PROBLEMS OF TRADE IN CERTAIN NATURAL RESOURCE PRODUCTS

Background Study on Zinc and Zinc Products

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Table of Contents

List of Tables

List of Charts

INTRODUCTION

The present study on zinc forms a part of the series of factual background papers prepared by the GATT secretariat on non-ferrous metals. These studies were undertaken in accordance with the Decision taken by Ministers at the Thirty-Eighth Session of the CONTRACTING PARTIES in November 1982 in relation to Problems of Trade in Certain Natural Resource-Based Products. The Decision called for the examination of problems relating to trade in certain natural resource-based products including in their semi-processed and processed forms, falling under the competence of the General Agreement relating to tariffs, non-tariff measures and other factors affecting trade with a view to recommending possible solutions.

The study provides information on zinc and zinc products covering the following CCCN positions: ex 26.01, ex 26.03, 28.19, ex 28.30, ex 28.35, 79.01, 79.02, 79.03, 79.04 and 79.06. Section I gives some background information on the salient features of the zinc industry. Section II briefly reviews developments with regard to world zinc production, consumption and prices since 1960. Section III presents information on world trade in zinc concentrates and refined zinc for the period from 1975 to 1986 as well as the direction of trade of these products by main exporting and importing countries in 1986. Section IV provides detailed information on trade flows on a tariff line basis together with tariff treatment in sixteen developed country markets and some developing countries. It also provides information on non-tariff measures affecting zinc and zinc products. Section V describes activities in some international organizations, notably the International Lead and Zinc Study Group.

SUMMARY

1. Zinc and products containing zinc are used in a wide range of industrial sectors, although its main markets remain in the building and construction industry, automobile and commercial vehicles, domestic consumer goods and chemicals. World zinc consumption has, therefore tended to vary from year to year in response to levels of general industrial activity in developed countries, which remain the principal consumers of zinc. In many of its uses, zinc continues to face strong competition from alternative materials, such as aluminium and plastics. However, the development of improved production processes such as thin wall die-casting and new galvanizing processes and of new zinc alloys in order to meet changing requirements of consumers and exploit new uses for zinc, have succeeded in maintaining and expanding total consumption of zinc.

2. At present, most mine production of zinc is in developed countries, notably Canada, the EEC (namely Spain and Ireland), Australia and the USSR. Peru and Mexico are the first and second largest producers among developing countries. Expansions of mine production are expected during the remainder of the 1980s and early 1990s in these countries and also in a number of other developed and developing countries, including India and the United States. Refined zinc production also takes place mostly in developed countries and in the USSR. However, smelter capacity of developing countries has been increasing and in 1986, about 63 per cent of developing country mine production was smelted domestically. The share of these countries in world smelter production in 1986 was 15 per cent compared to 7.4 per cent in 1960. During recent years, new zinc refineries have been constructed in several developing countries (Brazil, the Republic of Korea, Mexico, Peru and Thailand). In contrast, in developed countries only one major new refinery was developed (in Italy) and a small number of existing plants were expanded. Although some further increases in smelting and refining capacities seem probable in developing countries such as India and the Republic of Korea, it appears unlikely that these will affect the present pattern of world metal production to any significant extent. During recent years, rising energy costs and low prices for zinc have led to the closing of a number of older plants in Europe and the United States. Falling demand during the recession period of 1980-1982 also led to some temporary closures of mines and refineries, mainly in North America, but at many of them output has now been resumed.

3. The slowing down in the rate of growth in the world economy following the first energy crisis of 1973-74 is reflected in the low rate of expansion of zinc consumption during the late 1970's, in common with other major non-ferrous metals. The subsequent recessionary period of 1980-82

reduced zinc consumption in developed countries and brought to a temporary halt the growth of consumption in developing countries. At the same time, competition from a steadily widening range of alternative materials and the trend towards reductions in the weight of zinc used in many manufactured products or components, notably in the automobile industry, in the interests of weight saving and energy conservation, has restricted the rate of growth in zinc consumption in developed countries compared with that achieved during the 1960's and early 1970's. In recent years, most of the secular growth in consumption has occurred in developing countries. Prospects for continued rapid growth in the developing countries remain good but as their industrialization proceeds, these countries can be expected to adopt current technology without passing through the same pattern of heavy metal use evident in the historical industrial development of Europe, North America and Japan. Zinc price levels will continue to reflect trends in world supplies and demand. High price levels and volatile movements in prices may influence the consumption of zinc, particularly if competing materials are lower in price. A lengthy period of low prices, however, discourages the development of new mines and smelters, therefore prejudicing longer term availability of adequate concentrate and metal supplies.

4. On the basis of existing market conditions, and commercial and trade policies, there is little likelihood of significant change in the present pattern and structure of world trade in zinc. Countries, such as Canada, Australia and Peru will remain major exporters of zinc concentrates to Europe and Japan, where smelters will remain heavily dependant on imported supplies. For refined metal, imports by the increasing number of developing countries now consuming zinc in substantial quantities are likely to account for a rising proportion of total trade. However, some of the larger European countries and the United States can be expected to remain major importers from countries supplying primary zinc such as Australia, Canada, Finland, Mexico, Norway, Peru and Zaire. The extent to which vertical integration of mining and smelting will increase in developing countries and the effect this may have in the longer term on world trade patterns is difficult to assess. It is clear that in countries such as Brazil, the People's Republic of China and India, where metal consumption exceeds domestic production, the expansion of mine and smelter output is designed to achieve self-sufficiency in metal supplies. The total volume of trade may continue to increase thereafter in response to rising demand in other developing countries.

SECTION I

MAIN FEATURES OF THE ZINC INDUSTRY

Properties of zinc[1] and zinc reserves

5. Zinc stands at the third place in world consumption of non-ferrous metals[2], surpassed only by aluminium and copper. Zinc was already known in Roman times in combination with copper forming the alloy brass[3], but the individual metal was isolated only in the 18th century. Zinc is a silver-blue metal which on exposure to air becomes greyish owing to the formation of a film of oxide which protects the metal from further oxidation. High purity zinc is ductile and can be rolled into sheets or cast into shapes.

6. At present, about 90 per cent of zinc is extracted from zinc blende (or sphalerite - ZnS), which is mainly found in association with galena (Pbs), the sulphide of lead, in lead - zinc deposits, and to a lesser extent in association with copper or other base metal sulphides. Sphalerite ores usually contain iron, as well as cadmium, indium, germanium, gallium, and silver. Some sphalerite ore deposits also contain recoverable quantities of mercury and thallium.

7. Table 1 indicates that world reserves[4] of zinc were estimated at 146 million metric tons[5] in 1986. The most important zinc deposits are located in Canada (17.1 per cent of total reserves), the United States (15.1 per cent), Australia (8.9 per cent), the USSR (6.9 per cent), Peru (4.8 per cent). South Africa (including Namibia), Mexico and Zaire (4.1 per cent each), Spain, China, P.R., India, Korea, D.P.R. and Ireland (each accounting for 3.4 per cent), Japan (2.7 per cent), Poland, Portugal, Iran and Brazil (1.4 per cent each). Zinc or lead and zinc reserves are also found in Bolivia, Honduras, Burma, Morocco, Tunisia, Algeria, Zambia, Bulgaria, Romania, Italy, Austria, Norway, Sweden, France, Greece and Germany, F.R.

Zinc processing

8. Commercial zinc metal production started only at the beginning of the 19th century, after the introduction of indirectly fired reduction and suitable condensation vessels. As zinc oxide is not reduced by carbon below the boiling point of the metal, the conventional equipment for production of other major metals could not be used.

9. Zinc is mined by open-pit and underground mining. After mining, the ore is crushed, milled and then concentrated. Froth flotation has become the major concentration process. The zinc oxide resulting from roasting

TABLE 1

WORLD ZINC RESERVES
(1986 estimates)

	Million tons Zinc content	% of total
World	146	100.0
Developing countries	35	24.0
Brazil	2	1.4
India	5	3.4
Iran	2	1.4
Mexico	6	4.1
Peru	7	8.4
Yugoslavia	2	1.4
Zaire	6	4.1
Other	5	3.4
Developed countries	90	61.6
Australia	13	8.9
Canada	25	17.1
Ireland	5	3.4
Japan	4	2.7
Portugal	2	1.4
South Africa (inc. Namibia)	6	4.1
Spain	5	3.4
United States	22	15.1
Other	8	5.5
Centrally-planned economies	21	14.4
China, P.R.	5	3.4
Poland	2	1.4
USSR	10	6.9
Korea, D.P.R.	4	3.4

Source: US Bureau of Mines, Department of the Interior, "Mineral Yearbook, 1986", Zinc Chapter

can be reduced to metal either by the pyrometallurgical or the hydrometallurgical processes. The choice of roasting system depends on subsequent use. Sinter roasting is employed for further processing in the Imperial Smelting shaft furnace and vertical retort plants, while fluidized bed roasting is preliminary to zinc electrolysis. Pyrometallurgical zinc extraction is largely accomplished by the Imperial Smelting Process (ISP), which is suitable for the processing of lead-zinc mixed ores and lead-zinc containing secondary materials. Zinc extraction by horizontal and vertical retort methods have largely been phased-out because they were laborious, costly and energy inefficient. The hydrometallurgical process (by electrolysis), in which zinc is deposited from highly purified zinc sulphate solutions, has become the most important zinc recovery process. In the early 1960s, about 50 per cent of the zinc production was from electrolytic plants with about 42 per cent from horizontal and vertical retorts, and the balance from ISP and electrothermic plants. In the last two decades, many horizontal and vertical retort plants have closed whereas numerous electrolytic and ISP plants have opened. As a result, over 75 per cent of the world zinc production is now produced in electrolytic plants. ISP plants account for over 12 per cent, horizontal and vertical retort and electrothermic plants account for the remainder.[6]

10. Primary zinc is a term used for zinc produced from newly mined ores. Most primary zinc is produced by electrolysis or by distillation (electrolytic or distilled zinc). Secondary zinc produced from scrap or residues is classified into redistilled or remelted zinc depending upon the recovery process. Refined zinc produced by distillation uses primary and secondary materials. Commercially, zinc is traded in slabs cast in various shapes and sizes.[7] Zinc die-casting alloys[8] are zinc-base alloys with aluminium as the major alloying element. Brasses are copper-base alloys in which the zinc content ranges from 5 to 40 per cent. Some bronzes, whose principal alloying materials are copper and tin, also contain up to 4.5 per cent zinc. Zinc dust, achieves a purity of between 95 and 99.8 per cent zinc. Zinc oxide, produced from ore, secondary materials or metal is used in pigments and rubber.

11. Unlike secondary production of copper, lead or aluminium, secondary production of zinc - i.e. zinc recovered from galvanized steel scrap, zinc-die-casting and residue materials, is a comparatively low proportion of total zinc supply. The bulk of zinc scrap, including zinc contained in brass scrap, is recycled by remelting, with probably no more than 30 per cent recovered in the form of refined zinc metal. The recovery of zinc metal from secondary materials is limited by the widespread use of the electrolytic refining process, although this factor has become partly overcome by the establishment of special plants treating secondary materials only and by the zinc-lead blast furnace. Excluding brass, most secondary zinc materials are processed to make chemicals and dust. It is

expected that the volume of secondary materials used to produce refined zinc metal will rise slowly during coming years. Though environmental pressures to secure increased recycling of scrap materials such as die-castings from automobiles and household appliances and low grade wastes and residues, are likely to intensify, technical limitations on the volume and types of materials which can be treated and the price levels necessary to maintain the viability of recovery operations will remain important considerations.[9] On the other hand, the costs of hazardous disposal may also be a factor in determining whether a waste is reprocessed.

Industrial application of zinc

12. Zinc metal is used in the following four main areas: galvanizing, (the coating of steel to protect it from corrosion), brass and bronze products, die-casting and rolled zinc. In addition to metallic applications, significant quantities of zinc are consumed as pigments or other chemicals. The major use of zinc is for corrosion protection of steel either as continuous coils of sheet or wire or as tube or fabricated products. Most coatings are applied by hot-dip galvanizing, but electro-plating of steel sheet is becoming important for the vehicle industry.[10] Brass is used for decorative products as well as for functional uses in bathrooms and central heating (piping). Zinc die-castings are widely used in the automotive industry, either for functional parts (carburettors, pumps, etc.) or for fittings and trimmings. The use of zinc die-castings is also important in the manufacture of household appliances and office machinery, electrical goods and hardware. Rolled zinc is used in building construction for rain-water protection and roof drainage systems, for dry cell battery shells and for coins. Zinc dust is used as a reducing agent in chemical reactions, for paints and precious metal recovery. Zinc oxide is largely used in manufacture of rubber tyres and as a pigment for both indoor and outdoor applications. It is also used in ceramics, cosmetics, pharmaceuticals and floor coverings.

Substitutes for zinc

13. In many of the uses mentioned above, zinc can be replaced by other metals or materials. Substitution for zinc depends on the price and availability of substitutes as well as their technical suitability. Aluminium, magnesium, and plastics are the major substitutes for zinc in die-casting applications.[11] Plastic coatings, paints and special zinc-aluminium coatings[12] can replace zinc in some areas for corrosion protection, and aluminium alloys, stainless steel and plastics can be used in place of brass. Aluminium, magnesium, titanium and zirconium compete with zinc in chemical and pigment applications.

Structure of the zinc industry

14. A large part of the zinc primary industry is vertically and horizontally integrated. In 1986, more than one-half of the world's mine capacity outside the centrally planned economies was held by eight companies either through direct ownership, subsidiaries, or equity sharing. The companies are Noranda Mines Ltd., Cominco Ltd. and Falconbridge Ltd. (Canada), Asarco Inc. and Amax Zinc Co. (the United States), Rio Tinto-Zinc Corporation Ltd. (the United Kingdom), Centromin (Peru) and Société Générale de Belgique (Belgium). In the same year eleven groups and companies responsible for about one-half of world smelting capacity (outside the centrally-planned economies) were the following: Société Générale de Belgique (Belgium), Rio Tinto-Zinc (the United Kingdom), Mitsui Mining and Smelting Co. (Japan)[13], Société des Mines et Fonderie de Zinc de la Vielle Montagne SA (France), Metallgessellschaft Groups (the Federal Republic of Germany), Cominco Ltd. (Canada), Pennaroya Inmetal Group (France), Electrolytic Zinc of Australasia Ltd. (Australia), Canadian Electrolytic Zinc Ltd. (Canada), Preussag AG (the Federal Republic of Germany) and Asturiana de Zinc (Spain).[14] Zinc production in the centrally-planned economies is State-owned. State-owned mining and/or refining companies exist also in some other countries (Société Nationale de Sidérurgie, Algeria, Bleiberger Bergwerks Union AG in Austria, Metamig in Brazil, Outokumpu in Finland, Hindustan Zinc Ltd. in India, Industria Minera Mexico SA in Mexico, Centromin and Minero Peru in Peru, Boliden in Sweden, Gecamines in Zaire, and ZCCM in Zambia).[15]

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[1] Physical properties of zinc:
Symbol: Zn
Density at 20°C g/cm^3: 7.13
Atomic number: 30
Atomic weight: 65.37
Melting point: 419.6°C
Boiling point: 907°C
Electrical conductivity m ohm cm^{-1}: 0.177

[2] According to the criterion of use as industrial materials, the technically most important non-ferrous metals, excluding the precious metals, may be classified as follows:

(a) heavy metals: lead, copper, zinc and tin;
(b) light metals: aluminium ,magnesium and titanium;
(c) steel improving agents (as alloying metals) or special metals (as base metals): chromium, cobalt, manganese, molybdenum, nickel, vanadium and tungsten;
(d) other alloying or special metals: antimony, cerium, hafnium, cadmium, lanthanum, lithium, niobium, mercury, rhenium, silicon, tantalum, bismuth, yttrium and zirconium.

Source: Metallgesellschaft AG: Non-ferrous metals

[3]There is evidence that in both China and India, metallic zinc was produced in quantity prior to the 17th century.

[4]Resources as distinct from reserves are defined as total known deposits regardless of whether or not they can be mined at profit under current economic conditions. Reserves are the proportion of demonstrated resources that are economic to extract given current prices and costs. Large fluctuations in costs and prices, especially the latter, which occur over relatively short periods, may lead to large fluctuations in the level of reserves, particularly for those countries with large marginal deposits.
Source: The United States Bureau of Mines, the United States Geological Survey Resource and Reserve Classification for Minerals

[5]The quantities used throughout this study are metric tons unless otherwise specified.

[6]International Lead and Zinc Study Group: Trends in the Production of Lead and Zinc, April 1983.

[7]Composition of the commercial grades of zinc metal established by the American Society of Testing and Materials (ASTM) is as follows, in per cent:

Grade[a]	Lead max.	Iron max.	Cadmium	Zinc min. (by difference)
Special High Grade[b]	0.003	0.003	0.003	99.990
High Grade	0.03	0.02	0.02	99.90
Prime Western[c]	1.4	0.05	0.20	98.0

[a]When specified for use in the manufacture of rolled zinc or brass, aluminium shall not exceed 0.005 per cent.

[b]Tin in Special High-Grade zinc does not exceed 0.001 per cent.

[c]Aluminium in Prime Western Zinc shall not exceed 0.05 per cent.

[8]On average, zinc die-castings have 94-95 per cent zinc, 3.5 to 4.5 per cent aluminium, and from zero to 1.25 per cent copper. A new series of alloys with additional properties contain between 8 and 27 per cent aluminium.

[9]International Lead and Zinc Study Group: The Market Situation for Zinc, March 1987.

[10]Special High Grade or High Grade zinc are used for the electroplating industry and as the basis for the alloys used to hot-dip galvanized sheet. Prime Western and the former grades (with lead addition) are used for hot-dip galvanizing of tube and fabricated products.

[11]However, technological developments in the use of zinc for galvanizing have maintained its position in the construction and appliance industries and to a lesser extent, in transportation, despite competitive developments in other coatings and in aluminium and plastics. The development of thin wall die-casting and improved zinc alloys and finishing techniques has allowed zinc die-casting to retain many of its applications in the transportation, construction and appliance industries.

[12]A new galvanizing alloy, known as Galfan and composed of 95 per cent zinc and 5 per cent aluminium with some misch metal, has been developed by International Lead Zinc Research Organization (ILZRO) and is competitive with Galvalume (55 per cent aluminium, 43.3 per cent zinc and 1.6 per cent silicon alloy), in some uses. (US Bureau of Mines Mineral Commodity Profiles - Zinc, 1983).

[13]These three largest refining companies control nearly 30 per cent of total refining capacity, but only 15 per cent of mining capacity.

[14]These figures could have changed in view of recent re-organizations and divestments in the zinc industry.

[15]In Yugoslavia, zinc enterprises are so-called social ownership, where workers employed in them have all rights for the exploitation, processing and marketing of the products.

SECTION II

PRODUCTION, CONSUMPTION AND PRICES

Mine production

15. Table 2 indicates that world mine production of zinc doubled in the last twenty-six years, from 3.4 million tons in 1960 to 6.8 million tons in 1986. In 1986, the shares of developed countries, developing countries and centrally-planned economies in world mine production were 51.4 per cent, 23.8 per cent and 24.8 per cent, respectively. Canada ranks first in world zinc mine production, followed by the USSR, the EEC (namely Spain, Ireland and the Federal Republic of Germany), Australia, and Peru, which together accounted for about 61 per cent of world zinc mine production in 1986. Other important mine producing countries are Mexico, Japan, the People's Republic of Korea, Sweden, the United States, the People's Republic of China, Poland, South Africa, Yugoslavia, Brazil, Zaire and Bulgaria.

16. World zinc mine production rose substantially in the 1960s and the early 1970s. In 1973, it exceeded the level of 6 million tons, mainly as a result of mine expansion in Canada and Peru. The peak of zinc mine production of 6.6 million tons was reached in 1977 after the largest European zinc and lead mine was put on stream in Ireland. Subsequently, world mine output fell gradually and in 1981, world zinc mine production amounted to 6.1 million tons, the lowest level since 1974. This downward trend in zinc mine production was caused by slower growth in demand for zinc. Operating problems and declining ore grades in some major mines also contributed to this trend. However, in 1982 zinc mine production recovered and increased by more than 300,000 tons over the previous year as a result of the settlement of labour disputes (notably in Ireland) and important mine expansion in Australia and Canada. In 1983, mine production rose by 300,000 tons compared to 1982, mainly due to higher mine output in Peru, Mexico and Australia, which offset cutbacks experienced by Canada and the United States. In 1984, zinc mine production increased further and in 1985 reached a record level of 6.8 million tons. The major increase in output took place in Canada, Spain, Ireland and Peru, and after the settlement of industrial disputes, in Australia. The fall in world zinc mine production of about 300 thousand tons in 1986 resulted from reductions in several of the main producing countries, namely in Europe, (Germany, F.R., Italy and Ireland), the United States, Japan and Australia. In contrast, Canada's mine production rose by 120 thousand tons, following the reopening of the Faro mine in the middle of 1986. Inreases in production were also estimated to have taken place in China, P.R., and Korea, P.D.R. Zinc mine production of market economy countries was about 270 thousand tons higher in 1987 compared with 1986. This increase reflects the substantial increase in output in Canada (16 per cent), Australia (8 per cent) and

TABLE 2

WORLD MINE PRODUCTION OF ZINC, 1960-1986

	Thousand metric tons (metal content)											Percentage of world production										
	1960	1965	1970	1973	1975	1979	1980	1983	1984	1985	1986	1960	1965	1970	1973	1975	1979	1980	1983	1984	1985	1986
World	3,384	4,351	5,589	6,075	6,171	6,294	6,140	6,466	6,708	6,830	6,803	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developing countries	846	998	1,173	1,372	1,347	1,369	1,319	1,475	1,564	1,626	1,622	25.0	22.9	20.9	22.5	21.8	21.7	21.5	22.8	23.3	23.8	23.8
of which:																						
Algeria	39	37	17	13	12	3	8	11	12	13	14	1.2	0.8	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2
Argentina	35	30	39	41	37	37	33	37	35	36	39	1.0	0.7	0.7	0.7	0.6	0.6	0.5	0.6	0.5	0.5	0.6
Bolivia	4	13	47	53	49	44	50	47	38	38	33	0.1	0.3	0.8	0.9	0.8	0.7	0.8	0.7	0.6	0.6	0.5
Brazil	-	-	11	27	34	68	67	73	79	85	93	-	-	0.2	0.4	0.5	1.1	1.1	1.1	1.2	1.2	1.4
Honduras	4	10	19	25	25	20	16	38	42	44	27	0.1	0.2	0.3	0.4	0.4	0.3	0.3	0.6	0.6	0.6	0.4
India	5	5	8	15	23	43	32	37	41	53	45	0.2	0.1	0.1	0.2	0.4	0.7	0.5	0.6	0.6	0.8	0.6
Iran	9	15	29	33	80	25	30	39	47	50	36	0.3	0.3	0.5	0.5	1.3	0.4	0.5	0.4	0.7	0.7	0.5
Korea, Rep.of	-	7	23	48	46	62	57	56	49	46	34	-	0.2	0.4	0.8	0.7	1.0	1.0	0.9	0.7	0.7	0.5
Mexico	271	225	266	271	249	245	238	275	303	291	285	8.0	5.2	4.8	4.5	4.0	3.9	3.9	4.3	4.5	4.2	4.2
Peru	178	283	332	434	405	491	488	553	555	583	598	5.3	6.5	5.9	7.1	6.6	7.8	7.9	8.5	8.3	8.5	8.8
Romania	8	12	48	60	49	45	40	40	39	40	39	0.2	0.3	0.9	1.0	0.8	0.7	0.7	0.6	0.6	0.6	0.6
Turkey	4	2	24	25	26	25	23	32	34	33	41	0.1	0.1	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.6
Yugoslavia	56	92	101	97	103	102	95	87	86	89	95	1.7	2.1	1.8	1.6	1.7	1.6	1.5	1.1	1.3	1.3	1.4
Zambia	40	66	66	80	66	54	43	41	57	51	51	1.2	1.5	2.2	1.3	1.1	0.8	0.7	0.6	0.9	0.8	0.8
Zaire	109	119	103	88	80	73	67	75	68	74	82	3.2	2.7	1.9	1.5	1.3	1.1	1.1	1.2	1.0	1.1	1.2
Other	81	82	40	62	63	32	32	34	79	100	110	2.4	1.9	0.7	1.0	1.0	0.5	0.5	0.5	1.2	1.5	1.6
Developed countries	1,795	2,483	3,208	3,232	3,220	3,281	3,234	3,390	3,549	3,540	3,496	53.0	57.1	57.5	53.3	52.2	52.2	52.7	52.4	52.9	51.8	51.4
of which:																						
Australia	295	326	447	441	468	487	464	660	634	686	633	8.7	7.5	8.0	7.3	7.6	7.7	7.6	10.2	9.5	10.0	9.3
Austria	8	8	12	20	20	21	19	19	21	22	16	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Canada	390	826	1,253	1,351	1,229	1,204	1,059	1,070	1,207	1,172	1,291	11.6	19.0	22.4	22.2	19.9	19.1	17.2	16.5	18.0	17.2	19.0
EEC (1)	360	302	472	440	485	677	738	662	727	726	675	10.6	7.0	8.5	7.3	7.9	10.8	12.0	10.2	10.8	10.6	9.9
Denmark (Greenland)	10	-	-	27	89	87	86	79	71	70	62	0.3	-	-	0.5	1.5	1.4	1.4	1.1	1.1	1.0	0.9
France	17	21	19	12	14	37	37	34	36	41	40	0.5	0.5	0.3	0.2	0.2	0.6	0.6	0.5	0.5	0.6	0.6
Germany, F.R.	98	116	138	142	134	117	121	114	113	118	104	2.9	2.7	2.5	2.3	2.1	1.9	2.0	1.8	1.7	1.7	1.5
Greece	17	11	9	20	14	23	27	21	23	21	23	0.5	0.2	0.2	0.3	0.2	0.4	0.4	0.4	0.3	0.3	0.3
Ireland	1	-	98	66	67	205	223	186	206	192	182	0.0	-	1.7	1.1	1.1	3.2	3.6	2.9	3.1	2.8	2.7
Italy	131	116	110	79	79	65	57	43	42	45	26	3.9	2.7	2.0	1.3	1.3	1.0	0.9	0.7	0.6	0.6	0.4
Spain	86	38	98	94	85	143	183	176	229	234	233	2.5	0.9	1.8	1.6	1.4	2.3	3.0	2.7	3.4	3.4	3.4
United Kingdom	-	-	-	-	3	-	4	9	7	5	5	-	-	-	-	0.1	-	0.1	0.1	0.1	0.1	0.1
Finland	42	69	63	59	53	54	58	56	60	61	60	1.3	2.6	1.1	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Japan	157	221	280	264	254	243	238	256	253	253	222	4.6	5.0	5.0	4.3	4.1	3.9	3.9	4.0	3.8	3.7	3.3
Norway	10	13	10	15	24	28	28	32	27	28	27	0.3	0.3	0.2	0.2	0.4	0.4	0.5	0.5	0.4	0.4	0.4
South Africa (Incl. Namibia)	25	30	46	46	108	99	115	137	134	128	137	0.7	0.7	0.8	0.8	1.7	1.6	1.9	2.1	2.0	1.9	2.0
Sweden	74	79	93	119	111	174	167	205	208	212	219	2.2	1.8	1.7	2.0	1.8	2.8	2.7	3.2	3.1	3.1	3.2
United States	434	609	532	477	468	294	348	293	278	252	216	12.8	14.0	9.6	7.9	7.6	4.7	5.7	4.5	4.1	3.7	3.2
Centrally-planned economies	746	870	1,208	1,471	1,604	1,644	1,587	1,601	1,595	1,664	1,685	11.0	22.0	21.6	24.2	26.0	26.1	25.8	24.8	23.8	24.4	24.8
of which:																						
Bulgaria	77	80	76	80	83	75	70	68	65	68	70	2.3	1.8	1.4	1.3	1.4	1.2	1.1	1.0	1.0	1.0	1.0
Poland	144	152	187	203	210	237	217	189	191	191	184	4.2	3.5	3.3	3.4	3.4	3.8	3.6	2.9	2.9	2.8	2.7
USSR*	375	450	700	900	1,010	1,020	1,000	1,025	980	1,000	970	11.1	10.3	12.5	14.8	16.4	16.2	16.3	15.9	14.6	14.6	14.3
China, P.R.*	70	90	100	110	120	155	150	160	190	200	220	2.1	2.1	1.8	1.8	1.9	2.5	2.4	2.5	2.8	2.9	3.2
Korea, P.R.*	75	90	130	160	160	135	130	140	150	185	225	2.2	2.1	2.3	2.6	2.6	2.1	2.1	2.2	2.2	2.7	3.3
Other*	5	8	15	18	21	22	20	19	19	20	16	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

(1) For comparative purposes, total figures for the EEC include twelve member States for the whole period.

* Estimates

Definition: Zinc content by analysis of zinc ores and concentrates, plus the zinc content of other ores and concentrates known to be intended for zinc recovery.

Source: International Lead and Zinc Study Group

smaller increases in several other producing countries. According to the International Lead and Zinc Study Group it is not certain whether in the future new planned mine capacity will offset reductions through permanent closures at several long established mines which have become depleted. It is expected that about 300 thousand tons of additional new mine capacity will be in operation by the early 1990s. In addition, Red Dog lead/zinc and silver mine in Alaska with an annual capacity of 300 thousand tons is foreseen to start up in 1990. However, as of late 1986, the severe financial constraints experienced by most mining companies in recent years were delaying plans for the development of some new ore bodies until well into the 1990s.[1]

Smelting and refining

17. World smelter production of zinc has followed a similar trend as world mine production. It increased from 3.2 million metric tons in 1960 to about 6.7 million tons in 1986, after reaching the highest level of almost 6.8 million tons in 1985. In some developed countries, including certain member States of the European Economic Communities (namely the Netherlands, Belgium, Italy, the Federal Republic of Germany and France) and Japan, indigenous mines have not kept pace with refining capacity and the metal is largely produced from imported ores. Smelter capacity in developing countries has also been increasing and in 1986, about 63 per cent of developing country mine production was smelted domestically. This amounted to about 15 per cent of world smelter production in the same year compared to 7.4 per cent in 1960. In the period from 1960 to 1986, the share of developed countries in world smelter production declined from 70 per cent to 58 per cent while that of centrally-planned economies increased by about 4 percentage points and was over 26 per cent in 1986. The largest zinc metal-producing countries are the European Economic Community (24.9 per cent of zinc metal production in 1986), the USSR (15.4 per cent), Japan (10.6 per cent), Canada (8.6 per cent), the United States (4.7 per cent), and Australia (4.7 per cent). Among developing countries the major producers are Mexico, Peru, Brazil, the Republic of Korea, Yugoslavia, India and Zaire. In addition to the USSR, Korea, P.D.R., China, P.R., Poland and Bulgaria have also an important production of zinc metal. Table 3 shows data on world smelter production from 1960 to 1986 and the percentage share of producing countries. Charts I and II illustrate major zinc mine and metal producing countries in 1960 and 1986.

18. In the 1960s, world zinc metal production was increasing at a lower rate than zinc mine production. During the period 1970-1974, world smelter production grew faster (at 3.5 per cent annually) than zinc mine production (at 2.1 per cent annually), thus restoring the balance between mining and refining. New investments in smelter capacity continued after 1974 mainly in the European Economic Community, Canada and Japan and in 1979, world smelter production reached a record level of 6.4 million tons. In the

TABLE 3

WORLD PRODUCTION OF REFINED ZINC, 1960-1986

	Thousand metric tons											Percentages of world production										
	1960	1965	1970	1973	1975	1979	1980	1983	1984	1985	1986	1960	1965	1970	1973	1975	1979	1980	1983	1984	1985	1986
World	3,156	4,063	5,234	5,826	5,461	6,434	6,162	6,332	6,591	6,779	6,670	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developing countries	231	319	447	454	592	745	686	911	927	1,011	1,026	7.4	7.9	8.5	7.9	10.8	11.6	11.2	14.4	14.1	14.9	15.4
of which:																						
Algeria	-	-	-	-	5	23	25	31	35	35	30	-	-	-	-	0.1	0.4	0.4	0.5	0.5	0.5	0.5
Argentina	17	23	29	33	40	41	28	34	29	31	29	0.6	0.6	0.6	0.5	0.7	0.6	0.5	0.5	0.4	0.5	0.4
Brazil	-	-	9	22	32	64	78	100	107	116	130	-	-	0.1	0.4	0.6	1.0	1.3	1.6	1.6	1.7	2.0
India	-	-	23	13	26	63	44	54	56	71	74	-	-	0.4	0.2	0.5	1.0	0.7	0.8	0.9	1.1	1.1
Korea, Rep.of	-	-	2	13	21	81	76	106	106	109	126	-	-	0.0	0.2	0.4	1.3	1.2	1.7	1.6	1.6	1.9
Mexico	53	63	85	71	154	160	145	175	180	182	176	1.7	1.6	1.6	1.2	2.8	2.5	2.4	2.8	2.7	2.7	2.6
Peru	32	63	71	70	63	68	66	154	149	163	156	1.0	1.5	1.4	1.2	1.1	1.0	1.1	2.4	2.3	2.4	2.3
Romania	10	20	50	50	49	47	46	42	48	41	43	0.3	0.5	1.0	0.8	0.9	0.7	0.7	0.7	0.7	0.6	0.6
Thailand	-	-	-	-	-	-	-	-	4	59	59	-	-	-	-	-	-	-	-	0.1	0.9	0.9
Turkey	-	-	-	-	-	17	13	14	20	22	15	-	-	-	-	-	0.3	0.2	0.2	0.3	0.3	0.2
Yugoslavia	36	46	61	63	89	99	86	100	103	95	102	1.1	1.1	1.2	1.2	1.6	1.5	1.4	1.6	1.6	1.4	1.5
Zambia	30	47	53	53	47	38	33	38	29	23	22	1.0	1.2	1.0	1.0	0.9	0.6	0.5	0.6	0.4	0.3	0.3
Zaire	53	57	64	66	66	44	44	63	66	64	64	1.7	1.4	1.2	1.2	1.2	0.7	0.7	1.0	1.0	0.9	1.0
Developed countries	2,217	2,839	3,574	3,857	3,214	4,004	3,822	3,779	4,008	4,026	3,888	70.2	69.8	68.3	66.1	58.9	62.2	62.0	59.7	60.8	59.4	58.3
of which																						
Australia	122	202	268	306	200	310	306	303	306	293	310	3.9	5.0	5.1	5.3	3.7	4.8	5.0	4.8	4.8	4.3	4.7
Austria	12	13	16	17	17	23	22	24	24	25	24	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4
Canada	237	325	418	533	426	580	592	617	683	692	571	7.5	8.0	8.0	0.2	7.8	9.0	9.6	9.7	10.4	10.2	8.6
EEE (1)	827	892	1,180	1,333	1,188	1,476	1,490	1,497	1,567	1,588	1,633	26.2	21.9	22.6	22.8	21.8	22.9	24.2	23.6	23.7	23.4	24.5
Belgium/Luxembourg	246	238	232	277	228	252	247	263	271	271	269	7.8	5.9	4.4	4.8	4.2	3.9	4.0	4.2	4.1	4.0	4.0
France	149	192	224	258	181	249	253	249	259	247	257	4.7	4.7	4.3	4.4	3.3	3.9	4.1	3.9	3.9	3.4	3.9
Germany, F.R.	192	178	301	395	295	356	365	356	356	367	371	6.1	4.4	5.8	6.8	5.4	5.5	5.9	5.6	5.4	5.4	5.6
Italy	85	81	142	182	180	203	207	156	167	210	230	2.7	2.0	2.7	3.1	3.3	3.1	3.4	2.5	2.5	3.1	3.5
Netherlands	36	42	47	31	116	154	169	187	210	203	198	1.1	1.0	0.9	0.5	2.1	2.4	2.7	3.0	3.2	3.0	3.0
Portugal	-	-	-	-	-	-	2	4	6	6	6	-	-	-	-	-	-	0.1	0.1	0.1	1.0	1.0
Spain	45	54	88	106	135	186	162	198	212	211	216	1.4	1.3	1.7	1.7	2.5	2.9	2.6	3.1	3.2	3.1	3.2
United Kingdom	74	107	146	84	53	76	87	88	86	74	86	2.3	2.6	2.8	1.4	1.0	1.2	1.4	1.4	1.3	1.1	1.3
Finland	-	-	56	81	110	147	147	155	159	161	155	-	-	1.1	1.4	2.0	2.3	2.4	2.5	2.4	2.4	2.3
Japan	187	376	681	844	698	789	735	701	754	740	708	5.9	9.2	13.0	14.4	12.8	12.3	11.9	11.1	11.4	10.9	10.6
Norway	44	53	62	61	61	78	79	91	94	93	90	1.4	1.3	1.2	1.4	1.1	1.2	1.3	1.4	1.4	1.4	1.4
South Africa	-	-	27	57	64	75	81	82	90	94	81	-	-	0.5	1.0	1.2	1.2	1.3	1.3	1.4	1.4	1.2
United States	788	978	866	605	450	526	370	305	331	334	316	25.0	24.1	16.5	10.4	8.2	8.2	6.0	4.8	5.0	4.9	4.7
Centrally-planned economies	708	905	1,213	1,515	1,655	1,685	1,654	1,640	1,651	1,742	1,756	22.4	22.3	23.2	26.0	30.3	26.2	26.8	25.9	25.1	25.7	26.3
of which:																						
Bulgaria	17	66	76	80	92	89	91	93	93	90	90	0.5	1.6	1.5	1.4	1.7	1.4	1.5	1.5	1.4	1.3	1.4
Poland	176	190	209	235	243	209	217	170	176	180	179	5.6	4.7	4.0	4.0	4.4	3.2	3.5	2.7	2.7	2.7	2.7
USSR*	400	475	725	940	1,030	1,080	1,060	1,060	1,050	1,050	1,030	12.7	11.7	13.9	16.1	18.9	16.8	17.2	16.8	15.9	15.5	15.4
China, P.R.*	70	90	100	110	125	160	155	185	190	215	220	2.2	2.2	1.9	1.9	2.3	2.5	2.5	2.9	2.9	3.2	3.3
Korea, P.D.R.*	45	70	90	130	140	120	105	105	115	180	210	1.4	1.7	1.7	2.2	2.6	1.9	1.7	1.6	1.7	2.7	3.2
Other	-	14	13	20	25	27	26	27	27	27	27	-	0.4	0.2	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4

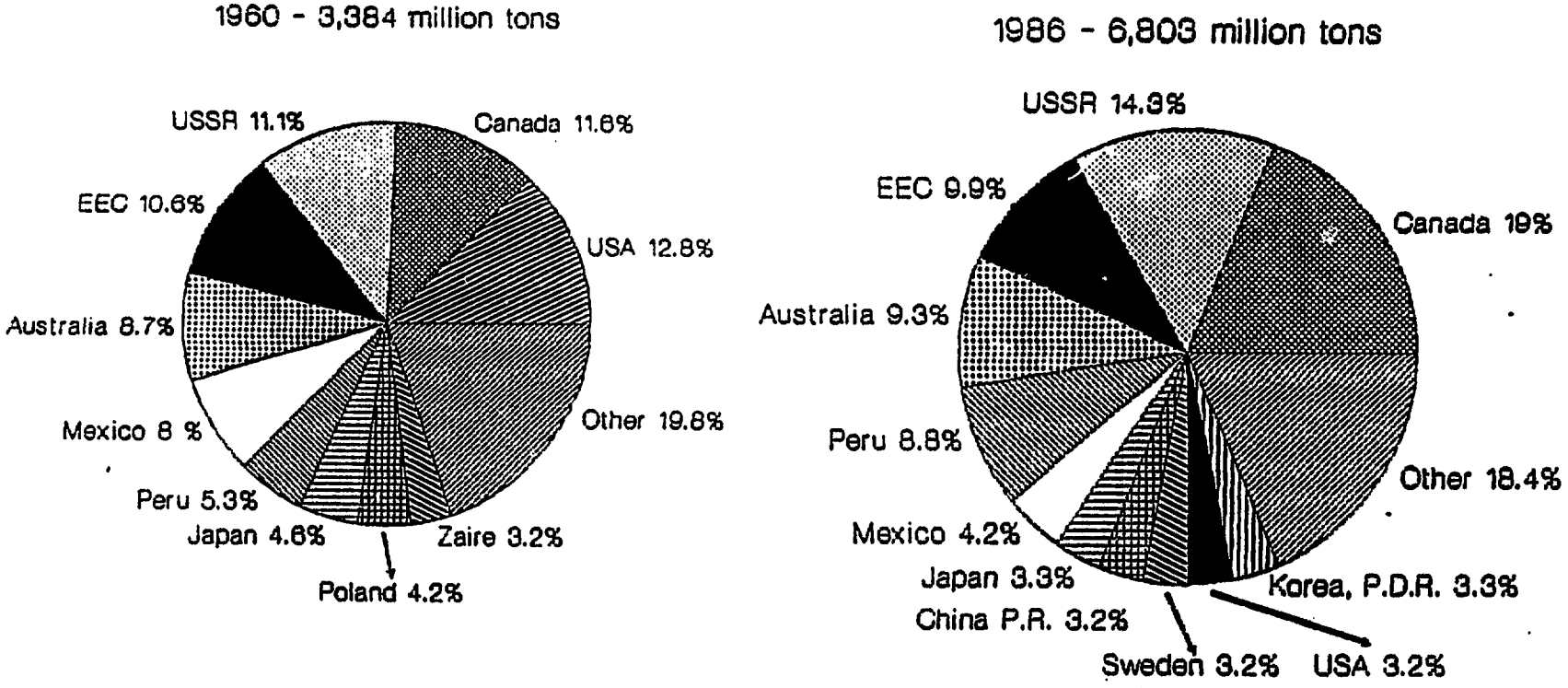
(1) For comparative purposes, total figures for the EEC include twelve member States for the whole period.

