

Zinc

Patrick Chevalier

*The author is with the Minerals and Metals Sector, Natural Resources Canada.
Telephone: (613) 992-4401
E-mail: pchevali@nrcan.gc.ca*

Market fundamentals for world zinc markets in 2000 remained strong, with good growth in overall demand, falling stock levels and increased metal production. Prices remained strong for the first nine months of the year but, while up overall from 1999 levels, began to decline sharply in the fourth quarter as concerns about the degree to which demand growth will slow in the United States, coupled with new smelter and mine capacity coming on stream for 2001, began to put downward pressure on prices.

World zinc usage reached 8.83 Mt in 2000, according to preliminary figures from the International Lead and Zinc Study Group (ILZSG), a total that was just slightly less than total world refined metal production of 8.9 Mt. Western World zinc demand exceeded production by 815 000 t. This supply deficit was largely offset, however, by net exports of zinc metal to the West by Eastern countries. Zinc metal stocks held on the London Metal Exchange (LME) fell steadily through the year to 195 000 t, a decline of 84 000 t since the end of 1999. Reported producer stocks were 7000 t higher than in 1999 at a total of 305 000 t.

Cash settlement prices on the LME averaged US\$1128.11/t in 2000, up 4.7% over 1999. Three-month prices averaged \$1137.34/t.

CANADIAN DEVELOPMENTS

Preliminary data indicate that Canadian mine production of zinc totaled 996 921 t in 2000, or 2.4% lower than in 1999. Lower-than-expected output at Myra Falls in British Columbia and temporary problems at the Bell Allard, Bouchard Hébert and Langlois mines in Quebec, the Brunswick mine in New Brunswick, and the Ruttan mine in Manitoba all contributed to the lower output in Canada in 2000 (Figure 2).

Zinc metal production in Canada was up slightly from 776 927 t in 1999 to 779 586 t in 2000, with increases from imported feed more than offsetting lower domestic sources. Canada ranked second after China in terms of zinc metal production and third after China and Australia in terms of mine production in 2000 (Figure 3).

British Columbia

Rock stability problems at Cominco Ltd.'s Sullivan mine that had started at the end of 1999 continued to result in lower concentrate production in early 2000. Improvements at the mine during the first quarter, however, resulted in higher zinc and lead concentrate production. The mine is expected to continue to operate until the planned closure date in December 2001. In December 2000, Cominco announced that it would be reducing zinc metal production at its Trail smelter by about 20 000 t through to January 2001 as the result of a power swap agreement with a major U.S. energy company.

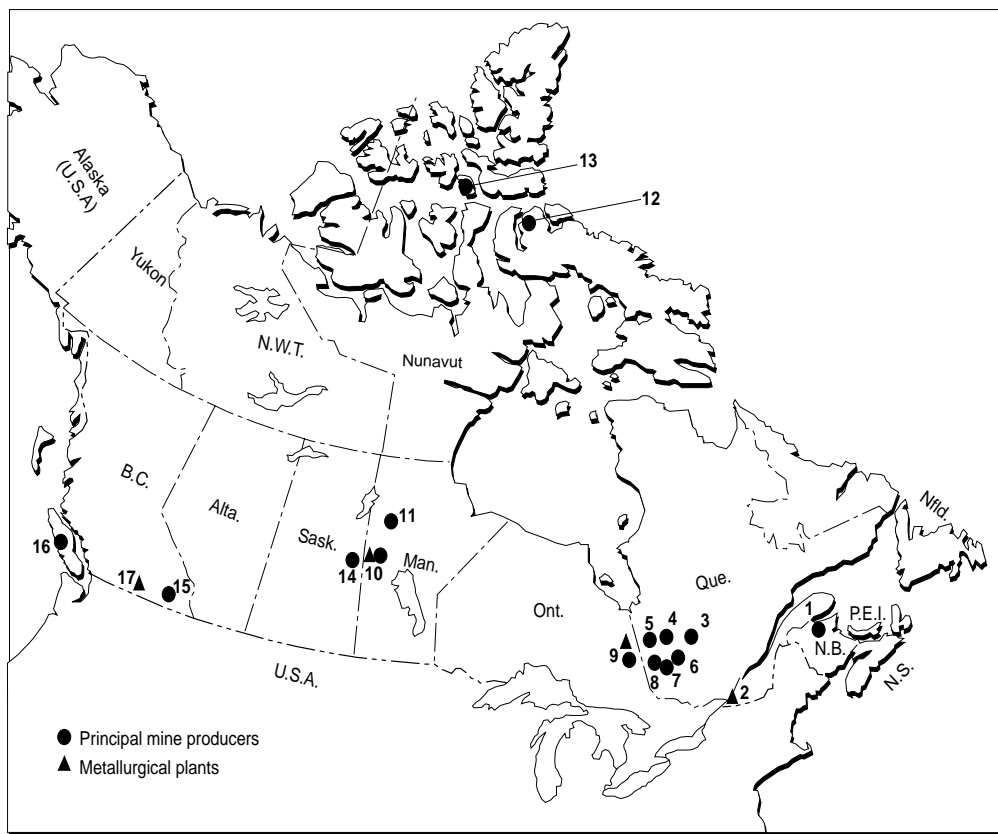
Yukon

Work continued throughout the year on the Finlayson project in southeastern Yukon Territory. Expatriate Resources Ltd. created the Finlayson project by consolidating its interests in its wholly owned mineral lands, its interest in the Wolverine Joint Venture (60% Expatriate, 40% Atna Resources Ltd.), and mineral lands acquired from Cominco Ltd. In March, Expatriate announced the acquisition of all of Cominco's interests in the Kudz Ze Kayah deposit and surrounding mineral lands. With the acquisition of Kudz Ze Kayah, the emphasis of the prefeasibility study shifted to co-development of the Finlayson project. In November, Expatriate and Atna completed a prefeasibility study indicating that the Finlayson project is technically and economically viable.

Saskatchewan/Manitoba

Hudson Bay Mining & Smelting Co., Limited, a wholly owned subsidiary of Anglo American plc, officially opened the Chisel North mine near Snow Lake, Manitoba, in June. The \$32 million capital investment is part of the company's \$400 million

Figure 1
Zinc Producers in Canada, 2000



Numbers refer to locations on map above.

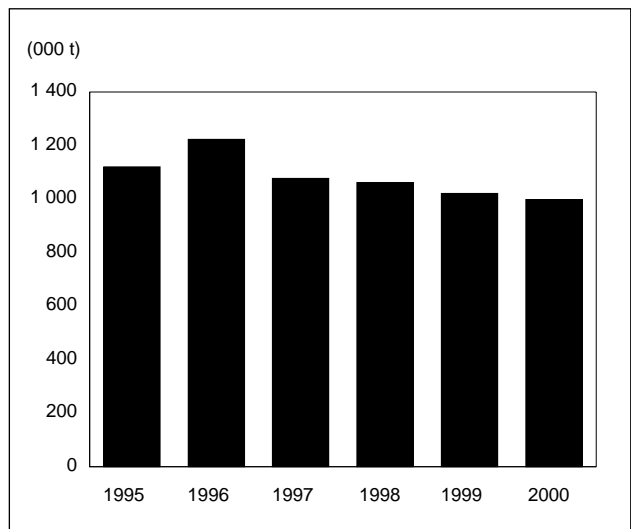
ZINC-PRODUCING MINES

1. Brunswick	Noranda Inc.
3. Langlois	Breakwater Resources Ltd.
4. Bell Allard	Noranda Inc.
5. Selbaie	Les Mines Selbaie
6. Louvicourt	Aur Resources Inc./Novicourt Inc.
7. LaRonde	Agnico Eagle Mines Limited
8. Bouchard-Hébert	Breakwater Resources Ltd.
9. Kidd Creek	Falconbridge Limited
10. Callinan	Hudson Bay Mining and Smelting Co., Limited
Trout Lake	Hudson Bay Mining and Smelting Co., Limited
Chisel North	Hudson Bay Mining and Smelting Co., Limited
777	Hudson Bay Mining and Smelting Co., Limited
11. Ruttan	Hudson Bay Mining and Smelting Co., Limited
12. Nanisivik	Breakwater Resources Ltd.
13. Polaris	Cominco Ltd.
14. Konuto Lake	Hudson Bay Mining and Smelting Co., Limited
15. Sullivan	Cominco Ltd.
16. Myra Falls	Boliden Limited

ZINC METALLURGICAL PLANTS

2. Valleyfield	Canadian Electrolytic Zinc Limited
9. Kidd Creek	Falconbridge Limited
10. Flin Flon	Hudson Bay Mining and Smelting Co., Limited
17. Trail	Cominco Ltd.

