A Study on Industrial Sub-Sector Development in the Republic of Indonesia

Part III

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A STUDY ON INDUSTRIAL SUB-SECTOR DEVELOPMENT IN THE REPUBLIC OF INDONESIA

Part III
Rubber-Based Products Industry

FIRST YEAR FINAL REPORT

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3.1. Method of Survey

The rubber industry is an integral one extending from the upstream sector to the downstream sector and the establishment of a comprehensive support system by the government is considered very important for its promotion. In determining the coverage of the survey, this was kept in mind and an effort was made to cover a wide range of companies from planters to manufacturers of final products. In addition, stress was placed on research and testing institutes among the government organizations.

Seven regions and 94 companies and organizations were selected after consultation with the Indonesian Ministry of Industry. A breakdown shows 18 companies in the natural rubber and latex production sector, 38 companies in the rubber product production sector, and 38 government organizations, research and testing institutes, industrial organizations, etc. Details are provided in Tables 3-1-2 to 3-1-4.

The Japanese survey team comprised one member in charge of trade and investment, one in charge of business management, and one in charge of production and technology.

The Indonesian side comprised two members of the Directorate General of the Chemical Industry, who participated in the survey alternately.

The survey included interviews and a questionnaire survey.

In view of the time limitations, the interviews focused on problems being confronted by the companies and organizations. In addition, the production technology experts investigated the current state of the factories and products and, when requested, provided guidance on methods of improvement of the same. In Yogjakarta, at the request of the companies, they held seminars in which large numbers of people participated.

The questionnaires were conducted with the aim of obtaining a grasp of the state of the companies, problems in the same, and requests to the government. The questionnaires were recovered through the Directorate General of the Chemical Industry and Local Office of the Ministry of Industry since it included numerous questions and required time for completion. There were a total of 60 questionnaires sent out and 40 recovered - for a recovery rate of 67 percent. (In the natural rubber sector, sometimes only questionnaire forms were sent out.)

Table 3-1-1: Number of Questionnaires Recovered by Sector

Production of natural rubber	17
Production of latex	4
Production of industrial rubber-based products	12
Production of latex products	7
Total	40

Note that the results of the questionnaire survey from the natural rubber and latex production sector were used as supplementation and confirmation of the results of the interviews and are not included in this report.

Table 3-1-2: List of Manufacturers Visited by Region

Region	Product	Name of Manufacturer
Jakarta	Rubber hose	Limusnunggal Rubber
	Tire/tube for bicycles	Banteng Pratama
	Examination glove	Ughari
	V belt	Mitsuboshi Belting
	Rice hulling roller, rubber roller, fender material	Standard Mills
	Examination glove	Shawindo Pelita
	Examination glove	Tata
	Examination glove	Perkasa Rubberindo
	Examination glove	Trias Arian Dini
	Examination glove	Nusa Dipa Perdana
	Rubber components for automobiles	Inoue Rubber
	V belt	Bando
	Rubber components for automobiles and rubber products for other industrial use	Aneka Konponen
	Square shaped rubber strings	Karet Agung Mas
	Surgical/examination glove, round shaped rubber strings	Latexindo Sejahtera
Bandung	Condom	BKKBN
	Small diameter hose, other rubber components for industrial use	Karya Putra
	Belt	Mitra
	Fender material	Tumaritis
	Rice hulling roller, rubber roller, rubber components for other industrial use	Kali Baru
	Rubber components for automobiles, rubber components for other industrial use	Rutu Parnawa
	Rubber components for other industrial use	Inti Karet
	Examination glove	Daifatex
	Rubber components for automobiles, rubber components for other industrial use	Sinar Jaya
	Rubber components for automobiles, rubber components for other industrial use	Budy Karya
Medan	Masticated compound	Naga Sakti Jaya
		Harapan
	Rubber sole	Garuda Mas Perkasa
	Rubber band, rubber sole	Asia Karet
	Tire/tube for bicycles	ABS Rubber
	Rice hulling roller, masticated material	Indo Yakin Maju
	Examination glove	Indo Rubber
	Examination glove	Eka Dura
	Rubber band, rubber sole	Panca Setia
	Volleyball	Deli Jaya
	Rice hulling roller, tube for bicycles, rubber components for other industrial use	Industri Karet Deli
	Rubber band, belt, fender material, rubber components for other industrial use	PTP III Rubin

	Rubber foam	Ocean Form
Surabaya	V belt	Aneka Kimia
Total		38 companies

Table 3-1-3: List of Manufacturers of Raw Material Rubbers such as Latex, RSS, SIR

Region	Product	Name of Manufacturer
Bandung	Latex, RSS, SIR	PTP XII
Jakarta	Latex	PTP XI
Medan	SIR	Nusira
	SIR	Hadibaru
	SIR	Rubber Hock Le
	SIR	Asahan Crumb Rubber
	Latex, RSS, SIR	PTP III
	Latex SIR	United Sumatra Plantations
	SIR	Dapmex Crumb Rubber
	SIR	Adei Crumb Rubber
	SIR	Batanghari Tebing
	Latex	Revertex
	SIR	PD Hok Tong
	SIR	Remco
Pontianak	SIR	New Kalbar Processors
	SIR	Giant Usaha Dieng
	SIR	Sumber Alam
	SIR	PTP XII
Total		18 companies

Table 3-1-4: List of Organizations Visited

Region	Classification	Name of Organization
Jakarta	Government agency (Ministry of Industry)	Ministry of Industry
	Private firm	Kasyo Company
	Private firm	Mitsubishi Corporation
	Industrial association	Gabungan Perusahaan Karet Indonesia (GAPKINDO)
	Government agency	Kepala Pusat Standarisasi Industri
	Industrial association	Lembaga Ilmu Pengetahuan Indonesia
	Industrial association	Federation of Indonesian Rubber Industries
	Industrial association	Association of Indonesian Rubber Goods Industries
	Government agency (Testing institute of the Ministry of Commerce)	PPMB
	University	IPB
	Government agency (Research institute of the Ministry of Agriculture)	BPPB
	Government agency (Training center of the Ministry of Commerce)	Indonesia Export Training Center
	Private firm	Toyota Astra Motor
	Private firm	Sanyo Industries Indonesia
Bandung	Government agency (Ministry of Industry)	Bandung Office of the Ministry of Industry
	Government agency (Ministry of Industry, research institute)	Balai Besar Bahan & Barang Teknik
	Government agency (Ministry of Industry, research institute)	Balai Besar Renelitian Dan Pengembangan Industri Tektil
Medan	Government agency (Ministry of Industry)	North Sumatra Office of the Ministry of Industry
	Government agency	Badan Perencanaan Pembangunan Daerah
	Industrial association	North Sumatra Chamber of Commerce and Industry
	Government agency	Provincial Office, Department of Trade of North Sumatra
	Government agency	Kanwil, Department Perdagangan
	Government agency (Ministry of Commerce, testing institute)	Medan Office of PPMB
	Government agency (Ministry of Agriculture, research institute)	Balai Penelitian Rerkebunan Sungei Putih (RIEC)
	Government agency (BKPM)	Regional Investment Coordinating Board, Province of North Sumatra
	University	Universitas Sumatra Utara Politeknik, Medan
	Government agency (Ministry of Industry)	Pendidikan Teknologi Kimia Industri

Region	Classification	Name of Organization
Palembang	Government agency (Ministry of Industry)	Palembang Office of the Ministry of Industry
	Industrial association	Palembang Chamber of Commerce and Industry
	Government agency (BKPM)	Badan Koordinasi Penamanan Model Daerah, Propinsi Daerah Sumatera Seltan
	Government agency (Ministry of Agriculture, research institute)	Balai Penelitian Perkebunan Sembawa
Yogjakarta	Government agency (Ministry of Industry, research institute)	Balai Besar Industri Barang Kulit Karet Dan Plastik
Pontianak	Government agency (Ministry of Industry)	West Kalimantan Office of the Ministry of Industry
	Industrial association	West Kalimantan Office of the GAPKINDO
	Government agency (Ministry of Commerce)	Pontianak Office of the PPMB
	Government agency (Ministry of Industry)	Sinkawan Office of the Ministry of Industry
	Project organizing agencies	Proyek Pengembangan Karet Pakyat Sub Unit IV
	Project organizing agencies	Small Holder Promotion Project
Total		38 organizations

Table 3-1-5: Breakdown of Firms and Organizations Visited

Rubber-based product manufacturers	38 companies
Raw material rubber manufacturers	18 companies
Other related organizations	38
Total	94

3.2. World Trends in Production and Consumption of Natural Rubber and Rubber-based Products

(1) World Trends in Production and Consumption of Natural Rubber

1) Recent trends

World production of natural rubber increased at an average annual growth rate of 3.1 percent in the 11 years from 1977 to 1988. In 1988, it reached 5.04 million tons. The amount of synthetic rubber produced in that same time grew by an average annual 1.5 percent (with the amount of production in 1988 being 10.15 million tons), while the growth rate of natural rubber was higher.

Looking at the demand side, consumption of synthetic rubber grew by 1.4 percent, while that of natural rubber grew by 4.4 percent, far more than synthetic rubber. As a result, the share of natural rubber in consumption of new rubber rose from 25.7 percent in 1977 to 33.8 percent in 1988.

Amid demand for natural rubber, there was large growth in demand for latex. The growth rate in consumption in the 10 years from 1978 to 1988 was an average annual 3.8 percent for natural rubber except latex rubber and 7.5 percent for latex. As a result, the ratio of latex in consumption of natural rubber rose from 8.8 percent in 1978 to 12.1 percent (580,00 tons) in 1988.

Production of natural rubber is concentrated in the Asian region, primarily Southeast Asia. The biggest producer is Malaysia, where production in 1988 reached 1.66 million tons, 32.9 percent of the total world production. In second place was Indonesia with 1.24 million tons (24.5 percent) and in third was Thailand with 980,000 tons (19.3 percent). The total production of these three countries combined accounts for 76.8 percent of the total world production. Other important producers are India, China, and Sri Lanka.

The same order applies in exports.

Of the main producers, Thailand has increased its production in the past 11 years by 7.7 percent a year. Indonesia has also steadily increased production by 3.6 percent a year, while Malaysia's production has remained essentially the same.

In terms of consumption, the U.S. is the biggest consumer, using 858,000 tons and accounting for 16.8 percent of total world consumption, followed by the EC with 705,000 tons (13.8 percent), Japan with 623,000 tons (12.2 percent), and China with 600,000 tons (11.7 percent). Together these four regions account for 54.5 percent of world consumption (1988).

Among the main consuming countries, China and Japan increased their consumption sharply. The average annual growth of consumption in the 11 years from 1977 to 1988 was 7.2 percent for China and 6.2 percent for Japan, compared with 0.6 percent for the U.S. and a slight decline for the EC. In the U.S. and EC markets, consumption of latex has grown, but that of natural rubber except latex has remained stagnant.

Table 3-2-1: Trends in World Production of Natural Rubber and Synthetic Rubber

(Unit : 1,000Ton)

	Natural Rubber				Synthetic Rubber	Natural & Synthetic Rubber,
	Malaysia	Indonesia	Thailand	World Total	World Total	World Total
1977	1,588	835	431	3,615	8,610	12,225
78	1,582	903	467	3,745	8,905	12,650
79	1,570	905	531	3,860	9,330	13,190
80	1,530	1,020	501	3,850	8,695	12,545
81	1,510	868	504	3,700	8,545	12,245
82	1,494	880	552	3,750	7,875	11,625
83	1,564	997	587	4,030	8,335	12,365
84	1,531	1,116	629	4,260	9,120	13,380
85	1,470	1,130	726	4,330	9,005	13,335
86	1,539	1,034	782	4,435	9,200	13,635
87	1,581	1,190	900	4,705	9,460	14,165
88	1,660	1,235	975	5,040	10,145	15,185

Source: International Rubber Institute (IRSG)

Table 3-2-2: Trends in World Consumption of Natural Rubber and Synthetic Rubber

(Unit: 1,000 tons)

	Natural Rubber					Synthetic Rubber	Natural & Synthetic Rubber
	U.S.	EC	Japan	China	World Total	World Total	World Total
1977	802	728	320	280	3,175	8,615	12,330
78	771	660	355	300	3,725	8,775	12,500
79	740	688	390	335	3,870	9,125	12,995
80	585	790	427	240	3,760	8,785	12,545
81	635	757	436	275	3,700	8,565	12,265
82	585	728	439	305	3,680	8,035	11,695
83	665	735	504	365	3,660	8,360	12,355
84	751	756	525	402	3,995	9,030	13,245
85	764	789	539	415	4,335	9,045	13,400
86	743	813	535	440	4,420	9,290	13,710
87	789	836	568	510	4,760	9,530	14,290
88	858	705	623	600	5,115	10,020	15,135

Source: International Rubber Institute (IRSG)

2) Position of Main Producers in Key Global Markets

Tables 3-2-3 to 3-2-5 show the shares of the main producers in the OECD markets, which account for just under 50 percent of the global consumption of natural rubber.

According to these tables, the biggest exporter is Malaysia, which accounts for 34.9 percent of the total exports to OECD nations, followed by Indonesia at 28.9 percent and Thailand at 20.9 percent (1987).

However, major differences can be seen in the shares according to the markets.

In the biggest market, the EC, Malaysia has a very strong share of 52.9 percent while Indonesia and Thailand account for only 15.6 percent and 7.0 percent respectively. In the second largest market, the U.S., Indonesia is the strongest exporter, accounting for 58.4 percent, followed by Malaysia at 19.4 percent and Thailand at 10.5 percent. In the third largest market, Japan, Thailand holds an overwhelming 66.6 percent share, while Malaysia and Indonesia have shares of 21.1 percent and 11.0 percent respectively.

This reflects the distribution of shares of exports of natural rubber except latex, which accounts for 84 percent of exports of natural rubber. In natural rubber exports, Malaysia relies greatly on the EC, Indonesia on the U.S., and Thailand on Japan.

All of the producing nations, therefore, lean considerably toward one market. For example, Indonesia is late in developing markets for its products in Japan and the EC.

In the latex market, which accounts for about 14 percent of exports of natural rubber, Malaysia has an overwhelming lead, accounting for 55.8 percent of total exports to OECD markets. Indonesia accounts for only 18.8 percent and Thailand for 2.6 percent. Malaysia holds a 96.6 percent share of the Japanese market and a 65.2 percent share of the EC market and holds first place even in the U.S. market with a 32.8 percent share. Indonesia holds 22.7 percent and 20.5 percent shares of the EC and U.S. markets respectively, but does not export much to Japan.

Indonesia has clearly had a late start in developing exports of latex to the Japanese market as well.

Table 3-2-3: State of Exports of Natural Rubber to OECD Nations by Main Producers
SITC-R2:232 Natural Rubber Latex, Natural Rubber & Similar Natural Gums

	OECD		Japan		U.S.		EC	
	'86	'87	'86	'87	'86	'87	'86	'87
Thailand								
100M$	401	515	288	354	53	86	51	65
1,000MT	495	550	364	388	61	88	58	64
Malaysia								
100M$	800	953	90	112	169	168	400	494
1,000MT	898	917	114	123	192	163	453	486
Indonesia								
100M$	651	718	44	62	365	464	107	136
1,000MT	679	761	53	64	444	492	129	143
World total								
100M$	2,145	2,596	437	537	698	842	767	926
1,000MT	2,495	2,630	546	583	821	875	877	918

Source: OECD Foreign Trade Statistic

Table 3-2-4: State of Exports of Natural Rubber to OECD Nations by Main Producers
SITC-R2:232 02 Natural Rubber

	OECD		Japan		U.S.		EC	
	'86	'87	'86	'87	'86	'87	'86	'87
Thailand								
100M$	389	500	288	354	53	86	48	59
1,000MT	479	533	364	387	61	87	54	58
Malaysia								
100M$	611	709	72	90	138	120	322	403
1,000MT	673	668	88	95	149	112	362	390
Indonesia								
100M$	507	652	43	60	347	467	322	107
1,000MT	612	689	52	64	419	462	362	110
World total								
100M$	1,803	2,180	415	511	599	712	647	784
1,000MT	2,098	2,208	519	553	697	733	738	773

Source: Same as Table 3-2-3

Table 3-2-5: State of Exports of Natural Rubber to OECD Nations by Main Producers
SITC-R2:232.01 Natural Rubber Latex

	OECD		Japan		U.S.		EC	
	'86	'87	'86	'87	'86	'87	'86	'87
Thailand								
100M$	3	7	-	-	-	-	-	-
1;000MT	4	8	-	1	-	-	-	-
Malaysia								
100M$	128	158	17	22	27	36	74	87
1,000MT	159	169	26	28	37	40	87	92
Indonesia								
100M$	43	51	-	-	18	22	25	29
1,000MT	56	57	-	-	25	25	31	32
World total								
100M$	229	280	17	23	84	107	113	134
1,000MT	287	303	26	29	115	122	134	141

Source: Same as Table 3-2-3

(2) Position and Evaluation of Indonesian Natural Rubber and Rubber-based Products in the Japanese Market and Attitudes of Japanese Rubber Product Manufacturers Toward Investment in Indonesia

1) Position and Evaluation of Indonesian Natural Rubber and Rubber-based Products

[1] Natural rubber and Latex

As shown in Table 3-2-2, the growth of demand for natural rubber in the Japanese rubber market has been higher than that for synthetic rubber in recent years and imports of natural rubber have grown steadily. The qualitative advantages of natural rubber have been widely recognized and demand is expected to continue to increase in the future.

