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REPORT AND RECOMMENDATION
OF THE
PRESIDENT OF THE
INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
TO THE
EXECUTIVE DIRECTORS
ON A
PROPOSED LOAN
TO THE ELECTRICITY GENERATING AUTHORITY OF THAILAND
WITH THE GUARANTEE OF THE KINGDOM OF THAILAND
FOR THE
BANG PAKONG THERMAL POWER PROJECT

April 12, 1979

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GLOSSARY

CURRENCY EQUIVALENTS

Currency unit	=	Thai Baht (B)
US\$1.00	=	B 20.25
B 1.00	=	US\$0.0494

WEIGHTS AND MEASURES

1 meter (m)	=	3.281 feet (ft)
1 cubic meter (cu m)	=	35.315 cubic feet (cu ft)
1 kilometer (kg)	=	0.621 miles (mi)
1 square kilometer (sq km)	=	0.386 square miles (sq mi)
1 hectare (ha)	=	2.471 acres (ac)
1 kilogram (kg)	=	2.206 pounds (lb)
1 metric ton	=	1,000 kilograms (kg)
1 cubic meter per second (cms)	=	35.315 cubic feet per second (cfs)
1 kilovolt (kV)	=	1,000 volts (V)
1 kilovolt-ampere (kVA)	=	1,000 volt-amperes (VA)
1 megavolt-ampere (MVA)	=	1,000 kilovolt-amperes (kVA)
1 kilowatt (kW)	=	1,000 watts (W)
1 megawatt (MW)	=	1,000 kilowatts (kW)
1 gigawatt (GWh)	=	1 million kilowatt hours (kWh)
1 kilocalorie (kcal)	=	3.968 British thermal units (Btu)

ABBREVIATIONS AND ACRONYMS

ADB	=	Asian Development Bank
BVI	=	Black & Veatch International
CPPD	=	Committee for Power Policy and Development
EGAT	=	Electricity Generating Authority of Thailand
IEAT	=	Industrial Estates Authority of Thailand
IFCT	=	Industrial Finance Corporation of Thailand
KFAED	=	Kuwait Fund for Arab Economic Development
MEA	=	Metropolitan Electricity Authority
MWWA	=	Metropolitan Water Works Authority
NGOT	=	Natural Gas Organization of Thailand
PEA	=	Provincial Electricity Authority
RTG	=	Royal Thai Government
TOT	=	Telephone Organization of Thailand

THAI FISCAL YEAR

October 1 - September 30

THAILAND

BANG PAKONG POWER PROJECT

LOAN AND PROJECT SUMMARY

Borrower: The Electricity Generating Authority of Thailand (EGAT)

Guarantor: Kingdom of Thailand

Amount: \$80.0 million

Terms: 20 years, including five years of grace, with interest at 7.9% per annum.

Project Description: The project is part of EGAT's 1978-85 expansion program and comprises: (a) land procurement and site development of a power station that will ultimately consist of four units of 500 MW capacity each; (b) construction of civil works including power plant structures and buildings, fuel supply handling and storage systems, water cooling systems, make-up water, etc.; (c) supply and installation of the boiler, turbo-generator, auxiliary electrical, mechanical and miscellaneous equipment for the first 500 MW generating unit; (d) construction of 230 kV switchyard at Bang Pakong and substations at Rangsit and Bang Kapi and 110 km of 230 kV transmission lines linking Bang Pakong power station to the EGAT grid; (e) supply of construction equipment (hoists, cranes, welding equipment, earth movers, concrete mixers, etc.); (f) engineering services; and (g) a study of future generation and transmission projects.

The project will help meet the country's growing electricity demand including that of the accelerated rural electrification program. There are no risks considered significant enough to preclude proceeding with the project.

Estimated Cost:

	----- \$ million -----		
	<u>Local</u>	<u>Foreign</u>	<u>Total</u>
Land	0.4	-	0.4
Civil works	31.8	6.0	37.8
Boiler plant	11.0	51.0	62.0
Turbo-generator plant	9.0	34.8	43.8
Other electrical and mechanical equipment	5.8	25.8	31.6
Transmission lines and substations	8.0	16.5	24.5
Engineering, consultancy services and supervision	7.3	9.0	16.3
Construction equipment	0.2	6.2	6.4
Duties and taxes	17.5	-	17.5
Contingencies			
Price	15.5	27.6	43.1
Physical	6.5	7.1	13.6
<u>Total Project Costs</u>	<u>113.0</u>	<u>184.0</u>	<u>297.0</u>

Financing Plan:

EGAT	113.0	-	113.0
KFAED	-	22.0	22.0
Suppliers' credits and commercial banks	-	82.0	82.0
IBRD	-	80.0	80.0
<u>Total</u>	<u>113.0</u>	<u>184.0</u>	<u>297.0</u>

Estimated Disbursements from Bank Loan:

	<u>Bank</u>	<u>FY</u>	\$ million				
			<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Annual			1.5	13.0	57.0	1.0	7.5
Cumulative			1.5	14.5	71.5	72.5	80.0

Rate of Return: 13%

Appraisal Report: No. 2271-TH dated April 5, 1979

REPORT AND RECOMMENDATION OF THE PRESIDENT
TO THE EXECUTIVE DIRECTORS
ON A PROPOSED LOAN TO
THE ELECTRICITY GENERATING AUTHORITY OF THAILAND
WITH THE GUARANTEE OF THE KINGDOM OF THAILAND
FOR THE BANG PAKONG THERMAL POWER PROJECT

1. I submit the following report and recommendation on a proposed loan to the Electricity Generating Authority of Thailand (EGAT), with the guarantee of the Kingdom of Thailand, for the equivalent of \$80 million to help finance the Bang Pakong Thermal Power Project. The loan would have a term of 20 years including five years grace with interest at 7.9% per annum. The Kuwait Fund for Arab Economic Development is considering co-financing the project with a loan of \$22.0 million equivalent on terms of 25 years, including 7 years of grace with interest at 3-1/2% per annum. EGAT is also seeking \$19 million from commercial banks and suppliers' credit financing of about \$63 million.

PART I - THE ECONOMY /1

2. A Basic Economic Report entitled "Thailand - Toward a Strategy of Full Participation" (2059-TH) was distributed to the Executive Directors on September 18, 1978. The Report forges a link between the overall development of the economy and the extent and incidence of poverty. It concludes that Thailand's rapid economic growth over the past 15 years has led to a significant reduction in absolute poverty, but that nevertheless important groups have lagged behind. It identifies the essential characteristics of these groups and points to the need for continued rapid overall development as well as the initiation of specific measures to deal with the poverty problem, particularly in rural areas. It further discusses the constraints that will have to be faced if these policies are to be successfully implemented. Country data are given in Annex I.

Recent Political Developments

3. Despite frequent changes at the top levels of government, there is a fundamental stability in Thai society and the bureaucracy. Recent changes in governments have mainly reflected differences in view about Thailand's external relations and on the political decision-making process within the country and not fundamental differences about the social or economic system. The civilian government formed in November 1977 under the Prime Ministership of General Kriangsak Chomnan, then Commander in Chief of the Army, has moved successfully to consolidate Thailand's external position by improving and stabilizing relations with Thailand's Indochinese neighbors and by strengthening relations among its ASEAN partners. The constitutional assembly under the interim constitution completed its work and a new constitution was promulgated in December 1978. Elections are scheduled for April 22, 1979. Because of the structure of the selection process, it is expected that Kriangsak will be

/1 Parts I and II are essentially the same as in the recent President's Report (No. 2471-TH) dated February 22, 1979 for the Fifth Railway Project in Thailand, distributed to the Executive Directors on March 6, 1979.

nominated Prime Minister. The relative strengths of the political parties in the election will determine the exact makeup and orientation of the new Government. It is unlikely, however, that the results of the election will impair the country's political stability or reduce its commitment to poverty alleviation and reduction of income disparities.

4. A broad concensus has been developing over the last several years on the priorities for socioeconomic development, and all recent governments have endorsed the objectives and major strategies of the country's Fourth Five-Year National Economic and Social Development Plan (1977-81). There is now increasing concern to achieve a widespread distribution of the benefits from growth. In the past several years the Government has initiated efforts to increase the flow of public resources to the poor rural areas, including the Tambon program of direct transfers to villages in 1976, the drought relief program in 1977, and the flood relief program in 1978. All these programs have been designed to produce quick and visible results, the latter two in response to specific crises, but they were also aimed at increasing production capacity in rural areas and demonstrating the concern of the Central Government for the plight of the rural population. When the new Government is installed for a four-year term after the April elections, it will be in a better position to pursue more long-term solutions as well. There is an increasing realization that an improvement in the conditions of the poorest farmers and those living in the more remote areas is not only desirable in itself, but would also counteract insurgency in the long run.

Past Socioeconomic Trends and Recent Changes

5. Thailand's economic performance since 1960 has been good. Although there was some deceleration in recent years, the average annual real GDP growth rate from 1960 to 1978 was 7.5%, or about 4.4% per capita. Real agricultural growth of 5% was a leading factor sustaining this expansion. The cultivated area increased by about 4% per year, water control was improved, irrigation expanded and the cultivation of relatively new crops including maize, cassava, kenaf, sugar and rubber grew rapidly. As a result, agriculture has also been a major contributor to export growth. The Government maintained economic and price stability throughout the period and encouraged private savings and investment. As a share of GDP, domestic savings fluctuated between 19% and 24%, and total investment between 20% and 27%. The high level of private investment contributed to a real industrial growth of 10% and a real growth of manufactured exports of 30% per year since 1970. All this was achieved with a limited inflow of foreign resources; until recently the resource gap remained below 5% of GDP, and in most years it was considerably smaller.

6. The growth in incomes has, however, not been evenly distributed throughout the country and at present there are very significant regional differentials in incomes and access to economic and social infrastructure. While the regions are very different in terms of topography, climate, soils, urbanization, etc., and present quite distinct problems for future development, there appears to be a close correlation between development and proximity to the center. The Central Region, including Bangkok, has the highest average per capita income and is better served by roads, telecommunications, schools, public health and other services than the other three regions, the North,

Northeast and South. The incidence of poverty is estimated at only around 10% in the Center, around 25% in the North and South, and around 35% in the Northeast. Within the regions there is also considerable variation: farmers who have diversified into cash crops have generally enjoyed substantial growth in real incomes while the incomes of those who have been unable or unwilling to shift out of subsistence rice culture have stagnated. This is most conspicuously the case of the rainfed rice farmers in the Northeast and North. Given a well-functioning labor market, the low incomes of this large group have tended to depress unskilled wages throughout the economy.

7. Overall, the rate of GDP growth declined in the 1970s to 7.1% p.a. compared to 8.3% in the 1960s. In addition to external factors (the oil price increase and its aftermath), the major domestic factor responsible for this deceleration is the increasing scarcity of land. Production has been pushed into less fertile soils causing a decline in the rate of agricultural growth to about 4.6% p.a. since 1970 compared to 5.7% in the 1960s. During 1973 and part of 1974, this secular deceleration was hidden by very high prices for Thailand's main export products and a domestic investment boom. This was accompanied by rapid domestic inflation, which led the Government to curtail sharply the public investment program in 1974 and 1975. Price stability has largely been restored and private domestic investment remains high at 17-18% of GDP. The economy expanded rapidly in 1978 and inflation again threatens to become a serious problem. The economy has demonstrated considerable resiliency in the face of external shocks and the political uncertainty that has existed in Southeast Asia for the past decade. The real GDP growth rate never fell below 5% and exceeded 7% since 1975.

8. Thailand's terms of trade and agricultural export prospects are now less favorable than in the early 1970s. It is facing severe restrictions on two of its major exports to the European Economic Community, cassava and canned pineapple, and its sugar exports are limited by the International Sugar Agreement. The balance of payments, which recorded surpluses in 1973-74, has since been running large deficits. The current account deficit reached \$1,241 million, or 6% of GDP in 1978. The Government has significantly increased its foreign borrowing from traditional sources, from the Eurodollar market and from the IMF to finance these deficits. Foreign exchange reserves have also been used extensively. To contain the balance of payments deficit, the Government, in March 1978, raised tariffs on 141 "nonessential" imports and increased excise taxes on a number of items, most notably gasoline. It raised the gasoline price again in February 1979 and started an energy conservation program to try to contain the oil import bill.

