

III-5-10. Intensification of R&D Activities

(1) Technical Support Project for the SIRIM Ceramic Technology Centre

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III-5-10. (1) Technical Support Project for the SIRIM Ceramic Technology Centre

1. Background of Project Proposal

The possibility of establishing an SIRIM Ceramic Technology Centre was first brought up in 1978 with the objective of assisting the development of the Malaysian ceramic industry, in which fully 95% of the companies are small businesses relying almost entirely on traditional technologies. This was initially formalized in 1982 as a proposal calling for a budgetary allocation of M\$8 million, but was later shelved due to budget constraints. In March of 1986, the inaugural year of the 5th Malaysia Plan, the proposal was finally approved by the Malaysian Parliament with a budget of M\$6 million, but this allocation as well was delayed due to the economic situation.

It was only in 1989 that serious efforts to establish the Centre got underway, with M\$1.5 million being allocated for construction expenses. Construction began in March 1990 and is scheduled to be completed in December same year. The Centre will be engaged in the development of conventional and advanced ceramic products through R&D, technical consulting, and technical training activities.

Unable to wait for this organization to be established, the SIRIM Ceramics Section in 1988 began work on several R&D projects, with related budgetary allocations through 1990 totaling M\$2.17 million. These items include the Project on Characterization of Fine Ceramics (1987-1991, total cost: M\$2.5 million), a joint project between Japan and Malaysia.

In the 6th Malaysia Plan, starting in 1991, SIRIM intends to upgrade the technical standards of the ceramics industry as a whole using the Ceramic Technology Centre. In particular, it hopes to engage in product development and evaluation and application activities in the fields of traditional and advanced ceramics.

Upon consideration of the above factors, the following technical support project was proposed for the SIRIM Ceramic Technology Centre.

2. Outline of the SIRIM Ceramics Section and the Ceramic Technology Centre

(1) SIRIM Ceramics Section

As of December 1989, the Ceramics Section was one of the sections in the Research Unit of the SIRIM Industrial Research Division. The Ceramic Technology

Section comprised the following staff: one Coordinator, six Research Officers, and two research assistants.

In the organizational restructuring of January 1990, the Ceramic Technology Section was promoted to the status of Ceramic Technology Centre, making it one of the eight Centres within the Industrial Research Division.

(2) Establishment of Ceramic Technology Centre (CTC)

1) Outline of the Centre

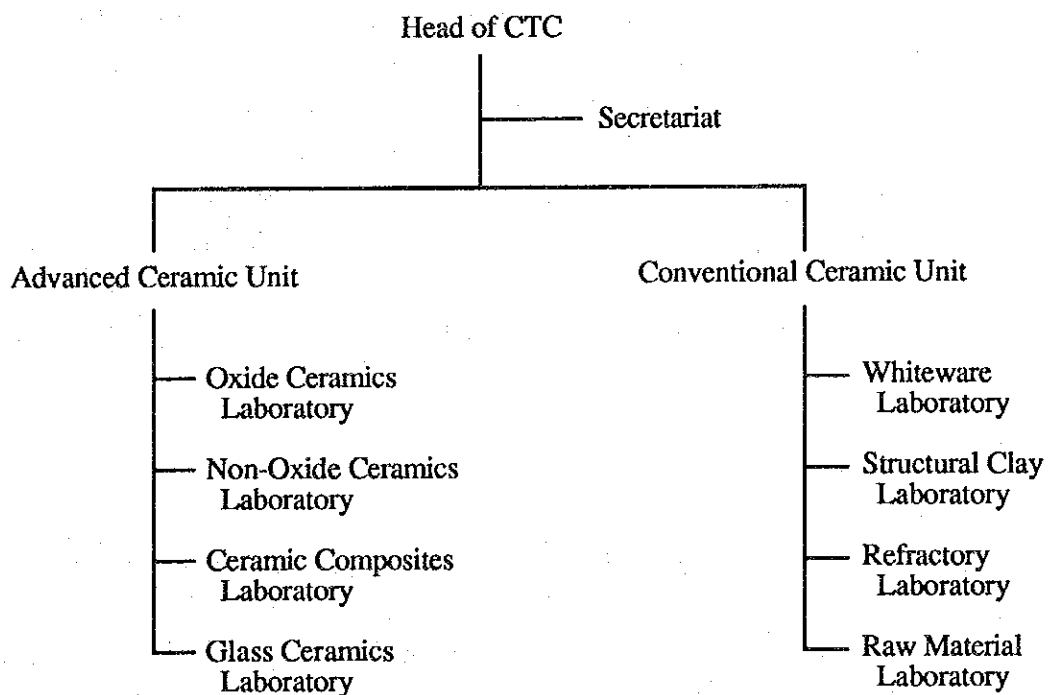
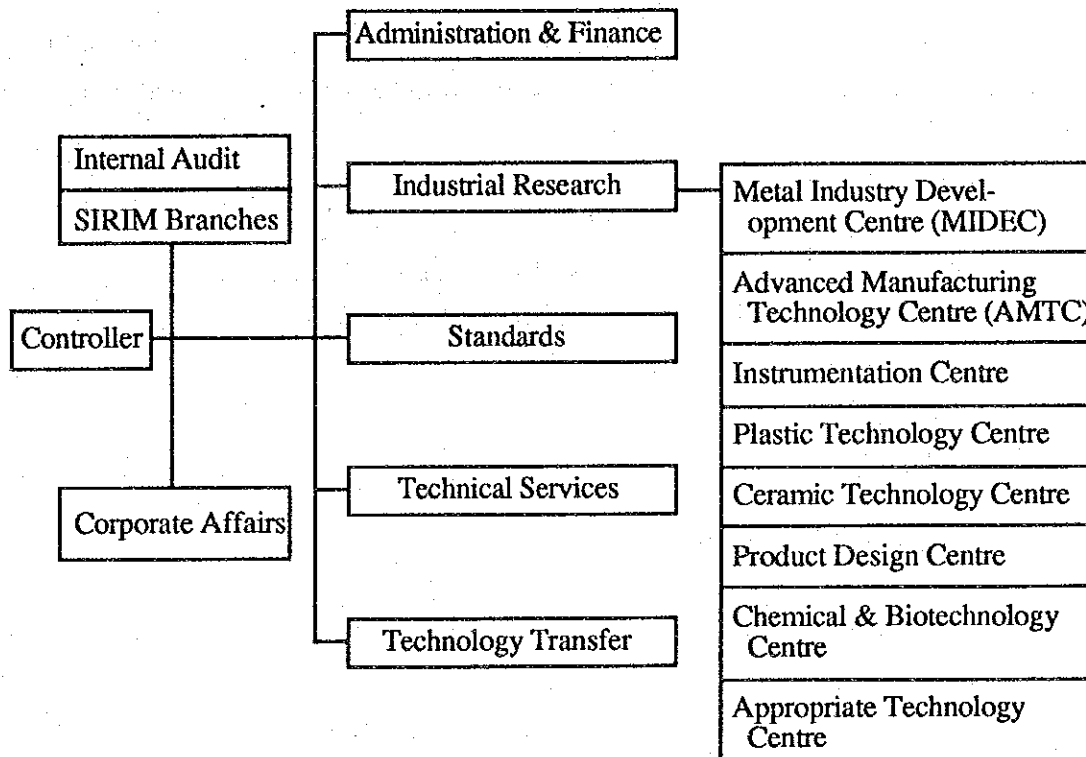
SIRIM has established a Ceramic Technology Centre in January 1990 with the objective of enhancing the technological development and advancement of ceramic industrial sectors in Malaysia. Major functions of CTC include R&D, technical consultancy and training for the local industry.