Imports of natural rubber latex, however, have generally been declining.

In the Japanese rubber market Thailand accounts for an overwhelmingly large share in natural rubber and Malaysia in latex. Indonesia stands as only the third largest supplier in both cases.

Imports of natural rubber from Indonesia, however, have been growing at a faster pace than those of other countries and the share has been rising steadily.

[a] Natural Rubber

Japan's imports of natural rubber increased from 523,124 tons in 1985 to 650,881 tons in 1989, at an average annual growth of 5.6 percent. During that period, the average price fell by 27 percent from 187 yen per kg to 136 yen, resulting in a decline in the import

value from 9,793.3 million yen to 8,880.4 million yen , an average annual decline of 2.5 percent.

A breakdown of the imports in 1989 shows smoked sheet of natural rubber accounting for 424,889 tons, Technically Specified Natural Rubber (TSNR) accounting for 54,605 tons, and other rubber (primary products in the form of plate, sheet, strips) accounting for 171,387 tons.

A breakdown of the imports by country shows Thailand accounting for 441,138 tons or 67.6 percent of the whole, Malaysia accounting for 110,260 tons or 16.9 percent, and Indonesia accounting for 90,495 tons or 13.9 percent.

From Indonesia, Japan imported only 16,541 tons of smoked sheet, the country's biggest rubber import item overall. As a result, imports from Indonesia accounted for only 3.9 percent of Japan's overall imports of smoked sheet. Japan also imported 12,347 tons of Technically Specified Natural Rubber, for a 22.6 percent share, and 61,607 tons of other rubber, for a 35.9 percent share.

While Japan's imports of natural rubber have been growing steadily, clear changes have occurred in the shares of the supplier countries.

Imports from the leader, Thailand, grew by an average annual 5.7 percent from 1985 to 1989, exhibiting a growth substantially in line with the increase in Japan's import demand and resulting in a slight increase in that country's share. Meanwhile, imports from Malaysia grew by only 2.8 percent, resulting in a 2 percent decline in that country's share. On the other hand, imports from Indonesia grew by a sharp 13.5 percent a year and as a result its share rose by 2.5 percent.

The growth in imports from Thailand and Malaysia largely reflect the growth in production in the two countries. However, the growth in imports from Indonesia has been about 10 percentage points higher than the growth in production in the country. This shows a great shift in exports of natural rubber from the country from the U.S. to Japan. It can be said that Indonesian natural rubber is becoming steadily more entrenched in the Japanese market.

[b] Natural Rubber Latex

Japan's imports of natural rubber latex fell from 27,871 tons in 1985 to 24,243 tons in 1989, an average annual decline of 3.5 percent. The decrease reflects the decline in consumption in recent years.

The majority of the imports of latex is from Malaysia, with that country accounting for 93.1 percent of the whole in 1989.

In addition, Japan imported 1,398 tons from Thailand and 42 tons from Indonesia. Imports from Indonesia fell to about one-third the level of 1985.

Table 3-2-6: Imports of Natural Rubber

(Unit: 1,000Yen)

	1985'		1986		1987		1988		1989	
	Volume	Value	Volume	Value	Volume	Value	Volume	Value	Volume	Value
Latex	(KG)		(KG)		(KG)		(KG)		(KG)	
Tailand	133,980	26,081	31,980	3,712	617,978	66,989	842,791	167,711	1,398,418	161,698
Malaysia	27,577,070	4,319,364	26,348,627	2,946,575	28,311,143	3,192,806	27,471,390	4,551,963	22,564,578	2,880,870
Indonesia	136,300	20,079	-	-	-	-	64,994	15,224	41,730	6,838
Total	27,871,473	4,373,348	26,473,031	2,962,572	28,710,754	3,268,114	28,463,066	4,753,304	24,242,567	3,078,591
Natural Rubber	(MT)		(MT)		(MT)		(MT)		(MT)	
Tailand	352,175	65,827,490	353,651	48,721,696	386,896	51,605,634	444,779	67,141,361	440,138	60,412,919
Malaysia	98,693	22,719,759	87,626	12,174,961	94,830	13,100,336	105,343	16,853,008	110,260	14,855,288
Indonesia	54,488	10,201,186	52,223	7,245,071	63,715	8,708,140	79,380	12,360,904	90,495	12,167,900
Total	523,124	97,930,267	518,611	70,363,182	552,910	74,486,291	639,559	97,841,392	650,881	88,804,020
Natural Gum	(KG)		(KG)		(KG)		(KG)		(KG)	
Singapore	132,514	153,000	171,032	124,054	126,362	73,540	306,074	148,563	331,160	202,417
Indonesia	501,000	476,417	450,880	296,652	476,472	259,333	577,000	279,669	708,975	411,837
Mexico	91,391	160,194	101,086	107,424	56,922	36,536	329,320	195,515	541,786	396,072
Total	1,121,275	1,164,721	1,135,528	802,674	1,022,439	579,935	1,683,784	860,600	2,257,992	1,375,715

Note: Total include other products as well.
Source: Foreign Trade Statistics, Ministry of Finance.

[2] Rubber Products

Japan's rubber product manufacturing industry was hit hard by what is called the "yen appreciation recession" in 1986, but business has been improving due to the effectiveness of the government's program to stimulate domestic demand which has been in place since 1987. The scales of production and shipments, however, still remain stagnant. This is because while shipments to the domestic market have been growing steadily, exports remain sluggish.

On the other hand, imports continue to grow rapidly, from tires and footwear to industrial rubber-based products and other rubber products.

It may be said that the market for finished rubber products in Japan is becoming dependent on imports.

One of the reasons for this is the fall in the international competitiveness of the rubber product manufacturing industry of Japan since the appreciation of the yen. Another is the expansion in overseas production by Japanese companies. The tire industry has for a long time been investing overseas. The industrial rubber-based product industry has also been investing overseas in the past few years. The investment began as a way of coping with the appreciation of the yen but it has recently been spurred by the shortage of manpower in Japan.

The Japanese rubber-based product manufacturing industry is expected to suffer from an even worse shortage of manpower in the next five to 10 years, with the exception of the capital-intensive large companies. Therefore, there should be even more movement toward overseas investment in the future. In the case of medium-sized companies, joint venture investments should increase. For small-sized companies, however, there is the limitation of both manpower and fiscal leeway and as a result imports of finished products through technical tie-ups will probably be dominant. In fact, many companies have expressed interest in technical tie-ups with overseas firms.

The potential for the development of the Japanese market for imported rubber products is far greater, it may be said, than with Western countries. However, the Japanese market is characterized by tough demands in terms of quality, delivery, and stability of supply and thus the hurdles which must be overcome to enter the market are high. As a result, the supply base of rubber products is limited to specific countries and regions and has not diversified. For example, 67 percent of the imports of industrial rubber-based products come from the U.S. and the EC.

The share of the ASEAN countries in the Japanese market for imported rubber products is small. In particular, imports from the late-starting Indonesia have been limited both in the amount and type of products.

The future potential of imports from Indonesia, however, may be said to be great. This is evident from the fact that Japanese rubber product manufacturers mention Indonesia first as a future investment site or technical tie-up partner.

It would probably not be easy for Indonesian rubber product manufacturers to enter the Japanese market on their own. The Indonesia rubber product manufacturing industry does not have sufficient export experience and therefore probably could not easily secure

sales channels in the Japanese market where there are stringent demands in terms of quality, delivery, and stability of supply.

Therefore, the most practical method of entering the Japanese market would be to tie up with a Japanese rubber product manufacturer through a joint venture investment or technical tie-up.

a. Features of the Japanese Rubber Product Industry

To give an overall picture of the Japanese rubber product industry, a summary is given here of the features of the industry including the tire and tube sector and footwear sector, which fall outside of the scope of this survey.

[a] Tires and Tubes

In the automobile tire industry, the top five companies, that is, the "Big 4" - Bridgestone, Yokohama Rubber, Toyo Rubber Industry, and Sumitomo Rubber Industry - plus Ohtsu Tire, account for most of the production in the sector.

The main products produced are tires for passenger cars (90.4 million pieces in 1987), for small-sized trucks (36 million pieces), two-wheeled vehicles (10.1 million pieces), and trucks and buses (9.54 million pieces).

Production of tires for passenger cars grew steadily from 1978 to 1987 at an average annual growth rate of 5.2 percent. In this field, demand has continued to rise rapidly both in Japan and overseas for radial tires, particularly steel radial tires, which offer excellent durability, stability at high speeds, and economical performance.

Tires for small-sized trucks and for trucks and buses grew by low rates of 3.6 percent and 2.5 percent respectively. Recently, this sector has been in remarkable decline. Shipments to the domestic market have been sluggish and exports have fallen sharply.

Tires for two-wheeled motor vehicles fell by an average annual 1.9 percent. Both domestic shipments and exports have been off.

In tire manufacturing emphasis is put on the characteristics of natural rubber. The percent of natural rubber in new rubber consumption in the tire industry rose from 42.5 percent in 1981 to 52.5 percent in 1987. Seventy-four percent of the consumption of natural rubber in Japan is by the rubber tire industry.

Companies in this industry have been rapidly investing overseas and assigning production to key overseas companies. They have been concentrating on higher grade products in domestic production and have been filling the gap between supply and demand with overseas production.

As a result, imports of automobile tires have soared. The main suppliers have been the U.S. and the EC and, much further down, the Republic of Korea and Taiwan.

Production of bicycle tires increased only by an average annual 3.0 percent and recently production has been declining. Shipments to the domestic market have been strong

due to the consumer reevaluation of the convenience and sportiness of bicycles, but exports have fallen tremendously.

In this industry too, companies have been moving all out to construct overseas production bases and imports have surged as a result.

Table 3-2-7: Trends in Supply and Demand of Tires

(Unit: Million yen)

	84	85	86	87	88
Automobile (including two-wheeled vehicles)use					
Production (1,000 pieces)	143,311	149,513	147,517	149,212	161,284
Shipment	871,070	874,968	795,714	771,686	831,835
Domestic	560,489	577,564	554,902	547,230	592,387
Export	310,581	297,403	240,812	224,455	239,448
Import	na	25,942	36,640	45,176	53,822
Domestic consumption	na	603,506	591,542	662,406	646,209
Bicycle use					
Production (1,000 pieces)	26,729	26,163	25,629	27,069	26,067
Shipment	11,835	11,933	11,070	10,419	10,293
Domestic	9,510	9,500	8,960	8,502	8,103
Export	2,325	2,433	2,110	1,917	2,191
Import	na	1,219	1,298	1,541	1,520
Domestic consumption	na	10,719	10,258	10,043	9,623

Notes: Classifications of imports differ for the years up to 1987 and 1988, so an accurate comparison is not possible.
Source: For Shipments, Ministry of International Trade and Industry, "Rubber Products Statistics Yearly" and for imports, customs clearance statistics of Ministry of Finance.

[b] Footwear

Japan's rubber footwear industry secured overseas markets for itself in the 1950s and enjoyed strong business from the start of the 1960s. However, after the first oil crisis of 1973 its U.S. market was taken over by the Republic of Korea and Taiwan. Exports plummeted and even its domestic market was eaten away by sharply increasing imports, resulting in a complete change in the business environment. Since then, this highly labor-intensive industry has been in recession. In the process of all of this, companies have gone out of business or have undergone rationalization so that production is now concentrated in the top companies such as Asics, Achilles, Asahi Corporation, Okamoto, and Tsukiboshi Chemical. Furthermore, the rate of overseas production, in the form of overseas investment or orders overseas, has risen. Japan began investing in South Korea and Taiwan but with rising inflation etc., production costs there rose and therefore investment spread to China and some Southeast Asian countries. In the Republic of Korea and Taiwan production has been shifting to higher grade products such as casual shoes and sports shoes while standard products are now being supplied by China and other countries. This pattern has become entrenched.

The industry entered a new era in the late 1980s. Imports grew even faster after the yen's appreciation, reducing the share of domestic products and forcing companies to specialized even further in higher grade products. Consumer tastes also became increasingly diversified and sophisticated and as a result the sales floors became more diverse. Along

with this, there were significant changes in the distribution system. The industry is now engaged in a life and death struggle to rationalize, strengthen its product development and improve its distribution system.

Table 3-2-8: Trends in Supply and Demand of Rubber and Plastic Footwear

(Unit: Million yen)

	84	85	86	87	88
Production (1,000 pairs)	179,586	164,070	151,688	141,123	137,404
Shipments	215,175	214,566	207,125	208,618	200,697
Domestic	208,459	209,413	203,371	197,348	192,257
Export	6,716	5,153	3,745	6,270	8,440
Import	na	82,699	64,615	105,482	132,883
Domestic consumption	na	292,112	267,986	302,830	325,140

Note & Source: Same as Table 3-2-7

[c] Industrial Rubber-based Products

In the industrial rubber-based product industry, which produces belts, hoses, and other products, production is widely dispersed. There are approximately 240 manufacturers if only the major ones are counted. The top companies are Toyoda Gosei, NOK, Inoue MTP, Bridgestone, Tokai Rubber Industry, Toyo Rubber Industry, Mitsuboshi Belt, Sumitomo Rubber Industry, Yokohama Rubber, Kinugawa Rubber, Bando Chemical, Nishikawa Rubber Industry, etc., with the top four companies accounting for large shares.

The main products include hoses, belts, shock absorbers, packing, sponge products, rollers, rubber plates, fenders, etc., with the types and uses both being diverse.

Most of the manufacturers of industrial rubber-based products have been in operation for several decades and the industry has accumulated a tremendous amount of knowhow. Not only the large companies, but also the medium and small ones have their own advanced knowhow and technology and have established stable production and supply systems. In this industry, they would not have survived otherwise.

The Japanese users of industrial rubber-based products, such as the automobile industry and the machinery industry, make stringent demands on the precision, durability, etc., of the products and demand stable supply as a precondition of business.

Naturally, manufacturers of rubber products have to engage in continuous research and development. All of the large companies have their own product standards which go much further than the JIS and are investing in modernization of their facilities, e.g., automation and the use of electronics. The small and medium-sized companies are also very careful to secure high precision molds and are working to develop high quality rubber through improvements in the methods of mixing raw materials and chemical agents and sub materials.

Strict fulfillment of delivery commitments is also demanded and in addition, for certain grades of products, very frequent delivery is required. In the case of rubber products for automotive use, one company ships six times a day at fixed times. Rubber product

manufacturers are located near the site of the major users and thus, in effect, other local manufacturers are prevented from doing business with them.

The industry being as it is, an international division of labor such as that seen in the tire industry would be difficult. Some of the large companies have invested overseas, but the main purpose of this activity is to secure local markets. In almost no case is the purpose to imports into Japan. Some companies are trying to import, but there are problems in the quality, speed of supply and stability of supply of the products produced overseas and thus no full-scale push is being made at this time.