* Estimates

Definition: Total production by smelters and refineries of zinc in marketable form or used directly for alloying including production on toll in the reporting country, regardless of the type of source material, i.e. whether ores, concentrates, residues, slags or scrap. Remelted zinc and zinc dust are excluded.

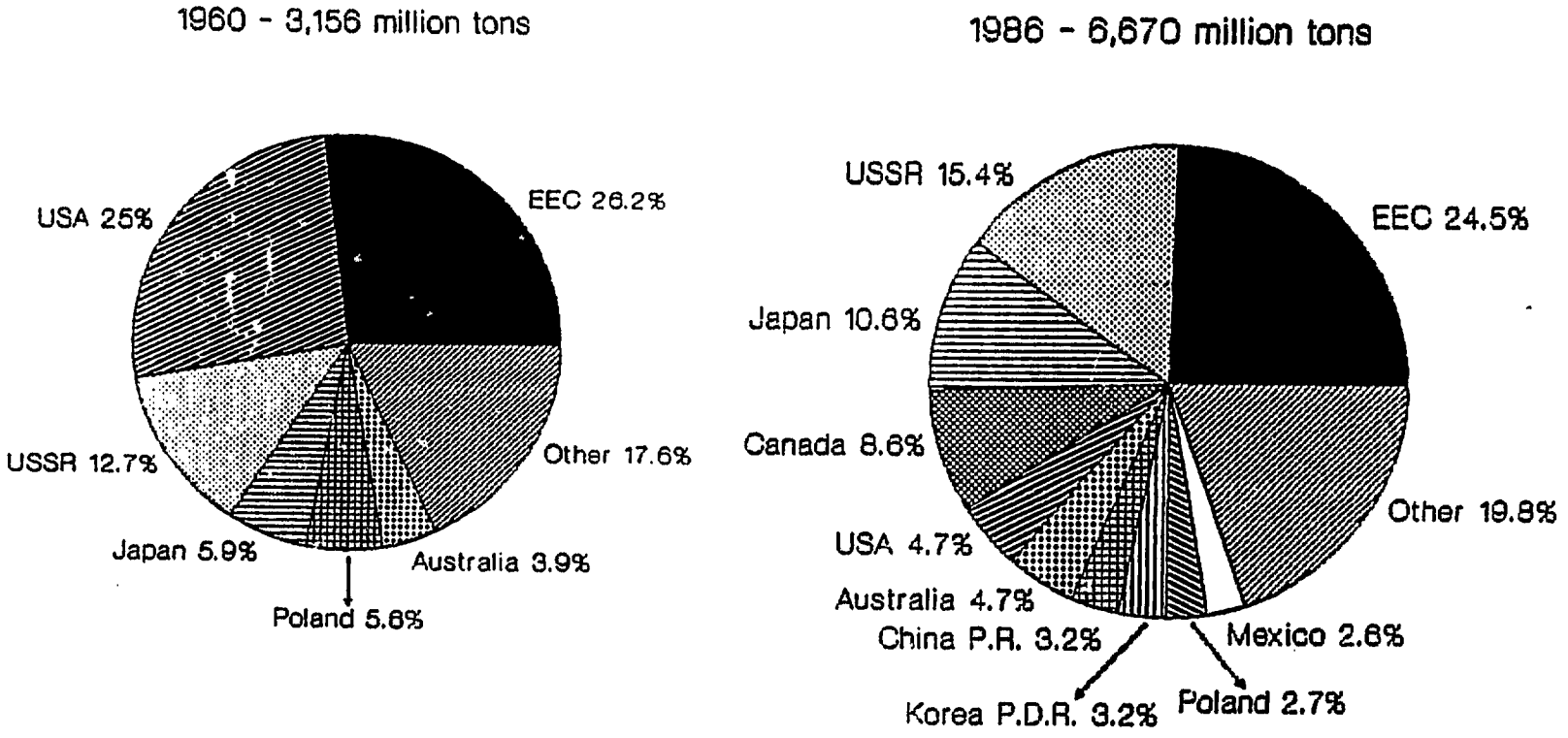
Source: International Lead and Zinc Study Group

CHART I - WORLD MINE PRODUCTION, 1960 AND 1986



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

CHART II - WORLD SMELTER PRODUCTION 1960 AND 1986



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

following years, world smelter production slowed down as a result of weak demand for zinc, mainly in the EEC, the United States and Japan. In 1981, the most significant increase was in Peru which, after putting a new refinery into operation, doubled its production. However, in the same year, smelter production in Japan fell about 9 per cent, to its lowest level since 1968, largely as a result of a rationalization of the lead and zinc industry.

19. In 1982, world zinc metal production continued to fall in response to weak demand in all major consuming areas. Metal production of the United States and Canada declined by about 200,000 tons due to cut-backs and closures of several smelter plants. Zinc metal production also decreased in most countries of the EEC. In 1983, zinc metal production recovered and was over 6.3 million tons, the highest level since 1979. Metal output rose in Canada, the EEC and Japan as well as in Mexico where a new electrolytic refinery began operation early in the year. Like mine production, zinc metal production also reached a record level of almost 6.8 million tons in 1985. The main increases were in Canada, Peru, Italy and in Thailand where a new refinery was put on stream. Smelter output was also estimated to be higher in China, P.R. and Korea, P.D.R. Most of the fall in 1986's output of refined zinc resulted from a reduced output in Canada due to a protracted industrial dispute. Except Italy, where new capacity had started operation in 1985, the downward trend continued in most developed countries. Again, increased production was estimated to have taken place in both China, P.R. and Korea, P.D.R. Smelter production also rose in Brazil and Korea, Rep.of, following the expansion of existing plants. Production of refined zinc in market-economy countries in 1987 was 200 thousand tons higher than in 1986. A fall in output in Japan and Peru was offset by increases in Italy, Norway, Yugoslavia, the United States, South Africa and the Republic of Korea. It is estimated that in the future the major increase in zinc metal production will take place in developing countries, especially Brazil and India and also the Republic of Korea and Thailand, as these countries strive for greater self-sufficiency in metal production.

20. As mentioned in paragraph 11, secondary production accounts for a smaller share of refined zinc production than that of some other non-ferrous metals. However, the reported output of secondary refined zinc metal produced from scrap, residues and waste increased in the late 1970s and is likely to continue to expand in the future as recovery techniques are improved. Presently, production of secondary zinc metal amounts to 300-350 thousand tons a year (280 thousand tons in 1986) and represents about 6 to 8 per cent of the refined zinc production of market-economy countries. Most secondary metal recovery takes place in developed countries, mainly in Europe, the United States and Japan.

Consumption

21. World consumption of zinc metal increased from 3.1 million tons in 1960 to 6.8 million tons in 1986 and world per capita consumption rose from 1.03 kg. in 1960 to 1.38 kg. in 1986. Table 4, showing regional and country consumption of zinc from 1960 to 1986, indicates that the share of developed countries in world zinc consumption decreased from 71.4 per cent in 1960 to 55 per cent in 1986. In the same period, the shares of centrally-planned economies and developing countries rose from 20.6 per cent to 26.4 per cent and from 8.0 per cent to 18.7 per cent, respectively. In 1986, the principal consuming countries were the member States of the European Communities (21.9 per cent, of which the Federal Republic of Germany 6.4 per cent, France 3.8 per cent, Italy 3.4 per cent and the United Kingdom 2.7 per cent), the United States (14.8 per cent), the USSR (14.6 per cent) and Japan (11.1 per cent). For illustration, Chart III shows major consuming countries in 1960 and 1986 and Chart IV indicates the balance between production and consumption of refined zinc in the years 1960 to 1986.

22. Throughout the 1960s and the beginning of the 1970s, world consumption of zinc grew rapidly at more than 6 per cent annually. By 1973, world consumption of zinc reached 6.2 million tons, twice as high as in 1960. Subsequently, sharp increases in oil prices, affecting the automobile industry and other economic activities, led to a decrease in world zinc consumption, which dropped drastically to 5 million tons in the recession year 1975. After a strong recovery to 6.5 million tons in 1979, world zinc consumption declined again in the following years and was about 6 million tons in 1982. The market situation for refined zinc improved in 1983 and 1984 but it deteriorated again in 1985. It reached a peak of about 6.8 million tons in 1986, reflecting increases in consumption in the United States and the EEC, and in several developing countries, namely Brazil, India, the Republic of Korea and Peru. However, between 1973 and 1986, the rate of growth in world consumption averaged only about 0.7 per cent annually. In 1987, zinc consumption of market economy countries remained high, at about the same level as in 1986.

22. An analysis of statistical data in Table 4 shows that the growth in zinc consumption varied substantially among the three groups of countries and from country to country. In the period 1960 to 1973, consumption in developed countries grew at about 5 per cent annually, after which, the rate of consumption growth in those countries became negative or largely stagnant. Since 1973, the volume and the shares in world consumption of zinc of the former leading consuming countries (mainly the United States, the Federal Republic of Germany, the United Kingdom and, to a lesser extent, Japan) has tended to decrease. Stagnant automobile production, the tendency towards smaller and lighter cars and competition of plastics, as well as lower demand for zinc in galvanizing and brass, were the causes of

TABLE 4

WORLD CONSUMPTION OF REFINED ZINC 1960-1986

	Thousand metric tons											Percentages of world consumption										
	1960	1965	1970	1973	1975	1979	1980	1983	1984	1985	1986	19-	-	1970	1973	1975	1979	1980	1983	1984	1985	1986
World	3,114	4,099	5,013	6,195	5,042	6,427	6,208	6,367	6,577	6,577	6,767	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developing countries	215	289	473	621	637	975	935	1,030	1,102	1,149	1,262	7.0	7.0	9.4	10.1	12.4	15.2	15.0	16.2	16.8	17.5	18.7
of which:																						
Argentina	17	27	34	37	42	43	31	30	29	26	29	0.5	0.6	0.7	0.6	0.8	0.7	0.5	0.5	0.4	0.4	0.4
Brazil	31	32	53	80	91	123	134	102	114	141	151	1.0	0.8	1.1	1.3	1.8	1.9	2.1	1.6	1.7	2.1	2.2
India	60	70	90	90	82	116	95	125	130	130	135	1.9	1.7	1.8	1.5	1.6	1.8	1.5	2.0	2.0	2.0	2.0
Indonesia	0	0	4	20	20	45	50	60	45	51	48	0.0	0.0	0.1	0.3	0.4	0.7	0.8	0.9	0.7	0.8	0.7
Korea, Rep.of	3	4	12	23	35	73	68	109	124	120	152	0.1	0.1	0.2	0.4	0.7	1.1	1.1	1.7	1.9	1.8	2.3
Mexico	23	33	47	59	53	83	89	88	101	101	92	0.7	0.8	0.9	1.0	1.1	1.3	1.4	1.4	1.5	1.5	1.4
Peru	2	5	5	10	9	29	23	16	33	41	51	0.1	0.1	0.1	0.2	0.2	0.5	0.4	0.3	0.5	0.6	0.8
Romania	8	11	32	40	50	61	60	49	47	41	43	0.3	0.3	0.6	0.6	1.0	1.0	1.0	0.7	0.7	0.6	0.6
Thailand	8	11	17	21	17	33	37	41	36	42	47	0.3	0.3	0.3	0.3	0.3	0.5	0.6	0.6	0.6	0.6	0.7
Yugoslavia	27	44	57	64	65	66	73	90	102	105	90	0.9	1.1	1.1	2.0	1.3	1.0	1.2	1.4	1.6	1.6	1.3
Other	36	52	122	177	173	303	275	320	341	351	424	1.2	1.2	2.5	2.9	3.4	4.7	4.4	5.0	5.2	5.5	6.3
Developed countries	2,256	3,011	3,457	4,258	2,945	3,828	3,605	3,582	3,668	3,650	3,716	72.4	73.5	69.0	68.7	58.4	59.5	58.1	56.3	55.7	55.5	54.9
of which:																						
Australia	97	102	115	121	82	99	96	83	77	87	86	3.1	2.5	2.3	2.0	1.6	1.6	1.5	1.3	1.2	1.3	1.3
Austria	13	17	23	21	24	25	27	27	31	32	33	0.4	0.4	0.5	0.3	0.5	0.4	0.4	0.4	0.5	0.5	0.5
Canada	51	85	96	127	126	156	133	144	146	156	153	1.6	2.1	1.9	2.1	2.3	2.4	2.1	2.3	2.2	2.4	2.3
EEC (1)	1,011	1,130	1,337	1,604	1,127	1,497	1,496	1 434	1,450	1,424	1,482	32.4	27.6	26.7	25.8	22.3	23.3	24.1	22.5	22.1	21.7	21.9
Belgium/Luxembourg	105	123	128	180	103	139	155	166	156	169	172	3.4	3.0	2.6	2.9	2.0	2.2	2.5	2.6	2.4	2.6	2.5
Denmark	12	11	12	13	11	16	15	9	10	12	12	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2
France	172	186	220	290	223	287	330	271	282	247	260	5.5	4.5	4.4	4.7	4.4	4.5	5.3	4.3	4.3	3.8	3.8
Germany, F.R.	297	330	396	438	297	417	406	405	425	410	434	9.5	8.0	7.9	7.1	5.9	6.5	6.6	6.4	6.5	6.2	6.4
Greece	4	6	8	15	12	21	19	11	12	15	15	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.2
Ireland	2	1	3	5	4	4	4	2	1	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	-	-	-
Italy	85	116	178	220	150	225	236	208	210	218	232	2.7	2.8	3.5	3.5	3.0	3.5	3.8	3.3	3.2	3.3	3.4
Netherlands	26	31	37	36	34	51	45	54	60	51	54	0.8	0.8	0.7	0.6	0.7	0.8	0.7	0.9	0.9	0.8	0.8
Portugal	1	1	10	11	8	14	17	9	11	9	10	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.1	0.2
Spain	32	44	77	102	86	98	105	107	101	103	110	1.0	1.1	1.6	1.6	1.7	1.5	1.7	1.7	1.4	1.6	1.6
United Kingdom	176	282	278	305	207	239	181	177	182	189	182	8.9	6.9	5.5	4.9	4.1	3.7	2.9	2.8	2.7	2.9	2.7
Finland	5	6	9	16	16	22	25	26	22	26	26	0.2	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4
Japan	189	330	638	814	563	779	752	771	774	780	753	6.1	8.0	12.7	13.1	11.2	12.1	12.1	12.1	11.7	11.9	11.1
New Zealand	2	3	15	21	15	20	16	19	20	21	20	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Norway	14	19	24	26	20	19	20	22	20	21	19	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.4	0.3	0.3	0.3
South Africa, Rep.of	28	37	55	62	65	78	84	83	90	84	83	0.9	0.9	1.1	1.0	1.3	1.2	1.4	1.3	1.4	1.3	1.2
Sweden	31	34	34	43	44	41	35	34	37	31	32	1.0	0.8	0.7	0.7	0.9	0.6	0.6	0.5	0.6	0.5	0.5
Switzerland	24	26	27	28	16	21	25	20	21	26	30	0.8	0.6	0.5	0.5	0.3	0.3	0.4	0.3	0.3	0.4	0.4
United States	790	1,221	1,074	1,364	839	1,057	879	934	980	962	999	25.3	29.8	21.4	22.0	16.6	16.5	14.2	14.7	14.9	14.6	14.8
Centrally-planned economies	643	799	1,083	1,316	1,460	1,624	1,668	1,755	1,807	1,778	1,789	20.6	19.5	21.6	21.2	29.0	25.3	26.9	27.6	27.5	27.0	26.4
of which:																						
Bulgaria	7	14	28	40	40	64	65	75	80	75	73	0.2	0.3	0.5	0.6	0.8	1.0	1.0	1.3	1.2	1.1	1.1
Czechoslovakia	36	41	45	55	74	65	67	56	58	58	61	1.2	1.0	0.9	0.9	1.5	1.0	1.1	0.8	0.9	0.9	0.9
German D.R.*	35	59	52	55	63	68	68	70	75	76	74	1.1	1.4	1.0	0.9	1.2	1.1	1.1	1.1	1.1	1.2	1.1
Poland	94	114	129	149	162	176	178	143	154	157	157	3.0	2.8	2.6	2.4	3.2	2.7	2.9	2.3	2.3	2.4	2.3
USSR*	375	450	680	840	9:0	1,000	1,030	1,050	1,050	1,000	990	12.0	11.0	13.6	13.6	17.9	15.6	16.6	16.5	16.0	15.2	14.6
China, P.R.*	80	100	115	125	160	190	200	290	330	350	360	2.6	2.5	2.3	2.0	3.2	3.0	3.2	4.5	5.0	5.3	5.3
Other*	16	21	34	52	61	61	60	67	60	62	74	0.5	0.5	0.7	0.8	1.2	0.9	1.0	1.1	1.0	0.9	1.1

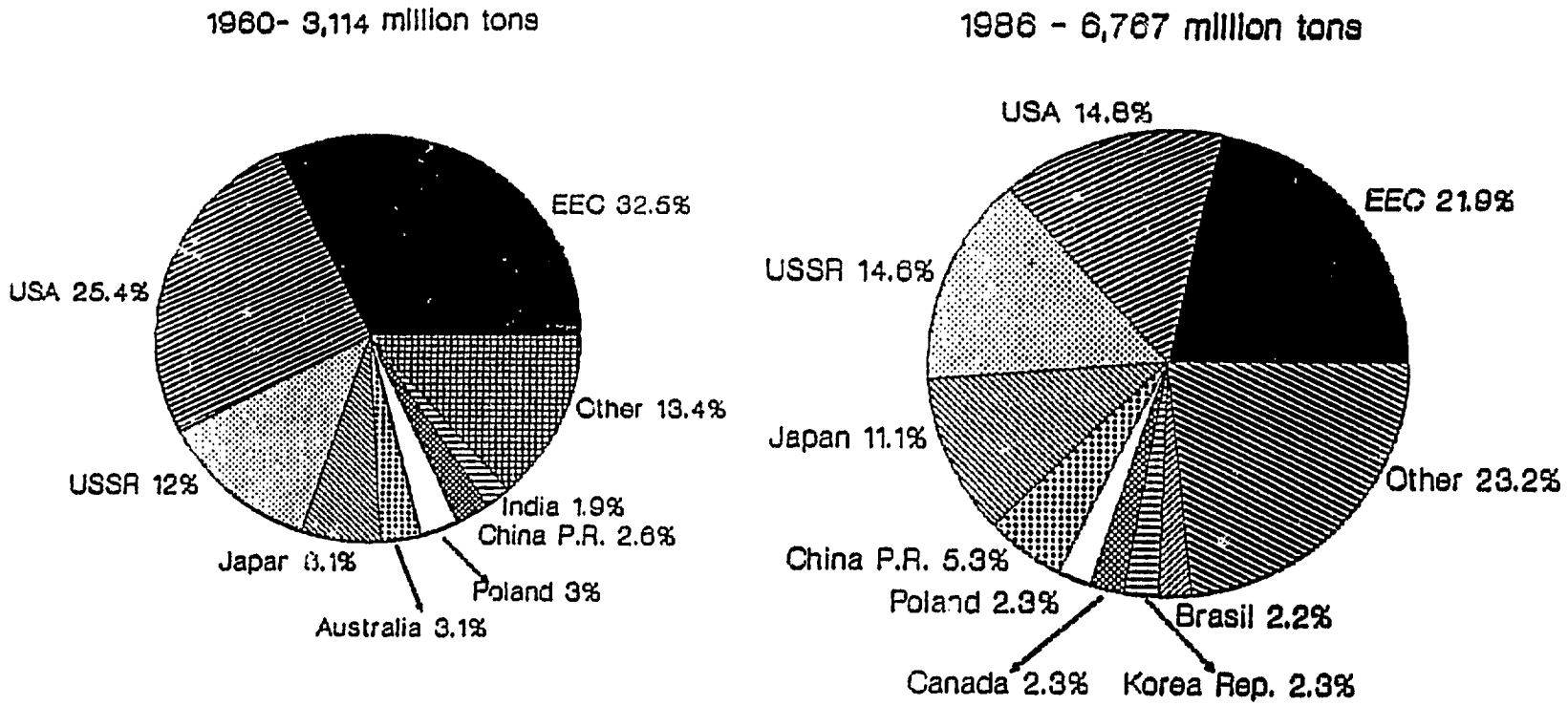
(1) For comparative purposes, total figures for the EEC include twelve member States for the whole period.

* Estimates

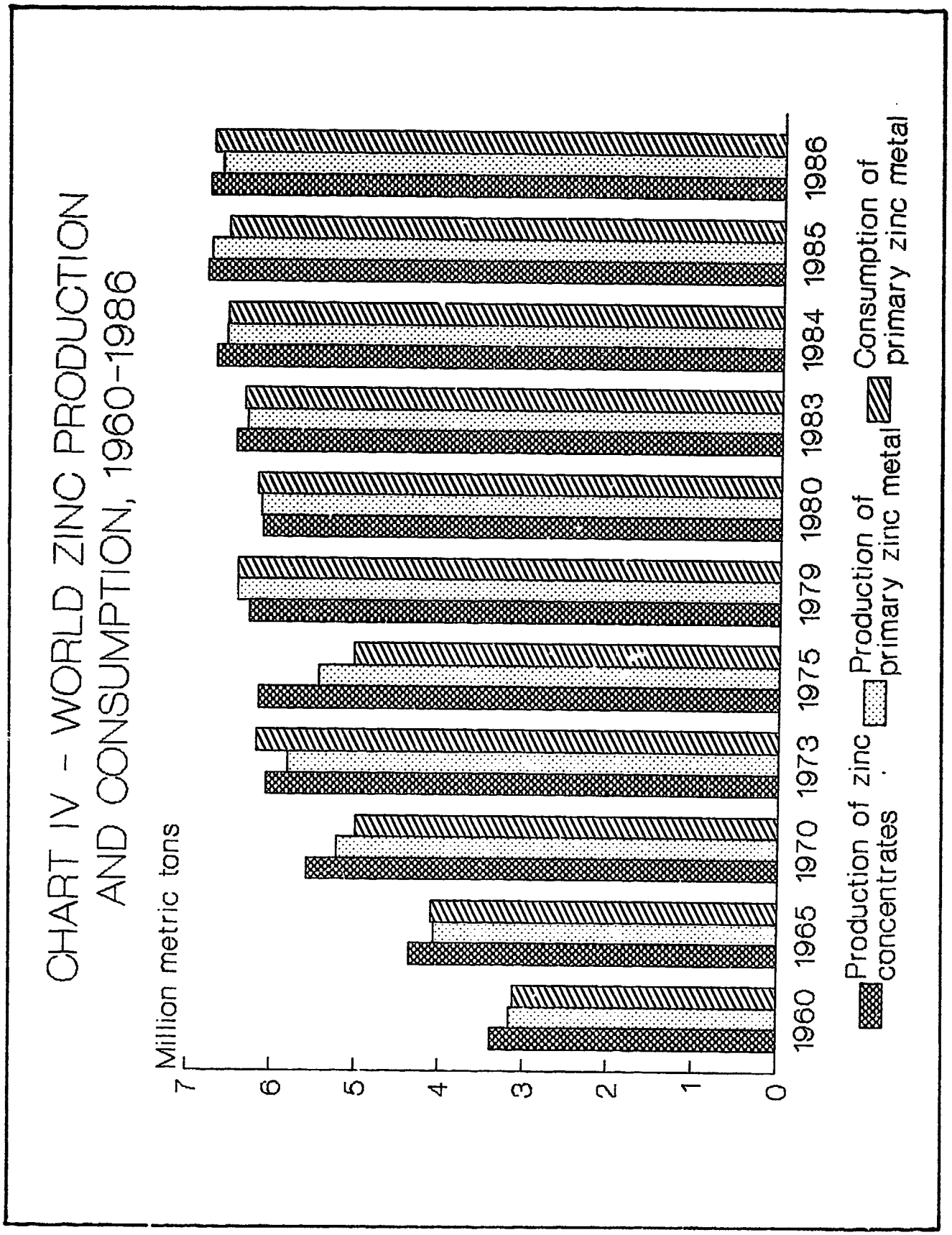
Definition: Total consumption of refined metallic zinc including zinc used directly for the production of zinc alloys, regardless of the type of source material from which produced, i.e. ores, concentrates, residues, slags or scrap. Remelted zinc and zinc dust are excluded.

Source: International Lead and Zinc Study Group

CHART III - WORLD ZINC METAL CONSUMPTION 1960 AND 1986



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

the decline in consumption in the United States, which decreased from 1.4 million in 1973 to about 1 million tons in 1986. During the same period, the consumption of the member States of the European Communities decreased from 1.6 million to less than 1.5 million tons. The main decrease was recorded by the United Kingdom because of lower demand for die-casting and brass. The relatively lower decline in zinc consumption of Japan can be attributed to the better performance of its automobile industry. Contrary to the downward trend experienced by developed countries, zinc consumption continued to expand in centrally-planned economies and developing countries. The average rates of growth in zinc consumption of centrally-planned economies were 6 per cent annually in the 1960s and 4.3 per cent annually in the 1970s. Nevertheless, the increase in their consumption since 1980 was mainly due to the higher consumption of zinc metal in the People's Republic of China while that of the other centrally-planned economies declined. During the last twenty-six years, the average annual growth rate of zinc consumption of developing countries was about 7 per cent (8.5 per cent between 1960 to 1973 and 5.6 per cent between 1973 to 1986). Zinc metal consumption of these countries in volume terms increased from about 200 thousand tons in 1960 to almost 1.3 million tons in 1986 and their share in world consumption in the same period rose by 12 percentage points, attaining about 19 per cent in 1986. Among developing countries, Brazil, India, Mexico, the Republic of Korea and Yugoslavia are major consumers of refined zinc, together accounting for about one-half of total consumption of developing countries.

24. Though it is considered by some that the use of zinc in developed countries has reached "saturation", many believe that a number of factors would help to maintain zinc consumption at substantial levels in the future or to permit it to continue to grow, albeit at a slower pace. One of these is the increased concern for protecting iron and steel products against corrosion and the development of new galvanized surfaces which may be painted. Further, it is considered that for automobile die-casting, downsizing of vehicles has already taken place and further substitution may be slow or avoided. In addition, as with the new applications which have been developed, such as for the coating of steel, the United States zinc penny and other special uses, the development of new zinc materials such as new zinc alloys might help to keep and/or gain new market for zinc metal. The International Lead and Zinc Study Group considers that continuing research into new uses for zinc and the active promotion of existing uses will be essential in maintaining consumption levels in coming years.

25. Table 5 shows the principal uses of zinc by main consuming countries from 1979 to 1986. Chart V illustrates the principal uses of zinc metal by this group of countries in 1986. As can be seen from Table 5, galvanizing, continues to be the main outlet for zinc, accounting for about 43 per cent

TABLE 5

PRINCIPAL USES OF ZINC, 1979-1986

	Zinc consumption: thousands of metric tons						Percentage of total consumption					
	1979	1980	1983	1984	1985	1986	1979	1980	1983	1984	1985	1986
Galvanizing	2,052	1,936	1,962	2,014	1,970	1,976	41.0	41.2	42.8	41.9	42.0	43.0
Zinc-base alloys	848	753	729	737	751	717	16.9	16.0	15.9	15.3	16.0	15.6
Brass and bronze	1,102	1,045	922	1,055	960	964	22.0	22.2	20.1	21.9	20.5	20.9
Zinc semi-manufactures	378	389	433	406	397	378	7.5	8.3	9.4	8.4	8.5	8.2
Chemicals	437	399	365	410	424	399	8.7	8.5	8.0	8.5	9.0	8.7
Zinc dust/powder	55	54	85	90	84	75	1.1	1.2	1.8	1.9	1.8	1.6
Miscellaneous	135	121	92	99	105	92	2.7	2.6	2.0	2.1	2.2	2.0
Total	5,007	4,698	4,588	4,810	4,690	4,601	100.0	100.0	100.0	100.0	100.0	100.0

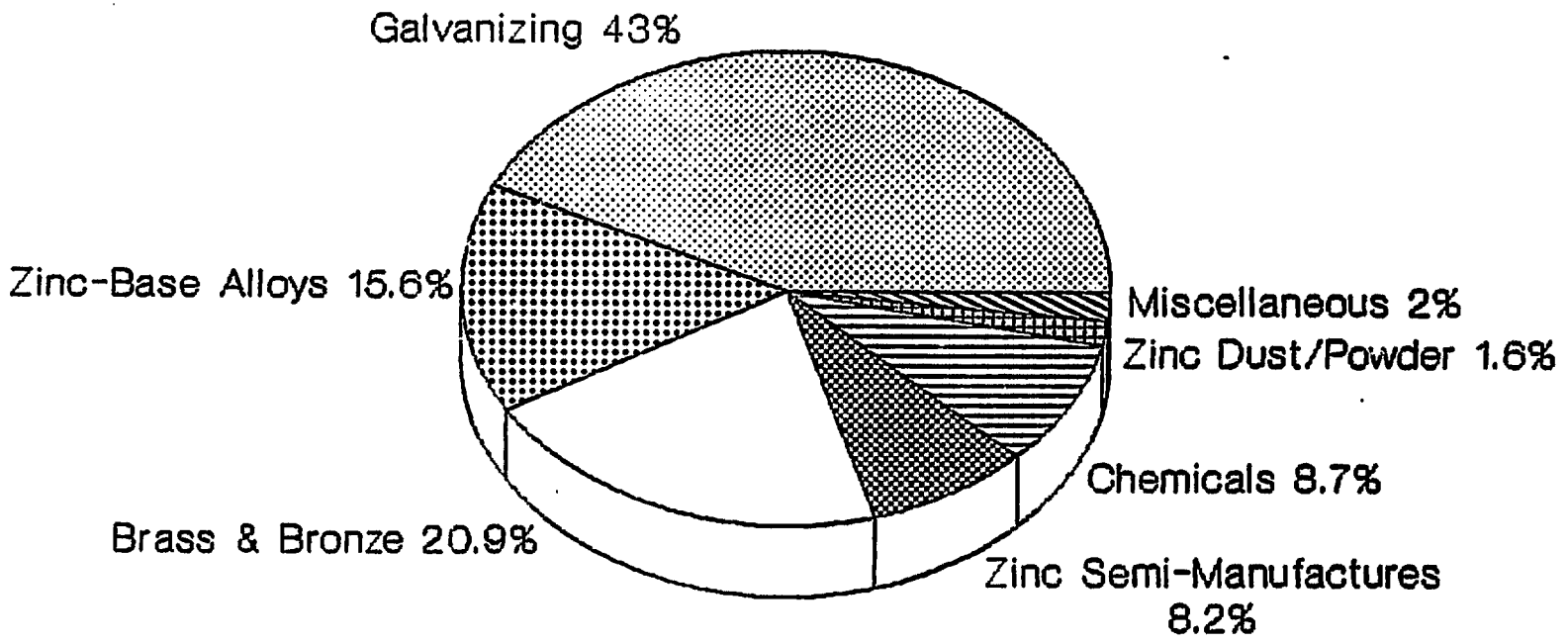
Countries included: Australia, Belgium, Brazil, Canada, Finland, France, Federal Republic of Germany, India, Italy, Japan, Mexico, Netherlands, New Zealand, Nordic countries, South Africa, South East Asian countries, Switzerland, United Kingdom, United States.

Data for the following countries include total metal consumption in all forms (i.e. refined zinc and remelted zinc, including the zinc content of copper alloys): France, Federal Republic of Germany, Italy, South East Asian countries, United Kingdom, United States.

Data for other countries include refined zinc except for Japan where remelted slab zinc is also included.

Source: International Lead and Zinc Study Group

CHART V - ZINC CONSUMPTION BY USE, 1986 (1)



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

of total consumption in 1986. Next in importance is zinc used in brass and bronze, and in die-casting alloys, which in the same year accounted for about 21 per cent and 16 per cent of total consumption, respectively. Zinc compounds used mainly in the chemical industry, pharmaceuticals, the rubber industry and in paints and ceramics represented about 8 per cent of total consumption. The share of zinc powder and dust used in the manufacture of dyestuffs and as a reducing agent in chemical reactions was 1.6 per cent. About 2 per cent of zinc consumed is used for miscellaneous purposes such as rolled zinc for roofing and dry battery shells, and in sacrificial anodes to protect ship hulls and submerged steel works and pipes, etc.

Prices and stocks

26. There are three internationally recognized price quotations for zinc:

(1) the daily cash and three month prices fixed by the London Metal Exchange (LME);

(2) the U.S. producers' price published by "Metals Week", which is the price or range of prices quoted by North American producers;

(3) the Producer Basis Price outside North America - PBP (also known as the European Producer Price-EPP) published by the London "Metal Bulletin", based on prices charged by principal European, Canadian and Australian producers.

Zinc prices in individual countries, apart from the United States, are normally related to either the London market price or, more commonly, to the Producer Basis Price, expressed in national currencies.

27. The LME prices are in pound sterling per metric ton and are an important indicator of day to day market conditions. Until recently, the LME zinc contract applied to Standard or Good Ordinary Brand (GOB) zinc of minimum 98 per cent purity. In September 1984, however, the London Metal Exchange introduced an additional contract for High Grade zinc of minimum 99.95 per cent purity, which finally replaced the Standard contract at the end of 1986. At present, the High Grade contract has become the only dealing contract and stocks of zinc held in LME approved warehouses consist entirely of High Grade zinc.[2] Under new regulations governing the operation of commodity markets in the United Kingdom, a form of clearing house arangement was introduced in place of the principals market on which the LME has functioned until now. The U.S. Producers' price is also for High Grade zinc and is quoted in United States cents per pound. The Producer Basis Price outside North America is quoted in United States dollars per metric ton. It was introduced in 1964 in order to provide a more stable price basis which, while reflecting general market conditions, would avoid the day-to-day fluctuations in the London Metal Exchange prices. The Producer Basis Price has become the price on which most sales of zinc metal outside the United States are based and is also the basis price for most sales of, and treatment charges for zinc concentrates.

28. Most sales of zinc concentrates and zinc metal are made under annual contracts negotiated directly between producers and their customers. The volume of physical zinc metal traded through the LME is small in relation to total world trade but as a terminal market, its daily prices are an indicator of the short-term balance between metal supply and demand, while use of its hedging facilities provides a valuable safeguard against price variations. The U.S. producers' price reflects supply and demand for zinc metal in the United States. In the short-term, trends in the U.S. producers' price may differ at times from the LME price and the Producer Basis Price, reflecting differences in the strength of demand in the United States compared with other major consuming areas such as Europe and Japan. The Producer Basis Price, on which, as already mentioned, most sales of both zinc concentrates and metal outside North America are based, has tended to change more frequently during recent years in order to avoid major differences with the LME price and to take account of fluctuations in the value of the United States dollar against sterling and other leading currencies. Such fluctuations in exchange rates can at times affect the competitive position of zinc from country to country when expressed in national currencies and also affect historical international trade flows.

29. Table 6 and Chart VI indicate average annual prices for zinc on the basis of the quotations at the LME and the U.S. producers' price during the period 1950-1986 in terms of both current and constant[3] US dollars. Both current and constant prices rose sharply during 1954-1965 and again during 1973-1974, when rapid increases in consumption resulted in severe pressure on available supplies.[4] The subsequent steep fall in consumption during 1975-76 and the build-up of excessively high stocks of zinc metal during 1976-77 caused prices to fall to much lower levels from which they slowly recovered during the late 1970s, only to weaken again during the recent world economic recession of 1981-82. The strong recovery in consumption during 1983 and 1984, combined with a major increase in imports of zinc metal by the People's Republic of China during 1982-83, led to some improvement in prices during late 1983 and the first half of 1984. However, zinc prices fell in the second half of 1984. After an increase in the first quarter of 1985, zinc metal prices fell in November 1985 to their lowest level since October 1983. Among the main reasons which led to the collapse in prices in 1985 were lower demand in several consuming countries as well as the decrease in exports to the People's Republic of China. At the same time, the tin crisis in October 1985 and the confusion it created on the London market added to the uncertainty in the market during the last two months of the year. The downward trend in prices continued through 1986 and the first months of 1987 in spite of the recovery in demand and the tightness of supplies in the third quarter of 1986. The increase in zinc metal prices since April 1987 has resulted from higher demand for zinc in the United States and the loss in production in Canada due to industrial disputes.

TABLE 6

ZINC PRICES, 1950-1987

	London Metal Exchange[1]		New York Market[2]	
	Current $	1980 Constant $[3]	Current $	1980 Constant $[3]
1950	328	1,451	317	1,409
1951	473	1,812	408	1,563
1952	412	1,509	369	1,352
1953	207	778	250	940
1954	216	831	247	950
1955	250	943	282	1,064
1956	269	982	308	1,124
1957	225	804	262	936
1958	182	639	238	835
1959	226	804	263	936
1960	247	861	297	1,035
1961	214	733	265	908
1962	185	623	267	899
1963	212	726	276	945
1964	324	1,087	310	1,040
1965	311	1,037	331	1,103
1966	282	907	331	1,064
1967	273	869	316	1,006
1968	262	840	309	990
1969	287	875	333	1,015
1970	295	845	349	1,000
1971	309	840	356	967
1972	377	943	391	978
1973	851	1,834	455	981
1974	1,259	2,193	793	1,404
1975	743	1,183	859	1,368
1976	712	1,118	823	1,292
1977	591	844	758	1,083
1978	593	737	683	849
1979	742	814	822	901
1980	761	761	825	825
1981	846	842	982	977
1982	745	752	848	856
1983	764	791	912	944
1984	922	972	1,072	1,130
1985	783	817	890	928
1986	754	665	838	739
1987	799	637	924	737

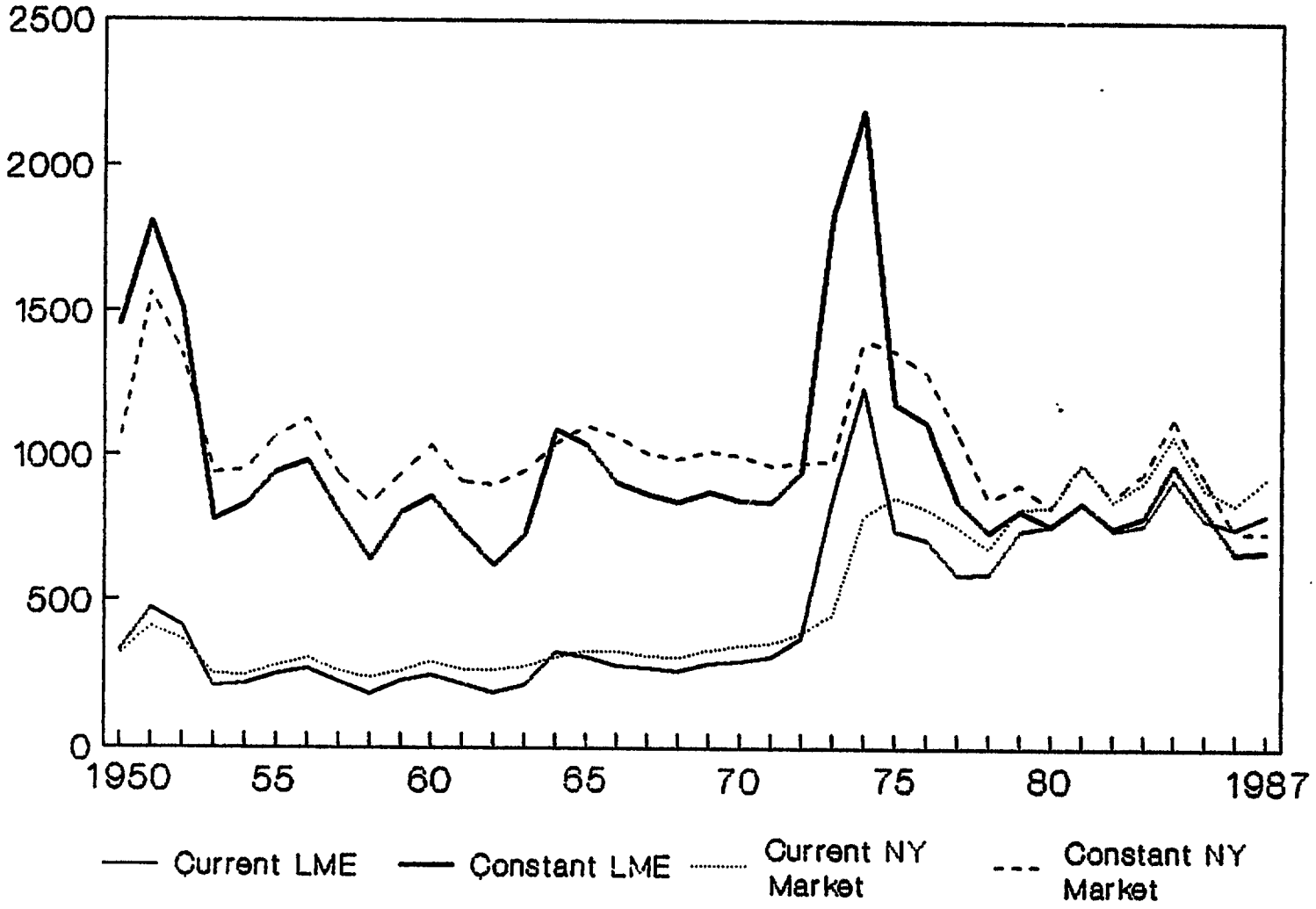
[1] Good Ordinary Brands, settlement price; from October 1984, high grade.

