

# General Review

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## **OVERVIEW**

Canada's mineral industry experienced another strong year in 1996 as the value of production for all sectors of the mining industry, including fuels, amounted to nearly \$49.2 billion, an increase of 13.4% over 1995. This continued the growth pattern exhibited in both 1995 (up by 5.3% from 1994) and 1994 (up by 12.7% from 1993). However, the 1996 increase was due almost entirely to growth in fuels production, notably crude petroleum and natural gas. Metals and nonmetals both weakened in value, with copper, molybdenum, the platinum group metals and sulphur all exhibiting significant declines.

Although domestic interest rates and inflation were low during the year, unemployment rates persisted at close to the 10% level, consumer spending was sluggish, and certain minerals- and metals-consuming sectors, including construction, remained depressed. As a result, the mineral industry, including fuels, continued to rely substantially on export markets for sales revenue. Mainly in response to strong markets in the United States and in Asian countries, exports of minerals and mineral products increased by 10.0% to \$67.7 billion, resulting in a positive merchandise trade surplus for these products of some \$26.8 billion.

Due to the rebuilding of inventory levels during the year, increased supply capability, and some softening in demand, prices for major nonferrous commodities declined from the highs reached early in 1996. Some limited recovery in price levels did, however, occur late in the year. As a result of generally lower prices, the corporate profits of the Canadian mining sector were significantly less in 1996 than in 1995.

Canada's overall Gross Domestic Product (GDP) increased by approximately 1.6% in 1996, down from

the 2.0% growth rate experienced in 1995, as shown in Figure 1. The mineral industry accounted for 4.3%, or \$23.7 billion, of the economy's GDP, a modest increase over 1995. This industry continued to provide the economic backbone for many regions and communities in the country, but most notably for the northern parts of Canada.

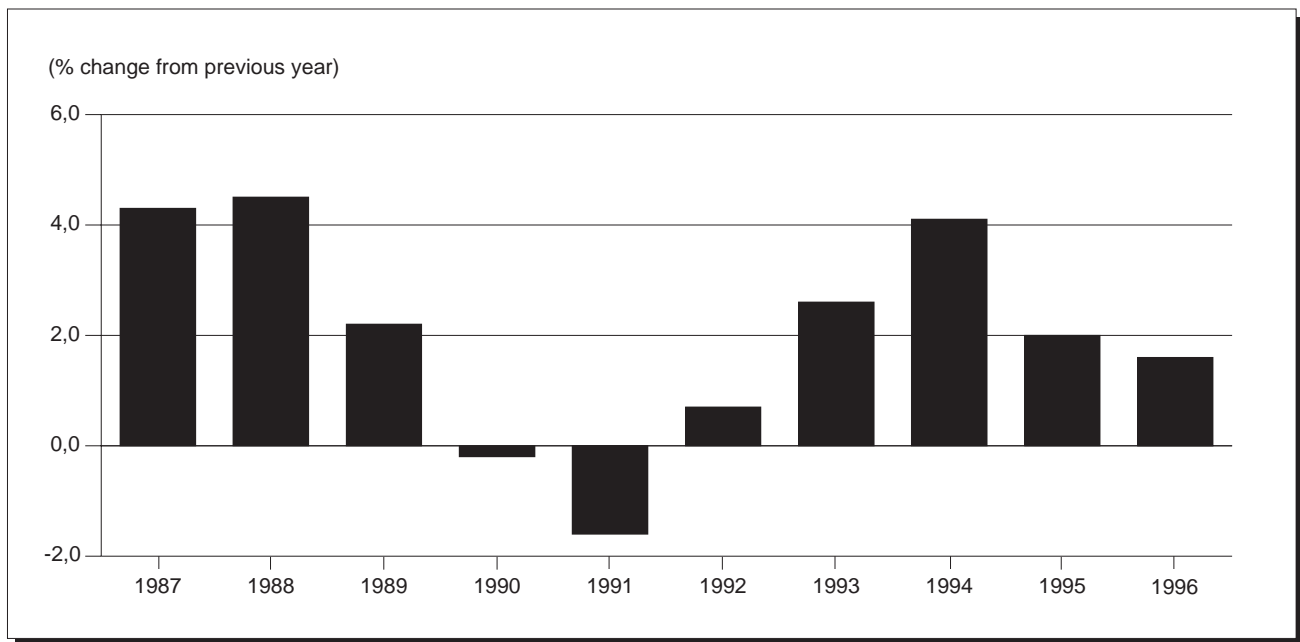
Significant Canadian mining industry highlights in 1996 included:

- the acquisition of control of the Voisey's Bay nickel-copper-cobalt deposit in Labrador by Inco Limited and the subsequent announcements outlining plans to develop the deposit;
- the successful satisfaction of regulatory requirements by BHP Diamonds Inc./Dia Met Minerals Ltd., allowing the development of Canada's first diamond mine at Lac de Gras in the Northwest Territories to proceed;
- the continued expansion of exploration expenditures in Canada to some \$873 million;
- 20 mine openings (14 new mines and 6 re-openings), while 17 mines closed (10 suspensions and 7 closures); and
- total direct employment in the mineral industry increasing to just over 350 000.

In November, the federal Minister of Natural Resources, the Honourable Anne McLellan, released the federal government's new minerals and metals policy. *The Minerals and Metals Policy of the Government of Canada*, framed in the context of sustainable development, will represent an important source of guidance for federal decisions on minerals and metals in the future.

The outlook for the Canadian mineral industry in 1997 remains positive. GDP is forecast to increase by about 3.2%. The resulting strengthened domestic demand, coupled with continuing strong economic performances by major export markets, particularly by the United States, should generate buoyant demand conditions for the minerals and metals industries. Although major nonferrous metal prices retreated for most of 1996, the firming of copper and aluminum prices in late 1996 continued into early

**Figure 1**  
**Canadian Economic Activity, Percent Change in GDP, 1987-96**  
 (Factor Cost at 1986 Prices)



Source: Statistics Canada.

Note: Data for 1996 are estimated.

1997. Precious metal prices continued to fall in early 1997, but are expected to recover by mid-year. It is anticipated that exploration in Canada in 1997 will continue to be strong, remaining at levels comparable to those recorded in 1996 despite the fact that, in some cases, resources are now being diverted to mine development.

## THE MINERAL INDUSTRY IN 1996

The Canadian mineral industry, excluding fuels, exhibited mixed results in 1996 with overall metals and nonmetals commodity production declining in value and structurals showing only a small increase. The total value of production fell by about 3.2% to \$17 billion. Although export markets, which are the biggest influence on Canadian mineral products, experienced buoyant economic conditions, increased supply capabilities by the industry, growing inventories and some softening in demand exerted pressure on mineral commodities, causing declines in prices during the year from previous highs.