Figure 2
Canadian Mine Production of Zinc, 1995-2000



Source: Natural Resources Canada.

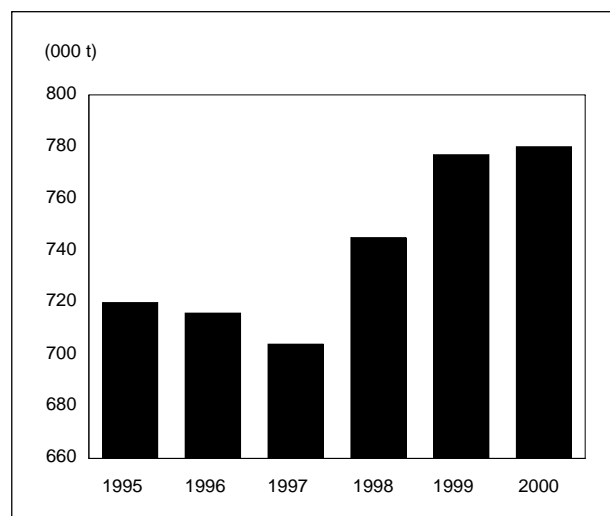
investment in the 777 project and includes the refurbishment of the Snow Lake zinc concentrator. Zinc concentrate from the Snow Lake concentrator will be trucked 200 km southwest to the Flin Flon smelter. In addition to the Chisel North mine development, work continued on the 777 mine in Flin Flon, which is expected to go into production in 2003. Construction of a new \$100 million electrolytic tankhouse also continued. In August, a severe rainstorm temporarily shut down the Ruttan mine at Leaf Rapids, Manitoba. A power outage shut down the underground pumps to the mine.

Ontario

Falconbridge Limited approved the development of Mine D (Deep) at the Kidd Creek copper-zinc mine at Timmins, Ontario. This mine extension project will deepen the mine from 2100 m to 3100 m below the surface and contribute 2 Mt/y of ore when full production is reached in 2004. When completed, the project will make the Kidd mine the deepest base-metal mine in the world. The first stage of the project is estimated to contain 15.7 Mt of ore grading 2.8% copper, 5.7% zinc and 58 g/t silver. Current estimates for the second stage are for 10.5 Mt of ore grading 2.2% copper, 5.3% zinc and 97 g/t silver.

Boliden Limited announced that it was transferring its corporate operations from Toronto back to Sweden in an attempt to cut costs and to be nearer its main smelter and refining operations. Shares in the company will continue to be listed on both the Toronto Stock Exchange and the OM Stockholm Exchange. Boliden owns the Myra Falls zinc mine in British Columbia and has operations in Chile and Europe.

Figure 3
Canadian Refined Zinc Metal Production, 1995-2000



Source: Natural Resources Canada.

Quebec

In northwestern Quebec, Noranda Inc. reported good drilling results from an exploration program to find new sources of feed for its milling and smelting operations in the Matagami region. The presence of a significant zinc and copper deposit consisting of three distinct ore zones (Equinox, Perseverance and Perseverance West) was discovered within the Matagami mining camp. Preliminary results for the Equinox zone indicate an inferred resource of 5 Mt grading 16.8% zinc, 1.3% copper, 34 g/t silver and 0.4 g/t gold. Work continues to further define the zones.

In May, Breakwater Resources Ltd. acquired the Bouchard-Hébert and Langlois zinc mines, located in northwestern Quebec, from Cambior Inc. Earlier in the year, Cambior announced mechanical problems with the semi-autogenous (SAG) mill at the Bouchard-Hébert mine, which resulted in a temporary shut-down of the mill. The repaired SAG mill was back in production in October and reached its full capacity of 2900 t/d by year-end. In November, Breakwater announced that it would be temporarily suspending operations at the Langlois mine due to operating problems associated with the main ore pass system. The difficulties with the ore pass system, combined with the decline in metal prices and high treatment charges, made it uneconomic for the company to operate the mine. By year-end, Breakwater announced that it was working on a project to optimize the site and that it may restart production by the first quarter of 2002.

Billiton Plc finalized a deal to purchase Toronto-based Rio Algom Limited in November. Billiton Base Metals' zinc operations in Canada include Les Mines Selbaie, located in northwestern Quebec. Following exhaustion of current ore reserves, processing is expected to continue at Selbaie until June 2004 from low-grade ore stockpiled during the mining period. A trust fund is also in place to guarantee closure and reclamation costs. Billiton Base Metals also owns a 25% royalty interest in the annual net proceeds of production from the Polaris mine in Nunavut, operated by Cominco.

New Brunswick

Breakwater Resources' Caribou mine has remained on care and maintenance since August 1998. Based on pilot plant testing, a plan to restart the mine was completed in the first quarter of 1999. The plan indicated that the flotation capacity of the mill will have to be expanded by about 40% in order to achieve the desired metallurgical results. The capital costs required to restart the mine are in the order of \$12 million, excluding working capital. A decision to re-open the mine still awaits higher metal prices.

Nova Scotia

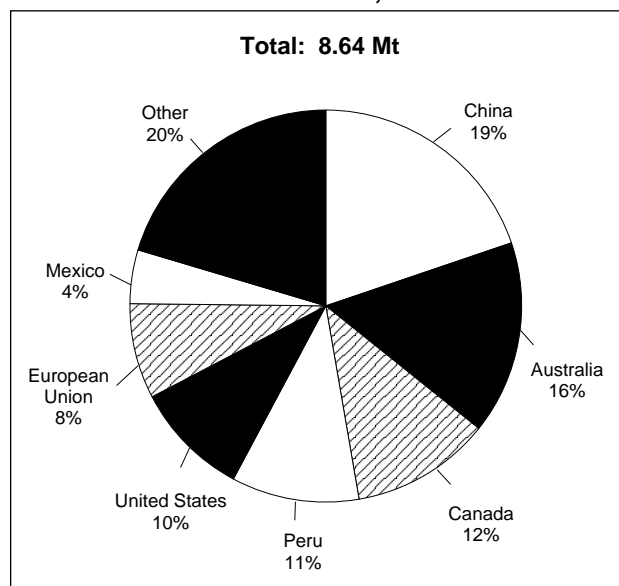
Australia-based Pasma Limited continued to seek the necessary provincial environmental permits for the Gays River zinc property. While the company has already received its federal approvals, it awaits permits from the provincial departments of natural resources and labour. Pasma acquired the former Gays River mine from Savage Resources Canada Ltd. Pasma has plans to spend \$5 million-\$10 million during the life of the mine; however, the company has stated that the project will not proceed until there is a significant improvement in world zinc prices.

WORLD DEVELOPMENTS

Total world mine production of zinc was 8.6 Mt in 2000, an increase of about 7% from 1999. The opening of the Century mine in Australia, together with the new Lisheen mine in Ireland, Rey de Plata in Mexico and the re-opening of Los Frailes in Spain, all contributed to the rise in world mine output (Figure 4).

World zinc metal production reached 8.93 Mt, an increase of 5.3% over 1999, due largely to increased production in Australia and China and, to a lesser extent, expansions in Italy, South Korea and Mexico. Western World zinc metal production rose for the fourth consecutive year by 4.5% to 6.1 Mt in 2000 (Figure 5).

Figure 4
World Zinc Mine Production, 2000



Source: International Lead and Zinc Study Group.

United States

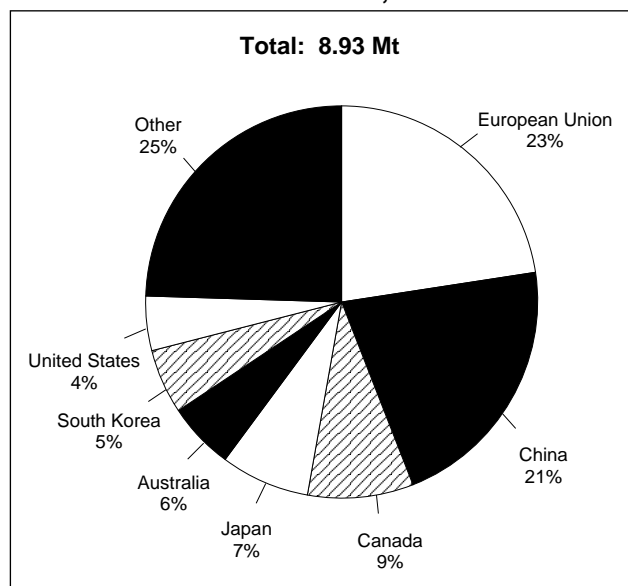
The re-opening of Pasma's Clinch Valley mine in Tennessee in July, together with increased production at Cominco's Red Dog mine in Alaska, led to an overall increase in zinc mine production of about 3% in 2000. The Red Dog mine is the leading zinc producer in the United States, accounting for more than half of total U.S. production, which totaled 828 000 t in 2000.