[2] Domestic producer price for Prime Western Grade, delivered New York.

[3] 1980 constant or real dollars, deflated by the c.i.f. Manufacturing United Value Index (MUV - Industrial market economies indices of US dollar unit values of manufactured exports to developing countries. The c.i.f. index combines a 90 per cent weight of f.o.b. export prices with a 10 per cent weight of transport costs).

Source: World Bank, Commodity Trade and Price Trends, 1987

CHART VI - ZINC PRICES, 1950-1987
(Yearly average)



Source: GATT, based on World Bank, Commodity Trade and Price Trends, 1986.

30. Table 7 illustrates the principal movements in commercial stocks of zinc metal and stocks held in government stockpiles since 1960. Stocks held by producers, traders and in LME approved warehouses tend to reflect most directly changes in the balances of world supply and demand. Stocks held by consumers represent mainly metal required to maintain normal processing operations and remain generally more stable. Following the steep fall in world zinc consumption in 1974-1975 in the wake of the first world energy crisis, commercial stocks rose in total to record levels of almost 1.2 million tons in 1976-1977. They were subsequently reduced to around 800,000 tons in 1982 and fell to 607,000 tons by the end of 1985, the lowest level of the last fifteen years. Commercial stocks stood at 613 thousand tons by the end of 1986. The United States zinc stockpile was largely accumulated during and immediately following the Korean War and has been reduced from its peak of 1.4 million tons in the early 1960s to its present level of 343,000 tons. Substantial releases of metal from the stockpile were made during the mid-1960s and during 1972-1974 to dispose of stockpile inventories rendered surplus as a result of reductions in the stockpile goals for zinc and other materials. In May 1980 the stockpile goal for zinc was raised to 1.3 million tons as a result of revised assumptions in the scenario for a possible emergency. No acquisitions were made, however, and the inventory has remained unchanged. There are no plans for increasing the quantities held. On 8 July 1985, the President proposed a major restructuring of the stockpile. The goal for zinc would drop to zero, with 77,000 tons of the current inventory to be retained in a supplemental reserve. Excess zinc could be available for disposal. Provision is made in the plan for consultations on any disposals with interested governments. Before the proposal can go into effect it must be approved by Congress. Congress, however, has opposed changing stockpile goals. The Japanese stockpiles (consisting of a government stockpile and a commercial stockpile for which the government provided financial assistance) were built up during 1976-1978 and were released steadily back to Japanese producers; the final small tonnage was released at the beginning of 1984.

Price elasticities

31. The supply and demand for zinc, as for most metals, are not very sensitive in the short run to price changes, and therefore relatively large price variations are required to clear the market. Producers' responses to changes in prices in the same year are near zero, while medium-term (3-4 years) price elasticities of supply in the past have been between 0.3 and 0.6.[5] Price elasticities of demand estimated for the short-term have turned out to be negligible; but for the medium-term, sectoral estimates (for developed countries) resulted as follows: (i) for galvanizing, elasticities between 0.2 and 0.4, with a mean lag of about 6 years, and (ii) for die-casting, elasticities between 0.3 and 0.4, with a mean lag also of 6 years.[6]

TABLE 7

STOCKS OF ZINC METAL, 1960-1986 (end of year)

(Thousand tons)

	1960	1965	1970	1973	1975	1978	1979	1980	1981	1982	1983	1984	1985	1986
Producers	316	212	485	244	747	462	552	499	564	503	345	420	410	432
Consumers	125	209	171	200	223	208	199	161	163	153	181	158	137	132
Merchants	5	10	13	5	95	90	70	40	74	53	45	21	29	32
LME	2	2	13	8	70	70	46	86	74	92	97	29	31	17
Comex	-	-	-	-	-	2	2	1	0	0	0	0	0	0
Total	448	433	682	457	1,135	832	869	787	875	801	668	628	607	613
Non-commercial stocks:														
US stockpile	1,405	1,191	1,016	614	350	346	346	342	341	341	341	341	341	341
Japan stockpiles	-	-	-	-	-	145	140	118	86	61	4	-	-	-

Source: The International Lead and Zinc Study Group

[1]International Lead and Zinc Study Group: The Market Situation for Zinc, March 1986.

[2]The London Metal Exchange is to introduce a new Special High Grade zinc contract under which the metal delivered must be of a minimum 99.995 per cent purity. The major currency for the new contract (as for the existing HG contract) will be expressed in US dollars, but all other conditions relating to shapes, and weights, size of lot, warrent, etc., will be identical to the HG contract. Trading in the three months position and further forward dates is to begin on 1 September, with the first cash position falling due on 1 December 1988.

[3]In 1980 constant or real dollars, deflated by the c.i.f. Manufacturing Unit Value Index (MUV - Industrial market economies' indices of United States dollar unit values of manufactured exports to developing countries. The c.i.f. index combines a 90 per cent weight of f.o.b. export prices with a 10 per cent weight of transport costs).

[4]It may be noted that the 1973-74 price rise was considerably steeper in current than constant price terms.

[5]See Satyadev Gupta, the World Zinc Industry (Lexington, Mass: Lexington Books, D.C. Heath and Company, 1983).

[6]World Bank, Economic Analysis and Projections Department estimates.

SECTION III

INTERNATIONAL TRADE

32. This section discusses briefly export and import flows in zinc concentrates and refined zinc from 1975 to 1986. It also describes the direction of trade in these products by main exporters and importers in 1986.[1] More detailed information on trade flows in zinc and its products, semi-manufactures and manufactures, is provided in Section IV which examines the world trade in zinc on a tariff line basis together with individual tariff treatment in sixteen developed country markets and some developing countries.

33. According to the statistics of the International Lead and Zinc Study Group, in 1986 the volume of trade in zinc concentrates without the intra-EEC represented over 26 percent of world mine production and that of refined zinc about 24 per cent of world smelter production (32 and 31 per cent, respectively, if the trade among the EEC countries is included).[2] Data shown below indicate total world trade in zinc concentrates and refined zinc in the period from 1975 to 1986.

Thousands of metric tons	1975	1979	1980	1983	1984	1985	1986
Concentrates: (zinc content)							
Exports	1,992 (1,829)	2,031 (1,729)	2,042 (1,713)	2,341 (1,989)	2,527 (2,045)	2,249 (1,848)	2,196 (1,799)
Imports	1,931 (1,761)	2,235 (1,966)	2,210 (1,875)	2,181 (1,849)	2,369 (2,013)	2,358 (1,954)	2,316 (1,925)
Refined zinc							
Exports	1,400 (1,171)	1,742 (1,394)	1,798 (1,438)	2,089 (1,725)	1,570 (1,483)	1,923 (1,519)	2,082 (1,626)
Imports	1,266 (1,046)	1,812 (1,484)	1,651 (1,324)	2,016 (1,675)	2,059 (1,722)	2,064 (1,711)	1,981 (1,637)

Note: The totals shown above include published data on trade reported by market-economy countries, together with estimates of trade between centrally-planned economies and other countries not covered by official trade statistics. Trade among centrally-planned economies is excluded, intra-EEC trade is included. The figures in brackets indicate the world total excluding intra-EEC trade.

Zinc ores and concentrates

34. Following the increase in smelting and refining in the mine producing countries in the last decade, world trade in zinc ores and concentrates has decreased and, as mentioned before, in 1986 it represented 26 per cent of world mine production compared to 28 per cent in 1975. As Table 8 shows, exports of concentrates decreased in the late 1970s, reflecting reductions in supplies as a result of increases in smelting and refining capacities in several mine producing countries and lower mine production. They reached the highest level of about 2 million tons in 1984, due to higher mine output in several producing countries. Decreasing again in the following years, they were 1.6 million tons in 1986. In 1986, the main exporters among developed countries, which accounted for about 63 per cent of world exports of zinc concentrates, were Australia (24.1 per cent), Canada (21.9 per cent) and Sweden (12.1 per cent). Canada was the world's largest exporter until 1985 when it was overtaken by Australia. In 1986, developing countries were responsible for more than 37 per cent of total exports of concentrates with Peru and Mexico as main suppliers (22.2 per cent and 5.6 per cent, respectively). In the same year, centrally-planned economies' exports of zinc concentrates were estimated to be about 0.8 per cent of world exports.

35. In the last decade, world imports of zinc concentrates have been fluctuating around 1.8 to 2 million tons. The bulk of world imports of zinc concentrates is destined to smelters in developed countries, notably to the member States of the European Communities and Japan. As already mentioned, these countries have, in general, smelting and refining capacity which exceeds their domestic sources of zinc ores and they rely largely on foreign supplies. Table 9 indicates that in 1986 these two markets shared 47.8 and 22.7 per cent of total world imports, respectively. In the same year, developing countries, namely the Republic of Korea, Brazil, India, Yugoslavia and Algeria, accounted for 9 per cent of world imports of zinc concentrates. In 1986, imports of these products by centrally-planned economies were estimated at 111 thousand tons which represented 5.8 per cent of world zinc concentrates imports in that year.

36. It seems that Australia, Canada and Peru will remain major exporters of zinc concentrates in the future. However, it is expected that the United States will become a major zinc concentrates exporter in the early 1990s after the completion of its new Red Dog zinc, lead and silver mine in Alaska. On the other hand, it is possible that the dependence on imports of zinc concentrates by the European countries might decrease if their plans for rationalization of production capacity are realized.

TABLE 8

WORLD EXPORTS OF ZINC ORES AND CONCENTRATES, 1975-1986

(Zinc content: thousands of metric tons, regional and country data as a percentage of world exports)

	1975		1979		1980		1983		1984		1985		1986	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Total trade	1,991.7		2,030.7		2,067.4		2,365.8		2,433.0		2,249.1		2,196.3	
Total trade excluding intra-EEC trade	(1,824.5)	(100.0)	(1,724.2)	(100.0)	(1,688.9)	(100.0)	(2,005.4)	(100.0)	(2,044.7)	(100.0)	(1,847.7)	(100.0)	(1,799.4)	(100.0)
Developing countries	634.4	34.6	578.4	33.5	607.3	36.8	579.4	28.9	659.5	32.3	697.0	37.7	663.9	36.9
of which:														
Bolivia	49.5	2.7	53.9	3.1	46.2	2.7	41.4	2.1	37.9	1.9	33.9	1.8	36.0*	2.0
Brazil	4.3	0.2	4.6	0.3	-	-	-	-	-	-	-	-	-	-
Burma	2.0	0.1	3.0	0.2	3.0*	0.2	5.0*	0.3	5.0*	0.2	5.0*	0.3	5.0*	0.3
Chile	3.0	0.2	1.5	0.1	1.0	0.2	6.0	0.3	6.0*	0.3	6.0*	0.3	6.0*	0.3
Ecuador	0.1	0.0	1.5	0.1	2.0	0.2	-	-	-	-	-	-	-	-
Guatemala	0.3	0.0	0.5	0.0	0.1	0.0	-	-	-	-	-	-	-	-
Honduras	23.1	1.3	21.1	1.2	13.0	0.8	42.7	2.1	38.5	1.9	57.8	3.1	50.0*	2.8
Iran	70.0*	3.8	24.0*	1.4	37.0*	2.2	30.0*	1.5	30.0*	1.5	-	1.6	30.0*	1.7
Korea, Rep.of	23.8	1.3	-	-	-	-	-	-	-	-	-	-	-	-
Mexico	73.6	4.0	61.4	3.6	67.4	4.0	60.8	3.0	69.1	3.4	118.1	6.4	100.0*	5.6
Morocco	13.2	0.7	7.4	0.4	4.5	0.3	7.6	0.4	12.0	0.6	14.1	0.8	14.4*	0.8
Nicaragua	5.0	0.3	-	-	-	-	-	-	-	-	-	-	-	-
Peru	122.4	17.5	368.6	21.4	409.0	24.2	370.7	18.5	441.6	21.6	412.0	22.3	400.0*	22.2
Philippines	7.4	0.4	11.1	0.6	7.4	0.4	2.3	0.1	2.4	0.1	2.5	0.1	2.5*	0.1
Tunisia	1.9	0.1	3.2	0.1	10.2	0.6	8.0*	0.4	8.0*	0.4	8.0*	0.4	8.0*	0.4
Yugoslavia	3.8	0.2	3.3	0.2	4.4	0.3	1.7	0.1	3.0	0.2	-	-	-	-
Other (Argentina, Congo)	5.0	0.3	11.0	0.6	-	-	-	-	0.3	-	-	-	-	-
Developed countries	1,324.1		1,406.3		1,400.1		1,770.4		1,755.5		1,537.1		1,521.4	
of which:	(1,161.2)	(63.5)	(1,099.8)	(63.8)	(1,046.6)	(62.0)	(1,410.0)	(70.3)	(1,367.2)	(66.9)	(1,135.7)	(61.5)	(1,124.5)	(62.5)
Australia	177.4	9.7	183.8	10.6	261.6	15.5	389.6	19.4	422.5	20.7	410.8	22.2	432.9	24.1
Canada	718.1	39.3	598.5	34.6	432.6	25.6	660.8	33.0	539.6	26.4	396.8	21.5	394.1	21.9
EEC	244.8		405.1		453.2		446.3		487.7		462.2		429.2	
Belgium	(77.6)	(4.2)	(97.9)	(5.7)	(97.2)	(5.8)	(85.9)	(4.3)	(99.4)	(4.9)	(60.8)	(3.3)	(32.3)	(1.8)
	9.5		25.0		10.4		20.1		11.0		8.3		5.3	
Denmark	(0.0)	(0.0)	(4.3)	(0.2)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)
(Greenland)	98.1		91.9		91.1		91.3		73.2		66.9		64.0	
France	(66.3)	(3.6)	(45.9)	(2.6)	(48.0)	(2.8)	(28.4)	(1.4)	(21.1)	(1.0)	(14.3)	(0.8)	(11.4)	(0.6)
	8.7		23.3		22.0		49.2		58.5		51.1		44.0	
Germany, F.R.	(-)	(-)	(-)	(-)	(2.4)	(0.1)	(1.7)	(0.1)	(-)	(-)	(-)	(-)	(-)	(-)
	31.4		34.4		39.2		47.7		56.6		65.2		51.9	
Greece	(-)	(-)	(3.8)	(0.2)	(3.8)	(0.2)	(2.5)	(0.1)	(3.6)	(0.2)	(0.6)	(-)	(4.3)	(0.2)
	14.4		26.5		22.4		28.8		19.7		25.6		21.7	
Ireland	(5.0)	(0.3)	(6.8)	(0.4)	(7.0)	(0.4)	(5.5)	(0.3)	(5.2)	(0.3)	(4.5)	(0.2)	(n.a.)	(n.a.)
	66.6		196.5		234.3		188.8		205.0		183.2		184.3	
Italy	(-)	(-)	(34.0)	(2.0)	(32.7)	(1.9)	(34.6)	(1.7)	(29.2)	(1.4)	(24.5)	(1.3)	(11.2)	(0.6)
	5.7		1.2		1.4		2.2		10.4		13.9		8.2	
Spain	(0.8)	(0.0)	(1.2)	(0.1)	(1.6)	(0.1)	(1.7)	(0.1)	(10.1)	(0.5)	(16.7)	(0.4)	(5.6)	(0.3)
	4.1		6.3		27.9		19.3		46.1		43.0		45.0	
United Kingdom	(-)	(0.0)	(2.0)	(0.1)	(1.7)	(0.1)	(11.5)	(0.6)	(23.0)	(1.1)	(5.2)	(0.3)	(n.a.)	(n.a.)
	6.3		-		4.3		8.9		7.2		5.0		4.5*	
Norway	(5.5)	(0.3)	(-)	(-)	(-)	(-)	(-)	(-)	(7.2)	(0.4)	(5.0)	(0.3)	(n.a.)	(n.a.)
South Africa	7.4	0.4	7.2	0.4	3.7	0.2	14.4	0.7	6.4	0.2	6.3	0.3	5.2	0.3
Sweden	48.3	2.6	20.3	1.2	22.8	1.3	16.2	0.8	56.7	2.8	25.0	1.4	40.0*	2.2
United States	104.0	5.7	172.0	10.0	174.2	10.3	182.9	9.1	212.1	10.4	212.8	11.5	216.7	12.0
Other	22.0	1.2	20.1	1.2	54.5	3.2	60.2	3.0	30.5	1.5	23.2	1.3	3.3	0.2
	2.3	0.1	-	-	-	-	-	-	-	-	-	-	-	-
Centrally-planned Economies	33.0	1.8	46.0	2.7	35.0	2.0	16.0	0.8	18.0	0.9	15.0	0.8	11.0	0.6
of which:														
Czechoslovakia	5.0	0.3	10.0	0.6	5.0	0.3	7.0	0.4	8.0	0.4	8.0	0.4	6.0	0.3
Korea, P.D.R.	28.0	1.5	36.0	2.1	30.0	1.8	9.0	0.4	10.0	0.5	7.0	0.4	5.0	0.3

*Estimated

Source: International Lead and Zinc Study Group

TABLE 9

WORLD IMPORTS OF ZINC ORES AND CONCENTRATES, 1975-1986

(Zinc content: thousands of metric tons, regional and country data as a percentage of world imports)

	1975		1979		1980		1983		1984		1985		1986	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Total Trade	1,930.6		2,234.7		2,209.8		2,184.3		2,369.2		2,358.0		2,315.8	
Total trade excluding intra-EEC trade	(1,736.0)	(100.0)	(1,947.4)	(100.0)	(1,866.6)	(100.0)	(1,834.6)	(100.0)	(2,012.7)	(100.0)	(1,953.9)	(100.0)	(1,924.5)	(100.0)
Developing countries	34.5	2.0	109.8	5.6	123.7	6.5	142.0	7.7	146.0	7.3	181.0	9.3	172.4	9.0
of which:														
Algeria	-	-	27.7	1.4	15.2	0.8	20.0*	1.1	12.4	0.6	10.8	0.6	10.0*	0.5
Brazil	0.0	0.0	0.0	0.0	18.1	1.0	29.4	1.6	27.6	1.4	37.7	1.9	35.4	1.8
India	5.5	0.3	14.5	0.7	22.6	1.2	-	-	16.1	0.8	21.7	1.1	20.0*	1.0
Korea, Rep.of	-	-	21.3	1.1	21.9	1.2	57.2	3.1	64.2	3.2	81.4	4.2	85.0*	4.4
Mexico	-	-	-	-	-	-	10.7	0.6	5.9	0.3	-	-	-	-
Romania	-	-	15.0	0.8	10.0	0.5	10.0	0.5	5.0	0.3	-	-	2.0*	0.1
Yugoslavia	29.0	1.7	31.3	1.6	35.9	1.9	14.7	0.8	14.8	0.7	29.4	1.5	20.0*	1.0
Developed countries	1,818.0		1,925.9		1,923.6		1,861.2		2,033.2		2,022.0		2,032.4	
of which:	(1,648.8)	(93.6)	(1,638.6)	(84.1)	(1,580.4)	(84.7)	(1,512.6)	(82.6)	(1,676.7)	(85.3)	(1,617.9)	(82.8)	(1,641.1)	(85.3)
Austria	0.6	0.0	2.8	0.1	4.3	0.2	3.3	0.2	6.5	0.3	5.7	0.3	6.0*	0.3
Canada	-	-	9.9	0.5	59.5	3.2	78.1	4.3	42.6	2.1	17.5	0.9	35.8	1.9
EEC	1,142.2		1,119.8		1,166.5		1,193.5		1,288.5		1,327.8		1,310.5	
	(947.6)	(54.6)	(832.5)	(42.8)	(823.3)	(44.1)	(843.8)	(46.0)	(932.0)	(46.3)	(923.7)	(47.3)	(919.2)	(47.8)
Belgium	252.3		228.9		177.5		274.8		274.8		272.5		249.5	
	(218.2)	(12.6)	(176.0)	(9.0)	(134.1)	(7.1)	(200.0)	(10.9)	(198.2)	(9.9)	(182.5)	(9.3)	(172.6)	(9.0)
France	233.2		246.9		235.0		292.0		279.1		270.1		256.7	
	(171.8)	(9.9)	(186.3)	(9.6)	(188.8)	(9.4)	(216.8)	(11.9)	(195.5)	(9.7)	(206.1)	(10.6)	(197.4)	(10.3)
Germany,F.R.	263.1		207.2		265.6		228.3		241.1		241.8		250.6	
	(233.4)	(13.4)	(155.9)	(8.0)	(205.8)	(10.9)	(164.5)	(9.0)	(184.7)	(9.2)	(182.2)	(9.3)	(204.6)	(10.6)
Italy	106.7		127.9		196.3		110.9		160.3		217.7		244.0	
	(86.0)	(5.0)	(85.9)	(4.4)	(130.5)	(6.9)	(91.8)	(5.1)	(110.8)	(5.5)	(123.1)	(6.3)	(124.6)	(6.5)
Netherlands	166.0		154.6		190.3		199.1		220.7		228.1		200.5	
	(146.8)	(8.5)	(113.1)	(5.8)	(104.9)	(5.6)	(118.2)	(6.4)	(149.3)	(7.4)	(145.6)	(7.5)	(131.2)	(6.8)
Spain	75.8		55.9		20.1		36.0		39.7		19.2		25.0*	
	(51.3)	(3.0)	(37.6)	(1.9)	(11.8)	(0.6)	(17.6)	(1.0)	(23.1)	(1.2)	(5.9)	(0.3)	(10.0)	(0.5)
United Kingdom	45.1		98.4		81.7		51.4		72.8		78.4		79.2	
	(40.1)	(2.3)	(75.7)	(3.9)	(58.4)	(3.1)	(33.9)	(1.9)	(70.4)	(3.5)	(78.4)	(4.0)	(78.8)	(4.1)
Finland	56.6	3.3	73.2	3.8	107.4	5.6	111.0	6.1	92.7	4.6	101.6	5.2	109.0	5.7
Japan	446.6	25.7	456.2	23.4	410.0	21.7	368.5	20.1	468.1	23.3	422.8	21.6	436.1	22.7
Norway	31.0	1.8	36.6	1.9	40.9	2.2	51.9	2.8	63.8	3.4	56.4	2.9	62.7	3.3
South Africa	10.4	0.6	-	-	-	-	-	-	-	-	-	-	-	-
Sweden	-	-	-	-	-	-	0.0	0.0	-	-	-	-	-	-
Switzerland	0.0	0.0	2.5	0.1	5.1	0.3	0.0	0.0	-	-	-	-	-	-
United States	131.5	7.6	224.9	11.6	129.9	6.9	56.0	3.1	71.0	3.5	90.2	4.6	72.3	3.8
Centrally-planned economies	77.2	4.4	199.0	10.2	162.5	8.6	180.0	9.8	190.0	9.4	155.0	7.9	111.0	5.8
of which:														
Bulgaria	4.0	0.2	25.0	1.3	15.0	0.8	25.0	1.4	25.0	1.2	25.0	1.3	15.0	0.8
German D.R.	-	-	15.0	0.8	30.0	1.6	40.0	2.2	45.0	2.2	25.0	1.3	20.0	1.0
Poland	65.2	3.8	14.0	0.7	13.5	0.7	-	-	-	-	-	-	-	-
USSR	8.0	0.5	125.0	6.4	90.0	4.8	65.0	3.5	90.0	4.5	90.0	4.6	7.0	0.4
China, P.R.	-	-	-	-	-	-	40.2	2.2	30.0	1.5	15.0	0.8	6.0	0.3
Korea, P.D.R	-	-	20.0	1.0	14.0	0.7	-	-	-	-	-	-	-	-

*Estimated

Source: International Lead and Zinc Study Group

Refined zinc

37. In contrast to zinc concentrates, world exports of zinc metal rose considerably between 1975 and 1980 following the increase in processing in some producing countries, namely Canada, Australia and Finland. Depressed demand for slab zinc and shortages of concentrates for exports led to the fall of exports in the following two years. Zinc metal exports increased in 1983 and attained the highest level of 1.7 million tons. In general, zinc metal exports have fluctuated more or less with cyclical movements in zinc metal consumption. Zinc metal exports represented about 24 per cent of world metal production in 1986 compared to 37 per cent in 1960. In 1986, developed countries provided some 70 per cent of world exports of refined zinc. As indicated in Table 10, in 1986, among developed countries, the leading world exporter was Canada with a share of 26.2 per cent, followed by Australia (13.4 per cent), the member States of the European Communities (11.2 per cent), Finland (7.3 per cent), and Norway (4.1 per cent). Main suppliers among developing countries, which represented almost 21 per cent of world exports of refined zinc in 1986, were Peru (6.5 per cent), Mexico (5.0 per cent), Zaire (4.4 per cent) and Zambia (1.3 per cent). In the same year, centrally-planned economies accounted for 8.6 per cent of world exports of refined zinc.

38. World refined zinc imports followed a similar trend as refined zinc exports. They increased substantially after 1975. World refined zinc imports reached the highest level of 1.7 million tons between 1983 to 1985, mainly due to higher imports by the United States and the People's Republic of China. The fall in imports by the People's Republic of China in 1986 led to the decline in world imports which decreased to 1.6 million tons in that year. The leading world importer was the United States which took some 41 per cent of total imports in 1986. In the same year, the EEC imported 131 thousand tons of refined zinc and Japan 92 thousand tons representing a share of 8 and 5.6 per cent in total trade, respectively. Other developed countries shared the remaining 6.5 per cent of total imports. Major importers among developing countries, which were responsible for 29 per cent of 1986 world zinc metal imports, were India, Indonesia, Hong Kong, Taiwan, Thailand, Yugoslavia, Brazil, Egypt, the Republic of Korea and Malaysia. Imports of zinc metal by these countries rose since 1979 as a result of increased consumption and insufficient or no domestic production. Centrally-planned economies' imports rose substantially between 1982 to 1985 largely because of increased imports by the People's Republic of China in those four years. In this period, imports of this group of countries amounted to about 330 thousand tons which represented about 19 per cent of total trade. Of this amount about 210 thousand to 230 thousand tons were imported by the People's Republic of China. However, as mentioned above, the reduction in imports of the People's Republic of China in 1986 also resulted in the

TABLE 10

WORLD EXPORTS OF REFINED ZINC, 1975-1986

(Zinc content: thousands of metric tons, regional and country data as a percentage of world exports)

	1975		1979		1980		1983		1984		1985		1986	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Total trade	1,400.4		1,741.9		1,797.9		2,103.1		1,869.8		1,922.9		2,082.4	
Total trade excluding intra-EEC trade	(1,165.0)	(100.0)	(1,368.0)	(100.0)	(1,402.2)	(100.0)	(1,732.0)	(100.0)	(1,483.0)	(100.0)	(1,510.3)	(100.0)	(1,616.4)	(100.0)
Developing countries	312.6	26.8	245.2	17.8	203.1	14.5	364.8	21.1	308.2	20.8	314.5	20.7	345.3	21.2
of which:														
Algeria	6.5	0.6	8.5	0.6	24.2	1.7	10.0*	0.6	10.0*	0.7	10.0*	0.7	10.0*	0.6
Argentina	-	-	0.5	0.0	-	-	0.4	0.0	-	-	2.0	0.1	2.0*	0.1
Brazil	-	-	0.1	0.0	0.2	0.0	0.0	0.0	-	-	0.1	-	0.1	-
Korea, Rep.of	-	-	8.9	0.6	11.6	0.8	-	-	-	-	0.5	-	1.7	0.1
Mexico	90.4	7.8	77.2	5.6	58.3	4.2	78.4	4.5	83.1	5.6	70.8	4.7	80.9	5.0
Peru	57.8	4.9	39.0	2.8	32.8	2.3	146.4	8.5	111.5	7.5	119.0	7.8	105.1	6.5
Singapore	n.a.	n.a.	2.9	0.2	4.8	0.3	0.3	0.0	-	-	-	-	-	-
Yugoslavia	51.0	4.4	34.7	2.5	22.9	1.6	25.0	1.4	24.0	1.6	15.0	1.0	25.0	1.5
Zaire	65.6	5.6	30.8	2.2	16.1	1.2	67.4	3.9	47.8	3.2	58.9	3.9	71.8	4.4
Zambia	41.3	3.5	42.1	3.1	32.2	2.3	36.9	2.1	31.8	2.1	21.1	1.4	27.7	1.3
Other	-	-	0.5	0.0	0.0	0.0	0.0	0.0	-	-	17.1	1.1	27.7	1.7
Developed countries	956.3		1,406.3		1,498.3		1,650.5		1,481.1		1,508.1		1,597.8	
of which:	(720.9)	(62.8)	(1,044.4)	(75.7)	(1,102.6)	(78.6)	(1,279.4)	(73.9)	(1,094.5)	(73.8)	(1,104.5)	(72.7)	(1,141.8)	(70.2)
Australia	117.7	10.1	198.9	14.4	219.1	15.6	232.7	13.4	220.9	14.9	214.6	14.1	217.5	13.4
Austria	0.2	0.0	0.?	0.1	1.4	0.1	4.9	0.3	4.5	0.3	4.4	0.3	4.0	0.3
Canada	247.2	21.2	429.4	31.1	471.7	33.6	500.5	28.9	526.7	35.5	557.0	36.7	426.8	26.2
EEC	417.2		554.5		581.1		661.1		704.9		691.3		637.7	
	(181.8)	(15.6)	(192.6)	(14.0)	(185.4)	(13.2)	(288.9)	(16.7)	(318.1)	(21.5)	(288.7)	(19.0)	(181.7)	(11.2)
Belgium	180.2		193.6		168.2		190.1		196.9		189.6		185.1	
	(59.0)	(5.1)	(35.5)	(2.6)	(26.4)	(1.9)	(64.7)	(3.7)	(68.7)	(4.6)	(72.2)	(4.8)	(60.1)	(3.7)
Denmark	0.1		0.2		0.1		0.2		0.3		-		0.1	
	(0.1)	(0.0)	(0.2)	(0.0)	(0.1)	(0.0)	(0.2)	(0.0)	(0.1)	(-)	(-)	(-)	(-)	(-)
France	15.0		44.5		32.9		50.7		93.1		68.6		59.6	
	(8.1)	(0.7)	(30.5)	(2.2)	(17.4)	(1.2)	(14.7)	(0.9)	(25.4)	(1.7)	(22.1)	(1.5)	(20.5)	(1.3)
Germany, F.R.	66.4		82.9		98.2		115.0		97.7		94.1		77.0	
	(34.1)	(2.9)	(39.9)	(2.9)	(39.5)	(2.8)	(51.3)	(3.0)	(44.8)	(3.0)	(36.6)	(2.4)	(22.0)	(1.4)
Italy	28.7		14.1		17.6		31.7		42.5		43.8		45.9	
	(25.6)	(2.2)	(8.3)	(0.6)	(12.1)	(0.9)	(17.4)	(1.0)	(29.4)	(2.0)	(34.4)	(2.3)	(35.2)	(2.2)
Spain	30.5		84.1		93.8		96.9		105.9		127.2		94.2	
	(24.7)	(71.2)	(69.3)	(5.0)	(58.4)	(4.2)	(88.8)	(5.1)	(94.2)	(6.4)	(66.0)	(4.3)	(n.a.)	(n.a.)
United Kingdom	13.4		12.2		27.0		19.9		8.1		8.0		11.4	
	(10.2)	(0.9)	(1.1)	(0.1)	(7.1)	(0.5)	(9.2)	(0.5)	(2.2)	(0.2)	(2.9)	(0.2)	(n.a.)	(n.a.)
Finland	78.1	6.7	128.8	9.3	120.9	8.6	128.5	7.4	122.8	8.3	137.3	9.0	119.2	7.3
Japan	52.8	4.5	37.2	2.7	41.7	3.1	49.2	2.9	45.2	3.1	33.0	2.2	23.4	1.4
Norway	32.8	2.8	56.8	4.1	60.3	4.3	71.8	4.2	74.9	5.1	71.9	4.7	67.2	4.1
South Africa	3.0	0.3	-	-	1.4	0.1	1.8	0.1	0.8	0.1	7.4	0.5	5.0*	0.3
Sweden	0.4	0.0	0.2	0.0	0.3	0.0	0.5	0.0	0.4	-	0.7	0.1	0.8	-
Switzerland	0.6	0.1	0.2	0.0	0.1	0.0	0.2	0.0	0.1	-	0.1	-	0.2*	-
United States	6.3	0.5	0.3	0.0	0.3	0.0	0.4	0.0	0.8	0.1	4.0	0.3	1.9	0.1
Centrally-planned economies	131.5	11.3	90.4	6.5	96.5	6.9	87.8	5.1	80.5	5.4	100.3	6.6	139.3	8.6
of which:														
Bulgaria	20.0	1.7	20.0	1.5	10.0	0.7	6.0	0.3	5.0	0.3	12.0	0.8	8.0	0.5
Poland	28.5	2.5	4.4	0.3	17.5	1.3	15.8	0.9	26.5	1.8	27.3	1.8	22.3	1.4
USSR	28.0	2.4	10.0	0.7	11.0	0.8	30.0	1.7	20.0	1.4	20.0	1.3	16.0	1.0
China, P.R.	3.0	0.3	4.0	0.3	5.0	0.3	5.0	0.3	2.0	0.1	4.0	0.3	49.0	3.0
Korea, P.D.R.	50.0	4.3	50.0	3.6	50.0	3.6	30.0	1.7	25.0	1.7	35.0	2.3	42.0	2.6
Other	2.0	0.2	2.0	0.1	3.0	0.2	1.0	0.1	2.0	0.1	2.0	0.1	2.0	0.1

*Estimated

Source: International Lead and Zinc Study Group

share and volume of zinc metal imports by centrally-planned economies in that year. Table 11 indicates world imports of refined zinc from 1975 to 1986.

39. According to an International Lead and Zinc Study Group analysis, it seems likely that trends in trade patterns of zinc metal will follow those which have emerged during the late 1970s. The possible continuation in rationalization of production capacity and closures of some older plants in some developed countries might increase the degree of dependence on imports or reduce availability of zinc metal for exports. The volume of zinc metal imports by developing countries will be determined by their ability to maintain rapid growth in consumption and at the same time by the speed with which some of them move towards self-sufficiency in metal supply. Moreover, some of these countries might become exporters of metal. The future trade of centrally-planned economies, particularly the import requirements of the People's Republic of China, and the volume of exports of the People's Democratic Republic of Korea, where it is believed that zinc production capacity is being substantially expanded, is difficult to estimate.

