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TECHNOLOGY AND SKILLS IN THAILAND

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The ASEAN Secretariat
and
Japan Institute of International Affairs
in collaboration with
ASEAN Economic Research Unit
Institute of Southeast Asian Studies

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EFFECTIVE MECHANISMS FOR THE ENHANCEMENT OF TECHNOLOGY AND SKILLS IN THAILAND

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TECHNOLOGY AND SKILLS IN THAILAND

The **ASEAN Secretariat**, based in Jakarta, was formally established by an agreement signed by the ASEAN Foreign Ministers during the First Meeting of ASEAN Heads of Government in Bali in February 1976. The Secretariat provides a central administrative organ for the co-ordination of the activities of ASEAN bodies and the implementation of ASEAN projects and activities. It is headed by a Secretary-General, appointed on a rotational basis among member countries. The Secretariat has three functional bureaus — Economics, Science and Technology, and Social and Cultural — each headed by a Director.

The **Japan Institute of International Affairs** (JIIA), founded in 1959 by former Prime Minister Shigeru Yoshida, is a non-profit research organization concerned with international affairs. The Institute's priority areas of research are on the ASEAN countries, China, Korea, the Soviet Union and Japan's relations with these countries. Research projects are conducted by the Institute's research staff members in co-operation with university scholars and researchers from other institutions in the public and private sectors. Research output is published in the form of either books or articles in any of the Institute's five periodicals, including the monthly *Kokusai Mondai* (*International Affairs*). The JIIA currently serves as the secretariat in Japan for the Pacific Co-operation Committee, the ASEAN Regional Studies Promotion Programme, and the Japan-Indonesia Conference.

The **Institute of Southeast Asian Studies** was established as an autonomous organization in May 1968. It is a regional research centre for scholars and other specialists concerned with modern Southeast Asia, particularly the multi-faceted problems of stability and security, economic development, and political and social change.

The Institute is governed by a twenty-two-member Board of Trustees comprising nominees from the Singapore Government, the National University of Singapore, the various Chambers of Commerce, and professional and civic organizations. A ten-man Executive Committee oversees day-to-day operations; it is chaired by the Director, the Institute's chief academic and administrative officer.

The ASEAN Economic Research Unit is an integral part of the Institute, coming under the overall supervision of the Director who is also the Chairman of its Management Committee. The Unit was formed in 1979 in response to the need to deepen understanding of economic change and political developments in ASEAN. The day-to-day operations of the Unit are the responsibility of the Co-ordinator. A Regional Advisory Committee, consisting of a senior economist from each of the ASEAN countries, guides the work of the Unit.

Foreword

One of the central objectives of the Association of Southeast Asian Nations (ASEAN), as embodied in the Bangkok Declaration under which ASEAN was founded, is the promotion of Southeast Asian studies. In this context, ASEAN warmly welcomed the offer of Mr Zenko Suzuki, the Prime Minister of Japan, in early 1981 to support the launching of an ASEAN Regional Studies Promotion Programme.

After extensive consultations among ASEAN member countries and between ASEAN and Japan, it was agreed that the ASEAN Regional Studies Promotion Programme, initially to extend over a period of five years, should focus on policy-oriented socio-economic research. Given the overriding importance that ASEAN attaches to economic development and the vital role of ASEAN–Japan economic relations in this regard, ASEAN–Japan Industrial Co-operation was adopted as the first topic of research under the Programme. The second topic chosen was Effective Mechanisms for the Enhancement of Technology and Skills in ASEAN. An integrated ASEAN–Japan Overview, together with volumes on the individual ASEAN countries, are the fruits of this second phase of research.

The recent history of ASEAN–Japan relations has been marked by a degree of ambivalence. As the first Asian nation to industrialize successfully and to have risen as a phoenix from the ashes of war-time destruction to the leading heights of industrial and technological power, Japan has always been held with a degree of awe and admiration by its southern ASEAN neighbours. Such awe and admiration have, however, been tinged with a certain amount of suspicion derived from war-time memories, especially as the impact of Japan's post-war economic expansion becomes increasingly felt in the ASEAN region.

