	7885	15865	16817
(Less) Contri. by Bang Chan ^{3/}	(330)	(347)	(364)	(382)	(401)	(421)	(442)	(464)	(487)	(512)	(1010)	(1070)
(Less) Contri. by Lat Krabang ^{4/}	(-)	(-)	(-)	(478)	(526)	(578)	(636)	(700)	(770)	(847)	(1705)	(1807)
Sub-Total	4337	4600	4880	4698	4965	5246	5542	5853	6181	6526	13150	13940
(ii) Bang Chan ^{5/}	849	909	970	1036	1119	1209	1305	1409	1522	1638	3433	3639
(iii) Lat Krabang ^{6/}	-	-	4723	3991	8891	9297	11772	11547	12288	13047	26253	27828
TOTAL (i+ii+iii)	5186	5509	10573	9725	14975	15752	18619	18809	19991	21211	42836	45407
(2) Interest & Commitment Fee												
(iii) Lat Krabang ^{6/}	-	-	1546	4555	7093	7527	7600	7472	6960	6448	304	-
(3) Depreciation ^{7/}												
(i) Head Office ^{1/}	387	387	387	387	387	387	387	387	387	387	387	387
(ii) Bang Chan ^{1/}	957	957	957	957	957	957	957	957	957	957	957	957
(iii) Lat Krabang ^{6/}	-	-	-	-	1930	3860	3860	3860	3860	3860	3860	3860
Sub-Total	1344	1344	1344	1344	3274	5204	5204	5204	5204	5204	5204	5204
(4) Costs of Land Sold												
(iii) Lat Krabang ^{6/}	-	-	-	20700	15525	15525	14490	-	-	-	-	-
Total Costs (1) to (4)	6530	6853	13463	36324	40867	44008	45913	31485	32155	32863	48344	50611
Surplus (Deficit)	(3752)	(3908)	(10342)	582	216	8907	17127	13362	13581	12939	43817	47079
Cumulative Surplus (Deficit)	(8314)	(12222)	(22564)	(21982)	(21766)	(12859)	4268	17630	31211	44150	382665	429744

^{1/}Assuming 6% p.a. increase throughout

^{2/}From Annex 26

^{3/}Assuming 5% p.a. increase

^{4/}Assuming 10% p.a. increase in 1979-85 and 6% p.a. increase thereafter

^{5/}Assuming 7% p.a. increase in 1976-79 and 8% p.a. increase thereafter

^{6/}From Annex 28

^{7/}Assuming constant throughout

THAILAND
APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

CASH FLOW PROJECTION OF IEAT
(Current Bht '000)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>-----1997</u>	<u>1998</u>
<u>Sources of Funds</u>												
(1) Net Income	(3752)	(3908)	(10342)	582	216	8907	17127	13362	13581	12939	43817	47079
(2) Depreciation	1344	1344	1344	1344	3274	5204	5204	5204	5204	5204	5204	5204
(3) Costs of Land sold	-	-	-	20700	15525	15525	14490	-	-	-	-	-
(4) Government Contribution	45700	21500	20000	10900	-	-	-	-	-	-	-	-
(5) Increase in IBRD Loan	-	-	23000	60000	10000	2000	-	-	-	-	-	-
(6) Decrease in Mortgage Receivables	-	-	-	(5008)	(2888)	(2261)	(1183)	4528	3340	2311	-	-
(7) Increase in Credits ^{1/}	566	1496	1020	1102	1190	1286	1388	1499	1619	1748	4404	4756
Total Sources	43858	20432	35022	89620	27317	30661	37026	24593	23744	22202	53425	57039
<u>Uses of Funds</u>												
Repayment of IBRD Loan	-	-	-	-	-	-	-	3200	6400	6400	6400	2200
Investment in Bang Chan and others ^{2/}	2260	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300	1300
Investment in Lat Krabang	25000	10947	45620	90219	26292	-	-	-	-	-	-	-
Total Uses	27260	12247	46920	91519	27592	1300	1300	4500	7700	7700	7700	3500
Cash Surplus (Deficit)	16598	8185	(11898)	(1899)	(275)	29361	35726	20093	16044	14502	45725	53539
Cumulative Cash Surplus (Deficit)	21208	29393	17495	15596	15321	44682	80408	100501	116545	131047	476615	530154
Debt Service	-	-	-	-	-	-	-	10672	13360	12848	6704	2200
Debt Service Coverage	-	-	-	-	-	-	-	2.88	2.20	2.12	7.82	25.33

^{1/} Derived from (i) Increase in Provident Fund plus (ii) Accrued Payables minus (iii) Increase in Receivables, where (i) and (ii) are assumed to increase at 8% p.a. and no increase in (iii).

^{2/} Assumed Bht 1.3 million throughout.

THAILAND
APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE
PROFORMA BALANCE SHEET OF TEAT

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985-----1997	1998
Assets											
<u>Current Assets</u>											
Cash	21,208	29,393	17,495	15,596	15,321	44,682	80,408	100,501	116,545	131,047--476,615	530,154
Receivables	551	-	-	5,008	7,896	10,157	11,340	6,812	3,472	1,161-- -	-
Total	21,759	29,393	17,495	20,064	23,217	54,839	91,748	107,313	120,017	132,208--476,615	530,154
<u>Fixed Assets</u>											
Head Office & Bangchan	29,075	29,031	28,987	28,943	28,899	28,855	28,811	28,767	28,723	28,679-- 28,151	28,107
Lat Krabang	25,000	35,947	81,567	151,086	159,923	140,528	122,188	118,328	114,468	110,608-- 64,288	60,428
Total	54,075	64,978	110,554	180,029	188,822	169,393	150,999	147,095	143,191	139,287-- 92,439	88,535
Total Assets	<u>75,834</u>	<u>94,371</u>	<u>128,049</u>	<u>200,633</u>	<u>212,039</u>	<u>224,232</u>	<u>242,747</u>	<u>254,408</u>	<u>263,208</u>	<u>271,495--569,054</u>	<u>618,689</u>
Liabilities and Equity											
<u>Current Liabilities</u>											
Accrued Payables	1,315	1,698	2,112	2,559	3,042	3,564	4,127	4,735	5,392	6,101-- 20,644	22,574
Debt Maturing - IBRD	-	-	-	-	-	-	3,200	6,400	6,400	6,400 2,200	-
Total	1,315	1,698	2,112	2,559	3,042	3,564	7,327	11,135	11,792	12,501-- 22,844	22,574
<u>L/T Liabilities</u>											
IBRD Loan	-	-	23,000	83,000	93,000	95,000	91,800	85,400	79,000	72,600-- -	-
Others 1/	11,698	12,260	12,866	13,521	14,228	14,992	15,817	16,708	17,670	18,709-- 40,010	42,836
Total	11,698	12,260	35,866	96,521	107,228	109,992	107,617	102,108	96,670	91,309-- 40,010	42,836
Total Liabilities	13,013	13,958	37,978	99,080	110,270	113,556	114,944	113,243	108,462	103,810-- 62,854	65,410
<u>Equity</u>											
Government Contribution	71,135	92,635	112,635	123,535	123,535	123,535	123,535	123,535	123,535	123,535--123,535	123,535
Retained Earnings	(8,314)	(12,222)	(22,564)	(21,982)	(21,266)	(12,899)	4,268	17,630	31,211	44,150--382,665	429,744
Total Equity	62,821	80,413	90,071	101,553	101,769	110,676	127,803	141,165	154,746	167,685--506,200	553,279
Total Liabilities and Equity	<u>75,834</u>	<u>94,371</u>	<u>128,049</u>	<u>200,633</u>	<u>212,039</u>	<u>224,232</u>	<u>242,747</u>	<u>254,408</u>	<u>263,208</u>	<u>271,495--569,054</u>	<u>618,689</u>
Current Ratio	16.54	17.31	8.28	8.05	7.63	15.38	12.52	9.64	10.18	10.57-- 20.86	23.88
L/T Debt/Equity Ratio	16:84	13:87	28:72	49:51	51:49	50:50	46:54	42:58	38:62	35:65 7:93	7:93

