General Review

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OVERVIEW

Despite falling metal prices in the latter part of the year, the Canadian mineral industry in 1997 proved to be a strong and positive contributor within a generally improving Canadian economy.

Canada's Real Gross Domestic Product (GDP) increased by 3.9% in 1997 as a combination of low inflation and low interest rates buoyed the Canadian economy. Consumer confidence and spending were strong as the employment picture gradually brightened. Indeed, the unemployment rate fell to 8.6% in December from a 1997 high of 9.7% in January and even higher levels during 1996. Its strong economic performance led to Canada having one of the best economic performances of the G7 countries in 1997. On the trade front, Canada's current account returned to a deficit position during 1997 after being in surplus in 1996 and, consequently, the Canadian dollar fell against the U.S. dollar in the latter part of the year.

Preliminary estimates of the value of production for all sectors of the mining and fuel extraction industry showed an increase of 0.3% to $49.8 billion, up only slightly from the $49.7 billion recorded in 1996. This compares to growth of 14.6% in 1996 and 5.3% in 1995. When fuels are excluded, the value of production for the non-fuel industry edged up by only 0.1% to $17.1 billion in 1997 as growth in nonmetals and structural materials overcame a 2.3% decrease in the value of metals production.

Mineral exports continued to perform well, although, in the later stages of 1997, falling prices for most minerals and metals had a negative impact on Canadian producers and the value of their exports. Nevertheless, exports of minerals and mineral products increased by 5.4% to $72.8 billion, resulting in a trade surplus for these products of $7.4 billion.

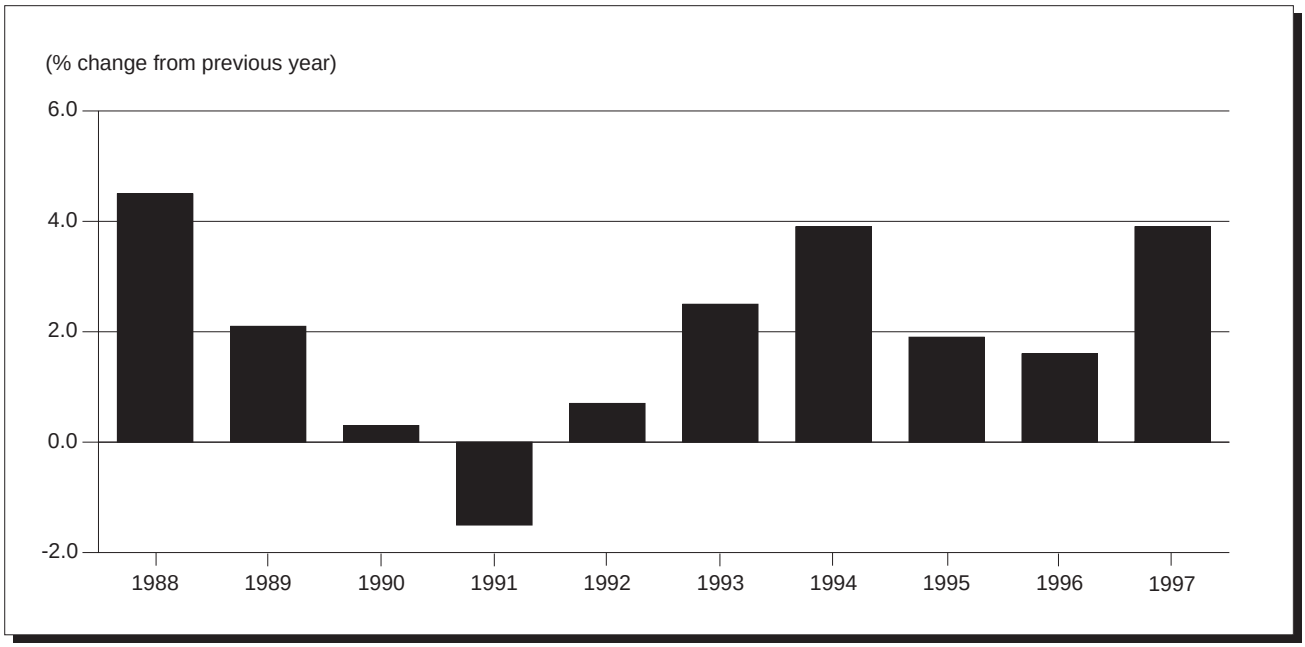
Prices for most nonferrous mineral commodities were strong during the first half of the year in response to robust demand conditions around the world but, in the last months of the year, were down sharply, mainly in reaction to the Asian financial and economic crisis. Prices for the precious metals, silver and platinum performed well, whereas gold prices declined steadily throughout the year. As a result of falling prices for key mineral commodities, the profits of the Canadian mining sector declined in 1997 when compared to 1996.

Several developments had a significant impact on the Canadian mining industry in 1997, including:

- the fall-out from the Asian financial and economic crisis of late 1997;
- the repercussions from the Bre-X incident in Indonesia;
- the continuing progress by Voisey's Bay Nickel Company Limited to bring its very sizeable nickel-copper-cobalt deposit in Labrador into production;
- the development of Canada's first diamond mine in the Northwest Territories and signs that a second producing mine may be in the offing;
- a moderate decline in exploration expenditures in Canada to $804 million;
- 21 mine openings (11 new mines and 10 re-openings), while 20 mines closed (9 suspensions and 11 closures); and
- the total direct employment in the mineral industry increasing by some 19 000 to just over 368 000.

The outlook for the Canadian mineral industry in 1998 is clouded by the dramatic price declines that occurred for most major mineral commodities in late 1997, particularly in December, and which continued into early 1998. Several gold producers had already started to shut down or scale back production in 1997 as the declining price of gold during the year caused

Figure 1
Canadian Economic Activity, Percent Change in GDP, 1988-97
(Factor Cost at 1992 Prices)



Source: Statistics Canada.
Note: Data for 1997 are estimated.

certain operations to become uneconomic. This trend is likely to intensify in early 1998 with closures, restructuring and mergers being considered by gold producers. Other producers, including major nonferrous producers, may have to make similar decisions should mineral commodity prices stay at depressed levels. Although demand conditions are expected to remain firm in North America, Europe and Latin America, it is unclear whether falling demand in the Far East will diminish economic activity in other parts of the world. The market meltdown for raw materials, caused largely by depreciated currencies in the Far East and the shaky financial status of many Asian economies, will likely take time to sort out and, as a result, many mineral commodity prices will likely remain weak during 1998. New mines scheduled to come on stream around the world will put additional downward pressure on prices. Thus, 1998 could prove to be a difficult year for the Canadian mineral industry. In order to remain competitive in this environment, Canadian companies will have to intensify efforts to reduce operating costs. It is also likely that exploration activity will decline in response to low commodity prices should they persist and to a backlash from the exploration scams that took place in 1997, including the high-profile Bre-X incident, making it difficult for junior mining companies to obtain appropriate financing for exploration projects.

THE MINERAL INDUSTRY IN 1997

The Canadian mineral industry, excluding fuels, exhibited modest growth in 1997, up 0.1%, or $25 million, from 1996 as the value of production increased to $17.1 billion. Strong growth was evident for the structural materials group, which was up by 5.8% to $2.8 billion, and for nonmetals which increased by 5.2% to $2.9 billion, as both groups responded to buoyant markets at home and abroad. This growth was, however, almost negated by the performance of the metals group. Metals, which are very dependent on export markets, were in strong demand for much of the year. Nevertheless, some markets softened, oversupply conditions for certain metals became evident as inventories rose, and, when linked with the Asian crisis late in the year, prices fell dramatically from earlier highs. As a direct consequence of these factors, the value of metals production declined by 2.3% to $11.4 billion.

Canada's GDP increased by 3.9% in 1997 to $691.0 billion, up strongly from the 1.6% growth registered in 1996 and, as shown in Figure 1, the best showing since 1994. The mineral industry accounted for 3.8%, or $26.2 billion, of Canadian GDP, up by 4.1% from 1996. Geographically, the importance of the industry is much more significant on a regional and commu-

nity basis as, in many parts of Canada, particularly in the North, it provides the major economic stimulus.

Low and stable inflation rates, together with low interest rates, led to a buoyant Canadian economy in 1997. Inflation averaged 1.6% for the year, and declined even further in the last two months of the year to fall to under 1%. Interest rates remained at historical lows even though the Bank of Canada raised interest rates four times during the year by a total of 125 basis points and brought the bank rate to 4.5% at year-end. Consumer confidence and spending was upbeat as automotive sales increased by 18.3% to nearly 1.4 million vehicles, the best year since 1989, and new residential construction increased by almost 19% to nearly 150 000 dwellings. The unemployment rate fell to 8.6% at year-end, compared to 9.6% at the end of 1996, as employment grew by 2.7%. Indeed, the strong economic performance led to Canada having one of the best economic performances of the G7 countries in 1997. However, on the trade front, Canada's current account returned to a deficit position during 1997 after experiencing a surplus in 1996, due in part to business purchases of foreign machinery, equipment and industrial goods needed to supply the strengthening Canadian economy. This deterioration in Canada's trade balance was a major reason why the Canadian dollar, when compared to the U.S. dollar, fell by some 500 basis points between January and December to end the year at just under US70¢.