Objectives, Constraints and Prospects

9. Thailand is currently in the second year of its Fourth Five-Year Development Plan (1977-81). The first two Plans concentrated on providing necessary economic infrastructure to facilitate and accommodate the rapid growth that was taking place in the economy. The strategy proposed in the Third Plan moved beyond the previous Plans to "alleviate problems related to the widening income gap and inequitable distribution of social services." However, actual budgetary allocations have not always reflected these priorities, and there has not been a major shift in expenditure patterns. The

concentration of senior staff of the ministries in Bangkok and the high degree of centralization of authority at the departmental level has been a major factor impeding reallocation of resources. There is little regional delegation of authority, and the close cooperation within and among ministries necessary to implement new-style integrated development projects has been lacking. These problems have been recognized and the Government is implementing a number of long- and short-term measures to modernize its development administration and expedite project execution, including a major reform in 1976 of the civil service personnel, planning and staffing procedures, establishment of special project committees, and implementation of a revolving fund scheme to speed implementation of Bank-funded projects. Continued improvement in development management is one of the principal objectives of our policy dialogue with the Government.

10. The Fourth Plan continues the shift in emphasis started in the Third Plan. Its principal objectives are achieving 7% real growth, equitable distribution of income, reduction in the rate of population growth, faster generation of employment opportunities and balanced regional development. Projected public sector development expenditures amount to \$12.5 billion for the Plan period, a 90% increase in real terms over the Third Plan. However, the Plan addresses sectoral issues and strategies only in broad terms, and concrete policies and programs to meet the Plan's economic and social objectives remain largely to be defined. The Bank and agencies of the Government are undertaking a number of studies to help the Government define policies and programs to help achieve the Fourth Plan objectives. These studies are focusing on problems of employment, income distribution, industrial policy, and regional development. The Bank will be supporting a Provincial Planning program, and NESDB has just initiated a New Village Development Program designed to involve all levels in the determination and implementation of small-scale projects, initially in the poorest villages. Japan has committed some \$70 million to support the first two years of this program.

11. In looking ahead towards the 1980s, it is clear that many of the positive features which helped sustain a rapid rate of economic growth over the past two decades will continue to contribute to future growth: a relatively equitable distribution of rural land, responsiveness of Thai farmers to improved technology, extensive, albeit uneven, provision of infrastructure by the Thai Government, and the dynamism of the private sector in both industry and agriculture. Also major gains have been made in family planning in recent years, slowing the annual rate of population growth from 3% during the 1960s to 2.5% in 1977.^{/1} The target for 1981 is 2.1%.

12. However, some less favorable domestic factors are emerging. As a result of very rapid population growth in the recent past, the labor force is expected to grow at 3% over the next decade, necessitating a very high rate of job creation. Past growth has benefited some households a great deal and others not at all, creating increasingly obvious income disparities that could threaten the social cohesion of the country. At the same time, additional fertile land, which has provided a livelihood for new entrants into the labor

^{/1} This is a further decline from the 2.9% average growth recorded in Annex I for the period 1970-76.

force and has supported agricultural export growth in the past, is becoming increasingly scarce. In view of these factors, continued reliance on the past pattern of development would lead to a deceleration of agricultural and overall growth in the next decade, resulting in persistently large balance of payments deficits, higher rates of unemployment or underemployment, and stagnating or declining real incomes of the poorer segments of the population, especially in rural areas and among unskilled workers. Thus, a shift in the development pattern is necessary not only for social, but also for economic reasons.

13. The key development issue in Thailand is how to shift the economy from a pattern of growth based on the extension of land under cultivation and on import-substitution industries to one based on increasingly intensive use of land and on industries producing for domestic and export markets under competitive conditions. Effective policies and programs will be necessary to ensure that economic growth is maintained and income disparities reduced, or at least not widened during this period of transition. In the past, the Government's role has been confined to largely short-term economic management, where its performance has been good, and to the provision of basic economic and social services. In order to achieve a relatively smooth transition, the Government will now have to undertake more coordinated and longer-term actions.

14. Agriculture will continue to be a crucial sector since it directly generates 30% of GDP, provides about 65% of exports, employs 70% of the labor force, and provides a livelihood for 90% of Thailand's poor. Future growth of the sector will have to be based on more intensive utilization of cultivated areas, improvement in yields, continued diversification of crops, improved cropping patterns and farming practices, and the availability of agricultural credit. All of these imply an increased government role in the rural sector. As a matter of high priority, special programs will have to be employed to accelerate income growth for those who have not fully participated in the recent growth in rural income. These programs should aid the development of upland and rainfed lowland areas through research, extension services and rural infrastructure development. In addition, wherever technically feasible, irrigation development, with the associated introduction of high-yielding varieties, greater use of fertilizers and other commercial inputs should be continued. The Bank's lending program is being reoriented to support these efforts (see para. 22).

15. While growth in the agricultural sector may be expected to remain fairly rapid for some time to come, the burden of sustaining future growth will have to shift progressively to the industrial sector. Industry, construction and services will have to provide an increasing share of employment for the growing population. This will require modifications of industrial policy and programs with the prime objective of creating jobs for the rapidly growing labor force at rising levels of productivity and wages. Greater effort will be required to encourage the location of industries outside Bangkok and to promote small-scale and rural industries. While continued rapid growth of manufactured exports is essential, the large domestic rural population also offers market opportunities for a balanced industrial growth strategy based on production of low-income consumer goods, agricultural inputs and equipment for local use, and processed agricultural products for urban consumption and

export. Our policy dialogue will concentrate on efforts to reduce price distortions, increase the availability of credit, and eliminate impediments to efficient production for domestic and foreign markets so that the dynamic private sector can realize its potential for spurring growth and creating jobs.

16. The Consultative Group for Thailand met in Paris on December 5 and 6, 1978 under the chairmanship of the Regional Vice President for East Asia and the Pacific. The Group noted with satisfaction the positive results of past development efforts in Thailand as summarized in the recently issued economic report (2059-TH). The Group also supported the conclusions of the report and of the analysis of the Thai delegation, led by the Minister of Finance, that major new efforts were needed to reduce the incidence of poverty and to maintain the past rates of growth. Programs to accelerate rural development, raise productivity, and thereby accelerate poverty alleviation were called for as the first priority. In addition, it was recognized that expanding industrial production along the lines of Thailand's comparative advantage was essential to the country's long-term prospects. The Thai delegation presented the New Village Development Program to the donors and it was favorably received.

Resource Requirements

17. The implementation of policies needed for a satisfactory rate of economic and social progress will necessitate a steady increase in public expenditures over the next few years. This will require much greater efforts to mobilize both domestic and external resources than in the past. Government domestic revenue as a percentage of GDP (15.5% for 1974-78) is low compared to other developing countries at similar levels of development due to low tax rates, high exemptions and a somewhat below-average rate of compliance. The Government has achieved a modest improvement in resource mobilization through revision of the tax structure and income and better collection efforts. It is currently investigating other more efficient tax systems, such as the value added tax. Such changes would also make it feasible to reduce taxation of foreign trade, particularly on rice and other exports, which has inhibited agricultural growth.

18. During the coming 5-10 years, there will be significantly greater demands on external resources than has been the case in the past as the cost of any attempt to reduce the presently existing resource deficit rapidly would be high in terms of growth and employment opportunities foregone. Despite an average real growth of exports in excess of 8% and a modest improvement in the terms of trade, large trade and current account deficits are expected through the mid-1980s. The needs for capital goods imports for industry and for modern inputs to raise agricultural productivity are such that the current deficit is not expected to decline rapidly. In the longer term, the exploitation of the natural gas fields in the Gulf of Thailand, further development of its lignite resources, the continued growth of manufactured exports and the development of Thai industries should restore external equilibrium and significantly reduce the current account deficits in the second half of the 1980s. Although the levels of foreign borrowing needed to finance these deficits are high in relation to Thailand's past experience, they are not high in relation to the current needs of the Thai economy or in comparison to other

countries at similar stages of development. With a dynamic private sector and a long history of conservative monetary and fiscal policy, Thailand should be able to use the resources effectively and service the debt.

19. Official donors, particularly Japan and the development banks, have been expanding their programs to meet a part of the rising requirements. The rest has been financed in the Eurodollar market and bond markets, and by the utilization of IMF resources for 1978/79 totalling about \$200 million. The Government has established a Foreign Loan Policy Committee to coordinate and approve all foreign borrowing by the Government and public sector. The Bank of Thailand is establishing procedures for recording private borrowing abroad in order to keep track of total foreign debt. Thailand's external public borrowing requirements to the end of the Fourth Plan period (1981) and the level of concessionality were reviewed at the last Consultative Group meeting. It was agreed that, although high, the aid requirements were consistent with Thailand's development strategy and sustainable for the economy. The need for continued substantial support on concessional terms was emphasized.

20. It is likely that by 1985, net disbursements will more than double in current terms for both public and publicly guaranteed borrowing and private borrowing, although in real terms the growth is much less. Even with this increase in borrowing, the debt service ratio on public debt (3.8% in 1977) should remain below 10% through 1985 and decline thereafter. The debt service ratio on total civilian borrowing, currently about 15%, should not exceed 20%. IBRD exposure in Thailand will fall as other donors increase their programs. Given the diversification of Thai commodity exports and the rapid expansion of manufactured exports, these debt service requirements will be within Thailand's capacity and will not endanger its credit standing. It should be noted, however, that these projections assume a significant level of concessional assistance from other donors, particularly Japan, in view of that country's announced intention to expand its foreign aid program.

PART II - WORLD BANK OPERATIONS IN THAILAND

21. Thailand first borrowed from the Bank in 1950 and has received 48 loans amounting to \$1,274.7 million, net of cancellations. Most of these have been for transportation (\$295.5 million), irrigation (\$236.3 million) and power/energy and rural electrification (\$245.4 million) with, in addition, one for a dual-purpose power and irrigation project (\$65.8 million). The remaining loans have been for telecommunications (\$153 million); other agriculture and rural development (\$104 million); urban development (\$79.6 million); education (\$52.3 million); and industry (\$42.8 million); two loans were made under the terms of the Interest Subsidy Fund. Thailand has also received four IDA credits: one for \$19.5 million for an education project; two credits totaling \$12.5 million for irrigation improvement; and one credit of \$33.1 million for a population project. In general, Bank Group-financed projects have been carried out satisfactorily and in accordance with expectations. Annex II contains a summary statement of Bank loans, IDA credits and IFC investments as well as notes on the execution of ongoing projects as of February 28, 1979.

22. Over the past five years, the Bank has shifted its lending to Thailand from a program dominated by investments in traditional infrastructure projects (accounting for over 80% of the lending through FY74) to a program which places increasing emphasis on assisting the Government's efforts to reach the poorer segments of its population more directly. Since FY75, investments in transportation, power, water supply, telecommunications and industry have accounted for only about 40% of Bank Group lending and more than half of these, in dollar terms, were for projects specifically designed to benefit the rural population. The proportion of Bank lending to the agricultural/rural development sector has trebled, accounting for about 45% of lending operations since FY75. The design of projects in this sector has also changed, from exclusively large irrigation projects to a program balanced between irrigation (including land development and support services to the farmer) and a variety of innovative projects to assist farmers outside the central flood plain (rubber replanting; livestock, agriculture extension, research and rural development). Projects in the social sectors - which prior to FY75 were limited to three in education accounting for 6% of the program - have both diversified and grown; such projects have in recent years included education, population and low-income housing for about 13% of the program.

23. The findings of the recent Basic Economic Report not only verify the appropriateness of the shift mentioned above, but also underscore the need to move even further to design programs which help the rural population, particularly those farmers in rainfed areas who have so far been largely bypassed by recent economic growth. In the agricultural sector, therefore, the Bank is redoubling its efforts to develop a package of supporting activities which will help to lift the rainfed farmers out of a subsistence existence. A combination of education, agricultural research and extension, credit and improved infrastructure is foreseen, though a viable package for the poorest and most remote farmers has yet to be developed. Expansion and improvement of irrigation systems will continue, with increased emphasis on reaching those farmers with irrigation potential in the northern, northeastern and southern regions. The program of transportation, electrification, water supply and telecommunications projects will also continue to have a rural focus. A key element of the strategy outlined in the Basic Economic Report is the creation of jobs and stimulation of increased economic activity away from Bangkok. The bulk of the Bank Group's urban and industrial lending is, therefore, being directed to the provinces as well as to assist the Government in the preparation of projects to enhance the attractiveness of regional urban centers. Selected projects in Bangkok will be aimed at strengthening agencies providing services to the urban populace and the development of low-cost, replicable programs to meet the demands of the dynamic urban sector, particularly the urban poor, without diverting scarce resources from other high-priority development needs.

24. The Bank's strategy of placing an increasing share of its program into projects alleviating poverty and promoting rural development will be difficult to execute without considerable technical assistance toward project preparation. The Bank's regional mission in Bangkok will continue to play a vital role in helping to identify and prepare such projects. Promoting overall growth also has a high priority in Thailand and is a necessary element in the poverty alleviation strategy. The resource requirements for infrastructure development are large and the Bank is concentrating its remaining funds in projects where it can have a catalytic role in effecting policy changes,

mobilizing other resources, and directly facilitating growth in rural areas. The Bank is also expanding its support of the industrial sector through its economic and sector work as well as selected projects in order to help promote industrial policy which favors more labor-intensive and dispersed activities to complement Thailand's efforts in poverty alleviation and in reducing income differentials in rural areas.