1/ Comprises Loan from Alcohol Department and Provident Fund

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

BANG CHAN ESTATE

1. In 1968, the Government decided to establish the first industrial estate in Thailand in Bang Chan, some 30 kilometers east of Bangkok. Department of Industrial Works, Ministry of Industry, developed the estate at a total cost of Bht. 76.8 million (US\$4.8 million), which was broken down to Bht. 46.2 million for land and Bht. 30.6 million for infrastructure cost. The estate has 687 rai (110 hectares) of land, of which 50% have been developed for net industrial plots, 14% was reserved for residential area, and 36% is absorbed by the administration complex, roads, and service facilities.

2. Uncoordinated development of infrastructure caused problems in the early stages of development. While power and water supply were made available from the beginning, upgrading of a local dirt road to a provincial highway connecting the estate to Bangkok was not completed until recently. The telephone exchange was completed only in mid-1974. Within the estate, raising the level of paddy field for industrial sites was left to individual lessees, and this delayed land utilization as well as raised costs unnecessarily.

3. Land title has been transferred to the IEAT in 1975, and the lease contract has been revised. Formerly, rental was set at a very low level: Bht 3,600/rai/year for the first five years of the contract, regardless of when the contract was signed; Bht 7,200 for the following five years; Bht 9,000 for the following ten years; and Bht 12,000 for the last 10 years. The companies entering into lease contracts after 1975 are charged at the following rates: Bht 7,200/rai/year during January, 1975 to December, 1979; Bht 9,000 during January 1980 to December 1989; and Bht 12,000 during January, 1990 to December 1999.

4. By July 1976, 39 companies had entered into lease contracts with the list and details in Addendum 1. Of these, 26 companies have already started production, 7 are under construction, 5 are in preparation and one is temporarily closed but soon will resume operations. Total employment is 1,799 and the total registered capital amounts to Bht 171.2 million (US\$8.5 million). Actual amounts of investments are much larger than this registered capital (see Addendum 1 for details).

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

LIST OF COMPANIES IN BANG CHAN
(JULY 1976)

Company	Product	Leased ^{1/} Area (m ²)	Employee ^{2/}	Registered Capital ^{3/} (Baht million)
<u>A. Companies in Operation</u>				
1. Scocem (Thailand) Co., Ltd.	Cement paints	8,000	13	0.5
2. Sigma Paints (Thailand) Co., Ltd.	Emulsion paints	8,000	34	6
3. Bang Chan General Assembly Co., Ltd.	Motor vehicle assembly	83,200	268	16
4. Chain Thai Factory Ltd.Part.	Motorcycle spare parts	6,400	93	1
5. Wan Thai Foods Industry Co., Ltd.	Instant noodles	18,640	49	3
6. Material Industrial Development Co., Ltd.	Construction materials	20,640	119	3
7. Toyo Ink (Thailand) Co., Ltd.	Offset ink chemical	5,440	20	1.8
8. Daily Foods Co., Ltd.	Butter, condensed milk	9,716	9	2
9. Izumi Piston Manufacturing Co., Ltd.	Machine spare parts	25,600	34	3
10. Spun Concrete Pile Co., Ltd.	Construction materials	8,540	64	2
11. Oriental Electric Industry Co., Ltd.	Electric equipment	16,480	-	6
12. Bangkok Electric Enterprise Co., Ltd.	Electric household supplies	16,576	50	3
13. Thai Electronics Industry Co., Ltd.	Radio component	14,380	45	5
14. Ying Charoen Paints Industry Co., Ltd.	Emulsion paints	4,800	15	1
15. Sukosol & Mazda Industry Co., Ltd.	Motor vehicle assembly	75,060	95	60
16. Saeng Thip Co., Ltd.	Construction materials	16,080	34	3
17. Saha Union Co., Ltd.	Pressure adhesive tape, elastic webbing, rubber thread, polyester buttons, lace, embroidery thread, acrylic knitting yarn, garments, spare parts, machinery service	47,324	500	30
18. Siam Insulator Co., Ltd.	Ceramics	27,260	52	5
19. Bangkok Glass Industries	Fire - proved glass	3,248	40	5
20. Uawithya Industry Co., Ltd.	Airconditioner	3,248	30	2
21. Architectural Research and Engineering Co.	Construction materials	10,724	65	0.4
22. Thai Bamboo and Wood Products Co., Ltd.	Household equipment	9,600	80	0.5
23. Aruna	Pencils	3,200	-	1
24. Auto Parts Industries Co., Ltd.	Metal processing and equip.	22,496	60	5
25. Sinthu Construction Ltd. Part.	Construction materials	8,000	12	1
26. Thai Yong Hong Electric Factory Ltd. Part.	Fan motors and electric appli.	5,588	18	-
<u>B. Companies Temporary Closed</u>				
27. Indhanon Co., Ltd.	Wooden packaging container	4,600	-	1
<u>C. Companies Under Construction</u>				
28. Thai Pure Drinks Co., Ltd. (Thai Namthip)	Wooden and paper packaging containers	5,440	-	1
29. Adhesive (Thailand) Co., Ltd.	Glue	8,000	-	-
30. Southeast Asia Pharmaceutical Co., Ltd.	Medicine	6,316	-	-
31. United Supplies and Engineering	Electric Appliances	3,200	-	-
32. Hawaii Thai Export Co., Ltd.	Rattan furniture	10,672	-	-
33. Mr. Boonliti Lertparmit	Rope and plastic tape	2,552	-	-
34. The Saeng Uthai Engineering Co., Ltd.	Stainless steel ware	8,600	-	-
<u>D. Companies entered into leasing contract but not yet started construction.</u>				
35. Universal Abrasive Co., Ltd.	Sand paper	3,200	-	2
36. Modern Packaging Co., Ltd.	Packaging	8,176	-	1
37. Uniliver (Thailand) Co., Ltd.	Machinery and concrete products	13,000	-	-
38. Osoth Co., Ltd.	Medicine	3,248	-	-
39. Tarinsiti Ltd. Part	Thread	4,800	-	-
Total		559,748	1,799	171.2