Under the CTC, 2 units are formed, i.e. Conventional Ceramic Unit and Advanced Ceramic Unit. Fig. III. 5-18 is an organizational chart for the Ceramic Technology Centre.

Current manpower allocation for CTC is 13, of which 9 are research officers and 4 supporting staff. SIRIM plans a staff of 80 for the Centre in the final year (1995) of the 6th Malaysia Plan, with the number to be gradually increased on an annual basis.

In view of manpower limitation, present activities are confined to R&D, and consultancy services for small and medium scale enterprises only. Training programmes for industries have not been undertaken by CTC as its manpower lack the experience and relatively new to the field. Therefore, development of manpower training for CTC personnel is essential to enable them to provide effective contribution to industries.

Fig. III. 5-18 SIRIM Ceramic Technology Centre (CTC) Organization Chart



2) Outline of the CTC Building Plan

The following is a brief summary of the Ceramic Technology Centre Building, scheduled to be completed by the end of 1990 and to be ready for occupation by mid 1991.

- Building: Two-storey
- Total floor space: 15,109 ft² (approx. 1,403 m²)
- Location: In the SIRIM headquarters in Shah Alam
- Construction period: March-December 1990 (scheduled)
- Construction costs: M\$1.5 million

3) Objectives of the Centre

The main objectives of the Ceramic Technology Centre are as follows:

- a) To develop an appropriate ceramic technology to help promote and upgrade the technological and economic status of the local industry, particularly the traditional small and medium-scale sectors through R&D, consultancy, extension and training
- b) To introduce and disseminate technology to help resolve the numerous present and future industrial problems faced by the industry
- c) To coordinate and encourage the growth of a local ceramic industry with respect to the industrial strategy and investment climate in Malaysia
- d) To encourage the growth of a new generation of entrepreneurs, professionals and related groups within the industrial and government institutions with good technical and scientific abilities in various aspects of ceramic technology
- e) To promote the growth the growth of high technology ceramics in a long term perspective

4) Major activities of the Centre

Major activities expected from the Ceramic Technology Centre are as follows:

- a) To conduct R&D to broaden the scope and utilization of local ceramic resources, and to develop the production technology at each stage of chinaware production such as forming or burning

- b) To conduct various consultancy and technical extension services, and also include troubleshooting exercises.
- c) To conduct design and fabrication activities involving preparation of ceramics and fabrication of equipment and tools, dryers and kilns
- d) To test and inspect the product quality
- e) To conduct in-house training programmes for quality control and production process control
- f) To prepare data, statistics, market knowledge and other relevant economic indicators, and also technical information on products, machinery and components, suppliers, etc.

5) Outline of facilities

a) Existing equipment

Scanning electronic microscope (SEM)
 Dilatometer (1,600°C)
 Particle size analyser
 Thermal gradient furnace (1,600°C)
 Compressive strength tester
 Modulus of rupture apparatus
 Vickers hardness tester
 Viscometer
 Controlled atmosphere furnace (1,600°C)
 Electric kilns (1,300°C, 1,700°C)
 Vacuum plaster mixer

b) Equipment to be purchased in 1990

Clay preparation unit
 Brightness tester
 Bearing pugmill
 Electromagnetting unit
 X-ray diffractometer (XRD)
 Hot press
 Differential thermal analyser/Thermal gravimetric analyser
 Controlled atmosphere furnace (2,200°C)
 Glass melting furnace
 Tube furnace

3. Outline of the Proposed Project

(1) Objective of the Project

The Ceramic Technology Centre (CTC) in SIRIM was formed in January 1990 to enhance the technological development and advancement of ceramic industrial sectors, especially of small scale industries, in Malaysia in the fields of conventional ceramics and advanced ceramics. But the newly established CTC has not been in full swing yet because of shortage of research/professional staff for CTC as well as of lack of experience for them, especially in the field of training programmes for industries.

Therefore, this project aims at establishing a technical training and service system capable of meeting the needs of the private sector in terms of both quantity and quality by training CTC technical staff in advanced and specialized ceramic technologies.

(2) Contents of the Project

1) Invitation of foreign experts

2 ceramic technology experts from overseas would be attached to CTC as ceramic advisors. Their qualifications and job description are as follows.

[1] Number of experts and qualifications:

Conventional ceramics expert	1 person
Advanced ceramics expert	1 person
(Both are to have at least 15 years of experience in their fields)	

[2] Duration:

One year each

[3] Job description

- To identify manpower requirements, experts requisition and type of R&D and training programmes for CTC to undertake.
- To advise CTC on the implementation of advanced and conventional ceramics research programme.
- To assist CTC in the implementation of training programmes for industry.
- To provide expert opinion on research work conducted by CTC researchers.

2) Dispatch of CTC technical staff for overseas training

CTC personnels would be provided short term technical training at any renowned ceramic research and training institutions overseas.

[1] Number of trainees:

Conventional ceramics 5 persons

- Refractory materials, Raw materials processing, Product testing & evaluation, Production quality control, Decoration technology -

Advanced ceramics 6 persons

- Ceramic coating, Net-shaping process, Tribology of ceramics, Characterization of magnetic ceramics, Glass ceramics, Ceramic composites

[2] Duration:

2-3 months each

4. Areas in which Assistance from Overseas is Anticipated

(1) Invitation of ceramic experts overseas

(2) Dispatch of CTC technical staff for overseas training

III-5-10. Intensification of R&D Activities

**(2) Expansion Project of Inspection and Testing
Facilities for Rubber footwear in the Rubber Research
Institute of Malaysia (RRIM)**

III-5-10. (2) Expansion Project of Inspection and Testing Facilities for Rubber Footwear in the Rubber Research Institute of Malaysia (RRIM)

1. Background of Project Proposal

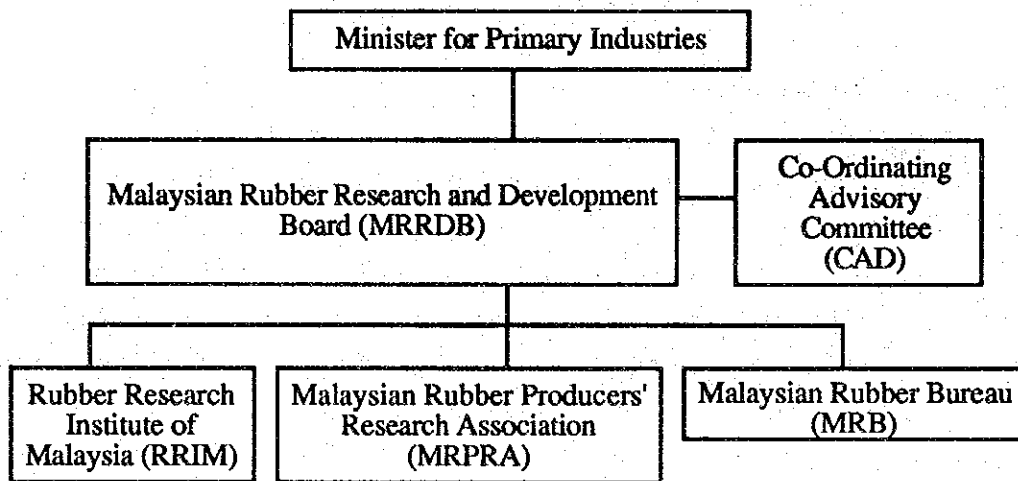
Among rubber footwear manufacturing firms at present, major companies have their own facilities for the inspection and testing of soles, uppers and completed products, but small and medium firms have no basic facilities and depend on the Rubber Research Institute of Malaysia (RRIM) or a university (USM) for the inspection and testing of their products. Even among enterprises which own such inspection and testing facilities, some are found not utilizing them effectively. Perfection of such inspection and testing facilities and training of the operating staff are essential for the rubber footwear industry to raise its level and develop its product into one of the major manufactured goods in the country.

