2. List of Companies and Organizations Visited by the Study Team

List of Companies and Organizations Visited by the Study Team

OFFICE ELECTRONIC EQUIPMENT

NO.	NAME OF COMPANY	ADDRESS	TEL.
(ASSEMBLER)			
1.	Microcomputer Systems (M) Sdn. Bhd.	No.23A-25A, Jalan Jejaka 7, Taman Maluri, Ceras, 55100 K.L.	03-9840119
2.	Sharp-Roxy Corporation (M) Sdn. Bhd.	Lot 202 Bakar Arang Ind. Est. 08000 Sungai Petani Kedah	04-412854
3.	Sony Electronics (M) Sdn. Bhd.	Ftz, Prai Ind. Est., 13600 Prai, Penang	04-396400
4.	Sapura Holdings Sdn. Bhd.	Bangunan Sapura, Jalan Enggang, Ulu Klang, 54200 K.L.	03-4572033
5.	Matsushita Ind. Corp. Sdn. Bhd.	No. 2, Jalan St 8/1, Sungai Way Ftz, P.O. Box 1012, Jln. Semangat, 46966 Petaling Jaya	03-7761972
6.	Skt. Hitec Sdn. Bhd.	22, 24 & 26, Jalan Bakau, 86000 Kluang, P.O. Box 55, 86007 Kluang Johor	07-722611
7.	Okida Enterprise Sdn. Bhd.	68, Jalan Haji Manan, 86000 Kluang, Johor	07-723564
8.	Clarion (M) Sdn. Bhd.	Ftz.1, 11900 Dayan Lepas, Penang	04-839106
9.	Radiola Corporation (M) Sdn. Bhd.	Bayan Lepas Ftz, PhaseⅢ, 11900 Bayan Lepas	04-832640
10.	I.E.S. Industries Sdn. Bhd.	8-B, Jalan Tara, Kawasan Perindustrian Tampoi 80350 Johor Bahru, Johor	07-367288
11.	Wearnes Electronics (M) Sdn. Bhd.	99 Jalan Parit Masjid 82000 Pontian Johor	07-871066
12.	Fujitsu Component (M) Sdn. Bhd.	No. 1, Lorong Satu, Kaw. Perindustrian Parit Raja, 86400 Batu Pahat, Johor	07-481392
13.	Mitsumi Technology (M) Sdn. Bhd.	Batu 34 1/2 Jalan Johor 82000 Pontian Johor	07-871822
(COMPONENT MAKERS)			
14.	Tamura Electronics (M) Sdn. Bhd.	Lot No. 1 Jalan St8/6 Sungei Way Ftz 47300 Selangor	03-7760950
15.	Hagemeyer Industries	19 Jalan Tandang 46050 P.J.	03-7910711

(M) Sdn. Bhd.		
16. Kris Components Snd. Bhd.	Lot 11A, Lorong 2A, Cheras Jaya, Jalan Balakong, 43200 Batu 9 Cheras, Selangor	03-9055117
17. NEC Home Electronics (M) Sdn. Bhd.	Lot 9, Tikam Batu Ind. Est., P.O. Box 4, 08007 Sungai Petani, Kedah	04-478700
18. Lambang Hidup Limited	2022 Solok Perusahaan 1, Prai Ind. Complex, 13600 Prai, Penang	04-306457
19. Crystal Precision (M) Sdn. Bhd.	Phase III Ftz 11900 Bayan Lepas Penang	04-8383712
20. Kohno Plastics (M) Sdn. Bhd.	Lot 79, Lorong Enggang 35, Kawasan Perusahaan Bebas, Ampang Ulu Klang, 54200 Selangor	03-4566022
21. Taiko Electronics (M) Sdn. Bhd.	Plo No. 28 Kawasan Perindustrian Senai, Johor	07-592266
22. Kee Fatt Industries Sdn. Bhd.	22 M/S Jalan Air Hitam 81000 Kulai, Johor	07-631635
23. Frs (M) Sdn. Bhd.	Lot 20, Jalan 26/3, Section 26 Kawasan Perindustrian Hicom 40000 Shah Alam Selangor	03-5111515
24. Polynic Industries Sdn. Bhd.	4865 & 4866, Jln. Permatang Pauh, Mak Mandin Indl. Est., Butterworth Penang	04-345569
25. Innopower Keidenki Sdn. Bhd.	Lot 2, Persiaran Sultan, Shah Alam Indl. Est., 40000 Shah Alam Selangor	03-5590977
26. Clairvoy (M) Sdn. Bhd.	C/O Radiola Corporation (M) Sdn. Bhd. Bayan Lepas F.T.Z., Phase III, 11900 Bayan Lepas, Penang	07-832640
(GOVERNMENT ORGANIZATION)		
27. Malaysian Industrial Development Authority (Electrical, Electronics Industries)	3.4.5-6Pl, Wisma Damansara, Damansara Heights, P.O. Box 10618 K.L.	03-2553633
28. Jabatan Telekom Malaysia	Kementerian Tenaga, Telekom Dan Pos Wisma Damansara Jalan Semantan, K.L.	03-2556687
(OTHERS)		

29.	Syarikat Telecom Malaysia Bhd.	Head Office, Bangunan Bukota Jalan Pantai Baru K.L.	03-2329494
30.	Canan Marketing (M) Sdn. Bhd.	50 Jalan Penchala, 46050 Petaling Jaya Selangor.	03-7916888

CATHOD RAY TUBE (CRT)

NO.	NAME OF COMPANY	ADDRESS	TEL.
(TV MANUFACTURERS)			
1.	East Coast Electronics	11A Jalan 215 46050 P.J. Selangor	03-7914322
2.	Matsushita Electric	Shah Alam Ind. Site 40000 Shah Alam Selangor	03-5591010
3.	Sharp-Roxy Electronics	Plo No.1 Kawasan Perindustrian Sri Gading 83009 Batu Pahat Johor	07-4454466
4.	Setron	Lot 15 3 3/4 M.S. Jalan Tampoi 81200 Johor Bahru Johor	07-322188
5.	Sharp-Roxy Appliances	11B Jalan 223 Section 51A 46100 P.J. Selangor	03-7571477
6.	Syarikat Hitek	22,24 & 26 Jalan Bakau 86007 Kluang Johor	07-722326
7.	Silver Electronics	No.2 Pesiaran Raja Muda 40000 Shah Alan Selangor	03-5500522
(Auxiliary Facilities Companies)			
8.	Alocone M & E Engineering	Bangunan Ame 36 Jalan Manis 3 Ymn Segar Cheras K.L.	03-9301313
9.	Arkitek Maa	Bangunan Ming 15-01 Jalan Bukit Nanas 50714 K.L.	03-2308955
10.	Aquamech Co.	No.5 Jalan Segambut 51200 K.L.	03-6269930
11.	Mecomb (M)	No.20 Jalan 225 P.J. Selangor	03-7743422
12.	Malaysian Oxygen	13 Jalan 222 P.J. Selangor	03-7554233
13.	Organo (M)	Lot 14.03 14th Floor Menara Mppj Merdeka Square 46200 P.J. Selangor	03-7567508
14.	Taikisha Ltd.	22nd Floor Ubn Tower No.10 Jalan P.Ramlee 50250 K.L.	03-2322033
15.	Dayuan Enginering (M)	42m Jalan Ss 21/39 Damansara 47400 P.J. Selangor	03-7172626
(Comporents Manufacturers)			
16.	Hitachi Consumer Products	Lot No.4 Jalan P1/4 Bangi Ind. Est. Bandar Baru Bangi 43000 Kajang Selangor	03-8250801
17.	Wearnes Electronics	99 Jalan Parit Masjid 82000	07-871066

	Pontian Johor	
18. Itami Plastic	Plo No.2 Kawasan Perindustrian Sri Gading 83009 Batu Pahat Johor	07-488266
19. Matsushita Precision Ind.	Plo No.1 Perdagangan Bebas Ftz Kb No.104, 81400 Senai Johor	07-592669
20. NEC Semiconductor (M)	Telok Panglima Garang Ftz 9 1/2 Miles Jalan Banting Kuala Langat 42500 Selangor	03-352620
21. NEC Home Electronics (M)	Lot 9 Kawasan Perusahaan Tikam Batu Peti Surat 4 08007 Sungai Petani Kedah	04-47800
22. Kohno Plastics	Lot 79 Lorong Enggang 35 Kawasan Perusahaan Beras Ampang Ulu Klang 54200 Selangor	03-4566622
(Others)		
23. Selangor Sedc	Komplex Pkns 40505 Shah Alam Selangor	03-7576923
24. Fmm	Tingkat 17 Wisma Sime Darby Jalan Raja Laut 50350 K.L.	03-293244
25. Sirim	Peti Surat 35 40700 Shah Alam Selangor	03-5951630
26. Mimos	Lot 7.2 & 7.3 Tingkat 7 Kompleks Bukit Naga Off Jalan Semantan Damansara Heights K.L.	03-2552700
27. Malaysian Technology Park	Lot 8,10,12 Block a Jalan Jaya 5 Taman Jaya Bandar Tun Razak Cheras K.L.	03-9307088
28. Sumitomo Co.	Ubn Tower 10 Jalan P. Ramlee K.L.	03-2308133

CERAMIC IC PACKAGES & SUBSTRATES

NO.	NAME OF COMPANY	ADDRESS	TEL.
(SEMICONDUCTOR MANUFACTURERS)			
1.	Motorola (M)	Sungei Way Ftz No.2 Jalan Ss8/2 P.J., Selangor	03-7761177
2.	Harris Semiconductor	#33 Lot2 Lrg Enggang Ulu Klang Ftz, K.L.	03-4569227
3.	Advanced Micro Device	Phase II, Ftz Bayan Lepas Penang	04-838114
4.	Integrated Device Technology (M)	Phase II, Ftz Bayan Lepas Penang	04-832101
5.	Intel (M)	Phase II, Ftz Bayan Lepas Penang	04-832021
6.	Motorola (M)	Phase II, Ftz Bayan Lepas Penang	04-832511
7.	Siemens Litronix (M)	Phase II, Ftz Bayan Lepas Penang	04-834404
8.	Carsem (M)	Japan Lapangan Terbang, Ipoh	05-201091
9.	Naito Electronics	Lot 57 Senawang Ind. Est. Seremban, Negri Sembilan	06-775487
10.	Motorola Semiconductor	Lot 122 Senawang Ind. Est. Seremban Negeri Sembilan	06-6773088
11.	Sgs Thomson Microelectronics	Tanjion Agas Ind. Area Muar Johor	07-921801
(MOULDS & DIES MANUFACTURERS)			
12.	Micro Machining	Bayana Lepas Ftz Penang	04-830906
13.	Dyna Craft	Bayana Lepas Ftz Penang	
14.	Eng Hardware Engineering	Plot 69 Persiaran Kampong Jawa, Bayan Lepas Ftz Penang	04-840122
15.	Topla Enginnering	Lot 56 Tasek Ind. Est. 31400 Ipoh Perak	05-551855
16.	Poly Tool	No.9 Persiaran Indah Rokam 4 Gunong Rapat 31350 Ipoh Perak	05-203633
(PRINTING COMPANIES)			
17.	Life Offset & Engraving	82 Jalan Petaling 50000 K.L.	03-2382016

18. Th Loy Industries	4 Jalan Segambut Selatan Segambut, 51200 K.L.	03-6271215

(FIRE-BRICK MANUFACTURERS)

19. Sea Ceramics	8 3/4 Mile Jalan Ipoh, 68100 Kuala Lumpur	03-6184422
20. Sea Inax	Lot 552 Tennamaram Est. Jalan Raja Musa, Locked Bag No.212 45600 Batang Berjuntai, Selangor	03-8719912
21. Armitage Shanks (M)	Jalan 225 46100 Petaling Jaya Selangor	03-7552522

(Others)

22. Mitsui High-Tech	Lot 11-A Jalan Ragum Shah Alam, Selangor	03-5509187
23. Northern Telekom Industries	Bayan Lepas Ftz Penang	04-834211
24. Kitako Electronics	Pt 1461 Senawang Ind. Est. 70450 Senawang Negeri Sembilan	06-770710
25. NEC Sales (M)	13th Floor Bangunan Arab Malaysian, 55 Jalan Raja Chulan, K.L.	03-2387788
26. Sumitomo Co.	Ubn Tower, 10 Jalan P.Ramlee, K.L.	03-2308133
27. Japan Electronics & Electrical Firm Group (JEEF)	42507 Telok Panglima Garang 15Km Klang-Bantin Road Kuala Langat Selangor	03-9526001
28. Malaysia American Electronics Industries Group (MAEI)	No.1 Lrong Enggang 33 Ampang Ulu Kelang 54200 K.L.	03-4567077
29. Penang Development Corporation	No.1 Jalan Sungai Nibong Bayan Lepas, Penang	04-832111
30. U.S.M.	Universiti Sains Malaysia Penang	04-875407
31. Sirim	Peti Surat 35 40700 Shah Alam Selangor	03-5951630
32. Mimos	Lot 7.2 & 7.3 Tingkat 7 Kompleks Bukit Naga Off Jalan Semantan Damansara Heights K.L.	03-2552700

Note: JEEF and MAEI don't have their own offices, so the addresses of these organizations are that of Toshiba Electronics (JEEF) and Texas Instruments (MAEI).

RUBBER FOOTWEAR

NO.	NAME OF COMPANY	ADDRESS	TEL.
(SHOES, BOOTS MANUFACTURERS)			
1.	Bata (Malaysia) Berhad	3 1/4 Mile, Jalan Kapar, 41900 Klang Selangor	03-3425418
2.	Cougar Industries (M) Sdn. Bhd.	167, Jalan Batu 27, Off Jln 3 Lama, 41300 Klang Selangor	03-3424382
3.	International Footwear (Penang) Sdn. Bhd.	178A Beach Street, 11600 Penang	04-25818
4.	International Footwear Permada (Kedah) Sdn. Bhd.	96-G, Mergong Industrial Estate, Seberang Jalan Putra Alor Setar, Kedah	04-738633
5.	Kosan Shoes Industry	4th Floor, Block B Locked Bag No. 89, Wisma Kosan Likas, Likas 88998, Kota Kinabalu, Sabah.	088-34805
6.	Marco Shoe Sdn. Bhd.	Pandamaran Industrial Site 42008 Port Klang, Selangor	03-3687451
7.	Ozly Sdn. Bhd.	22nd M.S. Kulai Air Hitam Road, 81000 Kulai Johor	07-633902
8.	Sime Darby Footwear Sdn. Bhd.	Lot 1, Alor Gajah Ind. Est. Alor Gajah Malacca	06-562224
9.	Viking Askim Sdn. Bhd.	Prai Free Trade Zone 12700 Butterworth, Province Wellesley	04-349555
(PERIPHERAL INDUSTRIES) - RAW MATERIAL SUPPLIERS			
10.	J & P Coats (Mfg.) Sdn. Bhd. (Yarn)	P.O. Box 91, 12710 Butterworth	04-307199
11.	Kam Yoong Shoe Manufacturer (M) Sdn. Bhd. (Soles and Slippers)	No. 21, Jln P/8, Kawasan Perusahaan 43000 Bangi, Selangor	03-825872
12.	Kamunting Industries Berhad (Canvas)	Kamunting Industrial Estate P.O. Box 17, 34600 Kamunting, Taiping	05-824155
13.	New Engineering Sdn. Bhd. (Soles)	123, Jalan Genting Kelang, Setapak, 53300 Kuala Lumpur	03-4298117
14.	Nylex (Malaysia) Sdn. Bhd. (Pve Leather)	Shah Alam Industrial Estate P.O. Box 33, Section 16, 40700 Shah Alam, SElangor	03-5591706

15. Tong Fatt Shoes Mfrs. Sdn. Bhd. (Soles and Slippers)	421 Batu 4, Jalan Kluang 83007 Batu Pahat, Johor	07-441863
16. Winson Industries Sdn. Bhd. (Shoelaces)	13B, Jalan Bakti, Larkin Ind. Est. 80350 Johor Bahru	07-361546
- TOOL MANUFACTURERS		
17. Fee Kee Sdn. Bhd. (Lasts)	Lot 30 Light Industrial Area, Taman Kepong, Kepong, 52100 Kuala Lumpur	07-6349968
18. Nya Seng Co. (Moulds)	48H, Jalan Lima, Off Jalan Chan Sow Lin, 55200 Kuala Lumpur	03-2216545
19. Sum Hing Engineering Works Sdn. Bhd. (Moulds)	No. 17, Jalan Tiga, Off Jalan Chan Sow Lin, 55200 Kuala Lumpur	03-2219105
20. Wong Brothers Engraving & Engineering Sdn. Bhd. (Moulds)	No. 20, Jalan Besar, Serdang Lama, Selangor	03-9486773
- RUBBER INDUSTRY RELATED COMPANIES		
21. Central Elastic Corporation Sdn. Berhad	Plot 56-61, Solok Perusahaan 1, Prai Industrial Complex	04-306212
22. Lyl Rubber Sdn. Bhd.	13th Floor, Lee Yan Lian Bldg. Jln Tun Perak, 50050 K.L.	03-2305650
(TRADING COMPANIES, RETAILERS AND FINANCING INSTITUTIONS)		
23. Sumitomo Corporation	4th Floor, Wisma Supreme Jln Punchak, P.O. Box 10297 50710 K.L.	03-208133
24. Marubeni Corporation	5th Floor, Ubn Tower, 10 Jln P. Ramlee, 50250 K.L.	03-2381688
25. Yaohan (M) Sdn. Bhd.	The Mall, Lg Floor Jln Tun Ismail 50480 K.L.	03-2937255
26. The Sumitomo Bank Ltd.	3rd Floor, Mui Plaza Jln P. Ramlee, 50250 K.L.	03-2483566
(OTHERS)		
27. Malaysian Export Trade Centre (MEXPO)	G. Floor, Wisma Pkns Jln Raja Laut, 50350, K.L.	03-2928122