Prices for nonferrous metals were strong during the first half of the year in response to robust demand conditions around the world but, by the third quarter, most had peaked and had begun to decline. The price of zinc was particularly strong, due in large part to a strong automotive sector, increasing by over 50% before peaking at just under US80¢/lb in August. However, in the last quarter of 1997, nonferrous prices began to soften and, by year-end, with the exception of aluminum, prices had dropped sharply from their highs. The fall-out resulting from the Asian financial crisis in the last few months of the year was a major underlying factor. For precious metals, gold declined almost steadily during the year and was trading at about US$290/oz at year-end, down about US$80/oz from January prices. The selling, and intentions of selling, of gold bullion reserves by central banks, low inflation levels around the world and the Asian crisis combined to adversely affect gold prices even though physical gold demand, particularly for jewellery, remained strong. Silver, on the other hand, which normally follows gold trends, finished the year trading near its high for the year as jewellery and photography demand remained sound and strong investor interest continued. Platinum and palladium remained strong, particularly at mid-year, as problems were experienced at Russia's Noril'sk mining operations. Iron ore prices stayed flat and uranium prices were down, while potash and sulphur prices rose higher in 1997 than in 1996.

In terms of the production of Canada's leading minerals, increases in output volumes in excess of the 5% mark were recorded for iron ore, potash and salt, whereas declines in excess of 5% were experienced by zinc, lead, molybdenum, the platinum group metals, asbestos and peat. When prices are factored in, the production values of many commodities fell in 1997, some dramatically. Decreases in the value of production compared to 1996 were most pronounced for lead, down 41.7%; asbestos, down 12.7%; molybdenum, down 13.0%; gold, down 10.3%; uranium, down 9.9%; cobalt, down 8.6%; silver, down 8.3%; and nickel, down 7.5%.

Canadian mining companies reported reduced profits during 1997 chiefly due to lower commodity prices. Many showed profits declining by 50% or more with some companies, notably gold producers, suffering losses. In the third quarter, operating profits for the metals sector as a whole declined by nearly 28% compared to the second quarter of 1997. However, capacity utilization in the mining and quarrying industries increased in every quarter of 1997 to end the year at 91.8%, up from the 84.1% recorded in the first quarter. Similarly, the primary metals industry (i.e., the smelting and refining industry) achieved a capacity utilization rate of 94.9% in the final quarter, up from 86.7% in the first quarter of 1997 and the highest rate since the end of 1994.

Asian countries are major consumers of mineral commodities and, over the past decade, many of these countries have provided significant trade opportunities for major minerals- and metals-exporting countries such as Canada. In the latter stages of 1997, it became clear that there were serious problems in this part of the world with declining real estate values, falling stock market prices, currency depreciations and shaky financial sectors in countries such as Thailand, Malaysia, Indonesia and the Republic of Korea (South Korea). As a result of this turmoil and the uncertainty of demand for raw materials in these economies, prices for raw materials began to tumble and, by year-end, most mineral commodities were trading at levels that were dramatically down from their highs for the year. Prices were also affected to some degree by a softening of demand in other markets and by planned increases to mineral supply capabilities for commodities such as copper and nickel. It was clear, however, that the Asian crisis was a major reason for the sharp fall in commodity prices in the last months of 1997.

In early 1997, Bre-X Minerals Ltd. announced that it had proven reserves of 71 million oz of gold at its Busang deposit in Kalimantan in Indonesia. This would have made that deposit one of the largest gold discoveries in history. Shortly thereafter, following a realignment of the ownership of the deposit that was imposed by the Indonesian government, Freeport-McMoRan Copper and Gold Inc. became the new operator of the property. In March, as part of its due diligence, Freeport indicated that its initial drilling

on the property had failed to confirm Bre-X's findings and that only traces of gold had been found. Subsequently, all drilling results were reviewed by an independent consulting firm hired by Bre-X, Strathcona Mineral Services Ltd. In May, Strathcona's final report stated that the Bre-X core samples had been tampered with (or "salted") on an unprecedented scale and that there was no gold of any significance evident in the holes drilled by Bre-X. It was now clear that a major fraud had been committed on investors and on the public, which precipitated an investigation by the RCMP. Immediately thereafter, the Ontario Securities Commission and the Washington Securities & Exchange Commission began investigations to see if any disclosure requirements or insider trading laws had been violated. Civil actions have been brought forward by both individuals and groups of shareholders. At the end of 1997, all of these investigations were continuing. This major fraud tainted the entire mineral exploration industry. Similar scams uncovered at two other properties in 1997, one in Nevada and the other in Ghana, exacerbated the situation. The most immediate impact on the industry has been to make the raising of exploration financing more difficult, particularly for junior companies. On a constructive note, in response to the Bre-X incident, securities regulations for provisions such as continuous disclosure requirements, better insider trading rules and improved stock exchange listing requirements were being strengthened and improved.

Voisey's Bay Nickel Company Limited, a wholly owned subsidiary of Inco Limited, continued development of its massive nickel-copper-cobalt deposit near Nain in northern Labrador during 1997. Late in the year, Voisey's Bay submitted its environmental impact statement for the mine, mill and related facilities and infrastructure to regulatory authorities and the environmental assessment panel. The panel's review and the public review process were expected to start early in 1998. The company was also finalizing its environmental study of the smelter and refinery facilities expected to be located at Argentia, Newfoundland, with the conclusion of this study planned for early 1998. Because these environmental requirements and Aboriginal agreements are taking longer to complete than had been originally forecast, it is estimated that the earliest that mining could start at Voisey's Bay would be 2001, even in the event that the project receives mine approval by the end of 1998.

Pre-production activity continued at the Ekati diamond project after government approval for mine development was received early in the year. BHP Diamonds Inc. owns 51% of this project, Dia Met Minerals Ltd. owns 29%, and the remainder is owned by private interests. The project, located at Lac de Gras in the Northwest Territories, some 300 km northeast of Yellowknife, is scheduled to begin production as Canada's first diamond mine in late 1998. Published estimates indicate proven and probable reserves of 65.9 million tonnes (Mt) averaging 1.09 carats per tonne (ct/t), valued at US$84/ct. The capital costs for the mine are now estimated at approximately US$700 million. Ongoing exploration by BHP, the operator of the project, continues to uncover diamondiferous kimberlite pipes on the property. Another diamond project making advances towards a production decision is the Diavik development, located some 30 km south of Ekati at Lac de Gras. Diavik Diamond Mines Inc., the operator and owner of 60% of the project, along with Aber Resources Ltd. who holds the remaining 40%, completed a prefeasibility study in 1997 on the project, which consists of four kimberlite pipes. The pipes have undergone extensive drilling and two have been subject to underground bulk sampling. One of the pipes is estimated by the companies to contain 11.3 Mt of reserves grading 4.6 ct/t with an average value of US$63/t. It is expected that, in early 1998, the companies will announce plans for the final feasibility study and will initiate the process to obtain the necessary government approvals for mine development.

In November, Noranda Inc. announced plans to go forward with its $720 million Magnola project at Asbestos, Quebec, to process asbestos mine tailings in order to recover its magnesium contents. The primary magnesium plant, based on technology developed by Noranda scientists, will produce pure and alloy products for the aluminum and automotive castings industries. Its initial annual capacity will be 58 000 t. Construction is expected to begin in 1998 following the required government approvals, with start-up of operations scheduled for mid-2000. The asbestos tailings are estimated to contain 250 Mt grading 24% magnesium.

Exploration expenditures in Canada remained relatively robust in 1997, dropping slightly to an estimated $804 million from $895 million in the previous year. There was a decrease in exploration work at the two big mineral discoveries of the past several years, namely BHP's diamond project at Lac de Gras in the Northwest Territories and Inco's nickel-copper-cobalt project at Voisey's Bay in Labrador, as both of these companies have been diverting more resources to mine development in order to bring their properties into production. Nonetheless, significant exploration continues to take place in these areas by these companies and others. Areas of exploration interest in Canada included the Buffalo Hills region near Lesser Slave Lake in north-central Alberta for diamonds, the Finlayson Lake area in the Yukon for lead-zinc-copper, northeastern Ontario east of Timmins for copper-zinc, and Lebel-sur-Quévillon in northwestern Quebec for gold. Grassroots exploration in late 1997 was being adversely affected by "salting" scams, most notably by the Bre-X gold incident in Indonesia early in 1997, making exploration financing, particularly by junior companies, more difficult to obtain as the year came to a close.