Although the Malaysian Standards on rubber footwear have so far been set only for rubber shoes for school children, safety shoes and battle shoes, there is a positive indication that Industrial Standards will also be fixed for rubber footwear other than the above-mentioned three articles. This will first of all require the perfection of inspection and testing facilities, on which the standards are based, at official organs and training of operating staff.

2. Outline of RRIM's Activity

The RRIM was established in 1925 and was organized by the Malaysian Rubber Research Development Board (MRRDB), which is a government institute directly controlled by the Ministry of Primary Industries of the Malaysian government. Fundamentally, it has a long history as an institute involved in raw rubber manufacturing technologies and the cultivation of natural rubber. Research, development, inspection and testing of rubber products were all performed after 1976, when the Technology Centre was established. So this phase in its history is brief. The RRIM organization is shown on Fig. III. 5-19. Its headquarters is in Kuala Lumpur and the Technology Centre is located in the Research Centre at Sungai Buloh. Here, there are 1,300 hectares of experimental farms for rubber and 1,200 hectares of experimental farms at Kota Tinggi in Johore State.

Position of RRIM



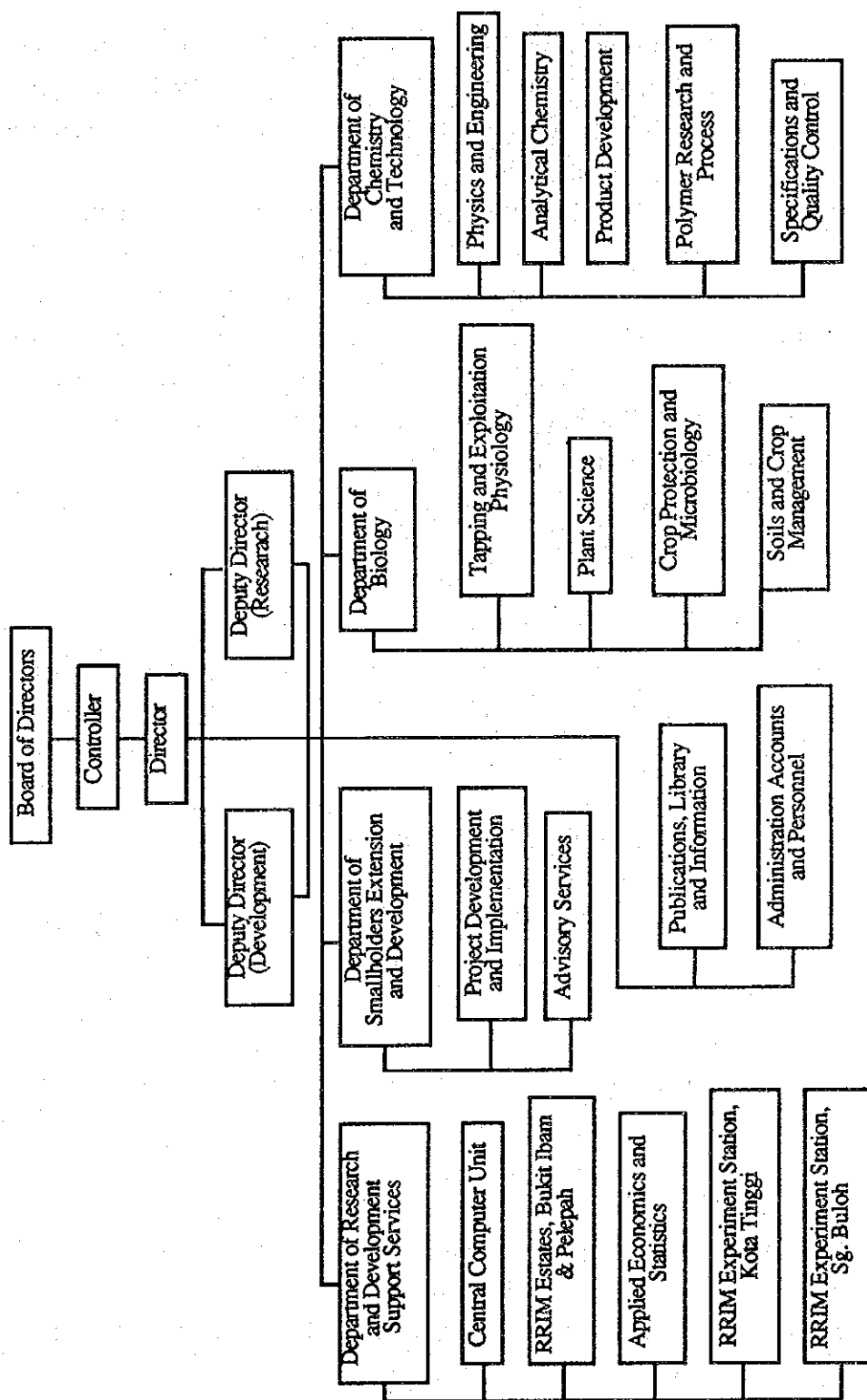
There are 200 excellent senior staff assigned to RRIM. This institute is the world's biggest among those researching only one product. Operational budget comes from MRRDB. For every kilogramme of rubber exported, M\$3.85 are collected by MRRDB as research fund. The budget for 1988 was M\$39.0 million.

The Technology Centre has manufacturing equipment such as the Banbury Mixer, Mixing Roll, Calender Roll, Extruder, Press and manufacturing machinery such as the Tyre Builder and the Tyre Vulcanising Press, which was installed with support from Japan. Also, the Physical Testing Laboratory (PTL) has testing equipment that deals with tension, rubbing, flex, hardness and aging qualities.

This centre has 35 experienced senior staff. They are engaged in different types of research and development. Concerning services, there is the Technical Advisory Service and the Physical Testing Service. They perform services on problem solving advices and product development as well as on inspection and quality assurance of rubber products, based on appropriate standards.

Tests and quality assurance work for rubber footwear are performed only when there is a request from the individual company. The numbers are still very small. However, these cases are expected to increase; therefore, an increase in facilities to test rubber footwear is planned. Also, there is a plan to build a National Testing Centre for rubber products.

Fig. III. 5-19 Organization Chart of RRIM



3. Outline of the Proposed Project

(1) Objective of the Project

RRIM has its own inspection and testing facilities for rubber products, but it has very few facilities for the inspection and testing of rubber footwear. RRIM takes great interest in the inspection and testing of rubber products and hopes to set up a national testing centre for rubber products in the future.