On the Japanese side, historical circumstances and the need for economic reconstruction in the early post-war years made it unavoidable that, initially, its external relations were largely oriented towards the West, especially the United States. However, as Japan rose to global economic prominence, and its economic presence in Southeast Asia grew, it increasingly came to attach greater importance to its relationship with the ASEAN countries.

ASEAN first approached Japan collectively in the early 1970s on the question of Japan's production of synthetic rubber and its adverse impact on the ASEAN economies. From such narrow beginnings, the dialogue has quickly expanded into the present broad-based consultative framework of the ASEAN-Japan Forum. Given the historical background, there is a general recognition that while economics must remain the central pillar of ASEAN-Japan relations, the socio-political context under

which such economic relations evolve is also of prime importance. Thus, a central objective of the ASEAN-Japan dialogue is the development of greater mutual awareness, understanding, friendship, and trust between the peoples of ASEAN and Japan, especially among the younger generation. In this regard, it is particularly heartening that the present Programme has begun to bring together many young researchers from both ASEAN and Japan in collaborative research on various important and pressing issues of mutual concern. The interactive thought process involved in such research, and the development of common perceptions on a wide range of issues, cannot but help improve the effectiveness of the dialogue and establish ASEAN–Japan relations on a firm basis. The ASEAN Secretariat and the Japan Institute of International Affairs, as the ASEAN and Japanese co-ordinating units for the Programme respectively, are happy and honoured to be playing a part in this process.

Phan Wannamethee
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ASEAN Secretariat
Jakarta

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Tokyo

March 1986

Preface

The study on "Effective Mechanisms for the Enhancement of Technology and Skills in ASEAN" was undertaken as the second phase of research under the ASEAN Regional Studies Promotion Programme, the first being "ASEAN-Japan Industrial Cooperation".

Country research teams from the five ASEAN countries and Japan were required to identify and examine problems in their respective countries in technology transfer and skills enhancement. Such a study, involving different countries with varied experiences, naturally poses problems of comparability. Nevertheless, to maximize comparability across countries, the study relied on the use of a common core questionnaire as well as a common analytical framework and data analysis procedure. In addition, the incorporation of country-specific factors salient and relevant to technology transfer and skills enhancement was encouraged. The final research design therefore attempts to accommodate such requirements.

Thus, primary data were collected through sample surveys taken on selected industries located in the ASEAN countries. Conclusions were then drawn and recommendations made from the findings of such surveys. From this exercise, five ASEAN-country papers were produced by the respective ASEAN-country research teams. These together with two papers prepared by the Japanese team giving Japanese perceptions and historical experiences on technology transfer and skills enhancement in ASEAN form the basis of an integrated overview which has been published under the title, *Effective Mechanisms for the Enhancement of Technology and Skills in ASEAN: An Overview*. The five country-papers are also being published separately. The monograph that follows is one in the series.

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R. Hirono,
and
Robert Y. Siy, Jr.
General Editors

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Introduction

In the years that have elapsed since Thailand has made serious attempts to diversify its economy, the transfer of technology has become an increasingly important subject, while the complexities of the transfer process have not yet been fully appreciated. The transnational corporation (TNC) is recognized as the main vehicle for technology transfer and the enhancement of skills in the labour force of Thailand.

This research represents an attempt to reveal the complexities of the technology transfer process, the role played by the TNCs, and their impact on skills improvement of Thailand's labour force. The specific research objectives are outlined below:

1. To look into the pattern of international transfer of industrial technology, particularly from Japan to Thailand.
2. To study the practices, attitudes, and behaviour of the TNCs with regard to the transfer of industrial technology and skill development of the local manpower in their subsidiaries in Thailand.
3. To analyse and identify Thailand's capacity to absorb foreign technology and bottlenecks in the transfer process.
4. To find out how co-operation between the TNCs on the one hand and their Thai counterparts and the Thai Government on the other can be improved and how the Japanese Government can be of assistance with regard to the transfer of technology and skill development in Thailand.