Direction of trade

40. As mentioned before, Australia overtook Canada as the world's largest exporter of zinc concentrates exporter in 1985. Its exports of this product have been over 400 thousand tons since 1984, more than twice as high as in 1975. Generally, most of its concentrates are shipped to Japan and the EEC. In 1986, these two markets imported 59 per cent and 16 per cent of Australian zinc concentrates, respectively. After two years of interuption, the Republic of Korea started to buy again and in 1986, it shared about 8 per cent of total Australian concentrates exports. In the previous years, Australia exported large quantities of zinc concentrates to the People's Republic of China, Indonesia, and to the USSR. The EEC remains Canada's major trading partner for its zinc concentrates. The member States of the EEC, namely Belgium, France, Italy, Germany, F.R. and the United Kingdom shared about 66 per cent of exports of this product in 1986. In the same year, about 13 per cent of Canada's exports went to Japan, 4 per cent to the United States and 2.5 per cent to the USSR. The EEC is also the principle buyer of zinc concentrates from Peru and Mexico. According to 1985 figures, 45 per cent of Peruvian and 65 per cent of Mexican concentrates were shipped to the member States of the EEC. Table 12 shows that the bulk of zinc concentrates exports of Sweden is destined to European smelters. In 1986, about 33 per cent of Swedish exports were destined to the EEC and 20 per cent each to Finland and Norway. As written in paragraph 32 most of the zinc concentrates are imported by the EEC and Japan. The largest exporter to the EEC remains Canada which, in 1986 supplied about 33 per cent of total EEC imports, followed by Peru (20 per cent), Australia (15 per cent) and Sweden (11 per cent). The bulk of Japanese imports of zinc concentrates originates

TABLE 11

WORLD IMPORTS OF REFINED ZINC, 1975-1986

(Zinc content: thousands of metric tons, regional and country data as a percentage of world imports)

	1975		1979		1980		1983		1984		1985		1986	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Total trade	1,266.3		1,812.0		1,651.1		2,016.0		2,059.2		2,064.2		1,981.3	
Total trade excluding intra-EEC trade	(1,045.5)	(100.0)	(1,481.7)	(100.0)	(1,322.0)	(100.0)	(1,672.9)	(100.0)	(1,721.7)	(100.0)	(1,711.4)	(100.0)	(1,636.9)	(100.0)
Developing countries	290.1	27.7	459.0	30.9	467.5	35.3	446.4	26.6	431.7	25.1	449.0	26.2	471.7	28.8
of which:														
Argentina	4.1	0.4	2.4	0.2	3.0	0.2	11.7	0.7	2.1	0.1	0.2	--	0.2*	--
Brazil	50.3	4.8	60.1	4.1	59.5	4.5	3.6	0.2	5.3	0.3	28.5	1.7	22.2	1.4
Chile	1.2	0.1	5.2	0.4	5.8	0.4	4.0	0.2	8.8	0.5	6.3	0.4	5.5*	0.3
Colombia	7.3	0.7	12.4	0.8	11.2	0.8	12.7	0.8	10.1	0.6	5.5	0.3	4.5*	0.3
Egypt	10.1	1.0	10.0*	0.7	11.0*	0.8	17.0*	1.0	13.0*	0.8	19.5*	1.1	20.0*	1.2
Hong Kong	6.8	0.7	27.3	1.8	29.4	2.2	8.3	0.5	7.6	0.4	10.5	0.6	42.6	2.6
India	38.1	3.4	54.0	3.6	49.8	3.8	28.2	1.7	57.3	3.3	68.9	4.0	60.0*	3.7
Indonesia	20.1	1.9	45.0	3.0	51.4	3.9	68.9	4.1	47.2	2.7	50.6	3.0	55.0*	3.4
Ivory Coast	0.9	0.1	5.2	0.4	4.1	0.3	1.8	0.1	2.2	0.1	4.8	0.3	4.5*	0.3
Korea, Rep.of	3.1	0.3	2.8	0.2	1.3	0.1	4.9	0.3	18.1	1.1	11.2	0.7	20.9	1.3
Malaysia	5.9	0.6	11.3	0.8	10.7	0.8	23.3	1.4	19.8	1.2	18.2	1.1	18.0*	1.1
Morocco	1.1	0.1	2.8	0.2	3.0	0.2	2.9	0.2	2.2	0.1	2.6	0.2	2.5*	0.2
Nigeria	10.1	1.0	9.1	0.6	19.5	1.5	27.0	1.6	3.6	0.2	8.1	0.5	8.0*	0.5
Philippines	9.4	0.9	26.5	1.8	16.2	1.2	24.7	1.5	18.5	1.1	12.6	0.7	15.0*	0.9
Romania	7.0	0.7	8.0	0.5	8.0	0.6	1.0	0.1	1.0	0.1	2.0	0.1	2.0	0.1
Singapore	8.7	0.8	17.4	1.2	16.6	1.3	16.0	1.0	10.9	0.6	9.4	0.6	11.8	0.7
Thailand	17.6	1.7	33.8	2.3	33.3	2.5	35.6	2.1	38.1	2.2	13.3	0.8	1.4	0.1
Tunisia	1.0	0.1	0.9	0.1	1.5	1.1	0.3	0.0	0.5	..	0.3	..	0.5*	..
Turkey	12.1	1.2	0.6	0.0	0.7	0.1	7.1	0.4	11.6	0.7	23.7	1.4	24.1	1.5
Venezuela	8.3	0.8	14.9	1.0	23.6	1.8	9.9	0.6	15.9	0.9	12.8	0.8	13.0*	0.8
Yugoslavia	18.5	1.8	4.8	0.3	7.8	0.6	25.1	1.5	22.9	1.3	25.0	1.5	25.0*	1.5
Other	48.4	4.6	104.5	7.0	100.1	7.6	112.0	6.7	115.0*	6.7	115.0*	6.7	115.0*	7.0
Developed countries	916.2		1,220.0		1,077.6		1,245.0		1,317.5		1,280.2		1,341.4	
of which:	(695.5)	(66.5)	(691.7)	(60.1)	(750.2)	(56.6)	(901.9)	(54.0)	(980.0)	(56.9)	(917.4)	(54.2)	(997.2)	(60.9)
Austria	7.6	0.7	4.5	0.3	4.1	0.3	6.1	0.4	9.6	0.6	8.7	0.5	11.4	0.7
Canada	0.7	0.1	2.6	0.2	0.7	0.1	10.0	0.6	6.8	0.4	1.8	0.1	7.3	0.5
EEC	450.3		555.5		525.0		492.4		520.3		503.6		475.2	
Belgium	(229.5)	(21.9)	(226.4)	(15.3)	(195.9)	(14.8)	(149.3)	(8.9)	(182.8)	(10.6)	(151.0)	(8.8)	(130.8)	(8.0)
	23.9		51.5		45.6		53.1		48.8		51.0		46.0	
Denmark	(20.0)	(1.9)	(22.4)	(1.5)	(18.9)	(1.4)	(5.0)	(0.3)	(4.1)	(0.2)	(3.8)	(0.2)	(3.5)	(0.2)
	11.0		16.0		13.0		8.7		10.6		12.1		11.9	
France	(4.4)	(0.4)	(11.6)	(0.8)	(9.7)	(0.7)	(7.4)	(0.4)	(8.6)	(0.5)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
	62.2		79.8		105.2		55.3		64.8		61.6		63.9	
Germany, F.R.	(25.5)	(2.4)	(13.3)	(0.9)	(17.9)	(1.4)	(3.0)	(0.2)	(6.6)	(0.4)	(5.9)	(0.3)	(4.3)	(0.3)
	82.3		141.4		141.1		141.9		160.5		151.8		159.2	
Greece	(22.8)	(2.2)	(45.8)	(3.1)	(38.4)	(2.9)	(43.0)	(2.6)	(50.5)	(2.9)	(41.0)	(2.4)	(39.8)	(2.4)
	11.7		20.9		18.8		12.8		11.7		17.3		15.0*	
Ireland	(2.9)	(0.3)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(4.2)	(0.3)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)	(n.a.)
	2.4		2.8		2.4		1.9		1.4		1.2		1.4	
Italy	(n.a.)	(n.a.)	(0.7)	(0.0)	(0.7)	(0.1)	(0.7)	(0.0)	(0.1)	(..)	(0.1)	(..)	(-)	(-)
	39.2		44.8		46.6		84.2		90.9		63.3		54.6	
Netherlands	(21.5)	(2.1)	(17.0)	(1.1)	(13.8)	(1.0)	(10.2)	(0.6)	(31.6)	(1.8)	(16.0)	(0.9)	(0.6)	
	25.1		20.3		20.2		13.9		15.2		14.0		17.0	
Spain	(5.6)	(0.5)	(4.7)	(0.3)	(10.2)	(0.8)	(2.0)	(0.1)	(3.2)	(0.2)	(1.0)	(0.1)	(5.1)	(0.3)
	0.1		0.8		1.8		3.6		0.2		0.9		4.5	
United Kingdom	(0.2)	(0.0)	(-)	(0.1)	(0.1)	(0.0)	(1.1)	(0.1)	(-)	(-)	(-)	(-)	(n.a.)	(n.a.)
	192.2		176.2		130.3		115.0		116.2		130.6		101.7	
Finland	(126.6)	(12.1)	(110.9)	(7.5)	(85.7)	(6.5)	(72.7)	(4.3)	(78.1)	(4.5)	(92.9)	(5.4)	(68.3)	(4.2)
Japan	1.9	0.2	1.1	0.1	1.1	0.1	1.2	0.1	0.1	..	0.1	..	0.1	..
New Zealand	22.2	2.1	36.7	2.5	41.9	3.2	41.2	2.5	56.4	3.3	64.5	3.8	92.2	5.6
Norway	14.8	1.4	19.7	1.3	18.9	1.4	18.4	1.1	26.8	1.6	21.5	1.3	22.0*	1.3
Portugal	4.1	0.4	0.4	0.0	1.0	0.1	0.2	0.1	0.4	..	0.4	..	0.1	..
South Africa	8.0	0.8	14.5	1.0	16.8	1.3	5.1	0.3	5.5	..	8.0	0.5	7.0*	0.4
Sweden	1.9	0.2	-	-	1.8	0.1	3.1	0.2	2.8	0.2	2.5	0.2	3.0*	0.2
Switzerland	42.9	4.1	36.4	2.5	30.4	2.3	32.6	1.9	35.4	2.1	31.8	1.9	32.8	2.0
United States	16.9	1.6	21.6	1.5	25.3	1.9	20.3	1.2	21.3	1.2	26.2	1.5	30.2	1.8
	345.1	33.0	527.0	35.5	410.6	31.0	613.2	36.6	632.1	36.7	610.9	35.7	666.6	40.7
Centrally-planned economies	60.0	5.7	133.0	9.0	106.0	8.0	326.0	19.4	310.0	18.0	335.0	19.6	168.0	10.3
of which:														
Czechoslovakia	32.0	3.1	30.0	2.0	30.0	2.3	35.0	2.1	37.0	2.2	40.0	2.3	43.0	2.6
German D.R.	10.0	1.0	13.0	0.9	15.0	1.1	10.0	0.6	20.0	1.2	20.0	1.2	20.0	1.2
Hungary	10.0	1.0	14.0	0.9	10.0	0.8	15.0	0.9	10.0	0.6	5.0	0.3	6.0	0.4
USSR	-	-	60.0	4.0	50.0	3.8	50.0	3.0	30.0	1.7	30.0	1.8	25.0	1.5
China, P.R.	5.0	0.5	12.0	0.8	1.0	-	210.0	12.5	210.0	12.2	235.0	13.7	70.0	4.3
Other	3.0	0.3	4.0	0.3	-	-	6.0	0.3	3.0	0.2	5.0	0.3	4.0	0.2

*Estimated

Source: International Lead and Zinc Study Group

TABLE 12

DIRECTION OF TRADE BY MAIN EXPORTING AND IMPORTING COUNTRIES, ZINC ORES AND CONCENTRATES, 1986

Principal exporters			Principal importers		
Country	'000 tons metal content	%	Country	'000 tons, metal content	%
Australia	433	100.0	EEC (gross weight)	2,039 (1,310)	100.0
to: Japan	254	58.7	from: Canada	671	32.9
EEC	68	15.7	Peru	413	20.3
Korea, Rep.of	33	7.6	Australia	299	14.7
India	5	1.2	Sweden	222	10.9
Others	73	16.9	Mexico	119	5.8
			Bolivia	60	2.9
Peru (1985)	388	100.0	Honduras	40	2.0
			Morocco	26	1.3
to: EEC	144	36.0	Turkey	22	1.0
Japan	108	27.0	Others	167	8.2
United States	25	6.3			
Others	123	30.7	Japan	436	100.0
			from: Australia	236	54.1
Canada	394	100.0	Peru	108	24.8
			Canada	62	14.2
to: EEC	259	65.7	Mexico	7	1.6
Japan	52	13.2	Korea, Dem.Rep.	5	1.1
United States	15	3.8	Others	18	4.1
USSR	10	2.5			
Others	58	14.7	Finland	109	100.0
			from: Sweden	39	35.8
Sweden	217	100.0	EEC(Greenland)	14	12.8
			Others	56	51.4
to: EEC	72	33.2			
Finland	39	18.0	Korea, Rep.of*	85	100.0
Norway	39	18.0			
Others	67	30.9	from: Australia	81	95.2
			Others	4	4.8

*Estimates

Source: International Lead and Zinc Study Group
Metallgesellschaft, Metallstatistik 1976-1986, Frankfurt am Main
Statistical Office of the European Communities, External Trade (Analytical Tables - Nimexe 1986), I 74-83 Export, Luxembourg

from Australia. In 1986, Japanese imports from this source represented 54 per cent of its total imports of zinc concentrates, while 25 per cent of concentrates was supplied by Peru and 14 per cent by Canada.

41. Canada, whose exports of zinc metal doubled between 1975 and 1985 remains the world's largest exporter. However, its exports decreased by about 25 per cent in 1986 compared to the previous year. The United States has been Canada's traditional market and in 1986, it imported 78 per cent of Canada's refined zinc exports. The rest of Canada's exports was shipped to the EEC as well as to developing countries. In the years 1982 to 1985, Canada delivered large quantities of refined zinc to the People's Republic of China. In 1986, Australian exports of refined zinc amounted to 218 thousand tons compared to 118 thousand tons in 1975. In 1980, Indonesia overtook the United States as the major market for Australian zinc metal and in 1986 it received over 17 per cent of total exports compared to 15.6 per cent for the United States. A large part of Australian refined zinc exports is destined to Asian markets. Most of the EEC zinc metal output is consumed within the EEC. In 1986, only about 13 per cent of the EEC total production was exported (excluding the intra-EEC trade). The United States which purchased about 33 per cent of the EEC refined zinc in 1986 is its traditional buyer. Other European countries and developing countries, mainly in Africa and the Middle East are also EEC customers. Most of Peruvian zinc metal is shipped to the United States. In 1986, this country bought about 40 per cent of zinc metal exported by Peru. In contrast to the United States whose imports have increased since 1980, imports of refined zinc by Brazil, another traditional importer of Peruvian zinc metal, decreased since 1980 and were almost nil since 1983. The remaining part of Peruvian zinc metal exports is shipped to other Latin American countries, and the EEC and Japan. In the previous four years, Peru also supplied a large part of zinc metal to the People's Republic of China. The United States is also the major market for Finland and Sweden. As already mentioned, the United States depends largely on imports of refined zinc for its domestic consumption. In 1986, net import reliance as an apparent consumption was 67 per cent. Canada, which is the principal supplier of the United States, supplied more than one-half of the United States imports in 1986. Other major exporters to the United States in 1986 were, in decreasing order of importance, the EEC, Mexico, Peru, Australia, Finland and Zaire. The People's Republic of China which became a major importer of zinc metal in 1982, purchased over 200,000 tons annually of this item from market-economy countries until 1985. The steep reduction of its imports in 1986 was a result of increased domestic production. Table 13 also shows the origins of imports into the EEC, Japan and Indonesia (1985). Charts VIII to X illustrate major exporters and importers of zinc ores and concentrates and zinc metal in 1986 as well as destinations of their exports and origins of their imports.

TABLE 13

DIRECTION OF TRADE BY MAIN EXPORTING AND IMPORTING COUNTRIES, REFINED ZINC, 1986

Principal exporters			Principal importers		
Country	'000 tons metal content	%	Country	'000 tons, metal content	%
Canada	427	100.0	United States	667	100.0
to: United States	333	78.0	from: Canada	349	52.3
EEC	29	6.8	EEC	91	13.6
India	4	0.9	Mexico	52	7.8
China	2	0.5	Peru	44	6.6
Others	59	13.8	Australia	41	6.2
			Finland	23	3.5
Australia	218	100.0	Zaire	16	2.4
			Others	51	7.7
to: Indonesia	38	17.4			
Taiwan	35	16.1	EEC	138	100.0
United States	34	15.6			
Hong Kong	16	7.3	from: Finland	49	35.5
New Zealand	12	5.5	Norway	34	24.6
Malaysia	10	4.6	Canada	30	21.7
India	10	4.6	Poland	9	6.5
EEC	6	2.8	Zaire	3	2.2
China	6	2.8	Algeria	2	1.4
Others	51	23.4	Others	11	8.0
EEC	209	100.0	Japan	92	100.0
to: United States	69	33.0	from: Korea, Dem.Rep.	39	42.4
Turkey	19	9.1	Peru	15	16.3
Switzerland	17	8.1	China	8	8.7
China	13	6.2	Australia	10	10.9
USSR	9	4.3	Others	20	21.7
Canada	8	3.8			
Brazil	5	2.4	India*	(69)[1]	
Pakistan	4	1.9		(59)[2]	100.0
Czechoslovakia	4	1.9			
Others	61	29.2	from: EEC	15	25.4
			Zambia	10	17.0
Finland	119	100.0	Others	34	57.6
to: EEC	45	37.8	Indonesia*	55	100.0
United States	22	18.5			
Sweden	13	10.9	from: Australia	45	81.8
Others	39	32.8	Others	10	18.2
Peru	105	100.0			
to: United States	44	41.9			
China	7	6.7			
Others	54	51.4			
Mexico	81	100.0			
to: United States	52	64.2			
Others	29	35.8			

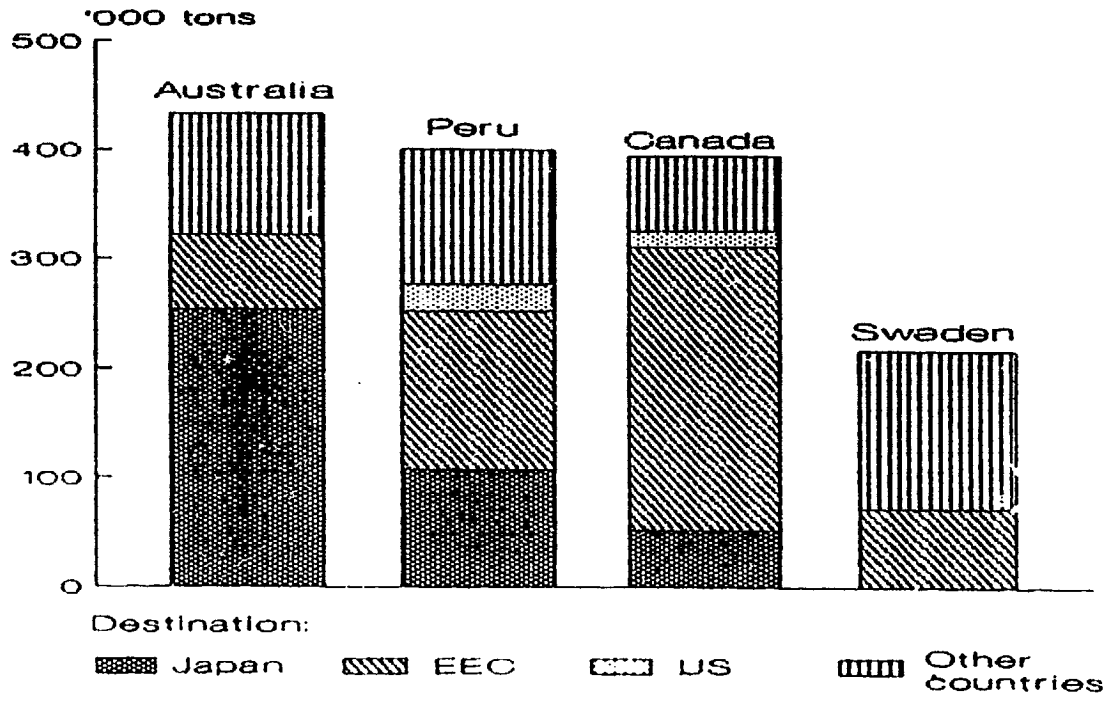
[1] 1985 figures.

[2] 1984-1985 figures.

* Estimates

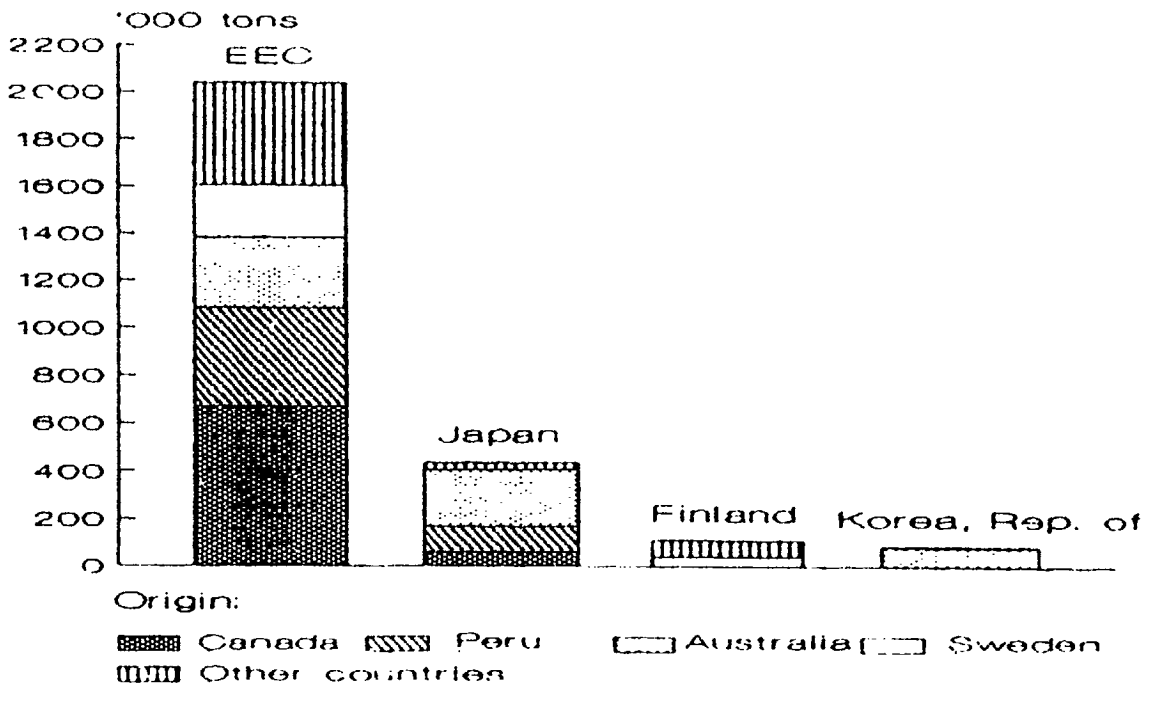
Source: International Lead and Zinc Study Group
Metallgesellschaft, Metallstatistik 1976-1986, Frankfurt am Main
Statistical Office of the European Communities, External Trade (Analytical Tables - Nimexe 1986), I, 74-83 Import, Luxembourg

CHART VII - DIRECTION OF TRADE BY MAIN EXPORTING COUNTRIES, Zinc ores and concentrates, 1986



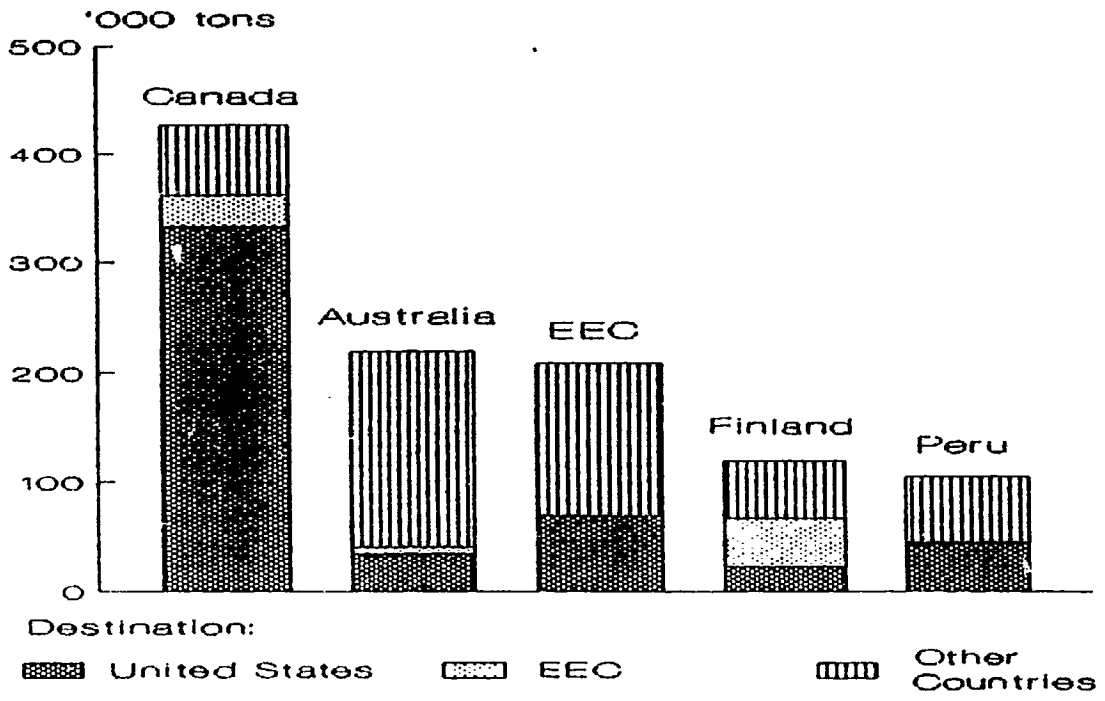
Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

CHART VIII - DIRECTION OF TRADE BY MAIN IMPORTING COUNTRIES, Zinc ores and concentrates, 1986



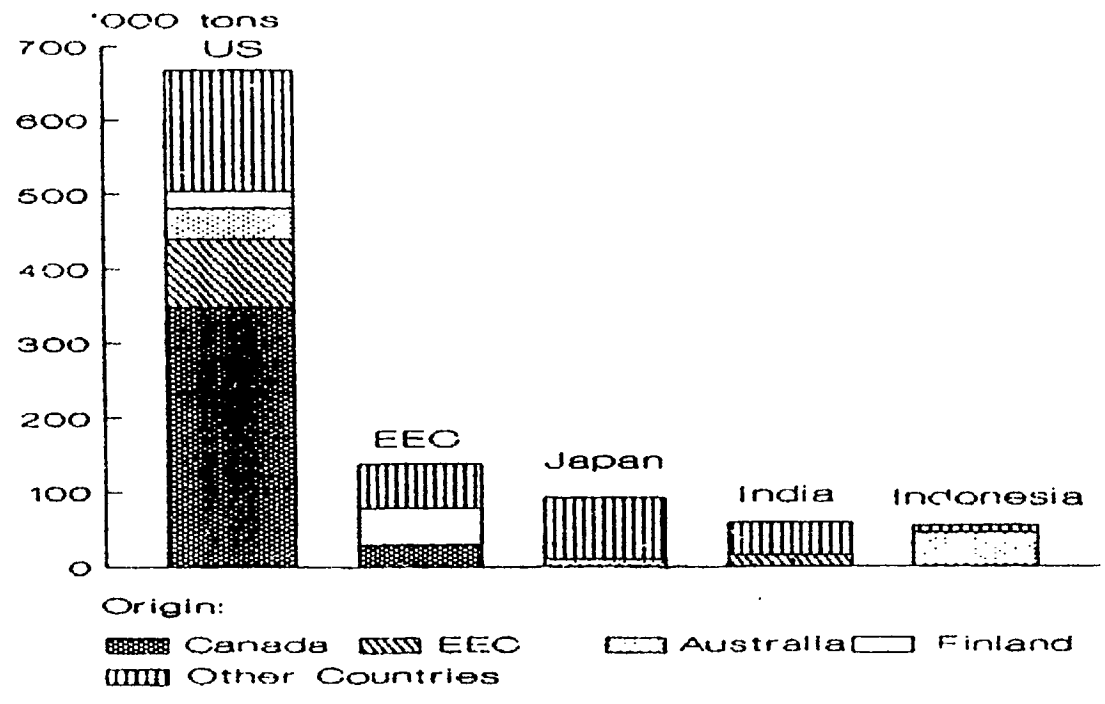
Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

CHART IX - DIRECTION OF TRADE BY MAIN EXPORTING COUNTRIES
Refined zinc, 1986



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

CHART X - DIRECTION OF TRADE BY MAIN IMPORTING COUNTRIES
Refined zinc, 1986



Source: GATT, based on statistics supplied by the International Lead and Zinc Study Group

[1]Statistical data on trade flows are based on information supplied by the International Lead and Zinc Study Group.

[2]All trade data in the text, unless otherwise indicated, exclude the intra-EEC trade.

[3]The International Lead and Zinc Study Group: The market situation for zinc, March 1987.

SECTION IV

COMMERCIAL POLICY SITUATION[1]

42. This section discusses commercial policy measures affecting trade in zinc and zinc products. First, it describes tariff concessions made by developed countries on zinc in the Tokyo Round negotiations and refers to pre- and post-Tokyo Round rates. It also lists tariff concessions made by other countries. This part is followed by an analysis of trade flows in zinc, under different tariff treatment for countries participating in the Tariff Study. Information on tariff treatment and trade flows for certain developing countries is also presented. Some reference is made to the problems of tariff escalation and effective tariff protection in the zinc industry. This section is concluded with a description of non-tariff measures applied to trade in zinc and its products which have been notified to GATT. As explained in paragraph 6, several other metals are commonly produced in association with zinc; this study does not attempt to describe the impact that trade barriers applicable to co-product and by-product metals might have on zinc trade.

Tokyo Round negotiations: tariff assessment

43. Tariff concessions and the binding of m.f.n. rates of duty in zinc and zinc products were subjects of several trade negotiations undertaken in the GATT. In this section, the main focus is the Tokyo Round negotiations and their results in further liberalizing zinc trade. It should, however, be borne in mind that any attempt to measure the importance of tariff reductions encounters a number of technical difficulties. "The main problem stems from the impossibility to correctly assess the volume of trade which will be generated by the agreed duty reductions. Instead of the future trade increment the past volume of trade is usually taken into consideration when the depth of the duty cut on individual customs tariff lines is combined in the overall assessment".[2] The methodology worked out by the Working Party on the tariff study was based on the comparison of the level of tariffs before the negotiations with the level of concessional rates agreed. Two tariff averages were used: the first tariff average was a simple arithmetic average of duty rates; the second was a weighted average giving to each duty the weight of imports on which such duty was collected.[3]

44. Table 14 presents a comparison of pre- and post-Tokyo Round simple and weighted average tariffs on all industrial products (excluding petroleum) with tariff averages on unwrought zinc, zinc semi-manufactures and metal manufactures (other non-ferrous metals included) for nine developed country markets.[4] Weighted tariff averages of all duty rates are calculated using the m.f.n. imports at the national tariff level in 1977 (in some cases 1976) of the country concerned. Simple and weighted tariff averages are broken down into three groups of products divided according to the stage of

Table 14

Pre-Tokyo Round and Post Tokyo Round Tariffs in nine Developed Country Markets

(Percentages)

		All industrial products excluding petroleum		Unwrought zinc		Zinc semi-manufactures		Metal[1] manufactures	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Nine tariffs combined	S	10.4	6.4	4.8	4.3	8.2	5.3	9.8	5.9
	W	7.0	4.6	2.5	2.2	6.4	4.5	9.3	5.7
United States	S	11.2	6.3	8.8	7.5	7.6	4.7	9.9	7.9
	W	6.3	4.3	2.2	1.5	3.0	2.1	5.5	4.5
Canada	S	12.6	7.3	4.4	4.4	8.4	4.5	14.6	8.5
	W	12.7	7.8	0.0	0.0	5.6	4.0	16.1	9.4
Japan	S	10.2	6.0	3.2	2.9	10.3	5.4	10.4	5.4
	W	5.4	2.7	4.2	4.0	10.2	5.4	9.3	5.2
Austria	S	11.7	8.1	1.0	1.0	13.2	7.0	15.9	9.6
	W	8.9	7.7	1.9	1.9	12.9	7.0	19.8	13.4
Finland	S	13.2	11.4	0.0	0.0	0.8	0.0	8.8	6.8
	W	6.9	5.5	0.0	0.0	0.0	0.0	7.7	6.2
Norway	S	8.5	6.7	0.0	0.0	1.8	1.3	7.8	5.3
	W	4.2	3.1	0.0	0.0	2.5	2.1	6.9	4.5
Sweden	S	6.0	4.8	0.0	0.0	0.0	0.0	5.1	3.8
	W	5.6	4.0	0.0	0.0	0.0	0.0	5.3	3.9
Switzerland	S	3.7	2.9	0.3	0.3	0.8	0.8	3.2	2.4
	W	2.9	2.2	0.0	0.0	0.7	0.7	3.8	2.7
EEC	S	9.1	6.4	1.7	1.7	9.0	7.1	7.8	5.6
	W	6.5	4.6	3.4	3.4	9.7	7.7	5.8	5.8

S: Simple average
W: Weighted average

[1] Metal manufactures include all non-ferrous metals.

processing. Table 14 shows that tariff averages, both simple and weighted, on unwrought zinc and zinc semi-manufactures are in most countries lower than those on all industrial products taken together. The exceptions to this observation are the simple tariff average on unwrought zinc in the United States, the weighted tariff averages on unwrought zinc and zinc semi-manufactures in Japan, and both simple and weighted tariff averages on zinc semi-manufactures in the EEC. With respect to metal manufactures (other non-ferrous metals included), eight out of nine developed country markets listed in Table 14 have higher than average tariffs on either the weighted basis, or on both the simple and weighted basis. The only exception is Sweden. However, in examining simple tariff averages for zinc manufactures given for the same countries in Tables 17 to 31, it can be noted that simple tariff averages on zinc manufactures are lower than those of metal manufactures in all countries with the exception of the EEC and Canada. Weighted tariff averages indicated in Table 14 and Tables 17 to 31 cannot be compared as they relate to different trade years.

45. Tariff concessions granted on zinc and zinc products in the Tokyo Round, varied according to different products and countries. On the basis of the information on pre- and post-Tokyo tariff treatment on zinc and zinc products in the countries participating in the MTNs, the following observations can be made:

(i) Australia excepted, m.f.n. duties on zinc and zinc products are bound by all developed countries.

(ii) Most of the m.f.n. duties are ad valorem. Only Switzerland applies low specific duties on all zinc semi-manufactures and manufactures. Specific rates also apply on zinc oxides (CCCN 28.19) and silvered zinc manufactures (ex CCCN 79.06) in Austria, on unwrought zinc (CCCN 79.01) in Japan and on zinc ores and concentrates and ashes and residues in the United States.[5] Imports of chlorides of zinc (ex CCCN 28.30) into Austria are subject to a compound rate. (For the sake of comparison, ad valorem incidence are indicated in bracket..)

(iii) The majority of the positive m.f.n. rates on zinc were reduced. However, certain important m.f.n. rates were bound at the same level (unwrought zinc in Austria, the EEC, Japan, unwrought zinc alloys in Canada, the United States, gutters etc. in the EEC, some semi-manufactures in New Zealand). Low specific rates on zinc semi-manufactures in Switzerland also remained unchanged. As mentioned above, tariff cuts varied according to products and countries and ranged between 20 and 64 per cent. In general,

tariff cuts were deeper on products which were facing higher nominal duties. However, while developed countries accord m.f.n. duty-free treatment on zinc ores and concentrates, m.f.n. nominal duties increase with higher zinc processing. In certain countries, tariff protection starts already beyond the mining stage (Canada, the EEC, Japan and the United States) while others initiate such protection with zinc refining or semi-manufacturing, or both. In most countries, m.f.n. nominal rates of duty increase further on zinc manufactures.

Trade in zinc and zinc products under different tariff treatment according to stages of processing

46. The purpose of this discussion is to give an indication of the magnitude of trade flows in zinc and zinc products under different tariff treatment and according to stages of processing for the countries for which more detailed statistical information was available. Three sets of Tables, with varying degrees of detail, have been established for this purpose. First, Table 15 provides a summary of trade in zinc and zinc products under different tariff treatment in sixteen developed country markets and some developing countries. Second, Tables 16 to 31 give information on trade flows for the same sixteen developed countries at tariff line level broken down by stages of processing as well as by different tariff treatment. Third, trade flows in zinc and zinc products of developing countries included in Table 15 are shown in Tables 32 to 49 based on information gathered from national trade statistics. In addition to the individual country tables, Table 50 indicates m.f.n. rates on zinc and zinc products applied by some other countries.

(i) Developed countries

47. Tables 16 to 31 were established on the basis of the tariff assessment listing for twelve country markets participating in the Tariff Study and from national statistics for the other four countries. The tables indicate imports on a tariff line basis from m.f.n. sources, imports from GSP beneficiaries and imports under other preferential treatment. They also show shares of imports under different tariff treatment in different stages of processing as well as in total imports of zinc and zinc products. Additional columns give the principal exporters under each treatment.

48. Each tariff line shows tariffs granted to the item under different tariff treatment. The m.f.n. treatment relates to m.f.n. final rates (1986/87 for Australia). In certain cases footnotes indicate lower rates actually applied (New Zealand) or imports under by-law provisions (Australia). For the purpose of comparability, specific rates were converted to ad valorem equivalents on the basis of 1984 trade figures and

Table 15

Summary of Imports in Zinc and Zinc Products under Different Tariff Treatment in Thirty-four markets [1]

(in US$'000)

Country	Trade Year	Total Imports Value	%	MFN Duty Free Unbound Value	%	MFN Duty Free Bound Value	%	MFN Dutiable Tariff Range Unbound	Tariff Range Bound	Value	%	GSP Tariff Range	Value	%	Other Preferential Treatment Tariff Range	Value	%	Countries to which preferential treatment is granted
Developed countries:																		
Australia	1984-85	11,108	100.0	314	2.8			12.0-20.0		2,013	18.1	Free-10.0	2,360	21.2	Free	4,802	43.2	NZL,PNG,CAN,Commonwlth.Ct
Austria	1984	20,733	100.0			3,433	16.5	2.0-8.0		286	1.4	11.0-4.0	400	1.9	Free	16,614	80.0	EEC,EFTA,Spain
Canada	1984	18,084	100.0			10,082	55.8	1.7-17.5		7,211	39.9	13.5-11.5	930	5.1	Free-15.0	-	0.0	Commonwealth countries, except UK
EEC	1984	731,498	100.0			596,699	79.3	3.5-11.0		29,802	4.0	Free	1,452	0.2	Free	123,915	16.5	EFTA,ACP,YUG,Mediter. overseas countries
Finland	1984	48,699	100.0			47,736	97.6	5.1-10.0		2	0.0	Free	-	0.0	Free	1,161	2.4	EFTA,EEC,CPE,Spain
Hungary	1984	35,905	100.0			28,014	55.7	2.5-7.7		6,870	19.1	Free	-	0.0	Free	5,262	14.7	Eastern trading area and Finland
Iceland	1986	120	100.0					Free-80.0		120	100.0				Free	-		EFTA
Japan	1984	322,833	100.0			241,634	74.8	1.9-7.2		13,594	4.2	Free	37,933	11.8				
New Zealand	1984	22,299	100.0			16,034	71.9	5.0-50.0		1,111	5.0	Free-25.0	67	0.3	Free	5,087	22.8	SPARTECA, Malaysia, Canada
Norway	1984	52,[illegible]	100.0			48,952	94.1	2.0-5.6		537	1.0	Free	241	0.5	Free	1,699	3.3	
Portugal	1985	16,789	[illegible]					Free-35.0		6,712	40.0				Free	10,077	60.0	EEC,EFTA,Spain
South Africa	1984	5,610	100.0					Free-20.0		5,610	100.0				17.0-15.0	-		Canada, UK
Spain	1985	15,229	100.0					Free-19.0		3,273	21.5				Free-4.7	11,956	78.5	EFTA,EEC
Sweden	1984	46,988	100.0			[illegible],197	98.3	3.2		96	0.2	Free	22	0.0	Free	673	1.4	EEC,EFTA,Spain
Switzerland	1984	28,104	100.0			2	0.0	0.1-14.0		7,590	27.0	Free	696	2.5	Free	19,816	70.5	EEC,EFTA,Spain
United States	1984	740,022	100.0			20,738	2.8	0.1-19.0		677,153	91.5	Free	37,040	5.0	Free	4,425	0.6	CBERA countries, Canada
Developing countries:																		
Argentina	1983	400	100.0					25.0-38.0		400	100.0				...			ALADI countries
Brazil	1985	48,095	100.0					Free-70.0		48,095	100.0				...			ALADI countries
Colombia	1983	11,765	100.0					15.0-45.0		11,765	100.0				...			ALADI countries
Hong Kong	1986	57,013	100.0					Free		57,013	100.0							
India	1984-85	82,942	100.0					60.0-100.0		82,942	100.0							
Indonesia	1985	56,666	100.0					15.0-40.0		56,666	100.0				...			ASEAN countries
Israel	1984	7,144	100.0					Free-12.0		7,144	100.0				Free-10.5	-		United States,EEC
Jamaica	1983	1,382	100.0					Free-25.0		1,382	100.0							
Korea	1986	67,496	100.0					15.0-25.0		67,496	100.0							
Malaysia	1986	41,861	100.0					Free-25.0		41,861	100.0				Free	-		ASEAN countries
Mexico	1985	2,498	100.0					15.0-30.0		2,498	100.0							
Morocco	1985	6,365	100.0					Free-25.0		6,365	100.0							
Peru	1982	37	100.0					15.0-60.0		37	100.0							
Philippines	1985	12,481	100.0					10.0-50.0		12,481	100.0				...			ASEAN countries
Singapore	1986	13,417	100.0					Free		13,417	100.0							
Thailand	1985	15,563	100.0					15.0-30.0		15,563	100.0				...			ASEAN countries
Turkey	1985	27,458	100.0					15.0-30.0		3,735	13.6				Free	23,723	86.4	EEC
Yugoslavia	1986	16,896	100.0					15.0-12.0		15,252	90.3				Free	1,644	9.7	Developing countries

... not available
- nil or negligible
1/ Details for each country are given in their respective table.

reference is made to Annex I where specific rates are indicated. The m.f.n. rates are broken down into duty-free and dutiable rates, bound and unbound. The GSP rates for Austria and Canada refer to the final GSP rates which were gradually reduced in step with staged m.f.n. reductions. GSP rates for other countries refer to 1987 schemes. Other preferential treatment refers to preferential rates of duty granted to certain countries or regional groupings.

49. Sub-totals on trade flows in each stage of processing are given together with tariff ranges and m.f.n. weighted and simple tariff averages. Figures for total zinc trade are also provided. However, it should be noted that trade flows under "ex" tariff lines comprise imports of all products included under the respective tariff lines and not only zinc products. In order to avoid the largest distortions, trade indicated in brackets under CCCN ex 26.03 was not taken into account in the calculation of the total zinc trade. Most tariff lines on zinc chemical compounds are ex items and also include chemicals of other non-ferrous metals. As no percentage allocations for different metals are available, trade figures given for these products relate to the total trade under the same tariff line and should be considered as a rough order of magnitude. Therefore, they were not included in the sub-total trade of chemicals and in total trade. Also, no weighted tariff averages were calculated for these products. In addition, as mentioned in the footnotes to the tables, for certain countries, separate values for imports under CCCN 79.03 - powders and flakes and zinc foil were not available. In such cases, trade values were considered for only within one tariff line; however, they were considered in calculating the weighted tariff averages. It should also be noted that a weighted tariff of zero per cent does not necessarily indicate duty-free treatment but may indicate that there is no trade under m.f.n. dutiable items. Certain difficulties in the calculations relating to the actual incidence of tariffs mentioned above, make it necessary to regard these figures as approximations at best. Moreover, neither the simple nor the weighted tariff averages provide a fully satisfactory indication of how tariffs have affected trade flows over time.

Individual developed country profiles

50. The Australian mineral industry has been undertaking actions for mine rationalization and improvement of operating practices in order to reduce unit costs and operating losses and to increase its efficiency and competitiveness. Australia's zinc mine production more than doubled in the last twenty years reaching the highest level of 695 thousand tons of zinc concentrates in 1987. At present, Australia is the world's fourth largest zinc mine producer, after Canada, the USSR and the EEC. Most Australian zinc is produced from lead and zinc mines since these two metals are

associated minerals in the same ore bodies. The largest zinc producer is the MIM Holding's Mount Isa mine in Queensland which produces about 40 per cent of Australian zinc ores. About half of zinc mine output originates from mines situated in the area of Broken Hill, two of which are owned by CRA and the third one by North Broken Hill Holdings (NBHH). The remainder comes from CRA's Cobar mine, NBHH's Elura mine in New South Wales and BHHH's mines and Aberfoyle's mines in Tasmania. In June 1988, CRA and NBHH agreed to merge their lead and zinc mining and smelting facilities. The new company will produce 380 thousand tons of zinc concentrates and 530 thousand tons of zinc metal. In June 1987, Cadjebut mine in Western Australia owned jointly by BHP Minerals and Billiton Australia with an annual capacity of 44 thousand tons was put on stream and another mine, Lady Loretta owned by Pancontinental and Outokumpu with an annual capacity of 85 thousand tons is expected to start operation in 1989. Other mine development projects are under consideration. At present, about 55 per cent of zinc concentrates output is exported. The rest is processed locally at three refineries - Broken Hill Associated Smelters Pty. Ltd. (BHAS) at Port Pirie, a smelter belonging to Electrolytic Zinc Co. of Australasia Ltd. at Risdon in Tasmania and a smelter owned by Sulphide Corp. Pty. Ltd. (SC) at Cockle Creek in New South Wales. In 1986, Australia overtook Canada and became the world's largest zinc concentrates exporter. Most of its exports are shipped to Japan, the EEC and the Republic of Korea. Australia also belongs to the major exporters of zinc metal since less than one-third (16 per cent in 1987) of output is destined for domestic consumption. Most Australian zinc metal is purchased by countries in South East Asia, namely Indonesia, Taiwan, Hong Kong and the United States. Australia also exports zinc dust and zinc ashes and residues.