As for rubber footwear, RRIM does only the rubber-related inspection and testing of soles and not the inspection and testing of discolouration involving uppers. The Standards and Industry Research Institute of Malaysia (SIRIM) is to do the inspection and testing of uppers. But SIRIM has virtually no facilities to do so. Under such circumstances, it would be desirable to move the inspection and testing of uppers to RRIM which could undertake all of the inspection and testing of rubber footwear.

This project aims at introducing the inspection and testing facilities and training the operating staff for that purpose as well as transferring technology to private industries.

The inspection and testing facilities should fulfill the following requirements:

1) Evaluation of Physical Properties of Upper Materials

- [1] Ability to evaluate basic physical properties including tensile strength, elongation, tear strength and bursting strength.
- [2] Ability to evaluate the degree of distortion of coloured material due to friction and fading.
- [3] Ability to evaluate changes in material due to cracking, discolouration and fading by heat and ultraviolet rays.
- [4] Ability to evaluate degree of abrasion of materials due to rubbing against each other.
- [5] Ability to evaluate capacity for enduring constant and repeated flexing of rubber footwear while in use.
- [6] Ability to evaluate low temperature resistance when rubber footwear is used in cold regions.

2) Evaluation of Materials Including Rubber Soles

- [1] Ability to evaluate basic physical properties including tensile strength, elongation, tear strength, hardness and tension set.
- [2] Ability to evaluate physical properties under the circumstances of changes in temperature which harden or soften rubber.

- [3] Ability to evaluate properties of rubber products such as hardening, cracking or softening as a result of aging due to heat, ultraviolet rays and ozone.
- [4] Ability to evaluate appearance and growth of cracks in rubber soles due to flex fatigue caused by repeated flexing while in use.
- [5] Ability to evaluate abrasion resistance of rubber soles which constantly touch ground and get worn away by rubbing against it.
- [6] Ability to evaluate peeling strength of rubber soles whose materials are glued to upper materials with adhesives.

3) Evaluation of Rubber Footwear

Ability to evaluate durability of rubber footwear composed of various materials combined by sewing or adhesion. These components have to endure great stress originating from constant and repeated flexing while in use.

(3) Contents of the Project

1) Introduction of Inspection and Testing Facilities

Inspection and testing facilities to be introduced in addition to the existing facilities are as listed in the Table III. 5-3.

Necessary expenses are as follows:

Inspection and test facilities	¥50,850,000
Personnel expenses	¥10,500,000
Expendables and material expenses	¥1,650,000
Special service expenses	¥8,000,000
<u>Overseas study and training expenses</u>	<u>¥5,000,000</u>
Total	¥76,000,000

2) Experts to be Invited from Overseas

- [1] Inspection and testing expert: 1 person (with 15 years experience or more)
- [2] Inspection standards evaluation expert: 1 person (" ")
- [3] Term of assignment : Three months each

3) Dispatch of Overseas Trainees

[1] Persons responsible for the inspection of uppers, soles and whole products:

One person each, totaling three persons

[2] Dispatch period: One month each

4) Undertakings to be Put into Practice

[1] Overseas training of persons responsible for the inspection and testing in RRIM should be made prior to the introduction of inspection and testing facilities.

[2] Introduction of inspection and testing facilities, drawing up of inspection and testing standards and training of inspection and testing staff of RRIM should be made in parallel with each other.

[3] Training of inspection and testing staff in private industry should also be made in parallel with the above.

[4] Seminars and workshops on inspection and testing should be held.

4. Areas in which Assistance from Overseas is Anticipated

(1) Introduction of inspection and testing facilities from overseas

(2) Invitation of inspection and testing experts from overseas

(3) Dispatch of RRIM technical staff for overseas training

Table III. 5-3 Listed of Inspection and Testing Facilities to be Introduced

Equipment	Type	Specification
1. Tensile tester to thermostatic chamber • STROGRAPH-T	TF-50	<ul style="list-style-type: none"> • Load cell: 1,000, 500, 50 kgt • Temperature chamber: -50°C—200°C • Crosshead Speed: 0.5—500 mm/min.
2. Flex cracking tester A. Repetition permanent fatigue tester	YSS Type	<ul style="list-style-type: none"> • Specimen Setting: 11 pcs. • Revolving Speed: 240 r.p.m. • Temperature range: -40°C—100°C
B. Flexo-meter	Standard Type	<ul style="list-style-type: none"> • Number of specimen: 12 pcs. • Upper clamp reciprocating Speed: 100 r.p.m.
C. Flexo-meter to low temperature chamber	LFR Type	<ul style="list-style-type: none"> • Number of specimen: 12 pcs. • Upper clamp reciprocating Speed: 100 r.p.m. • Temperature range: -30°C—70°C
D. Flex cracking tester to temperature chamber	De Mattia Type FT-204	<ul style="list-style-type: none"> • Number of specimen: 6 pcs • Flexing Speed: 300 ± 10 r.p.m. • Temperature range: -50°C—150°C
3. Flexing tester of goods		<ul style="list-style-type: none"> • Specimen Setting: 6 pcs.
4. Weather meter • Standard dewcycle sunshine super-life weather meter	WEL-SUN -DC	<ul style="list-style-type: none"> • Carbon arc. lamp runs: 60 hr • Temperature, Humidity regulator: RT—60°C, 30—70% RH
5. Ozone Weather meter	OMS-HVCR	<ul style="list-style-type: none"> • Ozone low concentration: 20—200 pphm • Ozone high concentration: 1—300 ppm. • Temperature range: (RT + 10°C)—60°C • Flexing unit to chamber

Equipment	Type	Specification
6. Fade meter • Standard UV long-Life Fade meter	FAL-5	<ul style="list-style-type: none"> Carbon arc lamp runs: 48 hr. Temperature range: (RT + 15°C)—70°C
7. Abrasion tester • Rotary abrasion tester	Taber type	<ul style="list-style-type: none"> Rotation Speed: 60 r.p.m. or 70 r.p.m. Load: 250, 500, 1000 g
8. Rubbing tester • Rubbing tester	Scott type FT-601	<ul style="list-style-type: none"> Revolution: 25 r.p.m. to 120 r.p.m.
• Universal wear tester	Castam type	<ul style="list-style-type: none"> Surface wear Bending wear Related Wear
9. Aging tester • Test tube aging tester	Test tube type	<ul style="list-style-type: none"> Temperature regulation: (RT + 10°C)—230°C Number of test tube: 24 pcs.
• STD Gear oven	Gear type 45SB	<ul style="list-style-type: none"> Temperature regulation: (RT + 10°C)—300°C
10. Hardness tester • Digital type hardness tester equipment	Digital type RH-10A	<ul style="list-style-type: none"> General Rubber: JIS A type SHORE A type
11. Burstine tester • Mullen bursting strength tester	Mullex type ML-45KG	<ul style="list-style-type: none"> Low pressure gauge: 20 kgt/cm² High pressure gauge: 45 kgt/cm²
12. Colour fastness to rubbing tester • Rubbing tester	JIS II type	<ul style="list-style-type: none"> Number of Specimen: 6 pcs. Reciprocating Speed: 30 r.p.m.
• Rubbing tester (Crock meter)	JIS I type	<ul style="list-style-type: none"> Sliding Speed: 60 ± 2 reciprocations/minutes

Equipment	Type	Specification
13. Low temperature tester	201-S	<ul style="list-style-type: none"> • Temperature regulator: RT— -40°C • Refrigerator to chamber
14. Impact tester to safety shoes	JIS type	<ul style="list-style-type: none"> • JIST 8101
15. Exfoliation tester of tiptoe	YSS type	<ul style="list-style-type: none"> • Exfoliation strength gauge: max. 50 kgt
16. Adhesion (peeling) test jig to rubber soles		<ul style="list-style-type: none"> • 1 set

ANNEX

1. Records of the Development Study

April 1986 The request for "Technical Cooperation Project on Industrial Development" was submitted to the Japanese Government from the Malaysian Government.