Cominco announced that it had invested in Metallic Power Inc. of Carlsbad, California, a developer of recyclable zinc-air fuel cells. The capital from the investment will be used to fund product development and commercialization. In September, Cominco endorsed the decision made by the board of its subsidiary, Cominco American, Inc., to rebuild and re-open the Pend Oreille zinc-lead mine near Metaline Falls, Washington. Cominco will begin the US\$70 million project with a two-year construction program in October that will involve refurbishment of the concentrator and the sinking of an internal shaft. The mine is scheduled to begin production in September 2002 at a rate of 84 000 t/y of zinc concentrates and 13 000 t/y of lead concentrates. The concentrates will be shipped to its nearby Trail operations in southern British Columbia.

Latin America

Mexico's Industrias Peñoles, S.A de C.V. completed the expansion of its Torreón zinc smelter in

Figure 5
World Zinc Metal Production, 2000



Source: International Lead and Zinc Study Group.

December to 220 000 t/y. About 30% of the production from the expanded facility will supply the company's nearby zinc alloy plant at Permejillo, which recently expanded capacity by 10 000 t to 100 000 t/y.

Elsewhere in Mexico, Peñoles opened the US\$39 million Rey de Plata mine in Tehuixtla, Guerrero in October, raising the company's average annual zinc production by about 12%. A joint-venture project between Peñoles (51%), Dowa Mining Co., Ltd. (39%) and Sumitomo Corporation (10%), the mine is Mexico's fifth largest zinc producer.

Brazilian zinc producer Cia Paraibuna de Metais SA increased its production capacity to 92 400 t/y following a US\$100 million debottlenecking and expansion project. Next year the company will begin work on a project to further increase production to 170 000 t/y.

In Chile, Breakwater Resources' El Toqui mine, located 1350 km south of Santiago, reported operating earnings of \$0.7 million in 2000 compared with \$2.4 million in 1999. Development work was started on the ramps to access new reserve areas. An internal study is reportedly under way for a possible expansion of at least 25% of the production capacity of the mill. The study is expected to be completed in the third quarter of 2001. Elsewhere in Chile, Breakwater's El Toqui subsidiary conducted surface exploration work at the Mallin-Monica sector and is carrying out more exploration work at the property. The company also conducted exploration in the Estatuas area.

In Peru, work continued on development of the Antamina copper-zinc project. By year-end, mine development was more than 80% complete, ahead of schedule and within budget. A joint venture between Noranda (33.75%), Billiton Plc (33.75%), Teck Corporation (22.5%) and Mitsubishi Corporation (10%), the mine is expected to begin full commercial production in early 2002. Construction is expected to be completed in May 2001. The first concentrate will be transported to the port through a 300-km pipeline. Proven and probable ore reserves of the planned open pit are calculated to be 559 Mt with an average grade of 1.23% copper, 1.03% zinc, 13.7 g/t silver and 0.029% molybdenum.

Europe

The Lisheen mine was officially opened in June in Ireland. An equal joint-venture project between Toronto-based Ivernia West Inc. and Anglo American plc, the Lisheen mine, located near Thurles, County Tipperary, is the fifth largest zinc-lead mine in the world. It is expected to produce 4.83 Mt of zinc and lead concentrates during its 14-year lifespan. Full production capacity is expected by mid-year 2001. At full production Lisheen will operate at the rate of 1.5 Mt/y of ore and produce some 160 000 t/y of contained zinc in concentrates.

Rio Tinto plc and Boliden, joint owners of the Norzink A/S zinc smelter at Odda, Norway, announced their intention in early October to sell their 100% interest in the facility to Finland's Outokumpu Oyj by year-end. Outokumpu agreed to pay US\$180 million for the plant, which has an annual production capacity of 150 000 t of zinc metal.

Vancouver-based EuroZinc Mining Corporation continued to work towards earning up to a 75% interest in the Aljustrel mine in Portugal by advancing the project to the production stage. In December, the company announced that it had agreed to a private placement to raise up to \$1.64 million. The money will be used for general working capital as the company arranges project financing for bringing the Aljustrel zinc project into production. In November, the company announced that an incentives package worth US\$32 million has been agreed to between the Portuguese government and EuroZinc for the Aljustrel project. The Portuguese government holds a 25% stake in the project.

In October the future of the Los Frailes zinc mine in Spain was put in doubt after Boliden Limited announced that it will not make any further investment in the project. The company will proceed with mining at pit 2 but cannot proceed with planned operations at pit 3 at the mine. Boliden's Spanish subsidiary, Boliden Apirsa SL, filed a court application for bankruptcy protection to preserve assets, pay creditors and ensure that operations at Los Frailes

continue until the completion of pit 2, planned for October 2001. The company has stated that the mine will close if it does not succeed in finding a way to continue operations. Los Frailes has been operating at a loss since operations were restarted in the second quarter of 1999. The mine was forced to close in 1998 following a failure in the mine's tailings dam.

In August, Enirisorse SpA sold its interests in Pertusola Sud SpA, subject to government approval, to Zincocalabra Spa, a new company owned by a private group of companies led by Cogefin SpA. Pertusola Sud operated the 100 000-t/y Crotone zinc smelter, which has been closed since last year. Zincocalabra intends to build a new zinc smelter with a capacity of 185 000 t/y. The sale of Pertusola represents the last stage in Enirisorse's divestment of its mineral and metal assets.

In June, Metaleurop S.A. announced the closure of its Harzer Zink plant near Harlingerode, Germany. The decision to close the 20 000-t/y plant, which uses a vertical retort process, was made as a result of the plant's inability to reach its expected profitability and to comply with current environmental regulations without a significant investment by the company. The production of zinc oxides at Harlingerode was not affected by the decision.

Asia

Cominco announced in June that it had entered into exclusive negotiations with Iran Zinc Mine Development Company (IZMDC) regarding the Angouran zinc deposit in northwestern Iran. The Angouran deposit is a small-scale, open-pit zinc mine that currently produces about 400 000 t/y of oxide ore grading 33% zinc. Most of the ore is processed in a plant at Dandi, 20 km east of the mine, to produce zinc calcine for subsequent treatment by local refineries. Cominco is seeking to establish a joint venture to carry out a feasibility study and, if attractive, build a plant to leach run-of-mine oxide ore to produce 100 000 t/y of refined zinc.

China's zinc smelting capacity is expected to continue to grow over the next five years, particularly in the northwestern part of the country. Reports indicate that the government will only authorize the construction of new zinc smelting plants with a capacity greater than 50 000 t/y. In addition, some existing zinc smelters will be encouraged to upgrade their capacity to 50 000 t/y or more. Some 20 000 t/y of existing capacity is to be phased out by 2005. The government has declared its northwestern region open for foreign investment, and proposals for several zinc mines in the western part of the country are under review. As a result of the planned smelter expansions, zinc concentrate imports are expected to rise. Several zinc smelter capacity expansions to be completed this year include Shaanxi Shangluo

smelter (15 000-t/y expansion to a total of 25 000 t/y), Jijie smelter (12 500-t/y expansion to 20 000 t/y) and Longcheng Chemical General Plant in Liuzhou, Guangxi province (30 000-t/y expansion by year-end to 60 000 t/y). Also by the end of 2000, the Kaifeng Zinc smelter was expected to complete an expansion from 16 000 t/y to 36 000 t/y. Xicheng Zinc Company was expected to produce close to 27 000 t of zinc in 2000, which is close to the plant's recently expanded capacity of 30 000 t/y. In October, Xicheng Zinc announced that it had delayed plans until 2002 to expand its capacity to around 60 000 t/y. In June, Billiton Plc, through its wholly owned subsidiary Billiton China BV, signed a joint-venture agreement to develop the LanPing zinc deposit in Yunnan province. The agreement, signed between Billiton and LanPing Nonferrous Metals Company, will give Billiton a 65% interest in the project.

