

CHEMICAL INDUSTRY OF JAPAN 2005

Supporting our wealthy and comfortable life,
the chemical industry,
which is living together with nature,
fosters the dream of mankind.

Introduction

The chemical industry is frequently described as quite difficult to understand by people outside of the industry. The chemical industry has been defined as “the industry that manufactures various products from various raw materials for various purposes by using primarily chemical technologies. However, like steel, those which are categorized separately are excluded.” (Mr. Yoshiro Tokuhisa, “Is There A Future for The Chemical Industry?” published by Nihon Keizai Shimbun Co.)

Viewed that way, the scope of the chemical industry changes depending on what is categorized separately from among manufacturing that primarily uses “chemical technologies.” Although there are various opinions, the statistics on which major charts and tables of this brochure are based conform to the category “17 - Chemical Industry” of the Standard Industrial Classification for Japan (second classification). Its contents are described in detail on Page 5.

Even among published government statistics, the definition of the chemical industry could differ due to differences in the purposes for compilation and use by ministries and agencies. For example, in the trade statistics of the Ministry of Finance, synthetic rubbers, artificial fibers, and materials for photos and movies are excluded from the “Chemical Industry” category and radioactive elements are included because the ministry uses the unified classification under an international treaty.

Moreover, there are cases in which pharmaceuticals are not treated as chemical products. An example is the ranking data of the world’s chemical companies on Page 10.

Meanwhile, there are opinions that the scope of the chemical industry is wider. In such a case, plastic products or plastic products and rubber products are added to the “Chemical Industry.” Total shipments of the former amounted to 33 trillion yen and the latter to 36 trillion yen in 2003. At any rate, the chemical industry ranks third in manufacturing after transportation machinery and electrical machinery.

** The statistics used in this brochure conform to the Standard Industrial Classification for Japan (second classification): “Chemical Industry.”
(Source)

Ministry of Economy, Trade and Industry [Census of Manufactures] [Basic Survey of Overseas Business Activities]

Ministry of Internal Affairs and Communications [Survey of Research and Development]

Ministry of Finance [Financial Statements Statistics of Corporations by Industry]

Ministry of Education, Culture, Sports, Science and Technology [Annual Report on the Promotion of Science and Technology]

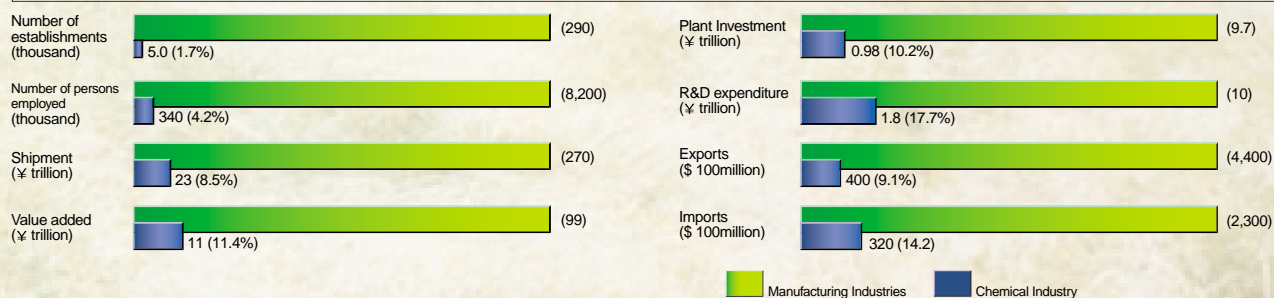
Ministry of Health, Labour and Welfare [Monthly Labor Survey]

Japan Productivity Center for Socio-Economic Development

Contents

1	Total Production (Shipments) of Chemical Industry Amounts to Yen 23 Trillion	3
2	Chemical Products That Meet The Needs of Various Fields	5
3	Shipment by Prefecture	7
4	Japan's Chemical Industry, The World's Second Biggest in Shipments after The U.S.A.	9
5	Yen 1,800 Billion Spent for Research And Development	11
6	Japan Is An Energy-Saving Superpower	13
7	Chemical Industry Ranks High in Plant Investment	14
8	340,000 Workers Are Employed	15
9	Labor Productivity / Working Hours	16
10	Trade	17
11	Outward Direct Investment Amounts to Yen 540 Billion, While Inward Direct Investment Amounts to Yen 110 Billion	19
12	Overseas Business Activities	20
13	Operating Profit Ratio	21
	Summary of Major Indices	22

■ Japan's chemical industry vs. all manufacturing industries in 2003



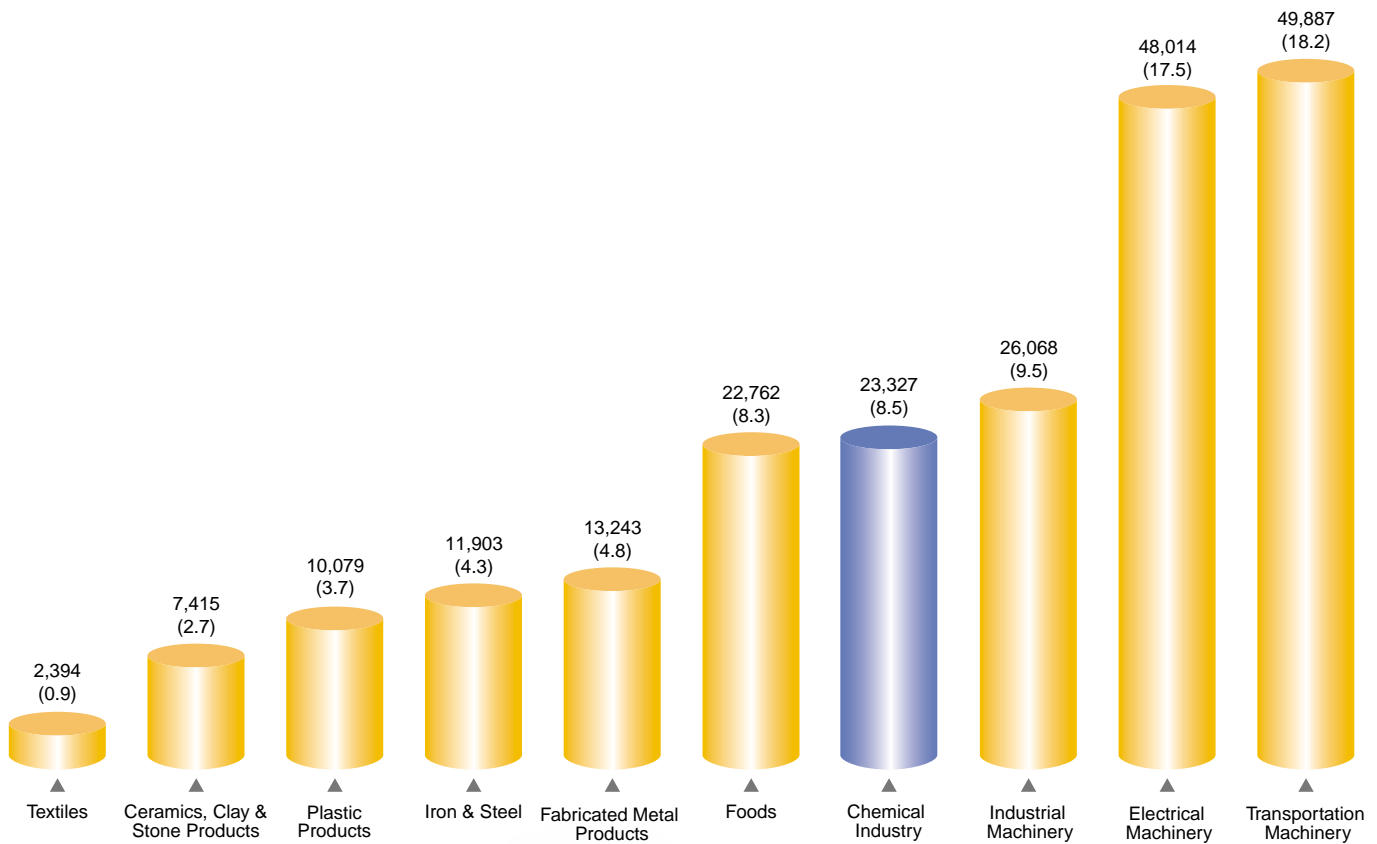
(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]
 Ministry of Finance [Financial Statements Statistics of Corporations by Industry]
 Ministry of Internal Affairs and Communications [Survey of Research and Development]
 Japan External Trade Organization

(Note) Data of plant investment and R&D expenditures are those of FY 2003. (April 1,2003-Mar.31,2004)

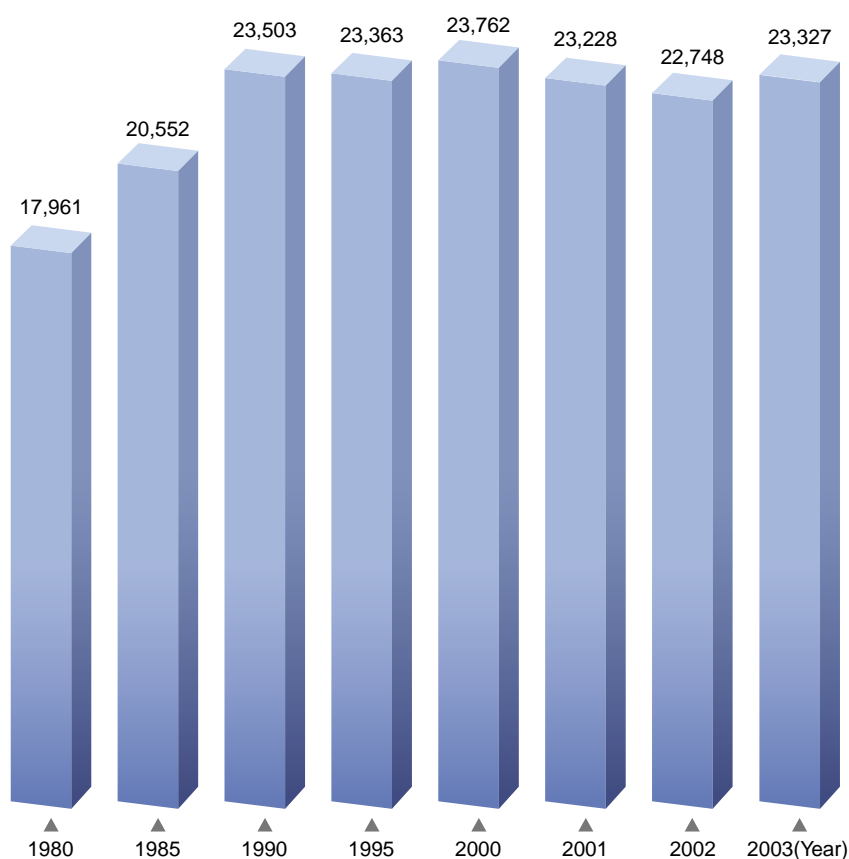
1 Total Production (Shipments) of Chemical Industry Amounts to Yen 23 Trillion.

Chemical industry's shipment value in 2003 amounted to 23 trillion yen, accounting for 8.5% of entire manufacturing industry.