September 1986 JICA despatched the Contact Mission to Malaysia. The basic objectives and content of the technical cooperation in industrial sector development were agreed between Malaysia and Japan.

February ~ August, 1987

JICA despatched a short-term expert to MIDA

July 27 ~ August 5, 1987

JICA despatched Preliminary Survey Team.

Scope of Work was signed.

(The First Year Study)

January 31 ~ March 30, 1988 Field Survey

{	February 3	Technical Committee on the Inception Report
	February 4	Steering Committee on the above
	March 28	Technical Committee on the Progress Report

May 22 ~ June 5, 1988 Additional Study on moulds and dies

August 21 ~ 30, 1988 Negotiation on the Draft Final Report

{	August 22	Technical Committee
	August 25	Steering Committee

September 1988 The Final Report completed

(The Second Year Study)

October 16 ~ December 14, 1988 Field Survey

{	October 18	Technical Committee on the Inception Report
	October 21	Steering Committee on the above
	December 8	Technical Committee on the Progress Report

March 15 ~ 24, 1989 Negotiation on the Interim Report

{	March 16	Technical Committee
	March 21	Steering Committee

June 21 ~ 30, 1989 Negotiation on the Draft Final Report

{	June 26	Technical Committee
	June 27	Steering Committee

July 1989 The Final Report Completed

(The Third Year Study)

October 16 ~ December 14, 1989 Field Survey

{	October 18	Technical Committee on the Inception Report
	November 3	Steering Committee on the above
	December 11	Technical committee on the Progress Report
	December 12	Meeting sponsored by EPU, on the Priority Programmes, of the Steering Committee and representatives of agencies related to the identified recommendation programmes.

June 3 ~ 22, 1990 Negotiation on the Interim Report

{	June 5	Technical Committee
	June 8	Steering Committee

October 1 ~ 10, 1990 Negotiation on the Draft Final Report

{	October 3	Technical Committee
	October 5	Steering Committee

November 1990 The Final Report completed

2. Member List of the Study Team

Team Leader	Heihachiro AOKI	Japan External Trade Organization (JETRO)
Deputy Team Leader	Issei KOIDE	„
Deputy Team Leader	Toshio ASAKURA	„
	Sumihito HIRAI	„
	Tsuneo TANAKA	„
	Toshiaki ENDO	„
	Junko SEKIGUCHI	„
	Tadao TAMAI	„
	Takehide TERANISHI	„
	Yoshitsugu MATSUMOTO	„
	Masahiro SUZUKI	„
Deputy Team Leader	Takashi NOBEHARA	The Sumitomo Business Consulting Co., Ltd.
	Mitsuo SHIMIZU	„
	Kazuo MISHIMA	„
	Shuichi KUROZUMI	DSK Corporation
	Minoru EBINO	Mazda Auto Corporation
	Nobukazu YAMAUCHI	Japan Ceramic Engineering Co., Ltd.
	Hiroteru HAMANO	Shin Nippon Glass Co., Ltd.
	Yusuke EMURA	Canon Inc.
	Masami IDENUMA	„
	Makoto NAGANO	„
	Akihiro YADMADA	NEC Corporation
	Osamu YAMADA	NTK Technical Ceramics
	Hidenori AKIYOSHI	Asahi Corporation
	Isamu TAKI	Tokyo International Foundry Engineering Consultant
	Kenji MORIYA	„
	Satoru OGI	Tokyo Electric Co., Ltd.
	Masao WATARAI	Oki Electric Industry Co., Ltd.
	Masahiro SAITO	NEC Corporation

3. Member List of the Steering Committee and of the Technical Committee

Economic Planning Unit (EPU)

Dr. Abdullah Mohd Tahir	Mr. Zainol Abd. Rashid
Miss Boey Siew Leng	Mrs. Siaw Lean Sim
Mrs. Wan Norma Wan Daud	Miss Yap Kim Lian
Mr. Allauddin Haji Anuar	Mrs. Zawiah Chik
Mr. Haji Tanzil Mohad Noor	Mrs. Pauline Chun Siew Min
Mr. Victor Wee	Mrs. Siti Halimah Ismail
Mr. Fakhurrazi Abdul Majid	Mr. Saharuddin Mat Ajil

Malaysian Industrial Development Authority (MIDA)

Y. Bhg. Tan Sri Datuk Zainal	Mrs. Rohana Baharuddin
Y. Bhg. Dato N. Sadasivan	Mr. Tan Chee Chai
Mr. Geh Sim Hong	Mr. Chua Chee Keong
Mrs. Zainum Aishah Ahmad	Mr. Yau Chin Chong
Mr. J. Jegathesan	Mr. Foo Sin Fong
Mr. Low Peng Lum	Mrs. Komala Devi
Mr. Yaakub Arshad	Miss Inon Abdul Hamid
Mr. G. Jayanathan	Mr. K. Sri Daran
Mr. Chua Eng Seng	Mr. Wee Ton Wang
Mrs. Fadillah Mohd. Yakin	Mr. Wan Hashim Wan Jusoh
Ms. Mardziah Aziz	Mr. Phang Ah Tong
Mrs. Tan Keok Yin	Mr. Adnan Mohd Saaid
Mr. Yeow Teck Chai	Mrs. Jalilah Baba
Mr. Lim Hock Guan	Tuan Hj. Hanafiah
Mrs. Foong Jit Cheng	Mr. Thenmoli N.
Mr. Chong Teek Lai	Mr. Rosly Aziz
Mr. Chan Yew Min	Mr. George Leong
Mrs. Khaziah Aabdul Kadir	Mr. Mansor Abdullah
Mr. Chen Seng Chong	Mr. Kamarulzaman Othman
Mr. Ahmad Sharkan	Mr. Ahmad Hj. Mohd. Sharkan
Mr. Onn Abdullah	Miss Sabariah Ahmad
Mr. N. Parameswaran	

Ministry of Trade of Industry (MTI)

Mrs. Nur Fuziah Mohd Hariri
Mrs. Khodijah Abdullah
Mr. Ithnin Hj. Hassan
Mr. Esparan
Mr. Norazian Yahya
Mrs. Mahanum Itam

Mr. Zulkafli Abd. Karim
Mr. Abdul Malek Abdul Khalid
Mr. Ramli Mahmud
Mr. Zulkifli Rauf
MR. Kenneth J. Luis

Malaysian Export Trade Centre (MEXPO)

Mr. Syed Hamzah Othman
Mr. Dzulkifli Mahmud
Mrs. Rusiah Mohamed

Mr. Yahaya M. Lik
Mr. Ismail Abdul Rahmar
Mr. Mohd. Esah Abd. Hamid

Standards and Industrial Research Institute of Malaysia (SIRIM)

Mr. Hamzah Kassim
Mr. Helme Hashim
Ms. Jayamalar Savarimuthu
Mr. Abdul Halim Abdul Rahman