The Canadian economy, as a whole, experienced less than spirited growth as GDP increased by only 1.6%, much less than forecasters had originally expected. Notwithstanding low interest rates and low inflation levels, domestic demand was generally weak, reflected by unemployment rates that stayed close to the 10% level. Consumer spending continued to be

sluggish as many consumers concentrated on paying down their debts, rather than purchasing goods and services. Fortunately, export demand held strong and total exports rose to \$275 billion, creating a trade surplus of some \$42 billion. Trade in merchandise exceeded trade in services and investment income, an event that had not happened in nearly a decade. Minerals continued to make a significant contribution to this Canadian export performance as exports of minerals and mineral products, including petroleum and natural gas, increased to approximately \$67.7 billion.

In terms of the production of Canada's leading minerals, increases in output volumes in excess of 5% were recorded for gold, nickel, zinc, uranium, lead, cobalt and salt, whereas declines in excess of 5% were experienced by copper, the platinum group metals, potash, peat and stone. When the impact of declining prices is factored in, the production values of several commodities fell dramatically in 1996. Decreases in the value of production compared to 1995 were most notable for copper, down by 27.7%; the platinum group metals, down by 19.7%; molybdenum, down by 49.3%; potash, down by 11.3%; and sulphur, down by 49.1%.

Mainly as a result of the lower commodity prices during the year, most Canadian mining companies reported reduced profits for activities in 1996 with the majority of these declines being in the 25-50%

range. Indeed, the operating profits for the metals sector as a whole declined by some 30% in 1996 compared to 1995. In spite of this, capacity utilization in the industry was strong. Capacity use in the mining, quarrying and oil wells sector increased by 0.7% to 88.1% in the fourth quarter of 1996. However, capacity utilization in the mining and quarrying industries dropped by 0.6% from the third quarter to 90.3%. In the fourth quarter of 1996, the primary metals industry (i.e., the smelting and refining industry) had a 96.3% utilization rate, the highest level since early 1988.

Two high-profile events highlighted the corporate and mine development activities of the Canadian mineral industry in 1996: the development of the Voisey's Bay deposit in Labrador and the development of Canada's first diamond mine in the Northwest Territories.

In early 1996, Inco Limited outbid Falconbridge Limited to merge with Diamond Fields Resources Inc., giving Inco control of the massive Voisey's Bay nickel-copper-cobalt deposit near Nain in northern Labrador. Voisey's Bay Nickel Company Limited, Inco's operating subsidiary for the project, revealed that it planned to complete a feasibility study of the project by the end of 1996 and that Argentia-Long Harbour was its preferred site for a smelter/refinery complex. At year-end, the total size of resources in the deposit was estimated at 150 Mt of ore. In late 1996, the Government of Canada, the Government of Newfoundland and two Aboriginal groups – the Innu Nation and the Labrador Inuit Association – reached agreement on an environmental review process for the proposed development project. It is expected that the federal Minister of the Environment and the Newfoundland Minister of Environment and Labour will jointly appoint members to an environmental assessment panel in early 1997.

The BHP Diamonds Inc./Dia Met Minerals Ltd. diamond project at Lac de Gras, some 300 km northeast of Yellowknife, Northwest Territories, received federal government approval in January 1997 to proceed with mine development. This followed completion of a public review process, the issuance of the Review Panel's report, and fulfilment of additional requirements laid down by the federal government in 1996. This development, which will become Canada's first diamond mine, is expected to begin operations in late 1997 or early 1998 at an estimated capital cost in excess of US\$500 million. Under the current mining plan, five kimberlite pipes are to be mined initially by open-pit methods and later, as warranted, by going underground. These pipes contain diamonds of all sizes and qualities and it is estimated that 30% are gem quality. As a whole, the five pipes average 1 carat (ct) per tonne with an average value of \$US100/ct. A single processing plant will be built with a starting throughput rate of 9000 t/d.

Exploration expenditures in Canada increased strongly by some 22% to approximately \$873 million

in 1996 as the result of active exploration programs in many parts of Canada, including the continuing exploration both for diamonds in the Northwest Territories and for new nickel-copper-cobalt deposits in the Voisey's Bay area of Labrador. New exploration activities took place in the Temagami area of north-eastern Ontario following the Ontario government's re-opening of the area to mineral activities in September 1996. Other areas of active exploration included the Finlayson Lake region of the Yukon (for zinc-copper-lead deposits) and the Sept-Îles area of Quebec (for nickel-copper-cobalt deposits).

Mine development expenditures were estimated at some \$700 million in 1996, with approximately \$500 million being expended for new and re-opened mines and the remaining \$200 million for mine expansions and extensions. During the year, 20 mines opened (14 new mines and 6 re-openings) while 17 mines closed (10 suspensions and 7 closures).

Regionally, the three leading mineral-producing provinces experienced overall declines during 1996 in the value of mineral production, excluding petroleum and natural gas, as Ontario decreased by 3% to \$5.6 billion, Quebec by 0.5% to \$3.3 billion, and British Columbia by 11.8% to \$3 billion. Of the 20 mines that opened or re-opened during 1996, 5 were located in Ontario, 4 in Newfoundland, 3 in Quebec, 2 each in British Columbia and the Yukon, and 1 each in Nova Scotia, New Brunswick, Manitoba and Saskatchewan. Mineral exploration spending increased in all provinces and territories with approximately 80% of this activity being carried out in the Northwest Territories, Ontario, British Columbia, Quebec and Newfoundland. Major increases of more than 35% over 1995 were recorded in British Columbia, the Yukon, Ontario and Nova Scotia. The Canada-Quebec Subsidiary Agreement on Mineral Development remained the only federal-provincial mineral development agreement that had not expired as of 1996. This agreement will terminate in March 1998.

Canadian companies continue to be actively involved in mineral exploration and development opportunities around the world. It is estimated that the larger Canadian-based companies spent some \$1 billion on exploration activities on properties outside Canada in 1996. These properties were located in a wide range of countries including the United States, Mexico, Chile, Peru, Venezuela, Indonesia, the Philippines, Ghana, Tanzania, Russia, Kazakhstan and China. Canadian companies with major properties under development include Barrick Gold Corporation's Pascua gold project in Chile and its Pierina gold property in Peru, the latter obtained as part of Barrick's acquisition of Arequipa Resources Ltd. in 1996, and Falconbridge Limited's Collahuasi copper project in Chile.