■ Shipment value of the chemical industry in the manufacturing industries in 2003 [¥ billion,%]



■ Trend in shipment value [¥ billion]



■ Shipment value of the chemical industry in the manufacturing industries [¥ billion]

Industry	Year	Every 5th year				Recent three years				
		1980	1985	1990	1995	2000	2001	2002	2003	
Chemical Industry		17,961	20,552	23,503	23,363	23,762	23,228	22,748	23,327	8.5%
Foods		22,196	20,542	22,748	24,117	23,888	23,454	22,984	22,762	8.3
Textiles		7,781	8,087	7,838	4,230	3,008	2,737	2,478	2,394	0.9
Plastic Products		—	8,052	10,466	10,530	10,486	9,995	9,628	10,079	3.7
Ceramics, Clay & Stone Products		8,304	8,772	10,724	10,169	8,860	8,397	7,678	7,415	2.7
Iron & Steel		17,864	17,754	18,269	14,073	11,927	11,202	10,963	11,903	4.3
Fabricated Metal Products		10,311	13,094	18,574	17,646	15,143	14,545	13,737	13,243	4.8
Industrial Machinery		17,361	24,190	33,225	29,884	29,972	28,210	25,477	26,068	9.5
Electrical Machinery		22,160	40,842	54,529	54,831	59,449	52,466	46,041	48,014	17.5
Transportation Machinery		24,897	36,179	46,858	44,215	44,367	45,152	47,997	49,887	18.2
Others		63,289	67,254	76,640	72,973	69,616	67,281	59,630	58,644	21.4
Total		212,124	265,321	323,373	306,030	300,478	286,667	269,362	273,734	100.0

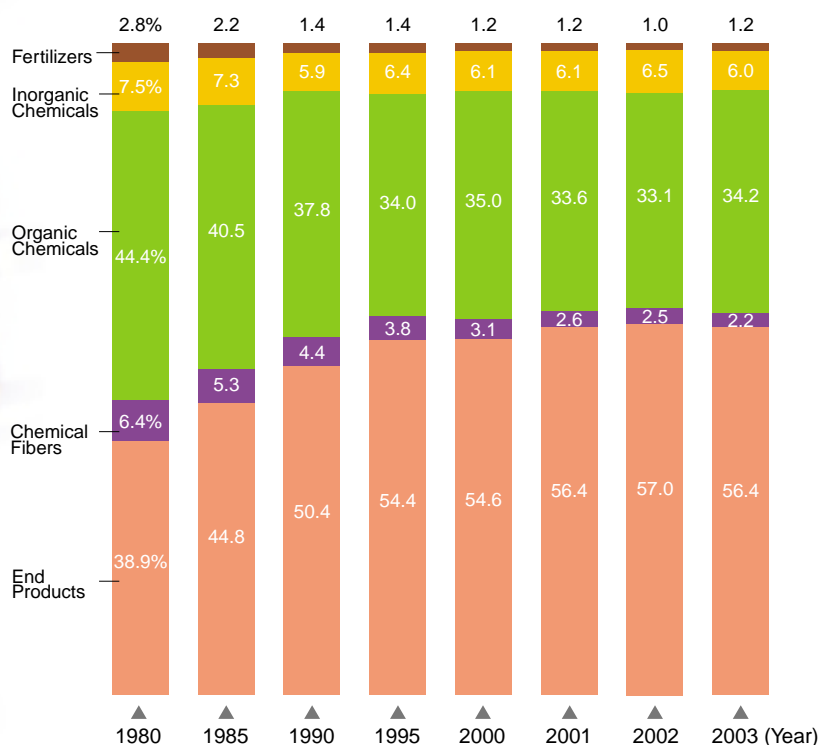
(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]
(Note) Statistics of facilities with more than four employees

2 Chemical Products That Meet The Needs of Various Fields

Various products that chemical industry produces are used as raw materials and intermediary products by other industries. Many end products include drugs & medicines, cosmetics, detergents, paints, film and other materials that help us enjoy a comfortable modern life.



■ Trend of shipment composition in chemical industry [%]



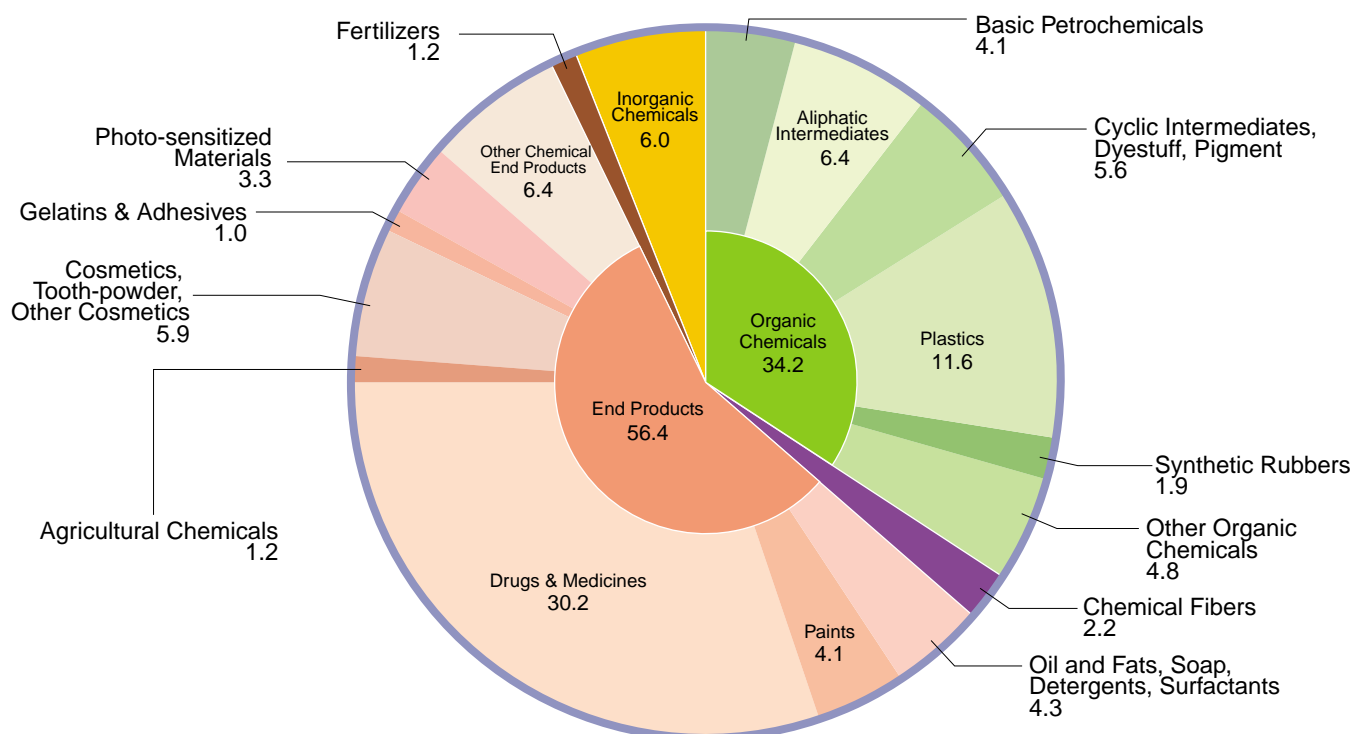
■ Trend of shipment composition in chemical industry [%]

Industry	Year	Every 5th year					Recent three years		
		1980	1985	1990	1995	2000	2001	2002	2003
Chemical Industry		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Fertilizers		2.8	2.2	1.4	1.4	1.2	1.2	1.0	1.2
Inorganic Chemicals		7.5	7.3	5.9	6.4	6.1	6.1	6.5	6.0
Organic Chemicals		44.4	40.5	37.8	34.0	35.0	33.6	33.1	34.2
▶ Basic Petrochemicals		10.9	6.2	5.1	2.6	2.9	4.2	4.1	4.1
▶ Aliphatic Intermediates		6.1	5.5	4.5	5.5	7.1	5.7	5.6	6.4
▶ Cyclic Intermediates, Dyestuff, Pigment		9.2	7.4	6.9	6.9	6.1	6.4	6.2	5.6
▶ Plastics		11.1	14.2	15.4	14.0	13.6	11.9	11.6	11.6
▶ Synthetic Rubbers		2.2	2.4	2.3	1.7	1.5	1.4	1.8	1.9
▶ Other Organic Chemicals		5.0	4.7	3.6	3.3	3.8	4.1	3.9	4.8
Chemical Fibers		6.4	5.3	4.4	3.8	3.1	2.6	2.5	2.2
End Products		38.9	44.8	50.4	54.4	54.6	56.4	57.0	56.4
▶ Oil and Fats, Soap, Detergents, Surfactants		3.5	3.8	4.1	4.0	3.5	4.1	4.4	4.3
▶ Paints		4.3	4.9	4.9	4.6	4.1	4.2	4.4	4.1
▶ Drugs & Medicines		14.1	18.6	21.9	25.7	27.0	29.2	30.0	30.2
▶ Agricultural Chemicals		1.8	2.2	1.6	1.6	1.4	1.5	1.3	1.2
▶ Cosmetics, Tooth-powder, Other Cosmetics		4.1	5.2	5.9	6.4	6.0	6.0	6.0	5.9
▶ Gelatins & Adhesives		0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0
▶ Photo-sensitized Materials		2.3	3.6	4.1	4.6	4.4	4.0	3.3	3.3
▶ Other Chemical End Products		4.6	5.7	6.9	6.6	7.2	6.4	6.7	6.4

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]

(Note) Statistics of facilities with more than four employees

■ Composition of chemical products shipped in 2003[%]



■ The major chemical industry indices with breakdown by product

	Number of Facilities	Employee Force (Persons)	Shipment (in Yen billion)	Value Added (in Yen billion)	Composition (%)			
					Number of Facilities	Employee Force	Shipment	Value Added
Chemical Industry	5,028	344,889	23,327	11,222	100.0	100.0	100.0	100.0
Fertilizers	168	6,218	270	83	3.3	1.8	1.2	0.7
Inorganic Chemicals	757	31,500	1,401	576	15.1	9.1	6.0	5.1
Organic Chemicals	713	79,372	7,985	2,957	14.2	23.0	34.2	26.4
▶ Basic Petrochemicals	11	2,472	947	261	0.2	0.7	4.1	2.3
▶ Aliphatic Intermediates	75	10,594	1,487	658	1.5	3.1	6.4	5.9
▶ Cyclic Intermediates, Dyestuff, Pigment	170	13,294	1,296	535	3.4	3.9	5.6	4.8
▶ Plastics	196	29,523	2,696	881	3.9	8.6	11.6	7.9
▶ Synthetic Rubbers	15	5,360	433	219	0.3	1.6	1.9	2.0
▶ Other Organic Chemicals	246	18,129	1,126	403	4.9	5.3	4.8	3.6
Chemical Fibers	59	11,004	506	183	1.2	3.2	2.2	1.6
End Products	3,331	216,795	13,166	7,423	66.2	62.9	56.4	66.1
▶ Oil and Fats, Soap, Detergents, Surfactants	303	15,118	999	541	6.0	4.4	4.3	4.8
▶ Paints	435	18,601	963	350	8.7	5.4	4.1	3.1
▶ Drugs & Medicines	957	92,988	7,043	4,544	19.0	27.0	30.2	40.5
▶ Agricultural Chemicals	73	4,910	282	92	1.5	1.4	1.2	0.8
▶ Cosmetics, Tooth-powder, Other Cosmetics	415	28,996	1,381	870	8.3	8.4	5.9	7.8
▶ Gelatins & Adhesives	163	5,719	243	98	3.2	1.7	1.0	0.9
▶ Photo-sensitized Materials	70	14,608	773	342	1.4	4.2	3.3	3.0
▶ Other Chemical End Products	915	35,855	1,482	586	18.2	10.4	6.4	5.2

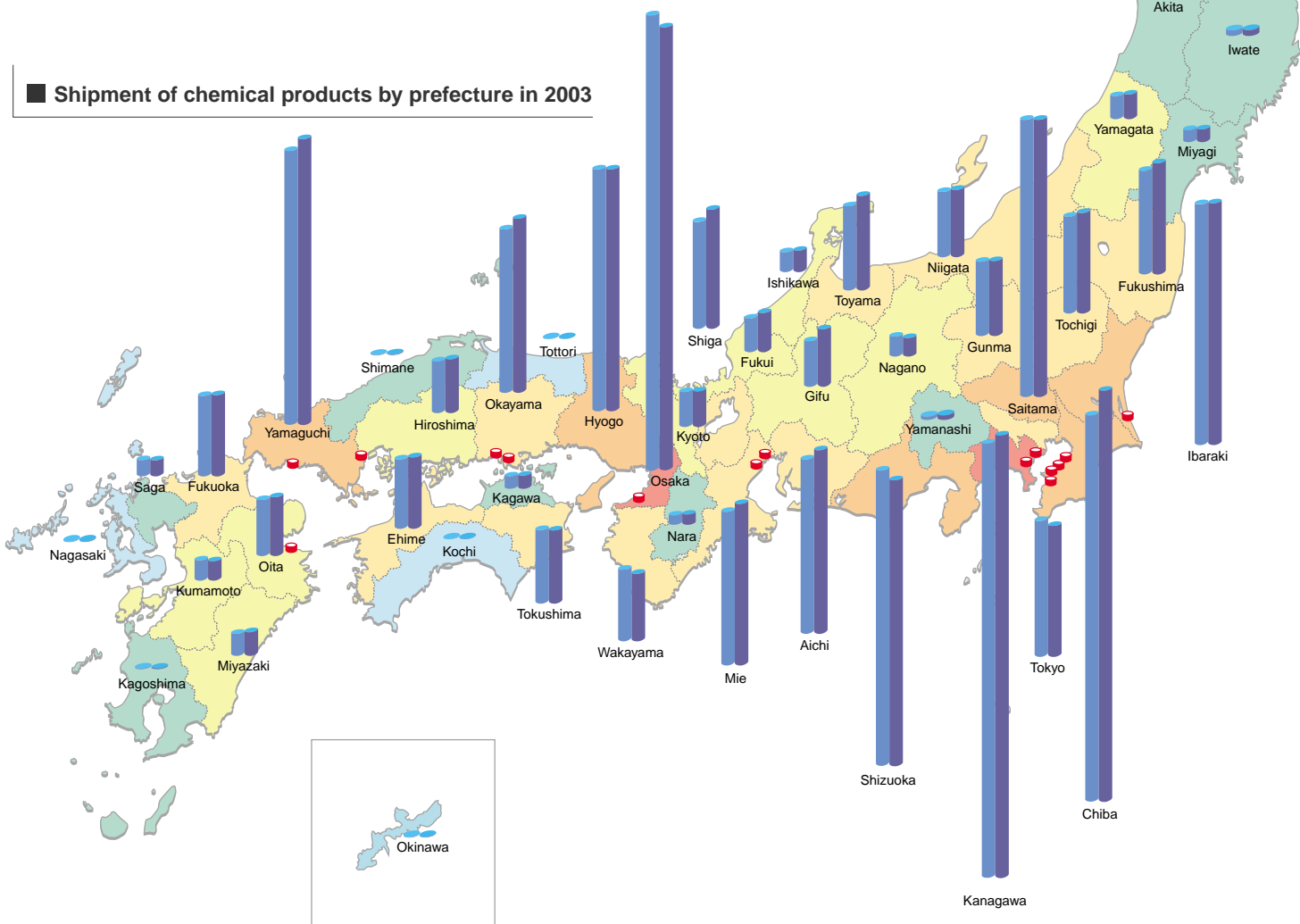
(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]