Regionally, the two leading mineral-producing provinces experienced overall declines in the value of non-fuel mineral production during 1997. The value for Ontario decreased by 3.2% to $5.5 billion and for Quebec by 3.1% to $3.3 billion. Saskatchewan increased its value of production by 15.3% to $2 billion to hold third place. British Columbia's value of production declined by 0.5% to $2.0 billion to become the fourth leading producing province. When coal is included, the value of production for British Columbia rose by 2.7% to $3.1 billion. Of the 21 mine openings, 6 were in Quebec, 4 in Ontario, 4 in British Columbia, 2 in Newfoundland, 2 in New Brunswick, 2 in the Yukon and 1 in Manitoba. Of the 20 closures recorded, 8 were in Quebec, 3 in the Northwest Territories, 3 in Newfoundland, 2 in Manitoba and 1 in each of New Brunswick, Ontario, Saskatchewan and British Columbia.

Canadian companies continued to seek exploration and development opportunities throughout the world in 1997. It is estimated that the larger Canadian-based companies spent some $1.5 billion on exploration activities outside of Canada during the year. Countries in which Canadian companies had a major presence included the United States, Mexico, Argentina, Bolivia, Colombia, Peru, Papua New Guinea, Russia, Finland, Greenland, Ireland, Sweden, Angola, Botswana, Slovakia, Haiti and Cuba. Canadian companies with major mining projects under development in foreign countries include Placer Dome Inc. with its Las Cristinas gold property in Venezuela, Barrick Gold Corporation with its Pascua gold project in Chile and its Pierina gold project in Peru, Falconbridge Limited with its Collahuasi copper project in Chile, and Inmet Mining Corp. and Rio Algom with their Antamina copper-zinc property in Peru.

In February, the Government of Ontario introduced the Lands for Life program, a public process designed to provide the government with views on the use for 46 million ha of the province's Crown land. Three 14-member roundtables comprising representatives from environmental, Aboriginal, forestry, mining, tourism and governmental groups were appointed. These groups are expected to submit their recommendations to the Ontario Ministry of Natural Resources in mid-1998. Mineral explorationists and mining interests have indicated that the recommendations coming from this process could have far-reaching impacts on future mineral exploration and development activities in Ontario.

A review of federal-provincial/territorial regulations affecting the mining industry was launched at the 54th annual mines ministers' meeting held in July 1997. The purpose of this review is to identify opportunities by which cooperative efforts could improve existing regulatory regimes for minerals and metals. The review aims to develop new means of enhancing the efficiency and effectiveness of regulatory and related decision-making processes affecting the mineral industry. A government-industry task force, created to coordinate the process, will present the results of the review, with appropriate recommendations, to mines ministers at their annual meeting in July 1998.

The Mining Association of Canada (MAC) announced in late 1997 that 31 of its member companies, which account for 85% of Canada's base-metal production, had reduced emissions by about 66% between 1988 and 1996. This was actually down slightly from the 68% reduction improvement made up to 1995 as a result of temporary technical problems at certain operations. These reductions stem from the federal government's voluntary ARET (Accelerated Reduction/Elimination of Toxic Substances) program. The largest decreases are for mercury at 81%, nickel at 76%, and cadmium and hydrogen sulphide at 74% each. These 31 companies are targeting a reduction of 75% to the year 2000 for nine substances, namely, arsenic, copper, mercury, zinc, hydrogen sulphide, cadmium, lead, nickel and cyanide. For arsenic, cadmium, lead, mercury and nickel, the MAC companies now plan to reach an 80% reduction by 2008 and to reduce emissions even further after that date.

The Mine Environment Neutral Drainage (MEND) program, which has been funded by federal and provincial mining departments and by Canadian mining companies, came to a close at the end of 1997 after eight years and funding of some $17.5 million. The MEND program was originally implemented to develop and apply new technologies to prevent and control acidic drainage. It is estimated that work under the program has reduced the liability due to mine acid drainage by at least $400 million. A new three-year post-MEND initiative emphasizing technology transfer in both Canada and abroad has now been established with funding to be shared between Natural Resources Canada and MAC.

During 1997, the National Geological Surveys Committee (NGSC), which comprises the Geological Survey of Canada (GSC) and the provincial and territorial geological surveys, continued to work towards making improvements in cooperation and collaboration in geoscience programming under the terms of the *Intergovernmental Geoscience Accord* signed in 1996. Since then, detailed bilateral agreements that establish mechanisms for collaboration in addressing geoscience priorities in each province have been signed, or are ready for signing, between the GSC and nine of the provinces/territories. As a result of these agreements, the GSC is now carrying out its programs as part of integrated work plans in Nova Scotia, New Brunswick, Manitoba, Saskatchewan, British Columbia, the Yukon and Northwest Territories. During 1997, the NGSC also participated in a review with the Canadian mineral industry to investigate alternative funding mechanisms for Canada's geological surveys. A final report will be jointly tabled at the annual meeting of Canadian mines ministers in July 1998.

MAC announced that its *Keep Mining in Canada* program would be extended with a new focus for another three years beyond 1997. This program, originally designed to increase awareness of the importance of the mineral industry to Canada and to respond to a trend of declining mining investment in Canada, has met its objectives and will be renamed *Mining Works in Canada*, focusing on the positive contribution that the industry makes to the Canadian economy.

A STATISTICAL PORTRAIT OF THE CANADIAN MINERAL INDUSTRY

The Canadian mineral industry can be characterized by the following four stages of processing activity:

- Stage I: primary mineral production (mining and concentrating);
- Stage II: metal production (smelting and refining);
- Stage III: minerals and metals-based semi-fabricated industries; and
- Stage IV: metals fabricating industries.

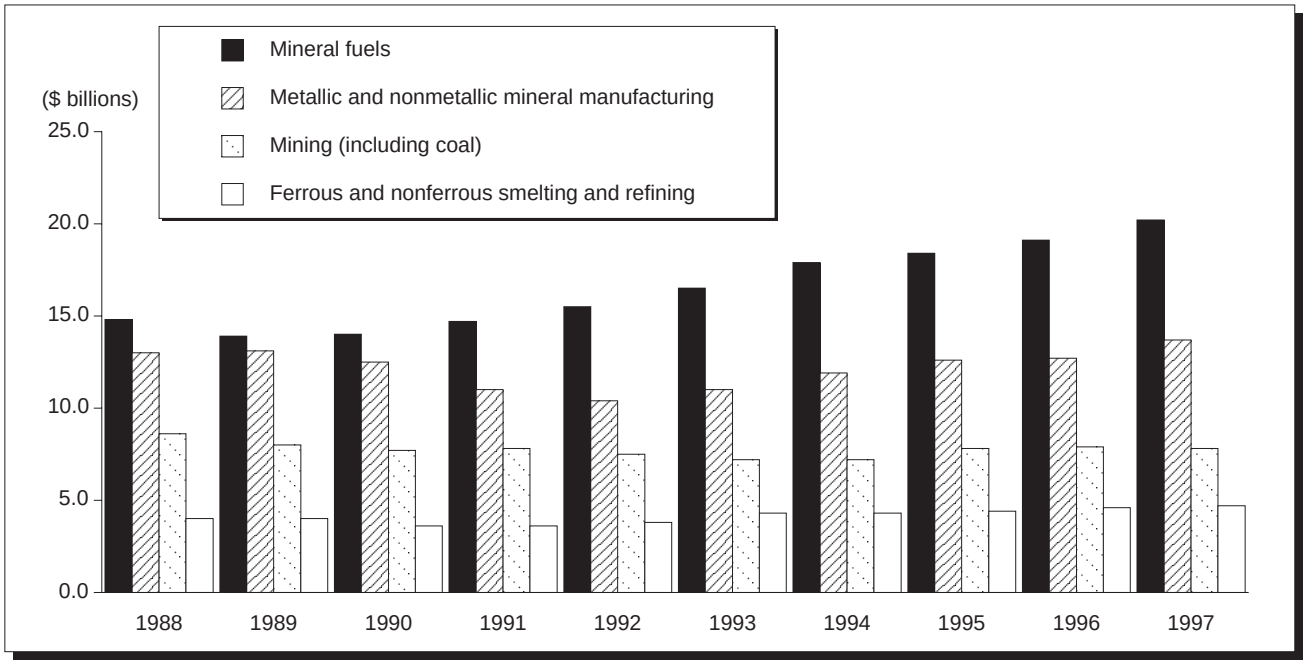
While much of the emphasis of this article tends to focus on Stage I activities (the activities of the mining industry itself), much of the portrait that follows describes the mineral industry as a whole, providing a more comprehensive overview of the overall importance of the mining industry to Canada. The mineral industry should be taken to exclude the extraction and processing of crude petroleum and natural gas, but to include both the coal and uranium mining industries.