Mr. Ramli Salleh
Mr. Megat Ahmad Zaki
Mr. Rozanah Abdullah

Malaysian Institute of Microelectronic Systems (MIMOS)

Dr. Arif Nun
Mr. Mohamad Raffee Yusoff

Rubber Research Institute of Malaysia (RRIM)

Mr. Lim Hun Soo

National Productivity Centre (NPC)

Mr. Hj. Ruslan Bin Khatib

Bank Negara Malaysia (BNM)

Mr. Hazali Shamsuddin
Mrs. Normi Buyong

Credit Guarantee Corporation (CGC)

Mr. Hj. Jaafor Abd. Razak

Manpower Department

Mr. Nidzam Kamarulzaman

Department of Environment

Mrs. Asmah Ibrahim

Miss Rahani Hussin

4. List of Principal Malaysian Government Agencies and Organizations Concerned to the Study

Governmental Agencies

Economic Planning Unit (EPU), Prime Minister's Department
Ministry of Trade and Industry
Ministry of Finance
Ministry of Science, Technology and the Environment
Ministry of National and Rural Development
Ministry of Labour
Ministry of Education
Ministry of Youth & Sports
Malaysian Industrial Development Authority (MIDA)
Malaysian Export Trade Centre (MEXPO)
Standards and Industrial Research Institute of Malaysia (SIRIM)
Metal Industry Development Centre (MIDEC), SIRIM
Majlis Amanah Rakyat (MARA)
National Productivity Centre (NPC)
Implementation Coordination Unit (ICU), Prime Minister's Department
Federal Agricultural Marketing Authority (FAMA)
The Malaysian Timber Industry Board
National Institute of Public Administration (INTAN)
National Vocational Training Council (NVTC)
Malaysian Administrative Modernisation and Manpower Planning Unit (MAMPU)
Malaysian Handicraft Development Corporation
Heavy Industries Corporation of Malaysia Bhd. (HICOM)

Regional Development Organizations

Penang Development Corporation (PDC)
Perak State Development Corporation
Selangor State Economic Development Corporation
Sarawak Economic Development Corporation
Bintulu Development Authority
Malaysian Technology Park
Department of Industrial Development & Research, Sabah

Industrial Associations

Federation of Malaysian Manufacturers (FMM)
National Chamber of Commerce and Industry of Malaysia
Malaysian Automotive Component Parts Manufacturers Association (MACPMA)
Malaysian Rubber Products Manufacturers Association (MRPMA)
Federation of Malaysian Foundry & Engineering Industries Associations (FOMFEIA)
The Selangor Foundry & Engineering Industries Association
Perak Foundry & Engineering Industries Association
Penang State Foundry & Engineering Industries Association
Malaysian National Computer Confederation (MNCC)
Persatuan Industri Komputer Malaysia (PIKOM)
Malaysian Plastic Manufacturers Association
Malaysian Employers' Federation (MEF)
Malaysian Textile Manufacturers Association

Financial Institutions

Bank Negara Malaysia
Malaysia Export Credit Insurance Berhad (MECIB)
Malaysia Industrial Development Finance Berhad (MIDF)
Credit Guarantee Corporation Malaysia Bhd. (CGC)
Bank Pembangunan Malaysia Bhd.
Malaysian Banking Berhad

Universities and Institutes

Institut Teknologi MARA
Universiti Sains Malaysia
Malaysian Institute of Economic Research
Institute of Strategic & International Studies (ISIS) Malaysia
Rubber Research Institute of Malaysia (RRIM)
Workers Institute of Technology
Federal College of Technology
Malaysian Agricultural Research & Development Institute
Malaysian Institute of Microelectronic Systems (MIMOS)

Training Organizations

Institute Kemahiran MARA (IKM)

The Centre for Instructor and Advanced Skill Training (CIAST)

Penang Skills Development Centre

Sultan Ahmad Shah Training Institute, National Electricity Board

National Computer Training Centre, National Institute of Public Administration
(INTAN)

Industrial Training Institute (ITI)

Youth Training Centre (YTC)

Public Enterprises

Jabatan Telekom Malaysia

Syarikat Telecom Malaysia Bhd.

5. History of Industrial Promotion Policies and Export Promotion Policies in 5 Asian Countries & Regions (Industrial Promotion Policies)

JAPAN	KOREA	TAIWAN	THAILAND	MALAYSIA
<p>Postwar Reconstruction Period (1946-48) "Priority Production System" Material Quota/Reconversion Finance Bank Loans/Price Control</p>				
<p>Industrial Rationalization Period (the first half of 1950's) Preferential Treatment for Equipment Investment (special depreciations)/Loans from the Japan Development Bank/Tax Exemptions</p>	<p>After the Disturbance in Korea (1950's) Import Substitutional Industrial Development Promotion Aids Quota System/Double Exchange Rate/Tax Exemption for Raw Materials & Machinery</p>	<p>Import Substitutional Industrialization Period (the first half of 1950's) Adjustment of Public Key Industries — Sugar, Cement, Fertilizer, ... etc./Textile Industry Promotion with Bave Import Quota</p>	<p>Import Substitutional Industrialization Initial Stage (1950's) Act on Promotion of Industries (1954) Import Substitutional Industrialization Focusing on National Enterprises & Light Industry</p>	<p>Import Substitutional Industrialization Initial Stage Pioneer Status Ordinance (1958) Tax Exemptions & Deductions for Pioneer Enterprises/Import Substitutional Industrialization (Food Processing & Textile)</p>
<p>Industrial Development Promotion Period (the latter half of 50's) Synthetic Fiber, Petrochemical, Electronics, Machinery Tariff Protection/Selective Fiscal & Financial Policy (Loans from the Japan Development Bank, Depreciations, Tax Exemptions & Reductions)/Approval of Technology Introduction</p>		<p>Transitional Period to Export Oriented Industry (the latter half of 50's) Adjustment of Public Key Industry/Textile & Agricultural Product Processing Industry Development</p>		

JAPAN	KOREA	TAIWAN	THAILAND	MALAYSIA
<p>High-Growth Period (1960's) Building an Open Economy Industry-Government Cooperation System (Investment Adjustment /Coordination of Production Field/Industry-by-Industry Development Programs (Law on Extraordinary Measures for Machinery Industries/Law on Extraordinary Measures for Electronic Industries)</p>	<p>Transition to Export Oriented Industrialization (1960's) Stressing Economic Growth Introduction of Foreign Capital (Mainly Loans)/Export Light Industry Promotion/Tax Exemptions/Key Industry Promotion with the Government Initiative & Intervention</p>	<p>Export Oriented Industriali- zation in Full-Swing (1960's) Introduction of Foreign Capital (Loans & Direct Investment) /Focusing on Private Sector /Export Processing Zone/Tax Exemptions & Deductions /Trading Company Promotion</p>	<p>Import Substitutional Industrialization Progressive Stage (1960's) Promotion of Industrial Investment Act/Stressing Public Enterprises & Introduction of Foreign Capital/Remittance Foreign Capital Liberalization /Tax Exemptions of Raw Materials & Machinery Imports/Foundation of IFCT, SIFO</p>	<p>Import Substitutional Indus- trialization Progressive Stage (the latter half of 1960's) The First Malaysia Plan (66-70) Import Substitutional Industrialization by Introduction of Foreign Capital</p>
<p>Stable Growth Period (1970-) Drawing up "Vision", Utilizing Market Mechanism Knowledge-Intensive Industry High Technology Development</p>	<p>Export Oriented • Heavy & Chemical Industrialization (1970's) "Heavy & Chemical Industries -Strategic Industrial Development Plan" Government Controlled Financing Organization Export Industry • Heavy & Chemical Industries Promotion with Low-Interest Loan Expansion of Equipments in Private Enterprises</p>	<p>Heavy & Chemical Industrialization (1970's) 10 Major Development Plan Foundation of Public Enterprises of Iron & Steel, Oil and Shipping/Social Capital Adjustment</p>	<p>Parallel Commitment with Export Oriented Industrialization (1970's) Expanding Introduction of Foreign Capital/Strengthening BOI/Expanding privilege on Tax</p>	<p>Parallel Period of Import Substitutional Industrialization & Export Industry Promotion (1970's) New Economic Policy (NEP) Export Industry Promotion (Parallel with Import Substitutional Industrialization) Industrial Coordination Act Guide Line of Foreign Capital Introduction Export Processing Zone Heavy & Chemical Industrial Promotion</p>