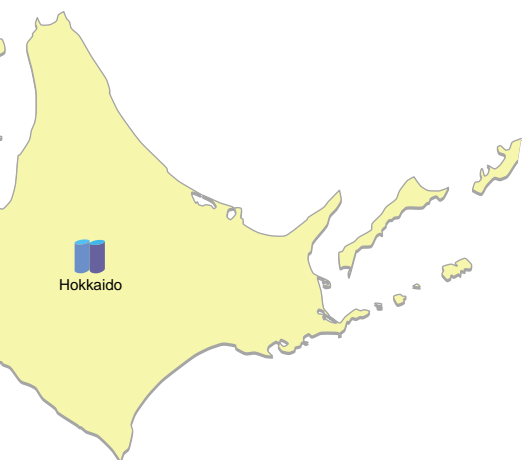
(Note) Statistics of facilities with more than four employees

3 Shipment by Prefecture

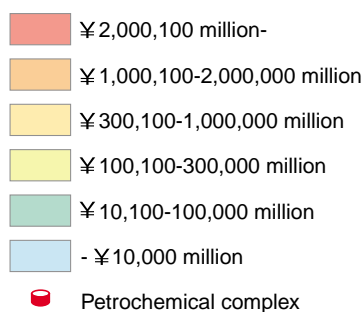
Osaka, Kanagawa and Chiba shipped more than 2 trillion yen each.

■ Shipment of chemical products by prefecture in 2003





2002 — 2003



■ Shipment of chemical products by prefecture in 2003 (ranking)

	Prefecture	Shipment	Increase/decrease from previous year	Employee force
1	Osaka	21,959	97.3	35,498
2	Kanagawa	21,951	102.0	27,293
3	Chiba	20,411	106.5	18,489
4	Yamaguchi	14,242	104.4	14,141
5	Shizuoka	14,231	96.8	23,526
6	Saitama	13,809	100.0	20,784
7	Hyogo	12,070	100.0	19,870
8	Ibaraki	12,066	100.4	11,809
9	Aichi	9,211	105.3	16,305
10	Okayama	8,744	106.6	9,959
11	Mie	8,122	105.1	10,925
12	Tokyo	6,606	96.3	16,057
13	Shiga	6,045	111.2	6,693
14	Fukushima	5,649	107.2	7,940
15	Tochigi	5,116	103.4	5,032
16	Toyama	4,841	112.5	10,751
17	Fukuoka	4,169	101.2	7,585
18	Gunma	3,858	101.2	5,724
19	Tokushima	3,766	99.6	7,539
20	Ehime	3,685	103.1	4,957
21	Niigata	3,480	103.3	6,525
22	Wakayama	3,478	94.2	4,887
23	Oita	3,069	105.3	2,357
24	Gifu	2,996	124.4	4,807

	Prefecture	Shipment	Increase/decrease from previous year	Employee force
25	Hiroshima	2,816	104.1	5,620
26	Fukui	2,106	115.8	4,115
27	Kyoto	1,921	102.2	5,220
28	Hokkaido	1,407	99.1	3,357
29	Yamagata	1,391	107.2	2,882
30	Miyazaki	1,343	108.0	2,391
31	Ishikawa	1,233	108.0	1,583
32	Kumamoto	1,113	96.3	3,305
33	Nagano	1,063	93.2	2,066
34	Saga	949	99.4	1,708
35	Kagawa	823	107.6	2,685
36	Miyagi	801	106.5	1,647
37	Nara	647	105.1	2,852
38	Iwate	498	106.3	1,360
39	Yamanashi	418	134.0	937
40	Akita	322	105.7	875
41	Aomori	296	102.7	458
42	Kagoshima	184	108.2	581
43	Shimane	144	92.8	470
44	Nagasaki	82	107.9	280
45	Okinawa	71	104.1	654
46	Kochi	46	82.0	289
47	Tottori	24	112.4	101
	Total	233,271	102.5	344,889

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]
(Note) Statistics of facilities with more than four employees

4 Japan's Chemical Industry, The World's Second Biggest in Shipments after The U.S.A.

■ Shipment of chemical products by country in 2003 [\$billion]



(Source) American Chemistry Council



■ The world's leading chemical companies in 2003

Ranking	Company (Country)	Chemical Sales (\$ million) 2003	Change from 2002	Chemical Sales as % of Total Sales	Chemical Operating Profits (\$ million) a	Change from 2002	Operating Profit Margin b
1	Dow Chemical (U.S.A.)	32,632.0	18.2%	100.0%	2,082.0	78.7%	6.38%
2	BASF (Germany)	30,768.9	1.7	81.5	1,726.7	-20.4	5.6
3	DuPont (U.S.A.) ^c	30,249.0	13.2	99.9	na	na	na
4	Bayer (Germany)	21,567.5	-2.0	66.7	-1,533.2	nm	def
5	Total (France)	20,197.3	-7.6	17.1	631.4	-28.2	3.1
6	ExxonMobil (U.S.A.) ^d	20,190.0	23.0	8.5	1,432.0	72.5	7.1
7	BP (U.K.)	16,075.0	23.0	6.8	568.0	10.3	3.5
8	Royal Dutch/Shell (U.K./Netherlands)	15,186.0	32.2	7.5	-209.0	nm	def
9	Mitsubishi Chemical (Japan)	13,216.4	5.6	79.6	648.0	21.4	4.9
10	Degussa (Germany)	12,929.7	-2.9	100.0	744.5	40.0	5.8
11	Akzo Nobel (Netherlands)	10,750.4	-4.7	72.8	741.1	-19.0	6.9
12	SABIC (Saudi Arabia)	10,314.2	29.0	82.7	3,016.2	55.5	29.2
13	China Petroleum & Chemical (China)	9,744.2	27.9	18.2	260.7	262.2	2.7
14	ICI (U.K.)	9,557.9	-4.5	100.0	643.8	-20.6	6.7
15	Mitsui Chemicals (Japan)	9,394.8	3.5	100.0	465.1	-4.5	5.0
16	Formosa Plastic Group (Taiwan)	8,499.0	27.4	52.7	1,410.3	36.1	16.6
17	Dainippon Ink & Chemicals (Japan)	8,405.3	1.3	100.0	377.9	9.1	4.5
18	General Electric (U.S.A.)	8,371.0	9.4	6.2	803.0	-28.6	9.6
19	Air Liquide (France)	8,360.1	7.3	88.0	1,421.2	4.1	17.0
20	Sumitomo Chemical (Japan)	8,042.6	4.7	80.5	300.1	-6.4	3.7
21	Toray Industries (Japan)	7,393.1	6.1	78.8	391.2	76.5	5.3
22	Shin-Etsu (Japan)	7,103.6	3.3	98.9	1,083.3	9.5	15.2
23	Chevron Phillips (U.S.A.)	7,018.0	28.2	100.0	76.0	85.4	1.1
24	Huntsman Corp. (U.S.A.)	6,990.2	-2.9	100.0	68.7	na	1.0
25	DSM (Netherlands)	6,845.6	-2.9	100.0	332.7	-39.9	4.9
26	PPG Industries (U.S.A.)	6,606.0	10.2	75.4	939.0	28.8	14.2
27	Equistar Chemicals (U.S.A.)	6,545.0	18.2	100.0	-62.0	nm	def
28	Reliance Industries (India)	6,540.9	4.4	58.6	722.9	15.0	11.1
29	Clariant (Switzerland)	6,329.7	-8.7	100.0	454.1	-11.4	7.2
30	Rhodia (France)	6,170.1	-17.6	100.0	-179.9	nm	def

(Source) Chemical & Engineering News

(Note) Financial figures converted at the following 2003 average rates: US\$1.00 = 0.884 euros, 0.612 British pounds, 1.345 Swiss francs, 3.75 Saudi riyals, 8.277 Chinese yuan, 115.97 Japanese yen, 7.082 Norwegian crowns, 46.59 Indian rupees, 34.40 Taiwanese\$, 7.558 South African rand, 1,192.08 South Korean won, and Canadian \$1.401.

a Operating profit is sales less administrative expenses and cost of sales.

b Chemical operating profit as a percentage of chemical sales.

c Sales include a significant amount of nonchemical products.

d Profits and profitability rates are after-tax.

def = deficit. na = not available. nm = not meaningful.

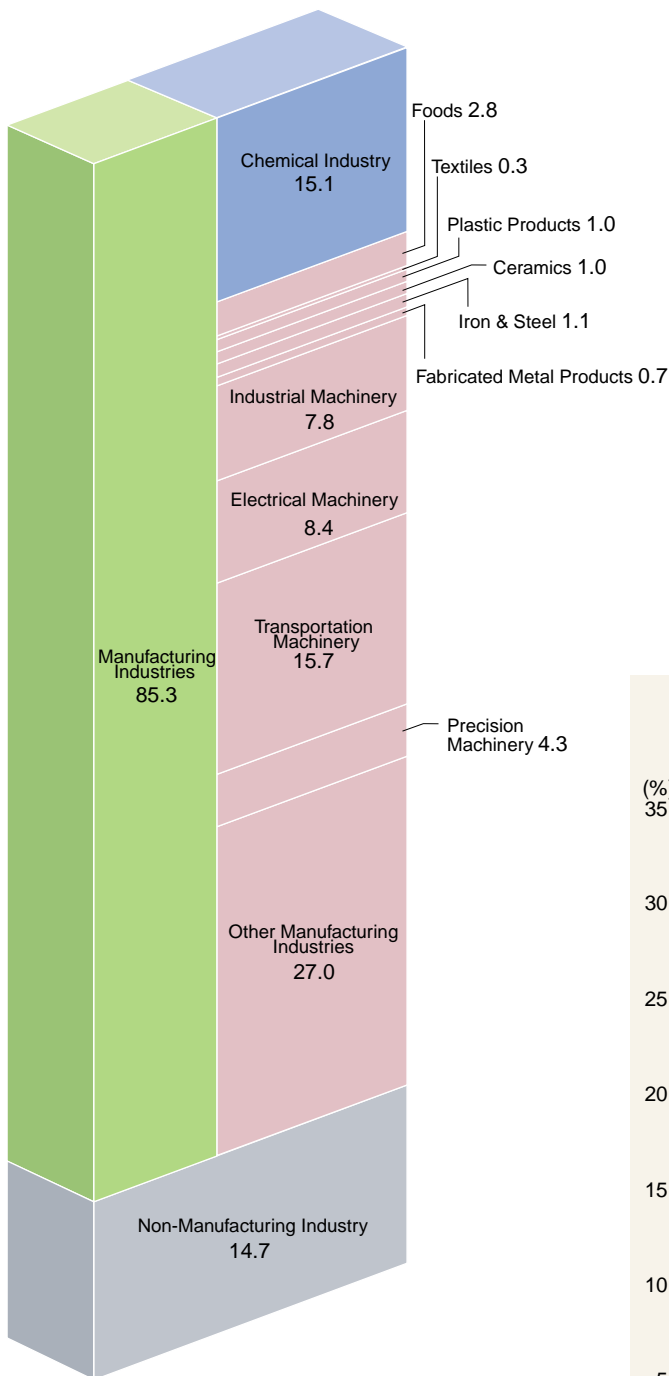
(Note) Drugs & medicines are excluded.