Africa

Breakwater Resources signed a letter of intent with Algeria's natural resource agency, the Office National de la Recherche Géologique et Minière (ORGM). The letter entitles Breakwater to earn up to a 90% interest in the Oued Amizour lead-zinc deposit with a total resource estimated at 30.2 Mt grading 5.5% zinc and 1.4% lead. Under the agreement, Breakwater must complete a feasibility study, arrange financing, and construct and bring the project into production. ORGM will retain a 10% net profit interest in the project once Breakwater recovers its full capital investment. Breakwater will pay ORGM US\$5 million for the property from the net profits of the operation over a five-year period beginning in the first year of production.

In September, Anglo American plc announced plans to proceed with the US\$454 million development of its Skorpion zinc mine project near Rosh Pinah in southern Namibia. Production from the 150 000-t/y zinc mine is planned for the second quarter of 2003.

Australia

Noranda announced in December that it had decided to exercise its option to acquire a 75% stake in the Lady Loretta project for \$17 million from Buka Minerals Limited. The project is located some 140 km northwest of Mt. Isa in Queensland. Noranda's drilling program increased the estimated mineral resource from 8.3 Mt grading 18.4% zinc, 8.3% lead and 125 g/t silver to 13.6 Mt grading 17.1% zinc, 5.9% lead and 97 g/t silver.

The new Century mine, owned and operated by Pasminco Limited, was officially opened in April. The A\$100 million project was completed under budget and ahead of schedule; it comprises a mine, located at Lawn Hill, and a port and dewatering facility at Karumba in Queensland. The mine and port

are connected by a 304-km underground pipeline that pumps zinc and lead concentrate from the mine site to the port. At the time of the official opening, the mine had already produced some 100 000 t of concentrate that was shipped to Pasmenco's Budel Zink smelter in the Netherlands. Shipments to other customers began in May. By the end of 2001, the mine will have an annual capacity of 5 Mt of ore yielding 888 000 t of zinc concentrate and 70 000 t of lead.

RECYCLED ZINC

Recycled zinc includes high-purity zinc refined from the treatment of electric arc furnace (EAF) dusts, remelted zinc with a purity less than 98.5% zinc, and scrap zinc used in the production of zinc alloys. According to ILZSG, the amount of recycled zinc recovered in the Western World has risen steadily in recent years, reaching 2.04 Mt in 2000.

The recycling of galvanized steel has become an important source of recycled zinc with processes developed to treat EAF dusts or to de-zinc steel before it is remelted. The Waelz kiln is the most common method of processing EAF dusts. Waelz oxides are treated in imperial smelting furnaces for the production of refined zinc. The requirement of Waelz kilns to be near their feed source, i.e., steel mill complexes, would suggest that treatment of these dusts will be most important in the United States, Japan and Western Europe.

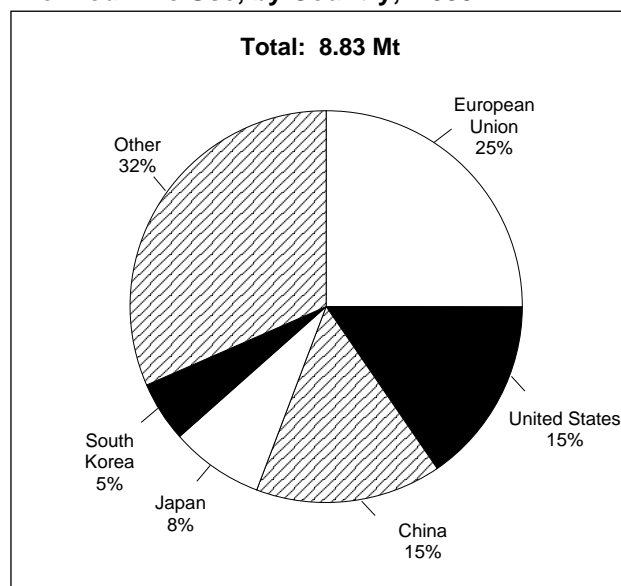
ZINC USAGE

Zinc use worldwide grew for the eighth consecutive year by about 4.0% in 2000 to reach 8.83 Mt. Preliminary figures from ILZSG for 2000 indicate that Western World demand increased from 6.7 Mt in 1999 to just over 7 Mt in 2000 (Figure 6). The main engine for growth in world demand came from Asian countries. European demand grew by 3.3% while growth in the United States was 3.5%. Zinc use in Canada increased from a reported 169 000 t in 1999 to 176 000 t in 2000, a rise of about 4.0%.

The galvanic protection of steel has been the predominant end use of zinc in recent years and currently represents 47% of zinc usage. Zinc is used extensively in the automotive and construction industries for corrosion protection and remains one of the most cost-effective means of protecting steel against corrosion. The zinc coating acts as a physical barrier and as an oxidant. The oxide, in turn, acts as a further barrier to corrosion (Figure 7).

The desire to reduce weight and improve fuel efficiency has led to an increased use of galvanized steel in the automotive industry to protect the thinner gauges of steel from corrosion. In North America, the

Figure 6
Refined Zinc Use, by Country, 2000



Source: International Lead and Zinc Study Group.

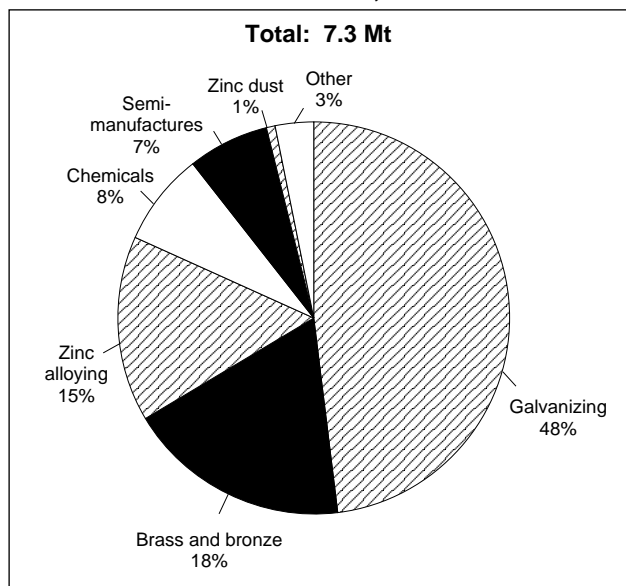
consumer trend toward all-purpose vehicles or sport utility vehicles has increased the use of zinc-coated automotive sheet. Both hot-dipped and electro-galvanized steel are used, the thicker coating of hot-dipped steel giving more corrosion protection to unexposed surfaces and the thinner coating of electro-galvanized steel providing a smoother finish for exposed, painted surfaces.

Galvanized steel is also used in construction for structural components, roofing, siding and reinforcement bars. Nails and other building materials are often hot dip galvanized. Zinc and zinc-aluminum thermally sprayed coatings are used for the long-term corrosion protection of large steel structures such as bridges and hydro-electric transmission towers.

With the relatively high cost of lumber, fabricated hot-dipped structural steel is becoming cost-competitive for use in residential home construction. The number of steel-framed homes built yearly in the United States has risen steadily and was estimated at 250 000 in 1997. The North American Steel Framing Alliance (NASFA) continues to work towards achieving a 25% market share for light-gauge steel framing in the residential construction market. The NASFA estimates that a 25% market share would require additional production of 85 000 t/y of zinc for galvanizing.

Galvanized steel studs have a number of advantages over wood, including more stable prices, reduced

Figure 7
Western World Zinc Markets, 1999



Source: International Lead and Zinc Study Group.

weight, immunity to warping or termites, fire resistance and recyclability. However, disadvantages include their tendency to bend or dent if handled improperly and the need for specialized training and tools.

A number of zinc alloy coatings have been developed over the years with superior qualities compared to pure zinc in specific applications. These include Galfan (90% zinc, 5% aluminum and the remainder rare earth elements) and Galvalume (55% aluminum, 43.4% zinc and 1.6% silicon), as well as zinc-iron and zinc-nickel alloys. Galfan, for example, exhibits higher formability and paintability than other coatings, and zinc-nickel alloys reduce the reactivity of high-silicon steels.

Canada's hot-dip galvanized steel and Galvalume capacity of 1 902 000 t/y is located at the facilities of Dofasco Inc. and Stelco Inc. in Hamilton and DNN Galvanizing Corporation in Windsor, both in Ontario, and Sorevco Inc. in Coteau-du-Lac, Quebec.

The manufacture of brass and bronze is the second most important use of zinc, accounting for 19% of total usage. The use of brass and bronze is highly dependent on the level of activity in the construction industry as these alloys are used in plumbing fittings, heating and air conditioning components, and other products. The addition of zinc to copper alloys improves their machinability, strength and resistance to corrosion.