JAPAN	KOREA	TAIWAN	THAILAND	MALAYSIA
	Liberalization • Heavy Chemical Industries Coordination (1980's) Economic Liberalization Leaving Public Cooperation to Private Foreign Capital Liberalization Finance Liberalization Heavy & Chemical Industries Coordination Small- and Medium-size Enterprises Promotion	High Technology Promotion (1980's) Specifying Strategic Industry Tax Exemptions for Electronics & Machinery/Low-Interest Loans/Preferential Internal Revenue Fund/Automobile Industry Promotion	Export Oriented Industriali- zation in Full Swing (1980's) Massive-neutralizing Foreign Capital Constraints /Strengthening Foreign Capital Introduction/Approval of Majority Foreign Capital/Tax exemptions & Deductions for Export Oriented Investment	Export Oriented Industrialization (the latter half of 1980's) The Fourth Malaysia Plan Review of Foreign Capital Constraint Specifying 12 Prior Type of Industry According to Industrial Master Plan

(Export Industrial Promotion & Export Promotion Policies)

JAPAN	KOREA	TAIWAN	THAILAND	MALAYSIA
<p>Industrial Rationalization Period (the first half of 1950's)</p> <p>Financial Preferential Measures</p> <p>Export Preferential Finance (Low Interest Rate Reduction of the Bank of Japan)</p> <p>Foundation of the Export Bank of Japan in 1950</p> <p>Tax Preferential Measures</p> <p>Export Income Deduction</p> <p>Special Deduction for Export</p> <p>Export Insurance</p> <p>Foundation of JETRO</p>	<p>After the Disturbance in Korea (1950's)</p> <p>Export Promotion in Import Substitutional Industrialization</p> <p>Export Promotion Fund/Export Credit Finance</p> <p>Foreign Currency Deposit /Export Subsidiaries (but Export was depressed)</p>	<p>Import Substitutional Industrialization Period (the first half of 1950's)</p> <p>Public Key Industry (Coordination/Bave of USA Aids Import Rate/Double Price System)</p>		
<p>Industrial Development Promotion Period (the latter half of 1950's)</p> <p>Shipment Export (Loans from Export-Import Bank of Japan)</p> <p>Special Deduction of Incomes Related to Overseas Transactions</p>		<p>Transition to Export Oriented Industrialization (the latter half of 1950's)</p> <p>Starting Rice, Sugar, Agricultural Processing Products Export (Public Sector) /Export & Import Exchange Link System</p>		<p>Import Substitutional Industrialization Period (1958-)</p> <p>Pioneer Status Ordinance (1958)</p> <p>Import Substitutional Industrialization by the Introduction of Foreign Capital</p>
<p>High Growth Period (1960's)</p> <p>Economic Liberalization</p> <p>Strengthening International Competitiveness</p> <p>Plant Export (Loans from Export-Import Bank of Japan)</p> <p>Special Deduction for Exports</p> <p>Overseas Market Development</p> <p>Reverse System</p> <p>Expansion of JETRO</p>	<p>Transition to Export Oriented Industrialization (1960's)</p> <p>Private Enterprises Promotion in Export Industry/Direct Subsidiaries/Low Interest /Accelerated Depreciation/Tax Exemption & Deduction (Cost Reduction)</p> <p>Export Light Industry (Textile & Wig) Promotion</p>	<p>Export Oriented Industrialization in Full Swing (1960's)</p> <p>Exceptional Loan/Export Zone/Trade Company Promotion/Tax Preferential Treatment by Investment Act/Introduction of Foreign Capital</p>	<p>Input Substitutional Industrialization Period (1960's)</p> <p>Promotion of Industrial Investment Act Establishment /Export Promotion According to Economic Plan/Raising Tariff due to Trade District Expansion</p>	

JAPAN	KOREA	TAIWAN	THAILAND	MALAYSIA
<p>Export Industry Rapid Growth Period (1970's)</p> <p>Expansion of Low Interest Loan /Export Processing Zone/Shosha</p> <p>Devaluation/Sogo-Shosha System/Export-Import Bank of Korea/Introduction of Value Added Tax</p>	<p>Export Industry Advanced Period (1970's)</p> <p>Strengthening Public Enterprises/Export Insurance /Export Import Bank's Medium- & Long-Term Export Loan System/Foreign Trade Development Association (Far East Trade Service)</p>	<p>Parallel Commitment with Export Oriented Industrialization Period (1970's)</p> <p>Export Industry Promotion Project by Investment Promotion Act of 77</p> <p>Investment Preference on Domestis Raw Materials, Labour-Incentive, and Localization/Tariff & Transaction Tax Exemption & Deduction/Preferential Treatment on Reduction by Bank of Thailand</p> <p>Strengthening Export Industry Promotion Project</p> <p>Strengthening Tax Preferential Treatment/Sogo-Shosha Promotion</p>	<p>Parallel Commitment between Import Substitutional & Export Industry Promotion (1970's)</p> <p>Export Industry Promotion Guide Line of Introduction of Foreign Capital/FTZ Act (1971)</p> <p>Electronics Processing with Introduction of Foreign Capital</p> <p>Export Financial System (1977)</p>	<p>Export Oriented Industrialization (1980's)</p> <p>Strengthening Export Development Promotion System in 1983</p> <p>Income Deduction/Accelerated Depreciation/Investment Deduction/Sogo-Shosha Neutralizing Foreign Capital Constraint</p> <p>Industrial Master Plan (1986-) Specifying 12 Prior Type of Industry, Resource based & Non-resource based</p>
<p>Coping with Trade Conflict (1980's)</p> <p>Export Self-Constraint</p> <p>Enterprise Advances to U.S.A.</p> <p>Open Market Promotion</p>		<p>Export Oriented Industrialization in Full Swing (1980's)</p> <p>Strengthening Policy Adjustment Function /Strengthening Export Development Promotion</p> <p>Organization/Establishment of Trade Training Center /Strengthening Investment Preferential Treatment & Introduction of Foreign Capital /Various Export Tax Rebate /Consideration on VAT Introduction</p>		