5

Yen 1,800 Billion Spent for Research And Development

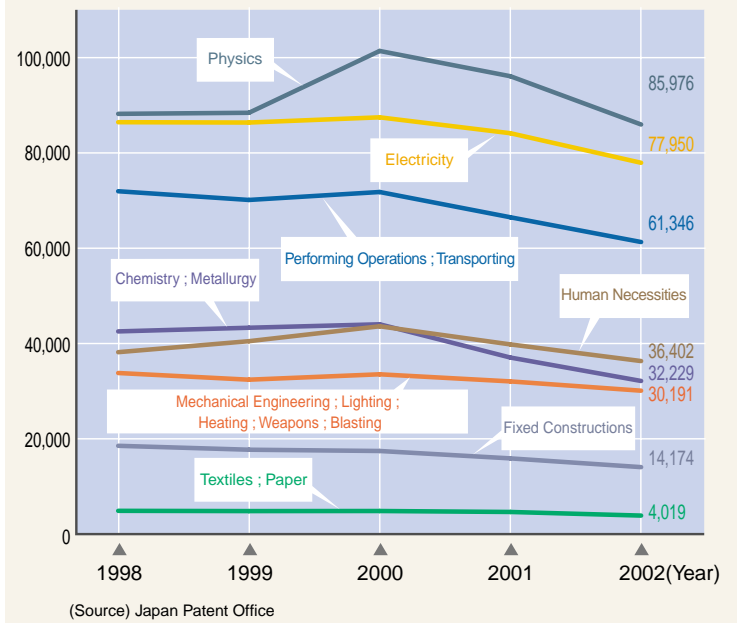
Research and development expenditures of the chemical industry in FY 2003 (Apr.1, 2003-Mar.31, 2004) in Japan amounted to 1,800 billion yen, accounting for 15% of all industry R&D expenditures. The percentage of research expenditures to sales was 5.2%, which was high together with precision machinery and electrical machinery.

■ Ratio of R&D expenditures to sales by industry in 2003 [%]

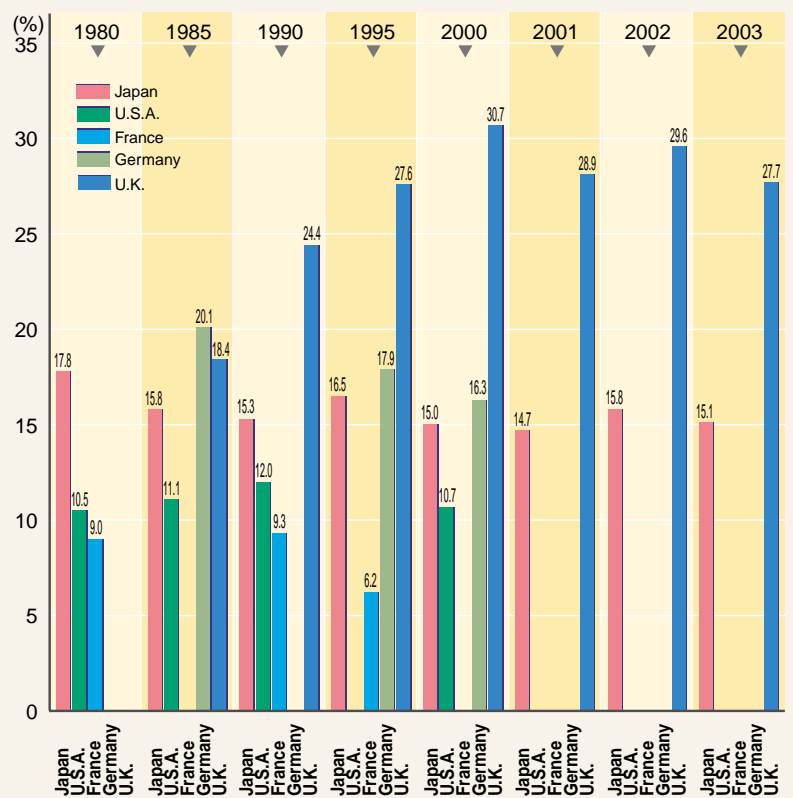


(Source) Ministry of Internal Affairs and Communications [Survey of Research and Development]

■ Trend of number of applications for patents by sector

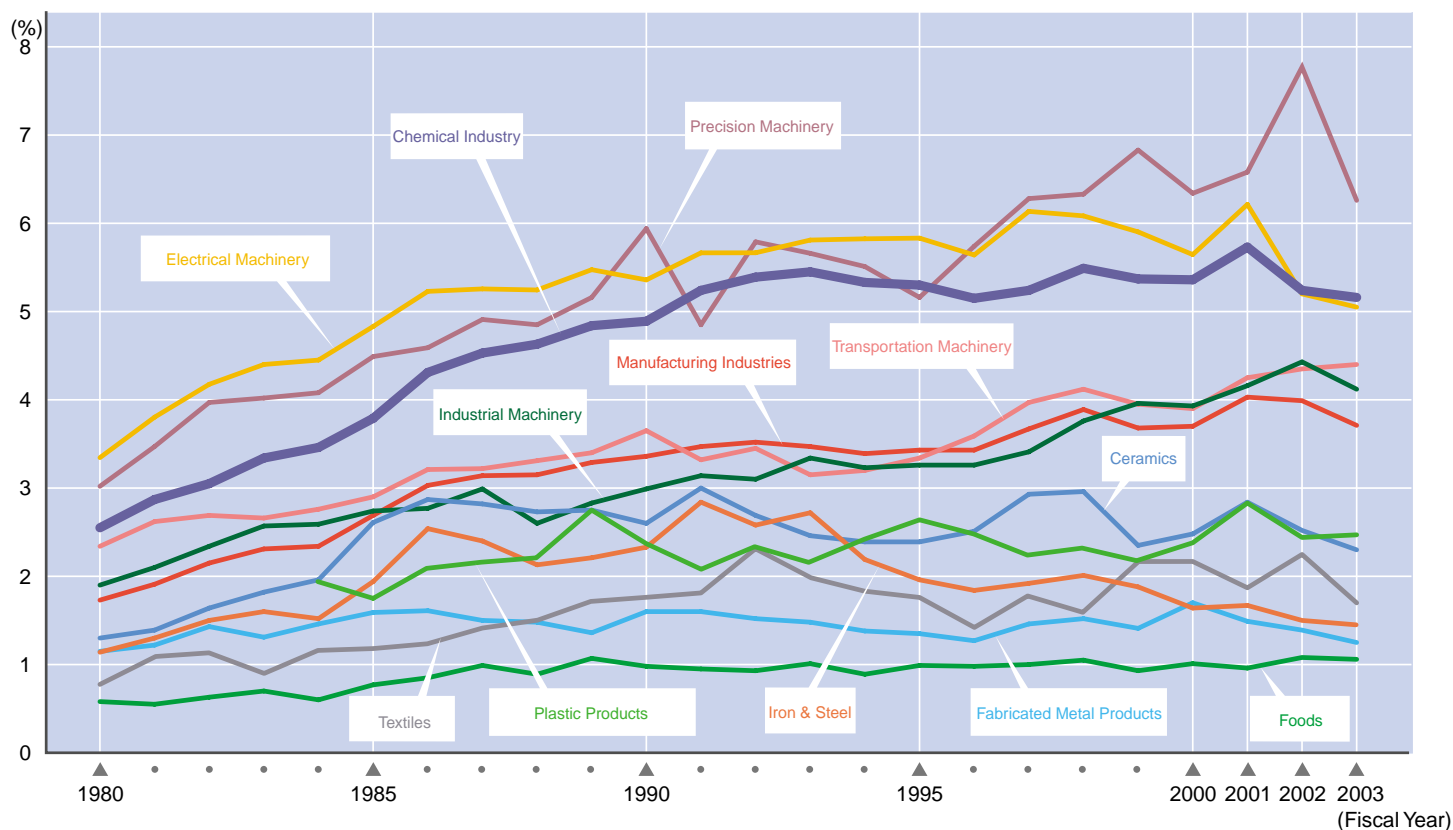


■ Chemical industry R&D expenditures in major countries [%]



(Source) Ministry of Education, Culture, Sports, Science and Technology [Annual Report on the Promotion of Science and Technology]

■ Ratio of R&D expenditures to sales by industry [%]



■ Ratio of R&D expenditures to sales by industry [%]

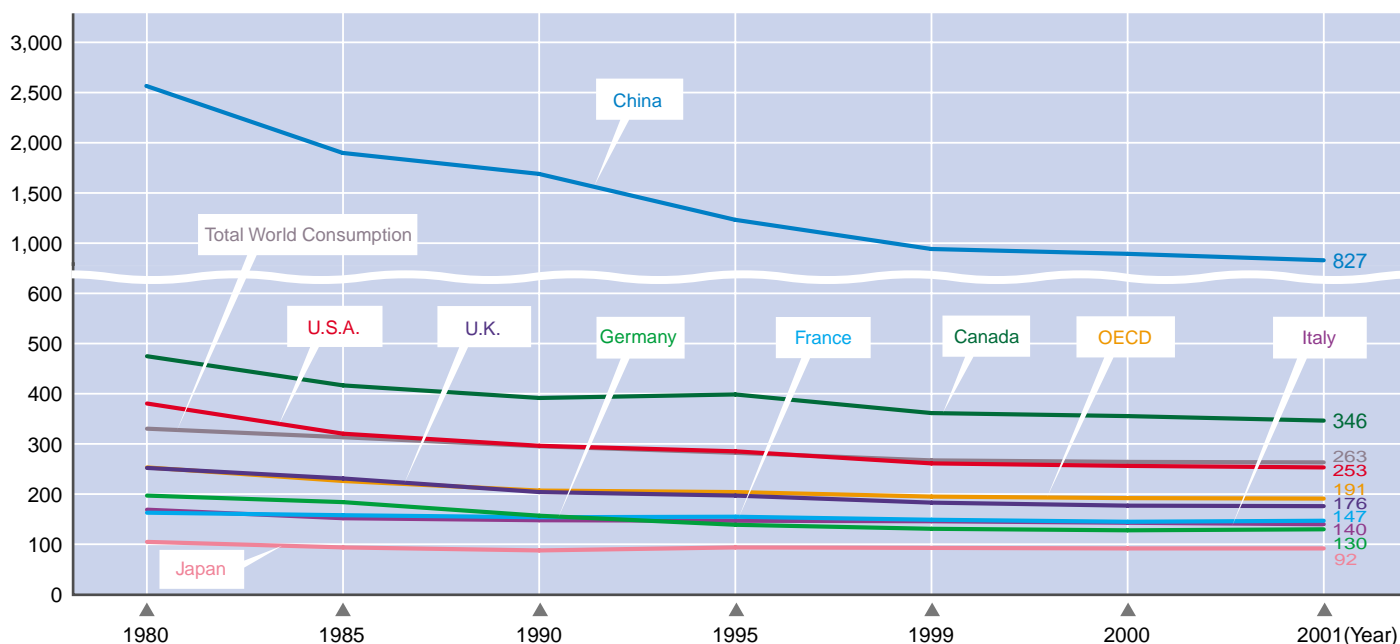
Industry	Fiscal Year	Every 5th year					Recent three years		
		1980	1985	1990	1995	2000	2001	2002	2003
Chemical Industry		2.55	3.79	4.89	5.30	5.36	5.73	5.24	5.16
Foods		0.58	0.77	0.98	0.99	1.01	0.96	1.08	1.06
Textiles		0.77	1.18	1.76	1.76	2.17	1.87	2.25	1.70
Plastic Products		—	1.75	2.37	2.64	2.38	2.83	2.44	2.47
Ceramics		1.30	2.61	2.60	2.39	2.48	2.84	2.52	2.30
Iron & Steel		1.14	1.94	2.33	1.96	1.64	1.67	1.50	1.45
Fabricated Metal Products		1.15	1.59	1.60	1.35	1.70	1.49	1.39	1.25
Industrial Machinery		1.90	2.74	2.99	3.26	3.93	4.16	4.43	4.12
Electrical Machinery		3.35	4.82	5.36	5.83	5.64	6.21	5.20	5.05
Transportation Machinery		2.34	2.90	3.65	3.34	3.90	4.25	4.35	4.40
Precision Machinery		3.02	4.49	5.94	5.16	6.34	6.58	7.77	6.26
Manufacturing Industries		1.73	2.69	3.36	3.43	3.70	4.03	3.99	3.71

(Source) Ministry of Internal Affairs and Communications
[Survey of Research and Development]