1/ Data collected on March 25, 1976.

2/ Data collected on July 31, 1976.

3/ Actual amounts of investments are much larger than "registered capital".

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

PROJECT DESCRIPTION

General

1. In March 1977 IEAT evaluated proposals submitted by nine Engineering/Architectural Consulting Firms for the design and supervision of the Lat Krabang Industrial Estate Project. The successful firm 1/ has since prepared a capital cost estimate based on their proposed estate design and layout. A comparison between Bank's estimate and the updated consultant's one is given in Addendum 1.

Land Fill and Bunding

2. In the vicinity of Bangkok, developing paddy land into industrial sites requires either raising the average level of terrain by up to 1.5 meters (adding, fill, compacting and levelling) or the less costly alternative of building dikes (bunds) around the boundary and installing pumps for removal of sewage and excess rainfall. IEAT and the consultants have opted for the second alternative, and it is proposed to have bunds all around the estate with the exception of an area of about 10 rai along the estate entrance road that will be filled and compacted to the required level. The total cost of land fill, bunding, fencing and pumping stations has been estimated at Bht 8.89 million.

Roads and Drainage

3. From the proposed layout the total cost of roads including parking areas has been estimated by the consultants at Bht 38.8 million (Bht 28.0 m for roads and Bht 10.78 m for the drainage system). The asphalt surface roads (some 10 km long and about 8.5 m wide) will be built according to the Department of Highways specifications and will include sidewalks.

Water Supply

4. The consultants' estimate for this project component is the same as IEAT's since it differs only in scale from the installations at Bang Chan which were completed in 1973. The same aquifer supplying

1/ Consisting of a group of engineering and architectural consultants, namely: (i) Dr. Ratchet Ranjanavanit and Associates (ii) Metric Company Ltd. (iii) Thai DCI Company Ltd. (iv) Santhaja and Associates Company Ltd, in association with (v) De Leuw, Cather International Inc. of USA.

Bang Chan is known to exist at Lat Krabang at about the same depth (150-200 meter). Daily consumption is projected to be, at full occupancy, 6,000 m³ average and 10,000 m³ peak load (overtime shifts, summer conditions) or 2.6 million gallons maximum. This is reasonable and is composed of: (i) sanitary demand of 400,000 gallons/day (40 gallons/day x 10,000 workers in full scheme), (ii) the balance of 2.2 million gallons/day for industrial use of some 200 primarily clean, light mechanical industries and the demand of various commercial activities. Two phases of development are planned:

<u>Phase I</u>	<u>Estimated Cost</u> (Bht. mill.)
-Two deep wells, 150-200 meters deep, capacity 200 m ³ /ha through 12" casing	1.3
-Ground level reservoir, concrete capacity 500 m ³	1.0
-One primary pump and one standby, building and controls	0.5
-One concrete elevated storage tank, capacity 200-300 m ³ , 25 meter elevation ..	3.0
-Distribution system - pipe, fittings, and valves (including hydrants) installed	<u>4.7</u>
Subtotal	<u>10.5</u>
 <u>Phase II</u> 	
-Two deep wells, 200 m ³ /ha through 12" casing	1.3
-Groundwater reservoir, concrete, capacity 5000 m ³	1.0
-One primary pump and one standby, building and controls	0.5
-One concrete elevated storage tank, capacity 200-300 m ³ , 25 meter elevation ..	<u>3.0</u>
Subtotal	<u>5.8</u>
Total	<u>16.3</u>

Power

5. From the estate layout, MEA has estimated that total distribution lines required will be approximately 6 kilometers and maximum demand 25 MW. The required transformer has already been installed by MEA some 5 km west of the project site; it will be connected to the estate internal overhead distribution network for power and street lighting, the cost of which is estimated at Bht 4.8 million. IEAT will advance funds to MEA for the installation and MEA has agreed to refund this amount to IEAT in the early eighties. IEAT's view is that this expenditure be treated as operating cost and not as capital cost.

Sewage and Garbage Disposal

6. From the consultants' estate layout (Map 17963) there will be only one central sewage treatment plant that will handle the combined sanitary and industrial wastes. The plant will consist of an aerated lagoon, evaporation ponds and pumping stations. A more sophisticated plant, (activated sludge principle) estimated at Bht 15.0 million has nevertheless been included in the cost estimate. The real need for the more sophisticated installation will be evaluated by the consultants during the course of final design. Until the design has been completed, only a rough global estimate is possible. Even then, since the final mix of factories - light mechanical, chemical, clean, semi-pollutive, pollutive, and so forth - will be unknown for some years, the design will have to be based on judgment to some extent. At this stage of the project, it was assumed that 90% of the water demand would reach the treatment plant or 9,000 m³/day during peak load periods. Pretreatment at the points of origin will be required under estate operating rules for aggressive wastes containing acids, alkalis, solvents, oils and greases, and dissolved and suspended inorganic or organic material to ensure that the waste entering the central treatment plant meets the design standards of the facility. The discharge from the treatment plant will also be controlled. It is too early to fix these acceptable limits, but generally recognized standards do exist. (For example, BOD - biological oxygen demand - is usually held to a limit of 2,000 ppm.).