GDP of the Mineral Industry

All four stages of the mineral industry, excluding the oil and natural gas industries, accounted for $26.2 billion, or about 3.8% of total GDP in 1997. Since the last General Review article was published, Statistics Canada has rebased its GDP by industry series from 1986 factor prices to 1992 factor prices. These more current numbers that are used for the first time in this year's article show different levels of GDP from those recorded previously.

Of this $26.2 billion, $7.8 billion, or 29.8%, can be attributed to primary mineral production as the GDP for this stage dropped by 0.5% from the corresponding level in 1996. The GDP for metal production (smelting and refining) was $4.7 billion, accounting for 17.8% of the total mineral industry GDP. The mineral manufacturing industries accounted for about 52.4% of overall mineral industry GDP, with the minerals- and metals-based semi-fabrication industries having a GDP value of $5.9 billion and the GDP of metal fabrication industries valued at some $7.8 billion. Figure 2 shows trends in the level of GDP from 1988 to 1997.

Figure 2
Gross Domestic Product at Factor Cost at 1992 Prices, 1988-97



Source: Statistics Canada.
Note: Data for 1997 are estimated.

Canadian Mineral Production

Preliminary estimates indicate that the total value of Canadian mineral production, including both fuels and non-fuel minerals, rose to $49.8 billion in 1997, an increase of 0.3% over the 1996 value of $49.7 billion. As the table below demonstrates, the total value of non-fuel production (the total value of production less mineral fuels) increased by 0.1% to $17.1 billion, or $25 million more than the 1996 total value. The value of fuel production also rose by a fractional amount to $32.7 billion, 0.4% greater than the $32.6 billion in 1996.

CANADIAN MINERAL INDUSTRY VALUE OF PRODUCTION, 1996 AND 1997

	1996r	1997p	Change
	($ millions)		(%)
Metals	11 697.5	11 425.7	-2.3
Nonmetals	2 757.5	2 902.0	5.2
Structural materials	2 641.9	2 794.3	5.8
Total nonfuels	17 096.9	17 122.0	0.1
Fuels	32 581.3	32 721.1	0.4
Total	49 678.2	49 843.2	0.3

Sources: Natural Resources Canada; Statistics Canada.
p Preliminary; r Revised.
Note: Numbers may not add to totals due to rounding.

As shown in Table 1, although industry performance was relatively flat, results were varied for individual non-fuel commodities in 1997, with significant increases in the value of zinc (+$250 million), potash (+$188 million), iron ore (+$110 million) and cement (+$58 million), while significant declines were exhibited by gold (-$289 million), nickel (-$143 million) and lead (-$106 million).

The total value of metallic mineral production fell by 2.3% from $11.7 billion in 1996 to $11.4 billion in 1997 as declines in production, lower prices or a combination of the two occurred for many of the commodities. Although gold production increased by 2.7%, its total value declined by 10.3% as prices fell. A decline in production of 1% for nickel, due mainly to work stoppages in Sudbury at mid-year at the operations of both Inco and Falconbridge, was accompanied by a decline of 7.5% in value. For lead, a significant reduction of 29.5% in production contributed to a 41.7% reduction in value. Copper exhibited a fractional decline in production of 0.9% as the total value of copper production increased by a modest 0.3%. Although zinc production fell by 12.5%, the value of zinc produced increased by 15.4% due to higher prices. The value of iron ore was up by 8.3%, reflecting an increase of 8.4% in the tonnage produced.

The value of output of the nonmetals group, which includes minerals such as asbestos, potash, salt, peat and sulphur, increased by 5.2% to $2.9 billion in 1997, up from $2.8 billion in 1996. Potash, the leading mineral in the group, increased output by 14.5% in volume and by 14.7% in value from the corresponding 1996 levels.

The value of production of structural materials, a group that includes cement, stone, sand and gravel, and lime, rose 5.8% to $2.8 billion due principally to cement, which increased its output volume by 3.7% and its value by 6.0% to just over $1 billion.

Based on the value of output, the top non-fuel commodities in 1997 were gold ($2.5 billion), copper ($2.1 billion), zinc ($1.8 billion), potash ($1.5 billion), iron ore ($1.4 billion) and cement ($1 billion). Figure 3 provides a detailed percentage breakdown of the total value of production by commodity and by province for 1996 and 1997.

In 1997, the value of non-fuel minerals accounted for 34.4% of the total value of Canada's mineral production, roughly the same as in 1996.

On a regional basis, Ontario again contributed the largest share of the non-fuel mineral output, accounting for 31.8% of the total value, followed by Quebec (19.3%), Saskatchewan (11.9%), British Columbia (11.5%), Manitoba (6.0%), Newfoundland (5.7%) and New Brunswick (5.4%). The remaining provinces and the territories accounted for 8.4%.

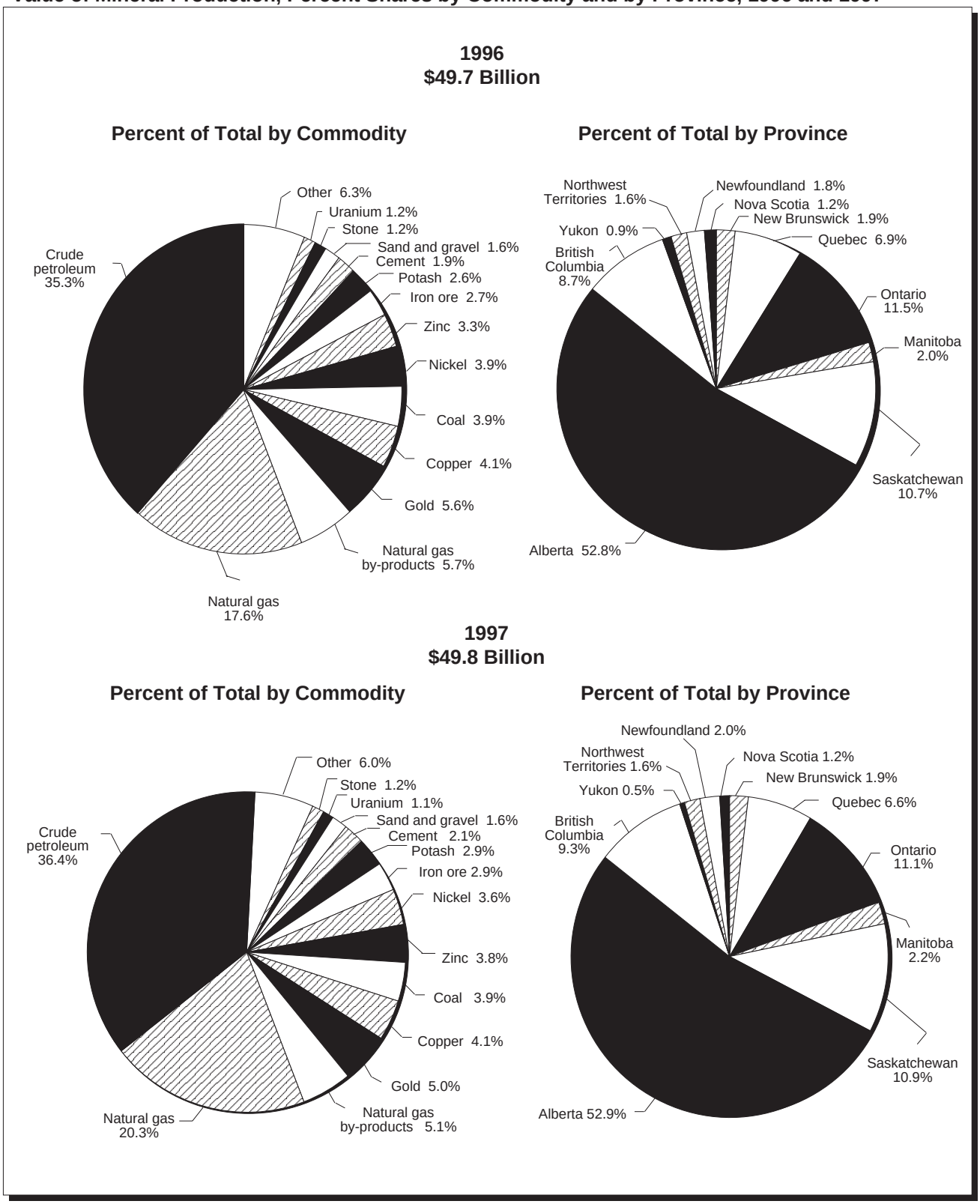
The total value of mineral fuels output rose only marginally from $32.6 billion in 1996 to $32.7 billion in 1997, an increase of 0.4%. Of the four fuel minerals, only natural gas exhibited an increase in both production and value with output rising by 2.1% to 156.8 billion cubic metres and value rising by 15.7% to $10.1 billion as prices remained strong during the year. Crude petroleum production rose by 4.1% to 122.5 million cubic metres, but the value of this output declined by 4.9% to $18.1 billion when compared to 1996. The production of natural gas by-products declined by 1.8% to a volume of 26.2 million cubic metres with the value of this production falling by 10.1% to $2.6 billion. Coal producers increased their output by 3.4% to 78.5 Mt in 1997, a new record annual production level. Nevertheless, the value of coal production fell marginally by 0.3% to $1.9 billion.