There are many areas, however, in which the desire for an international division of labor is increasing. This is particularly true in the case of labor intensive industries dominated by small and medium-sized companies. The biggest reason for this is the lack of manpower in Japan. The ratio of job offers to job applicants is becoming extremely high in Japan and the rubber product industry is finding it very difficult to secure the young workers it requires. The manpower shortage is expected to become very severe in five to 10 years. As measures for dealing with this, consideration is being given to overseas production and assigned production. Among small and medium-sized companies with weak technical capability and little financial leeway, the most practical way to import products is through technical tie-ups rather than direct investment. As candidates for such tie-ups, mention is made of Malaysia, Thailand, Indonesia, China, etc., but Indonesia is very popular due to its abundant and inexpensive labor force and its natural resources.

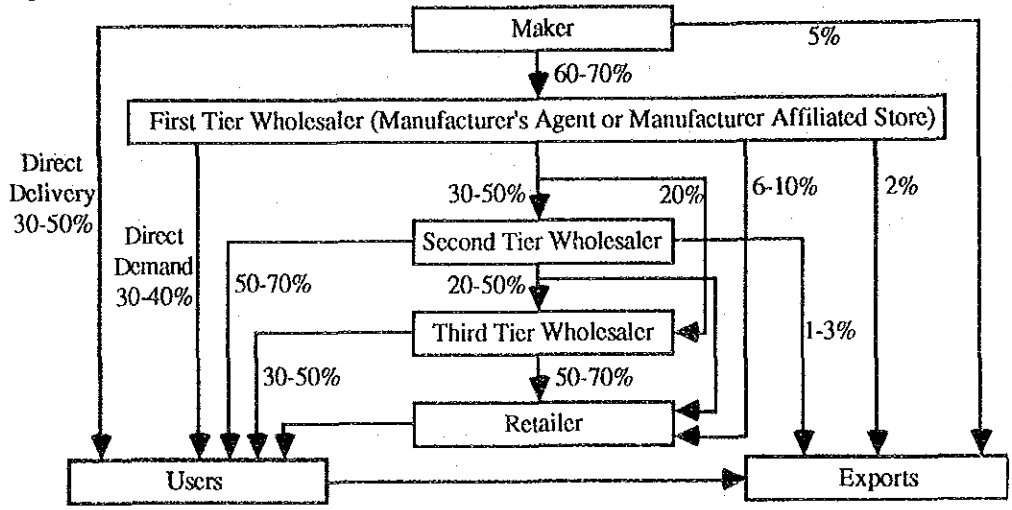
In Japan, there are well developed networks of fixed contractors known as "affiliated companies". These affiliated companies handle part of the processing work or manufacturing and are indispensable in helping companies to achieve highly efficient production and cope with fluctuations in orders. The manufacturers of industrial rubber products are affiliates of the manufacturers of automobiles, machinery, etc.. The rubber product manufacturers themselves, when of a medium size or larger, in turn have their own affiliated companies.

It is now being realized that even the affiliated companies are suffering from manpower shortages and that new affiliated companies have to be secured overseas or else the current production levels will not be able to be maintained in the future. Various production areas have taken specific steps toward this such as the dispatch of survey teams overseas. In the near future there should be considerable progress made toward an international division of labor involving Southeast Asia.

Domestic distribution channels may be roughly divided into direct sales to users and sales through wholesalers and retailers. Of these, direct sales to users account for 30 to 40 percent of the total and sales to wholesalers for 60 to 70 percent. Wholesalers are classified into three levels, primary, secondary or tertiary. Close to half of the sales to users are from primary wholesalers.

In the case of exports, most sales are direct from the manufacturers.

Fig. 3-2-1: Diustribution Route for the Industrial Rubber-based Product



Source: Rubber Almnac 1989

The industrial rubber-based product manufacturing industry is currently very busy. The industry suffered from a prolonged recession due to the drop in exports and stagnation in domestic demand after the oil crisis and then was hit by the recession brought about by the yen's appreciation. However, domestic demand began rapidly rising in 1988 and the industry's performance has taken a large turn for the better.

Exports continue to be low, with the ratio of exports in total shipments falling below the 3 percent level. On the other hand, imports have finally begun rising recently. However, the share is still only a bit more than 1 percent of domestic demand.

During the prolonged recession, a structure of dependence on the domestic market set in both in supply and demand. However, as mentioned earlier, there has been some movement toward a new wave of internationalization based on tie-ups in Southeast Asia.

Table 3-2-9: Trends in Supply and Demand of Industrial Rubber-based Products

(Unit: Million yen)

	84	85	86	87	88
Shipments	676,597	724,480	714,216	729,816	830,535
Domestic	639,983	686,453	686,186	704,184	805,857
Export	36,613	38,026	28,030	25,632	24,677
Import	1	7,907	5,834	6,013	9,831
Domestic Consumption		694,360	692,020	710,197	815,688

Note & Source: Same as Table 3-2-7

(Belts)

Rubber belts may be classified into conveyor belts and transmission belts. The applications differ tremendously, but a common feature is that demand is largely affected by plant and equipment investment in the basic industries and manufacturing industries.

Production of conveyor belts has been sluggish due to the across the board drop in demand in the ferrous metal, coal, mining, construction and other industries. Since 1988 there has been an increase in some demand due to the expansion of public investment and the boom in construction, but the past levels have not yet been recovered.

In contrast to conveyor belts, demand for transmission belts, particularly sophisticated function types, has been growing for automobiles, general industrial machinery, electrical equipment, and office automation equipment. Products with large domestic markets include V belts and toothed belts, 45 to 50 percent of which are for the automotive industry.

(Hoses)

Demand for automobile hoses, which account for about 70 percent of overall demand for hoses, is continuing to grow. There are many types of hoses for automobile use, from brake hoses, fuel hoses and other high performance types to radiator hoses, cooler hoses, power steering hoses, etc. Along with the increased production, higher grades, and greater functions of automobiles, the range of these products has become more diverse and higher in quality. The increase in the amount of metal portions is another feature of this sector.

In addition, there has been a rapid increase in domestic demand for high pressure hoses, which account for about 10 percent of overall demand. Production of general use hoses, such as for air, oxygen and acetylene and water transmission and pumping, has been slow, however.

(Shock Absorbers)

Shipments of shock absorbers for the domestic market have been rapidly rising. There are almost no exports.

The biggest use for shock absorbing rubber is for automobiles, which account for about 90 percent of the total demand, it is said. In line with the tougher emission control regulations and sound control regulations being place on automobiles, considerable use is being made of shock absorbing rubber. Recently, in line with the orientation toward higher grade vehicles (the pursuit of better riding comfort), the rate of installation has risen rapidly and the number of absorbers used has soared. Furthermore, more sophisticated functions have been developed.

In addition, use for noise prevention has been rapidly increasing in the fields of industrial machinery, rolling stock, electrical equipment and office automation equipment.

There are 20 large manufacturers and over 40 medium and small-sized companies.

(Sealing Materials)

Sealing materials fall under two main categories: packing and window seals. The total production and shipment value exceeds those of belts, hoses, and shock absorbers.

Packing includes O rings, lip type packing, oil seals, diaphragms, gaskets, and other molded and stamped products. The main demand fields are automobiles and hydraulic equipment, with automobile use accounting for about 40 percent of the overall demand. Domestic demand has been soaring since 1988.

Packing material must have various superior features such as oil resistance, heat resistance, wear resistance, chemical resistance and mechanical strength. The manufacturers offer various types of materials made of various blends to meet user needs. Most of the products used in automobiles are oil seals and here NBR (acrylonitrile) is mainly used. However, in the engine area, mostly silicone rubber and fluororubber are used due to their superior heat resistance.

Other than packing, the main fields are extruded products such as window seals for automobiles and gaskets for buildings. There are numerous types of companies operating in the industry, from manufacturers specialized in sealing materials to large, medium, and small packing manufacturers.

(Sponge Rubber Products)

Sponge rubber products are mostly used as buffering and sealing materials such as gaskets and packing which require their cushioning ability. However, they are also widely used as sound absorbers, insulating materials, and moisture absorbers. Demand is overwhelmingly from the automobile industry. Domestic demand has been increasing.

Recently, the use of urethane as raw material in place of natural rubber has been increasing. Various types of materials with differing properties are being made.

(Rubber Rollers)

Rubber rollers consist of iron cores covered with vulcanized rubber. While simple in appearance, stress is given to the selection and precision of the rubber material. Since they are mostly used in key portions of machinery, a high level of technical skill is required for their manufacture.

There are numerous demand sectors such as iron and steel manufacturing, paper manufacturing, pulp processing, spinning and dyeing, printing, plywood manufacturing, plastics, office automation equipment, audio equipment, photography, agricultural equipment, etc. Domestic demand is recovering. In particular, high growth is expected in the future for use in office automation equipment.

(Dock Fenders)

The fenders used at docking facilities are replaced infrequently and thus these are not products where any large increase in demand can be expected. Furthermore, domestic demand has not changed much in recent years. However, among the different types of

fenders in use, rubber ones are superior and have become the mainstream, enjoying a stable market.

Dock fenders come in solid types and air types. Recently, a new type consisting of independent foam bodies, which does not have the defects of the other types, has also appeared.

Table 3-2-10: Trends in Production and Shipments of Main Industrial Rubber-based Products.

(Unit: Vol.: tons/Val: new rubber, million yen)

		84	85	86	87	88
Belts	Production (t)	33,071	33,354	27,874	28,742	32,222
	Shipments	80,695	85,929	77,364	77,087	84,121
	Domestic	62,084	65,958	64,690	66,796	74,600
	Export	18,611	19,970	12,674	10,291	9,520
Conveyors	Production (t)	22,497	22,301	17,688	18,190	19,930
	Shipments	32,678	34,128	25,756	24,749	25,278
	Domestic	21,982	21,763	19,098	19,147	20,723
	Export	10,696	12,365	6,696	6,719	7,607
V-Belts	Production (t)	7,268	7,425	6,696	6,719	7,607
	Shipments	26,572	28,698	28,016	26,452	28,331
	Domestic	22,065	24,292	24,627	24,238	26,251
	Export	4,507	4,406	3,388	2,214	2,080
Hoses	Production (t)	24,174	26,954	25,988	25,469	25,469
	Shipments	94,995	111,655	111,034	117,243	123,447
	Domestic	88,092	104,527	104,658	112,318	119,367
	Export	6,903	7,128	6,377	4,925	4,080
High Pressure	Production (t)	2,607	2,824	2,584	3,001	3,905
	Shipments	17,254	21,760	22,178	25,695	29,019
	Domestic	16,305	20,961	21,631	25,212	28,578
	Export	949	798	547	483	441
Automobile	Production (t)	11,546	13,383	13,496	13,496	13,480
	Shipments	52,975	65,098	65,219	71,523	73,807
	Domestic	52,838	64,206	64,402	70,218	70,223
	Export	137	892	817	1,305	1,585
Other Industrial	Production (t)	152,836	162,882	162,535	163,420	192,384
Rubber-based	Shipments	500,907	526,896	525,818	535,486	622,967
Products	Domestic	489,807	515,968	516,838	525,070	611,890
	Export	11,099	10,928	8,979	10,416	11,077
Rubber Shock	Production (t)	27,425	29,071	28,732	30,187	45,208
Absorbers	Shipments	103,971	114,647	117,957	116,895	134,120
	Domestic	103,791	114,603	117,957	116,869	134,053
	Export	180	43	-	26	67
Fenders	Production (t)	2,855	3,092	2,449	2,837	2,670
	Shipments	10,277	12,345	10,801	12,559	11,669
	Domestic	7,529	9,132	9,061	10,758	9,820
	Export	2,748	3,214	1,740	1,800	1,849
Rubber Rollers	Production (t)	5,892	6,278	6,034	5,891	6,194
	Shipments	33,013	34,725	28,900	29,130	32,595
	Domestic	32,292	34,055	28,443	28,654	31,931
	Export	721	670	457	477	664
Packing	Production (t)	22,461	24,060	21,869	22,970	31,882
	Shipments	65,868	72,233	69,873	73,061	124,380
	Domestic	65,049	71,121	68,995	71,981	122,957
	Export	819	1,112	878	1,080	1,423
Sponge Products						
	Production (t)	16,371	17,035	18,105	18,350	19,629
	Shipments	41,784	42,562	43,360	46,072	52,657
	Domestic	41,784	42,562	43,360	46,072	52,657
	Export	-	-	-	-	-
Rubber Plates	Production (t)	8,298	10,357	10,677	10,006	13,852
	Shipments	13,747	14,237	13,751	14,056	15,410
	Domestic	13,632	14,160	13,728	14,032	15,405
	Export	114	77	22	24	5

Note & Source: Same as Table 3-2-7

[d] Other Rubber Products

The main products in this field are rubber coated fabrics, medical and sanitary products, gloves, and balls and other sporting goods.

Recently this field has been stagnant, with production and shipments growing only by an average annual 2 percent or so from 1984 to 1988. Demand for rubber coated fabrics and gloves has declined, while demand for medical and sanitary products and for sporting goods has grown steadily.

In recent years there has been a number of striking new materials developed. The designs, colors, and sizes have also become more diverse, and overall a higher grade of products are being made.

Compared with industrial products, there is a high dependence on foreign trade. In 1988, exports accounted for 12 percent of total shipments and imports accounted for 8 percent of domestic demand (estimated). There are many standard products and many types are stored at the distribution stage. These products are often traded overseas.

Table 3-2-11: Trends in Supply and Demand of Other Rubber-based Products

(Unit: Million yen)

	84	85	86	87	88
Shipments	122,401	123,797	122,727	126,406	132,554
Domestic	109,559	109,893	110,391	113,102	118,514
Export	12,842	13,905	12,336	13,304	14,041
Import	na	9,614	5,452	10,391	10,120
Domestic Consumption	na	119,507	115,843	123,493	128,634

Notes & Source: Same as Table 3-2-7

(Rubber Coated Fabrics)

Rubber coated fabrics are some of the oldest rubber products sold. They became popular at the initial stage of industrialization along with textiles.

They are used for apparel, for sundry goods, for air houses (structures relying on pressurized air) and for other purposes. In the past, apparel such as rainwear and aprons accounted for half of the shipments, but recently the share has fallen to about 36 percent. The share of sundry goods has also been falling steadily.

On the other hand, use for special use and industrial use products has been increasing. Special products include air houses, flexible containers, oil fences, cable coverings, skin diving suits, etc. Flexible containers are a unique Japanese packing material and have become indispensable for mechanization of work, contributing to a revolution in physical distribution. Today, they are becoming indispensable for the improvement of carrying efficiency and are spreading internationally as well. Typical products for industrial use include rubber dams, air houses, air domes, and danneige bags. Growth is expected in demand for industrial use, with rubber dams, used for storing water and water proofing

facilities in industry, agriculture, and sewerage, promising to be the first field affected. Demand for rubber dams is expected to be in large lots.

Domestic shipments of rubber coated fabrics grew by a low average annual 2 percent from 1984 to 1988. This was due to the large decline in usage for apparel and sundry goods. In these fields, the number of new material products appearing has been increasing in line with the diversification of consumer demand and the orientation toward high grade products. Amid these trends, products from the NIEs have increased their share.

(Medical and Sanitary Rubber-based Products)

Medical products include surgical gloves, rubber tubes, catheters, spoits, rubber stoppers, anesthetic masks, blood pressure measuring bags, syringe gaskets, etc. Sanitary products include condoms, nipples, finger sacks, ice bags, etc.

Medical and sanitary rubber-based products grew by an average annual 3.6 percent, a relatively high rate of growth. Demand for surgical gloves and condoms has been increasing due to the AIDS scare, with exports of condoms increasing rapidly.

In this field the main products are made of natural rubber and synthetic rubber, but recently the rate of use of silicone rubber has been rising rapidly. Silicone rubber is highly evaluated for its heat resistance, nontoxicity, lack of odor and chemical resistance and as a result it should become an important material in the future.

(Rubber Gloves)

These may be roughly divided into household type and industrial type. The household type are mostly for use while cooking or doing laundry and are of small or medium thickness. Recently, the designs, colors, and sizes have become more abundant. Industrial type gloves are widely used in the ferrous metal, shipbuilding, chemical, and civil engineering industries. Recently, shipments of gloves for use in IC factories and electronic factories have been increasing.