7. Given a maximum flow of 9,000 m³/day and assuming average types of industrial and sanitary waste (aggressive wastes having been neutralized or eliminated within plant limits), subject to final design, the consultants have the following global estimate in current (1977) prices.

	Estimated Cost (Bht. million)
- Aerated lagoon, polishing ponds, pumping station...	5.0
- Treatment plant unit	15.0
- Piping, installed	3.0
- Incinerator	<u>2.0</u>
Total	25.0

Buildings

8. It is proposed to have one administration block of some 1,000 m², one workshop of 500 m², twelve to fifteen housing units totalling 1,700 m², for IEAT's employees and five standard factory buildings of about 2,160 m², each, four of which will be constructed in the EPZ and one in the general industrial estate zone. The standard factory buildings will be planned for partitioning into units ranging from 400-800 m² according to the requirements of individual factories. Estimated cost of the buildings is detailed below:

<u>Item</u>	<u>Estimated Cost</u> (Bht. '000)
<u>(1) Standard Factory Buildings</u>	
-5 x 2,160 m ² or 10,800 m ² with reinforced concrete columns, block walling, steel trusses with asbestos cement corrugated roofing	
@ Bht. 2,400/m ²	<u>25,920</u>
<u>(2) Administration Building</u>	
-1,000 m ² under reinforced concrete slab with block walling	
@ Bht. 2,800/m ²	2,800
<u>(3) Workshop</u>	
-500 m ² , reinforced concrete columns, with cinder block walling, steel trusses with asbestos cement corrugated roofing	
@ Bht. 200/m ²	1,000
<u>(4) Housing</u>	
-12 to 15 units totalling 2,500 m ² reinforced concrete columns, block walling under slab	
@ Bht 2,500/m	<u>6,250</u>
Sub total (2), (3), (4)	10,050

Telecommunications

9. At full occupancy the estate and its occupants will need 500 telephone lines. The telephone organization of Thailand (TOT) and, IEAT have agreed to the utilization of a 36 circuit radio telephone system connected to an automatic branch exchange with a minimum of 200 lines. The cost of this system will be shared by both TOT and IEAT. IEAT's share has been estimated at Bht. 4.2 million. TOT expects no difficulty in having 120 telephone extensions functioning by end 1978, and the remaining extensions as and when they are required.

Industrial Projects Department
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APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

Comparison Between Bank's & Consultants Estimates (Bht million)

	<u>Banks'</u>	<u>Consultants</u>	<u>Remarks</u>
Land	25.0	25.0	
Land Fill & Bunding	6.0	8.9	Consultants' figure includes fence, gates, and site equipment
Road & Drainage	32.0	38.8	Includes asphalted parking areas
Water Supply	16.3	16.3	
Power Supply	14.6	--	Cost will be met by M.E.A.
Sewage Disposal	34.4	25.0	One treatment plant instead of two
Telecommunications	15.0	4.2	TOT has agreed to bear additional costs
Fences & Gates	5.0	--	Included in cost of land fill and bunding
Buildings	28.9	36.0	Housing provided for IEAT's employees
Eng./Arch. Services	12.2	6.0	Reduced Consultants' fees as per contract signed
Tech. Asst. & Training	7.8	2.0	Technical assistance provided by UNIDO
Contingencies	61.3	35.9	Reduction in capital cost and shorter construction schedule
Interest during Construction	<u>31.6</u>	<u>--</u>	Considered as an operating cost
Total	<u>290.3</u>	<u>198.1</u>	

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THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT^{1/}

PROJECT EXECUTION SCHEDULE

	1977				1978				1979				1980			
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th
Land Survey																
Selection of Engineering Contractor																
Detailed Engineering																
Civil Works, Tenders, Phase 1																
Construction, Phase 1																
Civil Works, Tenders, Phase 2																
Construction, Phase 2																

^{1/} Detailed scheduling, using PERT or "critical path" techniques, will be prepared during engineering design and should be ready by the last quarter of 1977

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THAILAND
APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT
PROJECT COST ESTIMATE

	(Bht. '000)					(Bht. '000)			(US\$ '000)			%
	1976	1977	1978	1979	1980	Local	Foreign	Total	Local	Foreign	Total	
1. <u>Land Acquisition</u>	25,000	-	-	-	-	25,000	-	25,000	1,250	-	1,250	15.4
2. <u>Land Development</u>												
- Land Fill, Bunding, Fence & Site Eqpt.	-	8,890	-	-	-	6,667	2,223	8,890	333	112	445	5.5
- Road & Drainage	-	-	28,350	10,430	-	25,207	13,573	38,780	1,260	679	1,939	23.9
- Water Supply	-	-	5,450	7,750	3,140	4,902	11,438	16,340	245	572	817	10.1
- Sewage Disposal	-	-	-	19,880	5,120	5,000	20,000	25,000	250	1,000	1,250	15.4
- Telecommunication	-	-	2,100	2,100	-	840	3,360	4,200	42	168	210	2.6
3. <u>Building</u>												
- Standard Factory Buildings,	-	-	-	19,100	6,800	12,537	13,363	25,900	627	668	1,295	16.0
- Administrative Building, Housing & Workshop	-	-	-	6,590	3,460	4,838	5,212	10,050	242	261	503	6.2
4. <u>Engineering/Architectural Service</u>	-	800	1,250	3,500	450	4,000	2,000	6,000	200	100	300	3.7
5. <u>Technical Assistance and Training</u>	-	-	1,250	750	-	600	1,400	2,000	30	70	100	1.2
<u>Base Cost</u>	25,000	9,690	38,400	70,100	18,970	89,591	72,569	162,160	4,479	3,629	8,108	100.0
6. <u>Contingencies</u>												
- Physical (10%)	-	969	3,840	7,010	1,897	6,459	7,257	13,716	323	363	686	8.4
- Price (Average 8%)	-	288	3,380	13,109	5,425	10,455	11,747	22,202	523	587	1,110	13.7
<u>Installed Cost</u>	25,000	10,947	45,620	90,219	26,292	106,505	91,573	198,078	5,325	4,579	9,904	122.1
<u>Percentage (%)</u>	12.6	5.5	23.0	45.5	13.4	53.8	46.2	100.0	53.8	46.2	100.0	

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THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTPROJECTED AVERAGE QUARTERLY DISBURSEMENT OF IBRD LOAN

<u>IBRD Fiscal Year</u>	<u>Disbursement</u>		<u>Cumulative US\$ '000</u>
	<u>Bht. '000</u>	<u>US\$ '000</u>	
1978 <u>1/</u>	5,750	287.50	575
1979	10,375	518.75	2,650
1980	8,750	437.50	4,400
1981	1,750	87.50	4,750

1/ Last two quarters only.