The third most important use of zinc, accounting for 14% of all uses, is in zinc-based alloys for the creation of die-cast products such as builders' hardware and automobile fittings. The goal of weight reduction in automobiles for increased fuel efficiency has led to a reduction in the use of zinc die castings, although in the last few years zinc-based alloys have regained some of their former market share. The major reasons for this have been the development of direct injection die castings, the popularity of zinc-aluminum die-casting alloys, and diversification away from over-reliance on the automotive sector.

One promising series of alloys is ACuZinc, which contains 5-11% copper and 2.8-4.0% aluminum, with the balance being zinc. These alloys increase the durability and performance, and reduce the thickness, of automotive die castings compared to many other zinc alloys.

Zinc semi-manufactures represent about 8% of zinc use and include rolled zinc for roofing applications and the production of coinage. Rolled zinc roofing is especially popular in Europe.

The remainder of zinc usage is for oxides and other chemicals and zinc dust. Zinc oxide has a variety of applications, the most important of which is as an accelerator in the curing of rubber. High-purity zinc oxide is used in the pharmaceutical industry and zinc oxide-based salves and ointments have long been known for their healing properties. Other grades are used in the zinc plating industry, as an anti-corrosion agent in lubricants, and in paints, animal feeds and a variety of chemicals.

Zinc-air batteries are a promising development in the race to create viable electric vehicles. The zinc-air battery has a range three to four times that of comparatively sized lead-acid batteries. Its slow recharge time can be overcome by the introduction of replaceable cassettes that house a zinc anode and two cathodes that extract oxygen from air to fuel the chemical reaction. When removed, these cassettes can be taken to a regeneration facility where electro-winning cells turn zinc oxide back into zinc. Such a system is ideal for fleet vehicles that return to a centralized location each day, but for passenger vehicles the plan requires considerable infrastructure.

INTERNATIONAL LEAD AND ZINC STUDY GROUP

The International Lead and Zinc Study Group was formed in 1959 to improve market information and to provide opportunities for regular inter-governmental consultations on issues related to lead and zinc markets. Particular attention is given to providing regular and frequent information on supply, demand and the outlook for lead and zinc.

The Study Group is headquartered in London, England. In 2000, 28 countries, representing most of the world's major lead- and zinc-producing and using nations, were members of the Group. The Group has an extensive information-gathering and dissemination role and acts as an effective mechanism for increasing market transparency related to lead and zinc production, use and trade. The Group is also an important forum for communication among governments, among industry, and between governments and industry. It holds a general session each year in October. Member countries' delegations include industry representatives as advisors. Canada has been an active member of the Group since its inception.

The 45th Session of the Study Group, chaired by Mr. Alek Ignatow of Canada, was held in London, England, in October 2000 and was attended by some 250 registered participants, including representatives of 26 member countries and observers from several invited nations, industry and non-governmental organizations. Delegates elected a new Secretary General, Mr. Don Smale of Australia, to replace Mr. Francis Labro of France, who retired as Secretary General at the end of the year. The next annual meeting of the Group will take place October 16-18, 2001, in New Delhi, India.

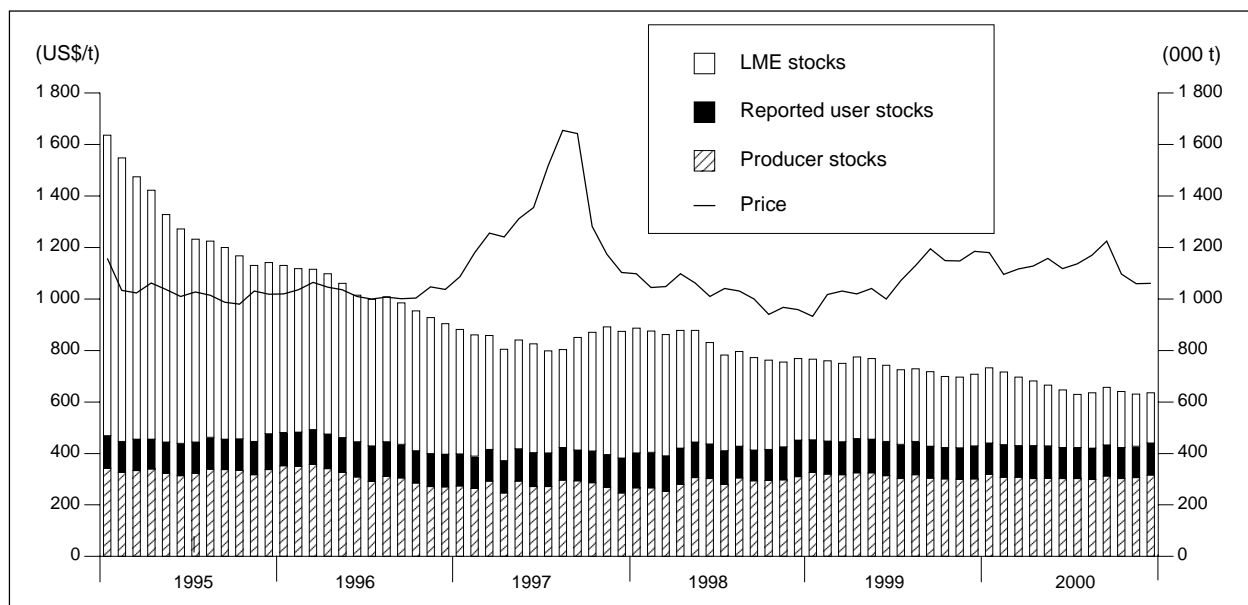
The Group continued to work on updating its capacity to deliver, through electronic means, its monthly statistical bulletin. It is now expected that the bulletin will be available to member countries and subscribers through the Group's web site by mid-2001.

More information about the Group's activities and the availability of a wide range of publications pertaining to lead and zinc can be obtained from its web site at www.ilzsg.org. For information on the Group's activities in partnership with the International Copper Study Group and the International Nickel Study Group related to the contribution nonferrous metals make to sustainable development and the Consultative Forum, visit these groups' joint web site at www.nfmsd.org.

PRICES AND STOCKS

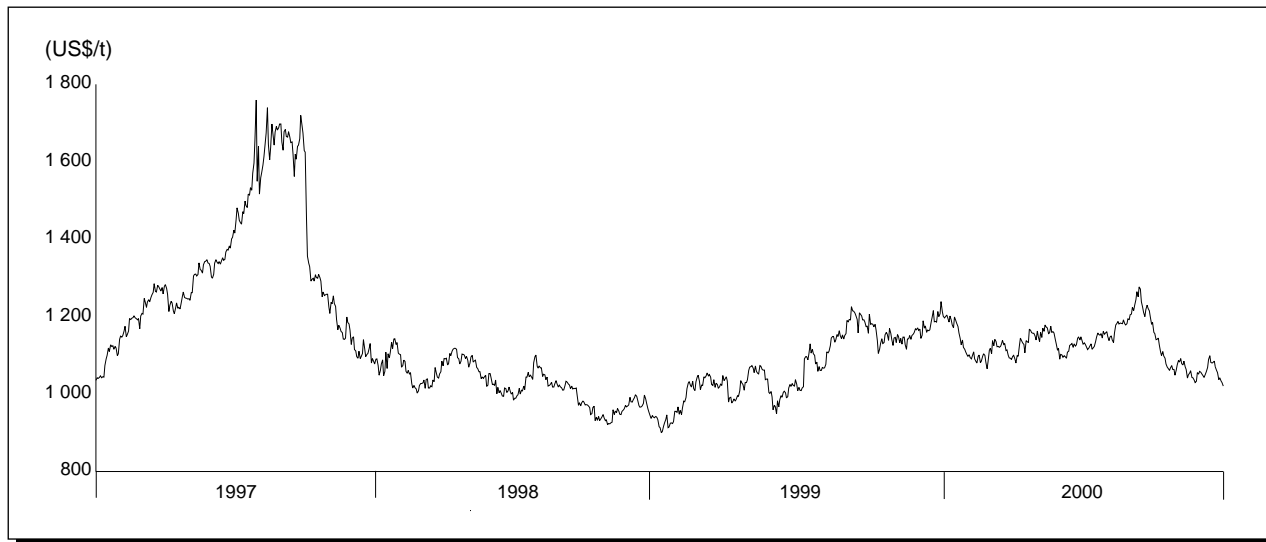
The LME Cash Settlement prices for zinc followed a downward trend in the first quarter of 2000. Cash prices started the year at US\$1200/t and fell to \$1065/t by the end of February, only to rally to reach a peak of US\$1277/t in September before falling back to finish the year at its lowest value for the year of US\$1021/t. The overall cash settlement price averaged US\$1128.11/t in 2000, up 4.7% over 1999. The forward three-month price averaged US\$1137.34/t, an increase of 4%. Higher prices reflected the strong demand in North America and the continued downward trend in stock levels. Stocks on the LME fell from a peak of 291 975 t in early February to a low of 194 250 t towards the end of the year. This represents just less than five weeks of Western World demand (Figures 8 and 9).