The research starts out by looking into the past trends and patterns of economic development in Thailand, whereby the main policies and salient patterns of industrialization in the Thai economy are discussed. Chapter 2 provides a theoretical framework and examines research methods used in the investigation of technology transfer and skill development in the Thai manufacturing sector. For illustration and analytical purposes, electronics and machinery industries are selected, the results of which are presented in Chapter 3.

The selection of the electronics industry as a case study on industrial technology transfer and skills improvement of the local manpower is based primarily on the grounds that it represents one of the high export-potential maufacturing industries in Thailand and that Japan, whose government has expressed an intention to assist in enhancing industrial technology and skills in ASEAN, has been recognized as one of the highly industrialized countries that has commanded highly advanced technology in the industry. With regard to the machinery industry, it is regarded as a

basic industry which is vital to the development of other industries in Thailand. In addition, the Thai Government is currently promoting the expansion of domestic production of machine tools and equipment in order to reduce its dependence on imports of capital goods which has aggravated the chronic trade and current account deficits in recent years. Finally, Chapter 4 summarizes the main research findings and outlines appropriate mechanisms by which the private sector, particularly in Thailand and Japan, as well as the respective governments can adopt in order to effectively participate in the process of the enhancement of technology and skills in developing countries, especially Thailand and ASEAN as a whole.

Past Trends and Patterns[1]

The past two decades saw the Thai economy experience structural changes and impressive rates of growth while stability was also maintained. In general terms, Thailand is, at this point in time, no longer a poor country by most standards. Studies of past development performance as well as an analysis of emerging and long-run trends, however, reveal that Thailand's path to future development is still rough and it will face increasingly difficult problems of development. (Refer to N. Khanthachai, et al., "ASEAN-Japan Industrial Cooperation: A Country Paper of Thailand", mimeo [Singapore: ISEAS, 1983].)

As shown in Table 1, the population of Thailand now stands at about 50 million, one of the largest in the Southeast Asian region, and although the annual growth rates are falling, the population still continues to grow considerably fast. Gross domestic product (GDP) at current prices totalled more than 928 billion baht in 1983, having grown consistently at around 7 per cent per year in real terms throughout the 1970s. The growth pattern of the Thai economy is expected to continue into the 1980s, albeit at a slower rate.

The population is becoming increasingly better off, with per capita income averaging at about 18,247 baht at current prices in 1983, up from about 4,200 baht just eleven years ago. According to the World Bank, Thailand now stands in the middle-income country group and has reached the stage where incomes are high enough to provide substantial buying power over the above basic needs.

As shown in Table 1, an important change in the composition of gross national product has taken place since 1960. The share of manufacturing value added rose significantly from 13.1 per cent in 1960 to 17 in 1972 and further to 21 per cent in 1983. On the other hand, the output share of the agricultural sector declined from 40 per cent in 1960 to 23.6 per cent in 1983. The utilities, construction and services value added, accounted for about 47 per cent in 1960, and increased substantially to 55.4 per cent in 1983.

Such a structural change does not, however, imply that agricultural output has declined. On the contrary, it has increased at the rate of about 5 per cent a year, mainly due to the lateral expansion of cultivated areas, and there is scope for further growth based on increased yields and cropping intensities. Agriculture remains the mainstay of the economy which still accounts for over two-thirds of employment and exports. Moreover, a large part of manufacturing production is concentrated in the processing of agricultural products and a significant proportion of the income of the