Industrial Projects Department
August 1977

THAILAND
APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE

REVENUE PROJECTIONS
(Current Bht'000)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985----	1997	1998
A. Revenue from Land Sale (320 rai)												
Land for Industry												
1. Sales against Cash (256 rai)												
- Rai of Land Sold	-	-	-	80	60	60	56	-	-	-	-	-
- Price per Rai ^{1/}	-	-	-	250	275	303	333	-	-	-	-	-
Revenue	-	-	-	20,000	16,500	18,180	18,648	-	-	-	-	-
2. Sales on 4-year Term (64 rai)												
- Rai of Land Sold	-	-	-	20	15	15	14	-	-	-	-	-
- Price per Rai ^{1/ 2/}	-	-	-	313	345	379	417	-	-	-	-	-
Revenue Booked	-	-	-	6,260	5,175	5,685	5,838	-	-	-	-	-
Mortgage Receivables	-	-	-	5,008	7,896	10,157	11,340	6,812	3,472	1,161---	-	-
Revenue from Land Sales (A)	-	-	-	26,260	21,675	23,865	24,486	-	-	-	-	-
B. Revenue from Land Lease (385 rai)												
1. Land for Industry (361 rai)												
- Rai of Land Leased (Cumul.)	-	-	-	125	205	285	361	361	361	361---	361	361
- Average Annual Rental ^{3/}	-	-	-	25.0	27.1	29.4	31.9	34.6	37.6	40.8-	82.1	87.0
Revenue	-	-	-	3,125	5,555	8,379	11,516	12,491	13,574	14,729	29,638	31,417
2. Land for Commercial Units (24 rai)												
- Number of Units (Cumul.)	-	-	-	-	50	100	150	200	-	-	-	-
- Premium per Unit	-	-	-	-	40	44	48	53	-	-	-	-
Revenue from Premium	-	-	-	-	2,000	2,200	2,400	2,650	-	-	-	-
- Starting Rental/Unit for Year	-	-	-	-	2.0	2.2	2.4	2.6	2.6	2.6-	2.6	2.6
Revenue from Rentals of Com. Units	-	-	-	-	100	210	330	460	460	460---	460	460
Revenue from Land Lease (B)	-	-	-	3,125	7,655	10,789	14,246	15,601	14,034	15,189--	30,098	31,877
C. Revenue from Factory Rentals (7 rai)												
- Number of Units (Cumul.)	-	-	-	-	-	6	10	14	14	14---	14	14
- Average Annual Rentals ^{4/}	-	-	-	-	-	285	302	320	339	360---	725	768
Revenue from Factory Rentals (C)	-	-	-	-	-	1,710	3,020	4,480	4,746	5,040--	10,150	10,752
D. Revenue from Warehouse & Housing Rentals												
- Stores ^{5/}	-	-	-	-	540	1,059	1,393	1,476	1,564	1,658	3,336	3,536
- Housing Rentals ^{4/}	-	-	-	-	-	134	173	185	197	208---	421	448
Revenue from Warehouse & Canteen Rentals (D)	-	-	-	-	540	1,193	1,566	1,661	1,761	1,866	3,757	3,984
E. Maintenance & Service Charges												
- Number of Rai (Cumul.)	-	-	-	225	388	554	709	717	717	717---	717	717
- Average Charge per Rai ^{4/}	-	-	-	0.72	0.76	0.81	0.86	0.91	0.96	1.02	2.06	2.18
Revenue from Maintenance (E)	-	-	-	162	295	449	609	652	688	731---	1,477	1,563
F. Water Supply & Sewage Disposal												
- Average Charge per Rai ^{4/}	-	-	-	18.0	19.1	20.2	21.4	22.7	24.1	25.5	52.0	55.1
Revenue from Water & Sewage (F)	-	-	-	4,050	7,411	11,191	15,173	16,276	17,280	18,283--	37,237	39,506
Total Revenue (A) to (F)	-	-	-	33,597	37,576	49,197	59,100	38,670	38,509	41,109--	82,719	87,682
Repayment by MEA ^{5/}	-	-	-	-	-	-	-	2,000	2,800	-	-	-
Gross Revenue	-	-	-	33,597	37,576	49,197	59,100	40,670	41,309	41,109--	82,719	87,682
Total Mortgage Receivables	-	-	-	5,008	7,896	10,157	11,340	6,812	2,335	1,161--	-	-

^{1/} Assumed 10% increase p.a. for starting contract

^{2/} Assumed a down payment of 20%, four equal annual installments of contract price and an interest charge of 12% on unpaid balances

^{3/} Assumed an 8.5% increase p.a. on an average

^{4/} Assumed a 6% increase

^{5/} Cost of power installation is assumed to be refunded by MEA in 1983 and 1984

THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTOPERATING COST ESTIMATE - 1983^{1/}

	<u>No.</u>	<u>Salary Scale - 1976</u> (Bht)	<u>Monthly Pay- 1983</u> ^{2/} (Bht)
<u>I. Salaries and Wages</u>			
<u>Management Section</u>			
Estate Manager	1	7,660-13,325	13,500
Security Officer	1	2,560- 4,660	4,500
Watchmen	<u>3</u>	1,015- 2,850	<u>6,750</u>
Sub-Total	9		35,330
<u>Accounting Section</u>			
Accountant	1	4,730- 8,950	9,000
Clerks	<u>2</u>	2,520- 4,660	<u>4,500</u>
Sub-total	2		13,500
<u>Maintenance Section</u>			
Supervising Engineer	1	4,730- 8,950	9,000
Technicians	2	3,420- 7,660	5,250
Maintenance Workers	<u>8</u>	1,015- 2,850	<u>18,000</u>
Sub-total	<u>10</u>		<u>32,250</u>
Total Employees	<u>17</u>		<u>70,500</u>
			(846,000 per year)

1/ First Year after full occupancy and full administrative staff.

2/ In current 1983 Bht, assuming inflation rate of 6% p.a.