In November, the Minister of Natural Resources, the Honourable Anne McLellan, released *The Minerals and Metals Policy of the Government of Canada: Partnerships for Sustainable Development*, which updates

and replaces the federal government's 1987 minerals and metals policy. This new policy outlines how the Government will seek to integrate environmental, economic and social objectives when making decisions concerning minerals and metals within the scope of its jurisdiction. The policy is driven by three guiding principles: advancing sustainable development goals, building a more efficient federation, and creating a climate that will advance the Government of Canada's jobs and growth agenda. The policy was finalized following a consultative phase and built on the principles and goals of the Whitehorse Mining Initiative.

Also in November, the federal government, through Human Resources Development Canada, agreed to provide funding to the Mining Industry Training and Adjustment Council (MITAC) in the amount of \$1.1 million over three years. This represents 50% of the total budget required for the operational council phase, with the remainder being contributed by the mining industry. MITAC will bring together the industry, unions and government in an effort to increase opportunities for workers to upgrade their basic skills, to develop training curricula designed specifically to meet the needs of the mining industry, to ensure transferability of training, to design courses on environmental safety and health based on best practices, and to improve adjustment planning for workers and communities affected by mine closures.

## 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-Fabricating Industries; and
- Stage IV: Metal Fabricating Industries.

While much of the emphasis of this article tends to focus on Stage I activities (that is, the activities of the mining industry per se), much of the portrait that follows describes the mineral industry as a whole, providing a more comprehensive picture of the overall importance of the activities of the mining industry to Canada. Normally, 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.

### Gross Domestic Product of the Mineral Industry

All four stages of the mineral industry, excluding the oil and natural gas industries, accounted for \$23.7 billion, or about 4.3%, of total Canadian GDP in 1996. The

growth or percentage change in the mineral industry's contribution to GDP stabilized in 1996 at 3.1%, due largely to a decrease in the value of non-fuel mineral production, including coal. The contribution of primary mineral production to the total mineral industry GDP figure remained constant at 28%, increasing in value by only 2.2% after a strong 7.1% increase in 1995. The second stage, metal production (smelting and refining), contributed 25% to the total, roughly the same as in 1995, and the third and fourth stages, the manufacture of semi-fabricated and fabricated products, accounted for 22% and 25% respectively. Figure 2 shows trends in GDP during the 1987-96 period.

### Canadian Mineral Production

Preliminary estimates show that the total value of Canadian mineral production, including both fuel and non-fuel minerals, rose to \$49.2 billion in 1996, an increase of 13.4% over the 1995 value of \$43.4 billion. As the table below demonstrates, the total value of non-fuel mineral production (that is, the total value of mineral production excluding mineral fuels) decreased from \$17.6 billion in 1995 to \$17.0 billion in 1996, a decline of 3.2%. In contrast, the total value of fuel production rose from \$25.8 billion in 1995 to \$32.1 billion in 1996, a noteworthy increase of 24.7%.

**CANADIAN MINERAL INDUSTRY VALUE OF PRODUCTION, 1995 AND 1996**

	1995 <sup>r</sup>	1996 <sup>p</sup>	Change
	(\$ millions)		(%)
Metals	12 172.7	11 752.6	(3.5)
Nonmetals	2 905.2	2 700.2	(7.1)
Structural materials	2 524.2	2 591.9	2.7
Total nonfuels	17 602.1	17 044.7	(3.2)
Fuels	25 758.8	32 127.1	24.7
Total	43 360.9	49 171.8	13.4

Sources: Natural Resources Canada; Statistics Canada.

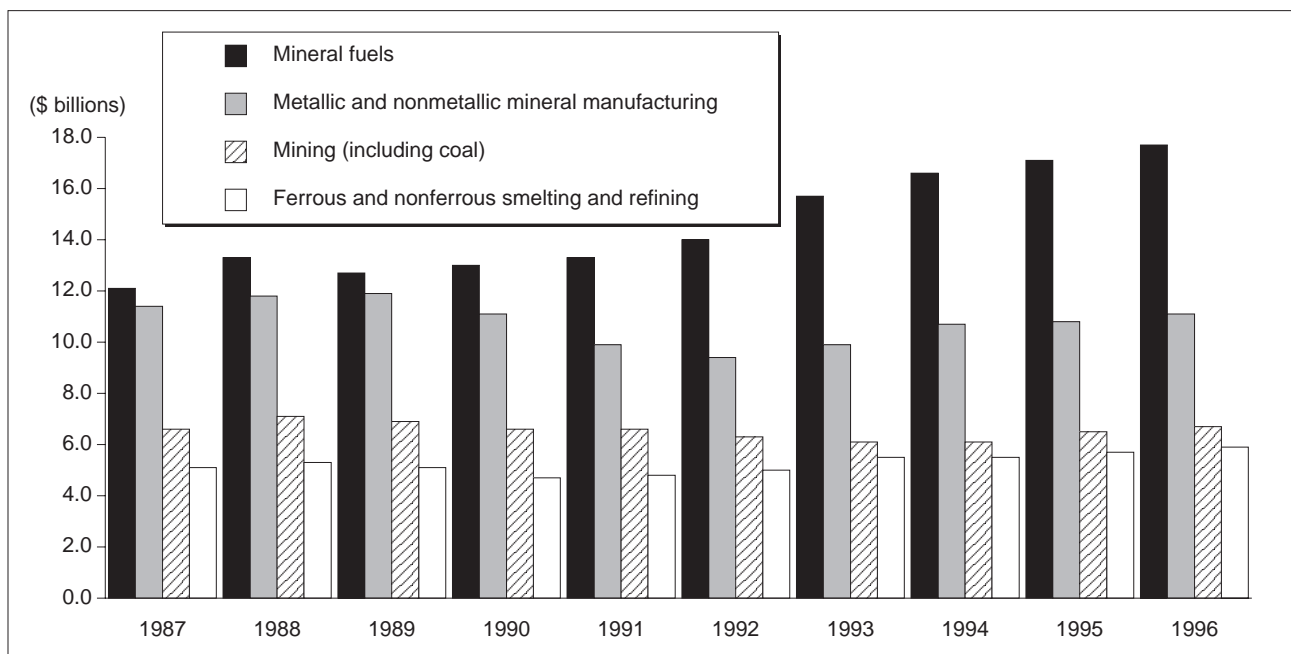
<sup>p</sup> Preliminary; <sup>r</sup> Revised.

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

As shown in Table 1, results were mixed for individual non-fuel commodities in 1996, with a substantial reduction in copper (-\$800 million) and potash (-\$160 million) values offsetting significant gains in the value of production of gold (+\$250 million) and zinc (+\$100 million). The production values of other leading metals and nonmetals, including nickel, iron ore and asbestos, remained relatively stable.