Figure 8
LME Monthly Average Settlement Prices and Total Stocks, 1995-2000



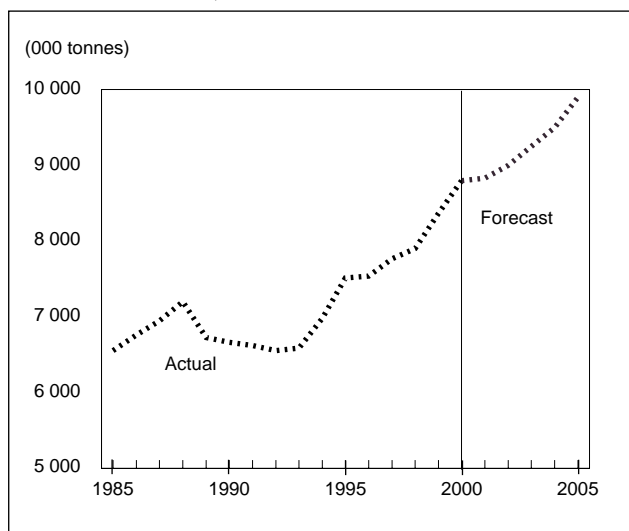
Source: International Lead and Zinc Study Group.

Figure 9
LME Daily Official Cash Settlement Prices, 1997-2000



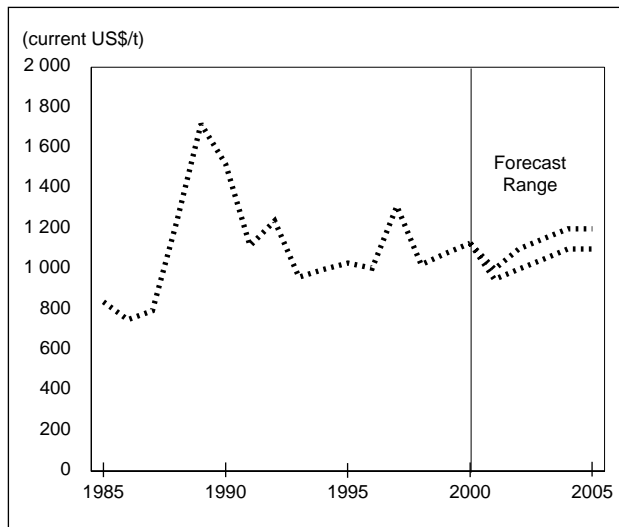
Source: London Metal Exchange.

Figure 10
World Zinc Use, 1985-2005



Source: International Lead and Zinc Study Group.

Figure 11
Average Cash Settlement Zinc Prices, 1985-2005
Annual LME Settlement



Source: Natural Resources Canada.

OUTLOOK

For 2001, the zinc market, according to information gathered by the member countries of ILZSG, is expected to result in a substantial Western World market surplus if ambitious production targets are achieved. Market demand is expected to weaken, particularly in the United States, while zinc metal output in 2001 is expected to increase 3.7%. Prices will likely reflect this potential oversupply and average about US\$950/t (US43c/lb) for the year.

Beyond 2001, investments made in the zinc industry in recent years are expected to result in large increases in mine and smelter capacity. Continued growth in galvanizing markets, combined with a gradual recovery in overall markets, is expected with zinc prices rising to US\$1100-\$1200/t by 2005 (Figures 10 and 11).

Notes: (1) For definitions and valuation of mineral production, shipments and trade, please refer to Chapter 65. (2) Information in this review was current as of July 9, 2001. (3) This and other reviews, including previous editions, are available on the Internet at http://www.nrcan.gc.ca/mms/cmy/index_e.html.

NOTE TO READERS

The intent of this document is to provide general information and to elicit discussion. It is not intended as a reference, guide or suggestion to be used in trading, investment, or other commercial activities. The author and Natural Resources Canada make no warranty of any kind with respect to the content and accept no liability, either incidental, consequential, financial or otherwise, arising from the use of this document.

TARIFFS

Item No.	Description	Canada			United States	EU1	Japan ²
		MFN	GPT	USA	Canada	MFN	WTO
2603.00	Copper ores and concentrates						
2603.00.00.30	Zinc content	Free	Free	Free	Free	Free	Free
2607.00	Lead ores and concentrates						
2607.00.00.30	Zinc content	Free	Free	Free	Free	Free	Free
2608.00	Zinc ores and concentrates						
2608.00.00.30	Zinc content	Free	Free	Free	Free	Free	Free
2616.10	Silver ores and concentrates						
2616.10.00.30	Zinc content	Free	Free	Free	Free	Free	Free
26.20	Ash and residues (other than from the manufacture of iron or steel) containing metals or metal compounds containing mainly zinc						
2620.11	Hard zinc spelter	Free	Free	Free	Free	Free	Free
2817.00	Zinc oxide; zinc peroxide	Free-7.5%	Free	Free	Free	7.7%	4.3%
28.33	Sulphates; alums; peroxosulphates (persulphates)						
2833.26	Of zinc	Free	Free	Free	Free	5.5%	3.9%
79.01	Unwrought zinc						
7901.11	Zinc, not alloyed: Containing by weight 99.99% or more of zinc	Free	Free	Free	Free	2.5%	4.30 yen/kg
7901.12	Containing by weight less than 99.99% of zinc	Free	Free	Free	Free	2.5%	Free-4.30 yen/kg
7901.20	Zinc alloys:						
7901.20.00.10	Containing by weight 90% or more but less than 97.5% of zinc	Free	Free	Free	Free	2.5%	4.30 yen/kg
7901.20.00.20	Containing by weight less than 90% of zinc	Free	Free	Free	Free	2.5%	Free-4.30 yen/kg
7902.00	Zinc waste and scrap	Free	Free	Free	Free	Free	Free
79.03	Zinc dust, powders and flakes						
7903.10	Zinc dust	Free	Free	Free	Free	2.5%	3%
7903.90	Other:	Free	Free	Free	Free	2.5%	3%
7904.00	Zinc bars, rods, profiles and wires	Free	Free	Free	Free	5%	3%
7905.00	Zinc plates, sheets, strip and foil	Free	Free	Free	Free	5%	3%
7906.00	Zinc tubes, pipes, and tube or pipe fittings (for example, couplings, elbows, sleeves)	3%	Free	Free	Free	5%	3%
7907.00	Other articles of zinc						
7907.00.10	Anodes for electroplating	Free	Free	Free	Free	5%	3%
7907.00.20	Discs or slugs, containing by weight 90% or more of zinc; gutters, roof capping, skylight frames and other fabricated building components	3%	Free	Free	Free	5%	3%
7907.00.90	Other	3%	3%	Free	Free	5%	3%

Sources: *Customs Tariff*, effective January 2001, Canada Customs and Revenue Agency; *Harmonized Tariff Schedule of the United States*, 2001; *Worldtariff Guidebook on Customs Tariff Schedules of Import Duties of the European Union* (40th Annual Edition: 2000); *Customs Tariff Schedules of Japan*, 2000.

¹ Duty suspension may apply for certain goods. ² WTO rate is shown; lower tariff rates may apply circumstantially.

Note: Where there is a tariff "range," a complete match of the HS code was not available; therefore, the high and low for the product in question are shown.