TABLE 1
Main Features of the Thai Economy, 1960–83

Items	1960	1972	1980	1982	1983[a]
Population (million persons)	27.1	37.35	46.96	48.49	49.46
Annual growth rate (%)	3.0	2.6	2.1	1.9	1.8
Retail price index	2.0	—	19.7	5.2	3.8
GNP per capita (฿ current prices)	2,056.0	4,257.0	14,475.0	16,906.0	18,247.0
GDP (฿ million, current prices)	55,816.0	164,626.0	684,930.0	846,136.0	928,548.0
GDP (฿ million, 1972 price)	59,400.0[b]	164,626.0	292,852.0	324,050.0	343,392.0
Annual growth rate (%)		7.1[c]	5.8	4.1	6.0
Gross fixed capital formation (% of GDP)	14.9	21.0	24.4	20.6	20.3
Value added as % of GDP					
Agriculture	40.0	30.3	24.9	24.6	23.6
Manufacturing	13.1	17.0	20.7	20.8	21.0
Utilities, construction & service	46.9	52.7	54.4	55.0	55.4
Imports as % of GDP	17.2	18.8	27.5	23.24	25.48
Exports as % of GDP	15.4	13.7	19.5	18.89	15.77
Manufactured imports by SITC (% of total imports)	74.6	73.5	55.4	58.4	64.7
Manufactured export by SITC (% of total exports)	1.4	10.1	26.4	39.57	41.89
Manufacturing employment (% of total employment)	n.a.	18.5	26.8	25.64	26.27
Share of mfg. output in the Central Region (mainly Bangkok)	73.2	73.9	87.7	82.64	n.a.
Trade balance (million baht)	−269.0	−8,885.0	−55,489.0	−36,888.0	−89,889.0
Payment balance (million baht)	1,655.0	3,991.4	5,179.3	3,314.3	−18,078.0
International reserve (million US $)	353.0	968.8	3,026.1	2,651.6	2,555.1
— as month of imports	9.1	7.8	4.4	3.7	3.0

[a] Estimate.
[b] Prices in 1962.
[c] Compared with the year 1972.

SOURCE: Nathabhol Khanthachai (1983), p. 4 (quoted with some adjustment).

service sector is derived from collecting agricultural commodities and distributing farm inputs.

The manufacturing industry in Thailand during this period was concentrated mainly on import-substitution, especially from 1960 to the early 1970s. As a result, this industrialization policy has brought about a structural change in the composition of imports and exports. The share of the manufactured imports dropped from 74.6 per cent in 1960 to 55.4 per cent in 1980, suggesting that the import-substitution policy has been carried out successfully only since the early 1970s. However, the import of manufactured goods, as shown in Table 1, started

to rise again after 1980. In general, there was a decline in the share of consumer goods imported (35 per cent in 1960 to 12 per cent in 1978), and an increase in that of raw materials, including fuel and lubricants and intermediate products (29 per cent to 48 per cent in the same period). The increase of the import share of fuel and lubricants was almost threefold since 1960. In the same period, however, the share of capital goods imports rose only slightly from about 25 per cent to 28 per cent. In short, the import-substitution oriented industrialization in Thailand has brought about a sharp decline in imports of consumer goods, but has significantly increased the imports of raw materials, and fuel and lubricants. The increases in import volumes and prices, particularly those of fuel and lubricants, have greatly aggravated Thailand's balance of payments in recent years.

The share of manufactured exports as a percentage of total exports increased from 1.4 per cent in 1960 to 10.1 per cent in 1972, and further to 41.8 per cent in 1983. In the early stages, the manufactured exports consisted mainly of processed primary products, such as processed food and textiles. In recent years, however, the exports of manufactured goods, mainly non-traditional products such as textiles, electronics and clothing, have become an increasingly important source of growth. Nevertheless, this change of export composition has not been able to alleviate Thailand's balance of payment problems.

As demonstrated in Table 1, Thailand has continuously had a deficit balance of trade since 1960. In recent years the gap has widen to serious proportions and, as a result, has aggravated Thailand's balance of payments. However, the devaluation of the Thai currency in 1982 as well as natural gas and oil discoveries in Thailand point hopefully to an improvement in the deficit in the coming years.

The growth of the manufacturing industry also contributed significantly to a rise in the share of manufacturing employment from about 18.5 per cent of the total in 1972 to about 26.3 per cent in 1983. This resulted in the concentration of wage labour in Bangkok as most of the manufacturing firms established their factories in Bangkok and the surrounding provinces. The large share of manufacturing output originating from Bangkok in the total output also reflects this trend.