The total value of metallic mineral production declined by 3.5% from \$12.2 billion in 1995 to \$11.8 billion in 1996, mainly due to the significant decline in the value of copper produced. Although its production tonnage declined by only 6.4%, the total value of copper production fell dramatically by almost 28% in

**Figure 2**  
**Gross Domestic Product at Factor Cost at 1986 Prices, 1987-96**



Source: Statistics Canada.

Note: Data for 1996 are estimated.

1996, a result of sharply declining prices. Nickel production was valued at close to \$2.0 billion in 1996, a small decline from 1995, although production tonnages rose by 7.2%. The value of gold production grew by 9.6%, reflecting an increase of 8.8% in the tonnage produced. The overall value of zinc production reached \$1.7 billion in 1996, increasing 6.7% from 1995, primarily as the result of an 8.5% rise in production tonnage. The value of iron ore production remained roughly the same as in 1995 with a small decrease of about 1.6% in the tonnage produced.

The value of output of the nonmetals group, which includes such minerals as asbestos, potash, salt, peat and sulphur, decreased from \$2.9 billion in 1995 to \$2.7 billion in 1996, a 7.1% drop. This drop basically resulted from a decrease in shipments of potash, the leading mineral in this group, of 7.8% in tonnage and 11.3% in value from the corresponding 1995 levels.

The value of production of structural materials, a group that includes clay products, sand and gravel, stone, cement and lime, increased by 2.7% (or about \$70 million) to approach the \$2.6 billion mark.

Based on value of output, the top non-fuel commodities in 1996 were gold (\$2.8 billion), copper (\$2.0 billion), nickel (\$2.0 billion), zinc (\$1.7 billion), iron ore (\$1.3 billion) and potash (\$1.3 billion). Figure 3 provides a detailed percentage breakdown of the total value of mineral production by commodity and by province for 1995 and 1996.

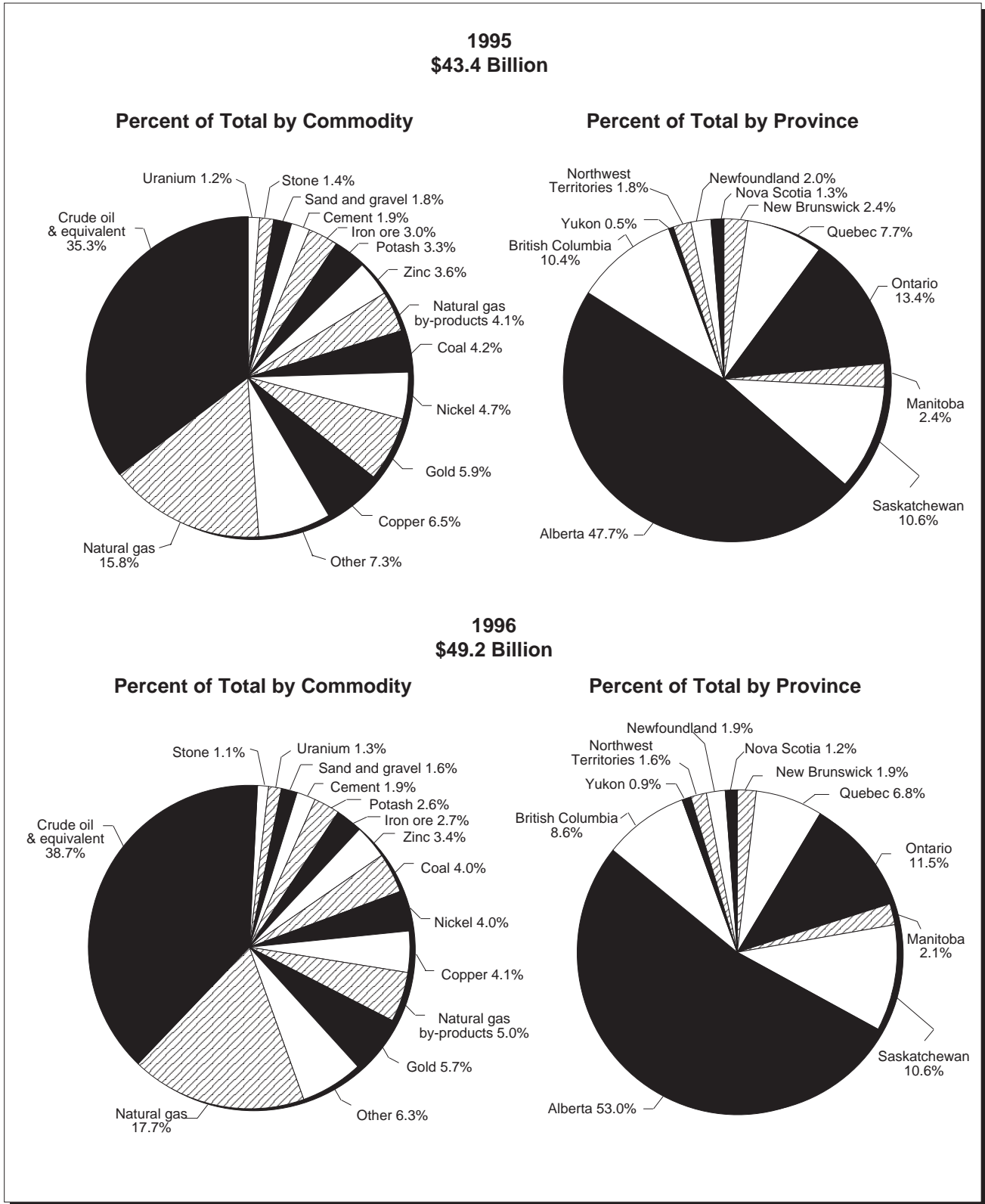
As a result of strong growth in the total value of fuel minerals, non-fuel minerals accounted for only 34.7% of the total value of Canada's mineral production in 1996, down from the 40.6% registered in 1995.

Regionally, Ontario contributed the largest share of the non-fuel mineral output accounting for 32.6% of the total value, followed by Quebec (19.5%), British Columbia (11.7%), Saskatchewan (10.5%), Newfoundland (5.5%), Manitoba (5.4%) and New Brunswick (5.3%). The remaining provinces and territories accounted for 9.5% of the total value of non-fuel mineral output.

The total value of mineral fuels output rose significantly from \$25.8 billion in 1995 to \$32.1 billion in 1996, overshadowing the decline experienced in the value of non-fuel mineral production. Each of the mineral fuel commodities contributed to the 24.7% increase with the value of crude oil and equivalent increasing by \$3.7 billion, natural gas by \$1.9 billion, natural gas by-products by \$0.7 billion, and coal by \$100 million. Together these minerals accounted for 65.3% of the total value of Canada's mineral production in 1996.