Alberta accounted for the majority of the value of mineral fuels output with 79.2% of the total, followed by Saskatchewan at 10.3%, British Columbia at 8.1%, and the remaining provinces and the territories at 2.4%.

Employment in the Mineral Industry

Total employment in the four stages of the mineral industry is estimated to have grown to just over 368 000 in 1997, up by 5.4% from approximately

Figure 3
Value of Mineral Production, Percent Shares by Commodity and by Province, 1996 and 1997



Sources: Statistics Canada; Natural Resources Canada.
Notes: The provincial shares may not add to 100% due to rounding. Prince Edward Island's share is excluded as it is too small to be expressed.

349 000 in 1996, and accounting for some 2.6% of total national employment.

Employment in Stage I (metal mining, nonmetal mining, quarrying and coal mining) was estimated at 64 400, up by some 5100, or 8.8%, from 1996. Major increases were exhibited by metal mining and nonmetal mining operations. However, some declines in employment were noted toward the end of the year because of a number of mine closures and slowdowns that occurred as the result of declining prices.

Employment in Stage II (smelting and refining) during 1997 is estimated to have stayed about the same as in 1996, dropping to 59 100 from 59 300. Stage III employment (metal semi-fabrication) rose by 5.0% to nearly 88 600 from 84 400, and Stage IV (metal fabrication) employment increased strongly by 7.6%, or by 10 000, to 156 000 in 1997.

Employment for those Canadians engaged in services incidental to mining, quarrying and oil wells, including mining diamond drilling (about 2100), rose to an estimated 11 000 in 1997, an increase of some 300, or 2.7%, when compared to 1996.

Mineral Industry Trade

Canada remains one of the world's largest exporters of minerals and metals, a fact that has had a continuing positive impact on the national standard of living. For many years, the Canadian mineral industry has made a significant contribution to Canada's trade surplus position and thus to its merchandise trade balance. The United States remains the primary destination for Canada's minerals and mineral products, receiving 81.0% of all domestic exports in 1997, followed by the European Union with 5.9% and Japan with 4.5%.

As Table 2 demonstrates, the export value of minerals and mineral products, including fuels, continued to climb, totalling $71.3 billion in 1997, an increase of $3.4 billion, or about 5.1%, over 1996. These exports include not only crude materials, but also smelted and refined products, and semi-fabricated and fabricated products. All groups (metals, nonmetals, structural materials and fuels) experienced increases in export values. Metals and metal products led the way, accounting for 47.6% of the total value, fuels for 41.6%, nonmetals for 9.6%, and structural materials for 1.2%. When coal is included with the non-fuel minerals, the total value of exports of mined minerals and their products totalled $44.4 billion in 1997 and accounted for 15.9% of Canada's total domestic exports.

The total value of metallic mineral and mineral product domestic exports increased from $32.2 billion in 1996 to $34.0 billion in 1997. Important increases were registered for aluminum (+$0.8 billion), zinc (+$0.29 billion), iron and steel (+$0.24 billion), and iron ore (+$0.23 billion), while a decline was seen in nickel (-$0.22 billion). Exports of other major metals and their products, including gold and copper, remained relatively stable.

The value of exports of nonmetallic minerals and mineral products grew from $6.4 billion in 1996 to over $6.8 billion in 1997, an increase of 6.8%. Increases in nonmetals were paced by an increase of over $0.2 billion in potash exports, recovering to the levels achieved in 1995 in terms of value and exceeding the volume of exports reached in that year.

The value of structural material exports grew to $863 million in 1997 from $754 million in 1996, an increase of 14.5%. Growth occurred in most products, most notably in cement (+13.2%) and stone (+23.4%). The top commodities in this group, in terms of export value, were cement ($574 million), stone ($115 billion) and clay and clay products ($44 million).

Exports of none of the fuel commodities declined significantly, with gains being made in the export of coal (+$115 million) and natural gas by-products (+$1.1 billion). Exports of petroleum, which has the highest value of all the mineral commodities, remained stable at about $17.0 billion, representing over one quarter of the value of Canada's total minerals and mineral products exported.

Imports of minerals and mineral products, including fuels, rose by over $7.7 billion in 1997 to reach almost $50.0 billion, an increase of 18.3% over 1996. The metals group accounted for 61.7% of this total, the fuels group for 26.1%, nonmetals for 9.7%, and structural materials for 2.5%. When petroleum and natural gas are excluded, mineral industry imports amounted to $37.8 billion and accounted for 13.9% of total Canadian merchandise imports. More detailed statistics on imports are presented in Table 3.

As a result of the increased level of imports, the merchandise trade surplus for the non-fuel minerals plus coal dropped to $7.4 billion, a decrease from the $10.7 billion surplus recorded in 1996. When petroleum and natural gas are added, the total surplus attributable to minerals and mineral products was $22.9 billion in 1997. Trends and levels for Canadian trade surpluses are provided in Table 4.

Investment by the Mineral Industry

Investment made by the mineral industry, both in terms of exploration and capital expenditures, provides an indicator of the strength that the Canadian mineral industry can expect to show in future years.

Exploration Expenditures

Preliminary estimates indicate that the level of expenditures on non-fuel mineral exploration should reach $804 million in 1997 and is likely to decline slightly in 1998. The 1997 level, which is the second highest level of exploration spending registered in the

1990s, is surpassed only by the $895 million recorded in 1996. Several factors have contributed to the modest decrease in spending from 1996 to 1997, particularly the decline in metal prices that occurred in late 1997 and early 1998, difficulties in obtaining necessary financing and, in some cases, a re-allocation of financing from exploration to the development of a mine complex. Nevertheless, exploration continues at a vigorous pace sustained by the knowledge that the discovery of major new deposits, such as Voisey's Bay, remains possible. Australia and Canada have led the world for the past 18 years as areas to which investments in mineral exploration have been directed.

Capital Expenditures

While expenditures on exploration provide a promise for future mine development, expenditures on new construction, machinery and equipment, or their repair or upgrade, are also necessary to maintain a strong industry presence. Capital expenditures for all four stages of the Canadian mineral industry are expected to top $6.0 billion in 1998. This estimate, although down slightly from the $6.3 billion estimated for 1997, reflects continuing confidence in the Canadian industry. Levels for 1997 and 1998 are expected to far exceed the levels of $4.7 billion and $5.3 billion reached in 1995 and 1996, respectively. Capital expenditures for the mining, quarrying and sand pit industries (Stage I) are expected to remain at $2.9 billion, roughly the same level as in 1997. Capital investment in smelting and refining (Stage II) is expected to decline by about 19% from the previous year, whereas the semi-fabricating capital investment is forecast to post an increase of about 9% over the previous year.

The intended level of spending in Stages I to IV is anticipated to decrease in 1998 by approximately 5.2%, whereas the intended capital spending for the total economy is expected to increase by 6.2%. When repair expenditures are included, total investment spending by the mining and mineral processing industries was $9.6 billion in 1996, the latest year for which repair expenditure data are available. The 1996 level of spending represented about 6% of the total capital and repair expenditures within the Canadian economy.

PROFILES OF THE LEADING MINERALS PRODUCED IN CANADA

Canada produces more than 60 minerals and metals and exports its products to almost all countries of the world. Certain of these minerals and metals, however, have a critical importance to the overall industry. The following summaries highlight the year 1997 for Canada's leading minerals.

Gold

In 1997, Canada's gold production increased by 2.6% to 169 t, roughly as had been predicted. Canada is the world's fourth-largest gold producer behind South Africa, the United States and Australia. The average price of gold decreased to US$328.41/oz in 1997 from US$367.80/oz in 1996. The depressed gold price was mainly due to the strengthening of the U.S. dollar, the fear of widespread central bank gold sales, and Asia's stock market crisis. If gold prices do not recover to above US$340/oz before the end of 1998, it is anticipated that Canadian gold production will more than likely decline to below 150 t/y by the year 2000. Overall employment in Canada's gold mines has been declining since the 1989 peak of 12 631 was reached.