51. Consequently, as Table 16 indicates Australian imports of zinc and zinc products are low and in 1986-87 fiscal year they amounted to about US 1 million. They consisted mainly of zinc concentrates, zinc ashes and residues, zinc dust, zinc oxides and zinc gutters. As already mentioned, Australian m.f.n. duties on zinc are not bound. Most rates are 2 per cent (formerly, duty-free rates on which a revenue duty of 2 per cent introduced in 1979 was applied). Positive m.f.n. rates of duty of 10 per cent are applied on zinc dust and 20 per cent on zinc chlorides and zinc manufactures. Certain zinc manufactures are imported duty-free on the basis of the Commercial By-Law System. This Law, which was modified in 1983 provides "for a concessional rate of duty to be applied to imported goods where the Minister for Industry and Commerce decides that no goods serving similar functions were produced or capable of being produced in the normal course of business in Australia".[1] However, after a substantial across-the-board reduction of tariffs, most Australian tariffs became duty-free as from 1 July 1988. Australia grants tariff preferences under its GSP scheme to zinc imports from developing countries. It also grants duty-free access to imports of zinc products from New Zealand under the Australia - New Zealand Economic Relations Trade Agreement and to Papua New Guinea under the Agreement on Trade and Commercial Relations (PACTRA). In addition, the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) provides for duty-free and unrestricted access to imports from the Forum Island countries. Duty-free treatment is also granted on zinc oxides to Canada. In 1986-87, about 21 per cent of total

Table 16

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Australia
Year: 1986/1987

(in US$'000)

	Tariff No.	Total Imports			MFN						GSP			Other Preferential Treatment (NZL,PNG,CAN,Commonwealth Countries 1))		
					Duty Free			Dutiable								
		Value	%	Tariff Average Weighted / Simple	Unbound Value	%	Bound Value	%	Origin	Rate Unbound / Bound	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	26.01.900 6)	6,140			-					2.0	-			Free	181		PER	Free	4,340		CAN
Ash and residues	26.03.000	1,707								2.0	1,065		EEC,JPN,USA	Free	612		KOR,PER	Free	30		NZL
	Sub-total	7,847	100.0	2.0 2.0	-	0.0				2.0	1,065	13.6		Free	793	10.1		Free	4,370	55.7	
Unwrought	79.01.000	893			2				EEC					Free	523		CHN,HK	Free	368		NZL
	79.03.100	768								10.0	163		EEC,KOR	5.0	605		CHN,KOR				
Powders & flakes	79.03.900	299								2.0	298		EEC,USA	Free	-			Free	1		CAN
	Sub-total	1,960	100.0	4.8 4.0	2	0.1				2.0-10.0 3)	461	23.5		Free	1,128	57.5		Free	369	18.9	
Wrought	79.02.000	191								2.0	188		EEC,USA	Free	-			Free	3		CAN,NZL
	79.03.900 7)	(299)								2.0	(298)		EEC,USA	Free	-			Free	(1)		CAN
	79.04.000	122			102				EEC,JPN					Free	9		PTW	Free	11		NZL
	Sub-total	313	100.0	1.3 1.0	102	32.6				2.0	188	60.0		Free	9	0.0		Free	14	4.4	
Chemicals 2)	28.19.000	528								2.0	299		EEC,USA	Free	229		CHN,IND,PTW	Free	5) -		
	ex 9.30.100	(79)								20.0	(3)		EEC	Free	(76)		CHN,IND,PTW	Free	-		
	ex28.39.000	(680)								2.0	(655)		EEC,USA	Free	(25)		CHN,MEX	Free	...		
	Sub-total	528	100.0	2.0 2.0						2.0-20.0 3)	299	56.6		Free	229	43.4		Free	-	0.0	
Finished manufactures	79.06.000	460			210 4)				EEC,JPN,USA	20.0				10.0	200		HKG,PTW,KOR	Free	50		NZL
	Sub-total	460	100.0	0.0 20.0	210	45.6				20.0				10.0	200	43.6		Free	50	10.8	
	TOTAL	11,108	100.0		314	2.8				2.0-20.0 3)	2,013	18.1		Free-10.0 3)	2,360	21.2		Free	4,802	43.2	

... not available
- nil or negligible

1) Those listed in the Australian Tariff under "Declared Preferential Countries".
2) Excludes zinc chemicals for which statistics are not separately recorded.
3) Tariff range.
4) Duty free under by-law.
5) Duty-free applied to imports from Canada.
6) Difference in the summing up represents trade of unspecified origins.
7) Available trade flow information does not distinguish between wrought plates, sheets and strip of zinc, zinc foil and zinc powders and flakes. Trade figures under these items have been included in unwrought zinc.
Exchange rate: 0.6636 US dollar per Australian dollar. This exchange rate is an average of period averages from July 1986 to June 1987. (IMF Statistics)

zinc imports originated from m.f.n. sources, mainly from the EEC and the USA. About 21 per cent of zinc imports were supplied duty-free under the GSP scheme by the People's Republic of China, Peru, Republic of Korea, India, Hong Kong and Taiwan, and about 43 per cent of imports entered free of duty from Canada (mainly zinc concentrates) and New Zealand.

52. Bleiberger Bergwerksunion AG in Corinthia, a part of State-owned holding company, Oesterreichische Industrieverwaltungs AG (OIAG) is Austria's only zinc producer. As zinc mines have become depleted and the ore grade declined to 3.8 per cent of zinc, some zinc concentrates for domestic smelting are imported. At present, domestic refined zinc production satisfies about 70 per cent of domestic requirements. Thus, zinc concentrates and zinc metal, represent the bulk of Austrian zinc imports. As Table 17 shows, in 1984 these two products accounted for 15.5 per cent and 53 per cent of total imports valued at about US$21 million, respectively. Austria also imports wrought zinc products (17.5 per cent of total imports in 1984), zinc oxides (10 per cent) and zinc manufactures. With the exception of zero duties on zinc ores and concentrates, zinc scrap and zinc chlorides, all other m.f.n. rates of duty are positive and range from 2 to 8 per cent. Specific duties apply to imports of zinc oxides and silvered zinc articles. In 1984, imports of zinc products subject to m.f.n. positive rates were practically nil.

53. All dutiable zinc products are covered by the Austrian GSP scheme. GSP rates are 50 per cent lower than the m.f.n. rates and they range from 1 to 4 per cent. Under the Customs Preference Act, Austria grants a duty-free treatment to least-developed countries on all zinc products. In 1984, imports from these sources accounted for about 2 per cent and consisted mainly of zinc metal supplied by Yugoslavia, Zambia and Algeria. In contrast, most Austrian zinc imports originate in other EFTA countries and the EEC and are free of customs duties and all charges. In 1984, these countries supplied about 95 per cent of m.f.n. dutiable goods as well as most of m.f.n. duty-free imports.

54. Canada is one of the world's major zinc producers. However, unfavourable market conditions, temporary mine closures, interruptions due to labour disputes and the permanent closures of some mines due to ore depletion adversely affected the level of its mine and smelter production of zinc in recent years. The Canadian zinc industry has undergone considerable restructuring and re-organization, including changes in ownership. Canadian zinc industry is extensively integrated. The major producers are Cominco Ltd., Noranda Inc., Falconbridge and Hudson Bay Mining and Smelting. With a share of 19 per cent of the world's zinc mine output in 1986, Canada is the world's largest producer. In 1987, it reconquered the first place as zinc ores and concentrates exporter after reaching a record level in zinc mining of 1.5 million tons and exports of about 650 thousand tons. There are some new mines under development while some others are being expanded (among others Callinan mine in Manitoba, Winston Lake mine in Ontario and Caribou mine in New Brunswick). These

Table 17

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Austria
Year: 1984

(in US$'000)

	Tariff No.	Total Imports Value	%	MFN Tariff Average Weighted	Simple	MFN Duty Free Unbound Value	%	MFN Duty Free Bound Value	%	Origin	MFN Dutiable Rate Unbound	Bound	Value	%	Origin	GSP and LDC 1) Rate	Value	%	Origin	Other Preferential Treatment (EEC,EFTA,Spain) 2) Rate	Value	%	Origin
Ores and concentrates	ex26.01	3,215						3,215		EEC,YUG,CSK													
Ash and residues	ex26.03	(8,460)						(8,460)		EEC,ZAF,HUN													
	Sub-total	3,215	100.0	0.0	0.0			3,215	100.0														
Unwrought	79.01.A	9,639									2.0		282		POL,HUN,CAN	1.0	276		YUG,ZMB,TZA	Free	9,061		EEC
	79.01.B	218				218				YUG,HUN													
Powders and Flakes	79.03.A	1,204									8.0		-			4.0	3		YUG	Free	1,179		EEC,NOR
	Sub-total	11,061	100.0	1.1	3.3	218	2.0				2.0-8.0	3)	282	2.5		1.0-4.0	3) 281	2.5		Free	10,260	92.8	
Wrought	79.02	409									6.0		2		USA	3.0	-			Free	407		EEC,CHE
	79.03.B	3,123									7.0		-			3.5	29		YUG	Free	3,094		EEC
	79.04	103									7.0		1		USA	3.5	-			Free	102		EEC,CHE
	Sub-total	3,635	100.0	6..	6.7						6.0-7.0	3)	3	0.1		3.0-3.5	3) 29	0.8		Free	3,603	99.1	
Chemicals	28.19.A	2,103									4.5	4)	-			2.2	87		YUG	Free	2,014		EEC,NOR
	28.19.B	-				-																	
	ex28.30.B	(2,470)									5.5	5)	(2,470)		EEC,CHE,POL								
	28.35.C	65									6.0		-			3.0	-			Free	65		EEC
	Sub-total	2,168	100.0	0.0	2.6	-	0.0				4.5-6.0	3)	-	0.0		2.2-3.0	3) 87	4.0		Free	2,079	95.9	
Finished manufactures	79.06.A	183									7.0		-			3.5	-			Free	183		CHE,EEC
	79.06.B.1	348									8.0		-			4.0	-			Free	348		EEC,CHE
	79.06.B.2	145									8.0		1		USA	4.0	3		HKG	Free	141		EEC,CHE
	79.06.B.B	-											-				-			Free	-		
	Sub-total	676	100.0	8.0	7.7						7.0-8.0	3)	1	0.1		3.5-4.0	3) 3	0.4		Free	672	99.4	
	Total	20,755	100.0			3,433	16.5				2.0-8.0	3)	286	1.4		1.0-4.0	3) 400	1.9		Free	16,614	80.0	

- nil or negligible

1) GSP rates indicate GSP rates as calculated by the secretariat in accordance with the Austrian formula: 50% per cent of final post MTN rates applied on a by country of origin and by product basis. Also, preferential duty-free treatment is granted to LDCs.
2) Under the Agreement between the EFTA countries and Spain, signed on 26 June 1979,Spain benefitted from a 60 per cent reduction on applied m.f.n. rates, until its entry into the EEC.
3) Tariff range
4) Ad valorem incidence of specific rate based on 1984 trade figures. Specific rate indicated in Annex I.
5) Partially bound; rate applied in 1984: Free.

mines together with the mines put on stream in 1987 (Faro mine in the Yukon and Newfoundland Zinc mine in Newfoundland) will not only offset the decrease in capacity due to closures of depleted mines (e.g. Pine Point mine in Northwest Territories with a capacity of 165 thousand tons was closed in 1987) but create some additional capacity (about 100 thousand tons). At present, Canada processes about one-half of its mine production. The other half is exported, mainly to the EEC and Japan. In 1986/87, Canadian smelter production remained about 17 per cent lower compared with that of the two previous years (692 thousand tons in 1985). This was due to labour disputes at the Canadian Electrolytic Zinc plant, Valleyfield, Quebec and the Cominco smelter, Trail, B.C. In 1986, Falconbridge Ltd. completed the expansion of its Kidd Creek smelter at Timmins, which has now an annual capacity of 133 thousand tons. Since several years, Canada's consumption of refined zinc has fluctuated around 150 thousand tons, about 20 per cent of its smelter output. Thus, Canada is also the largest zinc metal exporter though its exports fell considerably in 1986. (They were 427 thousand tons or 26 per cent of world refined zinc exports compared to 557 thousand tons or 37 per cent of world exports in 1985.) Canada's traditional buyer is the United States which imports on average about two-thirds of Canadian zinc metal.

53. As a result of its important zinc industry, Canada's zinc imports are low and consist mainly of some zinc concentrates and zinc unwrought products. Table 18 was elaborated on the basis of CCCN concordances supplied by the Canadian authorities. However, since Canada's tariff is end-use oriented, it is difficult to assess the average level of m.f.n. tariffs by stages of processing. Moreover, products corresponding to various stages of processing are classified under a single by-law item when imported for specific industrial processing in Canadian manufactures. Trade flows indicated under ex-tariff lines overstate the magnitude of trade in zinc since they pertain to trade of other products included in the same tariff lines. Under these conditions, Table 18 gives only a rough indication of zinc trade and tariff averages applied by Canada to zinc products. Nevertheless, Table 18 shows that Canada grants tariff protection to its domestic zinc processing industry. Positive m.f.n. duties ranging from 5.5 per cent to 17.5 per cent (alloyed zinc) are applied to several unwrought zinc products as well as semi-manufactures and manufactures. Though Canada grants preferential treatment to imports of m.f.n. dutiable zinc products when originating from developing countries under its GSP scheme, certain GSP rates are positive and range from 3.5 per cent to 11.5 per cent (alloyed zinc). Preferential duty-free treatment is granted to least-developed countries. Some zinc products benefit from preferential rates when imported from New Zealand and the British Commonwealth countries other than the United Kingdom. At present, Canada is in the process of ratifying a Free Trade Agreement with the United States which would provide for eliminating the tariff on zinc and other products imported from the United States over a ten-year period.

Table 18

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Canada
Year: 1984

(in US$'000)

	Tariff No.	Total Imports		MFN										GSP and LDC 1)				Other Preferential Treatment (Commonwealth countries, except UK)			
				Tariff Average		Duty Free				Dutiable											
						Unbound		Bound		Rate											
		Value	%	Weighted	Simple	Value	%	Value	%	Unbound	Bound	Value	%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	ex3290001	[116,581]								1.7		[116,581]		USA,PER,CHL								
Ash and residues	3450001	1,339						1,339						USA								
	Sub-total	1,339	100.0	0.0	0.0			1,339	100.0													
Unwrought 2)	ex3580001	[8,381]						[8,381]						USA,SWE,EEC								
	3450501	8,639						8,639						EEC,PER,USA								
	3460002	-								17.5		-			11.5	-			15.0	-		
	[3460501]	[767]								5.5		[767]		USA,EEC	3.5	-			5.0	-		
	[3450001]	[1,339]						[1,339]						USA								
	Sub-total	8,639	100.0	0.5	5.7			8,639	100.0	5.5-17.5 3)		-	0.0		3.5-11.5 3)	-	0.0		5.0-15.0 3)	-	0.0	
Wrought 2)	3461001	97						97						EEC,USA								
	[3460001]	[6,201]								10.2		[5,487]		USA,OAN,JPN	6.5	[714]		HKG,CHN,PRY				
	[3450501]	[8,639]						[8,639]						EEC,PER,USA								
	3461501	7						7						USA								
	3460501	767								5.5		767		USA,EEC	3.5	-			5.0	-		
	ex4012102	[4,718]								8.0		(4,579)		USA,EEC,JPN	(5.0)	139		BRA,KOR	(2.5)	-		
	Sub-total	871	100.0	4.0	3.1			104	11.9	5.5-10.2 3)		767	88.1		3.5-6.5 3)	139	16.0		5.0	-	0.0	
Chemicals	9281901	421								10.5		344		USA,JPN,EEC	Free	77		MEX	Free	-		
	9281902	1								12.5		1		USA	Free	-			Free	-		
	ex9283001	[10,886]								12.5		[10,729]		USA,EEC,JPN	Free	[158]			Free	-		
	ex9283501	[1,355]						[1,355]	4)					USA,EEC,FIN	Free	-			Free	-		
	9283006	412								12.5	5)	412		USA,EEC,OAN								
	Sub-total	1,034	100.0	11.4	11.8			...	0.0	10.5-12.5	3)	957	92.6		Free	77	7.4		Free	-	0.0	
Finished manufactures 2)	[3460501]	[767]								5.5		[767]		USA,EEC	3.5	-			5.0	-		
	3460001	6,201								10.2		5,487		USA,OAN,JPN	6.5	714		HKG,CHN,PRY				
	Sub-total	6,201	100.0	8.9	7.8					5.5-10.2	3)	5,487	88.5		3.5-6.5	3) 714	11.5		5.0	-	0.0	
	Total	18,084	100.0			10,082	55.8			1.7-17.5	3)	7,211	39.9		3.5-11.5	3) 930	5.1		Free-15.0	-	0.0	

...not available
- nil or negligible
1)Preferential duty-free treatment is granted to LDCs.
2)Tariff lines in square brackets - [], are not considered in the calculation of total and sub-total trade as they appear several times in different stages of processing. However, trade figures are considered for the calculation of averages.
3)Tariff range
4)Temporary rate: 5.1%; partially bound
5)Temporary rate: Free; ceiling binding

Note: Where the zinc products are specified separately (indicated by "ex"), the trade flow figures, shown within brackets - [], may include imports other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

56. Zinc mine production of Czechoslovakia is estimated at about 7 thousand tons and that of zinc secondary metal smelting at about 2 thousand tons per year. In 1985, Czechoslovakia started construction of a new ore processing plant in Bruntal. The plant, scheduled for 1990, will process 60 thousand tons of complex base metal concentrates from many domestic sources containing copper, lead, zinc and other rare elements. Czechoslovakia exports zinc concentrates, zinc oxides, zinc manufactures and ash and residues containing zinc. The latter are destined entirely to the Federal Republic of Germany, while the other exports are directed principally to Yugoslavia and some to the Federal Republic of Germany. Czechoslovakia's imports consist of zinc semi-manufactures supplied by Yugoslavia and Poland. In the Tokyo Round, Czechoslovakia reduced most m.f.n. rates applied to zinc imports. Table 50 gives the m.f.n. tariff treatment applied by Czechoslovakia to imports of zinc and zinc products.

57. The EEC (all twelve member States) is the world's largest zinc metal producer. In 1986, the EEC smelter production attained about 1.6 million tons which represented 25 per cent of world output. Its domestic zinc mine production which in the last few years fluctuated between 670 thousand to 730 thousand tons per year, satisfies only partially the demand for zinc concentrates of the EEC smelters and makes them to a large extent dependent on imports. Some EEC countries produce zinc metal from secondary sources. Thus, the EEC is also a large importer of zinc ash and residues and scrap. Most zinc metal is processed into semi-manufactures, including chemicals and manufactures for domestic consumption. Some excess metal and other zinc products are exported. Tables on imports of other countries show that the EEC countries are major suppliers of these products to many of them.

58. Like for lead, the EEC countries constitute the largest market for zinc and zinc products. Table 19 shows that in 1984, the EEC zinc imports were valued at more than US$750 million. The bulk of them were zinc raw materials which in that year represented about 79 per cent of the EEC's total imports. They were imported duty-free, supplied principally by Canada, Peru and Mexico. In contrast, unwrought zinc alloys excepted, all other zinc products are dutiable. Moreover, m.f.n. duties increase with higher stages of processing. M.f.n. rates of duty are between 3.5 per cent to 4.4 per cent on unwrought zinc, 8 per cent on wrought zinc, 5.3 per cent to 11 per cent (zinc oxide) on zinc chemicals and 7 per cent on zinc manufactures. As Table 19 indicates, imports of zinc products from m.f.n. sources represented only 24 per cent of total dutiable imports and consisted mainly of unwrought unalloyed zinc. The EEC grants duty-free access to most zinc products subject to positive m.f.n. rates of duty when imported from developing countries as well as least-developed countries under the GSP scheme. Imports of zinc products are not subject to any limitations under the GSP. However, unwrought zinc (CCCN 79.01) and zinc powders and flakes (CCCN ex 79.03) are not included in the GSP treatment.

Table 19

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: EEC
Year: 1984

(in US$'000)

	Tariff No.	Total Imports		MFN								GSP and LDC				Other Preferential Treatment							
				Tariff Average		Duty Free				Dutiable						ACP, Mediterranean, overseas countries, YUG 1)				EFTA countries			
		Value	%	Weighted	Simple	(Unbound Value	%) Bound Value	%	Origin	Rate Unbound	Rate Bound	Value	%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	26.01.6000	569,391					569,361		CAN,PER,AUS														
Ash and residues	25.03.1100	4,759					4,759		CHE,CAN,EGY														
	26.09.1600	18,536					18,536		USA,CAN,CHE														
	Sub-total	592,686	100.0	0.0	0.0		592,656	100.0															
Unwrought	79.01.1000	135,616								3.5		26,524		CAN,POL,USA	Free	-			Free	18,308		ZMB,YUG,DZA	Free	90,784		FIN,NOR,CHE
	79.01.3000	3,643					3,643		CHE,SWE,CAN														
Powders & flakes	79.03.2000	2,616								4.4		63		MEX,CAN,USA					Free	224		YUG,ISR,MSA	Free	2,329		NOR,CHE,AUT
	Sub-total	141,875	100.0	3.1	2.6		3,643	2.6		3.5-4.4	2)	26,587	18.7		Free	-	0.0		Free	18,532	13.1		Free	93,113	65.6	
Wrought	79.02.0000	1,018								8.0		125		CAN,USA,ZAF	Free	-			Free	777		YUG,ZMB	Free	116		AUT,CHE,NOR
	79.03.1000	4,457								8.0		908		POL,USA,BGR	Free	25		HKG	Free	3,326		YUG,LBY	Free	198		AUT,NOR,CHE
	79.04.0000	166								8.0		40		USA,DAR,CAN	Free	-			Free	-			Free	126		AUT,SWE,CHE
	Sub-total	5,641	100.0	8.0	8.0					8.0		073	19.0		Free	25	0.4		Free	4,103	72.7		Free	440	7.8	
Chemicals	28.19.0000	5,637								..0		9..		POL,CAN,CSK	Free	671		CHN,MEX,PER	Free	1,972		ESP,ISR,YUG	Free	2,056		PRT,NOR,AUT
	ex28.30.7000	(3,371)								(6.0)		(1,945)		USA,JPN,CSK	Free	(180)		IND,CHN	Free	(1,062)		ESP,YUG	Free	(176)		CHE,AUT,NOR
	ex28.30.9000	(1,053)								(5.3)		(859)		USA,CAN,JPN	Free	-			Free	(76)		ESP,ISR,YUG	Free	(118)		SWE,AUT,FIN
	ex28.35.4000	(1,093)								(6.9)		(848)		JPN,USA,POL	Free	(573)		MEX	Free	(98)		ESP	Free	(391)		AUT,SWE,CHE
	ex28.35.5900	(93)								(6.9)		(29)		USA	Free	-			Free	(42)		ESP,ISR	Free	(22)		CHE
	Sub-total	5,637	100.0	11.0	11.0					5.3-11.0	2)	938	16.6		Free	67:	11.9		Free	1,972	35.0		Free	2,056	36.5	
Finished manufactures	79.06.1000	425								7.0		-			Free	-			Free	55		YUG,DZA	Free	370		CHE,AUT,SWE
	79.06.9000	5,234								7.0		1,204			Free	756		HKG,IND,SGP	Free	1,114		YUG,ISR,ESP	Free	2,160		AUT,CHE,NOR
	Sub-total	5,659	100.0	7.0	7.0					7.0		1,204	21.3		Free	756	13.4		Free	1,169	20.7		Free	2,530	44.7	
	Total	751,498	100.0				596,299	79.3		3.5-11.0	2)	29,802	4.0		Free	1,452	0.2		Free	25,776	3.4		Free	98,139	13.1	

- nil or negligible
1) Preferential rate for Yugoslavia is duty-free (Agreement for cooperation between the EEC and Yugoslavia, April 1980).
2) Tariff range
Note: Where the zinc products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and in the calculation of the averages.

In 1984, imports of zinc products under the GSP amounted to about US$1.5 million. The EEC also grants duty-free preferential treatment to the ACP countries, members of the Lomé Convention as well as to the Mediterranean countries. In 1984, these countries (including Spain) supplied about US$26 million of m.f.n. dutiable imports (20 per cent). In 1984, almost US$100 million or 64 per cent of m.f.n. dutiable imports were imported from the EFTA countries which receive the duty-free treatment under a series of Free Trade Agreements signed between the EEC and EFTA countries.

59. Stagnant zinc mine production in Finland was mainly due to the depletion of metallic ores. At present, zinc mine output covers only about one-third of domestic smelters' requirements. Finland's zinc metal production which started in 1970, has significantly expanded and in 1986, it was about 160 thousand tons, almost three times higher than in 1970. The zinc industry is operated by a fully integrated company Outokumpu Oy which is State-owned. Since 1979, domestic refined zinc consumption fluctuated between 22 to 26 thousand tons annually, about 17 per cent of zinc metal output. Consequently, Finland belongs to the major zinc metal exporters occupying the fourth place among world zinc metal exporters, after Canada, Australia and the EEC. Most metal is delivered to the EEC, the United States and Sweden.

60. On the other hand, Finland is a net importer of zinc concentrates which, as shown in Table 20 accounted for 96 per cent of its zinc imports in 1984. The principal suppliers were Sweden, Canada and Greenland. In addition to these items, Finland also imports some wrought zinc products, zinc oxides and zinc finished manufactures. Table 20 indicates that except for zinc oxides and zinc manufactures, all other zinc products enter m.f.n. duty-free. However, Finland grants zero preferential duty to imports of these products when originating in developing or least-developed countries included in the list of GSP beneficiaries, and from other member countries of the EFTA and the EEC. Duty-free access is also accorded to zinc imports from Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland and the Soviet Union under the agreement for the reciprocal removal of obstacles to trade, and from Romania and the People's Republic of China under long-term trade agreements. In 1984, most of zinc oxides and zinc manufactures were imported from the EEC and EFTA countries.

61. Hungary's Seventh Five-Year Plan for the period 1986-1990 envisages an increase in production of semi-fabricated and finished products made from non-ferrous alloys. Hungary has a small zinc mine production (about 2 thousand tons of zinc concentrates annually) and some secondary zinc metal smelting. About 4 thousand tons of ash and residues containing zinc and 1 thousand tons of zinc scrap are exported annually to the Federal Republic of Germany. Hungary's domestic requirements of zinc are largely

Table 20

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Finland
Year: 1984

(in US$'000)

		Total Imports				MFN								GSP				Other Preferential Treatment (EFTA, EEC, CPE 1) and Spain 2))			
				Tariff Average		Duty Free					Dutiable										
	Tariff No.	Value	%	Weighted	Simple	Unbound Value	%	Bound Value	%	Origin	Rate Unbound	Bound	Value	%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	26.01.450	46,757						46,757		SWE,CAN,GRL													
Ash and residues	26.03.400	3						3		SWE													
	Sub-total	46,760	100.0	0.0	0.0			46,760	100.0														
Unwrought	79.01.100	75						75		EEC,SWE,NOR													
	79.01.200	70						70		EEC,NOR,USA													
	79.01.300	132						132		EEC													
Powders and flakes	79.03.900	3						3		EEC													
	Sub-total	280	100.0	0.0	0.0			280	100.0														
Wrought	79.02.000	242						1		JPN						Free	-			Free	241		EEC,POL
	79.03.100	114						114		EEC,NOR,SWE													
	79.03.300	551						551		NOR,EEC													
	79.04.000	26						1		JPN						Free	-			Free	25		EEC,NOR,SWE
	Sub-total	933	100.0	0.0	0.0			667	71.5							Free	-	0.0		Free	266	28.5	
Chemicals	28.19.100	431									10.0		-			Free	-			Free	431		EEC,SWE,NOR
	28.19.200	-						-															
	28.30.500	29						29		CHN,EEC													
	ex28.35.900	(63)						(63)		EEC,SWE,AUT													
	Sub-total	460	100.0	0.0	3.3			29	6.3		10.0		-	0.0		Free	-	0.0		Free	431	93.7	
Finished manufactures	79.06.000	466									5.1		2		USA	Free	-			Free	464		EEC,SWE,NOR
	Sub-total	466	100.0	5.1	5.1						5.1		2	0.4		Free	-	0.0		Free	464	99.6	
	T o t a l	48,899	100.0					47,736	97.6		5.1-10.0	3!	2	0.0		Free	-	0.0		Free	1,161	2.4	

- nil or negligible
1) Centrally planned economies.
2) Under the Agreement between the EFTA countries and Spain, signed on 26 June 1979, Spain benefitted from a 60 per cent reduction on applied m.f.n. rates, until its entry into the EEC.
3) Tariff range

Note: Where the zinc trade products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports of products other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

met through imports. Table 21 indicates that in 1984 zinc metal accounted for 66 per cent of total imports valued at about US$36 million. It was supplied by Yugoslavia, Algeria and Poland, m.f.n. duty-free. In the same year, zinc semi-manufactures and zinc oxides accounted for 3 and 15 per cent of total zinc imports, respectively. These products, as well as zinc manufactures are subject to m.f.n. duties ranging from 2.5 per cent (zinc oxides) to 7.7 per cent. Most imports of zinc oxides originated in the EEC.

62. Hungarian GSP scheme provides for preferential treatment for certain zinc products when imported from developing countries included in the list of GSP beneficiaries. Duty-free access is accorded to zinc imports from least-developed countries. There is no GSP preference on wrought zinc and zinc manufactures. In 1984, Hungary's imports from GSP sources were nil. Hungary accords duty-free treatment to imports originating in Finland under the bilateral agreement on the reciprocal removal of obstacles to trade on all m.f.n. dutiable tariff lines. According to paragraph 3a of the Protocol for the Accession of Hungary to GATT, Hungary has no customs duties on imports originating in centrally-planned economy countries listed in Annex of this Protocol. In 1984, imports from these countries were valued at US$5.2 million (16.7 per cent of total zinc imports) of which 85 per cent were zinc wrought plates and sheets and 15 per cent zinc oxides.

63. Iceland's domestic consumption of zinc is met through imports. In 1984, Iceland imported US$120 thousand of zinc products (see Table 22). In the Tokyo Round, Iceland bound and reduced its m.f.n. tariffs on zinc. Some tariffs are subject to ceiling bindings while m.f.n. applied rates are zero.

64. In the 1960s, Japan developed an extensive zinc smelting and refining capacity in order to satisfy the growing domestic consumption of zinc which attained more than 800 thousand tons in 1973. Then, the decline in demand for zinc due to stagnation in demand by major consuming industries such as automobiles, electric appliances and steel mills, and in recent years, high costs of production and low international prices for zinc, gave a severe setback to the domestic industry. At present, the Japanese zinc industry is undergoing structural changes which include the shut-down of some mines and smelters and rationalization of the existing capacity. Eight smelting and refining companies (Akita Zinc Co., Hachinohe Smelting Co., Mitsubishi Metal Corp., Nikko Zinc Co. Ltd., Konioka Mining and Smelting Co. Ltd., Hikoshima Smelting Co. Ltd., Sumiko I.S.P. Co. and Toho Zinc Co. Ltd.) operate mainly on imported ores and concentrates as domestic zinc mine production covers on average only about one-third of their needs. It is possible, however, that the dependence on foreign sources will further increase as several mines have recently been closed down due to depletion.

Table 21

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Hungary
Year: 1984

(in US$'000)

		Total Imports		MFN								GSP (LDC: duty free)				Other Treatment (CPE trading area and Finland 1))			
				Tariff Average		Duty Free				Dutiable									
	Tariff No.	Value	%	Weighted	Simple	Unbound Value	%	Bound Value	%	Origin	Rate Unbound	Bound	Value	%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	ex26.01.99	(21)									3.8	-				Free	-			Free	(21)		FIN
Ash and residues	26.03.01	-						-															
	Sub-total	...	100.0	0.0	0.0			..	0.0		3.8	-		0.0		Free	-	0.0		Free	...	0.0	
Unwrought	79.01.01	23,773						20,014		YUG,DZA,POL													
	79.01.02	-						-															
	79.03.00	5,644 2)									4.4	1,162			EEC,YUG					Free	4,482		POL,BGR
	Sub-total	29,417 3)	100.0	0.2	1.5			20,014	68.0		4.4	1,162		4.0						Free	4,482	15.2	
Wrought	79.02.00	1,187									7.7	1,187			YUG,EEC					Free	-		
	79.03.00	2)									4.4									Free			
	79.04.00	-									7.7	-								Free	-		
	Sub-total	1,187	100.0	6.0	6.6						4.4-7.7 4)	1,187		100.0						Free	-	0.0	
Chemicals	28.19.00	5,301									2.5	4,521			EEC,AUT,YUG	Free	-			Free	780		SUN,CSK,BGR
	ex28.30.01	(2,153)									8.9	(1,247)			EEC,SWE,CHE	15.0	-			Free	(907)		DDR,SUN,CSK
	ex28.30.02	(3)									6.2	(3)			EEC	12.0	-			Free	-		
	ex28.30.03	(139)									8.9	(82)			EEC	15.0	-			Free	57		SUN,DDR
	ex28.30.04	(162)									8.9	(162)			CHE,EEC,JPN	15.0	-			Free	-		
	ex28.35.01	(497)									9.8	(81)			EEC,AUT	15.0	-			Free	416		SUN,CSK
	ex28.35.02	-									9.8	-				15.0	-			Free	-		
	Sub-total	5,301	100.0	2.5	2.5						2.5-9.8 4)	4,521		85.3		Free	-	0.0		Free	780	14.7	
Finished manufactures	79.06.00	-									7.7	-								Free	-		
	Sub-total	-	100.0	7.7	7.7						7.7	-		0.0						Free	-	0.0	
	Total	35,905	100.0					20,014	55.7		2.5-7.7 4)	6,870		19.1		Free	-	0.0		Free	5,262	14.7	

... not available
- nil or negligible
1) Duty-free rates applied to Finland under the bilateral agreement on the reciprocal removal of obstacles to trade.
2) Available trade flow information does not distinguish between wrought plates, sheets and strip of zinc, zinc foil and zinc powders and flakes. Trade figures under these items have been included in unwrought zinc.
3) Difference in the summing up represents trade of unspecified origin.
4) Tariff range

Note: Where the zinc products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

Country: ICELAND

Year: 1986

TABLE 22

TRADE IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[4]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		Free(B)	-		Free	-	
Ash and residues	ex26.03		8%(B)[1]	-				
	Sub-Total	-	Free, 8%	-		-		
Unwrought								
Unalloyed	79.01		Free(B)	16	NOR,EEC			
Alloyed	79.0.							
Waste and scrap	79.01			-				
Powders (including dust) and flakes	79.03			21	NOR,EEC			
	Sub-total	37	Free	37				
Wrought	79.02		Free(B)	-				
	79.03			52	EEC,USA			
	79.04		17%(B)[1]	2				
	Sub-total	54	Free, 17%	54				
Chemicals	28.19		Free(B)	12	EEC			
	28.30			(16)	EEC,USA			
	28.35			(5)	EEC			
	Sub-total	12	Free	12				
Finished manufactures	79.06		Free(B),17%(B) 25%(B),35%(B),80%B	17	NOR,EEC			
	Sub-total	17	Free-80%[2]	17				
	Total	120	Free-80%[2]	120		Free	-	

[1]Ceiling binding, applied rate is zero.

[2]Tariff range.

[3]Imports origin not available when c.i.f. value imports less than US$999.

[4]Preferential tariff treatment granted to imports originating in EFTA countries.

Note: (B) Bound rates (Schedule LXII - Iceland)
IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1986: US$1 = Kr. 41.104.

Source: Statistical Bureau of Iceland, Statistics of Iceland External Trade 1986, Reikjavik
International Customs Tariff Bureau, International Customs Journal, No. 111, 1980-1981, Brussels

65. Consequently, as Table 23 indicates Japan is a net importer of zinc ores and concentrates which in 1984 represented about 76 per cent of its total zinc imports. They were imported mainly from Australia, Peru and Canada, m.f.n. duty-free. Other zinc imports consisted mainly of zinc metal and zinc oxides. As Japanese zinc processing industry is protected beyond the mining stage, all m.f.n. rates of duty applied on zinc imports are positive. They range from 1.9 per cent to 5.8 per cent on unwrought zinc, 4.2 per cent to 7.2 per cent on wrought zinc, 3.7 per cent to 6.5 per cent on zinc chemicals and 4.9 per cent to 5.8 per cent on zinc manufactures. In 1984, most m.f.n. dutiable imports were in the form of unwrought zinc originating from Australia, Canada and the EEC. Imports of other zinc products from m.f.n. sources were negligible. Imports of zinc ores and concentrates and zinc metal from the People's Democratic Republic of Korea are subject to statutory (general) rates. All m.f.n. dutiable zinc products are imported duty-free when supplied by developing and least-developed countries under the Japanese GSP scheme. However, in principle, all industrial products covered by the GSP are subject to quantitative limitations. In the case of zinc, ceiling quotas apply to goods in CCCN Chapter 28 (zinc oxides and other chemicals) and to unwrought zinc (CCCN 79.01.111). In the fiscal year 1984, the ceiling quotas on unwrought zinc was 3,951 tons and was increased to 19,324 tons in the scheme for 1988. Ceiling quotas on zinc chemicals included in Chapter 28 were also increased from yen 20,766 million to yen 49,650 million in the same year. In 1984, developing countries, mainly Peru, Mexico and Zaire, supplied about one-half of zinc metal imports and almost all zinc oxides originated from the Republic of Korea, Singapore and other Asian countries.

66. New Zealand has no domestic production of zinc and meets its needs through imports. In 1984, imports of wrought metal amounted to over US$20 million, representing 92 per cent of total zinc imports. Zinc alloys entered m.f.n. duty-free from Australia, Canada and the EEC. However, there were no imports of unalloyed zinc (CCCN 79.01.001) from m.f.n. sources under the m.f.n. rate of duty of 5 per cent which, as mentioned below, were supplied by Australia and Canada at zero duty. The remaining zinc imports consisted of zinc manufactures supplied by Japan, the EEC and the United States. Tariffs on these products are bound at a ceiling binding of 50 per cent, though the tariffs applied were 35 per cent.