Although the sharp increases in the value of production were principally a result of higher prices, each of the four fuel commodities also recorded gains in production volume in 1996. The production of crude oil and equivalent increased by 2.2% to 116.8 million m<sup>3</sup>, natural gas output rose by 3.2% to 153.0 billion

**Figure 3**  
**Value of Mineral Production, Percent Shares by Commodity and by Province, 1995 and 1996**



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.

m<sup>3</sup>, and natural gas by-products recorded a 3.4% increase in output to 25.9 million m<sup>3</sup>. Canada's coal production tonnage continued its record-breaking climb, surpassing previous highs reached successively in 1994 (72.8 Mt) and 1995 (74.9 Mt) to attain a new record level of almost 76.0 Mt in 1996.

Alberta accounted for the majority of the value of mineral fuels output, registering 79.5% of the total, followed by Saskatchewan at 10.7%, British Columbia at 7.0% and the remaining provinces and territories at 2.8%.

## Employment in the Mineral Industry

Employment levels in the four stages of the mineral industry continued to provide evidence of modest growth, although the picture varied by stage. Total employment in the mineral industry in 1996 is estimated to have been more than 350 000, up by 2.7% from the 341 000 registered in 1995 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 59 000, down by about 1000 from the revised 1995 level. This decline reflects a small job loss in metal mines as a result of the net impact of 1996 mine openings and closings, together with a decline in employment in nonmetal mines. However, it is expected that, with the anticipated openings of mining operations, employment in Stage I will grow in both 1997 and 1998.

Employment in Stage II (smelting and refining), estimated at 61 000 in 1995, increased to just over 63 500, or by about 4%, in 1996, continuing the modest rebound that occurred in 1995. Powered by strong growth in the metal fabricating industries, total employment in Stages III and IV rose from 220 000 in 1995 to nearly 228 000 in 1996, an increase of about 3.6%. A marginal decline to 8900 occurred in the number of Canadians employed in services incidental to the mining and quarrying industries, reflecting the fact that the current peak of mineral exploration is being reached.

## Mineral Industry Trade

Canada remains one of the world's largest exporters of minerals and metals, a fact that has had a major impact on the national standard of living. The mineral industry continued to make a significant contribution to Canada's trade surplus position and thus to its merchandise trade balance. The United States is the primary destination for Canada's minerals and mineral products, receiving 80.0% of total exports in 1996, followed by the European Union with 6.4% and Japan with 4.7%.

As Table 2 shows, the export value of minerals and mineral products, including fuels, totalled \$67.7 billion

in 1996, an increase of \$6.2 billion, or about 10.0%, over 1995. These exports included crude minerals, smelted and refined products, and semi-fabricated and fabricated products. All mineral groups, with the exception of nonmetals, experienced increases in export values with metals accounting for 47.4% of the total value, fuels for 42.1%, nonmetals for 9.4%, and structural materials for 1.1%. The non-fuel minerals industry, which includes coal but excludes petroleum and natural gas, exported \$41.9 billion worth of minerals and mineral products in 1996 and accounted for 16.2% of total Canadian domestic exports.

The total value of metallic minerals and mineral product exports increased from \$31.1 billion in 1995 to \$32.1 billion in 1996. The increased contributions made by gold (+\$0.6 billion), uranium and thorium (+\$0.27 billion), nickel (+\$0.20 billion), and iron and steel (+\$0.20 billion) were somewhat offset by the significant declines in the export values of copper (-\$0.59 billion) and aluminum (-\$0.46 billion).

The value of exports of nonmetallic minerals and mineral products fell from \$6.43 billion in 1995 to \$6.36 billion in 1996, a decrease of about 1.1%. Increases in the export values of nitrogen, gypsum, and glass and glassware products in 1996 were outpaced by the significant declines experienced by potash (-\$0.22 billion) and sulphur (-\$0.06 billion).

Due mainly to the \$95 million growth in the value of cement exports, the value of structural material exports rose from \$647.5 million in 1995 to \$742.0 million in 1996. The top three commodities in this group, in terms of export value, were cement (\$507 million), stone (\$93 million), and clay and clay products (\$42 million).

All of the mineral fuel commodities, except for coal and coke, contributed to the \$5.1 billion rise in the value of mineral fuel exports from \$23.4 billion in 1995 to \$28.5 billion in 1996. Petroleum exports led the way with a value of \$17.0 billion, an increase of \$2.8 billion over 1995, followed by natural gas with a value of \$7.4 billion (+\$1.8 billion).

Imports of minerals and mineral products, including fuels, amounted to \$42.2 billion in 1996, an increase of about 6.3%. The metals group accounted for 60.2% of this total, fuels for 27.0%, nonmetals for 10.3%, and structural materials for 2.5%. When petroleum and natural gas are excluded, mineral industry imports amounted to \$31.6 billion and accounted for 13.5% of total Canadian imports. More detailed information on imports is presented in Table 3.

The merchandise trade surplus for non-fuel minerals and coal amounted to \$11.0 billion, a 7.6% increase over 1995. When petroleum and natural gas are included, a trade surplus of approximately \$26.8 billion was registered for minerals and mineral products in 1996. A three-year trend in the balance of trade is provided in Table 4.

## Investment by the Mineral Industry

The size of the investments 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 indications are that total expenditures for non-fuel mineral exploration in 1996 should reach \$873 million and are likely to remain at roughly the same level in 1997. These levels represent substantial increases over the \$718 million spent in 1995 and the \$628 million spent in 1994. Several factors accounted for the recent revival of exploration activity. First, increases in the prices of precious metals since 1994 have encouraged higher levels of exploration activity. Secondly, interest in Canada's diamond mining potential has resulted in about \$147 million being invested in diamond exploration in each of 1995 and 1996, amounting to a total of about \$520 million being expended during the period 1993-96. It is expected that the first Canadian commercial production of diamonds will commence in late 1998 or early 1999. Finally, the discovery in late 1994 of the nickel-copper-cobalt deposit near Voisey's Bay is expected to sustain a high level of exploration activity in that area of the country for years to come. Canada remains a leading world target for exploration. Australia and Canada, between them, have led the world for the past 17 years as areas to which investment in exploration activities has been directed.