25. Bank loans and IDA credits, disbursed and outstanding, amounted to \$365 million, as of December 31, 1977, representing about 38% of public external debt (disbursed and outstanding). This is not excessive in view of Thailand's modest overall public external debt (5.2% of GDP in 1976). In addition, although the level of Bank commitments is expected to increase over the next five years, the Bank Group's share is projected to decline below 30% of total public external debt by 1982. The Bank Group's share in total debt outstanding would remain at about 20%, and its share of debt service is not expected to exceed 10%.

26. As of February 28, 1979, IFC has made commitments totalling \$83 million in 10 projects in Thailand. IFC's activities have been primarily in industry and in financial institutions development aimed at mobilizing domestic resources and providing financing to smaller enterprises. Prospects for increased IFC operations in Thailand have been enhanced by expanding private sector investment activity. In addition, consultations with the Government have identified several areas where IFC's assistance may be needed. These areas include very large and complex projects such as a proposed sponge iron project and a soda ash project to serve the ASEAN community; projects in the petroleum and downstream petrochemical sector; and projects in the agricultural sector. In addition, the Corporation expects to continue to help traditional manufacturing projects and to assist in financial institutions and money market developments.

PART III - THE POWER SECTOR

Energy Consumption and Resources

27. Total energy consumption in Thailand has increased from 5.31 million tons of oil equivalent in 1970 to over 11 million tons in 1977, an average annual growth rate of 10%. Petroleum products account for about 82% of total energy and hydro for another 8%.

28. Thailand's energy resources consist of hydro-power, petroleum, lignite (low-grade coal), oil shale deposits, and natural gas. Hydro potential (excluding that of two international rivers, the Mekong and the Salween) totals about 9,900 MW, of which about 3,600 MW or 36% are being exploited or are under study. Interest has been expressed in developing the considerable hydroelectric potential of the Mekong River, but political and resettlement problems make such development unlikely in the near term.

29. Proven petroleum reserves total about one million barrels with production currently at about 100,000 barrels annually (less than 0.2% of annual consumption). The total lignite reserves were estimated at about 235 million tons, of which about 110-130 million tons are proven reserves. Production was about 520,000 tons in 1977. EGAT has plans to utilize the known reserves for power generation by adding two units of 150 MW each at the Mae Moh thermal plant. A recent estimate made by the Bank indicated that lignite reserves might be as high as 650 million tons in total and may ultimately be capable of supporting 2,000 MW of electricity generating capacity. There are extensive oil shale reserves estimated at 2,700 million tons but oil production from shale is still uneconomic. The two most promising natural gas finds so far discovered in the Gulf of Thailand indicate a proven reserve of at least 1.1 trillion cubic feet (capable of producing about 27,000-43,000 barrels/day oil equivalent for 20 years) from one field area and probably reserves of about 3.5 trillion cubic feet of somewhat inferior quality gas from the other field area. Recently, the Bank made a loan (S-10-TH) to help finance the engineering and related studies required prior to the construction of a pipeline which would carry the natural gas from the off-shore production areas to the principal market areas, including the Bang Pakong power station which is the subject of this report. The substitution of gas for imported fuel oil in electricity generation will considerably reduce demand for fuel oil and result in foreign exchange savings estimated to rise from about \$50 million a year to about \$400 million a year in the mid-1990s in current prices, an average of about \$150 million per year. The realized foreign exchange savings will depend on the level of gas used and the final production costs.

30. An Energy Master Plan study is being undertaken by the National Energy Authority (NEA) financed by the United Nations Development Program (UNDP), with the Asian Development Bank as the executing agency. The Plan will define a program for meeting Thailand's energy requirements up to the year 2000. It is expected that the study will begin in August 1979 and be concluded in January 1981. A study of the refinery expansion will be undertaken as the first stage and results will be available by January/February 1980. During the second stage of the study, apart from looking into various issues relating to the energy sector in Thailand, ADB will: (a) review the present structure of energy demand in Thailand, and forecast future energy demand by energy type in the major sectors of the economy; (b) develop an energy supply scenario and the optimum mix between the various sources of energy; and (c) set out a detailed energy conservation program sector by sector with targeted savings and operational procedures.

Sector Utilities

31. The three state enterprises comprising the sector are operated efficiently as separate autonomous entities. However, overall macro policy planning and coordination need strengthening as mentioned in paragraph 32. The Electricity Generating Authority of Thailand (EGAT), to which the proposed loan would be made, has major responsibility for generation and transmission; it sells energy in bulk to large industrial consumers and to the two power distribution authorities. The Metropolitan Electrical Authority (MEA) is responsible for supplying electricity in the Bangkok metropolitan area, and the Provincial Electricity Authority (PEA) supplies electricity to the rest of

the country. EGAT accounts for 94% of all electricity generated, the balance being generated by PEA in areas not yet connected to the grid and by several self-generating industries. The three utilities' conservative commercial outlook needs to be changed in view of the Government's accelerated rural electrification program.

Sector Coordination

32. In its 1976 Sector Report (No. 1794-TH) the Bank recommended that planning and coordination among the three power utilities and the various Government agencies concerned with energy production and distribution should be strengthened to enable the sector to meet efficiently the country's demand for energy. In 1977, the Committee on Power Policy and Development (CPPD) was formed to oversee the functioning and development of the power sector and to provide overall sector control. However, since its formation, CPPD has not yet developed into an operating entity capable of coordinating planning activities, reviewing the utilities' development programs and projects or determining the adequacy of tariffs to maintain the sector's financial viability. Currently six ministries and other government agencies besides CPPD, EGAT, MEA and PEA have a say in sector decision making. Recently the cabinet proposed legislation for the establishment of a Ministry of Science, Energy and Technology, but it has not been decided whether the proposed ministry would have overall responsibility for the energy sector in place of the various ministries and government agencies. During negotiations RTG representatives concurred that there was a need to study the issue of sector planning and coordination and it was agreed that by December 31, 1979, RTG would submit to the Bank for its review and comment proposals for a study to improve sector coordination (Section 3.04 of the draft Guarantee Agreement). Further discussion on the sector coordination issue would take place within the context of the ongoing Power Sector loan appraisal. It was also agreed that for the purpose of determining the optimal sequence of its system development, EGAT would, not later than January 1, 1980, undertake a study of future generation and transmission projects which shall include an in-depth review of the load forecast. The findings of the study will be submitted to the Government and to the Bank by December 31, 1981 (Section 3.06(a) and (b) of the draft Loan Agreement).

Sector Financing and Tariffs

33. Tariff policies proved adequate throughout the late 1960s and early 1970s, and the financial position of the sector remained strong; in fact, all three agencies were able to reduce their tariffs periodically due to conservative financial management, economies of scale and consequent reduction in unit costs. However, following the fuel crisis, the sector's financial position deteriorated. The Government took various steps to cushion the effect of the fuel crisis (removing fuel taxes and duties and subsidizing the cost of fuel to EGAT) but these tended to distort the financial position. Bank staff, after their review of the sector in 1976, recommended: (i) restoration of fuel taxes and customs duties; (ii) removal of the fuel oil subsidy to EGAT; (iii) provision of a fuel adjustment clause in the tariff schedules so that variations in fuel prices would be passed on to consumers; and (iv) an increase in tariffs for FY77-79 to cover the sector's financial gap between cash generation and borrowings, and construction costs as well as to compensate for

increased operating costs. The staff also recommended that a tariff study be undertaken to establish a simplified tariff system which would reflect the costs to the economy of meeting demand for electricity. The tariff levels and structure would also ensure that sector revenues would be adequate to meet the sector's financial objectives and to provide for any income distribution objectives (subsidizing poor consumers).

34. The Government has acted upon all the above-mentioned recommendations. An increase in sector tariffs averaging about 29% was implemented on August 1, 1977; fuel subsidies were discontinued; taxes on fuel were restored; and a fuel adjustment clause was introduced. The tariff study, whose recommendations were to be implemented by October 1, 1978, was delayed because of changes in load forecasts in the utilities development programs, and is still being carried out; those recommendations that will be agreed between Government and the Bank are expected to be implemented by December 31, 1979.

35. The steps taken by RTG restored the financial viability of the utilities and largely removed the need for further budgetary assistance. However, the large financial requirements for PEA's accelerated rural electrification program called for cross-funding within the sector to ensure that adequate funds would be available for PEA's program. The appropriate level of tariffs and cross-funding are among the issues being studied under the tariff study referred to above (paragraph 33). Under Loan 1527-TH (Accelerated Rural Electrification Project) it was agreed that the sector as a whole would earn an annual rate of return on revalued net fixed assets in operation of 7% for FY78 and FY79 and 9% in FY80 and thereafter. A drought in 1977-78 and problems in the supply of fuel oil caused hydro reservoirs to be drawn down below normal operating levels. Consequently, fuel oil based generation was higher than forecast for FY77-79, increasing EGAT's operating costs substantially. The effect of the increased fuel consumption, coupled with increased costs due to wage awards, reduced EGAT's and the sector's rates of return to 3.2% and 5.3%, respectively, for FY78. During negotiations, it was agreed that a tariff increase of approximately 30% is now required to restore the sector's financial viability, and it was agreed that a rate of return of not less than 7% would be targeted for both EGAT and the sector as a whole during FY80 and FY81 and of not less than 8% thereafter (Section 5.04 of the draft Loan Agreement and Section 3.02 of the draft Guarantee Agreement). Implementation of the tariff increase required to achieve a 7% rate of return in FY80 is a condition of effectiveness of the proposed loan (Section 7.01 of the draft Loan Agreement).

Bank Participation in the Sector

36. Sector growth has been considerable. Electricity demand and energy generation grew annually on average by 14% and 16%, respectively, since 1970 reaching 2,138 MW and 12,493 GWh in 1978. The Bank has helped finance nine projects with 8 loans to EGAT, totaling \$282 million, and one loan to PEA of \$25 million. EGAT's projects have included dam construction, equipment for hydro and thermal power generation, transmission and substation facilities. Six projects have been completed and are operating satisfactorily; two are under construction.

37. The most recent loan (No. 1527-TH), the first to PEA, is helping finance the rural electrification program. The project is still in an early stage and some delays have arisen due to difficulties over procurement. At present only about 27% of all households in Thailand have electricity, an increase from about 25% in 1976, and although the largest proportion of households connected are situated in Bangkok and its environs, the greatest growth rate is now taking place in the provinces. The Bank intends to continue its role in assisting the rural electrification program and it is expected that by 1983 about 45% of the population will have access to electricity. The proposed loan will enable EGAT to meet the country's increasing electricity demand including that of the rural electrification program.

38. The last power project performance audit report made in March 1978 for the South Bangkok Thermal Unit No. 4 Project (Loan 790-TH) indicated that the main objectives of the project had been met. The project was completed on time and within the original cost estimate.

PART IV - THE PROJECT

Project History

39. In 1976, EGAT approached the Bank for assistance in financing the project which had been demonstrated as necessary to meet the increasing load growth during the Bank's review of the sector earlier that year. EGAT commissioned Black & Veatch International (BVI), consulting engineers from the USA, to carry out a feasibility study and assist EGAT in the preparation of the proposed project. The project was appraised in August/September 1978. Negotiations were held in Bangkok, Thailand from February 14 to February 28, 1979. The Thai delegation was led by Mr. Suphat Sutatum, Minister of Finance and Mr. Kasame Chatikavanij, General Manager of EGAT and Minister of Industry.

Project Description and Objectives

40. The project includes: (a) land procurement and site development of a thermal power station at Bang Pakong which would ultimately have four units of 500 MW capacity each; (b) construction of civil works including power plant structures and buildings, fuel supply handling and storage systems; water cooling systems, make-up water, etc.; (c) supply and installation of the boiler, turbo-generator, auxiliary electrical, mechanical and miscellaneous equipment for the first 500 MW generating unit; (d) construction of a 230 kV switchyard at Bang Pakong, and substations at Rangsit and Bang Kapi and 110 km of the 230 kV transmission lines linking Bang Pakong power station to the EGAT grid; (e) supply of construction equipment; (f) engineering services; and (g) a study of future generating and transmission projects. The project will help meet the country's growing electricity demand including that of the accelerated rural electrification program.

Location and Size

41. The Bang Pakong thermal plant will be located about 60 km southeast of Bangkok at the mouth of the Bang Pakong River on the northern side of the Gulf of Thailand. The project is a noteworthy step in the development of EGAT's power system in that the 500 MW units to be installed are 200 MW larger than the largest units currently in operation in EGAT's power stations. On a least cost evaluation basis, the 500 MW unit is justified in relation to the number and size of existing generating units and an estimated maximum demand of about 4,000 MW when the Bang Pakong station starts operating in 1983.