Copper

As in 1996, the average price for copper declined from US$1.04/lb to US$1.03/lb in 1997. The mine production decreased by about 4.5% (from 688 400 t in 1996 to about 657 500 t in 1997). Canada remained the third largest producer of copper in the world in 1997 with world copper consumption increasing slightly from 12.6 Mt to 13.15 Mt, and with future growth predicted to average in excess of 3% annually.

Nickel

Canadian nickel production was only slightly down from the 1996 revised figure of 192 649 t to approximately 190 785 t in 1997. Nickel's price averaged US$3.14/lb in 1997, a substantially lower average price than the 1996 price of US$3.40/lb and the 1995 price of US$3.73/lb. The outlook for nickel was more negative than it had been a year earlier. An average price of US$2.75/lb is forecast for 1998 based upon assumptions of substantial progress at resolving the financial problems in Asia, continued Chinese economic growth, and balanced or a slight surplus in supply and demand.

The stainless steel industry remains the largest consumer of primary nickel, accounting for about 65% of consumption.

Zinc

Canada's mine production of zinc decreased by 13% over 1996 levels, slipping to 1.10 Mt in 1997. This decrease was due primarily to the closure of the Faro mine in the Yukon for most of the year and the Langlois mine in Quebec for the first six months of 1997, as well as lowered production by several other operations. The value of zinc production rose again in 1997 to $1.9 billion, an increase of 15.4% over the previous year. Zinc prices averaged US59.8¢/lb for 1997, a significant increase over the 1996 average price of US46.5¢/lb.

In 1997, world zinc consumption grew by 2.8% to reach 7 732 000 t despite the economic slowdown in parts of Asia late in the year as the result of weakening currencies.

Iron Ore

Most of Canada's iron ore is produced by three mining operations in the Labrador Trough of northern Quebec and Labrador. Mine production levels increased from 35.7 Mt to 37.3 Mt in 1997. Canadian shipments of iron ore rose by 8.4% and the value of these shipments rose correspondingly by 8.3% to $1.4 billion. More than 80% of the volume and value of Canada's iron ore shipments are in the form of exports, and the United States remains the largest single customer receiving 31% of these shipments; European destinations account for more than 55% of all shipments of Canadian iron ore.

Uranium

Canada is the world's leading producer and supplier of uranium, exporting roughly 80% of its uranium production. Three of the world's top ten uranium-producing companies are located in Canada.

In 1997, primary production of uranium in Canada surpassed the 11 706 tU produced in 1996 by 3%, reaching 12 030 tU. The average price of Canadian export deliveries decreased from C$53.60/kgU (US$15.10/lb U_3O_8) in 1996 to C$51.30/kgU (US$14.20/lb U_3O_8) in 1997, reflecting the decline in spot prices to US$12.05/lb U_3O_8 (restricted spot price) and US$9.65/lb U_3O_8 (unrestricted spot price).

Uranium continues to rank among Canada's top ten commodities in terms of output value.

Silver

Silver, the best conductor of electricity of all metals, is produced as a co-product of gold mining or base-metal mining in Canada. Silver was produced in several provinces in 1997, including New Brunswick, Quebec, Ontario, Manitoba and British Columbia. Canada ranks among the five largest producers of silver in concentrate in the world.

Mine production of silver declined by about 7% to 1218 t as shipments declined marginally from 1243 t in 1996 to 1213 t in 1997. The value of shipments of silver also declined from US$283 million to $259 million as silver prices fell from an average of US$5.20/oz in 1996 to $4.90/oz. However, prices for silver rebounded after reaching a low of US$4.37/oz in July to $5.79/oz at year-end, and continued to rise early in 1998.

Potash

The term "potash" refers to a group of potassium-bearing minerals and chemicals. The dominant potash product is potassium chloride, a naturally occurring pink, salty mineral for which Canada is the leading world producer and exporter. The main use of potash is in the agricultural sector where it is used to enhance the efficiency of plants in the uptake of other nutrients. Some other end uses of potash are in detergents, ceramics, chemicals and pharmaceuticals.

The world's potash supply/demand situation in 1997 was very positive, increasing 13% in 1997 to reach 9.0 Mt K_2O. Canada now ranks as the world's largest producer and exporter of potash, holding a 44% share of the international trade in that commodity.

Sulphur

Most Canadian sulphur production occurs in Alberta. Preliminary figures for 1997 show Canadian sulphur production similar to the previous year, which is estimated at 9.4 Mt. Of this, elemental sulphur accounted for 90%, or 8.3 Mt. Canada remained the world's largest exporter with exports estimated at 6.2 Mt in 1997. The United States continued to be the dominant export destination for Canadian sulphur.

Chrysotile

Chrysotile, regarded as the form of asbestos "least hazardous" to human health, is the only asbestos produced in Canada and is the only form extracted in Canada. The Canadian chrysotile industry is concentrated in Quebec.

In 1997, Canadian chrysotile shipments decreased by 11.7% from the previous year. This decrease should continue into 1998 due primarily to the Asian financial crisis and a European ban on the commodity. Total 1997 shipments are estimated at 447 000 t valued at $224.0 million, compared to revised shipment figures of 506 276 t valued at $256.7 million in 1996. Due to the closure of the British Canadian operations in Quebec, employment in the Canadian chrysotile industry also decreased by about 230 in 1997. Canadian exports of chrysotile in 1997 also reflected a decrease of about 14.6% in volume from the previous year. Canada remains the largest exporter of chrysotile to the United States.

On September 16-19, 1997, Canada hosted The International Conference on the Safe and Responsible Use of Chrysotile Fibres, which attracted 300 delegate representing industry, government and labour unions from 45 chrysotile-producing and consuming countries. The conference was organized to disseminate information on the safe and responsible use of chrysotile asbestos.

Salt

Canadians are the highest per capita consumers of salt in the world, primarily due to the extensive use of salt as a de-icing agent to improve driving in

wintry conditions. Quebec was the first province to use salt to melt snow and ice, but was followed soon after by other provinces, which caused a boom in Canada's salt industry.

It has been estimated that Canada has more than one million billion tonnes of salt, or halite as it is called in geological terms, in its major rock formations. Salt is mined in several Canadian provinces including Nova Scotia, New Brunswick, Quebec, Ontario, Saskatchewan and Alberta. Shipments of salt grew to 13.3 Mt in 1997 from 12.2 Mt in 1996, a growth of over 8%. Mine production of salt grew from 12.3 Mt to 13.4 Mt for the same period. The value of salt shipments rose from $360 million to $381 million.

Coal

Coal is an organically derived material that is formed from the remains of decayed plant material compacted into a solid through millions of years of pressure and heat. Coal, which is also the world's most abundant and widely distributed fossil fuel, is primarily used for the generation of electricity and production of steel.

Canada is the world's fourth largest coal exporter and eleventh largest coal producer. Nearly all of Canada's coal is produced in the three westernmost provinces, with Alberta remaining Canada's largest coal-producing province in 1997. Canadian coal production reached a record 78.5 Mt in 1997, surpassing previous years' highs. Canada's coal consumption in 1997 is estimated at 55.8 Mt, slightly higher than the 1996 level of 53.4 Mt. In 1997, 49.5 Mt of coal were consumed to produce electricity, about 4.5 Mt were used in steel-making, and about 1.8 Mt were used by other industries, mainly cement.

Structural Materials

The value of all structural materials produced in Canada, including sand, gravel, cement, clay products, lime and stone, was $2.8 billion in 1997, an increase of 5.8% over the 1996 figure of $2.6 billion.

Shipments of cement in 1997 were estimated at 12.0 Mt, an increase of about 4% over the previous year and only slightly less than the 1996 recorded increase of 5.8%. This increase in cement shipments can be attributed to growth in construction activity in Canada led by an increase in housing starts. Similarly, the continued growth in the residential and non-residential construction sectors contributed to a 1% increase in total Canadian shipments of mineral aggregates (mainly crushed stone). Demand for mineral aggregates is largely based on local or regional needs.

Gypsum

The wallboard industry serves the residential, institutional and commercial building sectors. Most gypsum producers in Canada are involved in both mining and wallboard manufacturing. Canadian shipments of crude gypsum increased by about 4% in 1997, climbing to 8.5 Mt (valued at $91.7 million) from 8.2 Mt in 1996 (valued at $85.4 million). This increase was a result of the continued strength in exports to the United States and higher domestic demand, principally in British Columbia.