The rate of usage of natural rubber latex has been falling while the ratio of vinyl chloride usage has reached 80 percent in the household type and about 60 percent in the industrial type.

Shipments of rubber gloves have fallen tremendously since the yen's appreciation. On the other hand, Malaysian, South Korean, and Taiwanese products have been spreading. Taiwanese products are also making their way into the market for products of small thickness.

Table 3-2-12: Trends in Production and Shipments of Other Rubber Products

(Unit: Vol.: tons/Val.: new rubber used, million yen)

		84	85	86	87	88
Rubber Coated Fabrics	Production (t)	4,356	4,057	3,973	3,616	3,881
	Shipments	12,758	12,101	10,952	10,147	11,357
	Domestic	11,049	10,422	9,404	8,636	10,083
	Export	1,709	1,679	1,548	1,511	1,275
Clothing	Production (t)	2,086	1,615	1,479	1,383	1,432
	Shipments	5,399	4,733	4,447	3,976	3,587
	Domestic	3,787	3,128	3,237	2,524	2,382
	Export	1,611	1,605	1,210	1,452	1,205
Other Rubber Products	Production (t)	27,482	26,610	26,624	26,542	28,704
	Shipments	109,643	111,696	111,775	116,259	121,197
	Domestic	98,510	99,471	100,987	104,466	108,431
	Export	11,133	12,226	10,788	11,793	12,766
Medical & Sanitary Products	Production (t)	4,786	4,409	4,471	4,849	5,274
	Shipments	23,272	21,884	21,437	24,432	26,797
	Domestic	20,624	19,287	19,108	20,941	22,184
	Export	2,648	2,597	2,328	3,491	4,641
Rubber gloves	Production (t)	2,279	2,197	2,002	1,874	2,061
	Shipments	6,157	7,006	6,424	5,971	6,276
	Domestic	6,157	7,006	6,424	5,971	6,276
	Export	-	-	-	-	-
Sporting Goods	Production (t)	4,356	4,456	4,554	4,537	5,766
	Shipments	39,899	41,311	42,496	43,991	44,288
	Domestic	34,248	34,460	36,019	37,410	37,528
	Export	5,651	6,852	6,476	6,581	6,759
Rubber Thread	Production (t)	3,888	3,782	3,677	3,721	3,656
	Shipments	3,677	3,501	3,416	3,313	3,212
	Domestic	3,341	3,354	3,355	3,273	3,179
	Export	336	147	61	40	33

Note & Source: Same as Table 3-2-7

b. Import Trends

(a) Tires

As mentioned earlier, the tire manufacturing industry has moved ahead in reverse imports through overseas technical and production tie-ups and joint venture investment since which began many years ago. Imports grew further after the yen's appreciation, with imported automobile tires accounting for 8 percent of domestic demand and bicycle tires 16 percent. (Estimates for 1988)

The main overseas suppliers of automobile tires have been the U.S. and EC. South Korea accounts for an overwhelming amount of bicycle tires, followed by Taiwan.

(b) Footwear

The rubber and plastic footwear industry enjoyed a boom in the 1960s as an export industry but exports have been gradually declining. On the other hand, imports have soared in the domestic market, having doubled in the two years after the yen's appreciation began. The share of imports in the domestic market rose from an estimated 28 percent in 1985 to 41 percent in 1988.

Imports of footwear come mostly from South Korea and Taiwan, but the sales channels for famous brands from Western countries are also being expanded.

Table 3-2-13: State of Imports of Tires (New) by Country (1989)

(Unit: Piece, 1,000Yen)

	South Korea	Taiwan	Singapore	Tailand	Malaysia	Indonesia	U.S.	EC	World total	
									Volume	Value
Tires (Passenger Cars) (with Nominal Widths Over 101.6mm)	296,706	275,024	5,142	1,170	5,025	212,953	5,269,747	3,084,975	11,538,182	60,520,567
Tires (Passenger Cars) (with Nominal Widths of 101.6mm or less)	3,698	-	-	-	-	-	522	3,455	17,938	92,132
Tires (for Buses and Trucks)	61,979	10,010	89	55,458	30	60,184	517,201	72,757	913,620	5,513,739
Tires (for Motorcycles)	718,126	335,722	-	228,342	-	16	4,647	241,809	1,533,068	2,297,227
Tires (for Bicycles)	5,114,894	1,066,911	11,301	12,930	94,900	168,600	-	192,490	8,287,426	1,865,557
Tread Tires	105,492	289,594	-	5,708	24,020	31,330	3,438	2,775	465,555	722,036
Other Tires	612,157	616,074	1,026	19,100	562,017	-	7,382	6,560	1,829,507	693,088
Total										
Volume	6,913,052	2,593,335	17,558	332,708	685,992	472,083	5,804,050	3,604,876	24,586,480	
Value	2,987,814	1,534,544	71,698	482,406	175,880	430,210	27,305,840	24,071,197		71,744,824

Note & Source: Same as Table 3-2-6

Table 3-2-14: State of Imports of Rubber Footwear with Rubber or Plastic Outer Soles by Country

(Unit: 1,000 yen)

	South Korea	Taiwan	Singapore	Tailand	Malaysia	Indonesia	U.S.	EC	World total
Sports Footwear (Excluding Ski Boots) with Uppers of Rubber or Plastic	1,457,880	1,174,217	-	2,928	-	5,774	24,127	131,042	2,899,770
Shoes with Uppers of Rubber or Plastic	11,385,774	16,303,167	-	99,119	2,274	128,074	43,872	40,174	29,696,637
Sandals with Uppers of Rubber or Plastic	653,280	742,848	-	17,771	2,342	69,038	5,274	41,259	1,540,565
Exercise and Competition Footwear with Uppers of Leather	13,187,666	4,518,393	2,649	19,071	15,459	19,991	1,041,322	2,162,617	22,611,455
Sports Footwear with Uppers of Textiles	2,768,964	1,410,192	-	28,291	-	10,461	644,602	57,584	5,859,222
Canvas Shoes with Uppers of Textiles	3,262,747	1,216,815	745	23,597	15,059	88,978	296,297	320,118	8,052,935
Total	32,716,311	25,365,632	3,394	190,777	35,134	262,316	2,055,494	2,752,794	70,660,584

Source: Same as Table 3-2-6

(c) Industrial Rubber-based Products

As mentioned previously, this industry is centered on the domestic market in terms of both supply and demand. Imports and exports account for only a small percentage of activities.

However, imports have rapidly increased, especially since the appreciation of the yen, by an average annual 28.5 percent (1986 to 1989). There is a good possibility that imports will continue to increase through the spread of a greater international division of labor.

The biggest suppliers are the U.S. and the EC. Together, the two regions account for 68 percent of the total imports. In this field, there are stringent requirements on quality, durability, and reliability of delivery. This has resulted in the predominance of the advanced countries in terms of imports.

Imports from Asia are still small in scale compared with those from the Western countries. Taiwan, however, along with South Korea, entered the market early and has secured market channels for a certain level of sales. Products from Singapore are increasing as well, and a market is developing for products from the NIEs. The volume of imports from the NIEs, however, varies tremendously from year to year because at the present time, they are still of a supplementary nature.

Other than the NIEs, there are imports from Malaysia, Thailand, and Indonesia. There has been large growth in imports from Thailand and from Indonesia which began in 1986.

The imports from the Asian region tend to be concentrated on certain specific products from each source. Typical examples of this may be seen in Taiwan, Singapore, and the Republic of Korea. Imports from these sources lean toward conveyor belts, transmission belts (V-belts), and gaskets and seals respectively. This phenomenon is a reflection of the fact that Japanese users are extremely strict when it comes to the selection of products and won't accept products unless they meet certain standards.

Japan imports three products from Indonesia: V-belts, rubber plates, and pipes and hoses.

Table 3-2-15: Trends in Imports of Industrial Rubber-based Products by Country

(Unit: 1000 yen)

	85	86	87	88	89
South Korea	25,631	15,835	79,594	410,297	564,460
Taiwan	536,019	720,528	789,460	832,721	859,210
Singapore	248,048	294,513	147,555	540,257	462,340
Thailand	3,563	570	8,881	32,837	138,391
Malaysia	70,403	126,130	113,956	113,148	130,643
Indonesia	-	255	56,255	106,934	56,908
U.S.	3,256,008	2,265,559	2,106,415	3,245,183	5,005,014
EC	1,524,494	2,077,834	1,520,965	2,475,739	3,264,678
Total	7,896,745	5,844,647	5,998,512	9,154,397	12,411,732

Source: Same as Table 3-2-6

Table 3-2-16: State of Imports of Industrial Rubber-based Products by Country (1989)

(Unit: 1000 yen)

	South Korea	Taiwan	Singapore	Thailand	Malaysia	Indonesia	U.S.	EC	Total
Cellular rubber plates, sheets, strips, rods, shapes	16,134	-	-	3,181	11,409	1,641	235,225	57,991	333,669
Other plates, sheets, strips, rods, and shapes	83,823	35,347	-	4,231	84,795	-	608,567	1,001,602	1,886,408
Pipes and hoses (jointless) (those not reinforced with other materials)	25,737	10,509	-	32,583	5,529	643	176,547	140,229	425,188
Pipes and hoses (jointless) (those reinforced with other materials)	22,617	22,985	222	1,114	-	-	673,772	257,047	1,019,825
Pipes and hoses (with joints)	-	895	15,483	-	-	-	806,008	576,537	1,468,126
Transmission use V-belts	20,434	105,083	319,594	67,848	11,783	54,624	872,589	194,668	2,003,497
Transmission use flat belts	5,685	25,129	95,333	-	9,178	-	119,220	117,518	982,275
Other conveyor or transmission use belts	96,354	593,162	16,601	-	2,290	-	488,285	89,234	1,322,871
Gaskets, washers, and other seals	564,460	66,100	15,107	29,434	5,659	-	1,024,801	829,852	2,969,873
Total	835,244	859,210	462,340	138,391	130,643	56,908	5,005,014	3,264,678	12,411,732

Source: Same as Table 3-2-6

(d) Other Rubber-based Products

The main products imported here are household and industrial gloves, surgical gloves, and medical and sanitary products. The range of products is quite broad.

Compared with industrial rubber-based products, imports of these products have always been large compared with the size of the market. Imports have rapidly risen by an average annual 16.7 percent since the yen's appreciation (1986 to 1989).

The supply base has also been diverse, with imports from the Asian region being large. After the biggest supplier, the U.S., comes Malaysia, which accounts for an overwhelmingly large share of the import market for gloves. Taiwan and South Korea are the third and fourth largest suppliers.

Imports from Asia have grown rapidly. In the past three years, imports from South Korea have grown 3.6 fold and imports from Taiwan 3.3 fold. Imports from Thailand have grown an incredible 14-fold and are rapidly catching up with imports from the leading group.

Most of the products in this field are what are known as sundry goods which require relatively small capital investment and easy-to-acquire production technology. In the areas of design and color, consumer tastes have become more diverse and more sophisticated. However, there are no demands for high precision and durability as with industrial products. Furthermore, there are few direct sales to users. The inventory rate at the distribution stage is high and the frequency of deliveries is low and thus there is nothing to discourage procurement from distant locations. As with footwear, Asian products can easily enter the market.

Most of the imports from the NIEs and ASEAN countries are of household and industrial gloves but there are also numerous other products being imported.

Some products including household and industrial gloves and medical and sanitary goods are being imported from Indonesia but the volume of the imports is small.

Table 3-2-17: Trends in Imports of Other Rubber-based Products by Country

(Unit: 1,000yen)

	85	86	87	88	89
South Korea	302,962	257,835	460,462	714,231	920,889
Taiwan	367,496	411,039	725,165	961,157	1,371,282
Singapore	19,442	62,167	59,480	61,501	114,145
Thailand	22,809	45,114	45,211	563,243	652,494
Malaysia	1,930,392	1,728,770	2,109,633	2,526,462	3,199,823
Indonesia	373	-	6,813	18,350	37,870
U.S.	4,222,088	2,747,452	3,400,474	2,393,010	2,455,322
EC	1,399,712	1,286,947	1,881,054	1,658,945	1,855,059
Total	9,007,745	7,047,948	9,397,692	9,376,346	11,252,956

Source: Same as Table 3-2-6

Table 3-2-18: State of Imports of Other Rubber-based Products by Country (1989)

(Unit: 1,000 yen)

	South Korea	Taiwan	Singapore	Tailand	Malaysia	Indonesia	U.S.	EC	World total
Sanitary or Medical Use Products	7,826	5,833	7,122	298	348,687	423	297,322	564,556	1,238,075
Gloves (Surgical)	-	540	727	93,191	741,774	-	582,764	6,496	1,511,344
Gloves (Other Applications)	203,305	192,600	1,285	413,627	1,194,847	2,447	208,804	72,386	2,468,266
Apparel & Apparel Parts	30,431	6,217	-	450	-	-	18,349	12,000	107,882
Cellular Rubber & Other Products	9,890	25,722	-	-	-	-	42,082	57,608	135,807
Floor Coverings and Mats (Automobiles)	-	22,161	-	13,205	67,425	-	10,579	7,667	125,407
Floor Coverings & Mats (Others)	35,058	70,027	-	2,735	8,953	-	100,418	65,117	283,263
Other Products (Which can be Expanded)	-	6,255	-	-	1,168	31,466	85,710	86,443	214,731
Other Products (Automobiles)	252,796	253,577	-	8,844	5,922	671	51,768	307,609	928,755
Other Rubber Products	307,549	735,666	89,904	120,144	831,047	2,863	1,026,045	640,448	4,034,072
Hardened Rubber & Products of Same	45,291	12,800	-	-	-	-	5,281	8,968	81,900
Total	920,889	1,371,282	114,145	652,494	3,199,823	37,870	2,455,322	1,855,059	11,252,956

Source: Same as Table 3-2-6

c. Evaluation of Indonesian Products and Possible Measures for Promotion of Exports to Japan

Imports of Indonesian rubber products are small and Indonesian products are not well known in the Japanese market. Therefore, it was not possible to obtain an evaluation of them from experts in the industry. The experts are of the opinion that Indonesia has little export experience and thus it would be very difficult to enter the Japanese market with its strict standards for the selection of products.

Even the technical expert who conducted field surveys of the Indonesian rubber product industry believes that exports of Indonesian industrial rubber-based products to Japan would be difficult under the present conditions and would only be possible with standard types of consumer goods offered at considerably lower prices.

As mentioned earlier, however, there is strong interest in Indonesia on the part of the Japanese rubber-based product industry and there are a considerable number of companies which would like to import products through capital, production, or technical tie-ups if they could find reliable partners. Those tie-ups, it is believed, could lead to greater exports to third country markets.

Products which show promise as exports to Japan in the field of industrial rubber-based products are plates, sheets, hoses, and V-belts, areas in which Thailand, Malaysia, etc., have been building up business. Mention may be made of household and industrial gloves for the same reasons.

These are only examples, however. It may be said that all labor-intensive products, such as those requiring deburring work, are basically promising. Thus it should be possible to develop a wide range of fields through contacts with Japanese industry.

In promoting exports to Japan, note should be taken that support from official organizations in matters of export inspection, customs clearance procedures, etc., would be important.

2) Attitude of Japanese Companies with Regard to Investment in Indonesia

To gain an understanding of the state of overseas investment by Japanese rubber product manufacturers and their attitudes toward investment in Indonesia and technical transfers, a questionnaire survey was conducted in Japan. The survey covered the 134 members of the Japan Rubber Industry Association and responses were obtained from 48.5 percent or 65 companies.

According to the survey, only 37 percent of the companies had production bases overseas but 38 percent of the companies intended to invest overseas in the future. Thus it is expected that the rate of overseas production will become considerably higher.

In overseas investments up to now, Indonesia has been the fifth largest investment site. Interest in Indonesia has been rising, however, and that country is now the first candidate for future investment.

One merit of investment in Indonesia is the low personnel costs, as pointed out by an overwhelmingly large number of the companies questioned. On the other hand, a very large number of companies mentioned the shortage of technicians as a problem in investment in Indonesia. The survey showed clearly that the focus in investment in Indonesia is on the labor force. If success is achieved in the training of technicians, there is a possibility that greater investment will be made in Indonesia by Japanese companies.