The Borrower, EGAT

42. EGAT was established in 1968 by the merger of three public power utilities (the Yanhee Electricity Authority, the Northeast Electricity Authority and the Lignite Authority) for the purpose of increasing the efficiency of the electricity supply throughout the country and to coordinate the generation and transmission systems. It is a well-organized and well-operated utility with a considerable degree of autonomy. Staff are well trained and competent. EGAT has an able, energetic and highly regarded General Manager.

Future Investments, Sector Plans and Financial Planning

43. EGAT's energy sales are forecast to increase at an average annual rate of 11.5% through 1986. The capital expenditures, including interest during construction, for the construction of the plant and equipment required to meet such growth are estimated at \$5.5 billion at current prices through the period FY78-86. EGAT's generation will continue to be based mainly on the use of fuel oil but natural gas and lignite-based generation is being developed. The Bang Pakong and South Bangkok plants are likely to be fueled by natural gas now being developed, and the Mae Moh plant, being constructed with financial assistance from the Asian Development Bank, will be fired with nearby reserves of lignite. To meet the construction program, EGAT plans to borrow about 56% abroad to cover foreign costs, 16% locally, obtain 6% from the Government as equity and provide 22% from internal cash generation.

44. EGAT's financial position has been sound although a tariff increase is now required to offset the effects of adverse weather and increased fuel costs (see paragraph 35). In addition to earning a satisfactory rate of return on annually revalued assets which should enable EGAT to contribute an average of about 21% towards the costs of its construction program during the period 1980-1983, EGAT has agreed to maintain a debt/equity ratio of no more than 60:40, the maximum being 58:42 in 1981 (Section 5.05 of the draft Loan Agreement). Debt-service coverage will range between 1.3 and 3.0 times on an annual basis between 1978 and 1986; EGAT will limit its short- and medium-term debt to 15% of total debt (Section 5.06 of the draft Loan Agreement).

Cost Estimates

45. The total cost of the project is estimated at \$297 million, excluding interest during construction, and includes \$17.5 million equivalent in duties and taxes and a foreign exchange component of \$184 million. Estimates are

based on recent bid prices for similar works and equipment in the region. Total contingencies amount to \$57 million, about 24% of base cost at mid-1978 prices, and were calculated on the basis of assumed annual rates of escalation of 8% for 1978, 7.5% for 1979 and 7% thereafter for civil works; and 7% for 1978, 6.5% for 1979 and 6% thereafter for plant and equipment and transmission facilities. Costs are summarized in the Loan and Project Summary.

Financing

46. Project costs will be met by the proposed Bank loan of \$80 million (about 29% of total project costs net of taxes and duties); a loan of \$22 million equivalent from KFAED, suppliers' credits amounting to about \$63 million, commercial bank loans of about \$19 million and a mixture of EGAT's self-generated funds, local borrowing and equity of \$113 million equivalent. The KFAED loan was negotiated in March 1979, and is expected to be considered by the KFAED Board in May 1979. The financing arrangements with suppliers and commercial banks are still provisional; EGAT has asked for cash and credit terms in its bid documents for the equipment to be financed by suppliers' credits but may resort to commercial bank financing if better terms can be obtained than those offered by suppliers. Most of the major items would be financed by more than one of the four co-lenders. The Bank loan would be used to finance the foreign exchange cost of the turbo-generator package, auxiliary electrical, mechanical and miscellaneous equipment and part of the engineering services. The KFAED loan would finance part of the foreign exchange cost of the boiler plant package, transmission lines and substations. Commercial bank loans would finance the foreign exchange cost of construction equipment, civil works, part of engineering and consultancy services. The remaining foreign cost required for the boiler plant package, transmission lines and substations would be financed by suppliers' credits. The Borrower and the Guarantor gave their assurances that financing arrangements with KFAED, suppliers and commercial banks would be finalized no later than dates specified by the Bank (Section 6.01(c)(i) of the draft Loan Agreement).

Implementation and Construction

47. EGAT will be responsible for implementing the project. The consultants, BVI, will provide engineering services and construction supervision. Installation of equipment in the power plant and substations will be undertaken by EGAT's own workforce supervised by manufacturers' field engineers. The 230 KV transmission line will be constructed by the suppliers on a supply and erect basis. The target date for completion of construction work is December 1983. EGAT will also employ consultants, not yet selected, to undertake a study of future generation and transmission projects. EGAT possesses adequate experience in construction of thermal power plants and its record in project implementation has been good.

Procurement

48. Materials and equipment financed by the Bank will be procured under international competitive bidding in accordance with Bank guidelines with preference of 15% (or the custom duties, if less) being granted to local manufacturers. Contracts for the purchase of minor equipment items not exceeding the equivalent of \$150,000 each and not exceeding, in the aggregate,

the equivalent of \$2.0 million will be awarded in accordance with local procurement procedures acceptable to the Bank. Procurement of items financed by KFAED will follow its normal procedures.

Disbursements

49. Disbursements from the proposed Bank loan would be made at the rate of 100% of foreign exchange cost of the turbo-generator package; 100% of the foreign exchange cost of directly imported equipment and material; 100% of the ex-factory cost of equipment manufactured locally; and 65% of total expenditures for equipment and materials procured locally off-the-shelf. Disbursements for the engineering services would be at 50% of the foreign exchange costs. Disbursements by the Bank are expected to be completed by June 30, 1984.

Justification and Benefits

50. EGAT has sufficient installed capacity to meet its energy and capacity requirements until FY82. However, the expected increase in energy requirements in EGAT's system, by FY83, would be around 2,000 GWh a year, equivalent to about 270 MW in capacity at a plant factor of 0.85. This will be difficult to provide from hydro projects. With the commissioning of Unit No. 5 at South Bangkok Thermal Plant, that site has been fully developed. EGAT also plans to utilize fully the known lignite reserves for power generation by adding two units of 150 MW each at the Mae Moh Thermal Plant; however, any further development would require additional drilling, siting and other studies. Similarly, nuclear power could not be installed before 1987-88 due to the long gestation period required for the first unit. A thermal plant fueled by gas and/or fuel oil is, therefore, the only alternative and the 500 MW size was chosen after a comparison with alternative planting up sequences using 300 MW units. The sequence, including a 500 MW unit at Bang Pakong followed by the Khao Laem hydropower project, was found to be the least cost solution at discount rates up to 11.4%. The boiler's capability of being dual-fired is an additional attribute of the project because it will allow EGAT flexibility to utilize either natural gas or oil.

51. Using the average consumer tariff revenues for FY82 required to earn 8% on revalued net fixed assets of the sector, adjusted to 1978 price levels, as a proxy for the benefits of the project, the internal economic rate of return is estimated at 13%.

Ecology

52. The proposed power station will be located in an area with little development and very few inhabitants. The site is virtually uninhabited; consequently, there are no resettlement problems. The nearest town is about 4 km distant, outside the track of the prevailing wind from the site. Products from the combustion of natural gas are harmless and burning gas, therefore, poses no hazard. In view of possible future use of fuel oil, if alternative uses for the natural gas are developed, consultants have conducted a study on the effects of stack emission, and on the basis of their recommendations, the stack will be built to a height of 122 m in order to keep the maximum ground level concentration of sulfur dioxide concentrations below the standards prescribed by the US Environmental Protection Agency.

Risks

53. EGAT possesses adequate experience in the construction of thermal power plants and its record in project implementation has been very good. The consultants, BVI, are well known internationally and have had long experience in Thailand. No risks due to typhoon, earthquake or flood are expected. One possible uncertainty would have been the bearing capacity of the soil foundation. However, tests conducted have indicated satisfactory results.

PART V - LEGAL INSTRUMENTS AND AUTHORITY

54. The draft Loan Agreement between the Bank and the Electricity Generating Authority of Thailand, the draft Guarantee Agreement between the Kingdom of Thailand and the Bank, and the report of the Committee provided for in Article III, Section 4(iii) of the Articles of Agreement are being distributed to the Executive Directors separately. In addition to the features of the proposed project which are referred to in the text and listed in Section III of Annex III, another feature of particular interest is that the implementation of a tariff increase to enable EGAT and the electricity sector to earn a rate of return of not less than 7% in FY80 is a condition of loan effectiveness (Section 7.01 of the draft Loan Agreement).

55. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Bank.

PART VI - RECOMMENDATIONS

56. I recommend that the Executive Directors approve the proposed loan.

Robert S. McNamara
President

Attachments

April 12, 1979
Washington, D.C.

TABLE 3A
THAILAND - SOCIAL INDICATORS DATA SHEET

LAND AREA (THOUSAND SQ. KM.)	THAILAND			REFERENCE GROUPS (ADJUSTED AVERAGES) - MOST RECENT ESTIMATE ^{/a}		
	1960 ^{/b}	1970 ^{/b}	MOST RECENT ESTIMATE ^{/b}	SAME	SAME	NEXT HIGHER
				GEOPGRAPHIC REGION ^{/c}	INCOME GROUP ^{/d}	INCOME GROUP ^{/e}
GNP PER CAPITA (USS)	100.0	200.0	410.0	616.0	432.3	867.2
ENERGY CONSUMPTION PER CAPITA (KILOGRAMS OF COAL EQUIVALENT)	64.0	247.0	284.0	522.0	251.7	578.3
POPULATION AND VITAL STATISTICS						
TOTAL POPULATION, MID-YEAR (MILLIONS)	26.6	36.3	44.1			
URBAN POPULATION (PERCENT OF TOTAL)	12.7	15.0	16.8	30.1	24.2	46.2
POPULATION DENSITY PER SQ. KM.	52.0	71.0	86.0	156.8	42.7	50.8
PER SQ. KM. AGRICULTURAL LAND	112.0	152.0	185.0	794.8	95.0	93.3
POPULATION AGE STRUCTURE (PERCENT)						
0-14 YRS.	45.1	44.8	43.7	40.8	44.9	42.9
15-64 YRS.	52.9	52.3	53.2	55.4	52.8	53.5
65 YRS. AND ABOVE	2.6	2.9	3.1	3.2	3.0	3.5
POPULATION GROWTH RATE (PERCENT)						
TOTAL	3.2	3.0	2.9	2.3	2.7	2.5
URBAN	5.1	5.0	4.6	5.1	8.8	4.7
CRUDE BIRTH RATE (PER THOUSAND)	44.9	41.4	34.9	34.6	42.2	37.8
CRUDE DEATH RATE (PER THOUSAND)	13.8	10.7	8.9	8.7	12.4	10.8
GROSS REPRODUCTION RATE	..	3.2	3.1	2.6	3.2	2.5
FAMILY PLANNING ACCEPTORS, ANNUAL (THOUSANDS)	..	405.6	2680.2			
USERS (PERCENT OF MARRIED WOMEN)	..	14.0	37.0	22.1	14.2	20.0
FOOD AND NUTRITION						
INDEX OF FOOD PRODUCTION PER CAPITA (1970=100)	68.0	100.0	104.7	106.8	104.3	107.3
PER CAPITA SUPPLY OF CALORIES (PERCENT OF REQUIREMENTS)	96.0	103.0	107.0	108.7	99.5	105.3
PROTEINS (GRAMS PER DAY) OF WHICH ANIMAL AND PULSE	47.0	52.2	50.0	57.7	56.8	63.0
CHILD (AGES 1-4) MORTALITY RATE	10.4	5.3	..	4.0	7.5	8.0
HEALTH						
LIFE EXPECTANCY AT BIRTH (YEARS)	49.0	55.5	58.0	59.0	53.3	57.2
INFANT MORTALITY RATE (PER THOUSAND)	..	80.0	56.3	44.0	82.5	53.9
ACCESS TO SAFE WATER (PERCENT OF POPULATION)						
TOTAL	..	17.0	25.0	21.9	31.1	56.8
URBAN	..	60.0	69.0	58.3	68.5	79.0
RURAL	..	10.0	16.0	9.8	18.2	31.8
ACCESS TO EXCRETA DISPOSAL (PERCENT OF POPULATION)						
TOTAL	..	17.0	40.0	28.6	37.5	30.9
URBAN	..	65.0	58.0	66.6	69.5	45.4
RURAL	..	8.0	36.0	14.8	25.4	16.1
POPULATION PER PHYSICIAN	7800.0	7070.0	6750.0	4103.1	9359.2	2706.8
POPULATION PER NURSING PERSON	..	6650.0	4330.0	1520.2	2762.5	1462.0
POPULATION PER HOSPITAL BED						
TOTAL	1340.0 ^{/f}	890.0	770.0	657.1	786.5	493.9
URBAN	..	280.0	290.0	145.5	278.4	229.6
RURAL	..	1380.0	1140.0	1011.8	1358.4	2947.9
ADMISSIONS PER HOSPITAL BED	..	31.0	19.0	19.0	19.2	22.1
HOUSING						
AVERAGE SIZE OF HOUSEHOLD						
TOTAL	5.5 ^{/f}	5.8	5.5	5.2	..	5.2
URBAN	5.3 ^{/f}	5.9	5.5	5.2	..	5.0
RURAL	5.6 ^{/f}	5.8	5.5	5.4	..	5.4
AVERAGE NUMBER OF PERSONS PER ROOM						
TOTAL	..	..	..	..	..	2.0
URBAN	..	..	..	..	2.3	1.5
RURAL	..	..	..	..	..	2.7
ACCESS TO ELECTRICITY (PERCENT OF DWELLINGS)						
TOTAL	..	..	24.6	39.1	28.3	64.1
URBAN	..	63.0 ^{/g}	..	..	..	67.8
RURAL	..	13.0	..	..	10.3	34.1