Diamonds

Canada's first commercial diamond mine, the Ekati mine, is scheduled to open in October 1998 near Lac de Gras in the Northwest Territories. The current plan calls for five pipes to be mined by open-pit and then underground methods over the next 17 years. A second diamond mine operated as a joint venture by Diavik Diamond Mines Inc. and Aber Resources Ltd. may open by the year 2001.

Intensive exploration for diamonds continues in many parts of Canada, including British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Newfoundland, although 90% of the $154 million spent on exploration in 1996 was undertaken in the Northwest Territories. The search for diamonds continued with estimated expenditures of $92 million in 1997 and spending intentions of $125 million in 1998, despite the fact that substantial resources are now being allocated to mine-site development at promising sites.

LOOKING AHEAD FOR THE MINERAL INDUSTRY

General economic conditions in Canada continue to appear favourable for 1998 as GDP growth is forecast to be in the 3% range, perhaps lower than what might have been expected in the absence of the Asian economic crisis. Although less than the 3.9% growth experienced in 1997, the 1998 forecast would still make Canada's economy one of the best of the major industrialized countries of the world. Continued low inflation and low interest rates are expected to prevail with inflation at less than 2% and the Bank of Canada interest rate slightly higher than in 1997. Indeed, in January 1998, the rate had increased to 5%. Based on a strong performing economy, unemployment can be expected to stay below 9% in 1998 and consumer spending, which came alive in 1997, is expected to continue to be strong throughout the year. Export growth is expected to be buoyant, even though raw material prices continued to be weak early in 1998.

Even though the Canadian economy is forecast to perform well, as are the economies of the United States, Europe and Latin America, 1998 could prove to be a difficult year for Canadian mineral producers. As 1997 came to a close, the Canadian mineral industry was faced with having to deal with the effects of declining commodity prices continuing into early 1998. For the major nonferrous commodities, expanding supply and uncertain demand conditions placed downward pressures on prices. In addition, the Asian crisis, a major reason for the decline in most mineral commodity prices and in prices of other raw materials in the latter stages of 1997, required stabilization and resolution so that more normal market conditions could be re-established. Nevertheless, in early 1998, the crises in many of the affected Asian economies seemed to be deepening, notwithstanding significant financial aid offered by the International Monetary Fund.

Exploration expenditure levels can be expected to decrease in 1998 because of anticipated cutbacks by major companies in reaction to low mineral commodity prices. The difficulties encountered by the junior mining sector in raising risk capital because of low prices and the Bre-X incident in early 1997 is likely to be another factor influencing exploration.

If prices remain at depressed levels in 1998, Canadian producers, particularly base-metal producers, will be faced with no alternative but to reduce costs by closures, by scaling down mining operations, or perhaps by mergers. This process had already started for several Canadian gold producers in response to the steady decline in gold prices during 1997 and can be expected to continue. Low prices will put pressure on the industry not only to reduce exploration spending, but also to rethink the timing for projects committed to or actively under development but not yet put into production. All or any of these decisions will have a negative effect on employment levels, on the general well-being of the Canadian mineral industry, and on the positive impact that the industry exerts on the Canadian economy.

Note: Information in this review was current as of May 31, 1998.

TABLE 1. CANADA, PRODUCTION OF LEADING MINERALS, 1996 AND 1997

		Volume		Percent Change	Value		Percent Change
		1996	1997p	1997/1996	1996	1997p	1997/1996
		(000 tonnes except where noted)			($ millions)		
METALS							
Gold	kg	164 659.8	169 049.7	2.7	2 799.5	2 510.4	–10.3
Copper		652.5	646.5	–0.9	2 059.3	2 065.5	0.3
Zinc		1 162.7	1 017.1	–12.5	1 625.5	1 875.5	15.4
Nickel		182.4	180.6	–1.0	1 920.3	1 777.1	–7.5
Iron ore		34 400.0	37 284.5	8.4	1 321.7	1 431.2	8.3
Uranium	tU	11 348.0	11 416.1	0.6	620.9	559.2	–9.9
Silver	t	1 242.8	1 212.6	–2.4	282.5	259.1	–8.3
Platinum group	kg	13 934.2	13 009.2	–6.6	141.6	152.3	7.6
Cobalt		2.2	2.2	0.3	164.9	150.8	–8.6
Lead	t	241.8	170.4	–29.5	254.6	148.4	–41.7
Molybdenum	t	8 789.3	7 540.0	–14.2	100.2	87.1	–13.0
NONMETALS							
Potash (K_2O)		8 120.4	9 301.0	14.5	1 277.9	1 465.6	14.7
Salt		12 248.5	13 264.3	8.3	359.8	380.7	5.8
Asbestos		506.3	447.0	–11.7	256.7	224.0	–12.7
Peat		900.5	848.7	–5.8	141.0	133.4	–5.4
Gypsum		8 201.8	8 502.6	3.7	85.4	91.7	7.4
Sulphur, elemental		8 326.9	8 280.2	–0.6	83.8	86.6	3.3
STRUCTURAL MATERIALS							
Cement		11 587.4	12 015.0	3.7	964.4	1 022.3	6.0
Sand and gravel		213 830.7	214 301.8	0.2	772.6	800.5	3.6
Stone		92 449.1	94 229.8	1.9	592.2	617.7	4.3
Lime		2 402.0	2 446.9	1.9	202.6	209.5	3.4
Clay products		. .	. .	. .	110.2	144.3	30.9
MINERAL FUELS							
Petroleum, crude	000 m^3	117 620.6	122 463.7	4.1	19 071.7	18 130.2	–4.9
Natural gas	million m^3	153 578.3	156 841.5	2.1	8 734.9	10 109.5	15.7
Natural gas by-products	000 m^3	26 657.1	26 183.2	–1.8	2 838.7	2 552.0	–10.1
Coal		75 860.0	78 470.0	3.4	1 936.1	1 929.5	–0.3

Sources: Natural Resources Canada; Statistics Canada.
. . Not available; p Preliminary.
Note: Numbers have been rounded.

TABLE 2. CANADA, STAGE I TO STAGE IV, DOMESTIC EXPORTS OF MINERALS AND MINERAL PRODUCTS BY COMMODITY, 1995-97

	Unit of Measure	1995		1996		1997p	
	(000)	(Quantity)	($000)	(Quantity)	($000)	(Quantity)	($000)
METALS							
Aluminum	. .	. .	6 793 932	. .	6 328 775	. .	7 103 948
Antimony	kg	1 667	2 100	1 434	2 332	244	875
Bismuth	kg	204	1 475	141	1 517	135	1 415
Cadmium	kg	2 497	9 803	1 722	8 198	2 622	5 612
Calcium metal	kg	4 410	2 468	4 570	3 655	5 682	4 228
Chromium	kg	4 245	14 077	8 749	29 370	7 845	33 421
Cobalt	kg	4 227	322 047	5 120	385 335	6 325	429 220
Copper	. .	. .	3 620 517	. .	3 028 916	. .	2 926 866
Gold	. .	. .	2 904 428	. .	3 547 590	. .	3 490 137
Iron and steel	. .	. .	8 033 052	. .	8 232 608	. .	8 473 547
Iron ore	t	28 706	919 961	27 920	1 032 860	32 340	1 258 693
Lead	. .	. .	314 034	. .	430 810	. .	330 557
Magnesium and magnesium compounds	kg	98 783	197 307	101 974	221 788	106 273	251 672
Molybdenum	kg	9 217	163 402	8 771	71 562	11 265	91 473
Nickel	. .	. .	2 140 350	. .	2 339 044	. .	2 118 891
Platinum group	. .	. .	184 744	. .	158 116	. .	181 473
Silver	. .	. .	336 601	. .	433 500	. .	348 992
Tin	. .	. .	23 830	. .	20 261	. .	17 162
Uranium and thorium	. .	. .	687 317	. .	960 516	. .	1 002 932
Zinc	kg	. .	1 367 965	1 331 509	1 486 297	1 104 582	1 773 294
Other metals	. .	. .	3 064 488	. .	3 515 043	. .	4 111 958
Total metals			31 103 898		32 238 093		33 956 366
NONMETALS							
Asbestos	. .	. .	356 475	. .	353 188	. .	308 074
Barite and witherite	t	12	4 265	15	5 285	21	5 907
Diamonds	. .	. .	19 146	. .	16 794	. .	13 660
Graphite	. .	. .	121 520	. .	132 208	. .	131 682
Gypsum	. .	. .	186 919	. .	230 768	. .	288 697
Mica	t	17	9 712	17	9 516	15	9 093
Nepheline syenite	t	340	42 309	269	43 919	372	50 506
Peat	. .	. .	276 462	. .	289 132	. .	286 622
Potash and potassium compounds	kg	13 813 235	1 765 113	12 961 046	1 546 155	14 645 568	1 753 407
Salt and sodium compounds	t	4 186	526 620	4 959	543 287	4 781	503 071
Sulphur and sulphur compounds	kg	7 814	559 743	7 697	495 545	7 917	454 861
Talc, soapstone and pyrophyllite	kg	26	7 142	26	7 607	26	8 010
Titanium oxides	kg	88 038	200 307	69 781	152 332	79 167	172 711
Other nonmetals	. .	. .	2 370 472	. .	2 549 744	. .	2 824 637
Total nonmetals		13 913 668	6 446 205	13 043 810	6 375 480	14 737 867	6 810 938
STRUCTURAL MATERIALS							
Cement	. .	. .	431 672	. .	506 880	. .	574 078
Clay and clay products	. .	. .	36 989	. .	41 809	. .	44 269
Lime	kg	266 476	30 089	216 849	24 701	224 203	27 200
Sand and gravel	t	1 899	17 377	1 428	11 844	1 799	15 449
Silica and silica compounds	. .	. .	13 384	. .	13 995	. .	17 971
Stone	. .	. .	84 257	. .	92 851	. .	114 702
Other structural materials	. .	. .	39 594	. .	61 435	. .	69 437
Total structural materials			653 362		753 515		863 106
FUELS							
Coal and coke	t	34 489	2 367 020	34 979	2 620 374	36 158	2 735 387
Natural gas	000 m^3	79 022	5 649 076	80 117	7 432 768	82 345	8 565 016
Natural gas by-products	000 m^3	9	875 958	8	1 154 199	8	1 161 499
Petroleum	. .	. .	14 247 651	. .	17 040 149	. .	16 965 401
Other fuels	kg	180 429	237 076	193 888	251 406	162 884	254 766
Total fuels			23 376 781		28 498 896		29 682 069
Total mineral domestic exports (including fuels)			61 580 246		67 865 984		71 312 479
Total economy domestic exports			248 440 788		259 265 000		278 869 100