6 Japan Is An Energy-Saving Superpower

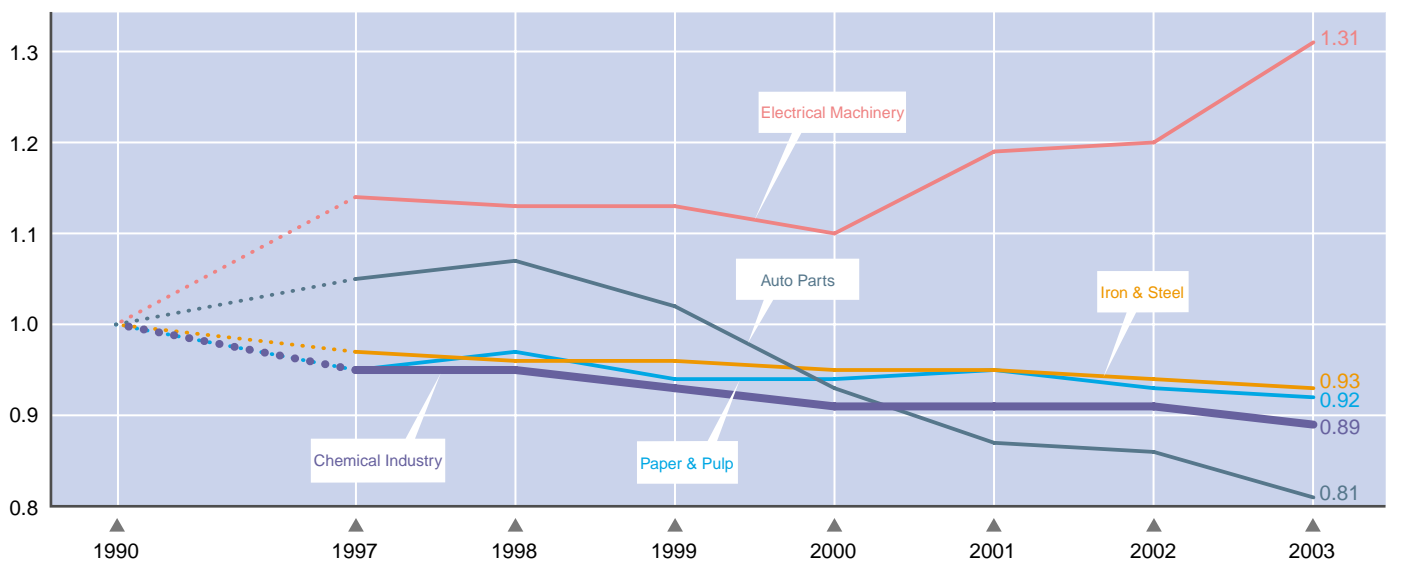
Japan uses the least energy per GDP of all advanced countries.

■ World's primary energy consumption per GDP [tons in crude oil equivalent / 1995 price, \$ million]



(Source) The Energy Conservation Center, Japan

■ Energy consumption per unit of major industries in Japan [1990=1.0]



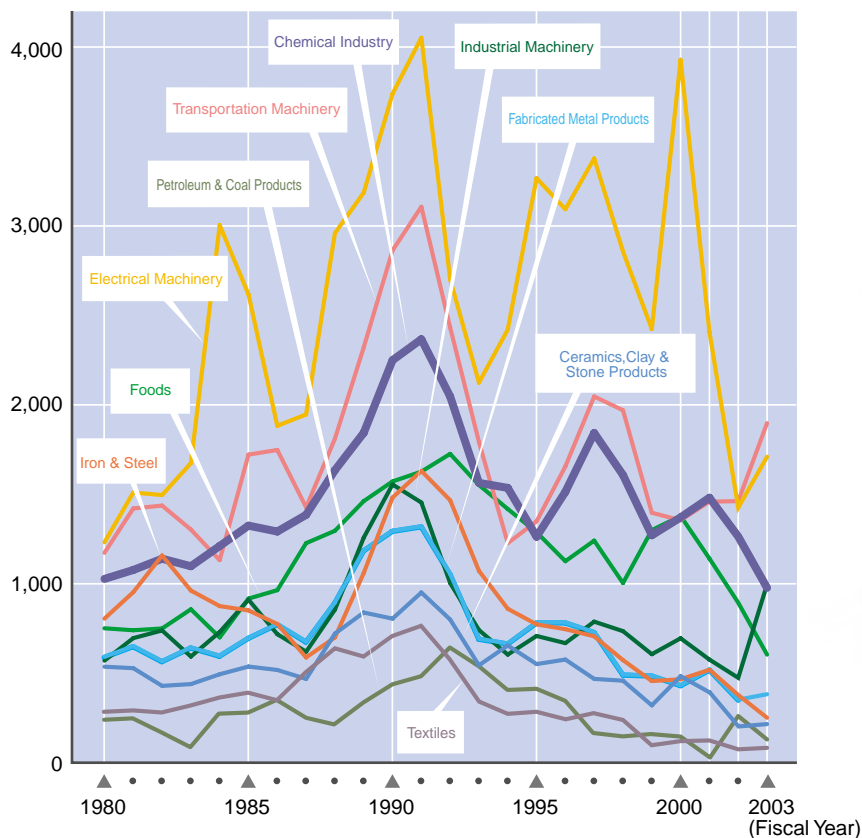
(Source) Nippon Keidanren [Results of the Fiscal 2004 Follow-up to the Keidanren Voluntary Action Plan on the Environment-Section on Global Warming Measures (Summary)]

7 Chemical Industry Ranks High in Plant Investment



Plant investment by the chemical industry accounted for 10% of all manufacturing industries.

■ Trend of plant investment by industry [¥ billion]



■ Trend of plant investment by industry [¥ billion]

Fiscal Year	Every 5th year					Recent three years			
	1980	1985	1990	1995	2000	2001	2002	2003	
Chemical Industry	1,024	1,322	2,247	1,260	1,368	1,478	1,261	985	10.2%
Foods	748	914	1,569	1,285	1,376	1,138	891	604	6.2
Textiles	273	391	710	275	113	120	69	83	0.9
Petroleum & Coal Products	239	280	438	413	146	29	262	132	1.4
Ceramics, Clay & Stone Products	533	534	802	548	480	390	199	218	2.3
Iron & Steel	802	848	1,479	770	463	516	375	274	2.8
Fabricated Metal Products	588	695	1,293	781	430	517	349	383	4.0
Industrial Machinery	567	908	1,552	705	692	573	471	998	10.3
Electrical Machinery	1,229	2,615	3,737	3,265	3,927	2,406	1,423	1,710	17.7
Transportation Machinery	1,170	1,719	2,861	1,346	1,352	1,456	1,459	1,845	19.1
Others	2,112	2,855	4,795	3,200	2,891	2,668	2,280	2,452	25.3
Manufacturing Industries	9,286	13,082	21,483	13,849	13,238	11,292	9,039	9,684	100.0

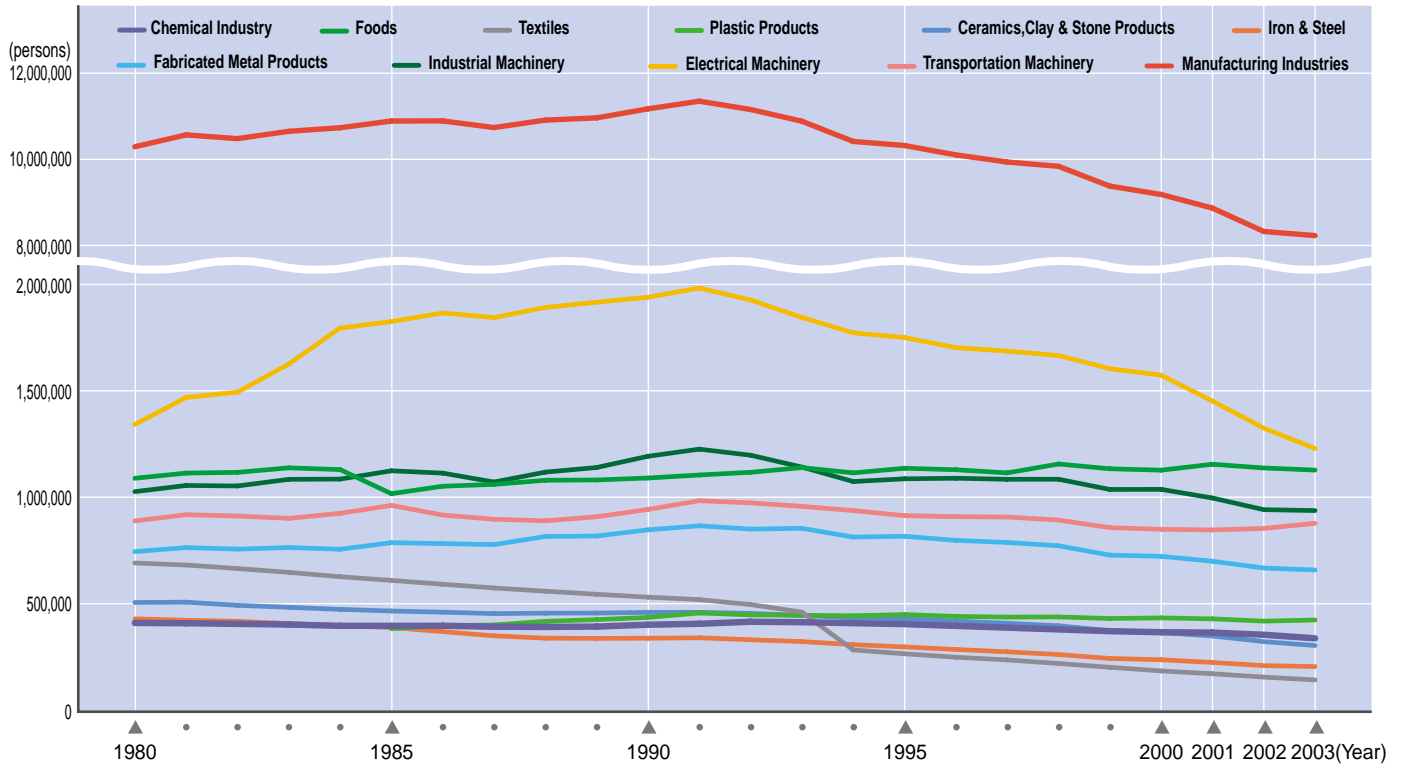
(Source) Ministry of Finance [Financial Statements Statistics of Corporations by Industry]

8

340,000 Workers Are Employed

The number of employees in the chemical industry accounted for 4.2% in entire manufacturing industry.

■ Changes in the number of employees by industry [Persons]



■ Changes in the number of employees by industry [Persons]

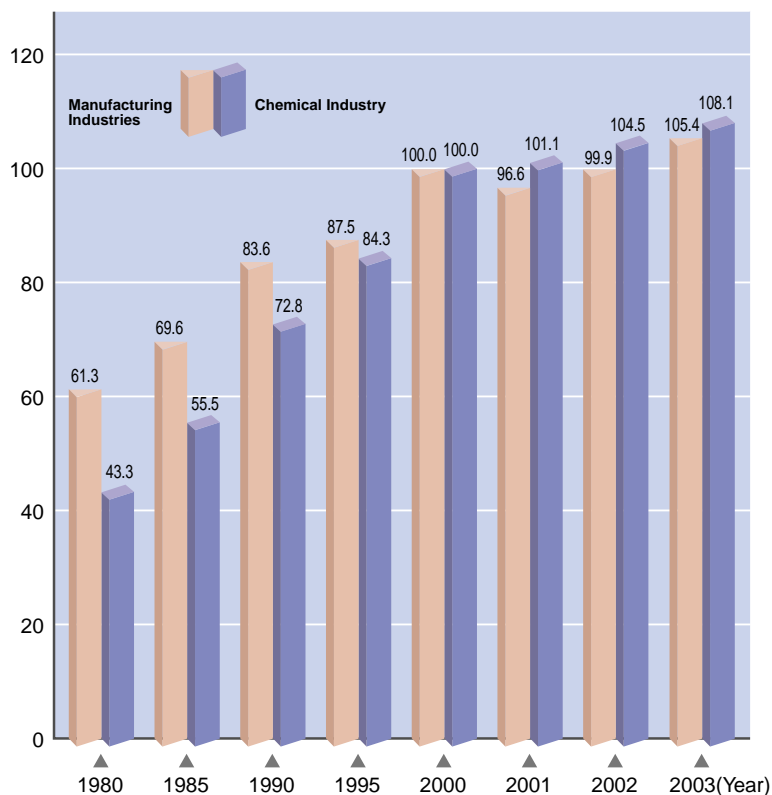
Industry	Year	Every 5th year				Recent three years				
		1980	1985	1990	1995	2000	2001	2002	2003	
Chemical Industry		409,338	395,748	401,076	392,109	365,953	364,068	353,980	344,889	4.2%
Foods		1,089,035	1,016,731	1,090,403	1,136,236	1,127,177	1,155,025	1,137,521	1,127,507	13.7
Textiles		691,018	609,462	530,736	264,528	184,004	170,812	155,071	149,214	1.8
Plastic Products		—	382,247	435,523	448,939	433,177	428,645	417,945	430,784	5.2
Ceramics, Clay & Stone Products		505,585	465,483	459,040	429,023	363,997	348,286	321,735	310,950	3.8
Iron & Steel		428,957	388,357	337,811	296,824	236,525	223,817	209,087	207,214	2.5
Fabricated Metal Products		744,546	786,604	846,915	816,694	722,425	699,422	667,367	658,229	8.0
Industrial Machinery		1,026,377	1,124,229	1,192,406	1,086,575	1,037,079	996,373	941,689	937,392	11.4
Electrical Machinery		1,341,722	1,825,314	1,939,729	1,750,103	1,573,683	1,451,804	1,326,340	1,299,122	15.8
Transportation Machinery		888,840	961,590	942,795	913,535	849,517	846,331	853,472	877,452	10.7
Others		3,166,500	2,934,184	2,996,395	2,786,017	2,290,296	2,181,637	1,939,382	1,885,397	22.9
Manufacturing Industries		10,291,918	10,889,949	11,172,829	10,320,583	9,183,833	8,866,220	8,323,589	8,228,150	100.0