Thirty-five percent of the companies indicated that there was a possibility of their providing technology to Indonesia, reflecting strong interest in this area. The most common condition mentioned was the availability of reliable partners. Up until now it seems that there have not been many technical tie-ups between Japan and Indonesia. However, the chances of greater activity in the future are good. The survey conducted in Indonesia for this project showed that there are quite many managers who are aggressive in their business and their desire to strengthen relations with Japanese industry. If greater communication can be achieved, it may be possible to match interests in many cases.

The results of the survey were as follows:

[1] Trends in Overseas Investment in the Rubber-based Product Industry

a. Investment to Date

Out of the 65 responding companies, 24 had experience in overseas investment in a total of 62 projects while 41 had no experience.

The biggest site of investment was the U.S., with a total of 11 projects, followed by Malaysia with nine, Taiwan with eight, South Korea with seven, Indonesia with six, and Thailand with five.

Fig.3-2-2: Number of Investment Projects by Country

Malaysia (9)	Thailand (5)	Indonesia (6)	Taiwan (8)	Singapore (4)	S.Korea (7)	China (3)	U.S. (11)	Others (7)

Most of the investment in the U.S. was in auto parts (five projects) and machine parts (four projects). More than 80 percent of the investments were made after 1986 and thus are of recent origin. The investments were made primarily with the object of securing a share in the world's largest consumer market.

There were a total of 20 investments made in the Asian NIEs, i.e., South Korea, Taiwan, Singapore, and Hong Kong (one project), and a total of 20 in the natural rubber producing countries, i.e., Malaysia, Indonesia, and Thailand.

A substantial 65 percent of the investments made in the Asian NIEs were made before 1980, while a comparatively small 30 percent were made in the late 1980s. In contrast, 60 percent, or more than half, of the investments in Thailand, Malaysia, and Indonesia were made in the late 1980s. Out of the total six investments made in Indonesia, four were made after 1987. This shows that investment by the Japanese rubber-based product industry in the Asian region, like that of Japanese industry as a whole, has been shifting from the Asian NIEs to four ASEAN countries (in particular in the three countries producing raw materials). In recent years, in the Asian NIEs, the supply and demand

relationship of labor has become tight, resulting in soaring wages, and the currencies have appreciated, resulting in the deterioration of exports and the investment environment. The four ASEAN countries have also experienced shortages of technicians and skilled workers and, in Thailand, the currency has appreciated. However, the environment is still considered better than that in the NIEs. It should be noted that the objectives of recent investment in Asia by Japanese companies have changed from coping with the yen's appreciation to coping with shortages of manpower and from securing shares of local markets through import substitution to creation of production bases for exports to Japan and third countries (U.S. etc.)

In terms of investments in the past, the majority in Taiwan and South Korea were in rubber footwear (nine cases) and the majority in Singapore and Hong Kong were in audio-visual and office automation equipment components and machine parts. In Malaysia, Indonesian, and Thailand, there were six investments in machine parts (belts), five in auto parts, three in rubber footwear, and two in rubber gloves, with the ratio of investments in industrial rubber parts being high. In Indonesia, there were two investments in each of the following: auto parts, rubber footwear, and machine parts.

b. Future Plans for Overseas Investment

Out of the 63 responding companies, 14 indicated that they were in the process of studying specific overseas investment projects, 10 said that they were not studying any specific projects at the moment but were considering investment, and 39 said that they were not considering any investment. In other words, 38 percent of the companies indicated that they intended to invest overseas.

Fig.3-2-3: Intentions Regarding Future Overseas Investment

Studying specific project (14)	Not studying any specific project, but considering overseas investment (10)	Not considering overseas investment (39)

The country mentioned most often as being under consideration as a site for specific overseas investment was Indonesia, mentioned in five cases, followed by Malaysia, Thailand, China, and the U.S., mentioned in two cases each. Furthermore, the countries mentioned by those who said they had no specific project but were considering overseas investment were Indonesia, Malaysia, and Thailand, mentioned in three cases each, followed by China which was mentioned in two cases.

Overall, the number one candidate for investment was Indonesia, which was mentioned in eight cases, followed by Malaysia, Thailand, and China, mentioned in four cases each, and the U.S., mentioned in two cases. None of the companies were considering the NIEs as candidates.

Overseas investment in the rubber-based product industry is expected to concentrate in the three raw material producing countries of Indonesia, Malaysia, and Thailand and in China which has an abundant, inexpensive labor force.

The fields being considered for overseas investment were shock absorbers (three cases), hoses (two cases), packing (two cases), and belts (one case), making a total of eight

projects in the industrial rubber-based product sector. There were eight projects in rubber footwear, four in automobile tires, and two in office automation equipment parts.

Of these, there were four investment projects being specifically studied for Indonesia in the areas of rubber footwear and rainwear, automobile tires (expansion), packing, and casters, and three investments still undecided in rubber footwear, tennis balls, hoses and audio-visual equipment rubber components, belts, and pinch rollers.

[2] Evaluation of Indonesia as an Investment Site

The biggest reason why Indonesia was mentioned as the leading candidate for future investment overseas was its low labor and personnel costs. A look at the points given as advantages of investing in Indonesia shows "personnel costs" being mentioned most often, by 38 respondents, followed by "reasons of natural rubber," mentioned by 13, "the domestic Indonesian market," mentioned by eight, and "others," mentioned by four.

Fig.3-2-4: Merits of Indonesia as an Investment Site

Reserves of natural rubber (13)	Personnel costs (38)	Domestic market (8)	Others (4)

On the other hand, the biggest problem considered in investing in Indonesia was also related to personnel, specifically the lack of technicians. A look at the points given as stumbling blocks to investment in Indonesia shows the "lack of technicians" mentioned most often by far, by 31 respondents, followed by the "insufficiency of rubber research organizations and other related facilities," mentioned by four, "difficulties in obtaining good quality rubber materials and latex," mentioned by three, and "others," mentioned by 14. The "other" reasons given were "insufficient fiscal resources," "insufficient domestic demand," "difficulties in acquiring sub materials," "poor infrastructure," "the low level of technology and quality," and the "insufficiency of supporting industries."

Fig.3-2-5 Stumbling Blocks to Investment in Indonesia

Lack of technicians (31)	Difficulties in acquiring good quality rubber materials and latex (3)	Insufficiency of rubber research organizations facilities and related facilities (4)	Others (14)

From the above, it can be seen that Japanese companies have a very strong interest in labor (wage levels and technical level) when investing overseas. This suggests that programs for the development of human resources would be a decisive factor in the promotion of the Indonesian rubber product manufacturing industry.

[3] Interest in Technical Tie-ups with Indonesia

As mentioned previously, Japanese rubber product manufacturers show the strongest interest in Indonesia among all future investment sites, but they also view the country as a leading potential partner in technical tie-ups. In this survey, companies were asked if they would respond positively to Indonesian companies offering technical tie-ups. Of the 65 responding companies, 19 indicated that there was a possibility they might respond positively (the remaining 36 companies indicated there was no such possibility).

As there were eight companies considering investment in Indonesia, it may be said that many more companies were interested in technical tie-ups. In interviews with some of Japan's rubber product manufacturers, the opinion was expressed that while the companies did not have enough financial leeway for investment in a joint venture, they would like to import products through technical tie-ups if there were a suitable partner. They also mentioned the projection that the industry, being labor intensive, would be hit by a serious shortage of manpower in five to 10 years, making the establishment of affiliated companies overseas a matter of great urgency. The interest in technical tie-ups reflects this situation.

The condition given most frequently for technical tie-ups was "reliable partner," given in 17 cases, followed by "payment of suitable loyality," given in eight cases, and "others", given in two cases. A considerable number of companies would probably decide to engage in a technical tie-up if there were a partner with suitable aggressiveness, credibility, and capability.

The reasons given most often by companies indicating there was no possibility of technical tie-ups in Indonesia were a "policy of no technical tie-ups," cited in 11 cases, and "greater merits in local production," cited in three. Also mentioned were a "poor setup in the company for such tie-ups," a "lack of leeway for technical transfers," "apprehensions about technology," and an "inability to dispatch technicians overseas" - all internal factors. There was almost no mention of problems relating to the Indonesian side.

(3) International Position and Evaluation of Indonesian Rubber Products in Third Country Markets

1) U.S.

The U.S. rubber product market has seen a surge of imports in recent years.

U.S. production of key rubber products (industrial rubber-based products and latex products, same below) rose from the US$636.3 million of 1982 to US$1,022.3 million in 1988, with an average annual growth of 8.2 percent. Imports rose 33.6 percent from US$39.5 million to US$224.6 million, increasing their share of the U.S. market from 5.9 percent to 18 percent, a three-fold increase. In particular, imports of latex products jumped 53.2 percent, climbing in share from 4.2 percent to 23.5 percent. Industrial rubber-based products grew by 20.4 percent, increasing in share from 6.8 percent to 13.2 percent. Imports of rubber products are expected to show high growth in the future as well.

In the U.S. market for imported rubber products, the Asian region - the ASEAN countries, Asian NIEs, and Japan - accounted for a 59.6 percent share (1988) (Asian NIEs 30.4 percent, ASEAN countries 19.1 percent, Japan 18.7 percent). Broken down, the share of the Asian region amounts to 44.9 percent of imported industrial rubber-based products and 69.1 percent of imported latex products.

The growth in imports from the Asian region was about the same as the average annual 34.7 percent (1982 to 1988), but the growth rate differed considerably among the groups of countries.

The highest growth rate was shown by imports from the six ASEAN countries, which reached an average annual growth of 57.7 percent. The growth in latex products reached 71.6 percent, towering far over the 44. 4 percent of the NIEs and the 17.3 percent

of Japan. The growth rate of ASEAN industrial products reached 56.9 percent, far higher than the 20.2 percent of the NIEs and the 10.9 percent of Japan.

Among the ASEAN countries, Thailand and Malaysia were far ahead of the others. Thailand increased its share in the field of industrial rubber-based products, primarily absorbers, while Malaysia achieved a dominant position in the field of latex products, primarily medical gloves.

Compared with these two countries, Indonesia held only a small share. Indonesia entered the market late and even now supplies only a limited range of products. Further, it has not yet developed a main product.

Still, the prospects for Indonesian products in the future are said to be bright. One of the reasons is that production of natural rubber in Malaysia is entering a low growth period. Another is that Malaysia and Thailand are diversifying their industrialization programs, while Indonesia is directing energy to the promotion of the rubber-based product industry.

Points for Indonesia to note when trying to increase its exports to the U.S., according to U.S. experts, are as follows:

- Indonesia should concentrate on the manufacture and export of certain main products.
- The industrial rubber-based products considered promising for Indonesia are transmission belts, followed by hoses and pipes, and then conveyor belts and promising latex products are medical gloves
- Indonesia should hurry to improve the mechanisms for collection and production of natural rubber so as to increase the trust of U.S. buyers.

[1] Production Trends

a. Industrial Rubber-based Products

According to the estimates of experts based on data from various sources, production of key industrial rubber-based products (hoses, pipes, belts, absorbers, and fenders) rose from US$398.8 million in 1982 to US$577.8 million in 1988, with an average annual growth of 6.4 percent. Production of the biggest items, hoses and pipes, and the second biggest items, belts, rose steadily and strong growth was also shown in absorbers. Poor performance was shown only in fenders.

Table 3-2-19: Production of Key Industrial Rubber-based Products

(Unit: US$1000)

	82	88	Average annual growth rate(%)
Hoses and pipes	224,730	305,911	5.3
Belts	114,218	164,400	6.3
Absorbers	28,860	69,040	15.6
Fenders	31,000	38,400	3.6
Total	398,808	577,751	6.4

Source: Statistics of Commerce Department and estimates based on interviews with industry experts

About 200 companies are engaged in production of industrial rubber-based products. However, the degree of monopolization is high, with the so-called "Big Five" companies - Goodyear, Firestone, Uniroyal, Goodrich, and General - accounting for the majority of the production.

The main applications for hoses and pipes are automobiles, machinery, laboratories, and hospitals. Demand has been growing steadily.

Demand for belts has been moving differently for different products. Demand for conveyor belts continues to remain stagnant due to the recession in the main user fields, the mining and industrial sectors, and thus many manufacturers are now suspending production. Demand for transmission belts has been growing steadily.

Demand for absorbers has been rising remarkably, particularly for use in automobiles, machinery, and rolling stock. Demand for fenders has been lowest but the growth potential for dock fenders used in ports has always been low.

Demand for industrial rubber-based products may be said to have grown strongly overall, with certain exceptions, but in the future it is forecast that the industry will enter a period of low growth. The U.S. economy is expected to slow down and thus almost all experts are being conservative in their estimates. For example, the Wall Street Journal expected an average annual real growth of 1.8 to 2 percent for industrial rubber-based products.

With some products, however, greater growth than in the past may be expected. Mr. Kollman of the Wall Street Journal expected an increase in demand for conveyor belts due to the signs that the mining sector is pulling out of its slump. He estimates real growth of an average annual 5 to 10 percent. Mr. Hutchings of Goodyear projects an approximate 5 percent overall growth in pipes and hoses due to the expansion in demand for automobiles.

b. Latex Products

Production of medical gloves, nonmedical gloves, balloons, condoms, and other latex products rose from US$237.5 million in 1982 to US$444.5 million in 1989, with high

average annual growth of 11 percent. Only production of nonmedical gloves performed poorly.

Table 3-2-20: Production of Latex Products

(Unit: US$1000)

	82	88	Average annual growth rate (%)
Medical gloves	112,525	221,862	12.0
Nonmedical gloves	40,800	55,000	5.1
Balloons	41,100	85,070	12.9
Condoms	43,025	82,610	11.5
Total	237,450	444,542	11.0

Source: Same as Table 3-2-19

About 1,500 companies are engaged in production of latex products. There is no monopoly situation as there is in industrial rubber-based products. The main users are consumers and hospitals and other institutions and there are large fluctuations in demand each year. Due to this situation, the industry is more dynamic in nature than the industrial rubber-based product industry.

Production of medical use gloves, the biggest item in this sector, increased starting in 1982 and soared in 1988. This is due to the escalating AIDS scare which has triggered a surge in demand for protective gloves in medical institutions. The AIDS scare has also increased demand and production of condoms. However, the production and consumption of condoms have been far lower than expert projections. This is said to be due to the American male's deep rooted resistance to using condoms, despite warnings about the risk of AIDS. There is, however, a good possibility of increased demand in the future.

In addition, demand and production of balloons have grown tremendously due to the present customs of attaching them to gifts and launching masses of balloons during public ceremonies.

The projections for demand and production of latex products, in particular medical gloves and condoms, are bright. Mr.Kollman projects that production of medical gloves will double in the next few years. However, some are of the opinion that the demand gap will be filled by increased imports and that domestic production will not grow substantially.

Production of nonmedical gloves and balloons, predictions say, will increase at about the same rate as in the past.

[2] State of Competition in the Import Market

As mentioned before, in the U.S. import market, the major share is held by the Asian region comprising the ASEAN nations, NIEs and Japan. However, the shares of these groups have fluctuated tremendously. In the past, the NIEs (meaning here Taiwan, South Korea, and Hong Kong) and Japan occupied overwhelmingly superior positions.

However, starting in the 1980s, the various ASEAN nations entered the field and rapidly increased their shares. The shares of the ASEAN nations, NIEs, and Japan are becoming more level.

Among the ASEAN countries showing rapid growth in their exports of rubber products to the U.S. were Malaysia and Thailand, the number one and third largest producers of natural rubber in the world. They entered the market in the early 1980s and pushed exports strongly beginning in 1982. Behind these moves were the slump in prices of natural rubber and the launching of programs of industrialization aimed at increasing added value due to the slumping prices. Malaysia has been focusing on rubber gloves, making use of its position as the producer of three-quarters of the latex in the world, while Thailand has succeeded in expanding its exports by focusing on gloves and absorbers.

Compared with these two countries, Indonesia, the world's second largest natural rubber producer, has been very late in entering the market and has not yet developed a market for its goods.

a. Industrial Rubber-based Products

As of 1988, Japan accounted for 23 percent of the total imports in the U.S. market, followed at a distance by the NIEs (11.9 percent) and the ASEAN countries (10.1 percent). The NIEs have recently found their position threatened by the ASEAN nations and it is only a matter of time before their positions are reversed.