TABLE 3A
THAILAND - SOCIAL INDICATORS DATA SHEET

	REFERENCE GROUPS (ADJUSTED AVERAGES)						
	THAILAND			/a			
	1960 /b		1970 /b		MOST RECENT ESTIMATE /b	SAME REGION /c	SAME INCOME GROUP /d	NEXT HIGHER INCOME GROUP /e
EDUCATION							
ADJUSTED ENROLLMENT RATIOS							
PRIMARY: TOTAL	136.0	81.0	78.0		95.6	75.8	99.8
FEMALE	128.0	77.0	75.0		93.7	67.9	93.3
SECONDARY: TOTAL	8.0	17.0	25.0		43.3	17.7	33.8
FEMALE	6.0	14.0	21.0		38.6	12.9	29.8
VOCATIONAL (PERCENT OF SECONDARY)	19.0	24.0	13.0		11.3	7.4	12.8
PUPIL-TEACHER RATIO							
PRIMARY	36.0	35.0	30.0		30.0	34.3	34.9
SECONDARY	20.0	16.0	21.0		25.4	23.5	22.2
ADULT LITERACY RATE (PERCENT)	68.0	79.0	82.0		84.0	63.7	71.8
CONSUMPTION							
PASSENGER CARS PER THOUSAND POPULATION	2.0	5.0	7.0		9.3	7.2	12.4
RADIO RECEIVERS PER THOUSAND POPULATION	6.0	78.0	135.0		97.6	71.1	104.5
TV RECEIVERS PER THOUSAND POPULATION	2.3	7.0	17.0		21.8	14.1	28.1
NEWSPAPER ("DAILY GENERAL INTEREST") CIRCULATION PER THOUSAND POPULATION	11.0	24.0	..		25.9	16.3	45.2
CINEMA ANNUAL ATTENDANCE PER CAPITA	..	..	1.7		4.6	1.6	4.6
EMPLOYMENT							
TOTAL LABOR FORCE (THOUSANDS)	12757.0	16163.0	18514.0		..	..	..
FEMALE (PERCENT)	48.3	47.3	46.9		33.2	28.0	25.7
AGRICULTURE (PERCENT)	82.0	78.0	76.0		48.4	54.1	46.2
INDUSTRY (PERCENT)	5.7	7.4	..		..	..	..
PARTICIPATION RATE (PERCENT)							
TOTAL	51.3	46.6	45.6		38.9	37.8	33.8
MALE	52.7	49.3	48.6		48.6	50.3	48.1
FEMALE	49.8	43.9	42.6		28.4	20.9	17.3
ECONOMIC DEPENDENCY RATIO	1.0	1.1	1.2		1.2	1.3	1.4
INCOME DISTRIBUTION							
PERCENT OF PRIVATE INCOME RECEIVED BY							
HIGHEST 5 PERCENT OF HOUSEHOLDS	21.8 /h	23.8 /i	14.0		17.3	19.5	23.6
HIGHEST 20 PERCENT OF HOUSEHOLDS	50.9 /h	49.7 /i	42.2		45.6	48.9	52.3
LOWEST 20 PERCENT OF HOUSEHOLDS	6.2 /h	6.1 /i	7.6		6.5	5.9	4.3
LOWEST 40 PERCENT OF HOUSEHOLDS	14.9 /h	15.9 /i	19.1		17.3	15.7	13.1
POVERTY TARGET GROUPS							
ESTIMATED ABSOLUTE POVERTY INCOME LEVEL (US\$ PER CAPITA)							
URBAN	..	..	120.0		140.8	155.9	191.9
RURAL	..	..	90.0		112.8	97.9	193.1
ESTIMATED RELATIVE POVERTY INCOME LEVEL (US\$ PER CAPITA)							
URBAN	..	..	..		..	143.7	319.8
RURAL	..	..	93.0		76.8	87.3	197.7
ESTIMATED POPULATION BELOW POVERTY INCOME LEVEL (PERCENT)							
URBAN	..	..	11.0		27.7	22.9	19.8
RURAL	..	..	28.0		40.4	36.7	35.1

.. Not available
.. Not applicable.

NOTES

/a The adjusted group averages for each indicator are population-weighted geometric means, excluding the extreme values of the indicator and the most populated country in each group. Coverage of countries among the indicators depends on availability of data and is not uniform.

/b Unless otherwise noted, data for 1960 refer to any year between 1959 and 1961; for 1970, between 1969 and 1971; and for Most Recent Estimate, between 1973 and 1977.

/c East Asia & Pacific; /d Lower Middle Income (\$281-550 per capita 1976); /e Intermediate Middle Income (\$551-1135) per capita, 1976); /f 1962; /g Percent of population in Bangkok metropolitan area; /h 1962-63, rural only; /i Rural only.

DEFINITIONS OF SOCIAL INDICATORS

Annex I
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Note: The adjusted group averages for each indicator are population-weighted geometric means, excluding the extreme values of the indicator and the most populated country in each group. Coverage of countries among the indicators depends on availability of data and is not uniform. Due to lack of data, group averages for Capital Surplus Oil Exporters and indicators of access to water and excreta disposal, housing, income distribution and poverty are simple population-weighted geometric means without the exclusion of extreme values.

LAND AREA (thousand sq. km)

total - Total surface area comprising land area and inland waters.

Agricultural - Most recent estimate of agricultural area used temporarily or permanently for crops, pastures, market and kitchen gardens or to lie fallow.

GNP PER CAPITA (US\$) - GNP per capita estimates at current market prices, calculated by same conversion method as World Bank Atlas (1975-77 basis); 1960, 1970, and 1977 data.

ENERGY CONSUMPTION PER CAPITA - Annual consumption of commercial energy (coal and lignite, petroleum, natural gas and hydro-, nuclear and geothermal electricity) in kilograms of coal equivalent per capita.

POPULATION AND VITAL STATISTICS

Total population, mid-year (millions) - As of July 1; if not available, average of two end-year estimates; 1960, 1970, and 1977 data.

Urban population (percent of total) - Ratio of urban to total population; different definitions of urban areas may affect comparability of data among countries.

Population density

Per sq. km. - Mid-year population per square kilometer (100 hectares) of total area.

Per sq. km. agriculture land - Computed as above for agricultural land only.

Population age structure (percent) - Children (0-14 years), working-age (15-64 years), and retired (65 years and over) as percentages of mid-year population.

Population growth rate (percent), total, and urban - Compound annual growth rates of total and urban mid-year populations for 1950-60, 1960-70, and 1970-75.

Crude birth rate (per thousand) - Annual live births per thousand of mid-year population; ten-year arithmetic averages ending in 1960 and 1970 and five-year average ending in 1975 for most recent estimate.

Crude death rate (per thousand) - Annual deaths per thousand of mid-year population; ten-year arithmetic averages ending in 1960 and 1970 and five-year average ending in 1975 for most recent estimate.

Gross reproduction rate - Average number of daughters a woman will bear in her normal reproductive period if she experiences present age-specific fertility rates; usually five-year averages ending in 1960, 1970, and 1975.

Family planning - acceptors, annual (thousands) - Annual number of acceptors of birth-control devices under auspices of national family planning program.

Family planning - users (percent of married women) - Percentage of married women of child-bearing age (15-44 years) who use birth-control devices to all married women in same age group.

FOOD AND NUTRITION

Index of food production per capita (1970=100) - Index number of per capita annual production of all food commodities.

Per capita supply of calories (percent of requirements) - Computed from energy equivalent of net food supplies available in country per capita per day. Available supplies comprise domestic production, imports less exports, and changes in stock. Net supplies exclude animal feed, seeds, quantities used in food processing, and losses in distribution. Requirements were estimated by FAO based on physiological needs for normal activity and health considering environmental temperature, body weights, age and sex distributions of population, and allowing 10 percent for waste at household level.

Per capita supply of protein (grams per day) - Protein content of per capita net supply of food per day. Net supply of food is defined as above. Requirements for all countries established by USDA provide for a minimum allowance of 60 grams of total protein per day and 20 grams of animal and pulse protein, of which 10 grams should be animal protein. These standards are lower than those of 75 grams of total protein and 23 grams of animal protein as an average for the world, proposed by FAO in the Third World Food Survey.

Per capita protein supply from animal and pulse - Protein supply of food derived from animals and pulses in grams per day.

Child (ages 1-4) mortality rate (per thousand) - Annual deaths per thousand in age group 1-4 years, to children in this age group.

HEALTH

Life expectancy at birth (years) - Average number of years of life remaining at birth; usually five-year averages ending in 1960, 1970, and 1975.

Infant mortality rate (per thousand) - Annual deaths of infants under one year of age per thousand live births.

Access to safe water (percent of population) - total, urban, and rural - Number of people (total, urban, and rural) with reasonable access to safe water supply (includes treated surface waters or untreated but uncontaminated water such as that from protected boreholes, springs, and sanitary wells) as percentages of their respective populations. In an urban area a public fountain or standpost located not more than 200 meters from a house may be considered as being within reasonable access of that house. In rural areas reasonable access would imply that the housewife or members of the household do not have to spend a disproportionate part of the day in fetching the family's water needs.

Access to excreta disposal (percent of population) - total, urban, and rural - Number of people (total, urban, and rural) served by excreta disposal as percentages of their respective populations. Excreta disposal may include the collection and disposal, with or without treatment, of human excreta and waste-water by water-borne systems or the use of pit privies and similar installations.

Population per physician - Population divided by number of practicing physicians qualified from a medical school at university level.

Population per nursing person - Population divided by number of practicing male and female graduate nurses, practical nurses, and assistant nurses.

Population per hospital bed - total, urban, and rural - Population (total, urban, and rural) divided by their respective number of hospital beds available in public and private general and specialized hospital and rehabilitation centers. Hospitals are establishments permanently staffed by at least one physician. Establishments providing principally custodial care are not included. Rural hospitals, however, include health and medical centers not permanently staffed by a physician (but by a medical assistant, nurse, midwife, etc.) which offer in-patient accommodation and provide a limited range of medical facilities.

Admissions per hospital bed - Total number of admissions to or discharges from hospitals divided by the number of beds.

HOUSING

Average size of household (persons per household) - total, urban, and rural - A household consists of a group of individuals who share living quarters and their main meals. A boarder or lodger may or may not be included in the household for statistical purposes. Statistical definitions of household vary.

Average number of persons per room - total, urban, and rural - Average number of persons per room in all, urban, and rural occupied conventional dwellings, respectively. Dwellings exclude non-permanent structures and unoccupied parts.

Access to electricity (percent of dwellings) - total, urban, and rural - Conventional dwellings with electricity in living quarters as percentage of total, urban, and rural dwellings respectively.

EDUCATION

Adjusted enrollment ratios

Primary school - total, and female - Total and female enrollment of all ages at the primary level as percentages of respectively primary school-age populations; normally includes children aged 6-11 years but adjusted for different lengths of primary education; for countries with universal education enrollment may exceed 100 percent since some pupils are below or above the official school age.

Secondary school - total, and female - Computed as above; secondary education requires at least four years of approved primary instruction; provides general vocational, or teacher training instructions for pupils usually of 12 to 17 years of age; correspondence courses are generally excluded.

Vocational enrollment (percent of secondary) - Vocational institutions include technical, industrial, or other programs which operate independently or as departments of secondary institutions.

Pupil-teacher ratio - primary, and secondary - Total students enrolled in primary and secondary levels divided by numbers of teachers in the corresponding levels.

Adult literacy rate (percent) - Literate adults (able to read and write) as a percentage of total adult population aged 15 years and over.

CONSUMPTION

Passenger cars (per thousand population) - Passenger cars comprise motor cars seating less than eight persons; excludes ambulances, hearses and military vehicles.