(Source) Ministry of Economy, Trade and Industry [Census of Manufactures]

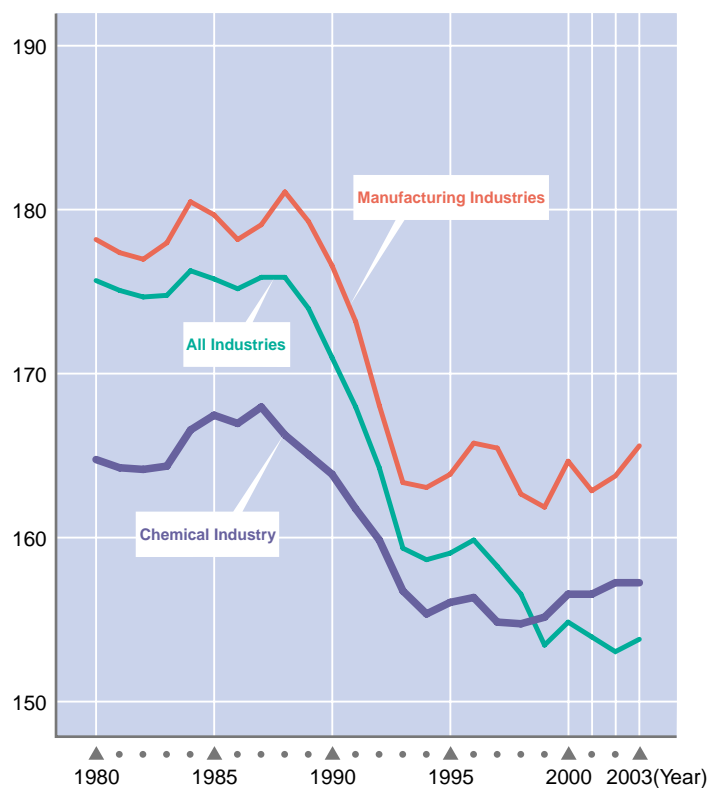
(Note) Statistics of facilities with more than four employees

9 Labor Productivity / Working Hours

■ Indices of physical labor productivity [2000=100]



■ Working hours (monthly average of total net working hours) [hours]



■ Indices of physical labor productivity [2000=100]

Year	Industry	Manufacturing Industries		Chemical Industry	
		Indices	Increase rate %	Indices	Increase rate %
Every 5th year	1980	61.3	3.5	43.3	△0.2
	1985	69.6	2.8	55.5	3.5
	1990	83.6	2.7	72.8	4.6
	1995	87.5	4.4	84.3	8.1
	2000	100.0	6.3	100.0	2.6
Recent three years	2001	96.6	△3.4	101.1	1.1
	2002	99.9	3.4	104.5	3.4
	2003	105.4	5.5	108.1	3.4

(Source) Japan Productivity Center for Socio-Economic Development

■ Working hours (monthly average of total net working hours) [hours]

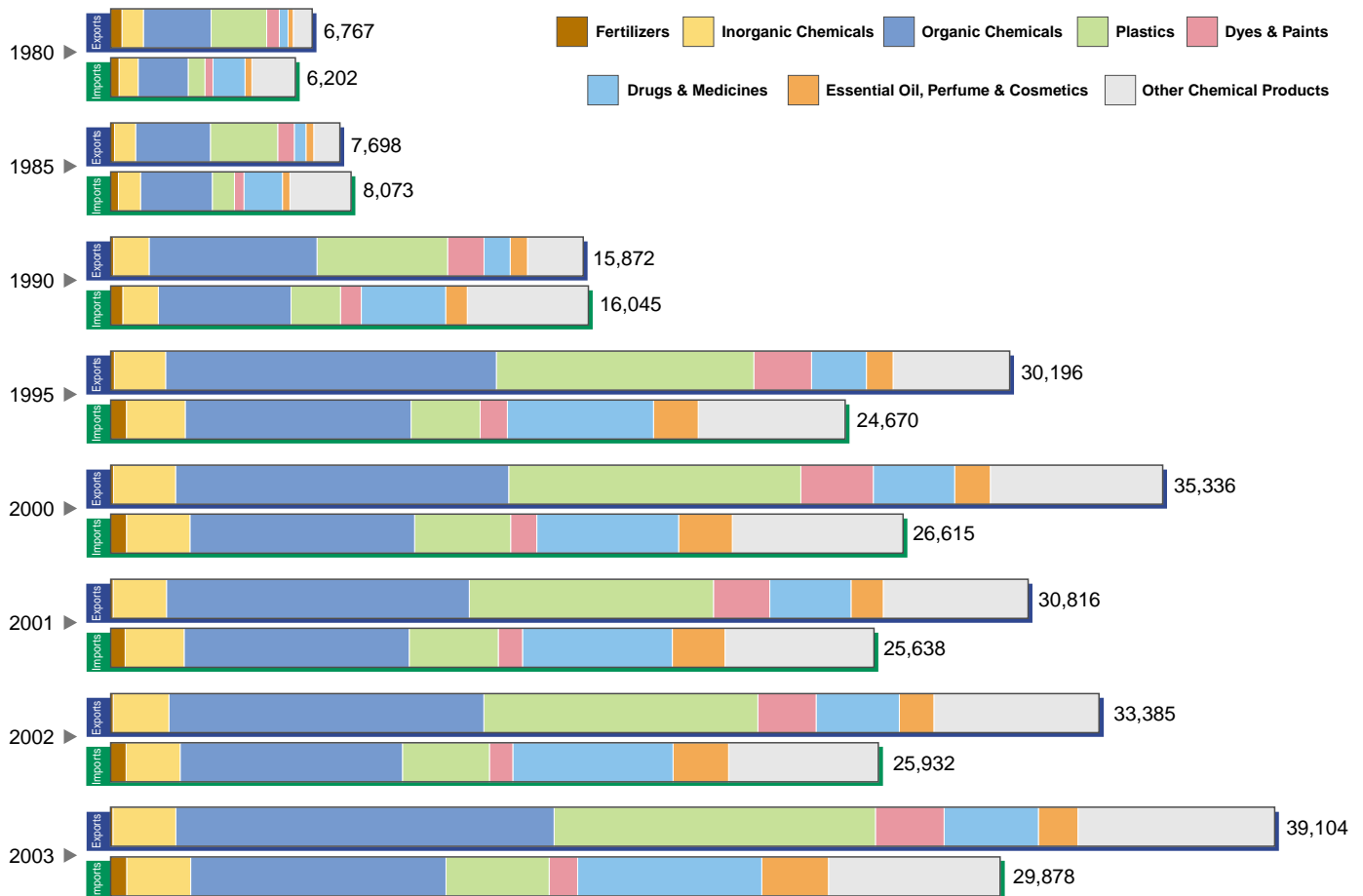
Year	Industry	All Industries	Manufacturing Industries	Chemical Industry
		1980	175.7	178.2
Every 5th year	1985	175.8	179.7	167.5
	1990	171.0	176.6	163.9
	1995	159.1	163.9	156.1
	2000	154.9	164.7	156.6
	Recent three years	2001	154.0	162.9
2002		153.1	163.8	157.3
2003		153.8	165.6	157.3

(Source) Ministry of Health, Labour and Welfare [Monthly Labor Survey]

10 Trade

The trade surplus amounted to \$9.2 billion in 2003, the 13th consecutive year of surpluses.

Exports and imports of chemical products [\$ million]

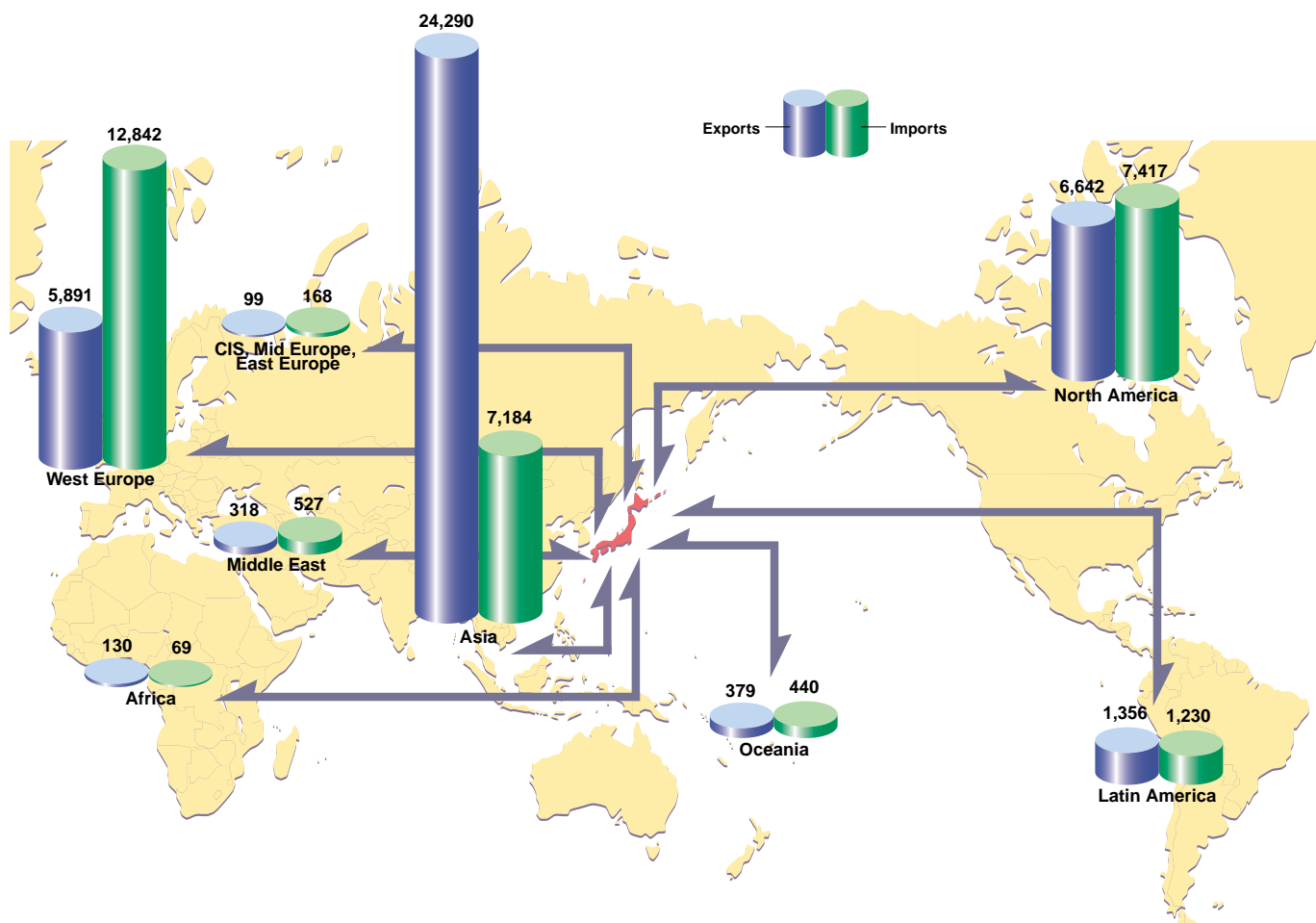


Exports and imports of chemical products [\$ million]