28.	Rubber Reseach Institute of Malaysia (RRIM)	Experiment Station 47000 Sungai Buloh Selangor	03-6561121
29.	Standard and Industrial Research Institute of Malaysia (SIRIM)	Persiran Dato Menteri Peti Surat 35, 40700 Shah Alam, Selangor	03-5591630
30.	Department of Industrial Development & Research, Sabah		
31.	Malaysian Industiral Development Authority, Kota Kinabalu Office	4th Floor, Bank Negara Malaysia Bldg. 88730 Kota Kinabalu	088-211411
32.	Malaysian Rubber Products Manufacturers's Association (MRPMA)	Wisma Getah Asli 148, Jln Ampang 10508, K.L.	03-439252

3. Questionnaire Sheet for Survey in Malaysia

QUESTIONNAIRE SHEET

THE STUDY ON SELECTED INDSUTRIAL PRODUCT DEVELOPMENT IN MALAYSIA

(FOR ELECTRICAL AND ELECTRONICS RELATED INDUSTRIES)

October - November, 1988

PREPARED BY:

JAPAN INTERNATIONAL COOPERATION AGENCY

IN COOPERATION WITH

MALAYSIAN INDUSTIRAL DEVELOPMENT AUTHORITY

A. COMPANY OUTLINE

1. Name of Company : _____

2. Address of Head Office : _____

_____

Tel : _____

Tlx : _____

Fax : _____

3. Name of Chief Executive : _____

4. Date of Establishment : _____

5. Paid-up Capital : M$ _____

6. Number of Employee : _____ wages paid (1987) _____

7. Type of company : _____

☐a. Sole proprietorship ☐d. Limited Partnership

☐b. Company Corporation ☐e. Joint Venture Company

☐c. Government Company

8. Total Fixed Asset Investment in Malaysia : _____

9. Total Fixed Asset Investment Worldwide (Manufacturing) : _____

10. Number of Manufacturing Operations worldwide : _____

B. PRODUCTION AND EXPORT (1987) & (1988)

1. Production and Export :

Production Item	Production				Export Ratio (%)		Major Export Destination	
	Unit		Value (M$)					
	87 Jan-Dec	88 Jan-Oct	87 Jan-Dec	88 Jan-Oct	87	88	87	88

2. Use of Preferential Measures for Exports:

☐ Received ☐ Not Received

If received : Have exports increased as a result of receiving export incentives?

☐ Yes ☐ No

If not received :

☐ a. Procedures are too complicated
☐ b. No knowledge that the system exists
☐ c. Grant of measures are too slow
☐ d. Effects are doubtful
☐ e. Otehrs (Please specify)_____

_____

3. What measures are you receiving?

☐ a. Export Credit Refinancing Scheme
☐ b. Abatment of Adjust Income for Export
☐ c. Double Deduction of Export Credit Insurance Premiums
☐ d. Industrial Building Allowance
☐ e. Others (Please Specify)_____

_____

4. Are you enjoying GSP benefits in exports

☐ Yes ☐ No

C. COMPONENTS & RAW MATERIALS

Major Components & Raw Materials	Supplied By			Major Supplying Company
	Import	Self-Production	Local Manufacturer	

D. LOCAL SUB CONTRACTING COMPANIES USED

1. Use of Local Sub-contracting Companies

☐ Using ☐ Not using

2. (a) How many local Sub-contractors does your company use?

_____

(b) Indicate percentage of Sub-contractors who are foreign owned

_____

3. Major products or services for which local sub-contractors are used:

_____

_____

_____

4. General evaluation of local sub-contracting companies:

a) Quality : ☐Good ☐Fair ☐Poor

b) Quantity : ☐Enough ☐Short

c) Delivery : ☐Punctual ☐Sometimes late ☐Always late

d) Technical level of Staff: ☐High ☐Middle ☐Low

e) Management : ☐Good ☐Fair ☐Bad

5. Does your company give any assistance to local sub contractors?

☐ Yes ☐ No

If yes, the type of assistance is

☐ a. Technical Assistance

☐ b. Assistance for Improvement of Quality

☐ c. Assistance for securing market

☐ d. Financial Assistance

☐ e. Others (Please Specify)_____

_____

6. Is all purchasing of components and parts undertaken by your company?

☐ Yes ☐ No

7. Does your company (or group) participate on equity in your current overseas suppliers?

☐ Yes ☐ No

If yes : State number of suppliers with equity ownership

☐ Less than 10

☐ 11 - 25

☐ 25 - 50

☐ 50 and above

E. INCREASE OF LOCAL COMPONENT

* Please list those items currently imported but being planned considered desirable to be procured from domestic manufacturers or suppliers.

No.	Name of Component Material & Services	Manufacturing Process	Number of Years Required for Domestic Procurement

F. LABOUR MANAGEMENT

1. Type of Workers :

Simple worker _____ %

Semi-skilled workers _____ %

Skilled workers _____ %

Foreman/inspector _____ %

Engineer _____ %

Clerical staff _____ %

Manager _____ %

2. Education Level of Factory Workers :

University _____ %

Technical Institute/Form 6 _____ %

Upper secondary school _____ %

Lower secondary school _____ %

Elementary school _____ %

3. Years of Experience :

Less than 1 year _____ %

1 - 3 years _____ %

3 - 5 years _____ %

5 - 10 years _____ %

Over 10 years _____ %

4. Labour Union :

☐ Yes ☐ No

If yes, the participation ratio : _____ %

5. Problem Areas

☐ a. Shortage of workers

☐ b. Lack of skilled workers or enginners

☐ c. Frequent job hopping

☐ d. Difficulty in labour negotiation

☐ e. High fringe benefit payment

☐ f. Rapid increase of labour costs

☐ g. Strong government request for the increased use of local workers

☐ h. Expenses for training a technical support are very high

☐ i. Others (Please specify) _____

_____

G. TRAINING

1. Does your company give some in-house training?

☐ Yes ☐ No

If yes, please specify the types of training :

_____

_____

_____

2. Types of workers trained in-house :

☐ a. General workers

☐ b. Skilled workers

☐ c. Instructors

☐ d. Engineers

☐ e. Clerical staff

☐ f. Executives

Are you using training incentive?

☐ Yes ☐ No

If using :

Please indicate number of training programmes and budget before receiving training incentives

No. _____ $ _____

Please indicate number of training programmes and budget after receiving training incentive

No. _____ $ _____

3. What kind of training did your skilled workers have before joining your company?

☐ Government training institutes

☐ Past working experience

☐ Others

☐ None

Did you provide additional training for workers recruited from government training institutes?

☐ Yes ☐ No

If yes, for how long was the training conducted?

☐ Less than 1 month

☐ 1 - 3 months

☐ More than 3 months

H. R & D

1. Does your company have R & D department?

☐ Yes ☐ No

If yes, 1) Please specify the type of R & D Activity

_____

_____

_____

2) How many R & D staff do you have?

_____

2. Are you using R & D incentives?

☐ Yes ☐ No

If yes, please state the number of R & D programmes and budget before receiving R & D incentives

No. _____ $ _____

Please state the number of R & D programmes and budget after receiving R & D incentives

No. _____ $ _____

I. INVESTMENT INCENTIVES

1. Indicate investment incentives previously enjoued:

☐ Pioneer Status

☐ Investment Tax Credit/Investment Tax Allowance

☐ Export Incentives

☐ Accelerated Depreciation Allowance

☐ Reinvestment Allowance

2. Indicate investment incentives currently enjoying

☐ Pioneer Status

☐ Investment Tax Allowance

☐ Accelerated Depreciation

☐ Accelerated Depreciation Allowance

☐ Reinvestment Allowance

J. JOINT VENTURE/TECHNICAL TIE-UPS

1. Desire for Joint Venture :

   ☐ Yes ☐ No

2. Desire for Technical Tie-ups :

   ☐ Yes ☐ No

3. Desired Joint Venture Partner Country

   ☐ a. Japan

   ☐ b. U.S.A.

   ☐ c. U.K.

   ☐ d. Others (Please specify)

4. What do you expect from the partner company?

   ☐ a. Technology transfer

   ☐ b. On-the job training

   ☐ c. Overseas market already developed by the partner

   ☐ d. Knowledge of management

   ☐ e. Finance

5. Have you previously attempted to obtain joint ventures/technical tie-ups?

   ☐ Yes ☐ No

   If yes, indicate number of serious attempts made

   ☐ Less than 3

   ☐ 4 - 8 times

   ☐ More than 8 times

6. Indicate why attempts at joint ventures/technical tie-ups have failed

   ☐ Disagreement on equity ownership

   ☐ Cost of technology payments too high

   ☐ No market support

   ☐ Training of workers too expenseve

   ☐ Insufficient technology support

   ☐ Machineries too expensive

☐ Others, please specify

_____

_____

K. INVESTMENT ENVIRONMENT FOR FOREIGN AFFILIATED FIRMS
(ONLY FOR FOREIGN AFFILIATED FIRMS)

1. Major reasons that your company has decided to invest in Malaysia:

☐ a. Low level of labour cost

☐ b. Availability of high quality labour force

☐ c. Good investment incentive systems

☐ d. Good infrastructure

☐ e. Political and economic stability

☐ f. Business of the procurement of raw materials

☐ g. Expectation for the expansion of Malaysian domestic market

☐ h. Others (Please specify)

_____

_____

2. Indicate nature of investment in Malaysia

☐ Expansion from home base

☐ Relocation from home base

If expansion : where are the bulk of the sales to be directed to :

☐ Malaysia

☐ Home Country

☐ Asia (except Japan)

☐ Europe

☐ Others (Please Specify)

_____

_____

3. Indicate the expansion in investment undertaken in Malaysian since your establishment

No. _____ Total additional investment : $ _____

4. Nationality of your parent Company : _____

5. You are requested to evaluate the existing conditions in Malaysia concerning the following items :
(The figure '5' is highest rank)

	1	2	3	4	5
a. Fundamental Attitude toward Foreign Investment					
b. Regulation of Foreign Equity					
c. Corporation Tax Rate					
d. Preferential Taxation System of Investment					
e. Infrastructural					
f. Costs of Lands and Buildings/Structure					
g. System of Distribution					
h. Level of Wages					
i. Quality of Labour Power					
j. Turnover of Workers					

L. TRANS-ACTION WITH FOREIGN AFFILIATED FIRMS IN MALAYSIA
(ONLY FOR LOCAL FIRMS)

1. Are you carrying on transactions with foreign affiliated companies?

☐ Yes ☐ No

If no, please specify the following questions:

2. The reason why you have not carried on transcations up to now is

☐ a. You had no opportunities of negotiations

☐ b. Your manaufactures did not satisfy clients' desire-levels

☐ c. You had no confidence in keeping dates of deliveries

☐ d. You did not reach agreements as to prices

☐ e. You do not wish to carry on transaction with foreign affiliated companies.

Please specify the reason why not?

_____

_____

☐ f. Others _____

_____

3. From now on, do you have an intention to carry on transactions with foreign backed enterprises?

☐ Yes ☐ No

4. Indicate problem areas in past/present association with foreign affiliated companies:

☐ Credit period too long

☐ Less than 3 months

☐ 3 - 6 months

☐ More than 6 months

☐ Insufficient technical support

☐ Insufficient lead time for, or

☐ Lack of communication

☐ Others (Please specify)

_____

_____

QUESTIONNAIRE SHEET

THE STUDY ON SELECTED INDUSTRIAL
PRODUCT DEVELOPMENT IN MALAYSIA

(FOR RUBBER FOOTWEAR INDUSTRIES)

October - December, 1988

PREPARED BY:

JAPAN INTERNATIONAL COOPERATION AGENCY
IN COOPERATION WITH
MALAYSIAN INDUSTRIAL DEVELOPMENT AUTHORITY

SURVEY ON RUBBER FOOTWEAR

The Study Team on Selected Industrial Product Development

c/o Malaysian Industrial Development Authority (MIDA)
Wisma Damansara, P.O.Box10618, Kuala Lumpur 23-03.
Tel. 03-255-3633 Fax. 03-255-7970
Attention: MS. VIVIENNE TAN / MR. TAKEHIDE TERANISHI

I. Background:

An agreement was reached in September 1986 between the Malaysian Government representatives and Japanese cantact team in implementing the study on Selected Industrial Product Development.

In August, 1987 Preliminary Survey Team dispatched by Japan International Cooperation Agency (JICA) has agreed on the scope of study with the Malaysian representatives.

In order to implement the full-scale study on selected industrial product development, the Study Team will be in Malaysia from October to December this year to conduct the field survey.

Based on the findings and analyses of these two-month's study, we will discuss the problems and work out a comprehensive package of programmes to promote the export of the products concerned.

II. Objective of the Study:

The objective of the study is to undertake studies on selected industrial products and to formulate industrial development and export promotion strategies for these products.

This study will be carried on for three years. This year, following seven items are surveyed for the study.

(1) Office Electronic Equipment
  (i) Word Processors
  (ii) Photocopying Machines
  (iii) Facsimile Machines
  (iv) Telex Machines
(2) Cathode Ray Tubes
(3) Ceramic Packages/Substrates
(4) Rubber Footwears

III. Contents of the Study:

1. Overview of the present situation of the selected industrial products.
2. Study of the existing status of manufacturing establishments in Malaysia for the selected industrial products.
3. Study of the export markets of the selected industrial products.
4. Recommendation of policies and measures for the development, technical up-grading and export promotion strategies for the selected industrial products.
5. Cost analysis studies for the selected industrial products in Malaysia and similar products in Japan.
6. Study for direct investment and technical collaboration.
7. Interviews with the Government officials, business circles, private companies, etc. understanding the current situation and find problems and preparing comprehensive programmes.

Ⅳ. Members of the Team:

	Heihachiro AOKI	Team Leader/Economist
	Issei KOIDE	Deputy/Economist/Export Promotion & Investment
	Tadao TAMAI	Economist/Export Promotion
	Tsuneo TANAKA	Economist/Industrial Policy
	Yoshitsugu MATSUMOTO	Economist/Office Electronic Equipment
*	Takehide TERANISHI	Economist/Rubber Footwear
	Junko SEKIGUCHI	Economist/Electronics
	Takashi NOBEHARA	Deputy/Development Economist/Management
	Kazuo MISHIMA	Economist/Management
*	Mitsuo SHIMIZU	Industrial Engineer/Production Engineering
	Yusuke EMURA	Industrial Engineer/Office Electronic Equipment
	Masami IDENUMA	Industrial Engineer/Office Electronic Equipment
	Makoto NAGANO	Industrial Engineer/Office Electronic Equipment
	Akihiko YAMADA	Industrial Engineer/Cathode Ray Tube
	Osamu YAMADA	Industrial Engineer/Ceramic Packages·Substrates
*	Hidenori AKIYOSHI	Industrial Engineer/Rubber Footwear

* Officers in charge of Rubber Footwear

Ⅴ. Direction for use:

1. Please tick in ☐ wherever is appropriate.
2. Please fill in as much information as possible.
3. Only approx. value(s) and volume(s) are needed.
4. Questionnaire completed and returned to us are used only for our survey and are not made public.
5. Please photostat one set of the completed questionnaire for your own keeping.
6. Please return the completed questionnaire to the above-mentioned address by October 29, 1988.