### Capital Expenditures

Expenditures on new construction, machinery and equipment, and on the repair of existing plants and equipment, are manifestations of an industry's vitality. Capital expenditure intentions (which include mine-site exploration and development expenditures) reported by the non-fuel mineral industry (including coal) in 1997 are expected to total some \$5.6 billion. This level of spending, reflecting the investment intentions of the industry, is 1.5% above the estimated 1996 expenditure level and almost 20% above the \$4.7 billion spent in 1995 on construction and machinery and equipment. The intended level of spending is comparable to the anticipated increase in capital spending for the total economy in 1997 of 5.2% from 1996 levels and 8.2% from 1995 levels. The semi-fabricating industries are expected to be the main contributors to this growth in 1997. Capital expenditures in the mining, quarrying and sand pit industries are expected to be about \$2.6 billion in 1997, about the same as in 1995 and 1996, but well above the \$1.9 billion spent in 1994. Robust exports and the continuing need to maintain, and even enhance, productivity and competitiveness are factors supporting the mineral processing industries.

When repair expenditures are included, total investment spending by the mining and mineral processing industries was \$8.8 billion in 1995, the latest year for which repair expenditure data are available. In 1994, some \$7.0 billion in expenditures were made. The 1995 level of spending represented 5.4% of total capital and repair expenditures within the Canadian economy, up from the 4.1% recorded in 1994.

## Capacity Utilization in the Mineral Industry

Canadian industries increased their use of production capacity through every quarter of 1996, bringing the level of use to 84.8% at year-end. This was slightly less than the recent peak of 85.1% recorded in the fourth quarter of 1994, and narrows the gap created after capacity utilization reached an historical peak of 86.8% during the first half of 1988. At the same time that capacity utilization increased, industries expanded their production capacity. Statistics Canada's survey of public and private investment showed that business investment increased in 1996 over 1995, with further increases expected for 1997. In addition, manufacturers do not expect shortages of either skilled labour or raw materials. This will allow for further expansion of output without encountering production bottlenecks. These factors point to a continuation of Canada's non-inflationary environment. Industrial product prices in early 1997 have changed little compared to prices over the previous several months.

Capacity use in the mining, quarrying and oil wells sector increased by 0.7% to 88.1% in the fourth quarter of 1996, the highest level attained since the second quarter of 1989. All of the fourth-quarter strength in this sector came from the crude petroleum and natural gas industries (in contrast to the previous quarter). As a result of declines in production by nonferrous metal mines (an effect of recently reduced exports) and coal mines, the mining and quarrying industries dropped 0.6% from the third quarter to 90.3% in the fourth.

Manufacturers of nonmetallic mineral products – mainly concrete and glass products – benefitted from higher construction activity in the fourth quarter and increased their capacity use by 2.8% to 87.7%, the highest level since the first quarter of 1989.

Capacity use in the manufacturing sector increased in the fourth quarter to 85.3% as 18 of the 22 industry groups raised their capacity levels. Use in the primary metals industry stood at 96.3%, the highest level since early 1988, at least partly in response to increased output in the motor vehicle, machinery and electronic products industries.



## 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 1996 for Canada's leading minerals.

### Gold

In 1996, Canada's gold production increased by 13.3 t from 150.8 t in 1995 to 164.1 t, a noteworthy increase of almost 9%. New projects coming on stream in various regions of the country will cause the annual level of Canadian gold production to rise to nearly 170 t by 1998 and to more than 180 t by the end of the decade. Largely as a result of production increases, the value of gold shipments rose from about \$2.5 billion in 1995 to over \$2.8 billion in 1996. Gold prices started 1996 at approximately US\$398/oz in January, peaked for the month of February at almost US\$405/oz, and then declined steadily to reach a low monthly average of US\$369/oz in December. As a result, the 1996 average price for gold was US\$387/oz, only slightly higher than the US\$384/oz recorded in 1995. The slide in gold prices continued into the early months of 1997. However, continuing demand for gold products, particularly from India and the Far East, is expected to result in a strengthening of gold prices. Canada remained the fourth-ranked producer of gold in the world, trailing only South Africa, the United States and Australia, in that order. Overall employment in Canadian gold mines is estimated to be 9400 in 1996, about the same as in 1995.

### Copper

After a strong year in 1995 in which the annual average price for copper reached a record US\$1.33/lb, copper prices declined in 1996, dropping back to US\$1.04/lb, a level close to the 1994 average of US\$1.05/lb. Prices reached a monthly low of US\$0.90/lb in July following revelations of major trading losses by Sumitomo Corporation, but rebounded somewhat in the later months of the year and strengthened in the early months of 1997 to almost \$1.10/lb. The tonnage of copper shipped in Canada in 1996 dipped from 701 000 t in 1995 to 656 000 t in 1996. Similarly, mine production levels slipped from the 726 000 t recorded in 1995 to about 695 000 t. With decreases in both copper prices and the volume of shipments, the value of 1996 copper shipments dropped to \$2.037 billion in 1996 from \$2.818 billion, a dramatic decrease of almost 28%. Canada remains the third largest producer of copper in the world behind Chile and the United States and ahead of Russia. Total world copper consumption in 1996 (including refined copper from primary and secondary sources) stayed roughly the same as in 1995

at 12.2 Mt, with future growth in demand forecast in the Asian market, particularly India and China.

### Nickel

Nickel is a hard, tough metallic element that ranks 24th in the abundance of elements found in the earth's crust. Nickel and chromium are alloyed with iron to produce stainless steel, which accounts for 65% of the nickel consumed worldwide. In 1996 Canadian mine production of nickel rose to 195 000 t, more than 7% higher than in 1995. Canadian nickel mine production volumes had returned to more normal levels in 1995, increasing by about 20% after a year of reduced production in 1994, due mainly to cutbacks at Inco. However, as a result of falling prices, the value of nickel shipments decreased slightly from \$2.031 billion in 1995 to an estimated \$1.958 billion in 1996, a decline of less than 4%. After peaking in August 1995 at over US\$4.00/lb, nickel prices have fallen steadily to reach a monthly average of US\$2.99/lb in December 1996. Average prices for 1996 were US\$3.40/lb, substantially lower than the US\$3.74/lb recorded in 1995. However, prices did begin to move upwards during the early months of 1997.

Worldwide consumption of nickel is estimated to have declined in 1996 by almost 5%, reversing the trend of the two previous years and helping to precipitate the drop in nickel prices. Nevertheless, it is anticipated that worldwide demand for nickel, especially for stainless steel, will increase and production will continue to rise in 1997. Canada's nickel production is expected to grow moderately until the development of the Voisey's Bay property results in a major increase. Canada and Russia remain the two largest producers of nickel in the world, between them accounting for almost 50% of world production.