Exports									Products	Imports								
Every 5th year					Recent three years					Every 5th year					Recent three years			
1980	1985	1990	1995	2000	2001	2002	2003	2003		1980	1985	1990	1995	2000	2001	2002	2003	2003
377	127	101	122	93	81	84	86	0.2%	Fertilizers	279	258	405	527	529	484	523	530	1.8%
719	708	1,188	1,720	2,084	1,792	1,882	2,128	5.4	Inorganic Chemicals	642	742	1,194	1,974	2,131	1,981	1,834	2,164	7.2
2,276	2,512	5,640	11,110	11,191	10,172	10,638	12,703	32.5	Organic Chemicals	1,679	2,411	4,457	7,587	7,546	7,561	7,425	8,568	28.7
1,867	2,261	4,386	8,649	9,810	8,201	9,257	10,812	27.6	Plastics	563	744	1,660	2,321	3,226	2,991	2,951	3,451	11.6
425	558	1,224	1,938	2,436	1,891	1,968	2,325	5.9	Dyes & Paints	272	319	700	914	880	815	794	944	3.2
295	391	879	1,843	2,733	2,728	2,812	3,180	8.1	Drugs & Medicines	1,074	1,292	2,834	4,908	4,764	5,033	5,438	6,195	20.7
174	263	579	897	1,198	1,084	1,167	1,326	3.4	Essential Oil, Perfume & Cosmetics	231	252	725	1,502	1,803	1,770	1,884	2,231	7.5
636	879	1,876	3,917	5,790	4,867	5,578	6,543	16.7	Other Chemical Products	1,462	2,054	4,069	4,937	5,736	5,004	5,083	5,795	19.4
6,767	7,698	15,872	30,196	35,336	30,816	33,385	39,104	100.0	Total Chemical Products	6,202	8,073	16,045	24,670	26,615	25,638	25,932	29,878	100.0

(Source) Ministry of Economy, Trade and Industry [White Paper on International Economy and Trade]

■ Exports and imports of chemical products in 2003 by region [\$ million]



■ Exports and imports of chemical products in 2003 by region [\$ million]

Exports									Region	Imports								
Every 5th year					Recent three years					Every 5th year					Recent three years			
1980	1985	1990	1995	2000	2001	2002	2003	2003		1980	1985	1990	1995	2000	2001	2002	2003	2003
3,024	3,161	8,641	18,376	21,123	17,831	20,178	24,290	62.1%	Asia	574	665	2,425	4,171	6,013	5,800	5,918	7,184	24.0%
257	169	283	243	264	247	275	318	0.8	Middle East	28	153	602	611	490	457	460	527	1.8
881	1,125	3,183	5,226	5,462	5,249	5,160	5,891	15.1	West Europe	2,081	2,651	6,510	10,814	11,219	11,012	11,100	12,842	43.0
845	1,532	2,605	4,945	6,563	5,715	5,969	6,642	17.0	North America	2,730	3,667	5,500	7,511	7,630	6,955	6,765	7,417	24.8
272	219	282	703	1,302	1,189	1,246	1,356	3.5	Latin America	194	347	584	839	647	807	1,113	1,230	4.1
158	114	138	152	151	130	139	130	0.3	Africa	67	70	69	85	50	46	40	69	0.2
302	286	384	480	393	383	346	379	1.0	Oceania	240	99	202	481	430	421	395	440	1.5
1,029	1,091	357	70	78	74	71	99	0.3	CIS, Mid Europe, East Europe	288	420	153	157	136	141	141	168	0.6
6,767	7,698	15,872	30,196	35,336	30,816	33,385	39,104	100.0	Total Chemical Products	6,202	8,073	16,045	24,670	26,615	25,638	25,932	29,878	100.0

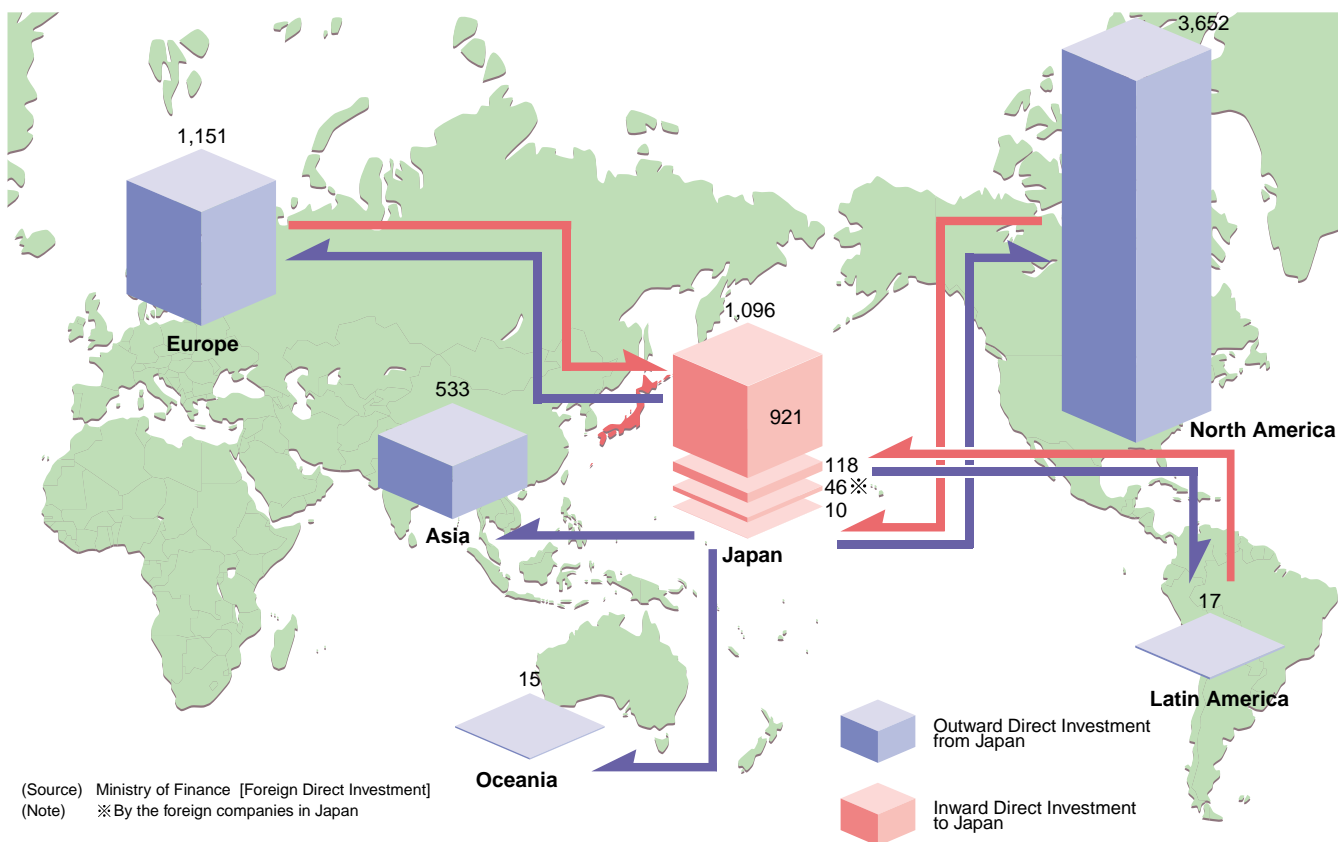
(Source) Ministry of Economy, Trade and Industry [White Paper on International Economy and Trade]

11

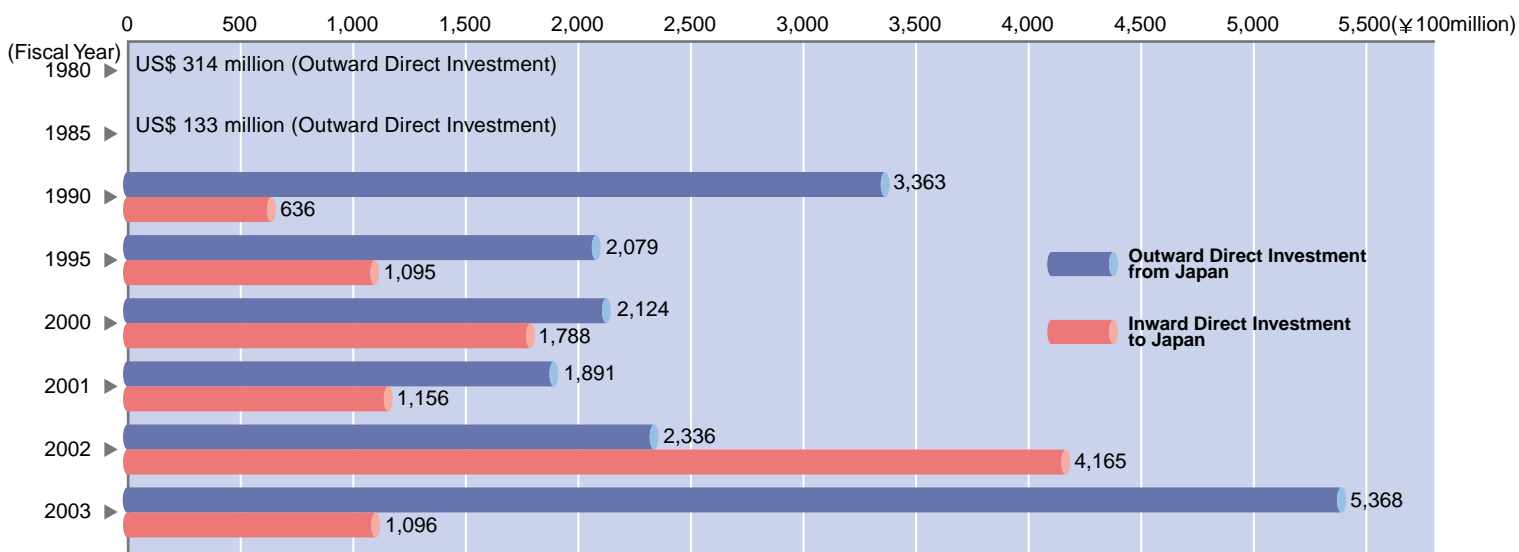
Outward Direct Investment Amounts to Yen 540 Billion, While Inward Direct Investment Amounts to Yen 110 Billion

Outward direct investment increased substantially in FY2003 because of mergers and acquisitions, etc.

Outward direct investment of the Japanese chemical industry and inward direct investment to the chemical industry in Japan in FY 2003 by region [¥100 million]



Actual outward direct investment of the Japanese chemical industry and inward direct investment to the chemical industry in Japan [¥100million]

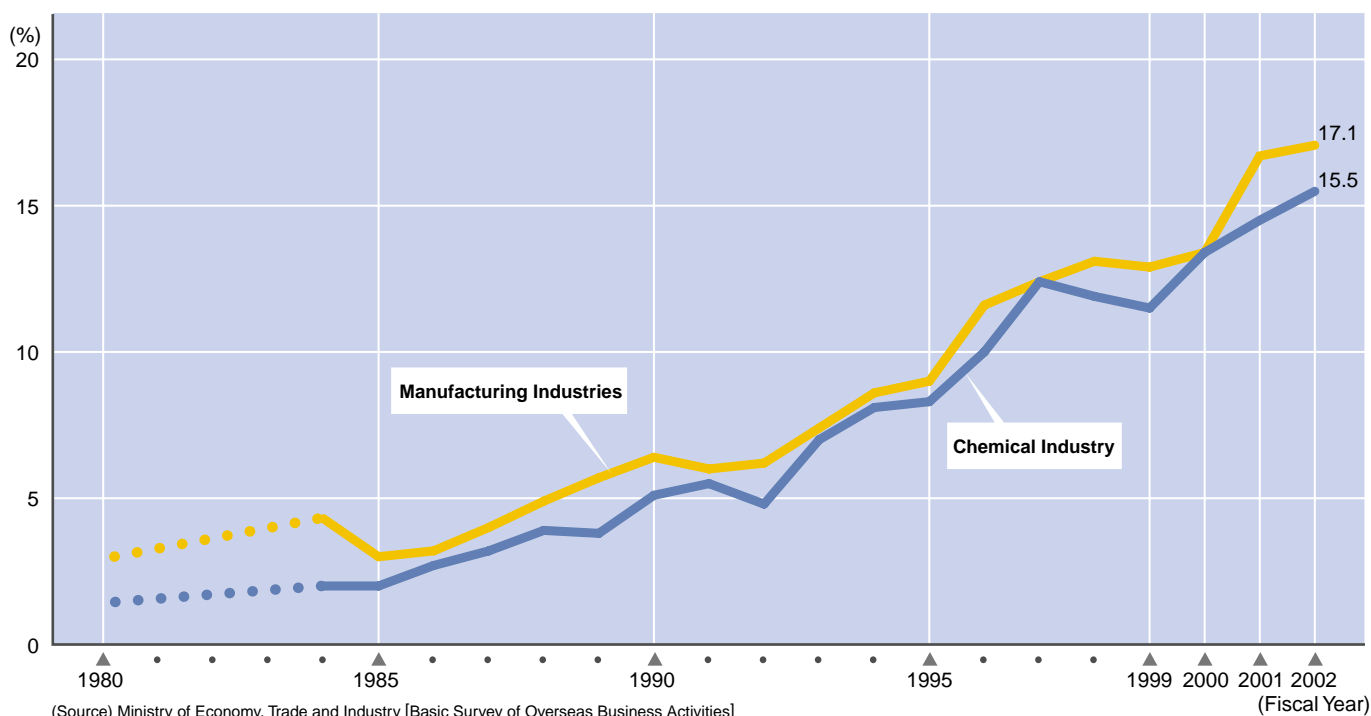


(Source) Ministry of Finance [Foreign Direct Investment]