In the markets for hoses, pipes, and belts, Japan and the NIEs hold the greatest shares. The NIEs, however, are far behind Japan, particularly in hoses and pipes. Imports from Japan are not that large in terms of volume, but they are higher priced items and lead others in terms of value. Hoses and pipes, according to Mr. Williams of the New York Times, are products where high quality is demanded and where the availability and reliability of supply are extremely important, so American buyers still tend to look toward Japanese products.

In the market for absorbers and fenders, Thailand and the other ASEAN nations hold a large share. Behind this are (1) the relative ease with which these products are manufactured and (2) the fact that price competitiveness is a more decisive factor than quality.

Even for the ASEAN nations, however, it is doubtful that absorbers and fenders will continue to be the most promising products in the future. The reason for this is that the potential for growth in the demand for these products is low.

According to Mr. Sheffield of the U.S. Department of Commerce's International Trade Association, the most important and promising group of products for Thailand, Malaysia, and Indonesia will in the long run be hoses and pipes. This product group has broad applications and demand will continue to grow in the future. True, it is a market difficult to enter due to the technical and quality demands, but entry is not impossible. In actuality, Thailand has managed to produce products meeting the demands of the U.S. market and began exports to the U.S. in 1986.

The second most promising group of products will be belts. According to Chairman Wordrop of the National Industrial Belting Association, there is great potential for the three

ASEAN nations in natural rubber transmission belts. Transmission belts also have broad and important applications. Conveyor belts are not easy to export to the U.S. as they require after sales service. Without a proper network, sales would be difficult. A precondition to exports would be a tie-up with a U.S. manufacturer such as an OEM production agreement.

Table 3-2-21: State of Imports of Main Industrial Rubber-based Products from the Asian Region

(Unit: US$1000)

(Hoses and Pipes)

	82	85	86	87	88
ASEAN	97	121	572	388	492
Malaysia	31	52	407	289	304
Thailand	-	-	107	79	129
Indonesia	-	-	-	20	1
NIEs	2,432	4,336	3,989	4,321	4,215
Japan	2,200	4,686	3,869	4,301	9,210

(Belts)

	82	85	86	87	88
ASEAN	61	43	9	5	27
Malaysia	-	-	-	-	-
Thailand	-	-	-	17	-
Indonesia	-	-	-	-	-
NIEs	408	709	1,779	2,532	1,470
Japan	2,694	3,213	4,952	5,288	8,096

(Absorbers)

	82	85	86	87	88
ASEAN	975	1,328	1,979	2,514	3,500
Malaysia	83	72	88	123	769
Thailand	800	1,236	1,828	2,307	2,683
Indonesia	59	12	2	58	-
NIEs	894	1,621	2,097	2,405	2,697
Japan	1,227	906	931	1,008	1,296

(Fenders)

	82	85	86	87	88
ASEAN	327	351	383	674	4,836
Malaysia	5	6	7	15	20
Thailand	90	114	116	121	152
Indonesia	-	8	9	3	9
NIEs	1,262	1,488	1,574	1,813	2,032
Japan	804	890	911	1,098	1,621

(Total)

	82	85	86	87	88
ASEAN	1,460	1,843	2,943	3,581	8,855
Malaysia	119	130	502	427	1,093
Thailand	890	1,350	2,051	2,524	2,964
Indonesia	59	20	11	81	10
NIEs	4,996	8,154	9,439	11,071	10,450
Japan	7,383	9,695	10,663	11,695	20,223
Import Total	28,957	48,815	57,726	65,860	88,039
Domestic Production	398,808	510,323	518,070	542,320	577,751

Source: Rubber Manufacturers Association (RMA)

b. Latex Products

In the market of latex products, unlike that of industrial rubber-based products, the NIEs account for an overwhelmingly large 42.3 percent share of the total imports, followed by the ASEAN countries with 25 percent. Japan holds only a small share of the market (1988).

The ASEAN countries have been rapidly increasing their exports in this field in recent years, catching up with the NIEs. Japan has almost completely withdrawn from the market, except in the area of condoms.

The reasons for the rapid rise in imports from the ASEAN countries have been (1) the relative simplicity of production of latex products, (2) the low start-up costs, (3) the advantages of the field for countries producing the raw materials, and (4) the fanning of interest in in the field by the increased demand in the U.S. market.

In the field of medical gloves, Taiwan is far ahead of other producers. Its only competitor is Malaysia.

Taiwan took the lead among the other suppliers around 1982. At that time Taiwan was already a major manufacturer of machinery for production of rubber gloves and therefore was in a vastly superior position compared with other countries.

Malaysia has been catching up fast, however. It has made effective improvements on its own in the system of collection of latex from small holders and has been working to mechanize glove production. The gap between Malaysia and Taiwan has been closing with each passing year. Mr. Smith, editor of Rubber World, is of the opinion that the positions of the two suppliers will be reversed in the next seven or eight years. It is said that the best medical gloves are those of pure latex and thus the prospects for the Malaysian industry are bright.

Nonmedical gloves are represent an even easier market to enter than medical gloves. Malaysia and Thailand have increased their production capacities for nonmedical gloves tremendously and imports from the ASEAN nations have already exceeded those from Taiwan and the other NIEs.

The balloon market is monopolized by Taiwan which has a sufficient supply of manufacturing facilities and which has a tradition of exporting such sundry goods.

The condom market is also led by Taiwan, although imports of Japanese products are also increasing considerably. Condom consumption has not grown as much as projected despite the AIDS scare and inventories have been increasing with each passing year. Competition is becoming more fierce and for the time being it is expected that there will be steady growth in sales only of the well-known Taiwanese and Japanese products.

Table 3-2-22: State of Imports of Main Latex Products from Asian Region

(Unit: US$1000)

(Medical gloves)

	82	85	86	87	88
ASEAN	46	614	868	2,347	28,020
Malaysia	46	594	849	1,173	21,863
Thailand	-	-	-	1,127	5,515
Indonesia	-	-	-	-	104
NIEs	368	1,183	1,731	3,464	39,357
Japan	5	51	121	59	177

(Nonmedical gloves)

	82	85	86	87	88
ASEAN	1,270	2,225	2,919	3,808	5,787
Malaysia	1,270	2,175	2,081	2,337	3,413
Thailand	-	-	784	1,443	2,251
Indonesia	-	-	-	-	4
NIEs	1,372	1,303	1,747	2,531	4,843
Japan	32	70	69	92	165

(Balloons)

	82	85	86	87	88
ASEAN	4	11	10	2	-
Malaysia	-	-	-	1	-
Thailand	4	11	10	1	-
Indonesia	-	-	-	-	-
NIEs	3,898	7,906	7,898	10,238	10,807
Japan	1,271	273	266	331	937

(Condoms)

	82	85	86	87	88
ASEAN	15	97	128	229	327
Malaysia	8	36	101	213	210
Thailand	3	11	13	6	67
Indonesia	-	-	-	-	-
NIEs	733	1,270	1,792	2,232	2,783
Japan	32	118	326	588	1,215

(Total)

	82	85	86	87	88
ASEAN	1,335	2,947	3,925	6,386	34,134
Malaysia	1,324	2,801	3,031	3,724	25,486
Thailand	7	22	807	2,577	7,833
Indonesia	-	-	-	-	108
NIEs	6,371	11,662	13,168	18,465	57,790
Japan	1,340	512	782	1,071	2,494
Import total	10,577	21,286	26,426	36,962	136,609
Domestic production	237,450	317,900	351,030	383,375	444,542

Source: Same as Table 3-2-21

[3] Evaluation of Indonesian Natural Rubber and Rubber-based Products and Necessary Countermeasures

As already stated, Indonesian rubber products entered the U.S. market at a very late stage. The future prospects for these products, however, are far from bleak. Most U.S. experts believe that the Indonesian rubber-based product industry will have a good chance to catch up with the Malaysian one in the early 1990s for the following reasons:

(a) Decline in Malaysian Production of Natural Rubber

Malaysia's production of natural rubber has been experiencing slow growth in the past 10 years and actually declined by approximately 12 percent in 1989. The general consensus is that no major recovery can be expected in the future. In view of this situation, there is a good chance that Indonesia will become the number one world producer of natural rubber in the early 1990s. In view of this, foreign buyers are looking for sources of supply other than Malaysia. Naturally, the first alternative supplier would be Indonesia. Interest is also focusing on Thailand which has been making tremendous strides in increasing production in recent years.

With this situation looming ahead of them in the supply of raw materials, buyers are expected to turn their attention to Indonesia and Thailand for the supply of rubber products as well.

(b) Diversification of Targets of Industrialization in Malaysia

Malaysia's industrialization program is now in a stage of diversification and the labor force available to the rubber product industry is shrinking. Further, wage levels are rapidly rising. In view of this, production costs in the rubber-based product industry will inevitably rise.

On the other hand, Indonesia enjoys an abundant, inexpensive labor force and thus is able to pour vast amounts of labor into the manufacture of rubber products. Indonesia

may accordingly be expected to have an even greater advantage in the future in the area of production costs.

Mr. Pratt of the U.S. Department of Commerce's International Trade Commission voiced the almost too optimistic opinion that Indonesia is in a position to be able to develop overseas markets immediately after starting production.

Whatever the case, it will of course be necessary to establish suitable targets and policies and follow through on them before attempting to secure shares of the U.S. and other overseas markets. The policies should cover not only the manufacture of rubber products, but also the natural rubber industry.

a. Natural Rubber

In general, U.S. buyers remain suspicious even today about the quality of Indonesian natural rubber.

The defects in natural rubber differ according to the processor and it is not possible to specify any poor characteristics in general. Therefore, the suspicions of the U.S. buyers are by nature a form of discrimination against the unknown. There are some valid reasons for suspicion, however. The defects of Indonesian natural rubber mentioned by experts are as follows.

(a) Problems in Production

The production of Indonesian natural rubber is characterized by a large number of small holders and a large number of cottage-industry-scale operations among its processors. Production is widely dispersed. There are also few foreign companies operating in these areas. Therefore, there is suspicion regarding the existence of sufficiently reliable mechanisms of quality control.

(b) Problems in the Promotion of the Industry

The Indonesian natural rubber industry has grown too rapidly. This was due to the government's low price rubber development policy which resulted in excessive development of very small, low capital intensive factories which are very susceptible to problems in production and technology. It will be necessary to reevaluate the government's promotion policy for the rubber industry.

(c) Problems in Standards

Malaysia has established its own Standard Malaysian Rubber (SMR) system under which it ranks its domestically produced rubber. SMR rubber is considered to be lower in grade compared with Ribbed Smoked Sheet (RSS) which has been internationally produced for many years, but it is lower in price and thus has penetrated the international market and has succeeded in becoming well known.

In contrast, the Standard Indonesian Rubber (SIR) system has been slow to win international acceptance and its products are deemed lower in grade than SMR. The degree of confidence in the main product, SIR20, is particularly low. Complaints have often been voiced that the product contained too much dirt and ash, the viscosity was low and the

content of copper and magnesium was too high. SIR is finding wide acceptance in the U.S. market, but this is merely a result of price competitiveness.

Leaving aside the question of the appropriateness of the above evaluation, it will be necessary to work to improve and publicize Indonesia's standing so as to wipe out the poor image Indonesian rubber has in the U.S. market. This will also be necessary when selling rubber products.

b. Rubber Products

The following will be necessary, according to U.S. experts, for Indonesia to promote its exports of rubber products to the U.S.:

(a) Criteria of Selection of Export Products

In Indonesia's case, the following products should be areas of specialization when promoting export industries:

- Standard products
- Products where strict delivery schedules are not required
- Products where the priority is on price rather than quality

(b) Establishment of Export Promotion Products

It will be necessary to keep the above criteria in mind and establish specific promising export products on which to concentrate.

The export products considered promising for Indonesia are (1) transmission belts, (2) hoses and pipes, and (3) conveyor belts.

There is large demand for transmission belts, as mentioned earlier. Furthermore, the shipping costs are low and demands for after sales service are rare. In the case of imported products, flat belts, in particular fan belts, are promising.

Hoses and pipes are inventory type products with large markets as well. The delivery demands are not that strict and the emphasis is on price rather than quality. In addition, the delivery periods for these products are long. The problem is increasing marine transport costs. In the case of Indonesia, however, low production costs will be able to offset the high transport costs. Attention should be paid to the fact that these items absolutely require continuity and reliability of supply.

Demand for conveyor belts has been somewhat stagnant so far. However, there is a good possibility that the demand will rise in the future. Some experts list these products among Indonesia's most promising items. Emphasis is put on price rather than on quality of conveyor belts and the delivery period is long. The demand sectors for conveyor belts are end users and rubber product manufacturers who resell the same. In the case of the end users, after sales service is demanded, so for the time being it would be more practical to do business with rubber product manufacturers.

In the field of latex products, judging from the size of the demand the most promising products would be medical gloves.

(c). *Improvement of Natural Rubber*

In the case of rubber products, it is extremely important to guarantee stable supplies as well as consistent quality. Companies must expend considerable effort to prove their reliability.

Further, in the upstream natural rubber industry, which supports the expansion of exports of rubber products, improvement in the mechanisms of collection, distribution, and processing of rubber is necessary.

Problems must be understood from the perspectives of the Indonesian natural rubber industry and rubber product manufacturing industry as a whole.

2) West Germany

The West German rubber product industry is at a mature stage of development. Production of elastomer products rose from 430,000 tons in 1985 to 452,000 tons in 1988, with an average annual increase of 1.7 percent. Sales rose from 5,927 million marks to 6,464 million marks, a slow average annual 2.9 percent rise.

The West German rubber product industry has traditionally been strongly oriented toward synthetic rubber. A breakdown of the 430,000 tons of new rubber processed in 1988 shows that natural rubber accounted for 178,000 tons, or 41 percent of the total, and synthetic rubber 257,000 tons, or 59 percent, with the weight of natural rubber seeming to be relatively high. However, 82 percent of the natural rubber is consumed by the tire industry. The other rubber product industries consume only 31,700 tons. In terms of materials, the West Germany rubber product manufacturing industry is interested mostly in improvement of quality through blends of various types of synthetic rubber and chemical agents and sub materials.

Overall imports of rubber products are small. There are some items such as V belts where the import rate is high, but in the majority of products the share of domestic products is overwhelmingly high.

Imports of rubber products from Asia mostly consist of imports from Japan, Taiwan, and South Korea, and there are few imports from other areas.

Imports of natural rubber from Asia consist mostly of imports from Malaysia and Thailand and there are few imports from Indonesia. The only Indonesian product being imported in large amounts is latex.

The related West German industries do not know much about Indonesian natural rubber or rubber products.

However, most of the parties interviewed for this survey showed interest in whether Indonesia was interested in entering the West German market and in the type of activities it might engage in toward that end.

[1] Production Trends

The West German rubber industry has a long tradition of manufacturing synthetic rubber. West German production of synthetic rubber was begun in 1909 by the German chemist Fritz Hoffman. The West German industry excels in the production of high grade products using blends of various materials.

With this rubber industry to draw from, the rubber-based product industry, particularly the manufacturers of industrial rubber-based products and other elastomer products, use synthetic rubber in a high proportion of cases.

Table 3-2-23: Shares of Materials in Rubber-based Product Industry (1988)

(Unit: 1000 tons)

	Synthetic rubber (%)		Natural rubber (%)		Total (%)	
Tire industry	144	(49.7)	146	(50.3)	290	(100.0)
Other industry	113	(77.9)	32	(22.1)	145	(100.0)
Total	257	(59.1)	178	(40.9)	435	(100.0)

Source: Trade Association of German Rubber Industry (W.d.K.)

The West German industrial elastomer product industry has entered a mature stage of development. Shipments increased by an average annual 0.6 percent in the years from 1980 to 1988 and sales rose by an average annual 4.2 percent.

Table 3-2-24: Trends in Production and Sales of Other Industrial Use Elastomer Products

	1980	85	86	87	88
Production (1000 MT)	na	430.1	437.3	453.5	451.8
Shipments (1000 MT)	441.0	435.4	443.0	451.9	463.5
Sales (million marks)	4,652	5,927	6,319	6,456	6,646

Source: Same as Table 3-2-23

In 1988, however, there was a boom in investment in the fields of hoses, belts, rubber-metal composite products, and other mechanical engineering sectors and products for use in plant construction. Production began to rise accordingly from 1989.