Radio receivers (per thousand population) - All types of receivers for radio broadcasts to general public per thousand of population; excludes unlicensed receivers in countries and in years when registration of radio sets was in effect; data for recent years may not be comparable since most countries abolished licensing.

TV receivers (per thousand population) - TV receivers for broadcast to general public per thousand population; excludes unlicensed TV receivers in countries and in years when registration of TV sets was in effect.

Newspaper circulation (per thousand population) - Shows the average circulation of "daily general interest newspaper", defined as a periodical publication devoted primarily to recording general news. It is considered to be "daily" if it appears at least four times a week.

Cinema annual attendance per capita per year - Based on the number of tickets sold during the year, including admissions to drive-in cinemas and mobile units.

EMPLOYMENT

Total labor force (thousands) - Economically active persons, including armed forces and unemployed but excluding housewives, students, etc. Definitions in various countries are not comparable.

Female (percent) - Female labor force as percentage of total labor force.

Agriculture (percent) - Labor force in farming, forestry, hunting and fishing as percentage of total labor force.

Industry (percent) - Labor force in mining, construction, manufacturing and electricity, water and gas as percentage of total labor force.

Participation rate (percent) - total, male, and female - Total, male, and female labor force as percentages of their respective populations.

These are ILO's adjusted participation rates reflecting age-sex structure of the population and long time trend.

Economic dependency ratio - Ratio of population under 15 and 65 and over to the labor force in age group of 15-64 years.

INCOME DISTRIBUTION

Percentage of private income (both in cash and kind) received by richest 5 percent, richest 20 percent, poorest 20 percent, and poorest 40 percent of households.

POVERTY TARGET GROUPS

Estimated absolute poverty income level (US\$ per capita) - urban and rural - Absolute poverty income level is that income level below which a minimal nutritionally adequate diet plus essential non-food requirements is not affordable.

Estimated relative poverty income level (US\$ per capita) - urban and rural - Relative poverty income level is that income level less than one-third per capita personal income of the country.

Estimated population below poverty income level (percent) - urban and rural - Percent of population (urban and rural) who are either "absolute poor" or "relative poor" whichever is greater.

ECONOMIC DEVELOPMENT DATA SHEET

	<u>Actual</u>				1978 /a	<u>Projected</u>			<u>Growth rates (%)</u>			1975 share of GDP (%)	
	1965	1970	1976	1977		1979	1980	1985	1965-77	1977-79	1979-85	1985-90	
A. National Accounts (Million US\$ at 1975 prices)													
1. Gross domestic product	6,843.8	10,323.0	15,712.6	16,685.5	18,138.9	19,395.2	20,692.9	29,256.7	7.7	7.8	7.1	7.0	100.0
2. Gains from terms of trade	-44.3	42.8	-507.7	-978.1	-704.3	-572.9	-533.8	-518.2					-3.2
3. Gross domestic income	6,799.5	10,365.8	15,204.9	15,707.4	17,434.6	18,822.3	20,159.1	28,738.5	7.2	9.5	7.3	7.0	96.8
4. Imports	1,659.9	2,989.4	3,699.1	4,460.8	4,896.8	5,082.8	5,440.4	7,507.8	8.6	6.7	6.7	6.8	23.5
5. Exports - volume	-1,593.2	-2,274.8	-3,808.4	-4,506.9	-4,641.3	-4,481.1	-4,862.1	-7,448.5	9.1	-0.3	8.8	8.7	24.2
6. Exports - adjusted for TOT	-1,548.9	-2,317.5	-3,300.7	-3,528.8	-3,937.0	-3,908.1	-4,328.3	-6,930.3	7.1	5.2	10.0	8.8	21.0
7. Resource gap - adjusted for TOT	111.0	671.9	398.4	932.1	959.8	1,174.7	1,112.1	577.5					2.5
8. Total consumption	5,302.3	8,007.0	11,709.5	12,370.3	13,579.1	14,809.7	15,740.4	21,253.9	7.3	9.4	6.2	6.1	74.5
9. Investment	1,608.2	3,030.6	3,893.8	4,269.2	4,815.3	5,187.2	5,530.8	8,062.0	8.5	10.2	7.6	7.5	24.8
10. National savings	1,576.4	2,500.8	3,477.7	3,312.5	3,794.2	3,970.7	4,300.3	7,037.7	6.4	9.5	10.0	9.6	22.1
11. Domestic savings adjusted for TOT	1,497.2	2,358.7	3,495.5	3,337.1	3,855.5	4,012.6	4,418.7	7,484.6	6.9	9.7	10.9	9.3	22.2
12. GDP at current US\$	4,052.9	6,543.3	16,284.3	18,156.9	21,881.8	24,093.0	27,401.6	55,355.9	13.3	15.2	14.9	13.4	
B. Sector Output (Share of GDP)													
	4,052.9	6,543.3	16,284.3	18,156.9	21,881.8	24,093.0	27,401.6	55,355.9	13.3	15.2	14.9	13.4	
1. Agriculture	0.391	0.346	0.301	0.281	0.271	0.264	0.258	0.229					
2. Industry	0.208	0.227	0.269	0.248	0.299	0.304	0.309	0.335					
3. Services	0.401	0.427	0.430	0.431	0.430	0.432	0.432	0.437					
C. Prices (1975 = 100)													
1. Export price index	46.43	48.04	91.65	89.5	103.13	113.40	123.48	172.32	5.6	12.7	7.2	5.1	
2. Import price index	47.76	47.15	105.75	114.12	121.58	130.03	138.71	185.20	7.5	6.7	6.1	5.0	
3. Terms of trade index	97.22	101.88	86.67	78.0	84.83	87.21	89.02	93.04	-1.8	5.5	1.1	0.1	
4. GDP deflator (US\$)	59.22	63.39	103.64	108.12	116.07	124.22	132.42	189.21	5.2	6.8	7.3	6.0	
5. Annual average exchange rate	20.80	20.80	20.40	20.0									
D. Selected Indicators													
	1965-77	1977-79	1979-85	1985-90									
1. ICOR	3.56	3.32	3.80	3.97									
2. Import elasticity	1.09	0.87	0.95	0.97									
3. Average national savings rate	0.24	0.20	0.23	0.26									
4. Marginal national savings rate	0.18	0.25	0.32	0.35									
5. Imports/GDP	0.27	0.26	0.26	0.26									
6. Investment/GDP	0.27	0.26	0.27	0.28									
7. Resource gap/GDP	0.04	0.06	0.04	0.01									
E. Output, Labor Force and Productivity in 1975													
			Value added /b				Labor force /c						
			US\$ million	%			Million	%					
1. Agriculture			4,559	31.3			13.4	75.7					
2. Industry			4,442	30.4			1.4	7.9					
3. Services			5,588	38.3			2.9	16.4					
Total/average			14,589	100.0			17.7	100.0					
							US\$						
							% of average						
F. Public Finance (% of GDP) (Central Government)													
1. Current revenue	13.5	13.8	14.5	13.6	13.4	14.6							
2. Tax revenue	12.3	12.5	13.5	12.0	12.1	13.3							
3. Current expenditures	10.5	12.6	10.7	12.1	13.0	12.5							
4. Budgetary savings	2.9	1.2	3.7	1.5	0.4	1.1							
5. Total public investment	6.5	7.7	3.8	4.9	5.3	5.4							
G. Fuel Imports (Current US\$ millions) (% of total imports incl. NFS)													
	65.0	112.0	628.6	711.7	833.7	923.0							
	8.3	8.0	18.4	20.0	21.1	19.7							

/a Preliminary.

/b At current market prices.

/c Estimate.

BALANCE OF PAYMENTS, EXTERNAL ASSISTANCE, DEBT AND CREDITWORTHINESS
(Current US\$ millions)

	1973	1974	Actual	1975	1976	1977	1978 <i>1a</i>	1979	1980	Projected	1985	1990
Summary of Balance of Payments												
Exports (including NPS)	2,084.7	3,025.4	2,796.5	3,490.6	4,029.3	4,786.5	5,081.7	6,006.0	12,835.0	24,967.7		
Imports (including NPS)	2,258.3	3,353.2	3,487.8	3,911.9	5,033.8	5,952.5	6,609.1	7,546.7	13,906.5	26,650.4		
Resource balance	-173.6	-327.8	-659.3	-421.3	-1,064.4	-1,168.9	-1,322.4	-1,542.7	-1,068.5	317.3		
Net factor service income	-20.8	-0.7	5.4	-41.6	-72.5	-142.2	-134.3	-213.4	-925.0	-1,412.5		
Net interest payments	7.0	36.0	69.0	26.1	-44.3	-70.8	-81.7	-117.9	-766.9	-1,170.7		
Of which on public M & LT loans	-25.1	-28.1	-34.5	-44.3	-64.0	-66.1	-68.5	-72.4	-133.1	-1,475.5		
Direct investment income	-28.0	-37.0	-64.0	-66.1	-68.5	-72.4	-75.5	-80.0	-192.5	-290.0		
Workers remittances (net)	0.0	0.0	0.0	0.0	0.0	22.9	46.5	34.4	48.2			
Current transfers (net)	145.5	241.0	80.1	22.8	39.3	68.7	80.0	80.0	100.0	110.0		
Balance on current account	-48.9	-87.5	-305.3	-460.1	-1,097.6	-1,241.4	-1,581.7	-1,75.1	-1,894.5	-985.1		
Private direct investment	67.0	135.6	85.5	79.1	106.1	42.5	140.0	116.8	276.1	487.0		
Grants & grant-like flows	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Public M & LT loans	69.0	95.9	149.2	241.7	362.7	711.5	816.6	1,010.8	1,980.4	2,697.6		
Disbursements	-28.3	-32.3	-38.7	-43.4	-87.8	-104.2	-164.1	-222.1	-260.1	-620.1		
Amortization	39.2	63.5	110.5	198.3	274.8	607.3	652.5	788.7	1,340.3	1,604.9		
Net disbursements	-44.2	129.3	64.0	33.8	47.6	31.1	469.3	761.3	542.4	705.6		
Other M & LT loans	178.9	326.2	199.6	279.7	311.8	504.4	672.1	1,021.8	1,397.0	462.2		
Disbursement ^{1a}	-223.1	-197.2	-135.1	-245.9	-267.8	-473.3	-202.8	-266.5	-850.6	-1,167.8		
Amortization	-44.2	129.3	64.0	33.8	47.6	31.1	469.3	761.3	542.4	705.6		
Net disbursements	-44.2	129.3	64.0	33.8	47.6	31.1	469.3	761.3	542.4	705.6		
Use of IIMP resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Short-term capital transactions	42.0	55.5	27.5	136.2	256.2	75.0	120.0	121.4	180.1	252.6		
Capital transactions NEI	57.9	96.3	77.2	-111.4	136.2	-96.7	0.0	3.0	0.0	3.0		
Change in reserve (- = increase)	-113.0	-392.7	40.1	-73.0	275.0	446.5	100.0	-101.0	-414.8	-654.5		
Net foreign exchange reserves /b	1,306.0	1,599.0	1,06.0	1,444.0	1,135.8	680.0	945.0	1,044.0	2,634.5	5,320.9		
Grant and Loan Commitments												
Official grants	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total public M & LT loans	87.1	436.5	214.4	172.3	633.0	1,031.0	1,319.0	1,620.1	2,697.6	4,622.2		
IIMD	15.0	142.0	95.0	158.0	137.8	211.0	221.0	221.0	221.0	221.0		
IDA	23.0	77.0	62.7	92.1	44.0	119.0	119.0	119.0	119.0	119.0		
Other multilateral	5.4	77.2	62.7	22.2	106.4	264.0	0.0	0.0	0.0	0.0		
Governments	24.0	200.5	47.7	22.2	106.4	264.0	0.0	0.0	0.0	0.0		
of which centrally planned economies /c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Suppliers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Financial institutions	15.7	9.7	18.0	100.0	341.9	325.0	531.8	531.8	531.8	531.8		
Other M & LT loans (where available)	178.9	415.9	32.5	360.2	348.9							
Memorandum Items												
Grant element of total commitments (%)	44,600	31,400	1t. 700	11,500	10,200	14,869						
Average interest (%)	0.044	0.057	0.076	0.081	0.080	0.077						
Average maturity (years)	29.100	23,800	23,500	18,500	14,000	12,832						
Medium- and Long-Term Debt (Disbursed only)												
Total debt outstanding (1000 end of period)	903.9	1,160.7	1,354.6	1,606.8	1,931.9	2,217.4						
Including undisbursed	1,182.4	1,177.0	2,009.5	2,404.0	3,185.9	4,056.7						
Public debt service	-56.9	-60.4	-73.2	-87.7	-122.3	-206.4						
Interest	-25.1	-28.1	-34.5	-44.3	-64.5	-100.2						
Other M & LT debt service	-255.8	-256.8	-314.5	-285.9	-338.3	-547.8						
Total debt service	-310.7	-327.2	-387.7	-333.6	-490.6	-752.2						
Debt burden (%)	5.7	5.5	5.4	5.4	5.7	5.2						
Debt service ratio	14.9	10.8	13.9	9.8	12.2	15.7						
Debt service ratio /d	16.2	12.0	16.2	11.5	13.9	17.2						
Debt service/GDP	2.9	2.5	2.7	2.0	2.7	3.4						
Public debt service/GDP	4.3	2.5	3.5	3.7	4.4	5.5						
Terms (%)	12.4	11.8	11.9	10.7	12.0	27.7						
Interest on total DOD/total DOD												
Total debt service/total DOD												
Dependency Ratios for M & LT Debt (Including NPS)												
Gross disbursements/imports (including NPS)	11.0	12.6	12.9	13.3	10.9	21.0						
Net transfer/imports (including NPS)	-2.3	2.8	1.8	2.0	2.0	10.2						
Net transfer/exports disbursements	-25.3	22.5	13.6	36.0	18.4	48.7						
Exposure (%)												
IIMD	14.8	8.0	9.1	8.3	12.0	9.3						
Bank Group disbursements/gross total disbursements	14.8	8.3	9.7	9.5	13.6	9.9						
IIMD DOD/total DOD	24.2	20.8	20.0	18.6	17.9	20.2						
Bank Group DOD/total DOD	26.2	20.9	20.4	19.2	18.9	21.3						
IIMD debt service/total debt service	8.0	8.5	8.3	10.9	9.8	7.8						
Bank Group debt service/total debt service	8.0	8.5	8.3	10.9	9.8	7.8						
External debt (disbursed only)												
(Current US\$ millions)												
IIMD	345.7	32.9	34.7	36.1	36.1	36.1						
Bank Group	365.2	34.7	37.5	36.1	37.9.7	37.9.7						
Other multilateral												
Governments												
Of which centrally planned economies /c	0.0	0.0	1.3	1.3	1.3	1.3						
Suppliers												
Financial institutions												
Bonds												
Public debt net												
Total public M & LT debt	1,052.1	100.0	879.8	83.6	215.4	215.4						
Other M & LT debt												
Total M & LT debt (including undisbursed)	3,145.9	299.0										