QUESTIONNAIRE

A. COMPANY OUTLINE

1. Name of Company : _____

(1) Address of Head Office : _____

_____

Tel : _____ Fax : _____

(2) Address of Factory : _____

_____

Tel : _____ Fax : _____

2. Name of Chief Executive : _____

3. Name of Responsible Person for Contact : Name _____

: Designation _____

4. Year of Establishment : _____

Year of Commencement of Rubber Footwear Production : _____

5. Paid-up Capital : M$ _____

Shareholders: Malaysian : M$ _____

: Foreign : M$ _____ (Investor: _____)

6. Main Bank : _____

7. Land & Factory Area : Land _____ m^2, Factory _____ m^2

8. Main Production Items : _____

_____

9. Annual Sales Turnover & Number of Employees (at the end of the year)

(1) Whole company * estimate

	1984	1985	1986	1987	1988 *	1989 *
Annual sales (M$1,000)						
Number of employees						

(2) Rubber footwear division * estimate

	1984	1985	1986	1987	1988 *	1989 *
Annual sales (M$1,000)						
Number of employees						

QUESTION ONLY FOR RUBBER FOOTWEAR

B. PRODUCTION

1. Production Volume & Capacity (unit: 1,000 pairs/year)

Production item	Production volume		Capacity
	1986	1987	present
(1) Vulcanize & Cold Cement			
·Canvas Shoes			
·Sports Shoes			
·Boots			
·Rubber Soled Footwear			
·Slippers & Sandals			
(2) Injection			
·Canvas Shoes			
·Sports Shoes			
·Boots			
·Rubber Soled Footwear			
·Slippers & Sandals			
(3) Soles & Heels			
(4) Others			

Excluding ·Plastic shoes
·Leather shoes for gents & ladies with rubber soles
Including ·Leather sports shoes with rubber soles

Please attach the list with your own production item classification, if this production item classification is not appropriate.

2. Operations

(1) Operation days : _____ days/year (1987)

(2) Operation hours : _____ hrs/day 1 shift : _____ ~ _____

2 shift : _____ ~ _____

3 shift : _____ ~ _____

3. Manufacturing Process

(1) Manufacturing process and capacity

☐ Auto-Clave Vulcanizing Process : _____ pairs/line·day

☐ Cold Cement Process : _____ pairs/line·day

☐ Injection Moulding Process : _____ pairs/day

☐ Slush Process : _____ pairs/day

(2) Local sub-contracting companies used

1) Major products or services made by local sub-contractors according to your specifications.

Products or Servises	Values(M$1,000)/yr	Names of sub-contractors
Uppers Soles (please specify)		

2) General evaluation of local sub-contracting companies:

a) Quality : ☐ Good ☐ Fair ☐ Bad

b) Quantity : ☐ Enough ☐ Sometimes short ☐ Always short

c) Delivery : ☐ Punctual ☐ Sometimes late ☐ Always late

d) Technical Level : ☐ High ☐ Middle ☐ Low

e) Management : ☐ Good ☐ Fair ☐ Bad

4. Manufacturing Equipment & Machinery (only estimate of years of use)

Name of Machinery & Equipment	Number of years of use (unit)				Planning to install within (unit)		
	Total	under 3years	3-10 years	over 10year	under 1 year	1-3 years	over 3years
Banbury Mixer							
Mixing Roll							
Calender Roll							
Heat Press (making moulded rubber sole)							
Sole-Cutter							
Cloth-Cutter							
Skiving Machine							
Sewing Mahcine with Flat & Post							
Tacking Sewing Machine							
Computer Sewing Machine							
Double Eyelet Machine							
Toe - Laster							
Side - Laster							
Heel - Laster							
Vulcanizer							
Injection Machine							

5. Mould / Last

(1) Making mould in your company ?

☐ Yes ☐ No If no, where to get ? ☐ Local ☐ Import

(2) Making last in your company ?

☐ Yes ☐ No If no, where to get ? ☐ Local ☐ Import

(3) What kind of last used ? ☐ Aluminium Last ☐ Plastic last

6. Quality Inspection

(1) Quality inspection department

☐ Have ☐ Do not have

(2) Quality inspection standards prepared

☐ Have ☐ Do not have

(3) Boundary samples for inspections

☐ Have ☐ Do not have

(4) Sampling inspection in manufacturing processes

☐ Do ☐ Do not do

(5) Final inspection

☐ 100% inspection ☐ Sampling inspection

(6) Reparing ratio

How many percentages ? :_____%/(1987)

(7) Defective ratio

How many percentages ? :_____%/(1987)

(8) Claims on inferior quality

How many cases ? :_____cases/year(1987)

7. Technical Standard

(1) What kind of Industrial (Rubber Footwear) Standard used for your Brand products ?

(2) What kind of Industrial (Rubber Footwear) Standard used for OEM Brand products ?

(3) More strict company standard than Industrial (Rubber Footwear) Standard

☐ Have ☐ Do not have

8. Delivery

(1) How many days to be needed for delivery in case of new order on OEM 50,000 pairs ?

_____days

(2) How many days to be needed to get next items for new order on OEM 50,000 pairs ?

1) Materials :_____days

2) Moudls :_____days

2) Lasts :_____days

C. MANUFACTURING TECHNOLOGY

1. Product Development

(1) Product development department

1) Product development department
☐ Have ☐ Do not have

2) How many designers ? :_____

3) How many patterners ? :_____

(2) New shoes model development

1) How many days to be needed for making newly-ordered trial samples ? :_____ days

2) How many new models developed in a year ? :_____ models/year(1987)

(3) Lasts & moulds for new shoes model development

1) Where to develop lasts for new models ?
☐ In your company ☐ In other companies

2) Where to make moulds for new models ?
☐ In your company ☐ In other companies

3) How to make moulds for new models ?
according to ☐ Shoes models ☐ Models'drawings ☐ Moulds'drawings

4) Where & How to make patterns

☐ In your company	☐ In other companies
by ☐ Hand	by ☐ Hand
☐ Grading machine	☐ Grading machine
☐ Computer	☐ Computer

(4) R & D information

Where to get R & D informations mainly ?
☐ Tied-up companies
☐ Sales agents
☐ Buyers
☐ Design magazines
☐ Trade fairs & exhibitions
☐ Design contests
☐ MRPMA
☐ MEXPO ☐ RRIM ☐ SIRIM
☐ Others (please specify) :

(5) How many patents, utility innovations patented and designs registered ?
☐ Patent :_____ cases
☐ Utility innovation :_____ cases
☐ Design :_____ cases

(6) How much annual expenses in R & D ?

M$_____ /year(1987)

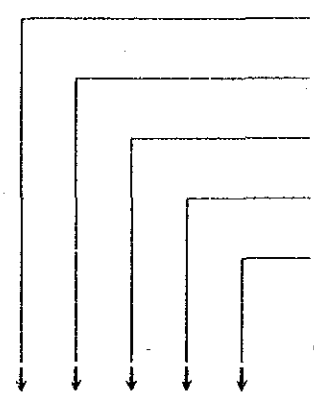
Ratio against annual sales turnover

_____ %/year(1987)

(7) Problem areas

☐ Lack of technology for making high value-added products like sports casual shoes
☐ Unavailability of materials for making high value-added products
☐ Lack of market information of products trends
☐ Others(please specify) :

2. Testing



					(1) Main Sole
☐	☐	☐	☐	☐	1) Hardness Test
☐	☐	☐	☐	☐	2) Tensile Strength Test
☐	☐	☐	☐	☐	3) Elongation Test
☐	☐	☐	☐	☐	4) Abrasion Test
☐	☐	☐	☐	☐	5) Spesific Gravity Test
☐	☐	☐	☐	☐	6) Shrinkage Test
					(2) Upper Cloth
☐	☐	☐	☐	☐	1) Bursting Strength Test
☐	☐	☐	☐	☐	2) Colour Fastness Test to Hot Water
☐	☐	☐	☐	☐	3) Colour Fastness Test to Friction (under dry condition)
☐	☐	☐	☐	☐	4) Colour Fastness Test to Friction (under wet condition)
					(3) Sewing Thread & Shoelace
☐	☐	☐	☐	☐	1) Tensile Strength Test
☐	☐	☐	☐	☐	2) Colour Fastness Test to Hot Water
					(4) Cloth & Others
☐	☐	☐	☐	☐	1) Peeling Strength Test

D. COMPONENTS & MATERIALS

1. Procurement & Price Level

1986=100

Components & Materials	Supplied by			Major import country	Price Level	
	Self	Local	Import		1987	1988
·Natural Rubber	☐	☐	☐			
·Synthetic Rubber	☐	☐	☐			
·Cotton Cloth	☐	☐	☐			
·Vinyl Leather	☐	☐	☐			
·Split Leather	☐	☐	☐			
·Nylon Taffeta	☐	☐	☐			
·Cotton Yarn	☐	☐	☐			
·Lace	☐	☐	☐			
·Eyelet	☐	☐	☐			
·Fastner	☐	☐	☐			
·Adhesive	☐	☐	☐			
·Carbon Black	☐	☐	☐			
·White Carbon	☐	☐	☐			
·Calcium Carbonate	☐	☐	☐			
·Clay	☐	☐	☐			
·Rubber Accelerator	☐	☐	☐			
·Zinc Oxide	☐	☐	☐			
·Titanium Dioxide	☐	☐	☐			
·Stearic Acid	☐	☐	☐			
·E.V.A. Resin	☐	☐	☐			
·E.V.A. Blowing Agent	☐	☐	☐			
·E.V.A. Cross Linking Agent	☐	☐	☐			
·	☐	☐	☐			
·	☐	☐	☐			

2. Import Procurement Ratio to Total Components & Materials Procurement (1987)

Import values / Total values : _____ %

3. Planned Procurement of Local Components & Materials

* Please indicate those items currently imported but planned to be procured from local suppliers in the future.

Components & Materials	Reasons			In how many years ?
	Reduced cost	Improved quality	Shortened delivery	
·Synthetic Rubber	☐	☐	☐	
·Cotton Cloth	☐	☐	☐	
·Vinyl Leather	☐	☐	☐	
·Split Leather	☐	☐	☐	
·Nylon Taffeta	☐	☐	☐	
·Cotton Yarn	☐	☐	☐	
·Lace	☐	☐	☐	
·Eyelet	☐	☐	☐	
·Fastner	☐	☐	☐	
·Adhesive	☐	☐	☐	
·Carbon Black	☐	☐	☐	
·White Carbon	☐	☐	☐	
·Calcium Carbonate	☐	☐	☐	
·Clay	☐	☐	☐	
·Rubber Accelerator	☐	☐	☐	
·Zinc Oxide	☐	☐	☐	
·Titanium Dioxide	☐	☐	☐	
·Stearic Acid	☐	☐	☐	
·E.V.A. Resin	☐	☐	☐	
·E.V.A. Blowing Agent	☐	☐	☐	
·E.V.A. Cross Linking Agent	☐	☐	☐	
·	☐	☐	☐	
·	☐	☐	☐	
·	☐	☐	☐	
·	☐	☐	☐	

E. SALES

1. Sales & Exports (1987)

Production item	Sales		Export ratio		Major export country
	Volume 1,000prs	Value N$ 1,000	Volume (%)	Value (%)	
(1) Vulcanize & Cold Cement					
·Canvas Shoes					
·Sports Shoes					
·Boots					
·Rubber Soled Footwear					
·Slippers & Sandals					
(2) Injection					
·Canvas Shoes					
·Sports Shoes					
·Boots					
·Rubber Soled Footwear					
·Slippers & Sandals					
(3) Soles & Heels					
(4) Others					

Excluding ·Plastic shoes
·Leather shoes for gents & ladies with rubber soles
Including ·Leather sports shoes with rubber soles

Please attach the list with your own production item classification, if this production item classification is not appropriate.

2. Marketing

(1) Sales department

☐ Have ☐ Do not have

(2) How many staffs in sales department ?

:_____

(3) Where to sell your products locally ?

1) Your Brand products

- ☐ Wholesalers
- ☐ Shoes shops
- ☐ Sports shops
- ☐ Super markets
- ☐ Department stores
- ☐ Others (please specify)

: _____

2) Licensed Brand products

- ☐ Wholesalers
- ☐ Shoes shops
- ☐ Sports shops
- ☐ Super markets
- ☐ Department stores
- ☐ Others (please specify)

: _____

3. Export

(1) Exporting at present ?

☐ Yes ☐ No

If no, what reasons ?

- ☐ No more capacity
- ☐ Less profit
- ☐ Complicated procedures
- ☐ No overseas market information

(2) Export department

☐ Have ☐ Do not have

(3) How many staffs in export department ?

: _____

(4) *Export by Brand (1987)*

Brand	Export by (N$1,000)			
	Direct trade	Trading houses	Others	Total
Your Brand products				
OEM Brand products				
Total				

(5) Where to sell your Brand products overseas ?

- ☐ Overseas sales agents
- ☐ Overseas importers
- ☐ Directly overseas super markets
- ☐ Directly overseas department stores
- ☐ Directly overseas shoes shops
- ☐ Directly overseas sports shops
- ☐ Others (please specify) :

(6) Claims on Exports

1) Delivery terms ☐ Yes ☐ No

2) Quality ☐ Yes ☐ No

3) Design ☐ Yes ☐ No

4) Quantity ☐ Yes ☐ No

5) Commercial claims ☐ Yes ☐ No

(7) Export promotional activities by

1) Overseas branch offices ☐ Yes ☐ No

2) Overseas sales agents ☐ Yes ☐ No

3) Importers ☐ Yes ☐ No

4) Business visits to overseas buyers
☐ Yes ☐ No

5) Participations in international trade fairs overseas
☐ Yes ☐ No

6) Attendances at international trade fairs for negotiations or market surveys
☐ Yes ☐ No

5) Overseas advertisement on magazines & papers
☐ Yes ☐ No

(8) Source of overseas market information

1) MEXPO ☐ Sufficient ☐ Acceptable ☐ Insufficient

2) MRPMA ☐ Sufficient ☐ Acceptable ☐ Insufficient

3) FMM ☐ Sufficient ☐ Acceptable ☐ Insufficient

4) Local trading houses ☐ Sufficient ☐ Acceptable ☐ Insufficient

5) Tied-up overseas companies ☐ Sufficient ☐ Acceptable ☐ Insufficient

6) Overseas sales agents ☐ Sufficient ☐ Acceptable ☐ Insufficient

7) Overseas buyers ☐ Sufficient ☐ Acceptable ☐ Insufficient

8) Overseas staffs ☐ Sufficient ☐ Acceptable ☐ Insufficient

9) Others (please specify) ☐ Sufficient ☐ Acceptable ☐ Insufficient

: _____

(9) Which country's market informations to be needed ?

Country : _____

_____

(10) What kind of overseas market informations to be needed ?

1) Demand trends 2) Import trends 3) Distribution channels

4) Consumers' tastes 5) Business behaviour

6) Import regulations & restrictions

Please put only Serial Number in next column in order of importance.

(i)	(ii)	(iii)	(iv)	(v)	(vi)

(11) Export expansion

1) What kind of models (items) to be exported in overseas market ?
Please spesify :

_____

2) Which country's market to be aimed ?
Please spesify :

_____

4. Use of Preferential Measures for Exports

☐ Recieved ☐ Not Recieved

If not recieved,

☐ No knowledge of measures

☐ Too complicated procedures

☐ Slow approval of measures

☐ Doutful effects

☐ Others (please specify) :

_____

5. What Measures Recieving ?

☐ Export Credit Refinancing

☐ Abatement of Adjusted Income for Export

☐ Double Deduction of Export Credit Insurance Premiums

☐ Double Deduction for Promotion of Export

☐ Industrial Building Allowance for Export

☐ Others (please specify) :_____

_____

F. LABOUR MANAGEMENT

1. Type of Employees & Years of Employment

Staffs	Number of employees (present)			Number of employees employed			
				under 1 year	1-3 years	3-10 years	over 10year
· Managerial staffs · Technical/Supervisory staffs · Clerical staffs & others							
Factory workers	Male	Female	Total				
· Apprentices · Simple workers · Semi-skilled workers · Skilled workers							
Total							

2. Educational Level of Factory Workers

(1) University _____ %

(2) Polytechnic _____ %

(3) High School _____ %

(4) Junior high school _____ %

(5) Elementary school _____ %

(6) Others (please specify) _____ %

3. Average Working Hours per Factory Worker (1987)

Numbers of hours per week per worker : _____ hrs

Numbers of hours per month per worker : _____ hrs

Numbers of hours per year per worker : _____ hrs

4. Average Wage of Employees (1987)

Staffs	Average wage (M$/year)		
· Managerial staffs · Technical/Supervisory · Clerical staffs & others			
Factory workers	Male	Female	Average
· Apprentices · Simple workers · Semi-skilled workers · Skilled workers			
Factory workers average			

5. Quality Control

(1) Quality control department

☐ Have ☐ Do not have

(2) How many staffs in quality control department ?

:_____

(3) QC circle activities

☐ Do ☐ Do not do

6. Suggestion Systems of Improving Productivity & Reducing Costs

☐ Have ☐ Do not have

If have, how many suggestions in a year ?

:_____/year(1987)

7. Labour Union

☐ Have ☐ Do not have

If have, how many participation ratio ?

:_____%

8. Training

(1) In-house training

☐ Do ☐ Do not do

If do, please specify types of training.

: _____

_____

(2) Outside training

☐ Do ☐ Do not do

If do, where to send your employees for training & how many ?