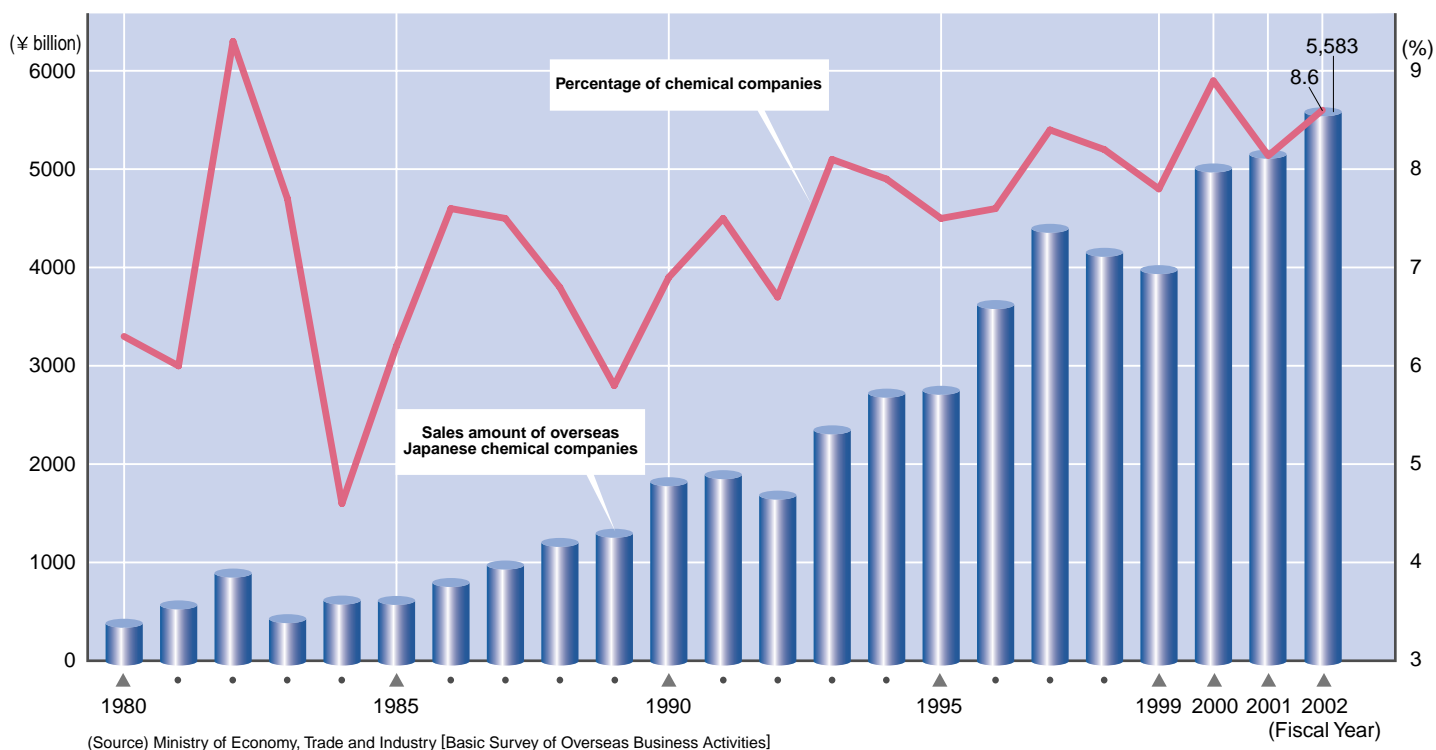
12 Overseas Business Activities

Overseas production of the Japanese chemical industry has increased to over 15%.

■ Trend of overseas production of Japanese companies [%]



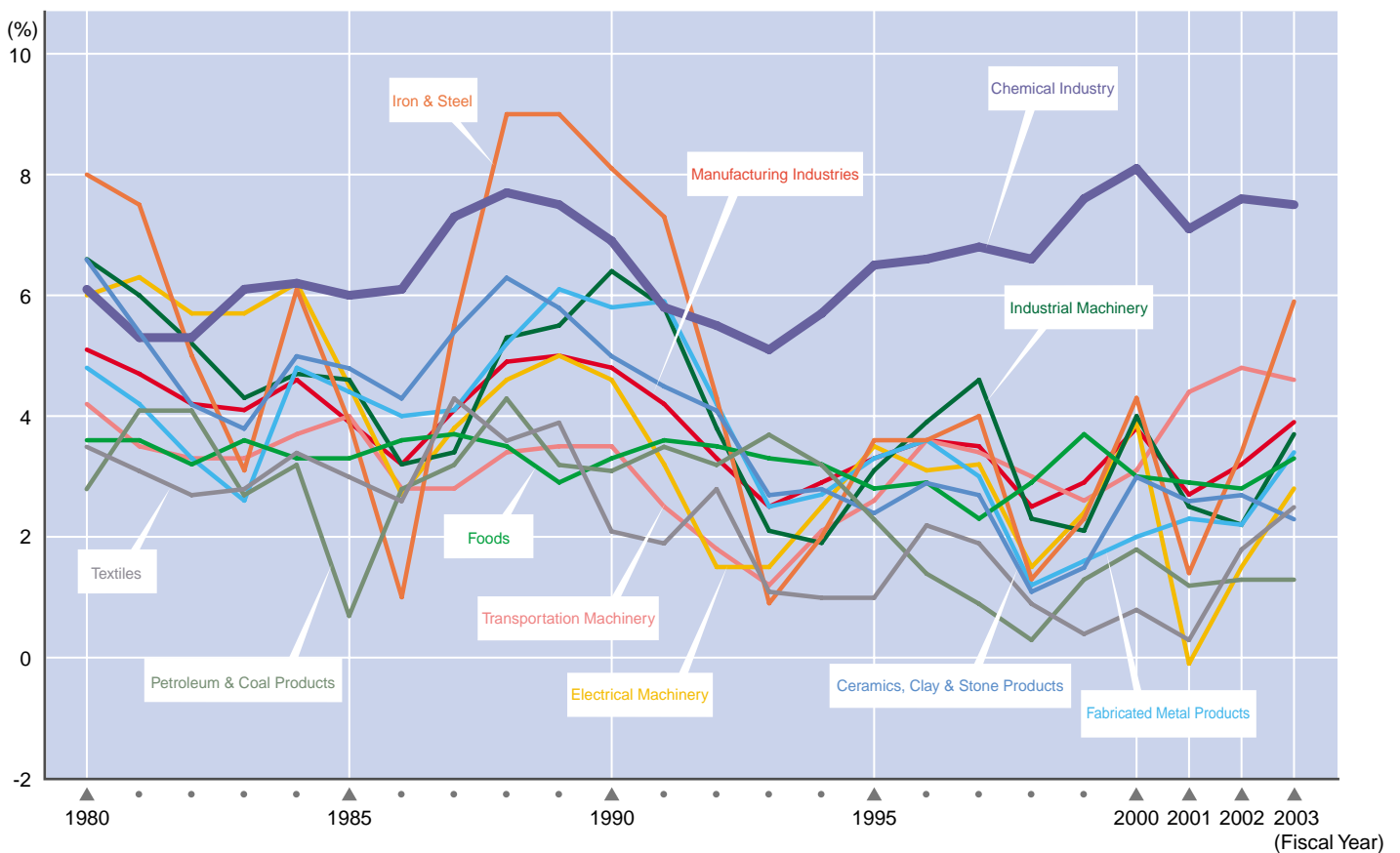
■ Sales of Japanese chemical companies based overseas and its percentage of all overseas Japanese manufacturing companies' sales [¥ billion, %]



13 Operating Profit Ratio

Operating profit ratio to sales remained high at 7.5%.

■ Trend of ratio of operating profits to sales by industry [%]



■ Trend of ratio of operating profits to sales by industry [%]

Fiscal Year	Every 5th year					Recent three years		
	1980	1985	1990	1995	2000	2001	2002	2003
Chemical Industry	6.1	6.0	6.9	6.5	8.1	7.1	7.6	7.5
Foods	3.6	3.3	3.3	2.8	3.0	2.9	2.8	3.3
Textiles	3.5	3.0	2.1	1.0	0.8	0.3	1.8	2.5
Petroleum & Coal Products	2.8	0.7	3.1	2.3	1.8	1.2	1.3	1.3
Ceramics, Clay & Stone Products	6.6	4.8	5.0	2.4	3.0	2.6	2.7	2.3
Iron & Steel	8.0	3.9	8.1	3.6	4.3	1.4	3.4	5.9
Fabricated Metal Products	4.8	4.4	5.8	3.3	2.0	2.3	2.2	3.4
Industrial Machinery	6.6	4.6	6.4	3.1	4.0	2.5	2.2	3.7
Electrical Machinery	6.0	4.5	4.6	3.5	3.9	△0.1	1.5	2.8
Transportation Machinery	4.2	4.0	3.5	2.6	3.1	4.4	4.8	4.6
Manufacturing Industries	5.1	3.9	4.8	3.3	3.8	2.7	3.2	3.9

(Source) Ministry of Finance [Financial Statements Statistics of Corporations by Industry]

Summary of Major Indices

CHEMICAL
INDUSTRY
OF JAPAN 2005



Major indices in 2003

	Number of Facilities	Number of Employees (Persons)	Total Shipment (Yen billion)	Amount of Value Added (Yen billion)	Plant Investment (Yen billion)	R&D Expenditures (Yen billion)
Chemical Industry	5,028	344,889	23,327	11,222	985	1,774
Foods	36,150	1,127,507	22,762	8,709	604	327
Textiles	9,185	149,214	2,394	1,055	83	37
Plastic Products	17,214	430,784	10,079	4,123	na	123
Ceramics, Clay & Stone Products	15,151	310,950	7,415	3,732	218	123
Iron & Steel	4,660	207,214	11,903	4,263	274	128
Fabricated Metal Products	37,606	658,229	13,243	5,980	383	85
Industrial Machinery	35,460	937,392	26,068	10,385	998	917
Electrical Machinery	22,141	1,299,122	48,014	15,733	1,710	989
Transportation Machinery	12,721	877,452	49,887	14,269	1,845	1,846
Others	98,595	1,885,397	58,644	19,187	2,584	3,682
Total Manufacturing	293,911	8,228,150	273,734	98,658	9,684	10,032

Ratio of chemical industry to all manufacturing industries [%]

	Number of Facilities	Number of Employees	Total Shipment	Amount of Value Added	Plant Investment	R&D Expenditures
Chemical Industry	1.7	4.2	8.5	11.4	10.2	17.7
Foods	12.3	13.7	8.3	8.8	6.2	3.3
Textiles	3.1	1.8	0.9	1.1	0.9	0.4
Plastic Products	5.9	5.2	3.7	4.2	na	1.2
Ceramics, Clay & Stone Products	5.2	3.8	2.7	3.8	2.3	1.2
Iron & Steel	1.6	2.5	4.3	4.3	2.8	1.3
Fabricated Metal Products	12.8	8.0	4.8	6.1	4.0	0.9
Industrial Machinery	12.1	11.4	9.5	10.5	10.3	9.1
Electrical Machinery	7.5	15.8	17.5	15.9	17.7	9.9
Transportation Machinery	4.3	10.7	18.2	14.5	19.1	18.4
Others	33.5	22.9	21.4	19.4	26.7	36.7
Total Manufacturing	100.0	100.0	100.0	100.0	100.0	100.0