^{1a} Preliminary.^{1b} Net foreign assets: US\$ equivalent of Line 31.^{1c} Includes CMEA countries, Peoples Republic of China, North Korea, North Viet Nam.^{1d} Including net direct investment income.

THE STATUS OF BANK GROUP OPERATIONS IN THAILAND

A. STATEMENT OF BANK LOANS AND IDA CREDITS
(As of February 28, 1979)

Loan or Credit Number	Year	Borrower	Purpose	Amounts (\$ million)		
				Bank	IDA	Less Cancellations Undisbursed
Twenty-four loans and one credit fully disbursed				388.9	5.5	-
822	1972	RTG	Education	15.4	-	5.9
864	1972	TOT	Telecomm	37.0	-	3.2
870	1972	RTG	Highways	28.6	-	0.9
369	1973	RTG	Education	-	19.5	5.3
461	1974	RTG	Irrigation	-	7.0	1.2
977	1974	EGAT	Power	75.0	-	17.9
992	1974	IFCT	Industry	12.0	-	0.7
1021	1974	MWWA	Water	55.0	-	12.6
1149	1975	RTG	Irrigation	95.0	-	76.1
1198	1976	RTG	Rural Dev.	21.0	(TW)	11.6
1199	1976	RTG	Livestock	5.0	(TW)	3.5
1243	1976	RTG	Rubber	50.0	-	41.4
1253	1976	TOT	Telecomm	26.0	-	9.8
1271	1976	RTG	Education	31.0	-	25.2
1327	1976	IFCT	Industry	25.0	-	20.1
1393	1977	RTG	Agriculture	28.0	-	24.7
1468	1977	RTG	Irrigation	55.0	-	46.8
1485	1977	EGAT	Power	50.0	-	41.8
1492	1977	IEAT	Industry	4.8	-	4.5
767	1978	RTG	Population	-	33.1/a	33.1
1519	1978	RTG	Highways	110.0	-	100.8
1527	1978	PEA	Power	25.0	-	25.0
1556	1978	RTG	Housing	8.6	-	8.5
S-10	1978	NGOT	Energy	4.9	-	3.8
1620	1978	TOT	Telecom	90.0	-	90.0
1630	1978	RTG	Irrigation /b	17.5	-	17.5
1638	1979	RTG	Urban /b	16.0	-	16.0
Total				<u>1,274.7</u>	<u>65.1</u>	<u>647.9</u>
of which has been repaid				<u>189.6</u>	<u>-</u>	
Total now outstanding				<u>1,085.1</u>	<u>65.1</u>	
Amount sold /c			68.6			
of which has been repaid			<u>37.1</u>	<u>31.5</u>		
Total now held by Bank and IDA				<u>1,053.6</u>	<u>65.1</u>	
Total undisbursed				<u>608.3</u>	<u>39.6</u>	

/a Of which \$3.1 is Norway grant participation.

/b Not yet effective.

/c Of which \$43.3 million sold to the Bank of Thailand.

B. STATEMENT OF IFC INVESTMENTS
(As of February 28, 1979)

<u>Year</u>	<u>Company</u>	<u>Type of Business</u>	<u>Amounts (\$ million)</u>		
			<u>Loan</u>	<u>Equity</u>	<u>Total</u>
1959	Concrete Products and Aggregate Co. Ltd.	Cement and Construction Materials	0.30	-	0.30
1964/	Industrial	Development	-	0.38	0.38
1970	Finance Corporation of Thailand (IFCT)	Finance Company			
1969/	Siam Cement Group	Cement and Construction Materials	28.33	3.75	32.08
1975		Money and Capital Market	-	0.30	0.30
1977	Mutual Fund Company Limited	Food and Food Processing	2.50	0.20	2.70
1977	United Sugar Terminal Limited	Small and Medium Scale Industries	2.00	-	2.00
1978	Siam Commercial Bank	Cement and Construction Materials	-	0.09	0.09
1978	Siam Cement Group	Glass Containers	4.85	0.25	5.10
1979	Bangkok Glass Industry Company, Limited	Cement and Construction Materials	36.00	4.00	40.00
1979	Siam City Cement Company, Limited	Capital Market	-	0.15	0.15
	Total gross commitments		<u>73.98</u>	<u>9.12</u>	<u>83.10</u>
	Less cancellations, terminations, repayments and sales		<u>48.51</u>	<u>2.56</u>	<u>51.07</u>
	Net held by the Corporation		<u>25.47</u>	<u>6.56</u>	<u>32.03</u>
	Total undisbursed		<u>42.85</u>	<u>0.25</u>	<u>43.10</u>

C. STATUS OF PROJECTS IN EXECUTION /1
(As of February 28, 1979)

Loan No. 822 Second Education Project (Kasetsart University); \$15.4 Million
Loan of May 24, 1972; Effective Date: August 22, 1972;
Original Closing Date: June 30, 1978; Current Closing Date:
July 31, 1980

Although the technical assistance and educational aspects of the project are largely on schedule, civil works are about three years behind schedule with consequent delays in furniture and equipment procurement. The delays in civil works result from delays in contracting architectural consultants, completing tender documents, and awarding contracts. The specialist services program under the project is nearly completed. Out of 26 experts, 21 have completed their assignment, two are in post and three are being recruited. Recommendations of experts for improvement of teaching, research and extension activities are considered worthwhile and have been implemented by the university staff. All the fellowships have been awarded; 94 recipients have completed their training. Total project cost will exceed appraisal estimates by about 35%.

Credit No. 369 Third Education Project; \$19.5 Million Credit of April 11,
1973; Effective Date: August 8, 1973; Original Closing Date:
June 30, 1978; Current Closing Date: June 30, 1979

Project implementation is about 20 months behind schedule partly due to cumbersome review of procurement and shortage of budget funds. However, substantial progress has been made during the last three years. Contracting has reached 98% of civil works and 77% of equipment. Almost 75% of the construction at project institutions has been completed. All project schools have started operation. The National Curriculum Development Center constructed and equipped under the project is playing a key role in the development of new curricula at primary and secondary levels as part of a comprehensive educational reform program. An in-depth evaluation of rural secondary schools is being carried out, but preliminary indications are that the new curriculum for diversified secondary education is working well in them. The expert services program is virtually completed and ninety-five percent of fellowship funds have been committed. The component of the project with greatest problems is that involving the construction and equipping of ten teacher training colleges.

/1 These notes are designed to inform the Executive Directors regarding the progress of projects in execution, and in particular to report any problems which are being encountered, and the action being taken to remedy them. They should be read in this sense, and with the understanding that they do not purport to present a balanced evaluation of strengths and weaknesses in project execution.

Physical execution of this component is slow and the status of the colleges is in a state of flux, as teacher training is being upgraded from secondary to postsecondary level. The Government is likely to submit to IDA a request for a postponement of the Closing Date by about nine months.

Loan No. 1271 Fourth Education Project; \$31 Million Loan of September 13, 1976; Effective Date: February 9, 1977; Closing Date: June 30, 1982

Progress in project implementation follows the appraisal estimate with minor delays (3-6 months), mainly related to the adult education system (AES) component. Of the civil works, which are being carried out in three phases; the first phase is almost completed, the second is under construction and the third is still to be awarded. Equipment contracts have been awarded as follows: 70% for diversified secondary schools and 25% for the AES. Construction at four secondary schools has been completed. Technical assistance contracts have been signed for both project components. Out of 100 DSS principals and assistant principals, 52 have completed an overseas training program on education and 24 are being trained. Out of 46 fellowships for AES, 11 have been concluded and 13 are ongoing.

Loan No. 864 First Telecommunications Project; \$37 Million Loan of December 5, 1972; Effective Date: March 1, 1973; Original Closing Date: December 31, 1977; Current Closing Date: December 31, 1979

The project is generally maintaining the revised time schedule established in 1975, following initial delays. The Bank loan is fully committed and \$33.4 million (90%) had been disbursed up to February 28, 1979. Over 90% of the local telephone network expansion has been completed; the balance is expected to be completed by June 1979. After a year's delay in procurement under a bilateral loan, the installation of the long distance transmission equipment is now progressing satisfactorily. The project is expected to be completed by the end of September 1979, two years and nine months behind schedule.

Loan No. 1253 Second Telecommunications Project; \$26 Million Loan of June 11, 1976; Effective Date: August 25, 1976; Closing Date: December 31, 1980

The project is progressing satisfactorily. Procurement action on all Bank-financed items is complete. The Bank loan is fully committed and \$16.2 million (62%) had been disbursed up to February 28, 1979. Local telephone network expansion is expected to be completed on schedule by mid-1979. After a year's delay in procurement under a bilateral loan, the installation of long distance transmission equipment is progressing satisfactorily. The project is now expected to be completed by the end of September 1980, nine months behind schedule.

Loan No. 1620 Third Telecommunications Project; \$90 Million Loan of October 4, 1978; Effective Date: January 3, 1979; Closing Date: September 30, 1983

Bid documents for procurement of all project items are expected to be issued by mid-1979. Action has been initiated on the following items as required under institutional covenants in the Loan Agreement: (a) maintenance of waiting lists for potential telephone subscribers, (b) better utilization of installed capacity in local telephone networks, and (c) the Economic Study of Telecommunications in Thailand.

Loan No. 870 Fifth Highway Project; \$28.6 Million Loan of December 26, 1972; Effective Date: March 26, 1973; Original Closing Date: December 31, 1977; Current Closing Date: December 31, 1978

The project is almost complete and the loan is expected to be disbursed in full within the next two months.

Loan No. 1519 Sixth Highway (Provincial Roads) Project: \$110 Million Loan of March 23, 1978; Effective Date: June 22, 1978; Closing Date: December 31, 1982

Progress is satisfactory. Procurement of maintenance equipment is under way, and most contracts have been awarded. Construction of project roads is well under way, with most contracts on schedule. Bids for the final group of road contracts are being evaluated and awards are expected to be made during the first quarter of 1979.

Credit No. 461 Northeast Irrigation Improvement Project; \$7 Million Credit of February 19, 1974; Effective Date: October 7, 1974; Closing Date: June 30, 1979

The project will be completed two years behind schedule as a result of initial delays in appointing consultants and in procuring earthmoving equipment. During the 1977/78 working season there was a marked improvement in the pace of construction, especially on the tertiary canals. Work on rehabilitation of main canal systems has been satisfactory and will be completed in 1979. The estimated project cost is \$30.3 million, compared with \$12.5 million at appraisal. In part, the increased cost is due to price inflation being higher than foreseen at appraisal. Also, a large part of the increase is due to a decision to provide new tertiary canals over an area of 34,700 ha rather than the 21,500 ha assumed at appraisal, and the adoption of higher standards for tertiary development than envisioned at appraisal. The higher costs are

compensated for by increases in projected commodity prices and the economic rate of return is now estimated at 24% compared to 22% at appraisal. Progress on the rainfed rice component continues to be satisfactory. The breeding program continues to be the strongest element while the agronomic program remains weak.