Annualy Cost-1983
(Bht)

II. Administration Costs

IEAT's Central Office	700,000
Printing & Stationery	50,000
Utilities	20,000
Communication	14,000
Transport	20,000
Miscellaneous	<u>50,000</u>
Total	<u>854,000</u>

III. Maintenance Costs

Civil Works (2% of Fixed Assets)	1,709,000
Water and Sewage (50% of Revenue)	<u>8,138,000</u>
Total	<u>9,847,000</u>
<u>Total Operating Costs in 1983</u>	<u>11,547,000</u>

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

OPERATING COSTS PROJECTIONS
(Current Bht '000)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1997</u>	<u>1998</u>
A. Salaries and Wages ^{1/}	-	-	-	223	395	586	798	846	897	951	1,913	2,028
B. Administration ^{2/}	-	-	323	583	642	706	776	854	940	1,034	2,080	2,205
C. Promotion	-	-	2,000	1,000	1,000	1,000	1,000	-	-	-	-	-
D. Repairs and Maintenance												
1. Civil Works ^{3/}	-	-	-	160	676	1,409	1,612	1,709	1,811	1,920	3,863	4,095
2. Water and Sewage ^{4/}	-	-	-	2,025	3,706	5,596	7,586	8,138	8,640	9,142	18,396	19,500
E. Payments for Power Station ^{5/}	-	-	2,400	-	2,400	-	-	-	-	-	-	-
Total Operating Costs	-	-	4,723	3,991	8,819	9,297	11,772	11,547	12,288	13,047	26,253	27,828

^{1/} Assumed to increase as shown through (i) staff buildup and (ii) 6% p.a. salary increase paralleling the general inflation rate.

^{2/} Assumed to increase by 10% p.a. from 1980 to 1985 and by 6% thereafter. These administrative expenses include approximately 10% p.a. of IEAT central office overheads.

^{3/} Assumed 2% of investment in land development, buildings and equipment, and increases of 6% p.a. after completion of the project.

^{4/} Assumed at 50% of revenue derived from water and sewage charges.

^{5/} Power installation is prepaid by IEAT and refunded later in 1983 and 1984.

Industrial Projects Department
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APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

	<u>INCOME PROJECTIONS</u> (Current Bht '000)												
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	---	<u>1997</u>	<u>1998</u>
<u>Revenues</u>													
Gross Revenues ^{1/}	-	-	-	33,597	37,576	49,197	59,100	40,670	41,309	41,109	---	82,719	87,682
<u>Costs</u>													
Total Operating Costs ^{2/}	-	-	4,723	3,991	8,891	9,297	11,772	11,547	12,288	13,047	---	26,253	27,827
Interest & Commitment Fee (IBRD) ^{3/}	-	-	1,546	4,555	7,093	7,527	7,600	7,472	6,960	6,448	---	304	-
Depreciation ^{4/}	-	-	-	-	1,930	3,860	3,860	3,860	3,860	3,860	---	3,860	3,860
Costs of Land Sold	-	-	-	20,700	15,525	15,525	14,490	-	-	-	---	-	-
Total Costs	-	-	6,269	29,246	33,439	36,209	37,722	22,879	23,108	23,355	---	30,417	31,688
Income (Deficit) Before Tax	-	-	(6,269)	4,351	4,137	12,988	21,378	17,791	18,201	17,754	---	52,302	55,994
Land Sale Tax ^{5/}	-	-	-	578	477	525	548	-	-	-	---	-	-
Income (Deficit) After Tax	-	-	(6,269)	3,773	3,660	12,463	20,830	17,791	18,201	17,754	---	52,302	55,994
Cumulative Income	-	-	(6,269)	(2,496)	1,164	13,627	34,457	52,248	70,449	88,203	---	506,262	562,256

^{1/} From Revenue Projections, Annex 26.

^{2/} From Operating Costs Projections, Annex 27.

^{3/} Based on Projected Disbursements, Annex 25.

^{4/} Assumed annual straight-line depreciation rates prevailing in Thailand: 2.5% for roads and drainage; 4% for buildings; 5% for capitalized engineering costs; 7.5% for water, power and sewage disposal facilities and 10% for miscellaneous equipments.

^{5/} 2.2% land sale tax.

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CASH FLOW PROJECTIONS
(Current Bht '000)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	---	<u>1997</u>	<u>1998</u>
<u>Sources of Funds</u>													
Income	-	-	(6,269)	3,773	3,660	12,463	20,830	17,791	18,201	17,754	---	52,302	55,994
Depreciation	-	-	-	-	1,930	3,860	3,860	3,860	3,860	3,860	---	3,860	3,860
Cost of Land Sold	-	-	-	20,700	15,525	15,525	14,490	-	-	-	---	-	-
Government Contribution	25,000	21,500	20,000	10,900	-	-	-	-	-	-	---	-	-
Increase in Loan (IBRD)	-	-	23,000	60,000	10,000	2,000	-	-	-	-	---	-	-
Decrease in Mortgage Receivables	-	-	-	(5,008)	(2,888)	(2,261)	(1,183)	4,528	3,340	2,311	---	-	-
Total Sources	25,000	21,500	36,731	90,365	28,227	31,587	37,997	26,179	25,401	23,925	---	56,162	59,854
<u>Applications of Funds</u>													
Repayment of IBRD Loan	-	-	-	-	-	-	-	3,200	6,400	6,400	---	6,400	2,200
Payment for Land	25,000	-	-	-	-	-	-	-	-	-	---	-	-
Land Development	-	10,043	42,650	51,686	11,448	-	-	-	-	-	---	-	-
Buildings	-	-	-	33,063	14,220	-	-	-	-	-	---	-	-
Eng./Archi. Service & Technical Assistance	-	904	2,970	5,470	624	-	-	-	-	-	---	-	-
Total Application	25,000	10,947	45,620	90,219	26,292	-	-	3,200	6,400	6,400	---	6,400	2,200
Cash Surplus (Deficit)	0	10,553	(8,889)	146	1,935	31,587	37,997	22,979	19,001	17,525	---	49,762	57,654
Cumulative	0	10,553	1,664	1,810	3,745	35,332	73,329	96,308	115,309	132,834	---	521,574	579,228
Debt Service	-	-	-	-	-	-	-	10,672	13,360	12,848	---	6,704	2,200
Debt Service Coverage	-	-	-	-	-	-	-	3.15	2.42	2.36	---	8.42	28.21