Sources: Natural Resources Canada; Statistics Canada.
. . Not available or not applicable; p Preliminary.
Note: Numbers may not add to totals due to rounding.

TABLE 3. CANADA, STAGE I TO STAGE IV, IMPORTS OF MINERALS AND MINERAL PRODUCTS BY COMMODITY, 1995-97

	Unit of Measure	1995		1996		1997p	
	(000)	(Quantity)	($000)	(Quantity)	($000)	(Quantity)	($000)
METALS							
Aluminum	. .	. .	3 519 825	. .	3 373 254	. .	3 811 668
Antimony	kg	2 235	13 413	2 515	11 916	2 512	11 007
Bismuth	kg	71	2 801	98	2 102	237	3 043
Cadmium	kg	367	1 373	736	1 502	487	1 340
Calcium metal	kg	44 794	37 410	44 885	35 801	53 747	40 462
Chromium	kg	107 053	97 526	112 877	94 366	104 845	97 578
Cobalt	kg	1 477	74 989	15 172	72 289	1 453	66 761
Copper	. .	. .	1 954 864	. .	1 651 541	. .	1 809 157
Gold	. .	. .	755 502	. .	1 077 646	. .	1 434 433
Iron and steel	. .	. .	10 352 358	. .	10 238 567	. .	12 861 118
Iron ore	t	6 000	264 532	6 911	334 255	7 122	356 472
Lead	. .	. .	337 792	. .	498 419	. .	556 102
Magnesium and magnesium compounds	kg	298 257	122 056	391 074	158 304	325 892	204 831
Molybdenum	kg	4 705	73 481	3 686	38 652	3 675	40 406
Nickel	. .	. .	708 998	. .	757 990	. .	601 593
Platinum group	g	523 457	223 832	243 738	207 343	266 376	226 140
Silver	. .	. .	121 977	. .	125 567	. .	140 788
Tin	. .	. .	56 357	. .	56 635	. .	59 389
Uranium and thorium	. .	. .	170 830	. .	248 005	. .	219 943
Zinc	. .	. .	180 271	. .	153 792	. .	276 929
Other metals	. .	. .	6 414 186	. .	6 693 082	. .	8 026 524
Total metals			25 484 373		25 831 028		30 845 684
NONMETALS							
Asbestos	. .	. .	74 965	. .	75 220	. .	84 954
Barite and witherite	t	17	1 735	16	1 868	22	2 985
Diamonds	. .	. .	186 687	. .	191 132	. .	222 494
Graphite	. .	. .	307 011	. .	335 834	. .	368 472
Gypsum	. .	. .	21 082	. .	24 855	. .	31 198
Mica	t	4	9 466	4	10 460	4	12 309
Nepheline syenite	. .	. . .	78	. . .	52	. . .	12
Peat	. .	. .	787	. .	764	. .	1 418
Potash and potassium compounds	kg	. .	29 275	. .	35 424	. .	38 992
Salt and sodium compounds	t	2 097	289 670	2 155	325 149	2 319	319 711
Sulphur and sulphur compounds	kg	105	15 053	110	15 947	152	19 040
Talc, soapstone and pyrophyllite	kg	51	13 648	58	15 283	55	12 995
Titanium oxides	kg	106 322	214 640	84 713	180 046	110 687	230 105
Other nonmetals	. .	. .	2 981 206	. .	3 149 246	. .	3 496 452
Total nonmetals			4 145 303		4 361 280	113 239	4 841 137
STRUCTURAL MATERIALS							
Cement	. .	. .	143 900	. .	157 933	. .	186 260
Clay and clay products	. .	. .	689 989	. .	669 653	. .	762 209
Lime	kg	52 883	6 778	36 640	5 054	47 199	6 351
Sand and gravel	t	1 099	10 553	3 241	16 299	3 193	17 524
Silica and silica compounds	. .	. .	100 366	. .	109 357	. .	126 150
Stone	. .	. .	99 216	. .	92 660	. .	103 573
Other structural materials	. .	. .	32 633	. .	30 698	. .	35 394
Total structural materials			1 083 435		1 081 654		1 237 461
FUELS							
Coal and coke	t	11 225	689 968	12 858	757 333	15 820	873 223
Natural gas	000 m^3	525	45 855	1 923	111 361	949	136 647
Natural gas by-products	000 m^3	1	70 380	. . .	70 206	. . .	55 947
Petroleum	. .	. .	7 846 677	. .	9 724 328	. .	11 642 864
Other fuels	. .	. .	350 720	. .	306 486	. .	345 953
Total fuels			9 003 600		10 969 714		13 054 634
Total mineral imports (including fuels)			39 716 711		42 243 676		49 978 916
Total economy imports			225 629 195		232 648 100		271 496 700

Sources: Natural Resources Canada; Statistics Canada.
. . Not available or not applicable; . . . Amount too small to be expressed; p Preliminary.
Note: Numbers may not add to totals due to rounding.

TABLE 4. CANADA, VALUE OF DOMESTIC EXPORTS, TOTAL EXPORTS (INCLUDING RE-EXPORTS), IMPORTS, AND BALANCE OF TRADE OF MINERALS AND MINERAL PRODUCTS, STAGES I TO IV, 1993-97

	1993	1994	1995	1996	1997
			($000)		
TOTAL MINING, INCLUDING FUELS					
Domestic exports	46 533 551	53 443 312	61 580 246	67 865 984	71 312 479
Total exports	46 973 169	54 244 071	63 035 928	69 080 361	72 785 888
Imports	29 844 584	35 449 516	39 716 711	42 244 115	49 979 415
Balance of trade	17 128 585	18 794 555	23 319 217	26 836 246	22 806 473
NON-FUEL MINING					
Domestic exports	27 054 681	32 595 897	38 203 465	39 367 088	41 630 410
Total exports	27 454 069	33 087 047	38 868 411	40 076 984	42 466 066
Imports	22 277 623	27 198 889	30 713 111	31 274 401	36 924 781
Balance of trade	5 176 446	5 888 158	8 155 300	8 802 583	5 541 285
TOTAL NON-FUEL MINING, INCLUDING COAL					
Domestic exports	29 007 047	34 757 122	40 570 485	41 987 462	44 365 797
Total exports	29 406 743	35 248 646	41 239 458	42 698 990	45 202 510
Imports	22 794 699	27 775 763	31 403 079	32 031 734	37 798 004
Balance of trade	6 612 044	7 472 883	9 836 379	10 667 256	7 404 506
TOTAL ECONOMY					
Domestic exports	177 621 840	213 290 163	248 440 788	259 265 000	278 896 100
Total exports	187 515 000	226 475 000	264 207 000	275 773 600	296 927 500
Imports	169 953 000	202 737 000	225 629 195	232 648 033	271 496 653
Balance of trade	17 562 000	23 738 000	38 577 805	43 125 567	25 430 847

Sources: Natural Resources Canada; Statistics Canada.