6. Outline of Trade Promotion Organizations in 8 Asian Countries & Regions

	Malaysian Export Trade Centre (MEXPO)	Singapore Trade Development Board (STDB)	Korea Trade Promotion Corporation (KOTRA)	China External Trade Development Council (CETRA), Taiwan
Year established	1980	1983	1962	1971
Law concerning the establishment	—	Trade Development Board Act, 1982	Korea Trade Promotion Corporation Act, No. 1059, 1962	n.a.
Competent authorities	Ministry of Trade & Industry	Ministry of Trade & Industry	Ministry of Trade & Industry	Ministry of Economic Affairs
Organization network				
Domestic	Headquarters (1)	Headquarters (1)	Headquarters (1), Branch (10)	Headquarters (1), Branch (2)
Overseas	30 locations as Trade Commissioner's Office	21 locations in 17 countries	76 locations in 65 countries	28 locations
Number of staff				
Domestic	39	340	506	600
Overseas	—	30	191	100
Main activities	<ol style="list-style-type: none"> 1. Trade inquiry service 2. Trade information 3. Company registry 4. Exhibition centre 5. Advisory services 6. Business appointments 7. Trade fairs and missions 	<ol style="list-style-type: none"> 1. Trade policy matters, both bi-lateral relations and multilateral /regional relations 2. Sponsoring of and participation in exhibitions and missions overseas 3. Promotion of warehousing and distribution services 4. Promotion of industrial design 5. Trade information services 6. Trade documentation services 7. Management of IDB Holdings (STDB's subsidiary) 	<ol style="list-style-type: none"> 1. Trade inquiry services 2. Participation in foreign trade fairs and exhibitions 3. Management of Taipei World Trade Center (TWTC), one-stop professional services for buyers and sellers 4. Sponsoring of trade fairs and exhibitions in the Import/Export Marts at TWTC 5. Worldwide computer database service for traders 	
Annual budget	MS1 million (FY1988) (approx. US\$391,000)	SS22 million (FY1987/88) (approx. US\$10.89 million)	36.3 billion Won (FY1988) (approx. US\$46.28 million)	NT\$5,500 million (FY1989) (approx. US\$208 million)

(Outline of Trade Promotion Organizations in 8 Asian Countries & Regions)

	Year established	Department of Export Promotion (DEP), Thailand	National Agency For Export Development (NAFED), Indonesia	Japan External Trade Organization (JETRO)	Hong Kong Trade Development Council (HKTDC)
Low concerning the establishment	1952	—	1971	1958	1966
Competent authorities		Ministry of Commerce	The Instruction of President No. 44 and 46, 26 August 1974	The Law Concerning Japan External Trade Organization No. 95, April 26, 1958	n.a.
Organization network		Ministry of Commerce	Department of Trade	Ministry of International Trade & Industry	Trade Department
Domestic		Headquarters (1), Branch (3) 13 locations in 10 countries	Headquarters (1) 11 locations in 11 countries	Headquarters (1), Branch (29) 77 locations in 57 countries	Headquarters (1) 20 locations
Overseas		(and 34 Commercial Counsellors Offices attached to Embassies)			
Number of staff		275	335	600	453
Domestic		26	11	300	133
Overseas					
Main activities		1. Trade information service 2. Trade fairs and exhibitions both in Thailand and overseas 3. Dispatch of sales missions and invitation of foreign buyers 4. Sponsoring of seminars 5. Product and market promotion and development 6. Trade inquiry service 7. Publications	1. Information services on product availability and Government trade regulations 2. Assistance in arranging business appointments and negotiations 3. Sponsoring of exhibitions domestically and overseas 4. Dissemination of overseas market information 5. Cooperation in product development	1. Collection and provision of extensive overseas trade and economic data 2. Import promotion activities 3. Promotion of industrial cooperation, technical exchanges and investment 4. Cooperation to spur development of trade and industry in the developing countries 5. Encouragement of international exchanges and mutual understandings 6. Support to internationalize regional economies	1. Receiving trade missions 2. Overseas market surveys 3. Management of display centers 4. Sponsoring of and participation in exhibitions and business conferences 5. Trade inquiry services 6. Registered manufacturers: 25,000 7. Registered Importers: 92,000 8. Fashion library
Annual budget		154 million baht (FY1989) (approx. US\$5.92 million)	Rp. 7,000 million (FY1988) (approx. US\$4.2 million)	Gross: ¥22.8 billion (FY1989) (US\$163 million) Subsidy: ¥13.8 billion (FY1989) (US\$112 million)	HK\$224 million (FY1987) (approx. US\$28.7 million)

7 VARIOUS SCHEME OF JAPANESE COOPERATION

	Operating Organization	Main Content, Condition Etc.	Local Organization To Contact	Time To Apply
Specialist Dispatching	JICA	To dispatch specialists in broad fields upon government's requests in developing countries/International organizations. 2 types of duration are available: short term (less than one year) and long term (more than one year)	Japanese Embassy JICA Malaysia Office	September of Previous year
	JODC	To dispatch specialists in technology and management upon request of private enterprises/organization in developing countries. Duration is either short term (less than one year) or long term (1-2 year), but one year extension is possible. According to cost sharing, 2 types of project are available: 1. General type (3/4 government support, 1/4 local enterprise) 2. Private cooperation type (3/8 Japanese enterprise, 3/8 government support, 1/4 local enterprise)	1. JETRO Kuala Lumpur Centre 2. Direct application to JODC via a partner, a Japanese private enterprise	Anytime (when necessary)
	JETRO	To dispatch specialists for market opening of products from developing countries to Japan.	JETRO Kuala Lumpur Centre	December of previous year
Training/Seminar (Local)	AOTS	Seminars such as Q.C., computerized production system, maintenance and servicing of motor vehicle etc.	AOTS Kuala Lumpur Office	Feb or March
	JETRO	To hold seminars or to give guidances locally concerning trade practice and management etc. for management level as the fostering project for managers of small and medium sized enterprises in developing countries.	JETRO Kuala Lumpur Centre	December of previous year
Training/Seminar (Japan)	AOTS	Organizing training courses for private sectors in developing countries. Orientation in AOTS training centre, Practical training in respective private firms in Japan.	AOTS Kuala Lumpur Office	Anytime (examination committee is held twice a month)
	JICA	To hold trainings in various fields based on governments recommendation of developing countries. There are 2 types of training: group training on settled themes which are common for developing countries and individual training by individual request from each country. Training for foreign businessmen and students who are interested in Japanese trade and economy.	Japanese Embassy JICA Malaysia Office	September of previous year
Information Data Supply	JETRO	Information service on trade promotion such as access to Japanese market etc.	JETRO Kuala Lumpur Centre	Anytime (when necessary)

	Operating Organization	Main Content, Condition Etc.	Local Organization To Contact	Time To Apply
Grant of Machine/ Material	JICA	Upon requests from developing countries, required machines and materials are granted in the case that technical training, transfer and dissemination etc. are not undertaken smoothly or existing technology cannot be used effectively because of lack of machines and of materials.	Japanese Embassy	September of previous year
Project Type	JICA	An economic cooperation as one combined project, where specialist dispatching, trainee acceptance and grant of machine and material, 3 types of cooperation are unified in coordination. Joint implementation by Japanese government and developing country's government.	Japanese Embassy	July of previous year
Investment Promotion	JETRO	Information service concerning setting up joint ventures and technical tie between Japanese firms and foreign counterparts. Matchmaking is also provided under "JOIN SCHEME"	JETRO Kuala Lumpur Centre	Anytime (when necessary)