☐ RRIM :_____ ☐ Private institutes :_____

☐ SIRIM :_____ ☐ Tied-up companies :_____

☐ CIAST :_____ ☐ Overseas :_____

☐ Other public institutes :_____ ☐ Others :_____

(3) What kind of Government supports to be needed ?

☐ Subsidy for training

☐ Expansion of public training facilities

☐ Despatch of instructors from public facilities

☐ On-the-job training by foreign experts

☐ Increase of number of technical seminars

☐ Others (please specify) :_____

_____

9. Problem Areas

☐ Shortage of workers

☐ Lack of skilled workers or technical staffs

☐ Frequent job hopping

☐ Rapid increase of labour costs

☐ High fringe benefit payment

☐ Increased training expenses

☐ Difficulty in labour negotiation

☐ Others (please specify) :_____

_____

G. COST

1. Manufacturing Costs

Cost		% of costs	Particulars of cost
Materials & Components	Natural rubber		Costs of all materials & components for manufacturing including procured ones
	Synthetic rubber		
	Others		
Labour cost			Payroll of factory's workers & clerical staffs excluding management & sales staffs
Sub-contract cost			Cost of processing outside
Fuel & Power cost			At factory
Depreciation cost			Factory's buildings, equipment & machinery,etc.
Others			Other manufacturing costs
Total		100%	

Note : Excluding general management & sales cost and profits

2. Please State Sharply-Increased Costs ?

: _____

_____

3. Cost Saving

(1) Cost saving activities

- ☐ Improving productivity (reducing man-powers)
- ☐ Improving technology levels
- ☐ Procuring lower cost materials
- ☐ Procuring materials directly from manufacturers
- ☐ In-house production of materials procured outside
- ☐ Others (please specify) : _____

(2) Any particular problems for reducing costs ?

- ☐ Still lower production level after installing new facilities
- ☐ Higher cost of imported materials
- ☐ Higher power charges
- ☐ Higher fuel costs
- ☐ Others (please specify) :

H. MANAGEMENT

1. Matters of Your Concern

1) Securing funds

2) Recruiting good workers

3) Training workers

4) Improving quality

5) Increasing productivity

6) Reducing costs

7) Shortening delivery period

8) Reducing defective ratio

9) Modernising equipments & machinery

10) Procuring good & cheap materials & components

11) Using local materials & components

12) Introducing new technologies

13) Intensifying R & D activities

14) Developing new higher value-added products

15) Increasing production

16) Strengthening marketing

17) Expanding export

18) Obtaining overseas market informations

19) Obtaining technology informations

20) Utilising Government incentives

21) Others (Please specify)

: _____

_____

_____

Please put only Serial Number in next column in order of concern.

(i)	(ii)	(iii)	(iv)	(v)	(vi)
(vii)	(viii)	(ix)	(x)	(xi)	(xii)
(xiii)	(xiv)	(xv)			

2. How to Secure Funds ?

Please specify interest rates, if possible.

- ☐ Commercial Banks : _____ %
- ☐ Finance Companies : _____ %
- ☐ Merchant Banks : _____ %
- ☐ Maney Brokers : _____ %
- ☐ MIDF(Malaysian Industrial Development Finance) : _____ %
- ☐ BPMB(Bank Pembangunan) : _____ %
- ☐ CGC(Credit Guarantee Corporation) : _____ %
- ☐ Other facilities (please specify) : _____ %
- : _____ : _____ %
- : _____ : _____ %
- : _____ : _____ %
- ☐ Own funds

3. Future Planning

(1) Demand prospects in Malaysia

Please fill in your estimates of demand for Rubber Footwear in Malaysia.

Rubber footwear	1988	1989	1990
Volumes(million prs)			
Values (M$ million)			

(2) Your company's future planning

1) Planning to increase production. (1987 production = 100)

whithin 1 year : _____ %

whithin 3 year : _____ %

whithin 10 year : _____ %

2) Planning to increase export. (1987 export = 100)

whithin 1 year : _____ %

whithin 3 year : _____ %

whithin 10 year : _____ %

I. JOIN VENTURES/TECHNICAL TIE-UPS

1. Desire for Joint Ventures

☐ Have ☐ Do not have

(1) If have, which countries to be desired for joint ventures ?

☐ Japan

☐ U.S.A.

☐ Italy

☐ France

☐ West Germany

☐ U.K.

☐ Others (please specify) :_____

(2) What to be expected from partner companies ?

☐ Technology transfer

☐ On-the-job training

☐ Overseas markets developed by partner companies

☐ Knowledge of management

☐ Finance

☐ Others (please specify) :_____

2. Any Technical Tie-ups Made at present ?

☐ Have ☐ Do not have

(1) If have, with which countries ?

☐ U.S.A.

☐ Italy

☐ France

☐ West Germany

☐ U.K.

☐ Others (please specify) :_____

(2) Any or any more technical tie-ups to be desired ?

☐ Do ☐ Do not do

1) If do, with which countries ?

☐ Japan

☐ U.S.A.

☐ Italy

☐ France

☐ West Germany

☐ U.K.

☐ Others (please specify) :_____

2) What to be expected from partner companies ?

☐ Technology transfer

☐ On-the-job training

☐ Overseas markets developed by partner companies

☐ Knowledge of management

☐ Others (please specify) :_____

3. Any Licensing Tie-ups Made at present ?

☐ Have ☐ Do not have

(1) If have, with which countries ?

☐ U.S.A.

☐ Italy

☐ France

☐ West Germany

☐ U.K.

☐ Others (please specify) :_____

(2) Any or any more licensing tie-ups to be desired ?

☐ Do ☐ Do not do

If do, with which countries ?

☐ Japan

☐ U.S.A.

☐ Italy

☐ France

☐ West Germany

☐ U.K.

☐ Others (please specify) :_____

J. INCENTIVE PACKAGE

1. Evaluation of Incentives

	Not using	Using		
		Very effective	Effective	Not effective
·Pioneer Status	☐	☐	☐	☐
·Investment Tax Allowance	☐	☐	☐	☐
·Accelerated Depreciation Allowance	☐	☐	☐	☐
·Reinvestment Allowance	☐	☐	☐	☐
·Export Credit Refinancing	☐	☐	☐	☐
·Abatement of Adjusted Income for Export	☐	☐	☐	☐
·Double Deduction of Export Credit Insurance Premiums	☐	☐	☐	☐
·Double Deduction for Promotion of Export	☐	☐	☐	☐
·Industrial Building Allowance for Export	☐	☐	☐	☐
·Double Deduction for R & D	☐	☐	☐	☐
·Industrial Building Allowance for R & D	☐	☐	☐	☐
·Double Deduction for Training	☐	☐	☐	☐
·Industrial Building Allowance for Training	☐	☐	☐	☐

2. Problem Arears for Using Incentives

(please specify)

Please return immediately.
Thank you for your cooperation.

Name: Date:

Designation:

Signature:

QUESTIONNAIRE SHEET TO TV ASSEMBLY MAKER

1. Company Outlines

(1) Name of company : _____
: _____

(2) Date of Establishment : _____

(3) Number of Employees : _____

(4) Annual Sales Value (87) : _____

(5) Production Volume and Production Value by Size

Size	Volume			Value		
	1986	1987	1988	1986	1987	1988

(6) Main Sales Destination of Product (88)

Domestic Market : _____ %

Exprot : _____ %

Other countries : _____
_____
_____
_____

2. Procurement of Raw Materials (88)

(1) Locol procurement ratio : _____ %

(2) Major items of local procurement

Items	Amount	Procured From

(3) Major Items of Imported Materials

Items	Amount	Procured From

(4) Desire to increase local procurement :

Yes No

(5) Desired product to be locally procured and estimated procurement. If the products were procured locally, what would be local content ratio of the Final Product (TV).

Desired Product Items To Be Locally Procured	Estimated Timing	Estimated Local Content Ratio Of TV
		%
		%
		%
		%
		%
		%

3. Demand and Supply Trend for CRT

(1) Total Quantity of CRT used

86 :_____pcs.
87 :_____pcs.
88 :_____pcs.
89 :_____pcs.
(Estimated)

(2) Used Quantity categorized by size, colour, and B & W.

Size (Color or B&W)	Used Quantity (Unit: pc)				
	1985	1986	1987	1988	1989 (Est)

(3) Main Suppliers (1988)

Name of Company	Quantity

(4) Are suppliers changed frequently ?

Yes No

(5) Please number the reasons for the choice of suppliers in order of importance.

( ) Already decided to purchase from your company group.
( ) Quality
( ) Price
( ) Delivery
Others (please specify if any) _____

(6) Who decides supply sources and purchase quantity?

(7) What is the duration of normal inventory stock?

(8) Do you have any intention purchase the product if domestic production starte in Malaysia?

(9) If "Yes", please specify what the preferable conditions would be.

(10) If "No", please specify the reasons

4. Others

(1) Please comment on your future expanison programmes, if any.

QUESTIONNAIRE SHEET TO IC ASSEMBLY MAKER

1. Company Outline

(1) Name of Company :

(2) Date of Establishment :

(3) Number of Employees :

(4) Annual Sales value :

(5) Production Items, Production Volume, Procuction Value

Production Items	Volume		Value	
	1986	1987	1986	1987

(6) Main Sales Destination of Product

Domestic Market _____ %

Export _____ %

Parent Company _____ %

Other countries : _____

_____

_____

2. Procurement of Raw Materials

(1) Local Procurement Ratio _____ %

(2) Major Items of Local Procurement

Items	Amount	Procured from :

(3) Major Items of Imported Materials

Items	Amount	Procured from :

(4) Desire to increase local procurement :

☐ YES ☐ NO

(5) Desired product to be locally procured

_____

_____

_____

(6) Government request for domestic procurement :

☐ YES ☐ NO

(7) If "Yes", please specify the cases of request :

3. Demand and Supply Trend for Ceramic IC packages/Substrates.

(1) Ceramic IC Packages

1) Use of Ceramic IC packages

a. used b. not used

86 : M$ _____

87 : M$ _____

88 : M$ _____

2) Type of Ceramic IC Packages Used

Number of Pins / Type	14 ~ 16	18 ~ 22	24 ~ 28	40	42 ~ 64	50 ~ 64	68	100 ~ 199	200 ~
Standard CERDIP									
EPROM									
Laminate DIP									
Laminate LCC									
Laminate PGA									
Laminate FLAT									

(2) Ceramic Substrates

1) Use of Ceramic Substrates
1. Used 2. Not Used

2) Total Amount for the use of Ceramic Substrates
86 : M$
87 : M$
88 : M$

3) Used Quantity categorized by size, glazing, thick film printing process.

Size (LxWxT)	Glazing	Thick coating	Quantity (Sheet/Month)

4) Main Suppliers

_____

_____

_____

(3) Are suppliers changed frequently?
Yes No

(4) Prease number the reasons for changing suppliers in order of importance.
( ) Quality
( ) Price
( ) Delivery
Others (please specify if any) : _____

(5) Who decides supply sources and purchases quantity?

(6) What is the duration of normal inventory stock?

(7) Do you have any intention to prchase the product if domestic production starts in Malaysia?

(8) If "Yes" please specify what the preferable conditions would be?

_____

(9) If "No", please specify the reasons.

_____

4. Others

(1) Please comment on your future expansion programs, if any.

4. List of Companies which Responded to the Questionnaire Survey in Malaysia

4－1 List of Companies Responded to the Mailed Questionnaires

- Electrical and Electronics Related Companies

1. Asian NDK Crystal Sdn. Bhd.
2. Century Batteries (M) Bhd.
3. Davex Engineering (M) Sdn. Bhd.
4. Dai-Ichi Electronics (M) Sdn. Bhd.
5. Dynacraft Sdn. Bhd.
6. Electric Power Engineering
7. Eng Hardware Engineering Sdn. Bhd.
8. Federal Cables Wire and Metal Manufacturing Bhd.
9. Grundig (M) Sdn. Bhd.
10. Hisda Jaya Corporation
11. Hitachi Semiconductor (Kedah) Sdn. Bhd.
12. Hitachi Semiconductor (M) Sdn. Bhd.
13. Hitachi Semiconductor Technology (M) Sdn. Bhd.
14. Intel Malaysia Sdn. Bhd.
15. Loh Kim Tewo Engineering Sdn. Bhd.
16. Malaysia Transformer Manufacturing Sdn. Bhd.
17. Malaysian Circuit Industries Sdn. Bhd.
18. Malaysian Quarts Crystal Sdn. Bhd.
19. Mitsui High Tec (M) Sdn. Bhd.
20. Mitsuoka Electronic Malaysia Sdn. Bhd.
21. Nippondenso Capital Sdn. Bhd.
22. Omron Malaysia Sdn. Bhd.
23. OYL Industries Bhd.
24. Penshin Components Sdn. Bhd.
25. Perwira Ericsson
26. Power Cables Malaysia Sdn. Bhd.
27. Radiola Corporation (M) Sdn. Bhd.

28. Sankyo Seiki (M) Sdn. Bhd.
29. Sanyo Electronics (M) Sdn. Bhd.
30. Steel Service Centre (M) Sdn. Bhd.
31. Syarikat Wire (M) Sdn. Bhd.
32. Tamura Electronics (M) Snd. Bhd.
33. Texas Instruments Malaysia Snd. Bhd.
34. Toyo Audio Co. (M) Sdn. Bdh.
35. TWD-Sanshin (M) Sdn. Bhd.
36. Yuasa Battery (M) Sdn. Bhd.
37. Yuasa Power Systems (M) Sdn. Bhd.
38. Abe Hatome (M) Sdn. Bhd.
39. Advanced Micro Devices Export Sdn. Bhd.
40. Alpha Industries Sdn. Bhd.
41. Asea Brown Boveri Manufacturing Sdn. Bhd.
42. Asian Precision (M) Sdn. Bhd.
43. Central Cables Bhd.
44. Clarion (M) Sdn. Bhd.
45. Crystal Precision (M) Sdn. Bhd.
46. General Electric (USA) Malaysia Appliance
47. Jalco Electronics Malaysia Sdn. Bhd.
48. Kit Cheong Electrical Engineering Sdn. Bhd.
49. Kitako Electronics (M) Sdn. Bhd.
50. Lucas Malaysia Snd. Bhd.
51. Malaysian Lamps
52. Matsushita Electric Co.
53. Matsushita Industrial Corporation Snd. Bhd.
54. Matsushita Precision Industrial Co. (M) Snd. Bhd.
55. Messex Sdn. Bhd.
56. Micro Machining Sdn. Bhd.
57. MK Electric (M) Sdn. Bhd.

58. Monsanto Electronics Sdn. Bhd.

59. Multicore Solders (M) Sdn. Bhd.

60. Naito Electronics Sdn. Bhd.

61. Northern Telecom Components Sdn. Bhd.

62. Northern Telecom Industries Sdn. Bhd.

63. Olympic Cable Company Snd. Bhd.

64. Onamba (M) Sdn. Bhd.

65. PDL-NYLEX Sdn. Bhd.

66. Pernas NEC Telecommunications Snd. Bhd.

67. Precico Sdn. Bhd.

68. Robert Bosch (M) Sdn. Bhd.

69. Sanyo Electric (Penang) Sdn. Bhd.

70. Sanyo Industires (M) Sdn. Bhd.

71. Sapura Holdings

72. Sato Electronics (M) Sdn. Bhd.

73. Seh (M) Sdn. Bhd.

74. Sharp-Roxy Corporation (M) Sdn. Bhd.

75. Siemens Litronix malaysia Snd. Bhd.

76. Singamip Industry Sdn. Bhd.

77. Sony TV Video (M) Sdn. Bhd.

78. TM Air Conditioning Sdn. Bhd.

79. Todai (M) Sdn. Bhd.

80. Toshiba Capacitor Malaysia Sdn. Bhd.

81. Toshiba Electronics Malaysia Sdn. Bhd.

82. Unicos Metal & Plastic Corp Sdn. Bhd.

83. Universal Cable (Sarawak) Sdn .Bhd.

84. Wearnes Electronics (M) Sdn. Bhd.

85. NEC Semiconductors

86. Hagemeyer Industries

87. Loda Electronics Sdn. Bhd.

88. Sharp-Roxy Electronics Corporation Sdn. Bhd.

89. Singatronics (M) Sdn. Bhd.

90. Taiko

4－2 List of Companies Responded to the Mailed Questionnaires

－ Rubber Footwear Related Companies

1. Bata(Malaysia) Bhd.
2. Cougar Industries (M) Sdn. Bhd.
3. International Footwear (Penang) Sdn. Bhd.
4. International Footwear Permada (Kedah) Sdn. Bhd.
5. Kosan Shoes Industry
6. Marco Shoe Sdn. Bhd.
7. Ozly Sdn. Bhd.
8. Sime Darby Footwear Sdn. Bhd.
9. Viking Askim Sdn. Bhd.
10. New Engineering Sdn. Bhd.
11. Fung Keong Rubber Manufactory (M) Sdn. Bhd.
12. Ling Nam Rubber Works
13. Maju Shoe Manufacturer Sdn. Bhd.
14. Kasut Kulim Malaysia Sdn. Bhd.
15. Shum Yip Leong Rubber Works Sdn. Bhd.
16. UB. Rubber Products Co.
17. Unirub Malaysia Sdn. Bhd.