The biggest product in the industry is hoses, which have performed relatively strongly. Representative products in this field include nonflammable hoses and spiral hoses used in the mechanical engineering sector. In the automotive industry, use of bent tubes is increasing.

V Belts

Production of V belts has been declining. Demand for belts for export and for the domestic mechanical engineering sector has been good, but demand in the automotive industry has fallen off.

Conveyor Belts

Conveyor belts for the ferrous metal, civil engineering, construction, and mining sectors have suffered from a large drop in demand, resulting in a large drop in production as well.

Latex Products

Due to the rapid rise in their use as a means of protection against AIDS, production of condoms and rubber gloves has continued to rise tremendously.

(Future Outlook)

In the field of industrial rubber products, synthetic rubber will continue to be the main material used.

Projections of demand and production differ considerably depending on the individual product.

Demand and production of hoses are expected to continue to be strong in the mechanical engineering sector and the automobile industry, but significant demand is not foreseen for natural rubber products.

Demand and production of belts can be expected to grow in the mechanical engineering sector, but demand in the automobile industry will probably stagnate. Demand in the civil engineering, construction, and mining sectors may be expected to recover.

Demand for tubes will probably be low. Some improvement in demand may be expected for absorbers and fenders. Demand for medical gloves, which have experienced remarkable growth in recent years, is approaching the saturation point and not that much can be expected in the future. The same may be said for balloons. On the other hand, demand is expected to continue to grow for condoms as a means of protection against AIDS.

[2] Import Trends

Most of the imports of rubber products are from countries in the EC. There are little imports from Asia. The main Asian suppliers are Japan, Taiwan, and South Korea, but each of these accounts for only a small share of the market.

Imports of tubes and hoses in 1988 totaled 68.3 million marks. Of these, 700,000 marks worth came from Japan and 100,000 marks worth came from Taiwan, representing 1 percent and 0.1 percent shares of the market respectively. Note that 100,000 marks worth of tubes and hoses were imported from Thailand in 1985, but no imports have been reported since then.

Imports of inner tubes for passenger car tires totaled 13.4 million marks, 2.2 million marks worth (16 percent share) of which were from South Korea. There have not been any imports from Japan for several years now.

Most of the imports of inner tubes for bicycle tires are from Asia. In 1988, there were 19.5 million marks worth of tubes imported, 5.8 million marks worth of which were from South Korea and 4.4 million marks worth of which were from Taiwan, together representing 52.3 percent of the total. In addition, 800,000 marks worth of tubes were imported from Thailand. Thailand entered the market several years ago and has secured its own business channels, although they are small in size. Note that imports have begun from Indonesia as well, although they are small at 100,000 marks worth.

Imports of conveyor belts from South Korea have been increasing, but few are imported from other countries.

The import ratio for V belts is a relatively high 32 percent (1988). In 1988, 68.5 million marks worth of belts were imported, 2.8 million marks worth of which were from Japan and 300,000 marks worth of which were from South Korea. Thus little was imported from Asia overall.

Imports of transmission belts are small in volume.Among the Asian countries, there is only a small volume imported from Japan.

The import ratio for gloves is a very low 1.4 percent, but of this medical gloves account for a relatively large 113.6 million marks, due to the rapid rise in demand (1988). The main suppliers in Asia are Malaysia (16.4 million marks), Thailand (10.5 million marks), and Taiwan (6.7 million marks). Malaysia already has a long record of exporting. Thailand entered the market in 1987 and has secured a share for itself.

Imports of household gloves totaled 22.9 million marks. Again, Malaysia was in the lead (with 9 million marks), followed by Thailand (1.1 million marks).

[3] Current State of and Outlook for Indonesian Natural Rubber and Rubber-based Products in the West German Market

a.Natural Rubber

As mentioned previously, the West German rubber industry uses large amounts of synthetic rubber . The amount of natural rubber used is small (only 16.6 percent in 1988). The majority of the synthetic rubber and chemical agents and sub materials used are domestically produced. Furthermore, most of the imports are from within the EC.

As a result of this, Asia is of only very small importance as a supplier of raw materials. Even the leading supplier, Malaysia, accounts for only 0.2 percent of the volume of materials imported while Thailand accounts for 0.1 percent.

Naturally, in light of the above, the share of Indonesian natural rubber in the West German market is miniscule.

Indonesia has a significant share only of the latex market.

Indonesian latex is used primarily for the production of gloves. In this application, Indonesian products are believed to be sufficiently competitive in terms of both cost and quality. However, in the production of condoms Indonesian products are avoided due to quality problems and mainly Malaysian products are used.

In the natural rubber market, Malaysia stands above the other suppliers. The reasons for this are that Malaysian products are suitable in the balance of price and quality and there are close relationships with the plantations with which business has been conducted for many years.

Indonesian products are considered satisfactory in both quality and price by some users, but there are more complaints than with Malaysian products. The criticisms of users regarding Indonesian products may be summarized as follows:

- Insufficient and unstable quality
- Unstable supplies
- Problems in packaging

To secure stable markets in West Germany and other European countries, it is necessary to consider these criticisms and work to maintain sustained business relations.

Table 3-2-25: Imports of Natural Rubber from Indonesia

(Unit: Million Marks)

	80	85	86	87	88
Latex					
Indonesia	22.6	34.4	25.0	20.4	30.4
Total	50.0	56.3	43.6	43.4	72.6
Smoked sheet					
Indonesia	13.8	17.2	8.6	7.3	15.0
Total	238.2	230.6	153.7	131.2	175.4
Crepe sheet					
Indonesia	1.5	1.8	1.6	0.8	1.0
Total	11.0	20.2	22.4	24.7	35.4
Others					
Indonesia	17.3	45.4	31.4	33.4	4.4
Total	198.7	237.7	179.0	185.0	79.1

Source: Statistical Bureau

b. Rubber Products

The West German rubber product industry has concentrated its activities in the labor-saving fields. Further, it has undergone considerable technical innovation and is specializing in knowledge intensive high tech fields.

Therefore, the majority of the imports are of conventional, labor intensive products, but the volume of those imports has been small.

Further, most of the imports are from within the EC region.

Due to the above, West Germany may be said to be a very difficult market for the Indonesian rubber product industry to enter. To secure a market in West Germany, it would be necessary not only to expend full efforts to stabilize quality, deliveries and supply, but also to establish considerable price competitiveness.

Products which would be promising as exports to West Germany would be V belts, where there is a large gap between supply and demand, (however, not that much demand can be expected) and medical and household gloves, where Malaysia and Thailand have already succeeded in entering the market.

(4) Current State of Production and Industrial Promotion Policies in Competing Countries

1) Malaysia

Malaysia, the world's greatest producer of natural rubber, has achieved tremendous success in promoting its rubber product industry as an export industry.

Behind this success have been the research and development and industrial promotion programs run for many years by the Malaysian Rubber Research and Development Board (MRRDB). Furthermore, multi-national companies have contributed much through relatively early investment under a positive government program of promoting investment.

A summary will be given below of the state of development of the Malaysian rubber product industry and the industrial promotion system of that country.

[1] Export Trends

Malaysia's exports of rubber materials and products rose from M$83.57 million (Malaysian ringgit) in 1980 to M$326.45 million in 1988, with an average annual growth of 18.6 percent. Rubber products displayed particularly high growth of 20.7 percent. The share of rubber products in total exports rose from 27.8 percent in 1980 to 32.1 percent in 1988.

Exports have been increasing at a particularly fast pace in recent years. Rubber products have risen sharply by an average annual 49.3 percent from 1985 to 1988 and materials by a similarly large 41.9 percent. Even when converted to U.S. dollars, they have grown by 46.6 percent and 39.3 percent.

Table 3-2-26: Trends in Exports of Rubber Materials and Products

(Unit: Million Ringgit)

	Total (SITC62)	Materials (SITC621)	Products (SITC628)
1980	83.6	45.7	23.2
84	106.5	62.6	27.8
85	113.0	63.7	31.5
86	154.6	76.2	55.7
87	242.5	114.2	88.3
88	326.5	181.8	104.8

Source: Statistics Bureau

The primary rubber products being exported are surgical and other rubber gloves and other latex products, which account for 76 percent of all exports. Exports of latex products rose quickly starting 1986 and increased 2.1 fold in 1988.

In other products, there were increases in exports of footwear and general products, but these did not contribute much to exports of rubber products. The rapid increase in exports of rubber products in Malaysia was due to the increase in exports of latex products.

Malaysia accounts for three-quarters of the world market for latex, an overwhelmingly large share, and may be said to have succeeded in the creation of an export industry which matches its ability to supply materials.

Table 3-2-27: Exports of Rubber Products

(Unit: Million Ringgit)

	84*	85*	86*	87	88
Tires	98	106	115	33	32
Tubes	7	10	9	7	8
Footwear	65	69	78	75	94
Latex products	153	181	240	372	786
Industrial products	7	9	11	8	9
General products	64	66	82	85	110
Total	394	441	535	580	1,039

Note: Only Malaysian peninsula. Includes shipments to Saba and Sarawak.
Source: Statistics Bureau

The Malaysian rubber product export industry, which produces primarily latex products, may be said to be currently in a boom period.

One of the direct reasons for this boom has been the global surge in demand for rubber gloves as a result of the AIDS scare. Another has been the expansion of Malaysia's production capacity to meet with this increased demand.

Malaysia started its Industrial Master Plan (IMP) in 1985 and has been attempting to change from a supplier of materials to an exporter of industrial products. In the rubber product industry, it has been creating an environment to expand its production capabilities with the aim of making maximum use of its superior position as the world's largest supplier of rubber materials.

Of course, industrialization plans cannot be achieved overnight. It is first necessary to prepare the proper foundations.

Malaysia set up research and development organizations for natural rubber in the 1920s. The activities of these have been gradually expanded to include those related to the consumption and final application of rubber products and also the rubber product industry. At the present time, Malaysia has a comprehensive data collection and research and development system encompassing all areas from the upstream to downstream sectors of the rubber industry. In this process, local rubber product industries have been gradually formed and an environment has been established for promoting investment by international companies.

[2] Development of Research and Development Systems

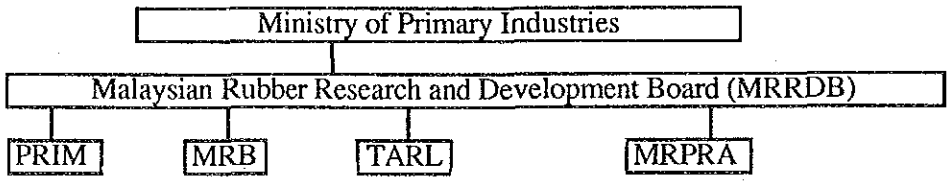
The primary industries of Malaysia are governed by the Ministry of Primary Industries and development policies are formulated by that ministry.

The Malaysia Rubber Research and Development Board (MRRDB) is in charge of implementation of development policies for the rubber industry.

The MRRDB has under it the following four research organizations which are located both domestically and overseas and which engage in research and collection of data:

(1) Rubber Research Institute of Malaysia (PRIM)
(2) Malaysian Rubber Bureau (MRB)
(3) Tun Abdul Razak Laboratories (TARL)
(4) Malaysian Rubber Producers' Research Association (MRPRA)

Fig. 3-2-6: Public & Private Research and Development System of Rubber Industry



(Malaysian Rubber Research and Development Board)

The MRRDB has the following five main duties:
(1) The drafting and formulation of development strategies
(2) The formulation of dynamic R&D programs
(3) Technical consultations and market research
(4) Development of the rubber product manufacturing industry
(5) Training of the labor force

The MRRDB is run using the Malaysia Rubber Research & Development Fund.

The fund draws revenue from the fees for inspection of rubber exports from Peninsular Malaysia (3.85 cents per kg), investment earnings of the reserves, and rental income from real estate.

In 1988, there was revenue of M$64.4 million from the fund.

The MRRDB engages in comprehensive promotion of the rubber industry. R&D is handled by PRIM and TARL.

(Subsidiary R&D Organizations)

The subsidiary organizations of the MRRDB currently have about 2000 staff who engage in R&D activities related to natural rubber. These R&D activities are wide in scope. Malaysia boasts the world's greatest collection of information on the technology of natural rubber, the manufacture of rubber products and all other aspects of the industry.

The heart of these R&D activities is the Rubber Research Institute of Malaysia (PRIM).

PRIM was established in 1925 with the purpose of research into the production of natural rubber. In the 1970s it expanded its research to cover the consumption and final utilization of rubber. PRIM now has a large-scale technology center at Sungei Buloh near Kuala Lumpur and certifies the quality of raw rubber across the nation. The laboratory at Sungei Buloh also conducts technological development research for rubber product industries. It is equipped with processing equipment similar to that of large-scale plants and executes research and development on processes and checks functions of products in tie-up with various factories, offering strong support for their technologies, quality control and process management. Its technological research and development cover such advanced areas as functional improvement of natural rubber through chemical treatment. PRIM also works with other organizations for the operation of the Standard Malaysian Rubber system (SMR, established 1965) and the Standard Malaysian Latex system (SML).

The Tun Adul Razak Laboratory (TARL) operates the London branch of the MRRDB and complements the PRIM.

The Malaysian Rubber Producers' Research Association (MRPRA) began activities in 1938 with the aim of researching the consumer market in the U.K.

These organizations differ in nature, but are similar in the activities of (1) overseas marketing of natural rubber and (2) support to the domestic rubber product industry in the areas of technology and labor training.

The Malaysian Rubber Bureau (MRB) serves as the channel for the Malaysian rubber industry and has offices in the U.K., U.S., Australia, India, and South Korea. Its main objectives are monitoring technical and market trends and providing technical advisory services (TAS) and market information to domestic rubber planters and rubber product manufacturers.

These four organizations all have headquarters in Kuala Lumpur. The headquarters and branches of these four organizations form a sophisticated technical and information system utilizing the academic knowledge and production information accumulated over the past 50 years.

In particular, in the field of natural rubber, a high level of technology has been accumulated in every area from the production of the raw materials to final processing. Malaysia has contributed greatly to the world in this regard. In particular, it has made great contributions to the development of new strains of rubber and new applications and has been evaluated as leading the rubber product manufacturing industry in the effective utilization of natural rubber and the improvement of the quality of the final products.

However, the MRRDB has only limited funds and is particularly restricted in its R&D activities. Furthermore, the technical development capabilities of local companies are very limited.

In this sense, the development of the Malaysia rubber product industry could not have been achieved without the inflow of foreign technology.

Foreign technology has flowed in the country in various forms - the establishment of joint ventures, the conclusion of licensing agreements, technical guidance by suppliers of manufacturing facilities and materials, etc.

Joint ventures have played particularly important roles.

Even the development of the latex product industry depended a great deal on foreign investment. Numerous foreign companies invested in the fields of gloves, condoms, catheters, etc. Among these were many world leaders such as Sagami Rubber Co., Ltd. of Japan, the British Glove Producer London International Group, Ansell of Australia, Hutchinson Mapa of France, Beiersdorf AG of West Germany, the Kedall Corporation of the U.S., and Fillatice SA of Italy.

Until the beginning of the 1970s, this industry produced only mattresses, water pillows, and other simple products for the domestic market. Rapid changes began in the mid-1970s. The MRRDB recognized the large potential of this sector and decided to encourage its development. With this, foreign companies began establishing production bases in Malaysia. The range of products produced rapidly became diversified to include gloves, condoms, rubber thread, nipples, etc., and technical, management, and overseas marketing knowhow rushed in from all over the world.

The industry again grew rapidly in the late 1980s, particularly from 1988. With investment in the manufacturing industry booming, new entries by foreign companies have increasing and even local companies have been spurred to greater investment. Local companies are particularly interested in examination gloves, for which overseas demand is soaring, and a succession of companies have entered the field. The most prevalent way this is being done is through the introduction of inexpensive Taiwanese machinery and the accompanying technical guidance. The production capabilities of the industry have grown tremendously in a short time.

The Malaysian latex product industry began to modernize through the inflow of foreign investment and today, approximately twelve years since modernization began, it is entering a boom period based on another wave of foreign investment and technology.