TABLE 1. CANADA, ZINC PRODUCTION AND TRADE, 1999 AND 2000, AND USE, 1997-99

Item No.	1999		2000P		
	(tonnes)	(\$000)	(tonnes)	(\$000)	
PRODUCTION					
All forms ¹					
Newfoundland	—	—	—	—	
Prince Edward Island	—	—	—	—	
Nova Scotia	—	—	—	—	
New Brunswick	283 925	453 996	237 535	397 871	
Quebec	184 303	294 700	197 928	331 529	
Ontario	86 028	137 558	85 365	142 986	
Manitoba	86 911	138 970	80 929	135 557	
Saskatchewan	315	503	1 033	1 731	
Alberta	—	—	—	—	
British Columbia	126 170	201 745	147 710	247 415	
Yukon	—	—	—	—	
Northwest Territories	—	—	—	—	
Nunavut	195 670	312 877	185 185	310 184	
Total	963 321	1 540 350	935 686	1 567 274	
Mine output ²	1 020 982	..	994 589	..	
Refined ³	776 927	..	787 527	..	
EXPORTS					
2608.00.30	Zinc content in zinc ores and concentrates				
	Belgium	81 280	90 991	75 089	88 030
	Sweden	46 895	80 057	46 629	80 477
	Finland	25 883	43 885	45 797	65 902
	Spain	43 234	45 609	31 398	35 453
	Japan	13 476	9 024	34 892	33 305
	Italy	12 012	17 266	15 246	23 704
	Other countries	104 145	120 613	54 682	64 787
	Total	326 925	407 445	303 733	391 658
2603.00.30	Zinc content in copper	737	500	7 757	5 599
2607.00.30	Zinc content in lead	—	—	—	—
2616.10.30	Zinc content in silver	—	—	—	—
2620.11	Ash and residues containing hard zinc spelter				
	India	—	—	21	15
	United States	175	280	—	—
	Total	175	280	21	15
2620.19	Ash and residues containing mainly zinc, n.e.s.				
	United States	9 311	8 850	7 838	7 277
	South Africa	—	—	102	124
	India	164	152	84	82
	Other countries	42	40	40	42
	Total	9 517	9 042	8 064	7 525
2817.00	Zinc oxide; zinc peroxide				
	United States	35 857	58 213	44 007	72 848
	France	206	320	73	442
	Italy	—	—	331	423
	Norway	54	86	238	410
	Other countries	88	158	1 037	1 103
	Total	36 205	58 777	45 686	75 226
2833.26	Zinc sulphate				
	United States	48	117	23	41
	Total	48	117	23	41
7901.11	Zinc, not alloyed, unwrought, containing by weight 99.99% or more of zinc				
	United States	363 869	610 579	350 299	631 763
	Taiwan	11 143	18 127	6 287	10 871
	Malaysia	5 245	8 309	4 864	8 651
	Hong Kong	2 503	4 114	4 174	7 397
	Singapore	4 180	6 814	3 386	5 969
	Philippines	4 878	7 604	3 675	6 267
	Indonesia	5 094	8 265	2 985	5 201
	Other countries	3 052	4 915	1 052	1 821
	Total	399 964	668 727	376 722	677 940

TABLE 1 (cont'd)

Item No.		1999		2000P	
		(tonnes)	(\$000)	(tonnes)	(\$000)
EXPORTS (cont'd)					
7901.12	Zinc, not alloyed, unwrought, containing by weight less than 99.99% of zinc				
	United States	179 259	299 865	187 166	332 883
	Hong Kong	4 806	8 797	9 064	17 491
	Taiwan	3 899	6 748	7 877	14 119
	Indonesia	1 859	3 275	4 799	8 772
	Other countries	21 006	35 457	16 960	29 202
	Total	210 829	354 142	225 866	402 467
7901.20	Zinc alloys, unwrought				
	United States	574	1 111	1 734	3 345
	Total	574	1 111	1 734	3 345
7902.00	Zinc waste and scrap				
	United States	24 335	18 399	33 547	22 705
	Taiwan	1 052	1 172	2 400	2 366
	India	100	91	386	292
	Other countries	41	47	61	66
	Total	25 528	19 709	36 394	25 429
7903.10	Zinc dust				
	United States	6 242	14 151	5 287	12 915
	South Africa	-	-	41	49
	Other countries	15	23	21	50
	Total	6 257	14 174	5 349	13 014
7903.90	Zinc powders and flakes				
	United States	7 251	19 816	8 339	24 466
	Other countries	326	540	587	1 038
	Total	7 577	20 356	8 926	25 504
7904.00	Zinc bars, rods, profiles and wire				
	United States	93	593	152	679
	Other countries	2	10	-	-
	Total	95	603	152	679
7905.00	Zinc plates, sheets, strip and foil				
	United States	19	104	10	99
	Other countries	18	78	-	-
	Total	37	182	10	99
7906.00	Zinc tubes, pipes and tube or pipe fittings (for example, couplings, elbows, sleeves)				
	United States	1 610	11 567	1 176	8 084
	Other countries	-	-	2	36
	Total	1 610	11 567	1 178	8 120
7907.00	Other articles of zinc				
	United States	2 763	20 941	3 644	24 443
	Other countries	14	99	78	273
	Total	2 777	21 040	3 722	24 716
	Total exports		1 587 772		1 661 377
IMPORTS					
2608.00.00.30	Zinc content in zinc ores and concentrates	266 455	130 596	207 676	128 115
2603.00.00.30	Zinc content in copper ores and concentrates	3	3	3	3
2607.00.00.30	Zinc content in lead ores and concentrates	1 165	999	3 149	2 614
2616.10.00.30	Zinc content in silver ores and concentrates	37 798	30 781	20 889	17 275
2620.11	Ash and residues containing hard zinc spelter	4	5	25	46
2620.19	Ash and residues containing mainly zinc, n.e.s.	1 050	853	1 518	1 767
2817.00	Zinc oxide; zinc peroxide	5 772	7 669	7 521	10 525
2833.26	Zinc sulphate	4 415	3 179	5 659	3 954
7901.11	Zinc, not alloyed, unwrought, containing by weight 99.99% or more of zinc	2 425	3 789	3 153	5 267
7901.12	Zinc, not alloyed, unwrought, containing by weight less than 99.99% of zinc	1 597	2 399	3 484	5 516
7901.20	Zinc alloys, unwrought	8 354	15 544	7 870	15 194

TABLE 1 (cont'd)

Item No.	1999		2000 ^p							
	(tonnes)	(\$000)	(tonnes)	(\$000)						
IMPORTS (cont'd)										
7902.00	Zinc waste and scrap	831	747	408	393					
7903.10	Zinc dust	3 632	7 425	5 019	10 307					
7903.90	Zinc powders and flakes	369	587	588	1 191					
7904.00	Zinc bars, rods, profiles and wire	8 483	13 983	8 664	15 315					
7905.00	Zinc plates, sheets, strip and foil	1 038	2 940	1 124	4 701					
7906.00	Zinc tubes, pipes and tube or pipe fittings (for example, couplings, elbows, sleeves)	1 911	11 484	1 771	12 369					
7907.00	Other articles of zinc	5 815	23 974	7 285	28 699					
	Total imports		256 957		263 251					
1997										
Primary			1998^a			1999^{pa}				
Recycled			Primary			Recycled				
Total			Total			Total				
(tonnes)										
QUANTITY USED^{5,6}										
Zinc used for or in the production of:										
	Copper alloys (brass, bronze, etc.)	x	x	2 717	x	x	2 987	x	x	2 395
	Galvanizing: electro	x	x	2 349	x	x	2 662	x	x	2 472
	hot dip	x	x	77 034	x	x	76 208	x	x	75 716
	Zinc die-cast alloys	x	x	20 747	x	x	27 402	x	x	29 550
	Other products (including rolled and ribbon zinc, zinc oxides)	x	x	30 706	x	x	29 164	x	x	33 055
	Total	131 035	2 518	133 553	137 610	814	138 424	142 451	737	143 188
	User stocks, year-end	10 133	65	10 198	8 994	59	9 053	12 175	89	12 264

Sources: Natural Resources Canada; Statistics Canada.

– Nil; . . Not available; n.e.s. Not elsewhere specified; ^p Preliminary; x Confidential.^a Increase in number of companies being surveyed.¹ New refined zinc produced from domestic primary materials (concentrates, slags, residues, etc.) plus estimated recoverable zinc in ores and concentrates shipped for export. ² Zinc content of ores and concentrates produced. ³ Refined zinc produced from domestic and imported ores. ⁴ Includes HS classes 2603.00.30, 2607.00.30 and 2616.10.30. ⁵ User survey does not represent all Canadian users and is therefore consistently less than the apparent quantity used. ⁶ Due to confidentiality in some end-use categories, a breakdown of primary and recycled sources is not provided in order to be consistent.

Note: Numbers may not add to totals due to rounding.