5. The Promotion Policies of Electronics Industry in Third Countries

5. Electronics Industry Promotion Policies in Third Countries

5-1. Electronics Industry Promotion Policies in Japan

(1) Legislation Related to the Promotion of the Electronics Industry

1) The Temporary Active Law of Electronics Industry Promotion

In June 1957 the Japanese government established the Temporary Active Law of Electronics Industry Promotion with a lifespan of seven years. Together with the announcement of this active law the Electronics Industry Council and the Five-Year Electronics Industry Promotion Plan were also established.

The active law centered around the following points: 1) securing and training of engineers; 2) reorganisation of universities and research institutions and the establishment of assistance measures and tax incentives for private-sector development of technologies to promote the development of Japan's own technologies; 3) securing of long-term, low-interest financing and tax incentives for construction, expansion, and modernization of production and testing facilities, and promotion of joint projects to allow specialisation of production; and 4) stimulation of domestic demand and promotion of exports.

Moreover, since the electronics industry is a strategic industrial field comprising leading-edge technologies and tremendous technological innovation, this active law and the accompanying five-year plan differed from measures for the protection and promotion of other industries in that they did not stop at the simple rationalisation of production but went on to cover everything from the commencement of production to the promotion of testing and research.

Under the active law, electronic equipment was grouped into three categories. The first category designated equipment needed in the promotion of testing and research; the second, equipment needed in the commencement of industrial production or the expansion of existing production capacity; and the third, equipment needed in the rationalisation of production. The first two categories were particularly effective, and their inclusion contributed significantly not only to the later reduction of the technological gap with the U.S. in leading-edge fields like semiconductors (e.g., ICs and LSIs), computers, and radar but also to the laying of a foundation for the high-performance applied technologies that supported the later growth of the electronics industry. A great number of the

advanced electronics technologies that later blossomed were in fact rooted in this act. Among related government policies for promotion of the electronics industry was the supply of financing to semiconductor manufacturers by the Japan Development Bank (a total of approximately ¥6 billion over a ten-year period, starting in 1966). In addition, the concept of establishing computer rental firms in the private sector handling only Japanese equipment was realised in order to promote the domestic computer industry.

As a result, the Japan Electronic Computer Co., Ltd. (JECC) was established in August 1961 with seven leading Japanese computer manufacturers as sponsor-cum-shareholders. This company was also established based on the Temporary Act for Electronics Industry Reconstruction, but despite strong national policy overtones it was a private undertaking.

Benefitting from the development of the key technologies that supported the development of the Japanese computer industry, the electronics industry in March 1958 established the Japan Electronics Industry Development Association in order to effectively utilise the above active law. Through this organisation the industry worked to promote the computer industry as well as other advanced electronics industries.

NEC, Fujitsu, and Hitachi utilised the results of research conducted by public research institutes and universities and began the production and commercialisation of computers.

Improvement of computer performance and reinforcement of technology development capabilities was also promoted as a national project. As a result, computers became eligible for benefits under the Temporary Active Law of Electronics Industry Promotion and were designated as first-category equipment. During the ten years from 1957 to 1967, ¥650 million, or one-third of the total subsidies for testing and research on mining and manufacturing industry technologies, was invested in technological testing and research. More than half of this was spent by Fujitsu, Oki Electric, and NEC in the joint trial manufacture of a high-performance computer that was the first of its kind in Japan. These three firms established an association for computer technology research and began trial manufacture of high-performance computers in 1962 in an attempt at early development of a machine that would surpass rival foreign products.

During this period, in order to overcome their inferiority to foreign manufacturers in the area of manufacturing technologies resulting from a lack of experience in the use of

computers, Japanese manufacturers concluded numerous technology provision agreements with U.S. manufacturers in order to procure the latest technologies.

Hitachi concluded such an agreement with RCA in 1961, Mitsubishi with TRW and GPI in 1962, NEC with Honeywell in 1962, Oki Electric with Univac in 1963, and Toshiba with General Electric in 1964. Fujitsu alone refused such tie-ups, and this policy still remains in force today.

Thus it can be seen that those firms active in the improvement of Japanese technology performed large-scale investment in R&D. Technological innovations are particularly rapid in the field of computer-related R&D, and the computer industry requires advanced technology development on a large scale. As a result, investment in R&D increased steadily. Investment in computer-related research at the six leading Japanese computer manufacturers grew at an accelerated pace starting in 1961, and by 1966, only five years later, annual investment had exceeded ¥11.2 billion.

In this way, the Temporary Active Law of Electronics Industry Promotion played a leading role in the improvement of technology in the Japanese electronics industry.

2) The Temporary Active Law of the Specific Electronics and Machinery Industries Promotion.

The Temporary Active Law of the Specific Electronics and Machinery Industries Promotion, which was to serve as the mainstay of policies for promotion of the electronics and machinery industries, was enacted in April 1972. This act, integrating the Temporary Active Law of Electronics Industry Promotion and the Temporary Active Law of the Machinery Industry Promotion, remained in effect until 1978.

Policies for promotion of the electronics industry under the new active law basically succeeded the Temporary Active Law of Electronics Industry Promotion, designating products in the electronics industry requiring promotion and laying out plans (the so-called "High Development Plan") for items fundamental to the improvement of production technology and the rationalisation of production at firms manufacturing these products. These plans thus served both as a foundation for the Ministry of International Trade and Industry's various promotion measures and as a set of guidelines for the private sector, providing important guidance for both public and private sectors.

The High Development Plan grouped designated products into several categories (e.g., equipment for promotion of testing and research, industrialisation, and production rationalisation) and allowed implementation of priority measures for everything from product development to the commencement and finally the rationalisation of production. In order to ensure the success of this plan, the government offered financing, tax incentives, and subsidies, giving a signal for joint action. Among the policies in effect longest are the Agency of Industrial Technology's Subsidy System of the Important Technological R&D Expenses, operated under the testing and research category, and the Japan Development Bank financing programme, operated under the testing and research and production rationalisation categories.

In carrying out the Temporary Active Law of the Specific Electronics and Machinery Industries Promotion, the Ministry of International Trade and Industry in 1971 announced a high development plan for the computer industry. This included plans for testing and research as well as production rationalisation, with the latter (the High Development Plan for Counter Type Computer Production, in effect during 1971-77) serving as a master plan for the entire programme.

In order to promote structural reorganisation by the private sector, the government enacted powerful liberalisation measures centering around the following points: 1) the granting of a subsidy for the new computer development promotion; 2) major increases in Japan Development Bank financing for JECC; 3) expansion of assistance for the Association for Data Processing Promotion Activities; 4) promotion of technology development; and 5) expansion of the tax incentives for the data processing promotion.

The Subsidy System for the New Computer Development Promotion was established in 1972 with the main objectives of strengthening assistance for Japanese computer manufacturers competing with IBM's 370 series, the forerunner of the new 3.5 generation machines, and helping them cope with liberalisation. Essentially, it was a programme of subsidies under the Ministry of International Trade and Industry. In 1972, the year of its inception, the programme provided ¥4.5 billion in subsidies to a corporate group for the development and trial manufacture of a new family of computers superior to the IBM 370 series. An additional ¥700 million in subsidies was given to firms possessing commercialisation capabilities and original technologies for the development of peripheral devices.

As one of the measures to cope with the liberalization of the computer industry, Large-sized IC Development Promotion Assistance for Next Generation Computers was added in 1976 toward the Subsidy for New Computer Development Promotion described in (1) above. This programme was enacted because of the urgent need then felt among Japanese computer manufacturers for development of the next-generation "future system" (frequently referred to as the "FS") that was expected to appear around 1980 as the successor to the IBM 370 series. This assistance programme was hammered out by the government as a national project for urgent and priority promotion of R&D work in ULSIs, a strategic technology expected to serve as the core of the new system.

Since IBM was expected to announce development of a next-generation FS in the first half of the 1980s, MITI strived constantly even after liberalisation to enlarge and reinforce the existing multi-faceted policies for promotion of the information industry and information processing.

In order to assist in these efforts, the government provided assistance from both the supply and demand sides, including hardware promotion policies, software promotion policies, promotion of technology development, systems development, and the establishment of a foundation for information processing. Among these, the the Subsidy System for Computer Development was singled out for re-emphasis as a strategic policy, and the government began investing all of this money in ULSI R&D starting in 1977. It was none other than the Temporary Active Law of the Specific Electronics and Machinery Industries Promotion which laid the base for all of these policies.

3) The Temporary Active Law for the Specific Machinery Information Industry Promotion

In order to promote leading-edge sectors of Japan's electronics and machinery industries, this act was established in 1978 with a lifespan of seven years as a successor to the Temporary Active Law for the Specific Electronics and Machinery Industries Promotion, effective from 1970 to 1977.

The new active law emphasized promotion of a knowledge-intensive industrial structure and had the following main objectives: 1) the drawing up of development plans by competent ministers for the machinery, electronic equipment, and software industries; and 2) the promotion of these plans by providing financial assistance and tax incentives

for leading-edge R&D activities in the machinery, electronic equipment, and software industries specified in the act, together with the direction of standard-restricting cartels.

The previous Temporary Active Law of the Specific Electronics and Machinery Industries Promotion emphasized the integration of electronics and machinery and concentrated mainly on leading-edge machines and equipment (i.e., single units) in the electronics and machinery industries. The new act, however, was characterised by 1) its inclusion of the software industry in addition to electronics and machinery and 2) its emphasis on R&D and commercialisation for compound systems extending over a number of industries. The act was significant in that it paved the way for integration not only of machinery and electronics but of machinery and information as well.

Electronic equipment and machinery designated in the development plans of the Temporary Active Law of the Specific Machinery Information Industry Promotion were again (recall the Temporary Active Law of the Specific Electronics and Machinery Industries Promotion) grouped into three stages -- testing and research, commercialisation, and rationalisation -- with the government deciding which equipment met the criteria. Two new provisions, however, were to be found in the act: first, testing and research for production technology contributing to the prevention of injuries, maintenance of the environment, rationalisation of natural resource utilisation, and reinforcement of the foundation for machinery manufacture; and second, industrial promotion of high-performance machinery incorporating computers or other electronic equipment.

The following were among the assistance policies enacted under the Temporary Active Law of the Specific Machinery Information Industry Promotion: 1) the establishment of financing frameworks for the Japan Development Bank and the Small Business Finance Corporation of ¥10 billion and ¥5.5 billion, respectively, for low-interest loans; 2) the indication by competent ministers, when deemed necessary and upon consultation with the Fair Trade Commission, of standard-restricting cartels to integrate standards and restrict outsiders; and 3) the right to advise third parties attempting to enter a field in which several firms are carrying out joint development work to temporarily cease or modify their plans, in order to facilitate implementation of the development plans.

4) The Facilitative Act of Basic Technology Research

The Temporary Active Law of the Specific Machinery Information Industry Promotion expired in March 1985, bringing to an end the policies concerning the Temporary Active Law of the Electronics Industry Promotion. The Ministry of International Trade and Industry therefore established this act as a new fundamental law for the electronics and information industries in the 1980s and has since been working to build a new foundation for development and promote the development of industrial technology.

The new act emphasizes the importance of technology development for Japan's contribution to the international community and for public investment for future generations. Based on the recommendations of the Standards Subcommittee under the General Affairs Department of the Industrial Structure Council, the following items were examined: 1) the creation of new tax incentives for technology development; 2) the establishment of a central organization for the comprehensive and efficient preparation of an environment conducive to industrial technology development by the private sector; and 3) the enactment of new legislation including the reconsideration and improvement of current systems that might restrict technology development in the private sector. Based on the examination of these items, the Ministry of International Trade and Industry created the concept of a central organization that would carry out the following duties: 1) supply of venture capital; 2) promotion of joint research with the objective of strengthening ties between industry, academia, and government; 3) promotion of cooperation in international research; and 4) promotion of the dissemination of research information. A concept for promotion of electrical communications by the Ministry of Posts and Telecommunications was also incorporated, and the end result was the establishment of the Basic Technology Research Promotion Centre as a specially approved corporate body.

The new act also provided for use of national testing and research facilities at reasonable cost and more flexible handling of patent laws in connection with joint international research.

5) The Mining and Manufacturing Industry Technology Research Union Act

This act, which formed the legislative basis for establishment of technological research unions by private companies in order to complement government R&D projects, produced the following benefits: 1) large-scale technology development requiring enormous funding and personnel resources became possible; 2) dispersion of investment and duplication of research efforts can be avoided and efficient technology development

carried out; 3) basic research that would be difficult for individual firms in the private sector becomes possible; and 4) the strengths of each of the participating firms can be combined in an organic whole.

In the electronics industry, ULSI Technology Research Union and Computer Basic Technology Research Union have been established, and the results have been significant.

(2) Tax Incentives and Financial Assistance

Financial assistance measures and subsidies have already been discussed, mainly in Section I ("Legislation Related to the Promotion of the Electronics Industry"). This section, therefore, will avoid already-covered material concerning the Japan Development Bank Financing System, the Mining and Manufacturing Industry Technology Testing and Research Subsidy System, the Subsidy System of the Important Technological R&D Expenses, and the Subsidy for the New Computer Development Promotion in favour of a more comprehensive view of the situation.

1) Tax incentives for overseas economic activities

a) Foreign Market Development Reserves for the Small-to-Medium-sized Enterprise

Under this system, private companies with capital of less than ¥500 million who have done a certain amount of foreign business are allowed to lay aside a certain portion of the value of exports for the previous or taxable year (the same period in the previous year) in preparation for foreign market development outlays. These reserves must be disposed of equally over the five years following the next fiscal year.

This programme was established to provide small-to-medium-sized exporters with tax incentives in consideration of the sizeable handicaps these firms face in gathering information, gaining the trust of foreign customers, and so on when they venture into volatile overseas markets. These incentives aimed at offering a measure of stability to such firms. The act expired in March 1988.

b) Special deduction for income related to technology and other overseas transactions

This programme allows the deduction of a specified portion of income earned from patent rights or the supply of technical services abroad from income for the current fiscal year. By promoting the transfer of Japanese technology abroad, the system attempts to: 1) promote the development of technology in developing nations and contribute to their economic development; and 2) promote industrial cooperation with the industrialised nations. The rate of the allowed deduction is shown below. This programme is due to expire in March 1989.

Item	Income Decution Rate
Patent Rights, etc.	25%
Technical Services	16%

2) Tax incentives and financial assistance for the private sector

In order to facilitate Japanese research activity and improve technical standards, a variety of tax incentives and financial assistance measures have been established to assist private-sector research outlays.

a) Tax incentives

Necessary tax incentives have been provided on the national and local levels for the promotion of science and technology. Under a programme of tax credits for testing and research costs, established in 1967, when spending on testing and research exceeds the previous high level, 20% of the excess amount can be taken as a tax credit. This system has played a major role in the development of unrestricted and creative private-sector research activity. In addition, 1985 saw the establishment of the Tax System for Strengthening the Technological Bases of Small-to-Medium-Sized Companies, by the option between the Basic Technological Research and Development Promotion Tax System which allows a tax credit of 7% of the value of assets acquired for basic technological development and the tax exemption of the additional testing research expenses. Similar incentives were also established at the local level for corporate and residence taxes.

b) Financial assistance

Among the financial assistance measures currently in effect is the Japan Development Bank's Technology Promotion Financing System (namely the Industrial

Technology Promotion Financing System and the Informationisation Promotion Financing System), which provides low-interest loans and has made significant contributions to Japanese technological standards. This system, established with the objective of improving Japanese industrial technology levels and promoting the "informationisation" of industry and society, provided loans worth a total of ¥146.9 billion in 1986. The Commercialisation Financing System of New Technologies for Small-to-Medium-Sized Company, under the control of the Small Business Finance Corporation, promotes commercialisation of new technologies at small-to-medium-sized companies in order to strengthen technology development in this sector.

R&D-oriented small companies, concentrated in high-risk fields, often possess sophisticated technological capabilities but are unable to pursue R&D work because of a lack of funding. For these firms, the R&D Type Company Promotion Centre provides loan guarantees without collateral for R&D-related expenses.

In 1980, the Commercialisation Insurance System for New Technology was established for small-to-medium-sized companies. When such firms borrow money for use in commercialising a new technology and the loan amount is guaranteed by the Credit Guarantee Association, the Small Business Credit Guarantee Corporation also covers it.

In June 1985, the Facilitative Act of the Basic Technology Research Act (see above) was established. This act has as its objective the facilitation of private-sector testing and research concerning basic technologies and the improvement of private-sector basic technologies. In addition to the prescription of special measures to promote an environment for testing and research, including the use of specified testing and research facilities at reasonable cost and the flexible handling of state-owned patent rights in relation to international joint research, the act provided for the establishment of a Basic Technology Research Promotion Centre, which uses funds collected from the Industrial Investment Special Account, the Japan Development Bank, and the private sector to finance key technology-related testing and research in the private sector.