### Zinc

Canadian mine production of zinc increased by 11% over 1995 levels, reaching 1.24 Mt in 1996. This increase was due primarily to a full year's production from the Faro operations in the Yukon and to the higher-grade zones mined at the Myra Falls mine in British Columbia. The value of zinc production rose from \$1.5 billion in 1995 to almost \$1.7 billion in 1996, an increase of 6.7%. Zinc prices averaged US46.5¢/lb for the year, a slight decrease from the US46.8¢/lb in 1995. It is anticipated that zinc prices will gradually increase from the US54¢/lb reached early in 1997 to between US62¢ and 72¢/lb by 2003 as demand increases and London Metal Exchange (LME) stocks begin to decline.

World mine production and metal production are expected to be higher in 1997 with mine production lower than previous forecasts due to a number of temporary suspensions and cutbacks announced in late 1996 and in January 1997. World consumption

of zinc is expected to rise to 7.8 Mt in 1997 as demand strengthens in both Europe and Asia.

## Iron Ore

Most of Canada's iron ore is produced by three mining operations in the Labrador Trough of northern Quebec and Labrador. Canadian shipments of iron ore decreased by about 1.6% in 1996 as mine production levels dropped from 37.3 Mt in 1995 to about 36.0 Mt in 1996, due mainly to a strike at one of the operations. The value of iron ore shipments in 1996 remained roughly the same as in 1995, increasing slightly from \$1.29 billion to \$1.30 billion. More than three quarters of the volume and value of Canada's iron ore shipments are exported and, although the largest single customer, receiving 37% of these shipments, remains the United States, European destinations in total account for slightly more than 50% of all shipments of Canadian iron ore.

## Uranium

Canada, the world's leading producer and supplier of uranium, exports roughly 80% of its uranium production. Three of the world's top ten uranium-producing companies are located in Canada. Shipments of uranium in 1996 totalled an estimated 11 450 tU, an increase of about 8.9% over the 1995 total of about 10 290 tU and a return to levels similar to those attained in 1994. The value of 1996 shipments was estimated to be \$646 million, an increase of more than 20% over the previous year. The average price of Canadian export deliveries increased sharply from \$47/kgU in 1995 to \$54/kgU in 1996. Spot market prices trailed off in the second half of the year due to limited near-term demand, and it is uncertain if they will continue to decline to the levels seen in the late 1980s and early 1990s. The difference between the "restricted" market price and the "unrestricted" market price generally narrowed during the year but increased by year-end to US\$0.95/lb U<sub>3</sub>O<sub>8</sub>. Canadian uranium marketers signed export contracts in 1996 for some 13 000 tU, after a near-record volume of 20 500 tU in contracts in 1995. Development work is proceeding on the McClean Lake uranium project in Saskatchewan, which will become Canada's first new uranium-producing operation since Key Lake opened in 1982.

## Silver

Canada ranks fourth among producers of silver in concentrate in the world. Silver is produced in several provinces including Ontario, British Columbia, New Brunswick, Quebec and Manitoba, normally as a co-product of base-metal mining or gold mining. Mine production of silver in 1996 remained roughly the same as in 1995 increasing from 1285 t to 1305 t. Shipments of silver declined to 1228 t in 1996 from 1245 t in 1995, with a slight increase in the value of that production from \$281 million to \$285 million.

LME silver prices in 1996 averaged US\$5.20/oz, the same as in 1995. After reaching a peak average monthly price of US\$5.65/oz in February, prices during the year generally declined to close the year at an average price of US\$4.82/oz in December.

## Potash

Potash, used principally in the preparation of fertilizers, is produced in two Canadian provinces, Saskatchewan and New Brunswick, with Saskatchewan accounting for about 87% of Canada's mine production volume of about 8.1 Mt K<sub>2</sub>O, a substantial decline from the 9.1 Mt K<sub>2</sub>O produced in 1995. The Canadian potash industry employs roughly 3500 workers. Canadian potash mines operated at 60% of capacity, compared to 68% in 1995, while other major world producers operated at capacities above 85%. Technical and economic studies were initiated in 1996 to determine the feasibility of initiating potash production in Manitoba.

World potash consumption rose by 4% in 1996, a somewhat slower pace than had been anticipated. Overall world potash production in 1996 was estimated at 23.2 Mt K<sub>2</sub>O, down by 4% from 1995, as potash producers reduced their production levels in order to achieve a better balance between supply and demand. Canada is the world's largest export producer with an estimated 40% share of world trade. Canadian potash exports increased to almost all regions in the world with the notable exception of China where imports from Canada declined dramatically.

## Sulphur

Canada was the world's second largest producer of elemental sulphur in 1996 with a 22% share of the market, and remained the world's largest exporter. Production of elemental sulphur increased by 4% to an estimated 8.3 Mt. Shipments remained static at 7.1 Mt as lower sales to the United States, the dominant export destination for Canadian sulphur, offset the 9% increase in offshore exports of 5.1 Mt. Entering 1996, sulphur price quotations on a free on board (f.o.b.) Vancouver basis were between US\$48 and \$51/t. Price reductions from Middle Eastern exporters and harsh competition between suppliers led to a virtual collapse in prices, which bottomed at US\$25-\$28/t in August. By year-end, prices had recovered slightly to between US\$29 and \$34/t. World consumption of elemental sulphur is expected to increase in 1997 by 3.3% to 37.5 Mt, and will continue to recover until the year 2000.

## 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 in the serpentine group. Asbestos-cement products remain

favoured by many users despite increased competition from substitute fibres and steel. Total shipments of chrysotile in 1996 were estimated at 521 000 t, up slightly from the revised 1995 level of 516 000 t. The value of shipments rose marginally from \$235 million in 1995 to \$238 million in 1996. Canada exports chrysotile asbestos to markets in more than 60 countries, with Asia continuing to represent the main export market in 1996, receiving over 60% of Canadian exports. After several years of decline, markets in Africa and the Middle East show some signs of recovery. Overall, shipments and exports in 1997 are expected to remain at the 1996 level.

## Salt

Canadians are the highest per capita consumers of salt in the world, primarily due to the use of salt as a de-icing agent to improve driving in wintry conditions. Salt is mined in several Canadian provinces including Nova Scotia, New Brunswick, Quebec, Ontario, Saskatchewan and Alberta. Shipments of Canadian salt rebounded to 1994 levels, growing to 12.3 Mt in 1996 from 11.0 Mt in 1995, an increase of about 12%. Similarly, the value of these shipments increased from \$270.4 million to \$316.2 million over that period. Mine production of salt increased from 10.9 Mt to 12.1 Mt. The domestic production and consumption of salt are expected to increase in the medium term.