67. New Zealand's GSP scheme grants tariff preferences to all m.f.n. dutiable zinc products when imported from developing countries. GSP rates are duty-free except for 25 per cent on zinc manufactures. In 1984, New Zealand imported some zinc manufactures from India, Hong Kong and Spain. Most m.f.n. dutiable zinc products namely unalloyed zinc, imported by New Zealand originates in Australia, which enjoys preferential access to New Zealand's market under the Australia-New Zealand Closer Economic Relations Agreement. Certain imports from Canada are also granted preferential rates. In 1984, New Zealand's preferential imports from these countries

Table 23

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Japan
Year: 1984

(in US$'000)

	Tariff No.	Total Imports Value	%	MFN Tariff Average Weighted	Simple	MFN Duty Free Unbound Value	%	Bound Value	%	Origin	MFN Dutiable Rate Unbound	Bound	Value	%	Origin	GSP and LDC Rate	Value	%	Origin	Other Preferential Treatment Rate	Value	%	Origin
Ores and concentrates	26.01.814	245,445	1)					233,847		AUS,PER,CAN													
Ash and residues	26.03.100	8,335	1)					7,568		USA,DAN,KOR													
	Sub-total	253,780	1)	100.0	0.0	0.0		241,415	95.1														
Unwrought	79.01.111	54,723	1)								4.3		12,424		AUS,CAN,EEC	Free	27,038		PER,MEX,ZAR				
	79.01.112	17	1)								2.1		-			Free	-						
	79.01.119	258	1)					219		USA,NYS,ECU													
	79.01.121	3,884									3.2	21	3		USA,AUT	Free	3,883		PER,DAN				
	79.01.129	8									4.4	21	-			Free	8		KEN				
	79.01.200	342									1.9		204		USA,PRI	Free	138		SGP,NYS,HKG				
	79.03.190	274									5.8		259		EEC	Free	15		NYS				
	Sub-total	61,500	1)	100.0	8.2	3.1		219	0.4		1.9-5.8	3)	12,892	21.0		Free	31,082	50.5					
Wrought	79.02.100	1									4.2		1		AUS	Free	-						
	79.02.200	42									4.8		42		EEC,AUS,USA	Free	-						
	79.03.110	-									5.8		-			Free	-						
	79.03.120	323									5.8		247		NOR,EEC,USA	Free	76		CHN,SGP				
	79.03.200	151									7.2		151		USA	Free	-						
	79.04.100	-									4.8		-			Free	-						
	79.04.200	5									4.8		5		EEC	Free	-						
	Sub-total	522		100.0	6.2	5.3					4.2-7.2	3)	446	85.4		Free	76	14.6					
Chemicals	28.19.100	6,696									6.5		153		EEC,USA	Free	6,543		KOR,DAN,SGP				
	28.19.200	-									3.7		-			Free	-						
	(ex)28.30.121	(467)									5.8		(88)		EEC	Free	(379)		CHN,DAN,THA				
	(ex)28.35.290	(423)									3.7		(339)		EEC,USA,SWE	Free	(84)		CHN,KOR				
	Sub-total	6,696		100.0	6.5	5.1					3.7-6.5	3)	153	2.3		Free	6,543	97.7					
Finished manufactures	79.04.100	5									4.9		5		USA	Free	-						
	79.04.200	330									5.8		98		CAN,USA,EEC	Free	232		HKG,DAN,KOR				
	Sub-total	335		100.0	5.8	5.4					4.9-5.8	3)	103	30.7		Free	232	69.3					
	Total	322,833		100.0				241,634	74.8		1.9-7.2	3)	13,574	4.2		Free	37,933	11.8					

- nil or negligible
1) Difference in the summing up represents imports from the People's Democratic Republic of Korea, subject to statutory (general) duties.
2) Ad-valorem incidence based on 1984 trade figures.
3) Tariff range

Note: Where the zinc trade products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports of products other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

Table 24

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: New Zealand
Year: 1984

(in US$'000)

	Tariff No.	Total Imports Value	%	MFN Tariff Average Weighted	Simple	MFN Duty Free Unbound Value	%	MFN Duty Free Bound Value	%	MFN Origin	MFN Dutiable Rate Unbound	Rate Bound	Value	%	Origin	GSP Rate	Value	%	Origin	Other Preferential Treatment (SPARTECA, Malaysia and Canada) Rate	Value	%	Origin
Ores and concentrates	ex26.01.01 9	(867)						(867)		JPN,AUS,CAN													
Ash and residues	ex26.03.000 1	(3)						(3)		AUS													
	Sub-total	...	100.0	0.0	0.0			...	0.0														
Unwrought	79.01.00 1	3,021									5.0	-				Free	-			Free	3,021		AUS,CAN
	79.01.00 9	13,270						13,270		AUS,CAN,EEC													
	79.03.00 9	645						645		AUS,EEC,KOR													
	Sub-total	20,936	100.0	0.0	1.7			15,915	76.0		5.0	-		0.0		Free	-	0.0		Free	3,021	24.0	
Wrought	79.02.00 0	191									5.0	83			EEC,USA	Free	3		SGP	Free	55		AUS
	79.03.00 1	68									5.5	68				Free	-			Free	-		
	79.04.00 0	81						81		EEC,USA													
	Sub-total	270	100.0	3.4	3.5			81	27.9		5.0-5.5 1)	151		52.1		Free	3	1.0		Free	55	19.0	
Chemicals	28.19.00 0	38						38		EEC,AUS													
	ex28.30.00 0	(1,607)						(1,606)		JPN,EEC,AUS													
	ex28.35.00 0	(2,334)						(2,334)		EEC,CHN,USA													
	Sub-total	38	100.0	0.0	0.0			38	100.0														
Finished manufactures	79.06.00 0	1,035									50.0 2)	960			JPN,EEC,USA	25.0	64		IND,HKG,ESP	Free 3)	11		AUS
	Sub-total	1,035	100.0	50.0	50.0						50.0	960		92.8		25.0	64	6.2		Free	11	1.1	
	TOTAL	22,279	100.0					16,034	71.9		5.0-50.0 1)	1,111		5.0		Free-25.0 1)	67	0.3		Free	5,087	22.8	

... not available
- nil or negligible
1) Tariff range
2) Ceiling binding, applied rate: 35 per cent.
3) Rate applied to Canada: 25 per cent.
Note: Where the zinc products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

amounted to US$5 million which represented about 25 per cent of total zinc imports. In addition, the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) provides for duty-free and unrestricted access to imports from the Forum Islands.

68. Norway belongs to the group of major producers of zinc metal with an annual output of 90 thousand tons. In October 1986, Norzink A/S, Norway's sole producer of zinc metal started operation in an advanced electrolytic zinc plant at Odda. The annual capacity of the new plant is 130 thousand tons. The plant is owned 50 per cent by Sweden's Boliden and 50 per cent by British Petroleum (BP) Minerals International Ltd. Zinc concentrates are partly supplied from Boliden mines from Sweden (about 50 per cent), about 15 per cent of concentrates come from small Norwegian mines and the rest is imported from other countries.

69. Thus, as Table 25 shows, Norway is a net importer of zinc raw materials which, in 1984, accounted for 85 per cent of total zinc imports of US$52 million. Most zinc products enter Norway duty-free. Positive m.f.n. rates apply to zinc sheets, plates etc., zinc oxides and zinc manufactures. In 1984, imports of zinc products subject to m.f.n. duties represented 27 per cent of zinc dutiable imports. Norway accords duty-free treatment to imports of zinc products subject to positive m.f.n. rates of duty, when imported from developing countries included in the list of GSP beneficiaries. In 1984, imports of dutiable zinc products from these countries were 10 per cent. As a member of the European Free Trade Association, Norway grants duty-free access ' imports of zinc products subject to positive m.f.n. rates from EFTA cou..cries and the EEC. In 1984, a large part (69 per cent) of imports subject to m.f.n. positive rates of duty as well as zinc products which are m.f.n. duty-free originated in these countries.

70. Poland belongs to the major European zinc mine and metal producers. In 1986, zinc mine output amounted to 184 thousand tons and zinc metal output totalled 179 thousand tons. However, since several years Poland's zinc industry has been facing difficult situation due to depletion of ores and higher production costs and its output has remained well below the 1979 record high level. Poland's exports of unwrought zinc amounted to 20 thousand tons in 1986. They were directed mainly to the EEC (the United Kingdom and Federal Republic of Germany) and Hungary. Poland also exports some zinc semi-manufactures. Table 50 gives Poland's m.f.n. tariff treatment applied to zinc imports.

70. Portugal's consumption of zinc metal after reaching the highest level of 17 thousand tons in 1979, fell and was 10 thousand tons in 1986. Its only primary smelter Quimigal-Quimia de Portugal E.P at Bareiro put on stream in the early 1980's produces about 6 thousand tons of zinc metal annually. Table 26 shows Portugal's zinc imports in 1985, before Portugal's entry into the EEC. At present, Portugal's tariff treatment on zinc and

Table 25

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Norway
Year: 1984

(in US$'000)

		Total Imports		MFN									GSP and LDC				Other Preferential Treatment (EEC,EFTA, Spain 1))			
	Tariff No.			Tariff Average		Duty Free Unbound		Duty Free Bound			Dutiable Rate		Dutiable Value							
		Value	%	Weighted	Simple	Value	%	Value	%	Origin	Unbound	Bound		%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	26.01.4500	34,384						34,384		SWE,CAN,EEC													
Ash and residues	26.03.4000	9,642						9,642		SWE,EEC,FRO													
	Sub-total	44,026	100.0	0.0	0.0			44,026	100.0														
Unwrought	79.01.1000	374						374		EEC,POL,SWE													
	79.01.2000	557						557		POL,EEC,SWE													
	79.01.3000	3,672						3,672		EEC,SWE,FIN													
	79.03.9000	16						16		EEC,USA													
	Sub-total	4,619	100.0	0.0	0.0			4,619	100.0														
Wrought	79.02.0000	232						232		EEC,USA,JPN													
	79.03.1010	28									5.6	-				Free	-			Free	28		EEC,SWE
	79.03.3000	27						27		SWE,EEC,USA													
	79.04.0000	46						46		EEC,AUT,SWE													
	Sub-total	333	100.0	0.0	1.4			305	91.6		5.6	-	0.0			Free	-	0.0		Free	28	8.4	
Chemicals	28.19.1000	1,665									2.0	526			DDR	Free	237		CHN	Free	902		EEC,SWE,FIN
	28.19.2000	-						-															
	28.30.5000	573						573		EEC,CHN													
	ex29.35.9000	(12)						(12)		EEC													
	Sub-total	2,238	100.0	1.0	0.7			573	2.6		2.0	526	23.5			Free	237	10.6		Free	902	40.3	
Finished Manufactures	79.04.0010	2						2		FIN													
	79.05.0090	784									3.8	11			USA,JPN	Free	4		HKG	Free	769		EEC,SWE
	Sub-total	786	100.0	3.2	1.9			2	0.3		3.8	11	1.4			Free	4	0.5		Free	769	97.8	
	Total	52,002	100.0					48,952	94.1		2.0-5.6 2)		537	1.0		Free	241	0.5		Free	1,699	3.3	

- nil or negligible
1) Under the Agreement between the EFTA countries and Spain, signed on 26 June 1979, Spain benefitted from a 60 per cent reduction on applied m.f.n. rates, until its entry into the EEC.
2) Tariff range.
Note: Where the zinc trade products are not specified separately (indicated by "ex") the trade flow figures, shown within brackets, may include imports of products other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

Country: PORTUGAL

TABLE 26

Year: 1985

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN[1]			Other preferences[2] (EEC, EFTA, Spain)		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01.600		Free	-			4/	EEC
Ash and residues	26.03.110		1%	-			9	EEC
	26.03.160			47	DZA,USA,AGO		81	EEC
	Sub-total	137	Free, 1%	47			90	
Unwrought								
Unalloyed	79.01.110		2%	1,428	CAN		1,058	EEC,ESP,FIN
Alloyed	79.01.150			4,281	CAN		4,946	EEC
Waste and scrap	79.01.300			870	SAU,TUN,USA		470	EEC,ESP
Dust	79.03.210		6%	-			3	EEC
Powders and flakes	79.03.250			4/			450	EEC,NOR
	Sub-total	13,506	2%, 6%	6,579			6,927	
Wrought	79.02.001		10%	24	POL		1,892	EEC
	79.02.009			-			3	EEC
	79.03.120			-			4	EEC
	79.06.160		10%	-			-	
	79.03.190			-			28	EEC
	79.04.000		35%	-			4/	EEC
	Sub-total	1,951	10%, 35%	24			1,927	
Chemicals	28.19.001		12.8%	4	Unspecified		81	EEC
	28.19.007			25	PER,USA,unspecified		65	EEC,ESP
	28.19.008			-			4	EEC
	28.30.710		Free	2	Unspecified		130	EEC
	ex28.35.430		Free	(1)	Unspecified		(55)	EEC
	Sub-total	311	Free, 12.8%	31			280	
Finished manufactures	79.06.100		25%	-			2	EEC
	79.06.900			30	PER,unspecified		796	EEC
	Sub-total	828	25%	30			798	
	Total	16,733	Free-35%[3]	6,711			10,022	

[1] According to Loose-Leaf XVIV - Portugal, rates concerned are not bound.

[2] Duty-free preferential treatment granted to EEC and EFTA countries.

[3] Tariff range.

[4] Imports smaller than US$500.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange Rate 1985: US$1 = 146.39 Escudos.

Source: Instituto Nacional de Estatistica, Estatisticas do Comércio Externo 1985, Lisboa
International Customs Tariff Bureau, International Customs Journal, No. 9, 1983-1984, Brussels

zinc products is being adjusted in the process of harmonization of its tariff after its accession to the European Community. Table 26 indicates that with the exception of unwrought zinc of which about half was shipped from Canada, most of Portugal's zinc trade was with the EEC, EFTA countries and Spain.

72. In the past few years, annual production of zinc in concentrates in South Africa was around 140 thousand tons. It originates from three mines, two of which are located in the northern cape and the third one in Namibia. Prieska Mine, the largest producer, commenced operation in 1971. Its output amounted to about 107 thousand tons of concentrates in 1986. The second producer is the Black Mountain Mine owned by Gold Fields of South Africa which has since late 1979 produced zinc as a by-product of lead mining. In 1986, the new Pering Mine started operating. Its capacity is about 35 thousand tons annually. Most of its zinc concentrates are processed by the Zinc Corporation of South Africa (ZINCOR). The capacity of this refinery has been increased to 105 thousand tons annually. The surplus production of zinc concentrates is exported mainly to Japan and the EEC. Table 27 shows that most of South African zinc imports in 1984 was unwrought zinc supplied by the EEC. It amounted to about US$7 million and entered m.f.n. duty-free. The second largest imports were zinc chlorides originating in the EEC, Taiwan and Australia.

73. Spain occupies a significant position in the world zinc industry. In the last twenty-five years, its zinc mine and smelter production increased about four times. With an annual output of 230 thousand tons of zinc concentrates Spain is the largest zinc mine producer in the EEC. Spain's mine capacity will further increase by 30 thousand tons in 1990 after putting on stream two new mines, Nuevo Arrayanes belonging to Minas de Almaden y Arrayanes and Santa Barbara owned by Penarroya and Enadimsa. Most zinc concentrates are processed in the country by three electrolytic smelters (the major smelter San Juan de Neva, owned by the Asturiana de Zinc SA has an annual smelting capacity of 200 thousand tons, the Espanola de Zinc SA smelter in Carthagène is rated at 60 thousand tons and a small smelter belonging to Metalquimica del Nervion in Bilbao has 8 thousand tons capacity of zinc metal annually). Spain also has a small production of redistilled and remelted zinc from secondary sources (about 12 thousand tons annually). On average only about one-half of the metal is consumed domestically and the remainder is exported, some to other EEC countries. However, the bulk of zinc metal exported in the last few years was destined to the People's Republic of China and the USSR. In addition to zinc metal, Spain also sells some zinc concentrates and zinc ashes and residues which are mainly delivered to other EFC countries. Table 28 indicates that Spain's zinc imports in 1985 consisted mainly of zinc concentrates of which one-third was supplied by Peru and the rest was imported from the EEC. Other zinc products, including unwrought zinc, zinc oxides and zinc

Country: SOUTH AFRICA

Year: 1984

TABLE 27

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[3]		
			Rate	Value[2]	Origin	Rate	Value	Origin
Ores and concentrates	26.01		10%	4/	EEC,USA			
Ash and residues	ex26.03		Free	(1,4?)				
	Sub-Total	-	Free, 10%	-				
Unwrought								
Unalloyed	79.01		Free	2,856	EEC			
Alloyed	79.01							
Waste and scrap	79.01			165				
Powders (including dust) and flakes	79.03			215	EEC,CAN			
	Sub-total	3,236	Free	3,236				
Wrought	79.02		10%	25	EEC,CAN	7%		UK
	79.03		Free, 10%	501				
	79.04		10%, 20%	15	EEC	15%		UK,CAN
	Sub-total	541	Free-20%[1]	541		7%, 15%		
Chemicals	28.19		15%	130	EEC,USA			
	28.30		10%	1,546	EEC,FIN,US			
	ex28.35			(915)	EEC,USA,ISR			
	Sub-total	1,676	10%, 15%	1,676				
Finished manufactures	79.06		Free,3%,20%	157	EEC			
	Sub-total	157	Free-20%[1]	157				
	Total	5,610	Free-20%[1]	5,610		7%, 15%		

[1]Tariff range.
[2]F.o.b. value.
[3]Part II, Schedule XVIII.
[4]Imports smaller than US$999.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1984: 0.6954 US$ per Rand
1.438 Rands per US$

Source: Commissioner for Customs and Excise of the Republic of South Africa, Foreign Trade Statistics, 1984
International Customs Tariff Bureau, International Customs Journal, No. 42, 1985-1986, Brussels

Country: SPAIN

TABLE 28

Year: 1985

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[1]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		Free	2,948	PER		5,973	EEC
Ash and residues	26.03			207	ESR,USA,TUN		832	EEC,CHE
	Sub-Total	9,960	Free	3,155			6,805	
Unwrought								
Unalloyed	79.01		10%(B)	-			687	EEC
Alloyed	79.01			-			711	EEC
Waste and scrap	79.01			-			153	EEC
Powders (including dust) and flakes	79.03			61	YUG,USA		921	EEC,NOR
	Sub-total	2,533	10%	61			2,472	
Wrought	79.02		12%,14%(B)	3/	USA		88	EEC,AUT,SWE
	79.03			45	JPN,KOR		13	EEC
	79.04		12%,14%,16%(B)	-			30	
	Sub-total	176	12%-16%[2]	45			131	
Chemicals	28.19		19%	-			543	EEC
	28.30		10.5%	-			10	
	28.35		17%	-			192	EEC,AUT,CHE
	Sub-total	745	10.5%-19%[2]	-			745	
Finished manufactures	79.06		13%,19%(B)	12	JPN,CSK,USA		1,803	EEC,SWE,CHE,POR
	Sub-total	1,815	13%, 19%	12			1,803	
	Total	15,229	Free-19%[2]	3,273			11,956	

[1]Under Article XXIV a 25 per cent of m.f.n. actual duty is granted to imports originating in the EEC and EFTA countries.

[2]Tariff range

[3]Imports less than US$1,000.

Note: (B) Bound rates (Schedule XLV - Spain)
IMF, International Financial Statistics, June 1985, Washington, D.C.
Exchange rate 1985: US$1 = Pesetas 170.04.

Source: Direccion General de Aduanas, Estadistica del Comercio Exterior de Espana, Tomo I, Enero - Diciembre 1985, Madrid
International Customs Tariff Bureau, International Customs Journal, No. 26, 1983-1984 (Annex), Brussels

manufactures also originated in the EEC or EFTA countries. Like Portugal, Spain too harmonizes its tariff schedule in several stages with the EEC Common Tariff since its accession to the EEC.

74. Boliden Mineral AB, Sweden's fully integrated mineral producer, operates eighteen local mines of sulphide ores. In the last decade, Boliden's zinc mine output almost doubled and was 219 thousand tons in 1986. In 1986, Boliden took over Black Angel lead-zinc mine in Greenland owned by the Danish company Greenex and acquired 10 per cent share of the Faro mine in Canada. All zinc concentrates production is exported, principally to Finland, Norway (Boliden owns 50 per cent of Norzink) and the EEC. Sweden also exports ash and residues containing zinc and zinc scrap. These products are mainly destined to Norway, and to a lesser extent, to some countries of the EEC. All refined zinc for domestic consumption which declined to 32 thousand tons in 1986, about the same level as in 1960, is imported.

75. Table 29 indicates that in 1984, imports of unwrought zinc represented 81 per cent of total zinc imports valued at US$47 million. Most metal was shipped from Norway, Finland, the EEC and Poland. The EEC countries and Norway provided also ash and residues for processing by Scan Dust AB at its reduction plant at Landskrony. They are also the major suppliers of zinc semi-manufactures, including zinc chemicals. Some zinc manufactures excepted, zinc product imports are m.f.n. duty-free. Sweden grants duty-free preferential treatment on these items to developing and least-developed countries under the GSP scheme, and to other members of the European Free Trade Association and the EEC. As can be seen from Table 29, most m.f.n. dutiable products were imported free of duty from the latter countries.

76. Switzerland has neither primary nor secondary zinc production. Zinc metal and other zinc products for domestic consumption are imported. In 1984, zinc imports amounted to US$29 million. Of this amount, refined zinc accounted for 85 per cent, wrought zinc 7 per cent, zinc oxides 6 per cent and zinc manufactures were the remaining 2 per cent. With the exception of zinc ores and concentrates and ash and residues which are m.f.n. duty-free, Switzerland applies positive m.f.n. rates of duty on all zinc products. These rates are specific and Table 30 indicates for the sake of comparision, ad valorem incidence based on 1984 trade figures. Most m.f.n. rates of duty are low, with simple tariff averages of 0.2 per cent on unwrought zinc and 0.3 per cent on wrought zinc products and zinc chemicals. The highest duty of 14 per cent is applied to CCCN 79.06.1500 (gutters, roof-capping, sky-light frames etc., of zinc). In 1984, Switzerland's imports from m.f.n. dutiable sources represented 27 per cent of total zinc imports and consisted mainly of refined zinc supplied by Poland, the German Democratic Republic and the Soviet Union. Switzerland

Table 29

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Sweden
Year: 1984

(in US$'000)

		Total Imports				MFN						GSP				Other Preferential Treatment (EEC,EFTA and Spain) 1)			
				Tariff Average		Duty Free				Dutiable									
	Tariff No.	Value	%	Weighted	Simple	Unbound Value	%	Bound Value	%	Origin	Rate Unbound	Rate Bound	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	26.01.4500	4						4		EEC									
Ash and residues	26.03.4000	9,727						9,727		EEC,PRT,MEX									
	Sub-total	9,731	100.0	0.0	0.0			9,731	100.0										
Unwrought	79.01.1000	35,045						35,045		NOR,FIN,EEC									
	79.01.2000	3,006						3,006		NOR,POL,FIN									
	79.01.3000	5						5		CYP									
	79.03.9000	-						-											
	Sub-total	38,056	100.0	0.0	0.0			38,056	100.0										
Wrought	79.02.0000	271						71		EEC,CHE,FIN									
	79.03.1000	74						-		NOR,POL,EEC									
	79.03.3000	324						-		NOR,EEC,FIN									
	79.04.0000	11						11		EEC									
	Sub-total	680	100.0	0.0	0.0			680	100.0										
Chemicals	28.19.1000	1,249						1,249		EEC,NOR,CHN									
	28.19.2000	-						-											
	28.30.5000	178						178		EEC,CSK,CHN									
	28.35.9010	100						100		EEC									
	Sub-total	1,527	100.0	0.0	0.0			1,527	100.0										
Finished manufactures	79.06.0010	3						3		EEC,NOR									
	79.06.0090	791									3.2	9%			JPN,CAN,USA	Free	22		HKG
	Sub-total	794	100.0	3.1	1.6	3	0.4				3.2	9%	12.1			Free	22	2.8	
																Free	673	84.8	EEC,NOR,FIN
	Total	46,988	100.0			46,197	98.3				3.2	9%	0.2			Free	22	0.0	
																Free	673	1.4	

- nil or negligible
1) Under the Agreement between the EFTA countries and Spain, signed on 26 June 1979, Spain benefitted from a 60 per cent reduction on applied m.f.n. rates, until its entry into the EEC.

Table 30

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: Switzerland
Year: 1984

(in US$'000)

	Tariff No.	Total Imports Value	%	MFN Tariff Average Weighted	Simple	MFN Duty Free Unbound Value	%	MFN Duty Free Bound Value	%	MFN Duty Free Origin	MFN Dutiable Rate 1) Unbound	Bound	MFN Dutiable Value	%	MFN Dutiable Origin	GSP Rate	GSP Value	%	GSP Origin	Other Preferential Treatment (EEC,EFTA,Spain 3)) Rate	Value	%	Origin
Ores and concentrates	26.01.5000	2						2		EEC													
Ash and residues	ex26.03.0100	(512)						(512)		EEC,HUN,AUT													
	Sub-total	2	100.0	0.0	0.0			2	100.0														
Unwrought	79.01.1000	20,194									0.1	7,199			POL,DDR,SUN	Free	586		REI,ZMB	Free	12,409		EEC,NOR,AUT
	79.01.2000	148									0.3	9			USA	Free	-			Free	139		EEC
Powders & flakes	79.03.2000	3,648									0.1	-				Free	-			Free	3,648		EEC,NOR,AUT
	Sub-total	23,990	100.0	0.1	0.2						0.1-0.3 2)	7,208	30.0			Free	586	2.4		Free	16,196	67.5	
Wrought	79.02.0100	423									0.1	-				Free	109		YUG	Free	314		EEC
	79.03.1000	1,503									0.6	329			USA,POL	Free	-			Free	1,174		EEC,AUT
	79.04.0100	60									0.1	-				Free	-			Free	60		EEC
	Sub-total	1,986	100.0	0.6	0.3						0.1-0.6 2)	329	16.6			Free	109	5.5		Free	1,548	77.9	
Chemicals	28.19.1000	1,472									0.4	2			USA	Free	-			Free	1,470		EEC,AUT,NOR
	28.19.2000	70									0.1	2			USA	Free	-			Free	68		EEC
	ex28.30.3000	(729)									0.5	(45)			DDR,POL	Free	-			Free	(684)		EEC,SWE
	ex28.35.2000	(628)									0.1	(16)			USA	Free	-			Free	(612)		EEC,AUT,SWE
	Sub-total	1,542	100.0	0.3	0.3						0.1-0.5 2)	4	0.3			Free	-	0.0		Free	1,538	99.7	
Finished manufactures	79.06.1000	-									0.4	-				Free	-			Free	-		
	79.06.1400	21									9.3	-				Free	-			Free	21		EEC,AUT
	79.06.1500	14									14.0	-				Free	-			Free	14		EEC
	79.06.2000	130									2.5	-				Free	-			Free	130		EEC,AUT
	79.06.2200	185									0.5	3			USA	Free	-			Free	182		EEC,AUT
	79.06.3100	40									2.7	16			JPN	Free	-			Free	24		EEC
	79.06.3300	194									0.8	30			USA,JPN	Free	1		HKG	Free	163		EEC,AUT
	Sub-total	584	100.0	1.4	2.6						0.3-14.0 2)	49	8.4			Free	1	0.		Free	534	91.4	
	T o t a l	28,104	100.0					2	0.0		0.1-14.0 2)	7,590	27.0			Free	696	2.5		Free	19,816	70.5	

- nil or negligible
1)MFN duties indicate ad valorem incidence of specific rates based on 1984 trade figures. Specific rates on tariff line basis are indicated in Annex I.
2)Tariff range
3)Under the Agreement between the EFTA countries and Spain, signed on 26 June 1979, Spain benefitted from 60 per cent reduction on applied m.f.n. rates, until its entry into the EEC.
Note: Where the zinc trade products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports of products other than those of zinc, and for the same reason are not included in the sub-totals and averages.

accords duty-free access to imports of zinc products originating in developing and least-developed countries. In 1984, about 8 per cent of zinc metal was supplied by Mexico and Zimbabwe and 26 per cent of zinc bars etc. were imports from Yugoslavia. Imports of zinc products from other EFTA countries and the EEC enter Switzerland duty-free. In 1984, these countries supplied over 70 per cent of Switzerland's zinc imports.

77. In the last 25 years, the United States has changed from a large importer of zinc ores and concentrates to a large importer of zinc metal. Over this period, domestic zinc metal production declined about 60 per cent, from 790 thousand tons in 1960 to 316 thousand tons in 1986. Since the 1960's, several plants were permanently closed for a number of reasons, including, inter alia, high operating costs, out-dated facilities, the closure of which was accelerated by the environment protection standards introduced in the 1960's. There was also a reluctance to build new capacity based on imported raw materials. At present, the United States zinc industry is composed of three primary producers, Amax Zinc Co., Jersey Minière Zinc Co. and Zinc Corporation of America. Their processing levels are approximately equal to domestic zinc mine production. Sixty per cent of mine output comes from five mines while twenty others produce the remainder. They are located in Tennessee, New York, Montana and Missouri. However, as mentioned before, the United States zinc mine production will substantially expand after putting on stream Red Dog zinc/lead/silver mine in Alaska in 1990. The mine, owned by Cominco American, will produce 314 thousand tons of zinc concentrates annually. In 1986, primary zinc production of 253 thousand tons was supplemented by 63 thousand tons of redistilled zinc from secondary materials. Though the United States is the second largest zinc metal consumer after the EEC, its consumption has been stagnant at about one million tons annually after reaching a peak of 1.4 million tons in 1973. This situation is mainly attributed to decrease in demand for zinc in the automobile industry and construction. The United States' domestic production of zinc metal satisfies only about one-third of domestic consumption and the United States is highly dependent on imports of this product.

78. Table 31 on the United States imports of zinc and zinc products was prepared on the basis of concordances established between the Tariff Schedule of the United States Annotated (TSUSA) and the Customs Cooperation Council Nomenclature (CCCN). It shows that in 1984 the United States imports of unwrought unalloyed zinc, amounting to US$640 million, represented almost 86 per cent of total zinc imports in that year. It was mainly supplied by Canada, the EEC and Mexico and was subject to m.f.n. duty of 1.5 per cent. In contrast, the United States imports of zinc alloys attracting an m.f.n. rate of duty of 19 per cent were practically nil. The second most important zinc import item was zinc oxide which entered m.f.n. duty-free. Zinc raw materials to which specific duties ranging from 0.1 per cent to 2.7 per cent apply also enter duty-free as

Table 31

Imports of Zinc and Zinc Products under Different Tariff Treatment According to Stages of Processing

Country: United States
Year: 1984

(in US$'000)

	Tariff No.	Total Imports		MFN								GSP and LDC				Other Preferential Treatment 1)			
				Tariff Average		Duty Free				Dutiable									
		Value	%	Weighted	Simple	Unbound Value	%	Bound Value	%	Origin	Unbound	Rate Bound	Value	%	Origin	Rate	Value	%	Origin	Rate	Value	%	Origin
Ores and concentrates	602.20 4)	29..86									2.5 2)		12,473		CAN,ZAF,AUS	Free	12,611		MEX PER	Free	4,102		WND
Ash and residues	ex603.20	(11)						(1):		EEC													
	603.30	2,842									2.7 2)		2,657		CAN	Free	539		MEX				
	603.5020	171									0.4 2)		51		CAN	Free	120		MEX	Free	46		GTM
	603.5030	319									0.4 2)		319		CAN	Free	-		-				
	ex603.54	-									0.1 2)		-			Free	-			Free	-		
	Sub-total	22,518	100.0	2.5	1.5			-	0.0		0.1-2.5 3)		15,100	46.4		Free	13,270	40.8		Free	4,148	12.8	
Unwrought	626.02 5)	635,840									1.5		635,231		CAN,EEC,MEX					Free	-		
	626.04	100									19.0		100		CAN,MEX					Free	-		
	626.10	3,940									2.1		3,720		CAN,MEX,EEC					Free	219		KWD,GTM,BRN
	Sub-total	639,880	100.0	1.5	7.5						1.5-19.0 3)		639,051	99.9						Free	219	0.0	
Wrought	626.15	424									5.7		424		EEC,CAN,JPN	Free	-			Free	-		
	626.17 5)	308									0.9		269		EEC,JPN	Free	1		MEX	Free	-		
	626.18	6									4.2		6		JPN	Free	-			Free	-		
	626.20	442									5.7		377		MOR,CAN,EEC	Free	65			Free	-		
	626.22	67									5.7		67		CAN,EEC,JPN	Free	-			Free	-		
	626.24	-									6.5		-			Free	-			Free	-		
	626.30	663									4.9		663		EEC,ZAF,PTW								
	626.31	40									4.9		40		EEC,CAN								
	626.35	90									5.7		61		CAN,EEC,ZAF	Free	29		CAN,MEX	Free	-		
	626.40 5)	9,230									0.9 2)		7,232		CAN,EEC,ESP	Free	1,999		MEX	Free	1		GTM
	626.42	275									9.6		275		EEC,MOR,JPN								
	626.45	135									3.8		130		CAN,EEC,JPN	Free	5		HKG	Free	-		
	644.20	18									4.9		18		MOR,JPN,EEC								
	644.30	44									5.7		44		EEC	Free	-			Free	-		
	Sub-total	11,742	100.0	1.7	4.9						0.9-9.6 3)		9,606	81.8		Free	2,099	17.9		Free	1	0.0	
Chemicals	422.70	304						304		PTW,KOR													
	422.72	856									1.6		838		EEC,CAN,JPN	Free	18		CAN	Free	-		
	422.74	477									17.5		59		EEC	Free	418		MEX				
	422.76	1,574									1.6		1,241		EEC,MEX	Free	333		MEX				
	422.78	3,995									4.2		2,649		EEC,MOR,JPN	Free	1,346		PER,IND				
	473.20	1,530									4.2		1,530		CAN,EEC,MOR	Free	-						
	473.46	19									1.2		19		EEC	Free	-						
	473.48	9									4.3		9		EEC	Free	-						
	473.76	34,156						20,454		CAN,EEC,JPN						Free	13,702		MEX,PER,CAN	Free	-		
	473.78	1,360									1.3		1,135		SWE,EEC,MOR	Free	225		PER,MEX	Free	-		
	473.80	6									7.4		6		EEC	Free	-						
	473.90	1,455									2.8		1,455		EEC,JPN	Free	-			Free	-		
	Sub-total	45,739	100.0	0.9	3.8			20,758	45.4		1.2-2.8 3)		8,939	19.5		Free	16,042	35.1		Free	-	0.0	
Finished manufactures	652.25	2,189									5.7		933		CAN,SWE,EEC	Free	1,256		BRA,MEX,CAN	Free	-		
	657.80	7,954									5.7		3,524		CAN,EEC,JPN	Free	4,573		CAN,MEX,MEX	Free	57		ISR
	Sub-total	10,143	100.0	5.7	5.7						5.7		4,457	43.9		Free	5,829	58.5		Free	57	0.6	
	TOTAL	740,022	104.0					20,758	2.8		0.1-19.0 3)		677,153	91.5		Free	37,040	5.0		Free	4,425	4.6	

... not available
- nil or negligible

1) A preferential treatment is given to beneficiary countries of the Caribbean Basin Economic Recovery Act (CBERA). Certain products originating in Canada are imported duty free under the Canada/United States Agreement on Automotive Products (L/2409 of March 1965). MFN duty free treatment applied to Israel under the Agreement on the Establishment of a Free Trade Area.
2) MFN duties indicate ad valorem incidence of specific rates based on 1984 trade figures. Specific rates on tariff line basis are given in Annex I.
3) Tariff range.
4) Duty on zinc in ores and concentrates suspended until 31 December 1989 (P.L. 98-573).
5) Difference in the summing up represents trade from non-e.f.a. sources.
Note: Where the zinc products are not specified separately (indicated by "ex"), the trade flow figures, shown within brackets, may include imports other than those of zinc, and for the same reason are not considered in the calculation of sub-totals and tariff averages.

m.f.n. duties were suspended until the end of 1989. In 1984, the United States imported almost US$12 million of wrought zinc products and over US$10 million of zinc manufactures. Imports of these items from m.f.n. sources were subject to m.f.n. rates of duty of 0.5 per cent to 9.6 per cent and 5.7 per cent, respectively. Imports from developing countries included in the list of GSP beneficiaries receive a preferential duty-free treatment. However, there is no GSP preferential treatment granted to imports of unwrought zinc. Moreover, the United States GSP scheme has a built-in safeguard mechanism whereby GSP beneficiaries may be excluded from GSP treatment on a product-by-product basis. (In 1984, only zinc sulphate imported from Mexico was affected by these provisions.) In 1984, about US$37 million or 5.0 per cent of zinc imports, originated from GSP sources. The United States also grants duty-free access to products from beneficiary countries of the Caribbean Basin Economic Recovery Act (CBERA) and to Israel under the Agreement on the Establishment of a Free-Trade Area. In 1984, imports of zinc products from these sources consisted mainly of zinc ores and concentrates supplied by Honduras. In November 1987, the United States signed an Agreement with Canada on Free Trade Area. At present, the United States is in the process of considering ratification of this Agreement which would eliminate the tariff on Canadian zinc and other products over a ten-year period.

(ii) Developing countries

79. The following sub-section gives a brief description of production, consumption and trade of zinc in some developing countries. Tables 32 to 49 provide detailed information on imports of zinc and zinc products on tariff line basis divided according to stages of processing for the following developing countries: Argentina, Brazil, Colombia, Hong Kong, India, Indonesia, Israel, Jamaica, the Republic of Korea, Malaysia, Mexico, Morocco, Peru, the Philippines, Singapore, Thailand, Turkey and Yugoslavia. Trade figures are based on the most recent national statistics. Imports under CCCN ex26.03 and zinc chemicals under ex tariff lines are not included in total zinc trade. Tables indicate the m.f.n tariff treatment applied in 1987 and where available, preferential treatment granted to other countries or regional groupings together with the value of preferential imports. In addition to the individual country Tables which link tariff treatment to trade flows, Table 50 indicates m.f.n. tariff treatment applied to zinc and zinc products by the following developing countries: Chile, Egypt, Ghana, Nigeria, Pakistan, Romania, Tunisia, Uruguay, Zaire and Zambia. Trade statistics based on the tariff line level for these countries are not available.

Individual developing-country profiles

80. Presently, the mineral industry of Argentina, excluding hydrocarbons, contributes about 0.3 per cent to the GDP. However, this might change in the future as the Argentinian government considers the development of its large mineral reserves in order to expand the country's economy and to decrease its dependence on mineral imports. Under the mining expansion

plan called "Plan de Expansôn Minera (PEM)", Argentina foresees an increase in production value from US$32 million in 1985 to US$1,100 million in the year 2000. The plan encourages, inter alia, domestic and foreign investments through tax reliefs and exploration programmes and feasibility studies. Until now, most requirements for zinc metal has been covered by domestic sources. The Minera Aquilar, Argentina's only lead-zinc mine situated in the province of Jujuy, produces on average about 35 thousand tons of zinc concentrates, most of which are processed into cathode zinc at the Sulfacid SA plant in Santa Fe. A pressure leaching zinc plant of a capacity of 16 thousand tons in Jujuy is under consideration. In previous years, Argentina exported small amounts of zinc concentrates. Its zinc imports consist mainly of unwrought zinc and some zinc oxides. M.f.n. duties of Argentina on zinc and zinc products range from 25 to 38 per cent. Argentina grants preferential treatment to members of ALADI under the ALADI preferential agreement. As can be seen from Table 32, in 1983, major suppliers of zinc products to Argentina were countries in the same geographic region.

81. According to the study by the Department Nacional da Producão Mineral (DNPM), the mineral sector of Brazil will maintain its high rate of growth until at least 1990 when the rate of expansion might have slowed down. Brazilian zinc industry which started in the early 1970s has substantially expanded in recent years. However, its production does still not fully satisfy growing domestic demand. In 1986, three major producers - Cia Minera de Metais SA, Cia Paraibuna de Metais and Companhia Mercantil e Industrial - Inga - produced about 90 thousand tons of zinc concentrates or about two-thirds of domestic smelter demand in that year. Paraibuna plans to quadruple capacity to 120 thousand tons by 1989. Production of zinc metal is also not sufficient and in 1986, about 14 per cent of domestic requirements were imported. As can be seen from Table 33, these two products were major items of Brazilian imports in 1986. Zinc concentrates were imported mainly from Peru under the bilateral barter agreement, and from Canada and Mexico. These countries also supplied most of the zinc metal. Imports of the above mentioned products represented 42 per cent and 56 per cent of total imports in 1986, respectively. M.f.n. duties on zinc products with the exception of zinc ores and concentrates are positive, ranging from 20 to 70 per cent (finished manufactures). Brazil grants preferential treatment to member countries of ALADI on some zinc products.

82. The largest Chilian lead and zinc mine El Toqui in Aysen Province was closed down in 1985. Other small zinc producers include Empresa Minera de Aysen Ltda and Cia Minera Catemu Ltda. All zinc mine output is exported and in 1985, exports of zinc concentrates amounted to about 37 thousand tons. In contrast, zinc metal and products of zinc for domestic consumption are imported. Table 50 gives Chile's tariff treatment applied to imported zinc products.

Country: ARGENTINA

Year: 1983

TABLE 32

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[2]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		30%	-				
Ash and residues	ex26.03			(13)	UGY			
	Sub-Total	-	30%	-				
Unwrought								
Unalloyed	79.01							
Alloyed	79.01			75	PER,JPN,EEC			
Waste and scrap	79.01		38%					
Powders (including dust) and flakes	79.03			131	MEX,EEC,USA			
	Sub-total	206	38%	206				
Wrought	79.02			9	USA			
	70.03		38%	-				
	79.04			2	USA,BRA			
	Sub-total	11	38%	11				
Chemicals	28.19		35%	177	USA,EEC,UGY			
	ex28.30			-				
	ex28.35		25%	-				
	Sub-total	177	25%, 35%	177				
Finished manufactures	79.06		38%	6	USA,JPN,SWZ			
	Sub-total	6	38%	6				
	Total	400	25%-38%[1]	400				

[1]Tariff range.

[2]Preferential treatment applied to ALADI countries. Figures are not available.

Source: Instituto Nacional de Estadistica y Censos, Comercio Exterior 1983, Tomo III, Republica de Argentina
International Customs Tariff Bureau, International Customs Journal, No. 58, 1987-1988, Brussels

Country: BRAZIL

Year: 1985

TABLE 33

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[2]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		Free	20,646	PER,MEX,CAN			
Ash and residues	ex26.03			(424)	SUR,EEC			
	Sub-Total	20,646	Free	20,646				
Unwrought								
Unalloyed	79.01		30%	26,860	PER,MEX,CAN			
Alloyed	79.01							
Waste and scrap	79.01							
Powders (including dust) and flakes	79.03		40%	254	USA,EEC			
	Sub-total	27,114	30%, 40%	27,114				
Wrought	79.02		45%, 55%	90	EEC			
	79.03		20%, 55%	1	EEC,USA			
	79.04		55%	-				
	Sub-total	91	20%-55%[1]	91				
Chemicals	28.19		30%, 45%	129	EEC,UKY,USA			
	28.30		30%	85	EEC			
	ex28.35			(12)	EEC,USA			
	Sub-total	214	30%, 45%	214				
Finished manufactures	79.06		70%	18	EEC,JPN,USA			
	Sub-total	18	70%	18				
	Total	48,083	Free-70%[1]	48,083				

[1]Tariff range.

[2]Preferential treatment applied to imports from ALADI countries to the following tariff items: 28.19.00, 28.30.22.00, 79.01.01.01, 79.01.02.01, 79.01.03.01. Details not available.