In relation to the above-described tax incentives, the following four points in the 1987 tax law are worthy of note for the electronics and information industries.

i) Core technologies

(a) Core and priority technologies

Having as its objective the development of general industrial technologies as well as technologies related to the national well-being, this programme provides up to one-half of applied research costs and 4.5 times the cost of testing for commercialisation.

(b) Untrodden innovative technologies

Having as its objective the promotion of R&D work on new and innovative technologies, this programme provides uniform assistance amounting to one-half of R&D expenses.

ii) Technologies for environmental maintenance and safeguards

Having as its objective the development of urgently-needed technologies for environmental maintenance and safety, this programme offers the same type of assistance as the programme for core and priority technologies described above.

iii) Local technologies

Having as its objective the development of technologies capable of responding to the special needs of local areas, this programme offers the same type of assistance as ii) above.

iv) Energy conservation technologies

Having as its objective the development of energy conservation technologies, this programme offers the same type of assistance as ii) above.

Costs eligible for assistance under these four programs are as follows: construction and buildings, machinery and devices, tools and furnishings, materials and components, and computer software (in the case of ii, direct labour costs are also eligible for assistance).

5) The Basic Technology Research Promotion System

The Basic Technology Research Promotion Centre, based on the Facilitative Act for Basic Technology Research, provides funding necessary for private-sector testing and research related to key technologies.

(3) Current Policies for Technology Development

The demands being made of electronics industry technology by today's economy and society, such as the strengthening of basic research, are on the rise, and the role of government institutions in research activities is increasing accordingly.

This section will describe five technology development systems currently in effect, beginning with the Large-sized Industrial Technology R&D System

1) The Large-sized Industrial Technology R&D System

The Large-sized Industrial Technology R&D System (also known as the Large Type Project System) was established in 1966.

At the time, liberalisation of the Japanese economy was proceeding at a fast pace, and technological levels were also improving rapidly due to the absorption of technologies from Europe and the U.S. Sufficient enthusiasm and effort were not being directed toward creative development of technology, however, and there was a need for large-scale, interdisciplinary, inter-industry research and development. Thus the current system was established to bring together the financial resources of the government and the R&D capacities of private companies.

Policies later established in response to the demands of the times and based around the nucleus of this system included the New Energy Technology R&D System (the "Sunshine Plan"), in 1974, and the Energy Conservation Technology R&D System (the "Moonlight Plan"), in 1978. The present system has played a pioneering role in the large-scale R&D efforts of the Ministry of International Trade and Industry.

During this period, 23 projects were established and a total of approximately ¥230 billion (estimated as of the end of 1987) in government funds invested. For large-scale industrial technologies important to the national economy and urgently needed but which

require large amounts of time and money for R&D and involve a large risk burden and are therefore impossible for private companies to develop independently, the government will provide the necessary funding and promote planned, efficient R&D with the close cooperation of industrial and academic circles for technologies contributing to improved living and welfare standards as well as innovative leading-edge technologies.

2) The Next-Generation Industrial Basic Technology R&D System

In order to compensate for its lack of natural resources, Japan must promote R&D for the key technologies indispensable to establishment of the next-generation industries expected to develop in the 1990s such as aerospace, information processing, development of new energy sources, and biotechnology. Moreover, Japan's key technology level, said to lag behind that of industrialised nations in Europe and the U.S., must be rapidly improved. However, despite its large ripple effect and its importance to the national economy, such development requires enormous investments of time and money and entails large risks. As a result, the Next-Generation Industrial Key Technology R&D System was established in 1981 by the Ministry of International Trade and Technology to actively incorporate the potential of the private sector into a planned and efficient programme of research and development.

In order to proceed efficiently with the R&D work, MITI adopted a parallel development system in which a number of R&D methods would be applied simultaneously. The long-term overall plan (lasting approximately ten years) is to be divided into three stages every several years, concrete objectives specified for each of the stages, R&D conditions and results evaluated for each stage, and an optimal method of development selected accordingly.

This system will proceed with the cooperation of industry, academia, and the government (i.e., national testing and research institutes). Contracts will be handed out to private companies to utilize the potential of industry, national testing and research institutes will participate in the R&D work, and in some cases the assistance of universities will also be sought out.

The main items singled out for technology development under the system are as follows:

a) New materials

Fine ceramics, high-efficiency high-polymer separation film materials, conductive

polymer materials, high-crystallinity polymer materials, high-performance crystal control alloys, compound materials, high-reaction materials

b) Biotechnology

Bioreactor cell large-scale cultivation technologies, applied technologies for recombinant DNA

c) New functional elements

Ultra-lattice elements, three-dimensional circuit elements, bio-elements

3) The Computer Basic Technology Development (the fifth-generation computer R&D)

The history of computers can be broken down into five "generations" according to the elements used therein: the first generation (vacuum tubes), the second generation (transistors), the third generation (integrated circuits), and 3.5 generation (large-scale integrated circuits). Today, the fourth-generation models using ULSIs are the standard. Until now, computers have been based on the principles laid out by Von Neumann in 1946. With the increasingly complex processing functions required of computers in recent years, however, software is taking up more space than ever, and functional limitations are beginning to surface.

The fifth-generation computer R&D has as its objective the realization by the early 1990s of a new generation of computers, differing from conventional Von Neumann models and based upon new principles and technology.

4) The Subsidy System of the Important Technological R&D Expenses

For important technology development projects being carried out at private firms, the government will provide a portion of the required costs. In addition, subsidies are offered for those projects expected to provide results.

There are four subsidy categories:

a) Tax incentives for promotion of data base construction

The programme preparation system is to be supplemented with a data base construction reserve (10% reserve) for funds required in the construction of data bases by corporations in the data base industry.

b) The Specific Act for Pecuniary Loss for Endowment to Testing and Research Corporations

A special measure for the Basic Technology Research Promotion Centre allowing deduction of money contributed to testing and research organizations.

c) The Reserve Fund System for Computer Repurchase Losses

The term of applicability of the reserve fund system covering special losses from repurchase of computers by corporations engaged in the manufacture or sale of computers will be extended to two years.

d) The Specific Act for the Decisive Life of the Semiconductor and IC Production facilities

Because of rapid technological innovations and obsolescence, the term of applicability of the special measure designating the service life of semiconductor and IC manufacturing facilities at five years (ordinarily seven years) will be extended by two years.

5-2. Electronics Industry Promotion Policies in Korea

(1) Legal and Financial Assistance Policies

Korea's industrialisation can be roughly grouped into two phases on the basis of the direction government policies were taking: the pre-1960s period of emphasis on import replacement, and the period of export-led growth since then.

In the early 1960s, the government promoted a series of policy reforms with the objective of stabilising the economy, invigorating market functions, and liberalising the economy. Among these were the expansion of social indirect capital through the Five-Year Economic Development Plans, the establishment of a system for the active introduction of foreign capital, and the relaxing of import restraints (starting in 1964). These reforms were also applied to the electronics industry field.

With the transition to a period of export-led growth, the Korean electronics industry began to strengthen its efforts to penetrate foreign markets. Exports of electrical appliances and electronics products began with the shipment of approximately US$4,000 worth of radios to Hong Kong in 1962. For continuous export promotion, the government in 1969 adopted a stance of strong support for the electrical appliance and electronics industry with enactment of the Electronics Industry Promotion Act. In the following year, production by the electronics industry reached $106 million, exceeding $100 million for the first time. With assistance provided under this act, the industry in 1974 exported approximately 4 million radios and 600,000 black-and-white television sets. Exports of the latter item grew at an annual pace exceeding 200% during the period 1969 - 1974.

Gradually strengthening their position in overseas markets, exports of electrical equipment and electronics products in 1976 exceeded US$1 billion for the first time, accounting for slightly more than 13% of total exports. In addition, the field was designated as one of the most important industries, making companies eligible for the benefits of policies emphasizing export promotion.

Despite the dramatic growth in exports described above, the majority of these products were produced through simple assembly, leaving considerable room for further improvement. In order to accomplish this and grow beyond assemlby-oriented production, the Korean government announced the Parts Industry Promotion Policy as

part of its plan to develop an advanced industrial structure and cultivate international competitiveness.

First of all, this policy established three major objectives: 1) promotion of the industry with priority given to industrial equipment; 2) production of high-class products; and 3) increased added value through domestic production of basic raw materials. Second, in order to achieve these objectives a total of 57 items were selected as priority promotion items for government assistance. The list consisted of nine government-led items, including semiconductors and minicomputers, and 48 private-sector-led items, including record players and special batteries. Third, producers were designated for 40 of the priority promotion items, including silicon wafers. This policy emerged from the government's intention to convert production in the industry from simple assembly to technology-intensive manufacture of high-value-added products.

Promotion of heavy and chemical industry took on a full-scale character with the advent of the 1970s and was accelerated even further after 1975. Among the major policies related to this growth were: investment credits for important industrial fields; tax incentives such as the reduction and exemption of customs duties; establishment of the National Investment Fund Act in 1973 to promote investment; financial assistance for the domestic production of machinery and plants (1976); and full-scale medium- and long-term export assistance financing through establishment of the Export-Import Bank(?) (1976). As a result of these policies, exports of electronics products, electrical equipment and machinery grew rapidly.

In contrast to the light industrialisation that had preceeded it, however, the heavy and chemical industrialisation promoted from 1970 onward required a broad foundation. Since both the size and quality of this foundation in Korea were insufficient, however, its reinforcement was urgently required. Among the policies established in this regard was the Small-to-Medium-sized Enterprise Affiliation Promotion Act of 1975.

One of the most important government policies concerning the electronics industry to take effect in the 1980s was the Long-Term Development Plan of the Electronics Industry. In this plan, the industry was designated as a "central strategic industry" in the Fifth Five-Year Economic Development Plan, and concrete measures to achieve this goal were laid out. The essential thrust of the plan was to induce across-the-board industrial development under the leadership and growth of the electrical equipment and electronics industry. The outlined objectives called for the industry to grow at an average annual

pace of 22% during 1982-86 and of 17% during 1987-91, with exports to increase by an average of 19% every year from 1982 to 1991, thereby garnering a 4.2% share of the world market by 1991. World market share in 1982 was 2.3%.

Moreover, the plan proposed that the ratio of industrial equipment production to total production be raised from the 14% of 1982 to 31% by 1991 through structural improvements in the industry, which until then had concentrated on consumer electronics equipment. At the same time, it proposed that the value-added ratio of the industry be raised from the 28% of 1980 to 34% in 1991 by outgrowing the assembly-oriented production structure and strengthening independent development capabilities. Concerning labour structure, the plan predicted that by 1991 specialized technicians and workmen would account for fully 15% of the industry workforce.

In order to promote this plan the Electronics Industry Promotion Fund(?) was established to provide financial assistance for research and development and new product development activities. The fund offers favorable conditions to prospective borrowers (five-year loans deferrable for two years with 6% annual interest), and in 1986 it distributed 2 billion won in assistance.

The industry is eligible for financial assistance under a variety of other government programmes as well, including the previously-described National Investment Fund and export financing programmes. Furthermore, the electronics industry has been designated as both an "important industry" and a "technology-intensive industry," making it eligible for a variety of tax-related benefits under the Tax Reduction and Exemption Act(?).

Thus it can be seen that the Korean economy has maintained a basic character of high growth since 1960. This growth can be divided into the following periods on the basis of government policy packages as follows:

(1) 1950s	Import-replacement industrialisation
(2) 1962-71	First phase of export-promotion industrialisation (emphasizing light industry)
(3) 1972 -present	Second phase of export-promotion industrialisation (emphasizing heavy and chemical industry)

A survey of government policies concerning the electronics industry and other export-oriented industries based on this division will be offered below.

1) Import Replacement Period (1950s)

During the 1950s, the government pursued a strategy of industrialisation centering mainly around import replacement. Foreign exchange policy during this period emphasized low-cost imports through the maintenance of an overvalued currency exchange rate while possessing close ties with foreign and military aid. Since exports at this time were insignificant, it was important for export policies to correct unfair elements. Among the policies with an export-promotion-like character adopted during this period were the Foreign Capital Retention System (Foreign Currency Reservation System), the Preferential Export System, and the Export-Import Linking System. Under these programs, foreign currency earned through exports could be used for imports or passed on to other importers at more than the official exchange rate. In addition, exporters were given priority rights to trade credits in the form of local-capital loans. A Financial Fund was also established for export promotion in 1959 with capital of 2 billion won, and it provided manufacturers of export goods with up to 75% of total production costs. The period of redemption was one year, with annual interest of 10%.

2) First Phase of Export Promotion (1962-71)

The transition of Korean economic policy from an emphasis on import replacement to promotion of exports began in 1962 with the commencement of the First Five-Year Economic Development Plan. During this period, a variety of government policies and systems, facilities, and related organisations were established for the promotion of exports. These formed the basis for the export promotion policies to come.

Export Subsidies

In 1961, a temporary expedient for the distribution of subsidies for the promotion of exports was established. Products for export were grouped into four classifications, and equal differences were provided in the subsidies paid out. Special export items (including new products and net exports manufactured with bonded processing) received 25 won to the dollar; first-class items, 20 won; second-class items, 15 won; and third-class items, 10 won (the official exchange rate in 1961 was 127.5 won to the dollar). Total subsidies peaked at 560 million won in 1962 and declined thereafter until their discontinuation in 1965.

Export Financing

These loans were provided to exporters with a period of 90 - 135 days upon presentation of a letter of credit. While the interest rate for ordinary loans in 1960 was 17.5%, enterprises were able to borrow under this system at a rate of 13.87%. The loan amount was limited to 80 won per dollar of exports (equivalent to 62.7%) in 1961. By 1963, with the drop in ordinary lending rates to 15.7%, financing became available under this program at a rate of 8.03%. The borrowing limit was also pushed up to 110 won on the dollar, or 85%. The absolute value of export assistance loans grew together with exports, and their share of total domestic credit in the private sector also increased from 9.2% in 1967 to 21% in 1975. In the 1960s the majority of these consisted of short-term loans directly related to exports. As the programme entered the 1970s, however, the proportion of medium- and long-term loans for export industry assistance began to grow. The ratio of the latter type of loan to total financing increased from 18% in 1967 to 39% in 1975.

Tax Reduction and Exemption

From 1959 onward imports of raw materials for use in the production of exports were exempted from customs duties, and in 1961 export products were also exempted from commodity and business taxes. Furthermore, tax on income earned from exports (i.e., income from activities earning foreign exchange) was slashed by 50%, although this programme was discontinued in the beginning of 1973.

Minimum Export Value Programme

The minimum annual export value necessary for companies to retain their registration as trading companies was raised from $5,000 in 1962 to $20,000 in 1963 and $300,000 in 1970.

Permitted Depletion of Imported Raw Materials for Use in Export Production

The government permitted depletion of a certain amount of the imported raw materials used in the production of export goods by export industries. As imports of raw materials for the production of exports grew dramatically during 1966-70, this indirect assistance is thought to have made a significant contribution.

Railway Transportation and Electrical Power Discounts for Export Industries

Rail shipping costs for mineral products to be shipped abroad were cut by 30%. In addition, a 30% discount on electricity was declared for those export industries requiring less than 200 kwh of power and in which electrical power costs accounted for more than 20% of total manufacturing costs. The latter programme was discontinued in 1975.

3) Second Phase of Export Promotion (1972 - present)

Abolishment of the System Allowing Reduction or Exemption of Taxes for Income from Activities Earning Foreign Exchange

Systems for the reduction and exemption of taxes established with the objective of export assistance were generally similar to those of the first phase, but in the beginning of 1973 the programme allowing reduction and exemption of taxes for income gained from activities earning foreign exchange was abolished. In place of this system, the following types of policies were adopted to assist companies in their export activities.

a) The pecuniary loss inclusion system for overseas market exploitation
b) The pecuniary loss inclusion system for export
c) The pecuniary loss inclusion system for overseas investment
d) Introduction of the special accelerated depreciation system for export trade

Tariff Refund System (1975)

The programme for reduction and exemption of tariff duties for imports of raw materials to be used in the production of exports was revised to a tariff refund system.

General Trading Corporation System (1975)

In the early 1970s Korean economic policy began to promote heavy and chemical industrialisation, but the economy was forced to depend greatly on export demand in order to procure the foreign reserve needed for investment and to repay interest and principle on foreign loans. With the promotion of heavy and chemical industrialisation, therefore, the need for expansion of exports became even more critically felt. As a result, the government decided to adopt a general trading corporation system similar to Japan's to function as an efficient foreign marketing organisation. Firms able to satisfy certain

specified conditions were designated as general trading corporations and made eligible for assistance in financing and exchange rate monitoring. These general trading corporations recordedg average export growth of 42.3% during the period 1975-83, and their share of total exports grew from 14.5% in 1975 to 55.5% in 1984.