THAILAND
APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

PRO FORMA BALANCE SHEET
(Current Bht '000)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1997</u>	<u>1998</u>
<u>Assets</u>												
<u>Current Assets</u>												
Cash	-	10,553	1,664	1,810	3,745	35,332	73,329	96,308	115,309	132,834	521,574	579,228
Mortgage Receivables	-	-	-	5,008	7,896	10,157	11,340	6,812	3,472	1,161	-	-
Total	-	10,553	1,664	6,818	11,641	45,489	84,669	103,120	118,781	133,995	521,574	579,228
<u>Fixed Assets</u>												
Land	25,000	35,043	77,693	129,379	140,827	140,827	140,827	140,827	140,827	140,827	140,827	140,827
Buildings	-	-	-	33,063	47,283	47,283	47,283	47,283	47,283	47,283	47,283	47,283
Eng/Arch.&T/A	-	904	3,874	9,344	9,968	9,968	9,968	9,968	9,968	9,968	9,968	9,968
Less: (1) Cumul. Depreciation	-	-	-	-	1,930	5,790	9,650	13,510	17,370	21,230	67,550	71,400
(2) Cost of Land Sold	-	-	-	20,700	36,225	51,750	66,240	66,240	66,240	66,240	66,240	66,240
Total	25,000	35,947	81,567	151,086	159,923	140,538	122,188	118,328	114,468	110,608	64,288	60,428
Total Assets	25,000	46,500	83,231	157,904	171,564	186,027	206,857	221,448	233,249	244,603	585,862	639,656
<u>Liability and Equity</u>												
<u>Current Liability</u>												
Debt Maturing - IBRD	-	-	-	-	-	-	3,200	6,400	6,400	6,400	2,200	-
Total	-	-	-	-	-	-	3,200	6,400	6,400	6,400	2,200	-
<u>Long Term Liabilities</u>												
IBRD Loan	-	-	23,000	83,000	93,000	95,000	91,800	85,400	79,000	72,800	-	-
Total Liabilities	-	-	23,000	83,000	93,000	95,000	95,000	91,800	85,400	79,000	2,200	-
<u>Equity</u>												
Government Contribution	25,000	46,500	66,500	77,400	77,400	77,400	77,400	77,400	77,400	77,400	77,400	77,400
Retained Earnings	-	-	(6,269)	(1,996)	1,664	14,127	34,957	52,748	70,949	88,703	506,762	562,756
Total Equity	-	-	60,231	75,404	79,064	91,527	112,357	130,148	148,349	166,103	584,162	640,156
Total Liability and Equity	25,000	46,500	83,231	157,904	171,564	186,027	206,857	221,448	233,249	244,603	585,862	639,656
Current Ratio	-	-	-	-	-	-	26.5	16.1	18.6	20.9	237.1	-
Debt/Equity Ratio	-	-	28:72	52:48	54:46	51:49	45:55	40:60	35:65	30:70	0:100	0:100

Industrial Projects Department
August, 1977

THAILAND

APPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECT

FINANCIAL RATE OF RETURN CALCULATIONS

1. The financial rate of return (FRR) was calculated by using the phased capital costs, operating costs and revenue projections. The project life is assumed to be 25 years and the residual value was obtained by assuming zero value for buildings and 41.4% of land remaining to IEAT at 1976 prices. A 41.4% remaining ratio was obtained by deducting from the original 1,007 rai of the land sold, land for utilities and landscaping. The rate of inflation taking place through the project life was assumed to be 6% p.a. Operating costs and revenues after 1985, when the project operations will be stabilized, are assumed to be increasing at a constant rate of 6% p.a. Thus, the obtained FRR is 11.5% in constant terms and 18.1% in current terms (Addendum 1).
2. A sensitivity test was also made to check the project's financial resilience. The FRR is quite sensitive both to the increase in capital costs and the decrease in revenues. The magnitude of changes in FRR caused by changes in costs and revenues is tabulated in Addendum 1.
3. Other variations which the project might face are also considered as listed below:
 - (i) Construction of project is completed as scheduled but operating costs increase by 10% due to higher real salaries and additional repair and maintenance; the FRR in constant terms is still 10.9%.
 - (ii) Project completed as scheduled but sale/lease is sluggish and delayed by 1 year and 2 years; FRR is 9.6% and 8.2% respectively.
 - (iii) Construction is delayed by 1 year and capital costs increase by 10% thus causing delays in sales/leases by 2 years; FRR is 7.7% which is considered as the worst case conceivable under current circumstances.
4. In current terms, the FRR drops to about 5% when revenues decrease by as much as 50%. Translating a 50% decrease in revenues into a 50% level of occupancy and assuming 50:50 equity and loan financing, this is the break-even point after servicing long-term debt.

DATE TABLE FOR FINANCIAL RATE OF RETURN CALCULATION

Year	Current Terms (Bht '000)			Deflator	Constant Terms (Bht '000)		
	Capital Costs	Operating Costs	Revenues		Capital Costs	Operating Costs	Revenues
1 (1976)	25,000	0	0	.94	26,596	0	0
2 (1977)	10,947	0	0	1.00	10,947	0	0
3 (1978)	45,620	4,723	0	1.06	43,038	4,456	0
4 (1979)	90,219	3,991	33,597	1.12	80,553	3,563	29,997
5 (1980)	26,290	8,819	37,576	1.19	22,094	7,411	31,576
6 (1981)	0	9,297	49,197	1.26	0	7,379	39,045
7 (1982)	0	11,772	59,100	1.34	0	8,785	44,104
8 (1983)	0	11,547	40,670	1.42	0	8,133	28,641
9 (1984)	0	12,288	41,309	1.50	0	8,192	27,539
10 (1985)	0	13,047	41,109	1.59	0	8,206	25,855
11 (1986)	0	13,829	43,695	1.69	0	8,206	25,855
.
.
.
24 (1999)	0	24,498	92,943	3.60	0	8,206	25,855
25 (2000)	(237,268)	31,268	98,519	3.82	(62,112)	8,206	25,855

Financial Rate
of Return 18.1%

11.5%

SENSITIVITY

Rate of Return (%)	Current Terms			Rate of Return (%)	Constant Terms		
	Capital Costs	Operating Costs	Revenues		Capital Costs	Operating Costs	Revenues
20.0	-10	0	0	13.2	-10	0	0
19.1	- 5	0	0	12.3	- 5	0	0
17.5	+ 5	0	0	10.8	+ 5	0	0
16.7	+10	0	0	10.1	+10	0	0
18.8	0	-10	0	12.1	0	-10	0
18.5	0	- 5	0	11.8	0	- 5	0
17.9	0	+ 5	0	11.2	0	+ 5	0
17.6	0	+10	0	10.9	0	+10	0
8.9	0	0	-40	7.2	0	0	-20
13.7	0	0	-20	9.4	0	0	-10
15.9	0	0	-10				
19.3	0	0	+ 5				
20.4	0	0	+10				

THAILANDAPPRAISAL OF THE LAT KRABANG INDUSTRIAL ESTATE PROJECTECONOMIC RATE OF RETURN CALCULATIONS

1. The economic rate of return (ERR) is calculated by revaluing the financial values of capital costs, operating costs and revenues to economic values by applying various conversion factors so that each of the benefit/cost streams may reflect the true economic worth to the economy. The numeraire used is the public income in the hands of the government.