Source: Ministerio da Fazenda, Comercio Exterior do Brasil, Importacao 1985, Tomo II, Brasilia
International Customs Tariff Bureau, International Customs Journal, No. 86, 1985-1986, Brussels

83. Colombia is a net importer of zinc metal, which in 1983, represented almost total of Colombian zinc imports amounting to US$10.4 million. Most of these imports originated in Peru, Mexico and Canada. The remaining zinc product imports are mainly zinc chemicals. M.f.n. duties range from 5 to 45 per cent, the highest rates being applied to zinc manufactures. Colombia grants preferential treatment on refined zinc to ALADI countries (see Table 34).

84. In the last four years, consumption of zinc metal in Egypt was on average 18 thousand tons annually, 50 per cent more than in the years 1980-82. All zinc metal and other zinc products are imported. Tariff treatment applied to zinc imports is given in Table 50.

85. Refined zinc consumption of Ghana is insignificant. Its tariff treatment applied to zinc imports is also given in Table 50.

86. In 1986, consumption of zinc metal in Hong Kong reached 30 thousand tons (about the same level of zinc consumption as Sweden, Austria or Switzerland). Table 35 indicates that Hong Kong grants m.f.n. duty-free treatment to all zinc products. In 1986, 90 per cent of its imports valued at US$59 million was unwrought zinc supplied mainly by the People's Republic of China, the People's Democratic Republic of Korea, the EEC and Australia.

87. Like lead, consumption of refined zinc in India rose substantially in the last decade and was 134 thousand tons in 1986. In the same year, about one-half was covered by output from domestic smelters. Hindustan-Zinc Ltd. (HZL), a State-owned company, owns two smelters with a total refining capacity of 73 thousand tons annually and seven lead and zinc mines. While the smelter at Debar in Rajasthan processes domestic zinc concentrates, HZL's zinc smelter at Visakhapatnam runs on imported concentrates. However, HZL became self-sufficient in zinc concentrates by the end of 1987 after the Rajpura-Dariba mines started to be fully operating. Under the Seventh Five-Year Plan, the Indian government has decided to develop a new lead-zinc smelter complex at Chanderiya in Rajasthan based on the deposits of Rampura-Agucha. According to the feasibility study by a German company, the complex should, inter alia, produce 70 thousand tons of zinc metal by the early 1990s. Another smelter - Cominco-Binani Zinc Ltd. (CBZ) situated near Cochin port in Kerala is privately owned. It has a capacity of 15 thousand tons annually and operates also on imported concentrates. The company foresees an increase of its capacity to 20 thousand tons of zinc metal per year. After the completion of expansion projects, total smelter capacity of India will rise to about 105 thousand tons annually and India will satisfy about 75 per cent of its domestic demand for zinc. Table 36 shows that in the fiscal year 1984-85 India's imports of zinc amounted to US$83 million of which unwrought zinc represented 93 per cent, wrought zinc

Country: COLOMBIA

Year: 1983

TABLE 34

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(In US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[2]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		5%	-				
Ash and residues	26.03		10%	-				
	Sub-Total	-	5%, 10%	-				
Unwrought								
Unalloyed	79.01		10%	10,413	PER			
Alloyed	79.01			360	PER,unspecified			
Waste and scrap	79.02		5%	-				
Powders (including dust) and flakes	79.03		20%	270	Unspecified			
	Sub-total	11,043	5%-20%[1]	11,043				
Wrought	79.02		25%	-				
	79.03		20%	-				
	79.04		30%	-				
	Sub-total	-	20%-30%[1]	-				
Chemicals	28.19		20%, 25%	324	PER,VEN			
	28.30		20%	398	Unspecified			
	ex28.35			-				
	Sub-total	722	20%, 25%	722				
Finished manufactures	79.06		30%, 45%	-				
	Sub-total	-	30%, 45%	-				
	Total	11,765	5%-45%[1]	11,765				

[1]Tariff range.

[2]Preferential tariff treatment granted to ALADI countries. Figures are not available.

Source: ALADI, Estadisticas de Comercio Exterior, Colombia, 1983
International Customs Tariff Bureau, International Customs Journal, No. 90, 1982-1983, Brussels

Country: HONG KONG

Year: 1986

TABLE 35

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		Free	(4,304)	CHN			
Ash and residues	ex26.03		Free	(248)	CHN,MAC,PTW			
	Sub-Total	-	Free	-				
Unwrought								
Unalloyed	79.01		Free	32,619	CHN,PNK,AUS			
Alloyed	79.01			22,722	EEC,AUS,PER			
Waste and scrap	79.01			283	MAC,PTW,USA			
Powders (including dust) and flakes	79.03			371	EEC,KOR			
	Sub-total	55,995	Free	55,995				
Wrought	79.02		Free	596	EEC,KOR,JPN			
	79.03			321	JPN,EEC			
	79.04			8	CHN			
	Sub-total	925	Free	925				
Chemicals	28.19		Free	1	CHN,EEC,CAN			
	28.30			1/	CHN,JPN,EEC			
	ex28.35			(2,112)	CHN,EEC			
	Sub-total	1	Free	1				
Finished manufactures	79.06		Free	92	CHN,EEC,USA			
	Sub-total	92	Free	92				
	Total	57,013	Free	57,013				

1/ Imports smaller than US$1,000

Note: Census and Statistics Department, Hong Kong Monthly Digest of Statistics, April 1987.
Exchange rate 1986: US$1 = HK$7.803.

Source: Census and Statistics Department, Hong Kong Trade Statistics, 1986
Bundesstelle Für Aussenhandelsinformation, Zoll und Handelsinformation, February 1987, Köln

Country: INDIA

Year: 1984-1985

TABLE 36

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN[1]			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		60%	1,180	AUS,USA			
Ash and residues	ex26.03			(15,126)				
	Sub-Total	1,180	60%	1,180				
Unwrought								
Unalloyed	79.01		100%	77,143	EEC,ZRB			
Alloyed	79.01							
Waste and scrap	79.01			1,145	USA,EEC,AUS			
Powders (including dust) and flakes	79.03			281	EEC,USA			
	Sub-total	78,569	100%	78,569				
Wrought	79.02		100%	318	JPN,EEC			
	79.03			2,188	EEC,AUS			
	79.04			-				
	Sub-total	2,506	100%	2,506				
Chemicals	28.19		100%	36	USA,EEC			
	ex28.30			(1,368)	EEC,JPN,USA			
	ex28.35			(117)	EEC,USA,JPN			
	Sub-total	36	100%	36				
Finished manufactures	79.06		100%	651	PER,AUS			
	Sub-total	651	100%	651				
	Total	82,942	60%, 100%	82,942				

[1] No bound rates in principle; concessions are under negotiation.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1984-1985: US$1 = Rs. 11.735.

Source: Directorate General of Commercial Intelligence and Statistics, Monthly Statistics of the Foreign Trade of India, March 1985, Calcutta
International Customs Tariff Bureau, International Customs Journal, No. 4, 1987-1988, Brussels

3 per cent and zinc concentrates 1.4 per cent. Zinc metal originated mainly in the EEC and Zambia. The m.f.n. rate of duty on zinc concentrates is 60 per cent and all other zinc products are subject to an m.f.n. duty of 100 per cent.

88. Indonesia has no domestic production of zinc and meets its increasing zinc consumption through imports. In 1985, zinc and zinc products imports amounted to US$57 million. They consisted mainly of unwrought zinc supplied by Australia, Canada and the EEC and were subject to an m.f.n. rate of duty of 5 per cent. Table 37 indicates both, m.f.n. statutory rates and applied rates. M.f.n. statutory rates range from 10 to 50 per cent and m.f.n. applied rates are between 5 and 40 per cent. Indonesia grants the preferential tariff treatment to ASEAN countries.

89. Israel also imports all zinc and zinc products for its domestic consumption. In 1984, refined zinc accounted for 71 per cent and zinc oxides for 15 per cent of total zinc imports of US$7million, respectively. They originated in the EEC and Canada. Most zinc products are imported m.f.n. duty-free. The m.f.n. duty of 10 per cent applies to zinc peroxides and zinc chlorides. M.f.n. positive rates of duty of 8 and 10 per cent also apply on some zinc manufactures. Israel grants preferential treatment to the EEC on m.f.n. positive rates of duty. M.f.n. dutiable imports enter duty-free when supplied by the United States under the Agreement of a Free Trade Area (see Table 38).

90. Jamaica's imports of zinc in 1983 accounted for US$1.4 million. Table 39 shows that the bulk of imports was unwrought zinc shipped from Canada and the United States m.f.n. duty-free. Jamaica also imported zinc oxides and some zinc manufactures. M.f.n. rates of duty on zinc semi-manufactures and manufactures range from 5 to 25 per cent.

91. Refined zinc consumption of the Republic of Korea had, with Brazil and India, the highest rate of growth of all developing countries. Korea's zinc consumption more than doubled in the last five years and was 154 thousand tons in 1986. Its refining has also expanded and in 1986, 82 per cent of consumption was covered by domestic production. The Republic of Korea has two zinc refineries. Young Poong Corp. operates a refinery of a capacity of 70 thousand tons a year at Sukpo and Korea Zinc Co. has a zinc refinery at Onsan. The capacity of the latter was increased from 75 thousand tons to 150 thousand tons in spring 1987. Domestic mine production supplied less than one-half of the refinery feed in 1986 (less than 30 per cent in 1987) and the remainder was imported. In 1986, more than 52 per cent of Korean zinc imports were zinc concentrates originating from Australia, Peru and Mexico. They were subject to an m.f.n. temporary rate of duty of 1 per cent. In the same year, imports of zinc metal were valued at US$22 million or 32 per cent of total zinc

Country: INDONESIA

Year: 1985

TABLE 37

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[3]		
			Rate[1]	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		5%	(332)	CHN,AUS,JPN			
Ash and residues	ex26.03			(15)	EEC,SGP			
	Sub-Total	-	5%	-				
Unwrought								
Unalloyed	79.01		5% 30%(B)	52,924	AUS,CAN,EEC			
Alloyed	79.01							
Waste and scrap	79.01			447	CAN,SGP,AUS			
Powders (including dust) and flakes	79.03			377	EEC,AUS,USA			
	Sub-total	53,748	5%	53,748				
Wrought	79.02		5%,10%,10% (10%,20%,30%)	816	AUS,CHN,PTW			
	79.03		5%,20%(10%)	194	AUS,EEC,SGP			
	79.04		10%(20%)	195	JPN			
	Sub-total	1,205	5%-20%[2] (10%-30%)[2]	1,205				
Chemicals	28.19		5%,10%(15%)	815	CHN,KOR,EEC			
	ex28.30		15%, 30%(B)	(2,084)	JPN,EEC,CHN			
	ex28.35		5%(15%)	(203)	CHN,SGP,EEC			
	Sub-total	815	5%-15%[2] (15%)	815				
Finished manufactures	79.06		5%,10%,30%,40% (10%,40%,50%)	898	JPN,CHN,SGP			
	Sub-total	898	5%-40%[2] (10%-50%)[2]	898				
	Total	56,666	5%-40%[2] (10%-50%)[2]	56,666				

[1]Applied rates. Rates in parentheses indicate m.f.n. statutory (general) rates.

[2]Tariff range.

[3]Preferential tariff treatment granted to imports originating in ASEAN countries. Figures are not available.

Source: Central Bureau of Statistics (Biro Pusat Statistik), Imports 1985, Volume I, Jakarta
International Customs Tariff Bureau, International Customs Journal, No. 63, 1986-1987, Brussels

Country: ISRAEL

Year: 1984

TABLE 38

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[3]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		Free	(856)	EEC,ZAF,AUS			
Ash and residues	ex26.03			-				
	Sub-Total	-	Free	-				
Unwrought								
Unalloyed	79.01		Free	5,060	EEC,CAN			
Alloyed	79.01							
Waste and scrap	79.01							
Powders (including dust) and flakes	79.03			-				
	Sub-total	5,060	Free	5,060				
Wrought	79.02		Free	462	EEC,CAN			
	79.03			250	NOR			
	79.04			55	EEC			
	Sub-total	767	Free	767				
Chemicals	28.19		Free, 10%	1,089	EEC			
	28.30[1]		10%	43	Unspecified	8.7%		EEC
	ex28.35		Free	(102)	EEC			
	Sub-total	1,132	Free, 10%	1,132		8.7%		
Finished manufactures	79.06		Free, 6%, 12%	185	EEC	Free,4.9%, 10.5%		EEC
	Sub-total	185	Free-12%[2]	185		Free-10.5%[2]		
	Total	7,144	Free-12%[2]	7,144		Free-10.5%[2]		

[1] In accordance with the maximum rates of customs duties detailed in the Protocol for the Accession of Israel to the GATT.

[2] Tariff range.

[3] Duty-free treatment applied to the United States under the Agreement of a Free-Trade Area.

Source: Central Bureau of Statistics, Foreign Trade Statistics 1984 (Imports), Israel
International Customs Tariff Bureau, International Customs Journal, No. 41, 1982-1983, Brussels

Country: JAMAICA

Year: 1983

TABLE 39

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		Free	-				
Ash and residues	26.03			-				
	Sub-Total	-	Free	-				
Unwrought:								
Unalloyed	79.01							
Alloyed	79.01		Free	913	CAN,USA			
Waste and scrap	79.01			-				
Powders (including dust) and flakes	79.03		10%	35	USA			
	Sub-total	948	Free, 10%	948				
Wrought	79.02			9	USA,CAN			
	79.03		10%	1	USA			
	79.04			12	EEC,USA			
	Sub-total	22	10%	22				
Chemicals	28.19			166	USA,VEN,EEC,CAN			
	ex28.30		5%	-				
	ex28.35			-				
	Sub-total	166	5%	166				
Finished manufactures	79.06		20%, 25%	246	EEC,USA			
	Sub-total	246	20%, 25%	246				
	Total	1,382	Free-25%[1]	1,382				

[1] Tariff range.

Note: International Financial Statistics, IMF, December 1985, Washington DC.
Exchange rate 1983: 1 US$ = Jamaican dollars 1.9322.

Source: External Trade 1983 (Provisional). The Statistical Institute of Jamaica, May 1984
International Customs Tariff Bureau, International Customs Journal, No. 86, 1985-1986, Brussels

imports. Major suppliers were the EEC, Taiwan and Peru. The m.f.n. duty on zinc metal is 20 per cent. Korea also imports some wrought zinc, zinc chemicals and zinc manufactures. Some m.f.n. rates of duty on zinc products were reduced as from January 1988 (see Table 40). Following the expansion of its zinc metal production making Korea self-sufficient in metal, Korea's trade pattern is expected to change in the future.

92. Malaysia has no zinc industry and all zinc for domestic consumption is covered by foreign sources. The bulk of zinc imports is unwrought zinc imported mainly from Australia, Canada and Japan (see Table 41). In 1986, imports of this product amounted to US$ 32 million, almost 77 per cent of the total. Most m.f.n. duties on zinc are zero, but an m.f.n. 10 per cent duty is applied on alloyed zinc metal and ash and residues. Zinc oxides and certain zinc products are subject to an m.f.n. duty of 25 per cent. Malaysia grants duty-free preferential treatment on unwrought zinc when imported from ASEAN countries.

93. Mexico is the second largest zinc mine producer and the largest metal producer among developing countries. In most Mexican mines, zinc is extracted as a by-product to silver of which Mexico is the world's leading producer. The major zinc mine producer Industrial Minera Mexico SA (IMMSA) extracts about 150 thousand tons of zinc concentrates annually. Since 1984, its zinc metal output almost doubled after the putting on stream of a new refinery at San Luis de Potosi in addition to its existing refinery at Monterrey. The other producer of refined zinc is Industria Peñoles which owns a metallurgical plant at Torreón. In 1986, Mexico processed over 60 per cent of its zinc concentrates output. The remainder was exported, mainly to the EEC, the United States and the USSR. In the same year. Mexico also exported about one-third of its zinc metal of which the United States is the principal traditional buyer. As Mexican domestic consumption of refined zinc, which has increased to about 100 thousand tons annually in recent years, is covered by domestic sources, Mexico's zinc imports are limited to zinc powders and zinc semi-manufactures including zinc chemicals. Table 42 shows that all these products were imported from the United States and the EEC. With the exception of zinc oxides, they were subject to the m.f.n. rate of duty of 25 per cent.

94. Morocco has a small mine production of zinc which is mined as a by-product to lead. There exist a number of small mining operations, however, some of them have become depleted. As Morocco has no zinc refinery, all zinc concentrates are exported, mainly to the EEC (about 14 thousand tons in 1985). Annual zinc metal consumption is between 2 to 4 thousand tons. Zinc metal is supplied by the EEC which also provides most of the other zinc products. Table 43 indicates that of zinc imports of US$6.4 million in 1985, unwrought zinc shared 50 per cent, wrought zinc products 6 per cent, zinc chemicals 13 per cent and zinc manufactures 30 per cent. Table 43 also shows, both, m.f.n. applied, and statutory rates which are applicable to these imports.

Country: KOREA, REP.OF

Year: 1986

TABLE 40

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		5%(12%)[1]	35,335	AUS,PER,MEX			
Ash and residues	26.03		20%(20%)[2]	426	SAU,USA,JPN			
	Sub-Total	35,761	5%, 20%	35,761				
Unwrought								
Unalloyed	79.01		20%(20%)[2]	21,759	EEC,FIN,PER			
Alloyed	79.01							
Waste and scrap	79.01			7,550	JPN,USA,SAU			
Powders (including dust) and flakes	79.03		25%(20%)[2]	178	JPN,EEC			
	Sub-total	29,487	20%, 25%	29,487				
Wrought	79.02		20%(20%)[2]	349	PER,JPN			
	79.03			675	JPN,USA			
	79.04		25%(20%)[2]	-				
	Sub-total	1,024	20%, 25%	1,024				
Chemicals	28.19		25%(20%)[2]	313	JPN,USA,EEC			
	ex28.30		20%(20%)[2]	(187)	USA,JPN			
	ex28.35			(109)	JPN,EEC,USA			
	Sub-total	313	20%, 25%	313				
Finished manufactures	79.06		25%(20%)[2]	724	USA,PER,JPN			
	Sub-total	724	25%	724				
	Total	67,309	5%-25%[3]	67,309				

[1]Temporary rate.

[2]Figures in parentheses are rates applicable as from January 1988.

[3]Tariff range.

Source: Office of Customs Administration, Statistical Yearbook of Foreign Trade, December 1986, Seoul
International Customs Tariff Bureau, International Customs Journal, No. 80, 1987-1988, Brussels

Country: MALAYSIA

Year: 1986

TABLE 41

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[1]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		2%	63	AUS,JPN,EEC			
Ash and residues	ex26.03			(2,486)	JPN,SGP,BRA			
	Sub-Total	63	2%	63				
Unwrought								
Unalloyed	79.01		2%, 5%	18,751	AUS,THA,JPN	Free		
Alloyed	79.01			12,772	AUS,CAN,EEC			
Waste and scrap	79.01		2%	156	SGP,CAN,AUS			
Powders (including dust) and flakes	79.03			593	NOR,SWE,EEC			
	Sub-total	32,272	2%, 5%	32,272				
Wrought	79.02		2%	1,685	AUS,SGP,JPN			
	79.03		20%	572	EEC,JPN,SGP			
	79.04		2%	68	SGP,EEC,JPN			
	Sub-total	2,325	2%, 20%	2,325				
Chemicals	28.19		25%[2]	45	SGP,JPN			
	ex28.30		2%	(6,617)	JPN,EEC,SGP			
	ex28.35			(539)	USA,EEC,FIN			
	Sub-total	45	2%, 25%	45				
Finished manufactures	79.06		5%, 20%, 30%	-				
	Sub-total	-	5%-30%[3]	-				
	Total	34,705	2%-30%[3]	34,705		Free		

[1]Preferential tariff treatment for imports originating in ASEAN COUNTRIES: Figures not available.

[2]Surtax of 5% ad valorem.

[3]Tariff range.

Source: Department of Statistics, External Trade Statistics 1986, Malaysia
International Customs Tariff Bureau, International Customs Journal, No. 12, 1987-1988, Brussels

Country: MEXICO

Year: 1985

TABLE 42

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[2]		
			Rate[1]	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		5%	-				
Ash and residues	26.03		10%	-				
	Sub-Total	-	5%, 10%	-				
Unwrought								
Unalloyed	79.01				USA			
Alloyed	79.01		10%, 25%	198				
Waste and scrap	79.01							
Powders (including dust) and flakes	79.03		10%, 25%	1,008	USA,EEC			
	Sub-total	1,206	10%, 25%	1,206				
Wrought	79.02			249	USA,EEC			
	79.03		25%	585	USA,IND,EEC			
	79.04			44	USA			
	Sub-total	878	25%	878				
Chemicals	28.19		10%, 30%	334	USA,EEC			
	ex28.30		25%	(617)	USA,EEC			
	ex28.35		25%	(110)	USA,EEC,CHE			
	Sub-total	334	10%-30%[3]	334				
Finished manufactures	79.06		25%	80	USA,EEC			
	Sub-total	80	25%	80				
	Total	2,498	5%-30%[3]	2,498				

[1]Customs tariff as bound at the rate of 50 per cent (Schedule LXXVII).

[2]No preferences are granted to imports from ALADI countries on these items.

[3]Tariff range.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1985: US$1 = Peso 256.87.

Source: Instituto Nacional de Estadistica, Geografia e Informatica, Anuario Estadistico del Comercio Exterior de los Estados Unidos Mexicanos 1985, Mexico, D.F.
Secretaria de Comercio y Fomento Industrial, Tarifa del Impuesto General de Importacion, Tomo I, Mexico, D.F., 1986

Country: MOROCCO

Year: 1985

TABLE 43

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences		
			Rate[1]	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		Free(10%)	(12)	AUS			
Ash and residues	ex26.03		10%	-				
	Sub-Total	-	Free, 10%	-				
Unwrought								
Unalloyed	79.01			2,476				
Alloyed	79.01			661				
Waste and scrap	79.01		Free(25%)	29	EEC			
Powders (including dust) and flakes	79.03			20				
	Sub-total	3,186	Free	3,186				
Wrought	79.02			125				
	79.03		Free(25%)	238	EEC			
	79.04		15%(30%)	16				
	Sub-total	379	Free, 15%	379				
Chemicals	28.19		Free, 10%(30%)	606	EEC,USA			
	28.30		20%(30%)	241	EEC			
	ex28.35		10%(30%)	(3)				
	Sub-total	847	Free-20%[2]	847				
Finished manufactures	79.05		Free, 25%(45%)	1,953	EEC,PER			
	Sub-total	1,953	Free, 25%	1,953				
	Total	6,365	Free-25%[2] (Free-45%)[2]	6,365				

[1]Applied rates until further notice. Rates in parentheses indicate m.f.n. statutory (general) rates of duty.

[2]Tariff range.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate: US$1 = Dirhams 10.042.

Source: Office des changes, Ministre du Commerce extérieur, Statistiques du Commerce 1985, Royaume de Maroc
International Customs Tariff Bureau, International Customs Journal, No. 132, 1986-1987, Brussels

95. In the last five years, consumption of refined zinc in Nigeria was on average 14 thousand tons annually. All zinc products are imported, mainly from the EEC. Table 50 indicates the m.f.n. tariff treatment which is applied to imports of zinc and zinc products.

96. The Geological Survey of Pakistan has undertaken a detailed mapping of Khuzdar region where lead and zinc deposits were previously identified. Present consumption of zinc metal which is around 10 thousand tons annually is covered by foreign sources, mainly the EEC and the Soviet Union. Table 50 gives the m.f.n. tariff treatment applied to imports of zinc and zinc products.

97. The mineral industry, the mainstay of Peru's economy, has been adversely affected by weakened world demand and low prices for metal. In recent years, the Peruvian government has taken several legislative measures, such as tax incentives to the small mining sector, the establishment of certain guarantees in new mining contracts, etc., to promote the development of and investment into, the mining industry. Peru is the world's fourth largest zinc mine producer, after Canada, the USSR and Australia. About 30 per cent of mine output, which reached the highest level of almost 600 thousand tons in 1986, is processed domestically. The refinery at La Oroya, belonging to the State company Centromin Peru, processes over 60 per cent of zinc concentrates from its Cerro del Pasco mining unit. At present, the company is making large investments to expand the mine capacity of its other mines, Andaychaqua and Casapalca. The second zinc refinery owned by the State company Minero Peru put on stream in 1983 almost tripled Peru's refining capacity. This made Peru the second largest zinc metal producer among developing countries after Mexico. In 1986, the refinery at Cajamarquilla produced about 96 thousand tons of zinc metal, almost two-thirds of the Peruvian annual output. Peru has also some smaller private mines with the participation of foreign, mainly Japanese and American, capital. The development programme of the largest zinc private producer San Ignacio de Morococha SA (SIMSA) includes, inter alia, exploration work and expansion of its San Vicente mine and the construction of a module-type zinc refinery with an annual capacity of 30 thousand tons. Peru signed an agreement with the Metal Mining Agency of Japan and the Japan International Cooperation Agency to conduct a feasibility study on the Izcay Creek deposit at Oyon. Ore reserves at this deposit evaluated at 3 million tons contain 18 per cent zinc and 30 gram of silver per ton. The project requires an investment of about US$30 million for a mining operation of 1000 tons a day. Peru is the fourth largest exporter of both zinc concentrates and zinc metal. In 1986, exports of these two products amounted to 400 thousand tons and 105 thousand tons, respectively. Consequently, as Table 44 shows, Peru's imports of zinc are practically nil.

Country: PERU

Year: 1982

TABLE 44

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Produc description	Tariff No.	Total trade	MFN			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		10%	-				
Ash and residues	26.03			-				
	Sub-Total	-	10%	-				
Unwrought								
Unalloyed	79.01		5%, 10%	37	Unspecified			
Alloyed	79.01							
Waste and scrap	79.01			-				
Powders (including dust) and flakes	79.03		30%	-				
	Sub-total	37	5%-30%[1]	37				
Wrought	79.02		10%, 40%	-				
	79.03		30%	-				
	79.04		15%,50%,60%	-				
	Sub-total	-	15%-60%[1]	-				
Chemicals	28.19		30%, 40%	-				
	ex28.30		30%	(134)	Unspecified			
	ex28.35		25%	(1,346)				
	Sub-total	-	25%-40%[1]	-				
Finished manufactures	79.06		30%	-				
	Sub-total	-	30%	-				
	Total	37	15%-60%[1]	37				

[1]Tariff range.

Source: ALADI, Peru, Estadisticas de Comercio Exterior, 1982
Bundesstelle für Aussenhandelsinformation, Zoll und Handelsinformation (Deutches Handels-Archiv), February 1987, Köln

98. The Philippines produces small quantities of zinc concentrates which are exported to Japan. In contrast, Japan supplies most of the Philippine's domestic requirements of zinc metal. In 1985, this item represented 91 per cent of the Philippine's imports valued at US$12.5 million. Zinc chemicals, namely zinc oxides and chlorides, accounting for the remainder were imported from Taiwan, the EEC and Japan. As can be seen from Table 45, m.f.n. rates of duty on unwrought zinc are 10 per cent, while most other zinc products are subject to an m.f.n. duty of 20 per cent. The preferential tariff treatment is granted to imports originating in ASEAN countries.

99. The shortage of hard currency forced Romania to adopt policy leading to a reduction of hard currency imports, and regarding the mineral industry, to maximizing self-sufficiency of domestic raw-material production. At present, all domestic consumption of zinc metal which decreased to about 40 thousand tons in the last two years (about 30 per cent below zinc metal consumption in 1980) is covered by domestic production. Romania posesses some low grade zinc and lead deposits at Baia Mare in North-West Romania. All output is processed into metal by the Uxina Chimica Metalurgia. In the last few years, some zinc concentrates for refining were imported, mainly from Spain. As mentioned, all zinc metal is consumed in the country and occasionally, some metal is imported. Romania also imports zinc oxides and some zinc semi-manufactures, principally from the EEC and Yugoslavia. Table 50 gives Romania's m.f.n. tariff treatment applied on imports of zinc and zinc products.

100. Singapore is a net importer of zinc and zinc products. In 1986, its zinc imports amounted to US$13.4 million (see Table 46). The bulk of these was in the form of unwrought zinc originating mainly in Australia, Canada and Thailand. Zinc oxides and zinc manufactures accounted for 7.8 and 4 per cent of total imports in the same year, respectively. All zinc products imported by Singapore enter m.f.n. duty-free.

101. The development of the mineral sector has been an important objective of Thailand's Sixth Five-Year National Economic and Social Development Plan. The Government's Committee on Mineral Resources Policy has been charged to lay down policy guidelines for mineral resources development regarding strategy for investment, production, consumption and marketing. Until 1984, Thailand depended on imports of zinc metal for its domestic consumption which reached the highest level of 60 thousand tons in 1980. Zinc metal was supplied by Australia, Canada and Japan. However, in 1984, Padaeng smelting and refining unit in Tak province was put on stream, which made Thailand self-sufficient in zinc metal. The plant capacity is 60 thousand tons annually. The ores are supplied from an independent mine at Mae Sot. In the last two years, two-thirds of zinc metal was consumed in the country and the remainder was exported, mainly to countries in the

Country: PHILIPPINES

Year: 1985

TABLE 45

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN[1]			Other preferences[3]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		10%	(4,537)	ZWE,TUR,AUT			
Ash and residues	ex26.03			(718)	JPN,USA,SGP			
	Sub-Total	-	10%	-				
Unwrought								
Unalloyed	79.01		10%	11,336	JPN,CAN,AUS			
Alloyed	79.01							
Waste and scrap	79.01			-				
Powders (including dust) and flakes	79.03		20%	325	USA,AUS			
	Sub-total	11,661	10%, 20%	11,661				
Wrought	79.02		20%	5	EEC			
	79.03			11	USA,JPN			
	79.04			87	JPN,USA			
	Sub-total	103	20%	103				
Chemicals	28.19		20%	404	FIW,EEC,JPN			
	28.30		30%	309	EEC,FIW			
	ex28.35		10%	(198)	JPN,EEC,FIW			
	Sub-total	713	10%-30%[2]	713				
Finished manufactures	79.06		20%, 50%	4	FIW,EEC			
	Sub-total	4	20%, 50%	4				
	Total	12,481	10%-50%[2]	12,481				

[1] According to Schedule LXXV - Philippines, rates of duty concerned are not bound.

[2] Tariff range.

[3] Preferential tariff treatment is granted to imports originating in ASEAN countries. Figures are not available.

Source: National Census and Statistics Office, Foreign Trade Statistics of the Philippines 1985, Manila
International Customs Tariff Bureau, International Customs Journal, No. 43, 1982-1983, Brussels

Country: SINGAPORE

Year: 1986

TABLE 46

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		Free	34	AUS			
Ash and residues	ex26.03			(3,866)	JPN,AUS,PHL			
	Sub-Total	34	Free	34				
Unwrought								
Unalloyed	79.01		Free	9,751	AUS,CAN,IRA			
Alloyed	79.01							
Waste and scrap	79.01			38	MYS			
Powders (including dust) and flakes	79.03			1,554	NOR,EEC,USA			
	Sub-total	11,343	Free	11,343				
Wrought	79.02		Free	278	AUS,FIN,EEC			
	79.03			120	AUS,JPN			
	79.04			57	MYS			
	Sub-total	455	Free	455				
Chemicals	28.19		Free	1,043	EEC,CHN,IND			
	ex28.30			(3)	JPN,CHN,EEC			
	ex28.35			(186)	CHN,EEC			
	Sub-total	1,043	Free	1,043				
Finished manufactures	79.06		Free	542	MYS,JPN,AUS			
	Sub-total	542	Free	542				
	Total	13,417	Free	13,417				

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1986: US$1 = S$2.1774.

Source: Department of Statistics, Singapore Trade Statistics, Imports and Exports, December 1986, Vol. VII, No. 12, Singapore
International Customs Tariff Bureau, International Customs Journal, No. 26, 1984-1985, Brussels

same geographic region. Consequently, the structure of Thailand's trade has changed and at present, Thailand imports only zinc oxides and some zinc semi-manufactures. Table 47 gives the m.f.n. tariff treatment applied on zinc and zinc product imports.

102. Tunisia's lead and zinc industry has been in depressed conditions since several years partly due to depletion of some mine deposits. Under the new legislation which encourages exploration and development of the mineral industry, Tunisia has undertaken several important lead-zinc ore projects in northern Tunisia. At present, all zinc mine output from five mines operated by the State-owned Société Tunisienne d'Expansion Minière (SOTEMI) is exported to Yugoslavia and the EEC. Tunisia's zinc imports are mainly in the form of unwrought zinc supplied by Algeria and the EEC. Table 50 gives m.f.n. rates of duty applied to zinc and zinc products.

103. The new mining legislation introduced recently by Turkey has as an objective the expansion of its mineral industry. Among others, it amended and modernized mineral licensing procedures and introduced trade and investment incentives for private local and foreign companies. The development of mineral resources is under the responsibility of the government agency Etibank. The lead and zinc industry of Turkey comprises one company. Cinko-Kursun Metal Sanayii AS (Cinkur) smelter at Kayseri is owned by Etibank (48 per cent) and by private interests (52 per cent). Turkey plans to expand and modernize with the aid of foreign capital the Cinkur smelter to produce 40 thousand tons of lead metal and 70 thousand tons of zinc metal annually. In the last five years, Turkey's consumption of zinc metal rose substantially, from 12 thousand tons in 1980 to 53 thousand tons in 1986. About 60 per cent of refined zinc for domestic consumption is imported. Table 48 indicates that in 1985, imports of this item represented 80 per cent of total zinc imports valued at US$27 million. Most of these were shipped from the EEC countries which receive the duty-free preferential treatment on all zinc products on the basis of the additional Protocol of the Association Agreement between Turkey and the EEC. The EEC countries also supplied most of the zinc chemicals and wrought zinc products. Imports from m.f.n. sources accounted for 20 per cent of total zinc imports. M.f.n. rates of duty range from 5 to 50 per cent.

104. Uruguay has no zinc production and imports all zinc for its consumption. Table 50 indiciates the m.f.n. treatment on zinc and zinc products.

105. With a share of about 8 per cent of the GDP, the mineral industry plays an important rôle in Yugoslavia's economy. However, since several years, the mine and metal processing industry of Yugoslavia has worked below capacity as a result of shortages of hard currency for imports of fuels and spare parts. The Long-Range Social Plan covering the period

Country: THAILAND

Year: 1985

TABLE 47

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	ex26.01		3%	(521)	PHC,CHN,AUS			
Ash and residues	26.03			-				
	Sub-Total	-	3%	-				
Unwrought								
Unalloyed	79.01		1%	13,203	AUS,CAN,EEC			
Alloyed	79.01			637	AUS,EEC			
Waste and scrap	79.01			-				
Powders (including dust) and flakes	79.03		20%	142	NOR,EEC,AUS			
	Sub-total	13,982	1%, 20%	13,982				
Wrought	79.02		5%, 13%	331	EEC,JPN,FIN			
	79.03		15%, 20%	86	YUG,EEC			
	79.04		15%	8	EEC			
	Sub-total	425	5%-20%[1]	425				
Chemicals	28.19		10%	481	TWN,JPN,EEC			
	28.30			3	EEC,USA,CHN			
	ex28.35			(62)	EEC,USA,CHN			
	Sub-total	484	10%	484				
Finished manufactures	79.06		30%, 50%	148	JPN,HKG,SGP			
	Sub-total	148	30%, 50%	148				
	Total	15,039	5%-50%[1]	15,039				

[1] Tariff range.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1985: US$1 = Baht 27.159

Source: Bundesstelle für Aussenhandelsinformation, Zoll und Handelsinformation, July 1984, Köln

Country: TURKEY

Year: 1985

TABLE 48

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[3]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		5%	2,146	IRN		449	
Ash and residues	ex26.03		10%	(1)	CIF		-	
	Sub-Total	2,595	5%, 10%	2,146			449	
Unwrought								
Unalloyed	79.01							
Alloyed	79.01		15%(B)	1,522	TUG,BGY,MEX		22,300	
Waste and scrap	79.01							
Powders (including dust) and flakes	79.03		18%(B)	-			-	
	Sub-total	23,822	15%, 18%	1,522			22,300	
Wrought	79.02		35%	-			76	
	79.03		18%(B)	-			28	
	79.04		40%	2/	USA		2/	
	Sub-total	104	18%-40%[1]	-			104	
Chemicals	28.19		20%	3	USA		780	
	28.30		30%(B)	64	CSK,CHN		88	
	ex28.35		50%	(8)	CHE		(87)	
	Sub-total	935	20%-50%[1]	67			868	
Finished manufactures	79.06		50%	2/	USA		2	
	Sub-total	2	50%	-			2	
	Total	27,458	5%-50%[1]	3,735			23,723	

[1]Tariff range.

[2]Imports less than US$1,000.

[3]Duty-free treatment to the EEC countries according to Articles 10 and 11 of the Additional Protocol of the Association Agreement between Turkey and the EEC signed on 23 November 1970

Note: (B) Bound rates (Schedule XXXVII).

Source: Prime Ministery State Institute of Statistics, Foreign Trade Statistics, 1985, Ankara
International Customs Tariff Bureau, International Customs Journal, No. 133, 1986-1987, Brussels

from 1986 to 2000, calls for an increase in production of the non-ferrous mining and processing sector. Zinc metal production should be 190 thousand tons by the year 2000, almost twice as high as zinc production in 1986. Although both zinc mine and metal production, has been stagnating, Yugoslavia still belongs to the major developing country zinc producers. Yugoslavia has about twenty lead and zinc mines, two zinc electrolytic plants and one zinc smelter. The country's leading producer, the Trepca mining, metallurgical and chemical complex in Kosovo province was responsible for about 30 per cent of total metal output in 1986. It is expected that by the end of the 1980's it will cover 40 per cent to 50 per cent of total output. The other producer, the Zletovo Sase complex in Macedonia has undertaken an expansion of its mines at Makedonska Kamenica and Probistip. Yugoslavia is a net exporter of zinc metal as well as of zinc oxides and zinc semi-manufactures. Most of its exports are destined to European countries. Table 49, giving the m.f.n. tariff treatment on zinc, indicates that Yugoslavia's zinc imports in 1986 consisted mainly of zinc ores and concentrates and zinc metal.

106. The first Five-Year Plan launched by Zaire at the beginning of 1986 provides for investment and modernization of the country's mineral industry. The total cost of the programme is US$790 million, of which 60 per cent is financed by Zaire's national mining corporation, La Générale des Carrières et Mines de Zaire (Gécamines). Regarding the zinc industry, the programme foresees to maintain output at no less than 64 thousand tons annually. In Zaire, zinc is mined as a by product of copper and production of both metals has been adversely affected, inter alia, by problems in infrastructure and obsolence of equipment. In 1986, zinc mine output of 81 thousand tons was about 25 per cent lower than the output in 1960. Zinc metal production remained, with some exceptions, stagnant at about 60 thousand tons annually. Zaire is a net exporter of zinc metal which is mainly destined to the United States, the Republic of Korea and Japan. Zaire's m.f.n. tariff treatment on zinc is given in Table 50.

107. The mineral industry is also the mainstay of Zambian economy. However, since several years Zambia has been facing difficulties due to, inter alia, constantly declining real earnings from copper, its principal export product. In addition to copper, other major non-ferrous minerals produced by Zambia are cobalt, lead and zinc. Mining of lead/zinc deposits at Kabwe started already in 1906. The Kabwe mine is operated by Zambia Consolidated Copper Mines (ZCCM) which is 60 per cent State-owned. The Kabwe Division of ZCCM also operates a metallurgical plant which comprises a concentrator, a leach and electromining zinc plant, a Waelz Kiln Komplex, a sinter plant, and Imperial Smelting Furnace and a lead refinery. The production of both, zinc concentrates and zinc metal, has declined in recent years as a result of a declining grade of ores and different technical problems such as shortages of coke, fuel oils and the low grade of sinter. Zambia's m.f.n. tariff treatment on zinc is given in Table 50.

Country: YUGOSLAVIA

Year: 1986

TABLE 49

IMPORTS IN ZINC AND ZINC PRODUCTS UNDER DIFFERENT TARIFF TREATMENT ACCORDING TO STAGES OF PROCESSING

(in US$'000)

Product description	Tariff No.	Total trade	MFN			Other preferences[2]		
			Rate	Value	Origin	Rate	Value	Origin
Ores and concentrates	26.01		7%	3,866	CSK,EEC,CAN		1,644	PER,CHL
Ash and residues	ex26.03		5%	(94)	CAN,EEC,CHE			
	Sub-Total	5,510	5%, 7%	3,866			1,644	
Unwrought								
Unalloyed	79.01		7%	9,217	EEC,DZA,BGR			
Alloyed	79.01		10%	510	EEC,POL.,ALT			
Waste and scrap	79.01		5%	-				
Powders (including dust) and flakes	79.03		12%	13	EEC,CHE			
	Sub-total	9,740	5%-12%[1]	9,740				
Wrought	79.02			5	EEC			
	79.03		12%	191	POL,BGR,EEC			
	79.04			34	BGR			
	Sub-total	230	12%	230				
Chemicals	28.19		8%	1,416	CSK,AUT,EEC			
	ex28.30		10%	(3,408)	SUN,DDR,EEC			
	ex28.35			(2,558)	EEC,CSK,POL			
	Sub-total	1,416	8%, 10%	1,416				
Finished manufactures	79.06		12%	-				
	Sub-total	-	12%	-				
	Total	16,896	5%-12%[1]	15,252			1,644	

[1] Tariff range.