Financial Assistance for the Expansion of the Export Industry Foundations

During this period, Korean trade policy emphasized the promotion of heavy and chemical product exports. For example, a stable supply of raw materials from abroad was secured, and the foundation for export industries was reinforced. Financial assistance also shifted from short-term loan programmes targeting trading firms to assistance for production and facility enlargement for manufacturers and the reinforcement of programmes to assist medium- and long-term deferred-payment exports. Other export-related policies are offered in 5. and 6. below.

Establishment of Export Unions

There were 14 such unions as of 1984.

Export Industry Parks

Aggressive Policies to Attract Foreign Capital Investment

Based on the Foreign Capital Introduction Act established in 1966, the government was aggressive in its encouragement of foreign investment since independent operation by domestic electronics companies was difficult in terms of technology, capital, and management, the government was aggressive in its encouragement of foreign investment. Various programmes were established to encourage investment by foreign companies, export industry parks were established, and the Gumi Electronics Industry Park achieved success. As a result of such programmes, investment by U.S. and Japanese companies became more active in the 1970s, and by 1980 100% foreign-capital companies and joint ventures accounted for more than 50% of all production value by the industry.

Policies to Protect and Promote Local Capital with Import Restrictions on Sets, Components, and Raw Materials

Imports of electronic equipment, components, and raw materials which could be produced or obtained domestically were restricted and the use of domestically produced products mandated in an attempt to protect and promote local capital. In the case of parts and raw materials to be used in electronics products for export, however, imports were liberalised to improve the competitiveness of the finished goods, and import duties were refunded upon export of the finished product.

(2) Manpower Training Policies

In order to develop an advanced industrial structure through the development of leading-edge industrial technologies as represented by the electronics industry, advanced chemical knowledge and the training and securing of technicians to lead this process are urgently needed. Korea, however, suffers from a shortage of high-level technicians. In 1981, there were a total of 20,718 researchers in Korea, only 5.3 per 10,000 population.

This figure is very small when compared with figures of 29 for the U.S., 26 for Japan, 20 for West Germany, and 14 for France. In addition, the ratio of professors in science and engineering-related fields to the total professorial population is only 0.7%, in comparison with figures of 5.5% for the U.S., 2.3% for Japan, and 14.6% for the U.K., indicating a shortage of high-level engineers. In response to this situation, the government expanded the manpower training functions of the National Technology Instituty, established new courses of study for researchers, instructors, and Doctors in 1982, and mobilized doctoral-class researchers at research institutions receiving state assistance to serve as joint instructors in an attempt to link research and manpower training.

As a result of policy-based attempts to enlarge and improve the educational system, coupled with the Korean people's respect and enthusiasm for education, by 1986 32.6% of all new employees at Korean enterprises had graduated from high school and 10.7% from university or graduate school. As a result, even unskilled workers who have just begun work can, after a short period of basic on-the-job training, be capable of a variety of tasks on the plant floor.

As was already seen in this report, due to an insufficient electronics industry foundation, attention is being focused on unskilled blue-collar labourers and other ordinary workers. As a result, there is a spotlight on government policies for vocational training, and the fields being targeted are not limited to the electronics industry alone.

The Korean government, upset over the extremely small number of companies who were implementing special vocational training in addition to ordinary on-the-job training, established the Vocational Training Act and set up a number of public vocational training centres in 1967. In addition, it greatly encouraged the establishment of in-enterprise vocational training centres.

First of all, viewed from the standpoint of labour policy, in order to train vocational education instructors for the supervision of in-company vocational training, the government added on at its own expense to the Central Vocational Training Centre in 1968 and, with financial assistance from the German government, to the Korea-West Germany Vocational Training Centre in 1971. These 25 public vocational training centres were integrated with the Korean Foundation for Technical Licensing, Changwon University of Technology, and the Vocational Training Research Centre in 1982 and reestablished as the Korean Foundation for Vocational Training and Management, a special corporation under the control of the Department of the Labour.

In 1974 the Specific Active Law for the Vocational Training was enacted, and in 1976 this was integrated as the Vocational Training Organic Law, providing the first real boost to in-enterprise vocational training. The training courses provided by each of the vocational training centres (having various levels) are dominated by programmes for the training of skilled workers in the manufacturing industries. In addition, there are training programmes for vocational training instructors (primarily at the public vocational centres), managers, and supervisors. Each of these programmes are divided into pre-employment training, grade-up training, change-of-job training, and re-training.

In these programmes, vocational training standards have been provided, determining training objectives, courses, facilities and maintenance, etc. in advance for each type of job. The present training course for technicians covers 13 fields and 300 types of jobs, with theory and practical skills being taught at a ratio of approximately 1:3.

Concerning the employment situation, in the electronics industry in particular demand continues to greatly outrun supply. This trend has continued since the mid-

1980s, and today there are even shortages of unskilled workers and apprentices who have not graduated from technical high schools. As a result, hiring prospects for all sectors of the manufacturing industry are less than promising, and the commonly held view is that the current labour shortage will continue on into the 1990s.

(3) Development Assistance Policies

1) Basic Directions and Current State of the Electronics Industry

In addition to the efficient promotion of systems for technology development, the government is implementing policies for technology development according to the following basic plan in order to increase R&D investment in the private sector and activate technology research.

a) Assigning respective roles to the government and private sector and rebuilding the functions of the technology development between organizations-in-charge. In principle, private enterprise is to lead technology development, with the government supervising overall technology development promotion. The role of the government is limited within public technologies and basic research linked to public earnings, main industrial Technology which is difficult for companies alone to eploit, and infrastructure to promote the technological exploitation of the company, etc.

b) Development of technology in leading-edge strategic industries will be limited to joint research in an attempt to concentrate research funds.

c) Since there are limitations on funding, technical personnel, etc., development will start from high-marketability fields, and assistance will be offered to cultivate overall technology development capabilities.

One of the oft-given reasons why the overall technological level at Korean companies remains at or barely above the level of a semi-advanced nation is a lack of strength on the R&D front. According to a survey conducted by the Korean Productivity Headquarters (Korean Enterprise Management: An Evaluation, 1986.), the technological level of Korean companies is increasing gradually year by year, but the ratio of production using technology developed independently by in-company research efforts remains at approximately 40%, while the majority uses either previously introduced foreign technologies that have been reworked or else fully or partly introduced technologies.

With the advent of the 1980s, Korean companies have, albeit gradually, begun to concentrate on autonomous research and development efforts. One immediate indication of these efforts is the establishment of technology research centers and the trend towards more of the same. As one example, in 1980 only 54 companies had established such facilities, while by 1986 the number had grown nearly four-fold, to 206.

In addition, the number of industrial technology research unions, which function as a barometer of joint R&D in Korea, grew from 15 in 1983 (with 91 participating companies) to 23 in 1986 (with 284 companies).

Worthy of note in 1987 was the trend toward creation of general technology research institutes by large enterprises and the financial combines in particular. These centers are capable of comprehensive promotion of R&D that includes related technologies such as the concerning (downriver, upriver) materials and application technologies required because of the complication and systemetisation of modern technology as well as the growing importance of software.

More specifically, the Goldstar Central Research Centre was established by Goldstar Co., Ltd. of the Lucky Goldstar Group with an investment of 100 billion won. The facility has a total floor area of approximately 32,000 m^2 and is the largest private facility of its kind in Korea. The Centre concentrates on comprehensive electronics-related research, with major areas including basic research, in charge of new materials and system technology development; home electrical appliance research, which includes telitex and other new media, intelligent housing, and home automation; semiconductor research; and OA research. The company has also announced plans to increase its research staff from the current 1,800 to 2,500 by 1990 and invest almost 250 billion won in R&D. In addition, the Samsung Group opened the Samsung General Research Centre recently, and the Hyundai and Daewoo Groups have plans to follow with establishment of their own general technology research facilities.

Furthermore, the establishment of non-profit general technology research centers having a character quite different from those of these private research centres has become quite common.

The 1986 ratio of public to private sector investment in technology was 26:74, with the government's role remaining a large one. The 1990s has been designated as "years of the advance to technology," and government-led investment has been sizeable.

In a long-range vision for technology development established mainly by the Ministry of Technology, total investment in technology is expected to reach 3% of the GNP (4.2 trillion won) by 1991.

As one part of these activities, the Daetoek Research Park was built on approximately 2.8 million m^2 of land on the outskirts of Daejon. Among its reisdents are the Korean Academic Institute of Science and Technology, which is Korea's leading scientific think tank, an energy research institute, a power resources research institute, a standards research institute, an electronics and telecommunications research institute, and a chemical research institute.

Also located in the park are the University of Technology and two other universities specializing in technology-related fields. Private research organizations from 22 companies are scheduled to come in the near future, giving the park a strong claim to status as Korea's "technopolis."

A more nationwide and comprehensive vision for the promotion of science and technology is attempting to group 19 cities across the nation into six research "belts" and develop science and industry R&D parks in each. According to this plan, the Seoul research belt would concentrate its R&D activities on the information industries and genetic engineering; the Daetoek research belt, on leading-edge technologies and the aerospace industry; the Iri research belt, on the textile and electronics industries; the southern research belt, on the petrochemical and shipbuilding industries; and the coastline research belt, on marine-related fields.

As part of the government policies to assist research and development activities at corporations, ten laws and programmes were enacted or implemented in 1987, including the Computer Programme Protection Act and the Material Patent System. These policies are designed to stimulate indpendent private-sector research and development efforts.

Viewed from a general perspective, it can be said that government policy initiatives for the promotion of R&D have made a large contribution to R&D efforts by Korean companies. A list of the 11 R&D fields to be promoted in the future as important projects is provided below:

1. Development of the semiconductors and computers that will lead tomorrow's information society

2. Development of automation techniques and technologies for the improvement of industrial productivity
3. Development of new materials for import replacement and the acceleration of technological innovation
4. Development of energy conservation technologies for achievement to the one-trillion-won energy conservation target
5. Development of precision chemical technologies for the advancement of science and industry
6. Development of genetic engineering technologies for promotion of new industrialization
7. Development of leading-edge technologies to increase the added value of mineral resources
8. Development of marine technologies for the cultivation of bases as a marine nation
9. Further development of existing industrial technologies for improvements in productivity and the international balance of payments
10. Long-term development and promotion of space science and technology
11. Promotion of the basic sciences for manpower training and the accumulation of technology

2) Results of Development Assistance Policies

The previous section offered a somewhat abbreviated summary of the directions being taken by government technology development as well as current conditions at a few representative Korean companies.

This section will discuss the results of the development assistance efforts described above, focusing on three areas: a) the Long-Term Development Plan of Electronics Industry; b) efforts to assist the development and promotion of research; and c) financial assistance.

a) Long-Term Development Plan of Electronics Industry

Efforts to promote this plan have resulted in development of the new technologies and products listed below, and domestic production of products is increasing on a yearly basis.

Samples of Main Development Products

	Category	'80	'86
	Computer	Monochrome CRT Terminer	Private Microcomputer High-Performance Peripheral Machinery
	Communica-tion	MechanicalOperating Machine	Optical Communication System of Electronic Operating Machine
Industrial Electronics	F A	-	Automatic Assembly Machine Robot
	Office Machinery	-	Copying Machine, FAX
	Electronics Adaptation	Electron Sphygmomanometer	NMR-CT Single Phase Photographing Device
Home Electronics	Video	Trial Product of VTR	8m/m VTR, 4m/m Integral Type VTR, Projection TV
	Audio	Stereo, Amplifier	CDP
Parts	Active Parts	Monochrome CRT Electron Timepiece Chip	Colour CRT IMD RAM
	Material	Monochrome CRT Glass	Ferrite, Shadow Mask, Polyester Film, etc.

b) Assistance for the development and promotion of research

Public and private sectors established a joint development programme in 1986 for fields such as semiconductors and computers presenting high investment risk together with joint research unions.

The Subject of National Policy : Co-Development Programme

Name of Development subject	Duration of Develop-ment	Development Nucleus	Total Volume Required (Billion Won)	Present Condition of Propulsion
The Develop-ment of Korean Type Middle Class Computer System	'87~ '90~	ETRI and Computer Research Union	335	• Wholistic Electron Way for Cities(85.8) • Decision of the Master Plan (86.5) The Fund for Grow-ing up the Indus-trial Technology, etc. are Securely Prepared with 2 Billion Won.
Micro Computer	'86~ '89~	ETRI and Semi-conductor Research Union	879	• Wholistic Electron Way for Cities(86.5) • Decision of the Master Plan (86.5) The Fund for Grow-ing up the Indus-trial Technology, etc. are Securely Prepared with 5 Billion Won.
Wholistic Electron Way for Citiew	'86~	ETRI and the Body of Production Industry	560	Inangulation of the Development (86.1)

c) Financial assistance

In the 1980s the Korean government established three main financial assistance systems for technological R&D. The first of these was the Designated R&D Activities System implemented in 1982. Under this programme, government-led research was to be performed mainly at specified research institutes, while technological research and development led by private company would be conducted jointly by research institutes and related firms. This system offered primarily long-term assistance for large-scale technology development.

The second of the programmes was the Industrial Development Act, enacted in 1986, which promoted activities for the improvement of industrial foundation technologies and served as a source of short- and medium-term technology assistance for corporations.

The third programme provided joint development assistance for national policy objectives through Industrial Technology Up-Grading Fund. Specifically, the three programmes were as follows:

<u>Designated R&D Activities System</u>

• Percentage of development costs reimbursed under the system

i) Public-private joint research activities

Large companies: up to 30%

Small-to-medium-sized companies: up to 70%

Research unions: up to 50%

ii) Government-led activities: 100%

• Development rights (proprietary rights, etc.): joint ownership by the supervising organization and participating corporations

• Collection of licensing fees

i) Time: Point of commercialization

ii) Method: At least x% of sales within five years

iii) Amount: A value exceeding the assistance provided by the government

<u>Industrial Foundation Technology Development Activities</u>

• Percentage of development costs reimbursed under the system

i) Divided into five contracts with a differential of 20% - 30%

ii) Government-led: 100%

• Collection of licensing fees

i) Time: When first implemented or when research and development activities are completed, depending upon the type of contract

ii) Amount: 50% of the assistance amount (100% for research unions)

• Methods of promoting development activities

Each year a technology demand survey is conducted and experts from respective fields interviewed to select the industrial foundation technologies for development.

Industrial Technology Up-Grading Fund

In addition to promoting domestic production of machinery, components, and materials, this programme has aided technology development by providing 20 billion won in assistance for the joint development of VTR parts and semiconductors by the component industry, 15 billion won for the joint development of medium-scale computers, 55 billion won for the development of common circuit technology, and 30 billion won for the development of national policy objectives for a total of 120 billion won.

(4) Policies to Promote Domestic Production

1) Basic Directions

The following are some of the major domestic production-related problems facing the Korean electronics industry today:

1. The ratio of industrial electronic equipment to total electronics industry production was only 20% at the end of 1986, significantly lower than figures for the U.S., Japan, and other advanced nations. As a result, development of core technologies and specialized parts in these fields has lagged behind. In addition, more training of specialized technicians and a healthier R&D structure are needed.

2. The nation's component and material industries have low self-sufficiency ratios. Electronics components account for 49% of all industry production, significantly more than the worldwide average of 24%. The reason is: Products in labour-intensive fields are produced under contract to advanced nations for export. In fact, the Korean electronics industry depends on imports for fully 40% of its components, and with the appreciation of the yen and the resulting increase in import costs or during world supply shortages Korean products quickly lose their competitiveness on the international market.

As a result, the localisation of component and material production is an absolute necessity for reinforcement of the industry substructure.

In order to resolve problems of the type described above, the government has made the basic thrust of its policy one of encouraging structural advancement and localisation of parts and material production through 1) domestic production policies and 2) the development of industrial electronics equipment and other technology-intensive products.

2) Domestic Production Promotion Strategy

Advancement of the industrial structure under the basic policy thrust described above will be carried out primarily through technology development policies with an emphasis on the development of leading-edge technology products.

a) Import Restrictions

In order to protect the domestic market, the government has restricted imports of foreign products capable of being developed domestically until home products become competitive on the international market while at the same time proposing in 1984 a system of annual import liberalisation to encourage industry to establish development promotion plans and step up development efforts. Specifically, the act called for the immediate liberalisation of imports of colour television sets, air conditioners, and other home electrical appliances whose competitiveness had been secured, while semiconductors, VTRs, computers, and other technology-intensive products were to be liberalised after 1987.

Other import items which had been liberalised but for which imports from Japan were expected to increase dramatically were designated for diversification of import origin, and another list of imports "for monitoring" was established to prevent importation of luxury goods and low-grade products. The latter list, however, was abolished in January 1989.

b) Domestic Production Plans

In addition to increasing the domestic value added of products there are plans for annual increases in domestic production to improve international competitiveness.