2. The project's inputs are land, engineering services, equipment and construction materials and civil works; its outputs are sale/lease of land, lease of factory buildings and services rendered to entrepreneurs locating in the industrial estate. Internationally traded goods and services ('tradables') are valued at their border prices. Non-traded goods and services are divided into: (1) tradable equipment and materials which are then valued at border prices; and (2) labor which is valued at shadow wage rates.

3. The capital costs are converted into economic values as shown in Annex 32, Addendum 1. The land was previously used as paddy field and purchased by IEAT for estate site at an economic value which reflects the net foregone output of the land. The net foregone output of the land is calculated as follows:

- (a) The annual rice production of rice as about 1.20 ton/rai (.56 ton/rai in wet season and .64 in dry season).
- (b) The average sale price of rice in the vicinity of Bangkok was about Bht 3,500/ton.

The gross foregone output is approximately Bht 4.2M, of which costs of rice production excluding land rent, and normal profit are assumed to be Bht 2.8M. Therefore, net foregone output of land is Bht 1.4M. Assuming time preference being 6%, the net present value (NPV) of the net foregone output over an infinite time is given below:

$$\begin{aligned}
 \text{NPV} &= 1.4 + 1.4 \cdot \frac{1}{1+.06} + 1.4 \cdot \frac{1}{(1+.06)^2} + \dots \\
 &= 1.4 \left\{ 1 + \frac{1}{(1+.06)} + \frac{1}{(1+.06)^2} + \dots \right\} \\
 &= 1.4 \cdot \frac{1+.06}{.06} = 24.963
 \end{aligned}$$

This NPV is comparable to Bht 25M which is the acquired price of 1,007 rai. Thus, application of various conversion factors for each corresponding project cost component gave the economic project cost of Bht 177 million which is .89 of the financial value.

4. The operating costs, which include salaries and wages, administrative expenses and repair and maintenance costs, were also adjusted by applying corresponding conversion factors. The economic cost of repair and maintenance was calculated by applying the conversion factor of .87, which is the ratio of economic/financial value for land development and buildings. The economic value of operating costs thus obtained is .85 of the financial value (Addendum 2).

5. Revenues are economic rents charged to land, factories, warehouses and services. These prices and charges are financially competitive with those of privately developed similar projects and the market for industrial estates are considered fairly perfect. Furthermore, the revenues in the hands of IEAT can be regarded as public income, the numeraire.

6. On these economic values for the project's inputs and outputs, the economic rate of return is 14.1%. Sensitivity test of ERR is made, first, in terms of changes in the conversion factors. If civil works, skilled labor and semi-skilled labor is converted in a more conservative manner, with corresponding figures being 0.85, 1.00 and 0.65 respectively, the ratios of economic value/financial value in capital and operating costs increase from .89 to .94 and from .85 to .91 respectively. In this case, the ERR in constant terms will be reduced to 12.9%.

7. Then, as in the case of FRR, the sensitivity of ERR to changes in key variables was examined as follows:

- (a) The project is completed as scheduled but the sales/lease is delayed by one year; ERR is 11.7% in constant terms.
- (b) The project is completed as scheduled but the sales/lease is further delayed by two years; ERR is 10.0%.
- (c) The worst case: the construction is delayed by one year, thus entailing a 10% increase in capital costs and a two-year delay in sales/lease of the project; ERR is 8.0%.

Conversion of Capital Costs into Economic Value

	<u>Financial Value</u>					<u>Economic Value</u>					<u>Economic Value/ Financial Value</u>
	<u>Direct Imports</u>	<u>Local Purchase</u>			<u>Total</u>	<u>Direct Imports</u>	<u>Local Purchase</u>			<u>Total</u>	
		<u>Materials</u>	<u>Skilled Labor</u>	<u>Unskilled Labor</u>			<u>Materials</u>	<u>Skilled Labor</u>	<u>Unskilled Labor</u>		
<u>Land</u>	-	25,000	-	-	25,000	-	25,000 ^{c/}	-	-	25,000	1.00
<u>Land Development</u>											
Land Fill & Bunding	2,511	5,649	-	1,883	10,043	2,511	4,237	-	941	7,689	
Road & Drainage	16,486	22,963	1,913	5,741	47,103	16,486	17,222	1,760	2,870	38,338	
Water Supply	14,561	5,304	234	702	20,801	14,561	3,978	215	351	19,105	
Sewage Disposal	26,146	5,228	327	981	32,682	26,146	3,921	301	490	30,858	
Telecommunication	4,158	728	312	-	5,198	4,158	546	287	-	4,991	
Sub-Total	63,862	39,872	2,786	9,307	115,827	63,862	29,904	2,563	4,652	100,981	0.87
<u>Buildings</u>											
Std. Factory Bldg. & Administration Bldg.	24,398	18,775	2,050	2,050	47,283	24,398	14,081	1,886	1,025	41,390	0.87
<u>Engineering/Arch. Service</u>	2,489	-	4,987	-	7,476	2,489	-	4,987 ^{e/}	-	7,476	1.00
<u>Technical Assistance</u>	1,744	-	748	-	2,492	1,744	-	698	-	2,442	0.98
<u>Total</u>	<u>92,493</u>	<u>58,647</u>	<u>10,571</u>	<u>11,357</u>	<u>198,078</u>	<u>92,493</u>	<u>68,985</u>	<u>10,134</u>	<u>5,677</u>	<u>177,289</u>	<u>0.89</u>

a/ Border Prices

b/ Derived by applying 'Conversion Factor for Civil Works' of 0.75

c/ According to the judgement of the appraisal mission, market value of land at Lat Krabang reflects the opportunity cost

d/ Derived by applying 'Conversion Factor for Skilled Labor' of 0.92

e/ Professional staff is considered scarce in Thailand, therefore economic values are identical with financial values

f/ Derived by applying 'Conversion Factor for Unskilled Labor' of 0.50

LAT KRABANG INDUSTRIAL ESTATE & EXPORT PROCESSING ZONE

PROPOSED LAYOUT