Loan No. 1630 Second Northeast Thailand Irrigation Improvement Project:
\$17.5 Million of December 4, 1978; Closing Date:
September 30, 1985

This loan is not yet effective.

Loan No. 1149 Phitsanulok Irrigation Project; \$95 Million Loan of
July 25, 1975; Effective Date: October 31, 1975;
Closing Date: June 30, 1983

Although the start of major construction was delayed by about a year, prospects are good that the project can be completed on schedule in 1984. A contract for the diversion dam was awarded in October 1977 and the first of three contracts for canal construction was signed in April 1978. Most of the equipment for the project is now delivered or on order. The on-farm works are proceeding on schedule, with four pilot projects in operation and construction of the first large block under way. The consulting services for the project were recently reorganized to provide a nucleus of resident staff and a greater level of assistance in project management. Systems for monitoring project benefits and water-associated diseases are being established and the reporting of project progress has improved. The first phase of the Chao Phya Basin Study, also financed from the loan, has been completed and the next phase is continuing. Consultants appointed in August 1978 for the RID Administration and Organization Study will shortly complete their first phase reports.

Loan No. 1468 Second Chao Phya Irrigation Improvement Project;
\$55 Million Loan of September 23, 1977; Effective Date:
December 23, 1977; Closing Date: June 30, 1983

Equipment procurement is progressing satisfactorily. Rehabilitation and on-farm development works on about 5,300 ha were completed in the 1978 construction season. Project preparation for about 40,000 ha in the Stage II area of Maeklong should be completed by January 1979. A project monitoring system is being set up and the Chao Phya Project area is now served by the National Agricultural Extension Project.

Loan No. 1198 Northeast Thailand Rural Development Project; \$21 Million
Loan of February 27, 1976; Effective Date: June 29, 1976;
Closing Date: June 30, 1981

After a delay of one year in appointing consultants good progress is being made on the engineering of the village roads. The first contract for construction of 11^{1/4} km has been completed and work has begun on two contracts for a total of some 250 km. Procurement problems have delayed the water supply components, but most of the drilling equipment has now been delivered, drilling crews have been recruited and are being trained. Progress on rural electrification is excellent and this component will be completed in June 1979. Progress on agricultural extension and land settlements is satisfactory. After a slow start-up, the Upland Crop Improvement Component is progressing satisfactorily. The program management, with the assistance of a recently appointed program advisor, has undertaken a critical review of past work and is gradually introducing an innovative program of research investigations of great problem-solving relevance to upland crop farmers in the Northeast.

Loan No. 1199T Livestock Development Project; \$5.0 Million Loan of February 27, 1976; Effective Date: May 25, 1976; Closing Date: June 30, 1981

The seed production and pasture development programs are progressing reasonably well and the loaned-bull and artificial insemination programs, hitherto hindered by the delay in importation of cattle, are expected to improve with the delivery of 400 imported Brahman cattle. Furthermore, the number of permanent project staff has been increased from the initially approved 121 to 223, and the New Zealand Government has agreed in principle to provide additional technical assistance for the remaining project period. Disbursements are still considerably behind schedule but are expected to increase with improvement in the preparation of procurement documents and the importation of cattle. The Department of Livestock Development has agreed to conduct a livestock sector review to prepare an integrated development plan.

Loan No. 1243 Rubber Replanting Project; \$50 Million Loan of September 13, 1976; Effective Date: January 14, 1977; Closing Date: June 30, 1981

The project is about one year behind schedule as a result of a corresponding delay in loan effectiveness. Otherwise, progress on the project is satisfactory.

Loan No. 1393 National Agricultural Extension Project; \$28 Million Loan of May 17, 1977; Effective Date: September 1, 1977; Closing Date: December 31, 1982

Project implementation in the field is progressing well with almost all staff appointments completed in fifteen provinces. There continues to be encouraging evidence of adoption of new technology by farmers as a result of improved extension services. Procurement is on schedule, but the civil works program is now more than one year late because bids for the revised civil works program were excessively high or unresponsive. Retendering is in progress, using simplified tender procedures agreed to for one Regional Training Center and eight provincial construction packages. Tendering has commenced for the 1979 construction program. Disbursements are also behind schedule because of the delays in the civil works program, but both the civil works program and disbursements are expected to progress as scheduled during 1979. Extension and civil works consultants continue to provide DAE with excellent assistance.

Loan No. 977 Srinagarind (Ban Chao Nen) Hydroelectric Project; \$75 Million Loan of April 15, 1974. Effective Date: June 14, 1974; Closing Date: December 31, 1980

Civil works under the project have been about 85% completed. Construction of the dam embankment was completed on May 14, 1978 and all other works are being carried out satisfactorily. The installation of the turbine generating units is expected to be completed on schedule. Although the reservoir did not reach the level anticipated during the first wet season, 1978 has been a good hydro year and the water situation in the reservoir has improved. Project costs are likely to be about 20% over estimates, due mainly to additional grouting work required beneath the main embankment. Project costs will probably increase further as a result of the recent devaluation of the US dollar against the Japanese yen. The progress on resettlement has been satisfactory, and almost all of the 814 families affected have now been moved into their new homes.

Loan No. 1485 Pattani Hydroelectric Project; \$50 Million Loan of September 23, 1977; Effective Date: December 20, 1977; Closing Date: December 31, 1982

The construction of the main civil works is proceeding satisfactorily. Implementation is about one month behind schedule. The initial delay was caused by slow mobilization of the contractor and poorer than expected rock conditions at the downstream ends of the diversion tunnels. Orders for all major equipment (financed by the Kuwait Fund) have been placed. Construction of the resettlement project is progressing according to schedule. Disbursements are generally in line with appraisal estimates.

Loan No. 1527 The Accelerated Rural Electrification Project; \$25 Million Loan of March 9, 1978; Effective Date: June 7, 1978; Closing Date: June 30, 1983.

The project is in the early stages of implementation. There was an initial delay of about four months in the preparation of bid documents but procurement is now under way and should present no further problems. Field construction crews have been organized and have been working on pole setting and conductor stringing since the middle of 1978, utilizing materials available in stock.

Loan S-10 Natural Gas Development Engineering Project, \$4.9 Million Loan of July 28, 1978; Effective Date: September 25, 1978; Closing Date: June 30, 1980

The engineering work is proceeding on schedule. The follow-up project loan is at the appraisal stage.

Loan No. 1021 Bangkok Water Supply Project; \$55 Million Loan of June 28, 1974; Effective Date: December 2, 1974; Closing date: June 30, 1979

Physical work on the project is proceeding satisfactorily. The quality of construction and the performance of consultants on supervision of construction of the IBRD portion of the project is good. The quality of work on the ADB portion of the project - the transmission and distribution of pipes - has not been satisfactory, but MWWA is taking corrective measures. Because of the initial delays in contract awards, the project is expected to be completed in late 1979, about 20-21 months behind the original schedule. Extension of the June 30, 1979 Closing Date by about 9-12 months will be required for full disbursement of the loan. Due to inadequate tariffs, which were last revised in May 1972, MWWA's financial performance continues to be poor. MWWA's proposals for raising the water tariffs in line with increased operating costs were reviewed recently by the Cabinet which has approved in principle a substantial increase in water tariffs, beginning July 1, 1979 (when some water benefits from the project are expected to materialize). MWWA has also received approval to increase tariffs every two years following the initial increase so as to enable MWWA to achieve its covenanted rate of return of 8%.

Loan No. 1556-TH Bangkok Sites and Services Project; \$8.6 Million Loan of June 15, 1978; Effective Date: September 22, 1978; Closing Date: December 31, 1981

Progress is generally good with only minor delays in implementation. Current cost estimates for civil works are below appraisal estimates. Initial interagency problems in improving water supply and in transfer of project land at King Petch are being resolved. In order to minimize resistance to beneficiary charges, cost recovery in improved slums will be introduced as physical works are completed - starting in early 1980.

Loan No. 1638 Bangkok Traffic Management Project; \$16 Million Loan of January 25, 1979; Closing Date: September 30, 1982

The Loan has not yet been declared effective. However, implementation of the project is generally ahead of schedule. Signal equipment will be installed this spring, some two years earlier than had been expected, as a result of the consulting and procurement work done under contracts for which the Bank provided retroactive financing.

Loan No. 1492 The Minburi (Lat Krabang) Industrial Estate Project; \$4.75 Million Loan of December 5, 1977; Effective Date: March 24, 1978; Closing Date: December 31, 1981

Project implementation is progressing satisfactorily. Construction of on-site infrastructure is proceeding on schedule and land sales are well ahead of the appraisal estimate.

Loan No. 992 Second Industrial Finance Corporation of Thailand (IFCT) Project; \$12.0 Million Loan of June 4, 1974; Effective Date: September 4, 1974; Original Closing Date: September 30, 1978; Current Closing Date: September 30, 1979

The full amount of the \$12 million Loan has been committed. The commitment was more rapid than originally estimated. Disbursements have also been very satisfactory. Since June 1974 when the loan was made, IFCT's financial condition has continued to be good.

Loan No. 1327 Third IFCT Project; \$25 Million Loan of December 8, 1976; Effective Date: March 14, 1977; Closing Date: December 31, 1980

The loan commitment rate has been slower than expected because of the sharply depressed investment climate in 1976. The IFCT's capital structure and liquidity position have improved, however, with successful share capital increases. Satisfactory progress has been made on the institution-building aspects of project.

Credit No. 767 Population Project; \$33.1 Million Credit of February 27, 1978; Effective Date: July 6, 1978; Closing Date: December 31, 1981

RTG has, in accordance with the Credit Agreement: (a) established and staffed the Project Coordinating Committee, which has met frequently; (b) established and staffed the Project Administration and Financing Unit (PAFU); (c) appointed a project director, deputy director and two assistant project directors and a health planner/economist; and (d) initiated most of the key project activities at the national level and in the 20 Accelerated

Family Planning and Health Provinces. With regard to the civil works, furniture and equipment, vehicle and special equipment components of the project, satisfactory progress has been made in completing design work, preparing vehicle and equipment lists/specifications and in selecting and acquiring sites. However, due to delays in staffing PAFU, the high turnover of staff in the Construction and Design Division, and delays in securing Budget Bureau approval for the supplementary budget for FY1978, key project activities were held up initially and major elements of the project are about six months behind schedule. The principal factors contributing to the problems faced by the project have been weak project management and insufficient attention to project coordination and to the removal of impediments to speedy implementation. The Ministry of Public Health is aware of this situation and is taking appropriate action to ensure that the Project Director and his Deputy are more directly involved in project execution.

THAILAND

BANG PAKONG THERMAL POWER PROJECT

Supplementary Data Sheet

Section I: Timetable of Key Events

- (a) The Project was prepared over a period of about 2-1/2 years (early 1976 to September/October 1978).
- (b) The project was prepared by EGAT and its consultants, Black and Veatch International.
- (c) The project was first proposed to the Bank in early 1976; the first Bank mission to consider the project visited Thailand in October 1977.
- (d) Departure of Appraisal Mission: August 1978
- (e) Completion of Negotiations: March 1979
- (f) Planned Date of Effectiveness: October 1979

Section II: Special Implementation Action: None

Section III: Special Conditions

- (a) The Borrower has agreed to:
 - (i) not later than January 1, 1980, undertake a study of the future generation and transmission projects including an in-depth review of the load forecast (paragraph 32);
 - (ii) as a condition of effectiveness, take all measures, including adjustment of tariffs, necessary to improve EGAT's financial position and the sector to earn a rate of return of not less than 7% in FY80 and 81 and of not less than 8% as of FY82 and in each fiscal year thereafter (paragraph 35);
 - (iii) maintain a debt/equity ratio of no more than 60:40.

- (b) The Government has agreed to:
 - (i) not later than December 31, 1979, submit to the Bank for its review and comment a proposal for a study aimed at improving coordination in the electricity sector (paragraph 32); and
 - (ii) take all measures, including adjustment of tariffs, necessary to enable the electricity sector as a whole to earn a rate of return of not less than 7% in FY80 and FY81 and of not less than 8% as of FY82 and in each fiscal year thereafter (paragraph 35).
- (c) An additional condition of effectiveness will be an increase in sector tariffs sufficient for EGAT and the sector as a whole to earn a rate of return of at least 7% in FY80 (paragraph 35).