[2] Preference granted under the Protocol Relating to Trade Negotiations Among Developing Countries; zinc ores and concentrates - duty-free.

Note: IMF, International Financial Statistics, June 1987, Washington, D.C.
Exchange rate 1986: US$1 = Dinars 379.22

Source: Federal Institute of Statistics, Statistics of Foreign Trade of the SFR Yugoslavia, 1987, Beograd
International Customs Tariff Bureau, International Customs Journal, No. 57, 1980-1981, Brussels

TABLE 50

ZINC AND ZINC PRODUCTS TARIFF RATES ACCORDING TO DIFFERENT STAGES OF PROCESSING

Product description	CCCN Tariff No.	Chile	Czechoslovakia	Egypt	Ghana	Nigeria	Pakistan	Poland	Romania	Tunisia[1]	Uruguay[2]	Zaire	Zambia
Ores and concentrates	ex26.01	20%	Free(B)	50%	35%	10%	20%	Free	Free	10%	10%	10%	15%
Ash and residues	ex26.03							Free	5%		5%		15%
Unwrought													
Wrought	79.01												
Alloyed	79.01	20%	Free(B)	2%[5%(B)]	35%	10%	20%	Free	Free	20%	10%	10%	15%
Waste and scrap	79.01												
Powders and flakes	79.03		6.5%(B)	20%			60%	5%		14%	10%,20%		
Wrought	79.02	20%	5.25%(B)	20%	35%	15%	60%	5%	Free	14%	20%	10%	15%
	79.03		5.75%,9.5%(B)			15%,20%							
	79.04		3.5%(B)			15%	80%	10%		18%		25%	15%,25%, 30%
Chemicals	28.19	20%	5%,5.5%(B)	10%	35%	10%	40%	8%	Free	10%, 18%	10%,55%	10%	30%
	ex28.30		10%(B)	5%[10%(B)]				3%			10%		
	ex28.35							10%	10%	16%			
Finished manufactures	79.06	20%	7%,5.75%(B) 8.75%,9%(B)	30%	35%	30%	20%,80%,100% 125%	10%	5%	10%, 20%, 31%	10%,55%	30%	Free, 5% 15%, 20% 30%
General tariff ranges		20%	Free-9.5%	2%-50%	35%	10%-30%	20%-125%	Free-10%	Free-10%	10%-31%	5%-55%	Free-10%	Free-30%

[1]Provisional membership.

[2]Schedule XXXII - no bound rates; under waiver.

Note: (B) Bound rate (Schedules: VII - Chile; X - Czechoslovakia; LXIII - Egypt).

Source: - International Customs Tariff Bureau, International Customs Journal: Chile, 1986; Egypt, March 1987; Poland, April 1986; Romania, March 1977
- Bundesstelle für Aussenhandelsinformation, Zoll und Handelsinformation, Köln: Ghana, July 1982; Nigeria, April 1987; Pakistan, September 1986; Zaire, September 1987; Zambia, June 1987
- Direction Générale des Douanes, Tarifs des droits de douanes à l'importation et à l'exportation, Edition 1987, Tunisia
- Centro de Estadisticas Nacionales y Comercio Interacional del Uruguay, Manual Practico del Importador, Edicion de 1985 (Rev. September 1987), Montevideo

Tariff escalation and effective tariff protection

108. A number of serious difficulties arise in any attempt to measure with great precision effective tariff rates. These involve lack of accurate information on input/output values in specific industries, as well as other factors such as the estimation of the relative importance of trade flows under m.f.n. and GSP rates, the calculation of ad valorem tariff equivalents of non-tariff measures, the establishment of appropriate weighting patterns and accounting for technological change in industries. Nevertheless, the effective rate of protection can be assessed with reasonable precision in the early stages of processing. In the case of zinc these stages include smelting and refining and the effective rate of protection might be estimated on the basis of the average value added of refined zinc. Beyond the unwrought stage, precise measurement of effective rates of protection becomes increasingly difficult. However, several GATT studies demonstrated that where tariffs show escalation at successive processing stages, simple calculations of effective rates of protection yield estimates that are higher than nominal tariff rates themselves.

109. Due to the methodological problems described above, the present study does not attempt to analyze effective tariff protection in the zinc industry. However, the study shows nominal tariff protection granted to zinc and its products. It may be seen from this study that there is a fairly widespread tendency in a number of countries for nominal tariffs to increase with a higher stage of processing. Although most of the countries examined import zinc ores and concentrates duty-free, they apply positive m.f.n. rates of duty on unwrought and wrought zinc products and zinc manufactures. Moreover, with respect to the latter two groups of products, it is often the case that duties are significantly higher on zinc manufactures than on wrought zinc.

Non-tariff measures

110. Table 51 shows non-tariff measures applicable to exports and imports of zinc and zinc products, as notified to the secretariat in the context of the updating of the Inventories of Non-Tariff Measures. Measures taken for balance-of-payments purposes were also taken into account. Other non-tariff measures relevant to the present study may be identified as the process of updating and notification continues. As indicated in this Table, non-tariff measures affecting trade in zinc and zinc products involve the following areas:

(i) government participation in trade and restrictive practices tolerated by governments. These are in the form of government aids, countervailing duties, government procurement and State-trading;

(ii) customs and administrative entry procedures, such as anti-dumping duties, customs classification, consular formalities and documentation, rules of origin and other customs formalities;

(iii) technical barriers to trade including technical regulations and standards;

(iv) specific limitations, such as quantitative restrictions, exchange control, licensing and embargoes and other restrictions of similar effect;

(v) charges, in the form of prior import deposits, surcharges, port taxes, statistical taxes.

In addition to the measures listed in Table 51, there exist other measures of a general nature that are not only specific to zinc but which apply to a wide range of products including zinc. These measures include governmental and inter-governmental grants and loans, fiscal measures (e.g. tax incentives for resource products processing industries), research assistance, etc., which might have a protective effect.

111. When the purchases of "non-ferrous metals and articles thereof", are made by the entities listed in Annex I to the Agreement on Government Procurement, they are covered by this Agreement.[8] Statistical information exchanged among the parties to the Agreement indicates that in 1985, purchases of such products by government entities covered by the Agreement amounted to SDR 45.8 million (US$46.5[9]) for all members except the EEC. The purchases of the EEC were valued at SDR 20.5 million (US$20.8 million[10]). It should be noted that Article VIII of the Agreement contains general exceptions relating to procurement of items indispensable for national security or national defence purposes. In addition, defence agencies in countries which are party to the Agreement are not covered by the Agreement in respect to purchases of certain specific products.

Table 51

NON-TARIFF MEASURES AFFECTING TRADE IN ZINC AND ARTICLES THEREOF

Non-tariff measures	Product	Country maintaining the measure
I. On exports		
Export embargo	Ash and residues containing metals (CCCN 26.03)	Austria
	Zinc, unwrought and waste (CCCN ex 79.01)	Brazil
	Metallic ores and concentrates (CCCN ex 26.01)	Indonesia
	Zinc and articles thereof (CCCN ex 79)	Pakistan
	Zinc unwrought and waste (CCCN ex 79.01)	Colombia
Export restraints	Zinc, unwrought and waste (CCCN ex 79.01)	Austria
	Ash and residues (CCCN ex 26.03)	Brazil
	Zinc, unwrought and waste (CCCN ex 79.01)	Dominican Republic
	Ash and residues containing metals (CCCN ex 26.03)	EEC
	Ash and residues (CCCN ex 26.03)	Finland
	Zinc and articles thereof (CCCN ex 79)	Malaysia
	Zinc unwrought and waste (CCCN ex 79.01)	Malaysia
	Zinc, unwrought and waste (CCCN ex 79.01)	New Zealand
	Zinc, unwrought and waste (CCCN ex 79.01)	Yugoslavia
	Zinc, unwrought and waste (CCCN ex 79.01)	Korea, Republic of
	Metallic ores and concentrates (CCCN ex 26.01)	New Zealand
	Metallic ores and concentrates (CCCN ex 26.01)	Canada
Export taxes	Metallic ores and concentrates (CCCN ex 26.01)	Haiti
	Metallic ores and concentrates (CCCN ex 26.01)	Philippines
	Ash and residues containing metals (CCCN ex 26.03)	Switzerland
	Zinc, unwrought and waste (CCCN ex 79.01)	Switzerland
	Metallic ores, slag and ash (CCCN ex 26)	Canada
Export controls	Zinc products	Australia
II. On imports		
Prohibition	Zinc waste (CCCN 79.01)	Bangladesh
	Tubes and pipes of zinc (CCCN 79.04)	Senegal
	Metallic ores and concentrates (CCCN ex 26.01)	Pakistan
	Ash and residues containing metals (CCCN ex 26.03)	Pakistan
Quotas (unspecified)	Zinc ores (CCCN 26.01 8a)	Yugoslavia
	Zinc concentrates (CCCN 26.01 8b)	Yugoslavia
	Zinc unwrought (CCCN 79.01)	Yugoslavia
	Zinc and articles thereof (CCCN 79)	Senegal
	Chlorides and oxychlorides (CCCN ex 28.30)	Yugoslavia
Quantitative restrictions, licensing	Zinc oxide and zinc peroxide (CCCN 28.19)	EEC(Benelux, Italy)
	Chlorides and oxychlorides (CCCN ex 28.30)	EEC(Italy)
	Zinc, unwrought and waste (CCCN 79.01)	EEC(Benelux, Germany, Fed.Rep., Italy)
	Wrought bars, rods etc. of zinc (CCCN 79.02)	EEC(Italy)
	Wrought plates, sheets and strip (CCCN ex 79.03)	EEC(Benelux, Germany Fed.Rep. Italy)
	Tubes and pipes of zinc (CCCN 79.04)	EEC(Italy)
	Other articles of zinc (CCCN ex 79.06)	EEC(Italy)
	Metallic ores and concentrates (CCCN 26.01)	Japan
	Metallic ores, slag and ash (CCCN 26)	Switzerland
	Zinc oxide and zinc peroxide (CCCN ex 28.19)	Sweden
	Zinc and articles thereof (CCCN ex 79)	Turkey
	Metallic ores, slag and ash (CCCN ex 26)	India
	Zinc and articles thereof (CCCN ex 79)	India
Licensing (method unspecified)	Metallic ores and concentrates (CCCN ex 26.01)	Malawi
Liberal licensing	Metallic ores and concentrates (CCCN ex 26.01)	Korea, Republic of
	Metallic ores and concentrates (CCCN ex 26.01)	Switzerland
	Zinc unwrought and waste (CCCN ex 79.01)	Korea, Republic of

Non-tariff measures	Product	Country maintaining the measure
Automatic licensing	Ash and residues containing metals or metallic compounds (CCCN 26.03)	South Africa
	Zinc oxide (CCCN 28.19)	New Zealand
	Zinc oxide and zinc peroxide (CCCN 28.19)	South Africa
	Chlorides and oxychlorides (CCCN ex 28.30)	South Africa
	Chlorides and oxychlorides (CCCN ex 28.30)	Switzerland
Non-automatic licensing	Metallic ores, slag and ash (CCCN 26)	Zambia
	Zinc ores and concentrates (CCCN 26.01.08.00.00)	Argentina
	Ash and residues containing metals or metallic compounds (CCCN 26.03)	Argentina, Colombia, Sri Lanka, Tunisia
	Zinc waste and scrap (CCCN 79.01.01.00.00)	Argentina
	Alloyed zinc (CCCN 79.01.02.00)	Colombia
	Zinc unwrought and waste (CCCN 79.01)	Peru, Turkey
	Zinc waste and scrap (CCCN 79.01)	Ghana
	Zinc unwrought and waste (CCCN ex 79.01)	Colombia
	Wrought bars, rods, etc. of zinc, zinc wire (CCCN 79.01)	Ghana, Peru, Turkey
	Wrought plates, sheets and strips of zinc (CCCN 79.03)	Colombia, Ghana, Peru
	Tubes and pipes of zinc (CCCN 79.04)	Colombia, Ghana, Peru, Tunisia
	Other articles of zinc (CCCN 79.06)	Colombia, Ghana, Peru
	Household articles of zinc (CCCN 79.06.00.01.00)	Argentina
	Zinc oxide and zinc peroxide (CCCN 28.19)	Argentina
	Zinc oxide (CCCN 28.19.01.00)	Colombia
	Zinc oxide (CCCN 28.19)	India
	Zinc chloride (CCCN 28.30)	India
	Zinc chloride (CCCN 28.30.01.05)	Colombia
	Zinc chloride (CCCN 28.30.00.01.99)	Argentiona
	Zinc sulphate (CCCN 28.38C)	Tunisia
	Sulphides, polysulphides, other (CCCN 28.35.01.99)	Colombia
	Sulphides, polysulphides (CCCN ex 28.35)	Argentina
	Metallic ores and concentrates (CCCN ex 26.01)	Colombia
	Sulphides, polysulphides (CCCN ex 28.35)	India
	Metallic ores and concentrates (CCCN ex 26.01)	Japan
	Other articles of zinc (CCCN ex 79.06)	Nigeria
	Metallic ores and concentrates (CCCN ex 26.01)	Peru
	Metallic ores and concentrates (CCCN 26.01)	Sri Lanka, Tunisia
	Sulphides, polysulphides (CCCN 28.35)	Sri Lanka
	Ash and residues containing metals (CCCN 26.03)	Turkey
	Wrought plates, sheets and strip (CCCN ex 79.03)	Turkey
	Metallic ores and concentrates (CCCN ex 26.01)	New Zealand
	Zinc oxide and peroxide (CCCN 28.19)	Peru
	Zinc chloride (CCCN 28.30.01.05)	Peru
	Ash and residues (CCCN 26.03)	Peru
	Zinc unwrought and waste (CCCN 79.01)	Brazil
	Wrought bars, rods, etc. of zinc, zinc wire (CCCN 79.02)	Brazil
	Wrought plates, sheets and strip of zinc (CCCN 79.03)	Brazil
	Tubes and pipes of zinc (CCCN 79.04)	Brazil
	Other articles of zinc (CCCN 79.06)	Brazil, Tunisia
Licence suspended (temporarily)	Other articles of zinc (CCCN 79.06.01.00, 06.00, 07.00)	Brazil
	Zinc oxide and zinc peroxide (CCCN 28.19)	Brazil
Restrictrion (unspecified)	Zinc oxide for paint and pharmaceutical industries (CCCN 28.19.110)	Indonesia
	Other zinc oxide (CCCN 28.19.190)	Indonesia
	Zinc chloride (CCCN 28.30)	Indonesia
	Metallic ores and concentrates (CCCN ex 26.01)	Thailand
State-trading	Metallic ores, slag and ash (CCCN ex 26)	India
	Zinc unwrought and waste (CCCN 79.01)	India
	Wrought bars, rods, etc. of zinc, zinc wire (CCCN 79.02)	India
	Wrought plates, sheets and strip of zinc (CCCN 79.03)	India
	Tubes and pipes of zinc (CCCN 79.04)	India
	Zinc unwrought and waste (CCCN ex 79.01)	Tunisia
	Zinc and articles thereof (CCCN ex 79)	India
	Metallic ores and concentrates (CCCN ex 26.01)	Tunisia
	Sulphides, polysulphides (CCCN 28.35)	Sri Lanka
Border tax adjustments	Metallic ores and concentrates (CCCN 26.01)	EEC
Domestic price measures	Metallic ores and concentrates (CCCN ex 26.01)	Brazil
Surcharges, port taxes, etc.	Metallic ores and concentrates (CCCN ex 26.01)	Austria

Source: NTM/W/17/Add.2
NTM/W/6/Rev.4
NTM/W/17/Add.2/Corr.1
NTM/INV/I-V/Add.17
L/5640/Add.29/Rev.1
L/5640/Add.34

[1]This Section refers only to countries members of the GATT.

[2]The Tokyo Round of MTNs, Report of the Director-General of GATT.

[3]"The two methods can lead to very different results and such difference is easy to explain. In the weighted average the more trade is flowing under the duty, the more importance the duty is given in the calculation. At the same time, logically, the lower the duty the larger tends to be the volume of trade which flows under such duty. Thus the weighted average will tend to give more importance to low duties and, at the other extreme, will ignore duties which are so high as to be prohibitive. For these reasons, the weighted average has a downward bias. On the contrary the simple average gives the same importance to each duty whatever its level. It could thus assign excessive importance to residual tariff items or to duties facing products of little importance in world trade. Therefore the simple average should in principle give an upward correction of the weighted average bias." The Report of the Director-General on the Tokyo Round of Multilateral Trade Negotiations.

[4]Table 14 is based on the Tariff Study information prepared by the secretariat for the report by the Director-General on the results of the Tokyo Round in 1980. For technical reasons, this information did not include Australia and New Zealand. At present, it is not possible to compile similar information on more recent statistics since the Tariff Study files for the United States and Canada are recorded on the basis of the national nomenclature.

[5]The problem of the overcapactiy in the zinc metal industry in the EEC has not yet been solved though plans regarding the reduction in the EEC smeling capacity have been under consideration since several years. Major closures occured during the period of the mid-1960's through the early 1970's. Many smelters were coverted and modernized and the facilities were enlarged. At present, nineteen zinc smelting plants existing in the EEC has an aggregate average output of about 1.6 million tons annually. The average level of zinc metal consumption is of about 1.45 million tons. As already mentioned, at present, domestic zinc mine production covers only about 40 per cent of the EEC smelters requirements. In addition to Spain, which is referred to in paragraph 72, only Ireland, where zinc is mined as a by-product at the Tara mine, has some significant production of zinc concentrates. Zinc deposits in other EEC countries are relatively small and are becoming depleted. Thus, two German mines situated in the Harz mountains are foreseen for closure in the middle of 1988. The only main recent expansion in mining capacity took place in Italy, Sardinia, where a new mine was opened in 1987 and one other was expanded. Among the EEC countries, the Federal Republic of Germany has the largest zinc metal production. A smelting capacity of its three primary smelters - Ruhr-Zinc GmbH in Datteln, Berzelius Metallhütten GmbH in Duisburg and Preussag Weser

Zink GmbH in Nordenham amounts to 340 thousand tons. Preussag AG also has a secondary zinc smelter with a total annual capacity of 80 thousand tons. Belgium follows the Federal Republic of Germany as the second largest zinc metal producer. A smelter owned by the Société des Mines et Fonderies de Zinc de la Veille Montagne SA (VM) at Balen uses the largest furnace in the world. Two other smelting plants at Overpelt belong to the Métallurgie Hoboken - Overpelt SA (MHO). Belgian smelters which are totally dependent on zinc raw materials imports sell abroad 60 per cent of their metal output. The VM also had a smelter at Viviez in France, which was closed down at the end of 1987. However, its capacity was largely replaced by the expansion of the Asturienne-France smelter at Auby to 200 thousand tons annually. The other French smelter at Noyelles Godault belonging to the Société Miniére et Métallurgique de Peñarroya SA has an annual capacity of 100 thousand tons. A merger between Preussag and Penarroya is under consideration. The new company, called Metaleurop, will have an annual output of 390 thousand tons of zinc. Also, French smelters work mainly on imported zinc concentrates. Domestic mine production used to contribute about 20 per cent to zinc metal output in Italy. (However, it was only 11 per cent in 1986). In the reorganization undergone in the Italian mining and metallurgical industry in 1987, a new company within the ENI conglomerate was established. The company, Agip Minière had taken over mines that Samim used to run. Nuova Samin S.p.A. has a zinc electrolytic plant rates at 80 thousand thousand tons of zinc per year and an Imperial Smelter complex (70 thousand tons annually) at Porto Vesme in Sardinia. Samin's secondary smelter at Porte Nossa was put on stand-by in March 1987. The Pertusola Sud S.p.A smelter at Crotone in Calabria has an annual capacity of 100 thousand tons. As Belgium, the Netherlands too depends fully on zinc concentrates imports. The annual capacity of its only smelter Budelco B.V. (AM & S and Billiton) at Budel-Dorplein is 210 thousand tons. On average, about 75 per cent of its output is exported. In contrast, zinc metal production of the smelter belonging to the Commonwealth Smelting Ltd. (a daughter company of AM & S Europe Ltd.) at Aronmouth satisfies only about one-half of domestic consumption of the United Kingdom. The annual capacity of this smelter is 100 thousand tons.

[6] Without Portugal and Spain, see para. 70 and 72.

[7] It shoud be noted, however, that since zinc prices have fluctuated in recent years, the ad valorem equivalent might be affected by the choice of the reference years.

[8] Members to this Agreement are: Austria, Canada, the EEC (Greece, Portugal and Spain excepted), Finland, Hong Kong, Israel, Japan, Norway, Singapore, Sweden, Switzerland and the United States.

[9] Using the average SDR/US$ conversion rate for 1985 of SDR 0.98489 per US$.

[10] The EEC nomenclature is different from that of other signatories and the figures therefore may not be strictly comparable.

SECTION V

ACTIVITIES IN OTHER INTERNATIONAL ORGANIZATIONS

112. The International Lead and Zinc Study Group is an intergovernmental consultative organization established in 1959 under the auspices of the Economic and Social Council of the United Nations. The current membership includes thirty-one countries[1] which are responsible for 90 per cent of world production and over 80 per cent of world consumption of both lead and zinc. The Group's main functions are to provide opportunities for intergovernmental consultations on international trade in lead and zinc and improve transparency in world- wide supply and demand for both metals. For this purpose, the Study Group meets regularly to review the current levels of world production, consumption and international trade in lead and zinc and to assess expected short-term trends. It publishes a monthly statistical bulletin containing latest available data on production, consumption, stocks, prices and trade. It also publishes special reports dealing with economic and technical aspects of the lead and zinc industries of concern to its members. During the twenty-eight years in which the Study Group has been in operation, it has proved a valuable forum for consultation between member governments on problems in lead and zinc and in monitoring trends in supply and demand.

113. Principal industry based international organizations operating in the zinc industry are:

(i) the International Lead Zinc Research Organization, whose main function is to promote, sponsor and organize research into uses of lead and zinc;

(ii) the Zinc Development Association and the Zinc Institute Inc., which are concerned with the promotion of the uses of zinc and zinc products;

(iii) the European Zinc Institute which assembles statistical data on zinc production, deliveries and stocks reported to it by producing companies.

114. In addition, national Zinc Development Associations or Information Centres are in operation in many developed countries and in some developing countries, carrying out promotional work and providing information on zinc.

[1]Member countries of the International Lead and Zinc Study Group are as follows: Australia, Austria, Belgium, Brazil, Bulgaria, Canada, the People's Republic of China, Czechoslovakia, Denmark, Finland, France, the Federal Republic of Germany, Hungary, India, Iran, Italy, Japan, Korea, Rep.of, Morocco, the Netherlands, Norway, Peru, Poland, the Republic of South Africa, Spain, Sweden, Tunisia, the Union of Soviet Socialist Republics, the United Kingdom, the United States of America and Yugoslavia.

OBSERVATIONS

114. From the examination of world trade flows in zinc and zinc products and the tariff and non-tariff treatment under which this trade takes place the following observations can be made:

(a) Trade in zinc takes place in five product groups: Zinc ores and concentrates, unwrought zinc, wrought zinc, zinc chemicals and finished manufactures of zinc. Imports of zinc into sixteen developed country markets examined were as follows: (1984 for Austria, Canada, EEC, Finland, Hungary, Japan, Norway, New Zealand, South Africa, Sweden, Switzerland and the United States; 1986/87 for Australia; 1985 for Portugal and Spain; 1986 for Iceland).

(In million US dollars)

990.2	as ores and concentrates;
1,100.4	as unwrought metal;
31.4	as wrought metal products;
75.9	as zinc chemicals; and
30.1	finished chemicals.

Imports into eighteen developing country markets were as follows: 1982 for Peru; 1983 for Argentina, Colombia and Jamaica; 1984 for Israel; 1984/85 for India; 1985 for Brazil, Indonesia, Mexico, Morocco, Philippines, Thailand and Turkey; 1986 for Hong Kong, Republic of Korea, Malaysia, Singapore and Yugoslavia).

(In million US dollars)

65.8	as ores and concentrates;
369.4	as unwrought metal;
11.5	as wrought metal products;
9.4	as zinc chemicals; and
5.5	as finished manufactures.

(b) In developed countries with the exception of the tariffs on zinc products in Australia and on zinc oxides (CCCN 28.19) in New Zealand, all m.f.n. rates on zinc and zinc products are bound. The majority of the positive m.f.n. rates of duty were reduced in the Tokyo Round. The tariff cuts varied according to products and countries and were between 20 and 64 per cent. In general, tariff cuts were deeper on products which were facing higher nominal rates. However, several countries did not grant any concessions on certain sensitive zinc products which were bound at the same rate of duty. For most zinc products entering developed countries, the post-Tokyo Round m.f.n. tariffs range from zero to 19 per cent.

(c) In most developed countries, positive m.f.n. rates are ad valorem and only Switzerland applies specific rates to all zinc products. Specific rates are also applied by Japan on unwrought zinc and by the United States on zinc ores and concentrates. Austria and Norway apply specific rates on zinc oxides. Zinc chlorides in Austria are subject to a compound m.f.n. rate.

(d) All developing countries examined apply m.f.n. ad valorem rates of duty to zinc and zinc products. With the exception of Turkey, their m.f.n. tariffs are unbound and range from duty-free to 100 per cent, with the majority being between 10 to 40 per cent. Hong Kong and Singapore grant m.f.n. duty-free treatment to all zinc products.

(e) Most developed countries and some developing countries accord m.f.n. duty-free treatment or low positive m.f.n. tariffs on zinc ores and concentrates. M.f.n. nominal duties increase with higher stages of processing. In certain countries tariff protection starts already beyond the mining stages, while in other countries, m.f.n. rates are higher on zinc semi-manufactures, mainly zinc oxides, or manufactures. However, it can be assumed that most countries accord the most important tariff protection on imports of unwrought zinc. The GATT studies showed that where nominal tariffs show escalation at successive processing stages simple calculations of effective rates of protection yield estimates that are higher than nominal tariff rates themselves.

(f) All developed countries grant duty-free or preferential rates under their GSP schemes on most dutiable m.f.n. rates to GSP beneficiaries. An exception to this is imports of unwrought zinc in the EEC and the United States which do not benefit from GSP. The EEC also imposes ceiling limitations on imports of certain zinc products from Yugoslavia and Japan applies ceiling limitations on unwrought zinc.

(g) Most developed countries grant duty-free or preferential rates under other regional agreements (Japan excepted) to the majority of zinc products. Some developing countries also grant tariff preferences to certain zinc products under regional agreements.

(h) In addition to tariff protection, some countries, both developed and developing, apply non-tariff measures, such as import prohibitions, licensing, quotas and restrictions to imports of certain zinc products. Non-tariff measures on exports include export prohibition, export licensing and taxes. There also

exist other measures of a general nature in the form of government procurement, governmental or intergovernmental grants and loans, fiscal measures, research assistance, etc.

(i) At present, most of the international trade in zinc takes place in the form of zinc ores and concentrates and unwrought zinc. Zinc ores and concentrates are mainly imported by countries which have an important smelting capacity and insufficient domestic mine production. Often, they are exporters of zinc products of higher stages of processing. Trade in zinc semi-manufactures (zinc oxides excepted) and manufactures is less important and takes place mostly within the same geographic region and under preferential arrangements. Major suppliers of zinc semi-manufactures and manufactures are developed countries. Imports of semi-finished or finished products from developing countries under GSP are nil or very low.

115. A number of other metals, notably lead, copper, cadmium, indium, germanium, gallium and silver are commonly produced in association with zinc and their recovery and sale have a bearing on the commercial viability of some zinc operations. This study has not considered the impact that trade barriers applicable to these by-product and co-product metals might have on the structure and pattern of trade in zinc and zinc products.

URUGUAY ROUND

116. The examination of trade flows and trade policy measures undertaken by the Working Party on Natural Resource-Based Products showed that international trade in these products including zinc is still affected by trade barriers despite significant tariff cuts achieved in past GATT negotiations. Thus, the Ministerial Meeting at Punta del Este in November 1986, which launched the Uruguay Round, decided to include Natural Resource-Based Products as one of the subjects for negotiations. According to the negotiating objective stated in the Ministerial Declaration, "Negotiations shall aim to achieve the fullest liberalization of trade in natural resource-based products, including in their processed and semi-processed forms. The negotiations shall aim to reduce or eliminate tariff and non-tariff measures, including tariff escalation". A Negotiating Group on Natural Resource-Based Products was established to carry out negotiations in this area.

ANNEX I

SUMMARY OF POST-TOKYO BOUND TARIFF SITUATION AFFECTING ZINC AND ARTICLES THEREOF ON THE BASIS OF THE HARMONIZED SYSTEM IN ELEVEN DEVELOPED COUNTRY MARKETS

Heading No.	H.S. Code	Description	Australia	Austria	Canada	EEC	Finland	Japan	New Zealand	Norway	Sweden	Switzerland	United States 9/
26.08	2608.00	Zinc ores and concentrates	12% U	Free B	Free 1/	Free B	Free B	Free B	Free 6	Free B	Free B	Free B	1.7 cts/kg on lead content + 0.7 cts/kg on zinc content
26.20		Ash and residues (other than from the manufacture of iron or steel), containing metals or metallic compounds.											
		- Containing mainly zinc:											
	2620.11	-- Hard zinc spelter	12% U	Free B	Free B	Free B	Free B	Free B	Free B	Free B	Free B	Free B	1.5%
	2620.19	-- Other	12% U	Free B	Free B	Free B	Free B	Free B	Free B	Free B	Free B	Free B	1.3 cts/kg
28.17	2817.00	Zinc oxide; zinc peroxide	12% U	17% B	10.5% B	11% B	16% B, Free B	6.5% B	Free U	Neg0.1¢/kg, Free B	Free B	SwF1.40/100kg B	Free
28.27		Chlorides, chloride oxides and chloride hydroxides; bromides and bromide oxides; iodides and iodide oxides.											
		- Other chlorides:											
	2827.36	-- Of zinc	15% B	2/Free, 3% to 3% B	12.5% B	6% B	Free B	4.9% B	Free B	Free B	Free B	SwF0.50/100kg B	1.6%
	2827.49	-- Other	12% U	Free B	12.5% B	5.3% B	Free B	4.9% B	Free B	Free B	Free B	SwF0.50/100kg B	17%
		- Bromides and bromide oxides:											
	2827.59	-- Other	12% U	Free B	Free B	6.9% B	Free B	5.8% B	Free B	Free B	Free B	SwF2.50/100kg B	13.7%
	2827.60	- Iodides and iodide oxides	12% U	Free B	12.5% B	6.9% B	Free B	5.8% B	Free B	Free B	Free B	SwF2.50/100kg B	14.2%
28.29		Chlorates and perchlorates; bromates and perbromates; iodates and periodates.											
		- Chlorates:											
	2829.19	-- Other	12% U	6% B	12% 4/	8% B	Free B	4.9% B	Free B	Free B	Free B	SwF1.90/100kg B	13.3%
	2829.90	- Other	12% U	Free B	10% 4/	4.8%-6.9% B	Free B	5.8% B	Free B	Free B	Free B 5/	SwF2.40/100kg B	13.7%
28.30		Sulphides; polysulphides.											
	2830.20	- Zinc sulphide	12% U	6% B	Free B	6.9% B	Free B	3.7% B	Free B	Free B	Free B	SwF0.50/100kg B	12.8%
28.33		Sulphates; alums; peroxosulphates (persulphates).											
		- Other sulphates:											
	2833.26	-- Of zinc	15% U	3/10% B	9.2% B	9% B	Free B	5.6% B	Free B	Free B	Free B	SwF0.70/100kg B	11.6%
28.34		Nitrites; nitrates.											
	2834.10	- Nitrates	12% U	6% Free B	8.1% B	7% B	Free B	4.9% B	Free B	Free B	Free B	SwF1.10/100kg B	13.1%
		- Nitrates:											
	2834.29	-- Other	12% U	10% Free B	8, Free 12.5% B	13% B	Free B	Free-5.8% B	Free B	Free B	Free B	SwF1.50/100kg B	13.5%
79.01		Unwrought zinc.											
		- Zinc, not alloyed:											
	7901.11	-- Containing by weight 99.99% or more of zinc	12% U	12% B	Free B	3.5% B	Free B	3yen/kg B	5%, Free B	Free B	Free B	SwF0.10/100kg B	1.5%
	7901.12	-- Containing by weight less than 99.99% of zinc	12% U	12% B	Free B	3.5% B	Free B	3yen/kg B	5%, Free B	Free B	Free B	SwF0.10/100kg B	1.5%
	7901.20	- Zinc alloys	12% U	12% B	Free B, 12.5% B	3.5% B	Free B	17.6yen/kg, Free B	5%, Free B	Free B	Free B	SwF0.10/100kg B	1.5%
79.02	7902.00	Zinc waste and scrap.	12% U	Free B	Free B	Free B	Free B	1.9% B	Free B	Free B	Free B	SwF0.20/100kg B	12.1%
79.03		Zinc dust, powders and flakes.											
	7903.10	- Zinc dust	10% B	6/10% B	Free B	4.4% B	Free B	5.8% B	Free B	Free B	Free B	SwF0.25/100kg B	10.7 cts/kg
	7903.90	- Other	12% U	10% B	4%-10.4% B	4.4% B	Free B	5.8% B	Free B	Free B	Free B	SwF0.25/100kg B	19.5%
79.04	7904.00	Zinc bars, rods, profiles and wire.	12% U	6% B	Free-10.2% B	10% B	Free B	4.8% B	5% B	Free B	Free B	SwF4.00/100kg B	14.2%
79.05	7905.00	Zinc plates, sheets, strip and foil.	12% U	17% B	Free-10.2% B	10% B	Free B	7.2% B	5% B	12.2% B	Free B	SwF4.00/100kg B	14.2%
79.06	7906.00	Zinc tubes, pipes and tube or pipe fittings (for example, couplings, elbows, sleeves).	12% U	17% B	10.2% B	10% B	Free B	4.8% B	Free B	Free B	Free B	SwF4.00/100kg B	13.8%
79.07		Other articles of zinc:											
	7907.10	- Gutters, roof capping, skylight frames and other fabricated building components	20% U	17% B	10.2% B	17% B	Free 7/	4.9% B	30% 8/	13.8% B	Free B	SwF17.00/100kg B	15.7%
	7907.90	- Other	20% U	10% B	Free-10.2% B	17% B	15.1% B	5.8% B	30% 8/	13.8% B	Free B, 13.2% B	SwF18.00/10[illegible], SwF46.00/100kg B	5.7%

1/ Bound at 0.4%.
2/ From 1 January 1989: 10%; from 1 January 1990: 7.5%; from 1 January 1991: 5%; from 1 January 1992: 2%.
3/ From 1 January 1991: 12.5%; from 1 January 1992: 10%.
4/ Bound at 12.5%.
5/ Perchlorates: bound at 5.6%.
6/ From 1 January 1989: 7.5%; from 1 January 1991: 5%; from 1 January 1992: 2%.
7/ Bound at 5.1%.
8/ Bound at 50%.
9/ The nomenclature of the customs tariff of the United States [illegible]

ANNEX II

THE HARMONIZED SYSTEM OF COMMODITY DESCRPTION AND CLASSIFICATION

CHAPTER 26 - ORES, SLAG AND ASH

1. For the purposes of headings Nos. 26.01 to 26.17, the term "ores" means minerals of mineralogical species actually used in the metallurgical industry for the extraction of mercury, of the metals of heading No. 28.44 or of the metals of Section XIV or XV, even if they are intended for non-metallurgical purposes. Headings Nos. 26.01 to 26.17 do not, however, include minerals, which have been submitted to processes not normal to the metallurgical industry.

2. Heading No. 26.20 applies only to ash and residues of a kind used in industry either for the extraction of metals or as a basis for the manufacture of chemical compounds cf metals.

Heading Number	H.S.[1] Code	
26.08	2608.00	Zinc ores and concentrates
26.20		Ash and residues (other than from the manufacture of iron or steel), containing metals or metallic compounds.

CHAPTER 28

INORGANIC CHEMICALS; ORGANIC OR INORGANIC COMPOUNDS OF PRECIOUS METALS, OF RARE-EARTH METALS, OF RADIOACTIVE ELEMENTS OR OF ISOTOPES

Heading Number	H.S. Code	
		I. Chemical elements
28.17	2817.00	Zinc oxides, zinc peroxide
28.27		Chlorides, chloride oxides and chloride hydroxides; bromides and bromide oxides; iodides and iodide oxides
	2827.36	- Of zinc
28.30		Sulphides; polysulphides
	2830.20	- Zinc sulphide
28.33		Sulphates; alums; peroxosulphates (persulphates)
	2833.26	- Of zinc
28.41		Salts of oxometallic or peroxometallic acids
	2841.20	- Chromates of zinc or of lead

CHAPTER 29

ZINC AND ARTICLES THEREOF

1. In this Chapter the following expressions have the meanings hereby assigned to them:

(a) Bars and rods

Rolled, extruded, drawn or forged products, not in coils, which have a uniform solid cross-section along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons (including "flattened circles" and "modified rectangles", of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel). Products with a rectangular (including square), triangular or polygonal cross-section may have corners rounded along their whole length. The thickness of such products which have a rectangular (including "modified rectangular") cross-section exceeds one-tenth of the width. The expression also covers cast or sintered products, of the same forms and dimensions, which have been subsequently worked after production (otherwise than by simple trimming or de-scaling), provided that they have not thereby assumed the character of articles of products or other headings.

(b) Profiles

Rolled, extruded, drawn, forged or formed products, coiled or not, of a uniform cross-section along their whole length, which do not conform to any of the definitions of bars, rods, wire, plates, sheets, strip, foil, tubes or pipes. The expression also covers cast or sintered products, of the same forms, which have been subsequently worked after production (otherwise than by simple trimming or de-scaling), provided that they have not thereby assumed the character of articles or products of other headings.

(c) Wire

Rolled, extruded or drawn products, in coils, which have a uniform solid cross-section along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons (including "flattened circles" and "modified rectangles", of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel). Products with a rectangular (including square), triangular or polygonal cross-section may have corners

rounded along their whole length. The thickness of such products which have a rectangular (including "modified rectangular") cross-section exceeds one-tenth of the width.

(d) Plates, sheets, strip and foil

Flat-surfaced products (other than the unwrought products of heading No. 79.01), coiled or not, of solid rectangular (other than square) cross-section with or without rounded corners (including "modified rectangles" of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel) of a uniform thickness, which are:

- of rectangular (including square) shape with a thickness not exceeding one-tenth of the width);

- of a shape other than rectangular or sqaure, of any size provided that they do not assume the character of articles or products of other headings.

Heading No. 79.05 applies, inter alia, to plates, sheets, strip and foil with patterns (for example, grooves, ribs, chequers, tears, buttons, lozenges) and to such products which have been perforated, corrugated, polished or coated, provided that they do not thereby assume the character of articles or products of other headings.

(e) Tubes and pipes

Hollow products, coiled or not, which have a uniform cross-section with only one enclosed void along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons, and which have a uniform wall thickness. Products with a rectangular (including square), equilateral triangular or regular convex polygonal cross-section, which may have corners rounded along their whole length, are also to be considered as tubes and pipes provided the inner and outer cross-sections are concentric and have the same form and orientation. Tubes and pipes of the foregoing cross-sections may be polished, coated, bent, threaded, drilled, waisted, expanded, cone-shaped or fitted with flanges, collars or rings.

Sub-heading Note

2. In this Chapter the following expressions have the meanings hereby assigned to them:

(a) Zinc, not alloyed

Metal containing by weight at least 97.5 per cent of zinc.

(b) Zinc alloys

Metallic substance in which zinc predominates by weight over each of the other elements, provided that the total content by weight of such other elements exceeds 2.5 per cent.

(c) Zinc dust

Dust obtained by condensation of zinc vapour, consisting of spherical particles which are finer than zinc powders. At least 80 per cent by weight of the particles pass through a sieve with 63 micrometres (microns) mesh. It must contain at least 85 per cent by weight of metallic zinc.

Heading Number	H.S. Code	
79.01		Unwrought zinc
		- Zinc, not alloyed:
	7901.11	Containing by weight 99.99 per cent or more of zinc
	7901.12	Containing by weight less than 99.99 per cent of zinc
	7901.20	- Zinc alloys
79.02	7901.00	Zinc waste and scrap
79.03		Zinc dust, powders and flakes
	7903.00	- Zinc dust
	7903.90	- Other
79.04	7904.00	Zinc bars, rods, profiles and wire
79.05	7905.00	Zinc plates, sheets, strip and foil

Heading Number	H.S. Code	
79.06	7906.00	Zinc tubes, pipes and tube or pipe fittings (for example, couplings, elbows, sleeves)
79.07		Other articles of zinc
	7907.10	- Gutters, roof capping, skylight frames and other fabricated building components
	7907.90	- Other

[1]Harmonized System.