TABLE 2. CANADA, ZINC PRODUCTION AND EXPORTS,¹ 1975, 1980 AND 1986-2000

	Production		Exports		
	All Forms ²	Refined ³	In Ores and Concentrates	Refined	Total
	(tonnes)				
1975	1 055 151	426 902	705 088	247 474	952 562
1980	883 697	591 565	434 178	471 949	906 127
1986	988 173	570 981	450 249	427 176	877 425
1987	1 157 936	609 909	613 185	441 227	1 054 412
1988	1 370 000	703 206	816 885	551 521	1 368 406
1989	1 272 854	669 677	614 223	495 061	1 109 284
1990	1 179 372	591 786	716 185	452 251	1 168 436
1991	1 083 008	660 552	566 815	520 508	1 087 323
1992	1 195 736	671 702	678 172	509 744	1 187 916
1993	990 727	659 881	455 953	493 264	949 217
1994	976 309	690 965	450 320	551 168	1 001 488
1995	1 094 703	720 346	609 575	533 179	1 142 754
1996	1 162 720	716 467	670 789 ^r	581 604	1 252 393 ^r
1997	1 026 864 ^r	703 798 ^r	489 697 ^r	546 964 ^r	1 036 661 ^r
1998	991 584	745 131	425 341	576 926	1 002 267
1999	963 321	776 927	327 662	610 793	938 455
2000 ^p	935 686	787 527	311 490	602 588	914 078

Sources: Natural Resources Canada; Statistics Canada.

^p Preliminary; ^r Revised.¹ Beginning in 1988, exports are based on the new Harmonized System and may not be in complete accordance with previous method of reporting. Ores and concentrates include HS classes 2608.00.30, 2603.00.30, 2607.00.30 and 2616.10.30. Refined includes HS classes 7901.11 and 7901.12. ² New refined zinc produced from domestic primary materials (concentrates, slags, residues, etc.) plus estimated recoverable zinc in ores and concentrates shipped for export. ³ Refined zinc produced from domestic and imported ores.

TABLE 3. WESTERN WORLD, PRIMARY ZINC STATISTICS, 1996-2000

	1996	1997	1998	1999	2000P
	(000 tonnes)				
Mine production (zinc content)	5 565	5 495	5 657	5 857	6 240
Metal production	5 509	5 582	5 718	5 834	6 161
Metal used	6 238	6 429	6 524	6 712	6 976

Source: International Lead and Zinc Study Group.
P Preliminary.

TABLE 4. WORLD MINE PRODUCTION OF ZINC, 1996-2000

	1996	1997	1998	1999	2000P
	(000 tonnes)				
EUROPE					
Finland	27	32	31	20	16
Ireland	163	193	180	200	263
Poland	159	158	160	148	148
Russia	126	121	114	132	136
Spain	140	147	128	154	204
Sweden	160	155	161	175	177
Others	123	119	106	97	77
Subtotal	898	925	880	926	1 021
AFRICA					
Morocco	82	90	112	112	110
Namibia	35	37	42	35	40
South Africa	77	71	70	70	63
Others	38	10	33	51	47
Subtotal	232	208	257	268	260
OCEANIA					
Australia	1 008	972	1 020	1 110	1 380
AMERICAS					
Bolivia	145	154	151	145	144
Brazil	128	124	88	96	93
Canada	1 223	1 077	1 062	1 021	997
Mexico	378	379	395	354	384
Peru	761	868	869	900	910
United States	628	632	755	843	824
Others	103	107	88	106	109
Subtotal	3 366	3 341	3 408	3 465	3 461
ASIA					
China	1 121	1 210	1 273	1 476	1 710
India	154	142	195	185	208
Iran	76	77	82	79	80
Japan	79	72	68	64	64
Kazakstan	157	223	224	288	322
North Korea	80	60	44	37	34
Thailand	19	15	25	24	27
Turkey	68	64	58	57	48
Others	38	28	29	32	28
Subtotal	1 792	1 890	1 998	2 242	2 521
Total world	7 296	7 337	7 563	8 009	8 643
Total Western World	5 565	5 495	5 687	5 857	6 240

Source: International Lead and Zinc Study Group.
P Preliminary.

TABLE 5. WORLD ZINC METAL PRODUCTION,¹ 1996-2000

	1996	1997	1998	1999	2000P
	(000 tonnes)				
EUROPE					
Belgium	207	203	205	232	264
Finland	179	176	199	225	223
France	324	317	320	318	318
Germany	362	348	361	361	357
Italy	269	268	232	145	170
Netherlands	207	203	217	221	217
Norway	135	136	138	144	138
Poland	163	171	175	180	174
Russia	172	189	192	221	222
Spain	363	378	385	383	391
Others	277	289	265	252	263
Subtotal	2 658	2 678	2 689	2 682	2 737
AFRICA					
Algeria	30	30	31	32	33
South Africa	101	110	107	108	103
Others	—	—	—	—	—
Subtotal	131	140	138	140	136
AMERICAS					
Argentina	36	39	39	40	36
Brazil	187	186	177	187	195
Canada	716	704	745	777	780
Mexico	222	230	229	219	245
Peru	173	173	184	191	200
United States	366	366	368	372	400
Subtotal	1 700	1 698	1 741	1 785	1 856
ASIA					
China	1 185	1 434	1 486	1 703	1 919
India	149	166	180	189	204
Japan	599	603	608	633	654
Kazakstan	169	185	240	243	262
South Korea	287	335	390	430	477
Thailand	73	84	89	95	101
Others	164	152	148	116	89
Subtotal	2 626	2 959	3 141	3 409	3 706
OCEANIA					
Australia	327	307	311	344	493
Total world	7 442	7 783	8 021	8 361	8 928
Total Western World	5 509	5 583	5 719	5 834	6 161

Source: International Lead and Zinc Study Group.

— Nil; P Preliminary.

¹ 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 from which it is produced, i.e., whether ores, concentrates, residues, slag or scrap. Remelted zinc and zinc dusts are excluded.

TABLE 6. ZINC USE,¹ BY COUNTRY AND BY REGION, 1996-2000

	1996	1997	1998	1999	2000P
	(000 tonnes)				
EUROPE					
Belgium	235	260	260	275	285
France	248	271	285	298	310
Germany	501	530	573	561	530
Italy	336	354	373	336	377
Russia	130	146	110	120	119
Spain	150	160	197	190	203
United Kingdom	226	224	219	220	210
Others	597	628	625	607	648
Subtotal	2 423	2 573	2 642	2 607	2 682
AFRICA					
South Africa	95	98	91	87	90
Others	60	57	62	68	72
Subtotal	155	155	153	155	162
OCEANIA					
Australia	177	183	192	210	217
New Zealand	20	18	17	15	17
Subtotal	197	201	209	226	233
AMERICAS					
Brazil	185	190	177	187	192
Canada	151	161	170	169	176
Mexico	152	178	186	200	212
United States	1 210	1 243	1 313	1 342	1 358
Others	151	150	156	162	159
Subtotal	1 849	1 922	2 002	2 060	2 097
ASIA					
China	829	830	920	1 200	1 350
India	214	220	232	254	270
Japan	736	742	659	634	676
South Korea	364	343	318	389	438
Taiwan	194	225	241	273	294
Others	589	556	523	568	596
Subtotal	2 926	2 916	2 893	3 318	3 624
Total world	7 550	7 767	7 900	8 366	8 798
Total Western World	6 238	6 429	6 524	6 712	6 976

Source: International Lead and Zinc Study Group.

P Preliminary.

¹Total refined zinc use, 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 dusts are excluded.

TABLE 7. CANADA, ZINC METAL CAPACITY, 2000

Company and Location	Annual Rated Capacity (000 tonnes of slab zinc)
PRIMARY	
Canadian Electrolytic Zinc Limited Valleyfield, Quebec	250
Falconbridge Limited Timmins, Ontario	133
Hudson Bay Mining and Smelting Co., Limited Flin Flon, Manitoba	95
Cominco Ltd. Trail, British Columbia	290
Total primary, Canada	768

Source: Natural Resources Canada.

TABLE 8. MONTHLY AVERAGE ZINC PRICES, 1999 AND 2000

	LME Special High Grade Settlement (US\$/t)
1999	
January	932.7
February	1 017.3
March	1 030.0
April	1 019.0
May	1 040.7
June	1 000.5
July	1 072.1
August	1 130.6
September	1 193.7
October	1 148.7
November	1 147.2
December	1 183.7
Yearly average	1 077.3
2000	
January	1 178.8
February	1 094.2
March	1 116.4
April	1 127.6
May	1 156.8
June	1 117.9
July	1 136.2
August	1 169.8
September	1 224.4
October	1 095.9
November	1 059.1
December	1 059.8
Yearly average	1 128.1

Source: International Lead and Zinc Study Group.