Promoting Project for Domestic Production

	'86	'87	'88	'89	'90	'91	Sum of Import Substitute ('86~'91)
							(Unit: Million $)
Operator	72	75	78	82	86	90	159
Telephone	84	86	88	91	92	93	14
Computer	50	60	80	85	90	95	1,155
HDD	5	25	40	65	80	90	474
Printer	29	35	50	60	75	80	203
Radio Communi-cation Equipment	55	58	62	65	70	75	25
VTR	75	80	85	85	85	85	108
Electronic Range	82	91	94	97	98	99	203
Cathode Ray Tube CRT	85	87	90	92	94	96	90
Magnetic Tape	51	58	62	65	70	80	328

c) Establishment of the Five-Year Plan for Domestic Production of Components and Materials

From the end of 1985 the price of imported components rose together with the yen, leading the government in 1987 to establish the five-year plan (1987-91) for the domestic production of electronics components and materials.

Objectives

i) Improvement of the self-sufficiency ratio for components and materials

By promoting domestic production through 1991, the final year of the sixth Five-Year Economic Development Plan, and stemming the yearly average increase in component imports to 10.1%, the self-sufficiency ratio for components is to be raised to 69%.

ii) Annual import replacement and export promotion targets

A total of 3,750 products will be developed between 1987 and 1991, resulting in $3 billion in import replacement and $2 billion in increased exports.

Promotion system

i) Selection criteria

• Products to be developed with government assistance

Items for which the country depends greatly on imports and items urgently requiring technological development but for which development is lagging

• Products to be developed by companies

Items for which demand is increasing and private-sector commercialisation and in-company development (with simple financial assistance) are possible

• Products to be developed jointly

Specialised components for leading-edge electronics equipment entailing a large investment, lacking in general applicability, and for which private-sector development lags behind

• Method of assistance

Priority financial assistance will be offered through the Industrial Development Fund, Industrial Foundation Technology Up-Grading Fund, etc.

3) Policies to Assist the Promotion of Domestic Production

a) Financial Programs

National Investment Fund

- Funding: Government funding
- Target: Electronics industry purchases of domestically-produced facilities and materials
- Annual interest: 10% - 11.5%
- Term of repayment: 10 years (including a five-year period of deferment)
- Scale of assistance:

The Size of Assistance for National Investment Fund

(Unit : Million Won)

Year	'84	'85	'86	'87	'88
Total of Assistance	100	100	100	100	100

Electronics Industry Promotion Fund (combined with the Industrial Development Fund in 1986)

- Funding: Public and private investment
- Target: Prototype development
- Annual interest: 6%
- Term of repayment: Divided evenly over three years with a two-year period of deferment
- Scale of assistance:

The Size of Object for Electronic Industry Promotion Fund

(Unit : Million Won)

Year	'81	'82	'83	'84	'85	'86
The Number of Assisted Companies	37	32	32	53	94	
Total of Assistance	(3,800)	(2,150)	(2,250)	(4,227)	(6,460)	(7,000)
Development of Industrial Machinery and Tools	19	–	–	22	39	
	(2,000)			(1,977)	(2,150)	
Development of Parts	18	32	32	31	55	
	(1,800)	(2,150)	(2,250)	(2,250)	(3,950)	

Note : The Figures in Parentheses Show the Total for Assistance.

Industrial Technology Up-Grading Fund

- Funding: Oil Stabilisation Fund
- Target: Firms developing designated machinery, components, and materials
- Annual interest: 5%
- Term of repayment: Ten years (within five years)
- Scale of assistance: (1986-87)

The Size of Assistance for Industrial Technology Up-Grading Fund

Unit : Million Won

Year	1st year	2nd year	Total
Total of Assistance	450	200	650

b) Tax Incentives

Main Systems	Contents	Remarks
Investment Tax Credit or Special Sinking Depreciation System	• Ground: Control bill of Tax Reduction and Exemption, Article 12th • Objects: 6 types of Industry Like Electronics Industry - 100% Specially Recognised Depreciation of General Sinking Depreciation Sum. - 3-5% Exemption of Investment Tax	Abolition in December '86
System of Foreign Investment Tax Reduction and Exemption for Technical Collecting Industry	• Ground: Induction Lag of Foreign Capital • Objects: 39 Industries Like Semiconductor • Contents: Reduction and Exemption of Income Tax, etc. for 5 Years	
Reduction and Exemption of Introduction Customs on Institution Materials	• Ground: The Customs Law, Article 28th • Objects: Industrial Equipments and Electronics Like Computer, etc. • Items: Institution Materials which are Impossible to Produce in Domestic Because of Manufacturing Objects • Rate of Reduction: 60% (70% of Semiconductor)	

5-3. Electronics Industry Promotion Policies in Singapore

(1) Legal Assistance Policies

Among those nations struggling to industrialise, Singapore has one of the most developed sets of legal policies for assistance. The core of these policies is the Economic Expansion Promotion Act -- The Income Tax Exemption Act enacted in 1967. This act, significantly revised in 1970, remains in effect today. Inclusion of the phrase "Income Tax Exemption" stems from the existence of restrictions for the consideration as a portion of an income tax act in Article 2. This act centers around the following clause: "In order to promote the Singapore economy, corporations investing a specified amount or achieving a specified export ratio in industries manufacturing designated products will be exempted from income taxes for a specified period." In offering such incentives the act was also an attempt to attract foreign capital. As will be described in detail below, the electronics industry was the highest priority field for application of this act. The 1970 revision left the fundamental thrust of the legislation unchanged; rather, the revision was made with the objective of further promoting industrialisation in consideration of the tempo of industrialisation and against the backdrop of expectations for greater investment and industries with high technological standards.

The leading-edge technology industries targeted by the act included five fields: 1) electronics; 2) knowledge-intensive services; 3) chemical products; 4) biotechnology; and 5) precision engineering products.

Under the act, all companies contributing to industrial development and the promotion of exports, regardless of whether they were established with local or foreign capital, are eligible for tax exemption.

The act centers around the following five points:

1) Pioneer Industries

Firms are automatically exempted from taxes for five years, and this may be extended another five years for companies making significant investments in special training or technologies and expected to require a long preparation period. All depreciation and wear costs can be carried forward after the period of exemption runs out, and all dividends distributed during the period are also tax-exempt.

2) Facility Expansion Investment

When fixed investment exceeding S$10 million is made, income resulting from the investment is exempted from taxation for five years.

3) Export Industries

At those companies designated as export industries, a tax reduction of 90% is offered for five years on income earned from exports of products specified for tax reduction. Dividends based on export earnings are also tax-exempt. Those export companies also designated as new industries are eligible for these benefits for 8 - 15 years.

4) Patent Royalties, Technological Assistance Fees, and Other Fees for the Use of Industrial Proprietary Rights

The usual tax rate of 33% is reduced to 20%, and in cases where the payment does not include foreign remittance and is appropriated for share income of the paying company, taxes are exempted entirely.

5) Other

Investment for facility expansion and modernisation can be depreciated 100% during the first year. Materials, machinery, and raw materials imported by manufacturing firms operating in Singapore are also exempted from import taxes.

There are various ways of raising capital for domestic enterprises: Funds may be borrowed from owners, cooperating companies, parent companies, commercial banks, merchant banks, credit sale companies, medium- and long-term credit associations, the Singapore Development Bank, and the Juron Corporation (the latter two are government-related institutions). In addition, underwritten or publicly-held stock and corporate bonds may be issued.

The Singapore Development Bank provides financial assistance to industry in the form of medium- and long-term loans, participation in share capital, loan guarantees, short-term commercial financing, and management services. Since Singapore's financial

institutions and organizations are relatively well developed, it is comparatively easy for companies to raise funds.

(2) Manpower Training Policies

The labour department of Singapore's Economic Development Board (EDB), in coordination with the nation's economic reorganisation efforts, manages the Skills Development Fund (SDF) in order to improve the quality of the workforce, carry out retraining, and provide mainly financial assistance for hiring. The electronics industry is eligible for assistance from the fund, which was established at the end of 1979 and provides three types of financial incentive. The Training Grant System (TGS) is one of these.

The Training Grant System offers grants to encourage employers to participate in training programmes to improve worker skills.

Ordinarily, the fund subsidises 30% - 90% of all training costs. The following eight fields have been designated for priority development:

1. Technical skills
2. Computer-related skills
3. Management/supervision skills
4. Handicrafts skills
5. Specialised education/expert skill training
6. Product design and R&D skills
7. Company-wide productivity improvement planning
8. Basic Education for Skills Training (BEST) planning

When the system was first established, employers were obligated to supply at least 30% of the approved training and planning costs in order to receive grants. Later, however, this provision was relaxed, and at present the SDF will provide up to 90% of all training expenses. For two years after introduction of the system, approval of grants proceeded slowly. This was due to two factors: first, employers were unaware of both the system and its provisions; and second, the EDB was less than generous in its approval of grants. In 1982, however, the application procedure was speeded up, and by the end of October 1983 the SDF had approved a total of S$153 million in training grants in response to 17,000 applications. The number of workers who had received training as a result of this assistance exceeded 136,000, or more than 12% of the entire labour force.

Thus far the spotlight has been focused mainly on the financial aspects of manpower training. The remainder of this section will deal with the systematic and organisational aspects, namely, the various institutions providing vocational training.

Singapore's plan for vocational training is generally referred to as Continuing Education Training (CET). Broadly defined, CET covers all forms of education for those who have left formal schooling. It includes a wide variety of courses (part-time, special, and correspondence courses) organised by government and educational institutions, specialized organisations, public service organisations, and private enterprise together with company-sponsored training courses, halfway retirement legislative education courses, and lectures. The government intends CET to cover all economic specialties and all workers. Although various types of courses are available under CET, due to the limitations of this report discussion will be limited to the public sector.

CET planning in the public sector can be divided into two categories. One includes the special open courses provided by the government and public institutions to individuals or specified labour organizations. The other covers internal worker training programmes laid out by government and public institutions. This report will concentrate on the former category and, as in the discussion of financial aspects, will focus on one organisation therein, in this case the EDB. This organisation was selected because the majority of vocational training related to the electronics industry is reflected in EDB policies.

It should be clear from the above that the EDB has as its main duty the promotion of investment in industries which contribute to the innovation of Singapore's economic structure. In addition, however, the organisation serves as an important training institution for industrial skilled labour. The EDB believes that securing a sufficient and stable supply of skilled labour is essential to its fundamental task of attracting investment. EDB activities in the training field complement those of lower and upper secondary schools. The organisation is currently engaged in the operation of its own special training centre as well as a technical training institute with the cooperation of foreign governments and private companies of varied nationality.

Since the early 1970s the EDB has carried out Joint Industrial Training Plan. Under this plan, the specialised knowledge of manufacturing companies and foreign governments is brought together with the financial resources of the Singapore government

in an attempt to create a pool of skilled labourers and technicians for Singapore industry. Under this plan the following four technical training centres have been established, of which three were realised with the assistance of foreign companies and one was done through a joint venture with the government of Japan.

1. Tata Government Training Centre (est. 1972)
2. Brown Bovely Government Training Centre (its predecessor, the Loray Government Training Centre, was established in 1973)
3. Philips Government Training Centre (est. 1975)
4. Japan-Singapore Training Centre (est. 1979)

These four centres carry out four-year "apprenticeship programmes" in which trainees receive two years of training at one of the facilities and are then assigned to companies in their respective fields for another two years. The major characteristic of this programme is that training at the centres is carried out in a working environment closely approaching actual industry conditions. The centres provide courses allowing trainees to master basic skills that are applicable in a wide variety of industries.

In addition to these four training centres, where general skills are provided, the EDB, in cooperation with three foreign governments, has established the following three technical training institutes providing specialised training in fields such as metal tool and die design, the production process, robot engineering, and microprocessor and computer software technology.

1. Japan-Singapore Institute of Software Technology (JSIST)

Established in the beginning of 1982 for the training of computer personnel and improvement of the information processing skills of managers and specialists.

2. Germany-Singapore Institute (GSI)

Also founded in the beginning of 1982 with the objective of training specialists in machine processing, metal tool and die structure, and the production process.

3. France-Singapore Institute (FSI)

Established in 1983 for the training of technicians in the fields of control engineering, mechanical engineering, robot engineering, microprocessors, and computer applications.

After entering full operation, each of the three training centres will be able to accommodate approximately 400 trainees.

In addition to the above, the Applied Technology Group (ATG) was organised to carry out training in leading-edge industry sectors. It makes use of the eight facilities listed below to train workers in leading-edge technologies.

Each of these facilities has introduced advanced leading-edge industrial equipment with the technical cooperation of foreign-affiliate companies and is carrying out high-level education and training programmes. Vocational training using these specialised facilities and the advanced equipment is provided to all of the trainees in the above-described EDB training centres as well, thereby giving a boost to the technical level of Singapore's plant workers.

The eight existing facilities as of 1987 are as follows:

1. CECTU (in cooperation with Computer Vision)
   Specialised training in CAD/CAM
2. AERTU (in cooperation with ASEA)
   Specialised training in industrial robots
3. JECTU (in cooperation with JAPAX)
   Specialised training in computer numerical control (CNC)
4. SSERL (in cooperation with Sankyo Seiki)
   Specialised training in assembly robots
5. HECTU (in cooperation with Hewlett-Packard)
   Specialised training in CAD/CAM
6. SERL (in cooperation with Seiko)
   Specialised training in assembly robots
7. MECTU (in cooperation with Mentographic)
   Specialised training in CAD/CAM
8. MEML (in cooperation with Mitsutoyo)
   Precision measurement

(3) Development Assistance Policies

1) Bank-rate Support System for Mechanisation

The Skills Development Fund (SDF) being implemented by the labour department of the EDB includes three types of financial incentives. One of these, the Training Grant System, was described above. The remaining two incentives, to be discussed here, are

the Bank-rate Support System for Mechanization and the Consultant Development System.

The former programme was introduced in December 1980 in an attempt to encourage companies to invest in new machinery and facilities.

The system provides financial aid when the company pays interest accruing from the purchase of machinery. This assistance, limited to 9% annual interest, is equivalent to half of the actual interest payments accruing from loans undertaken to finance the purchase of the equipment.

2) Consultant Development System

This system is designed to assist local companies attempting to improve the management of their operations by employing an outside consultant for a short period of time to obtain technical know-how and improve labour training plans.

Established in August 1981, this system subsidises 30% - 70% of the consulting fee.

These three programmes, each under the supervision of the SDF, have been warmly welcomed by local companies enthusiastic about training, automation, and development.

3) Incentives for the Introduction of New Technologies (INTECH)

These incentives were announced in August 1984 with the objective of encouraging corporations to invest in new knowledge-intensive industries.

Under this system, the SDF is empowered to provide up to 90% of financing required for personnel and facility costs entailed by new technology projects in the following areas:

1. Automation and robot engineering
2. Microelectronics
3. Biotechnology
4. Information technology
5. Optical and raster engineering

6. Engineering and material science

As can be seen from these six fields, the goal of this system is to encourage development by groups of highly trained specialists and scientists.

4) Product Development Assistance Scheme (PDAS)

According to a survey conducted by the Science Council, approximately 180 public and private bodies are currently engaged in research and development activities in some form or another. This scheme was established under the control of the EDB in order to stimulate innovation and product development by local industry. By requesting EDB subsidies, local firms can be compensated for up to 50% of direct development costs incurred during development of new products or improvement of existing ones. The maximum subsidy for any one project is S$200,000. In 1983, six local firms were awarded a total of almost S$600,000 under the scheme.

Introduction of PDAS has created a great deal of interest in Singapore industry circles, and for the next few years product development activities are expected to double annually.

(5) Research and Development Assistance Scheme (RDAS)

In order to provide funding for medium- and long-term R&D projects for development of specified areas, the Ministry of Finance in 1981 provided a blanket subsidy of S$50 million to the Ministry of Trade and Industry. In 1983 this subsidy was renamed the Research and Development Assistance Scheme.

Since March 1984 the Singapore government has provided investment incentives to local firms investing in new technology projects.

When a local firm invests in a venture capital activity that has been approved as a new technology industry and retains a loss as the result of such involvement, it is eligible for a 50% wrote-off on the total investment. Although risky, this kind of investment is the R&D-oriented type of activity that often results in the development and improvement of innovative technologies.

Singapore has long awaited a new type of entrepreneur to encourage investment in new fields. And, in fact, a large number of leading local companies (e.g., the Robin Group, National Iron and Steel Mills, Intraco, F & N, etc.) have become involved in the electronics industry and other high-tech fields.

The majority of these entrepreneurs, however, are forced to procure financing on a financial market that is unfamiliar with speculative investment. Although Singapore offers relatively easy financing in comparison with other Southeast Asian nations, lack of funding was the greatest obstacle faced by these local entrepeneurs. Hence the electronics industry's complaint that the government ought to offer more assistance. Fully aware of this problem, the government has made full use of SDF through EDB to support the development of the electronics industry and other high-tech industries.