With respect to inflation, Thailand has traditionally been a country of considerably stable prices. Domestic price inflation in the fifteen years ending 1973 in Thailand averaged only 2 per cent a year, with the maximum increase in any one year being less than 4 per cent. During the oil crisis of 1973/74, domestic prices jumped sharply to an average annual increase of 20 per cent. However, the rate was brought down to 4 per cent in 1976, 8 per cent in 1978, and 10 per cent in 1979. Since the early 1980s the inflation rates have shrunk to single-digit levels. This is partly because of careful management and control of the annual budget as well as the government's cautious attitude towards international and external borrowing by the public sector, and partly because of the stable prices of imported oil.

Industrial development in Thailand has taken place largely through the initiative of the private sector responding to market forces. Throughout the past two decades, the manufacturing sector has grown in real terms at about 10 per cent a year, contributing nearly 30 per cent of overall growth in GDP during the period. Due to the import-substitution policy adopted by the government, most of the

TABLE 2
Gross Domestic Product at 1972 Prices
(Millions of baht)

Economic Sector	1977	1978	1979[a]	1980[a]	1981[a]	1982[b]	1983[c]
Agriculture	56,537 (27.6)	72,513 (27.8)	71,408 (25.8)	72,784 (24.9)	77,701 (25.0)	78,502 (24.2)	80,940 (23.6)
Mining and quarrying	3,526 (1.5)	4,104 (1.6)	4,531 (1.6)	4,780 (1.6)	4,623 (1.5)	4,431 (1.4)	4,368 (1.3)
Manufacturing	48,071 (20.3)	52,521 (20.1)	57,841 (20.9)	60,597 (20.7)	64,490 (20.7)	67,317 (20.8)	71,947 (21.0)
Construction	11,996 (5.1)	13,583 (5.2)	14,547 (5.3)	16,576 (5.7)	15,500 (5.0)	15,097 (4.7)	15,843 (4.6)
Electricity and water supply	4,144 (1.7)	4,500 (1.7)	5,178 (1.8)	5,560 (1.9)	6,330 (2.0)	6,755 (2.1)	7,394 (2.2)
Transportation and communication	14,474 (6.1)	16,205 (6.2)	17,663 (6.4)	18,811 (6.4)	20,209 (6.5)	21,715 (6.7)	23,609 (6.9)
Wholesale and retail trade	41,213 (17.4)	43,658 (16.7)	45,497 (16.4)	48,227 (16.5)	51,103 (16.4)	52,739 (16.3)	55,592 (16.2)
Banking, insurance, and real estate	11,574 (4.9)	13,443 (5.1)	15,582 (5.6)	17,419 (6.0)	19,197 (6.2)	21,396 (6.6)	24,330 (7.1)
Ownership of dwellings	3,823 (1.6)	4,052 (1.6)	4,289 (1.6)	4,502 (1.5)	4,723 (1.5)	4,936 (1.5)	5,152 (1.5)
Public administration and defence	9,555 (4.0)	10,166 (3.9)	11,594 (4.2)	12,423 (4.2)	13,192 (4.2)	13,833 (4.3)	14,399 (4.2)
Services	23,260 (9.8)	26,352 (10.1)	28,777 (10.4)	31,173 (10.6)	34,202 (11.0)	37,261 (11.5)	39,304 (11.5)
Gross Domestic Product (GDP)	237,173 (100.0)	261,097 (100.0)	276,907 (100.0)	292,852 (100.0)	311,270 (100.0)	324,032 (100.0)	342,878 (100.0)

[a] Revised.
[b] Bank of Thailand figures.
[c] Estimate.

SOURCE: Office of the National Economic and Social Development Board.

growth was aimed at the domestic market, especially with regard to consumer goods. However, a good domestic business situation, relatively low wage rates, and a favourable disposition towards exports on the part of the government have resulted in businessmen aiming more at production for export. This trend will continue into the 1980s.

As illustrated in Tables 1 and 2, in 1960 manufacturing value added was 13.1 per cent of gross domestic product, increasing to 17 per cent and 21 per cent in 1972 and 1983 respectively. This has been accompanied by an overall change in the structure of the Thai economy as mentioned earlier. Within the manufacturing