[3] Measures for Promotion of Foreign Investment

Malaysia approved a total of 589 foreign investments worth M$1,471.3 million in the rubber product industry in the 10 years between 1980 and 1989. Of this, there were 388 cases of equity investments worth M$593.2 million and 201 loans worth M$878.1 million.

The biggest investor was the U.S., which provided mostly loans, followed by Taiwan, with numerous medium and small size investments in equity, followed by Singapore, Australia, the U.K., and Italy, in that order.

There has been relatively little investment by Japanese companies in this area, with the country coming in tenth place among the top investors.

Table 3-2-28: State of Permits for Foreign Investment in the Rubber-based Product Industry (1980 to 1989)

	No. of cases	Value (million Ringgit)			No. of employees
		Investment	Loan	Total	
U.S.	47	99.9	141.3	240.9	9,054
Taiwan	57	102.4	65.3	167.7	8,289
Singapore	65	69.7	77.6	137.3	9,216
Australia	16	22.3	83.4	105.7	2,495
U.K.	25	32.7	71.3	104.9	3,805
Italy	14	34.8	68.4	103.2	1,353
Japan	N.A.	28.5	35.2	63.7	2,222
Total	589	593.2	878.1	1,471.3	58,522

Source: MIDA

Foreign investment in Malaysian manufacturing industries rose 2.6 fold in 1988 and 1.6 fold in 1989. In recent years, problems have surfaced in neighboring Thailand where foreign investment has been rising sharply. These problems include a tight labor supply and demand situation and insufficient infrastructure and as a result of them foreign investors are beginning to take an interest in Malaysia. While the problems in Thailand are an external matter, the situation created by them is extremely advantageous to Malaysia because the basic factors which are attractive to foreign investors are the existing advantages possessed by Malaysia, i.e. the established infrastructure, the high quality of the labor force and the liberal foreign investment policies. The rubber product industry has these advantages plus abundant, good quality natural resources, an accumulation of technical knowhow and a large industrial base.

The government organization for promotion of foreign investment in Malaysia is the Malaysian Industrial Development Authority (MIDA). MIDA is a statutory body under the jurisdiction of the Ministry of Industry and engages in positive activities for investment promotion.

Malaysia has eased its restrictions on foreign investment considerably since 1985 in an effort to promote the same. That country has some unique restrictions under its Bumiputra policy and the foreign investment system is somewhat complicated, but basically the system is very open.

The measures offered by Malaysia to encourage investment are primarily tax incentives such as exemption from income tax and abatement of import duties on raw materials and capital goods.

The exemption from income tax is offered for five years for new investments obtaining pioneer status (extendable for another five years if the investment or employment is expanded by a certain amount during the period). For other new investments, up to 100 percent of the investment may be counted as an income tax deduction depending on the export ratio, the rate of added value, the rate of local procurement, the number of employees, and the investment location. Further special deductions are provided for certain export ratios and investment locations.

Export ratios are classified into three categories. In the case of an export ratio of 80 percent or more, foreign equity of up to 80 percent is allowed. Until 1990, as a special provision, up to 100 percent foreign equity was allowed when the export ratio was 50 percent or more.

[4] Measures for Export Promotion

As seen above, export oriented investment and export activities may be said to be treated very favorably.

The government's export promotion activities are run by the Malaysian Export Promotion Center (MEXPO).

MEXPO was established in 1980 as a unit of the Department of Trade of the Ministry of Trade. Its main activities are (1) a trade inquiry service, (2) a trade information service, (3) preparation of lists of domestic and overseas trade businesses, (4) operation of a standing exhibition hall, (5) trade consultations, (6) arrangement of business appointments, (7) running of exhibitions and participation in trade fairs, and (8) dispatch of trade missions.

MEXPO, however, has only a small staff of 39 and thus it cannot be said that its activities are particularly strong.

The Malaysian government announced in 1989 that it would establish a new trade promotion organization to further push exports. MEXPO is to be absorbed in that organization.

[5] Future Development Targets in Rubber Product Industry

The future development targets for the Malaysian rubber product manufacturing industry may be summarized as raising the degree of sophistication of the products and the added value. Malaysia will therefore be gradually withdrawing from the mass production fields, where price competition with the later developing countries is becoming more fierce, and shifting to fields where more advanced technical and product development capabilities are required.

A look at the table of Priority Development Fields given in the Industrial Master Plan (1986 to 1990 and 1990 to 1995) shows that the greatest priority will continue to be given to the development of the tire industry, but that major changes will be made in the particular products designated. For example, truck tires, which previously were given number two priority, are removed from the latest list, while aircraft tires, radial motorcycle tires, winter tires, and high performance tires, which previously were given low priority, have been raised in rank. Moreover, latex products and footwear, which have already achieved sufficient competitiveness, have been reduced to lower ranks, while rubber-to-metal bonded engineering components and other industrial rubber-based products which require high precision have been raised in rank.

(Priority Development Fields in Industrial Master Plan)

1986 to 1990	1990 to 1995
First priority fields	
Radial steel car tires	Radial steel car tires
Radial steel truck tires	Radial aircraft tires
OTR tires, solid tires	Radial motorcycle tires
Pressured retreads	Winter tires
Automotive components	High performance tires
Fashion footwear	Rubber-to-metal bonded engineering components
Second priority fields	
Radial aircraft tires	Latex products
Radial motorcycle tires	Hoses, beltings
Winter tires	Automotive components
High performance tires	Fashion footwear
Rubber-to-metal bonded Engineering components	Molded rubber products
Hoses and beltings	
Sports goods	
Third priority fields	
General rubber goods	General rubber goods
Rubber bands	Floor coverings, sheeting, and matting
Floor coverings, sheeting, and matting	Molded products
Joint rings	
Molded products	

Source: The Industrial Master Plan (IMP)

The goal is to shift the rubber product industry from an era of quantity to one of quality. As a result, the speed of growth is expected to slow down, with the average annual growth in total production falling somewhat from the average annual 8.8 percent between 1985 and 1990 to 8.2 percent between 1990 and 1995.

However, the growth in terms of added value is forecast to rise from 7.6 percent to 10.1 percent and the value of exports is expected to rise from 8.0 percent to 9.3 percent due to the shift to higher value added products.

Table 3-2-29: Growth Targets of the Rubber-based Products Industry

(Unit: Billion Ringgit, 1981 prices)

	Value	Target		Projected average annual growth (%)	
	85	90	95	85-90	90-95
Production					
Rubber products	0.9	5.8	8.6	8.8	8.2
Industry total	51.4	76.9	110.3	8.4	7.5
Added value					
Rubber products	0.9	1.3	2.1	7.6	10.1
Industry total	13.2	210.4	31.0	9.1	8.7
Number of employees					
Rubber products	46	68	100	8.1	8.0
Industry total	759	065	1,464	7.0	6.6
Exports					
Rubber products	1.7	2.5	3.9	8.0	9.3
Industry total	21.6	33.8	51.0	9.4	8.6

Source: Industrial Master Plan (IMP)

2) Thailand

Thailand is the world's third largest producer of natural rubber. The majority of this is exported as rubber materials. Only a small amount is consumed by the domestic rubber product industry.

Thailand's rubber product manufacturing industry is still in the early stages of development. The growth rate has been high, but the industry is still small in size. Furthermore, it is suffering from problems such as fierce international competition, rising costs, insufficient technology and fluctuating prices. The number of factories which are not starting operation has been rising, even in the rubber glove industry which has displayed the highest growth in recent years. The performance of the industry has not been good.

The problems facing the rubber product industry cannot be expected to be resolved in a short period and it is believed that considerable time will be required before the industry can begin full-scale growth.

[1]. Current State of the Natural Rubber Industry and the Rubber Product Industry.

a. Natural Rubber Industry

Thailand's production of natural rubber rose from 592,000 tons in 1979 to 10 million tons in 1989, with average annual growth of 5.4 percent. This is the highest growth rate achieved among the key producing countries.

In line with this growth, exports increased by a high 6.4 percent.

Thailand's rubber industry, however, continues to perform a low level of processing.

A full 96 percent of the natural rubber is exported in the form of rubber materials. Only 4 percent, or about 40,000 tons, is used by the domestic rubber product industry.

Table 3-2-30: Trends in Production and Exports of Natural Rubber

(Unit: 1000 tons)

	Production	Exports
1979	592	518
80	546	457
81	505	476
82	552	548
83	600	552
84	630	596
85	722	670
86	790	761
87	920	879
88	974	937
89	1,000	960

Source: Statistical Bureau

b. Rubber Product Industry

The volume of production of rubber products is not known, but seen from export figures, Thailand is producing tires, pipes and tubes, belts, and other industrial rubber-based products, rubber thread, medical and sanitary goods, gloves, and other latex products, tiles, plates, sheets, matting, and other molded products, etc. In other words, it is producing products in almost every field.

Exports of rubber products rose rapidly from 872.81 million baht in 1984 to 4,450.41 million baht in 1988, increasing five-fold over four years.

However, exports in 1988 were still less than half the amount of Malaysia. Furthermore, while the exports extended over 11 categories of goods, rubber gloves and tires and tubes stood out as the largest by far, with exports of other industrial rubber-based products remaining small.

Thailand's rubber-based product industry has finally begun to grow, but it has been facing numerous problems.

These problems may be summarized as follows:

- Insufficiency of international competitiveness

Thailand's rubber-based product industry is primarily composed of small size companies, with the exception of some of the foreign joint venture companies. Therefore, there is no economy of scale and Thailand stands in an inferior position in terms of cost competitiveness with relation to the advanced countries and the Asian NIEs.

- Rising material costs

Thailand produces natural rubber but relies on imports for synthetic rubber and chemical agents and sub materials. The material costs are estimated to correspond to about 45 percent of the production costs. Despite Thailand being a producer of natural rubber, therefore, the material costs are very high.

- Insufficient technical level

The level of technical knowhow among the local small size companies is low. There are only a few companies which can produce products which would be acceptable in the international market.

- Fluctuating prices of rubber

Prices of rubber, a market commodity, fluctuate tremendously and this makes investment in the rubber industry a high risk proposition. One of the major stumbling blocks to large investments by local companies is this high risk. The same is true for Indonesia, but in Thailand's case, there are additional disadvantageous conditions. For example, as a result of the continued boom in investment, the biggest among the ASEAN nations, a serious shortage has arisen not only in terms of technically skilled labor, but in labor in general. The number of applications for foreign investment shows signs of abating, but the number of foreign joint venture companies beginning operation in the next one to two years is expected to increase further, making the situation of small local companies even more difficult.

(b) Current State of the Latex Product and Industrial Rubber-based Product Industry

Exports of rubber gloves soared from 680,000 baht worth in 1984 to 1,778.256 million baht worth in 1988. This growth reflects the increase in demand for gloves due to the AIDS scare.

There were only two companies, Ansell and MBK Medical Gloves, in operation before 1986. However, there was subsequently a rapid succession of entries into the field by domestic and overseas companies, with 150 companies given approval for investment by the middle of 1989. The total production capacity has grown over 15 fold to 10 billion pairs between 1986 and 1989.

The technical capabilities of the industry have not risen fast enough to keep up with the growth in scale and problems are beginning to appear.

These technical problems and intensifying international competition have led many companies to hesitate in starting operations and more than 60 percent of the approved investment projects are not yet running. Furthermore, the operating rates of the companies already in operation seem to be low overall.

In addition, export prices have plummeted in line with intense international competition and the rocketing value of Thailand's baht, squeezing company earnings. Calculated from customs clearance statistics, the export price per pair of gloves has fallen rapidly from 6.03 baht in 1986 to 2.58 baht in the first half of 1989.

Due to this situation, future applications for investment are expected to fall in number. However, due to the number of companies now graduating from the trial production stage, production itself should continue to grow.

In the field of industrial rubber-based products, the biggest products have been hoses and tubes. Exports of these have increased five-fold in four years. However, the value of exports in 1988 reached only 170.9 million baht and thus were still small in size.

There are about 20 companies operating in this field, mostly in the Bangkok area, but almost all are small or medium size companies founded by local capital. Furthermore, these companies have low levels of technical knowhow and lack experience in overseas marketing.

Almost all are producing for the domestic market. Thailand does not have any standards for the industrial products produced by small and medium size companies. The companies therefore do not have any targets for improvement of the quality of their products.

A precondition for the expansion of exports of industrial rubber-based products would be the quick establishment of standards regarding product specifications, performance, processing, quality, etc.

Table 3-2-31: Exports of Rubber Products

(Unit: 1000 baht)

	84	85	86	87	88
Unprocessed mixed rubber	11,498	24,948	18,263	3,902	2,803
Unvulcanized adhesives, rings, disks, washers	1,199	64,476	242,325	218,321	8,164
Vulcanized yarn and cord	33,753	37,547	46,831	106,957	153,394
Vulcanized tiles, plates, sheets, strips, rods, and other profile shapes	3,067	236	5,249	9,889	67,343
Vulcanized tubes, pipes, formers	32,069	58,195	66,811	100,860	170,896
Tires and tubes	12,529	701	2,028	14,063	31,296
Medical and sanitary goods (packs, nipples, condoms, etc.)	41,419	125,955	126,672	104,649	121,051
Gloves and other apparel	1,170	4,266	205,554	789,990	1,835,417
Other vulcanized rubber products (excluding hardened rubber)	23,283	43,065	46,387	77,198	13,096
Other vulcanized rubber products (hardened rubber)	872,813	1,222,116	1,742,42	2,756,017	4,450,408

Source: Statistics Bureau

[2] R&D system

In Thailand, the Rubber Research Institute under the Ministry of Agriculture comprehensively controls both the raw rubber and rubber product fields of the industry. The Rubber Research Center under the institute is active in the research and development of technology, concentrating on the control of quality of raw rubber.

The main facilities of the Rubber Research Center are located in Songkla, where study and training facilities and a technological research institute centering on natural latex have been set up. The research institute does research and development not only on raw rubber but also rubber product industries. It has laboratories at two locations, one at Suratthni, midway between Songkla and Bangkok, and the other in the suburbs of Bangkok. Both have study and training facilities and technological research equipment for raw rubber.

In addition, there are 15 licensed laboratories which certify the quality of raw rubber (sheet, Technically Specified Natural rubber=TTR in Thailand).

[3] Government Investment and Export Promotion Measures

In the ways mentioned above, the rubber product industry is stalled in an early stage of development. This is due to the unique situation surrounding the industry and is not due to something facing Thailand's manufacturing industry as a whole. As is well known, Thailand has led the ASEAN nations in attracting foreign investment to its manufacturing industries and in exports of finished products.

This speaks of the excellence of Thailand's investment and export environment. There are many things to be learned from Thailand in this respect.

For reference, a brief description will be given of Thailand's foreign investment and export promotion measures.

(Investment Promotion Measures)

The public body taking charge of the promotion of investment in Thailand is the Board of Investment (BOI). The BOI was established over 30 years ago and is engaged in the encouragement and promotion of investment in the manufacturing industries.

Thailand offers, as investment incentives, exemption of import duties on plant facilities recognized by the BOI, reduction of import duties and business taxes on raw materials and supplies (up to 90 percent), and exemption from corporate income tax (for three to eight years).

The degree of the incentives is determined by the location of the project (for example, incentives being given only for locations outside of Bangkok), export ratios, acquisition of foreign investment and employment levels.

There are no incentives provided for specific industries. Therefore, no special incentives have been established for the rubber product manufacturing industry.

The investment regulations of Thailand are applied to three groups of industries. In any project in any group, the Thai side shall hold the majority share of the equity or else approval will be difficult to obtain. Projects with high export ratios, however, may have up to 100 percent foreign equity.

(Export Promotion Measures)

Measures for the promotion of exports include tax incentives, such as the waiver of the corporate taxes, eased regulations on equity and also exemption from import duties and business taxes on raw materials used for manufacturing export goods. Export oriented projects may be said to be treated very favorably.

The government's export promotion activities are the responsibility of the Department of Export Promotion (DEP). Its main activities are the sponsoring of exhibitions, participation in trade fairs, dispatch of export missions, governmental negotiations, and information services.

For the rubber industry, it dispatches trade missions and engages in negotiations to promote exports of natural rubber. However, it is currently not engaged in any activities for the promotion of exports of finished rubber-based products.