## Coal

Canada's coal production reached a record 76.0 Mt in 1996, surpassing the previous record high of 74.9 Mt established in 1995 by 1.4%. Nearly all (96%) of Canada's coal is produced in the three westernmost provinces (British Columbia, Alberta and Saskatchewan), with the remainder being mined in Nova Scotia and New Brunswick. British Columbia increased its coal production by 5% in 1996 to 25.5 Mt, while coal production in Alberta, Canada's largest coal-producing province, fell by 2% to 36.2 Mt. Saskatchewan, the country's third largest coal-producing province, increased production by 1% to 10.9 Mt. On the east coast, coal production rose in the province of Nova Scotia and was constant in New Brunswick.

The value of coal production grew to \$1.94 billion, higher by about 6% than the \$1.83 billion registered in 1995. Canadian coal consumption is expected to remain more or less constant at about 54 Mt/y over the remainder of the decade, growing in the first part of the next century as more coal is used by provinces to generate electricity. Most of this coal will come from indigenous sources, although some will be imported, principally from the United States. Canada, which is the world's fifth largest coal exporter, exported a record 34.5 Mt of coal in 1996, of which 80% is metallurgical coal. On the world scene, thermal coal trade is expected to continue to grow

because of increasing coal consumption for electricity generation in Asia.

## Structural Materials

The value of all structural materials produced in Canada, including sand and gravel, cement, clay products, lime and stone, was \$2.6 billion in 1996, an increase of nearly 3% over the \$2.5 billion recorded in 1995. Cement shipments increased by 10.6% in value and by 5.8% in tonnage over 1995 to reach a value of \$931 million. On the other hand, total shipments of mineral aggregates (mainly crushed stone and sand and gravel) decreased by about 6% to 304 Mt in 1996. Demand for mineral aggregates is mainly local or regional and is strongly influenced by trends in domestic construction. The \$6 billion infrastructure renewal program supported by all levels of government that began in late 1993 continued to make an important contribution to total construction activity as the related program expenditures have been extended an additional two years to 1998/99. It is anticipated that shipments of mineral aggregates will rise modestly as the recovery in the residential and engineering construction industry continues into 1997.

## Diamonds

During the year, Canada moved closer to the opening of its first commercial diamond mine. Following the completion of a public review process and the fulfilment of regulatory requirements laid down by the federal government in 1996, the BHP Diamonds Inc./Dia Met Minerals Ltd. diamond project at Lac de Gras, some 300 km northeast of Yellowknife, Northwest Territories, received federal government approval in January 1997 to proceed with mine development. Diamonds recovered to date from the kimberlite pipes at this site indicate that there is strong potential for their economic extraction. Intensive exploration activity is also being carried out at other project sites in the Northwest Territories. Exploration for diamonds, which had grown sharply in Canada in 1994 and 1995, continued strongly in 1996 and is expected to remain at an elevated level in 1997. Although this exploration activity has been focussed in the Northwest Territories, it has also occurred in several other provinces including Saskatchewan, Ontario, Quebec and Newfoundland (Labrador). The development of promising pipes will offer prospects for new economic activity both in the mining industry itself and in the downstream processing of diamonds.

## LOOKING AHEAD FOR THE MINERAL INDUSTRY

The outlook for the Canadian mineral industry in 1997 remains quite good as the Canadian economy is expected to grow significantly and major Canadian export markets are forecast to continue to expand at

a steady pace. However, price levels for mineral commodities are expected to be less buoyant than in 1995 and the early part of 1996. Although prices for major nonferrous commodities such as copper, aluminum and nickel had begun to rebound and show strength in early 1997, Canadian mineral producers will likely be hard-pressed to increase profit levels over those obtained in 1996.

In terms of general economic conditions in Canada, GDP grew by approximately 1.4% in 1996, somewhat less than most forecasters had predicted. Prospects for 1997 are much brighter with forecasts of a 3.2% GDP growth rate as the export market and housing sector are expected to perform well, and as low interest and inflation rates stimulate consumer confidence and spending. Nevertheless, the main engine of growth for the Canadian economy will likely continue to be the export sector. Exports are forecast to rise by nearly 6% in response to demand from the United States and elsewhere, even when some expected strengthening in the value of the Canadian dollar is taken into account.

Inflation and interest rates are expected to remain low. Most forecasters expect the inflation rate to increase only slightly in 1997 in line with an anticipated stronger economy, but still to average less than 2%, the mid-point of the Bank of Canada's inflation target range of 1.0-3.0%. Continuing stability in the interest rates in the United States, a firm Canadian dollar vis-à-vis the U.S. dollar, and strengthening foreign investor confidence in Canada should enable the Bank of Canada to keep the Canadian bank rate relatively stable with respect to the 3.25% rate recorded at the end of 1996.

Domestic consumer spending is, at long last, expected to improve, driven principally by the effects of lower interest rates. The housing market is finally showing strength as affordability, the lowest interest rates in almost 30 years, and pent-up consumer demand exert positive demand pressures. Indeed, Canada Mortgage and Housing Corporation forecasts that housing starts will increase by 13.7% to 141 800 in 1997. Ongoing high unemployment levels, uncertainty about public and private sector downsizing and restructuring, and government deficit reduction efforts have also dampened consumer spending. However, some growth in employment is occurring and employment is forecast to increase by 1.5-2.0% in 1997. Nevertheless, the unemployment rate will probably remain above 9% throughout most of the year.

Internationally, the outlook is positive for economic activity in markets around the world. In the United States, economic activity is forecast to grow by about 2.2% in 1997, in Japan by 1.9%, and in Europe by about 2.5%. Elsewhere, in developing countries, growth rates are forecast to be higher than in industrialized countries, notably in Asian countries where rates in the range of 7.5% are expected. This bodes

well for the demand for minerals and metals worldwide. The continued strong growth in the United States will be particularly positive for Canadian companies that ship about 80% of their mineral and metal exports to the United States.

In 1997, progress will continue on government initiatives that respond to issues that affect the well-being of the Canadian mineral industry. Many of these initiatives can be traced back to the work of the Whitehorse Mining Initiative and, in some cases, have been captured in new mineral policies, such as at the federal level and in the province of Nova Scotia. Specific examples of such initiatives include the promotion of Canada's mineral potential abroad; the development of partnerships and improved cooperation amongst the federal, provincial and territorial governments; regulatory reform; and the defence of Canada's interests internationally with respect to efforts to ban the use of, or trade in, certain minerals and metals because of possible environmental or health risks.

For the past several years, the federal government, through Natural Resources Canada, has conducted mineral investment seminars in foreign countries promoting Canada both as having an attractive investment climate for mineral development and as being a source for mineral financing and expertise for exploration and mine development. These seminars will continue in 1997. Natural Resources Canada is also participating in conferences (for example, the Investing in the Americas conference held annually in the United States) where mineral development and investment are major themes. Team Canada missions led by the Prime Minister of Canada, such as the mission to the Far East in January 1997, which included participation by provincial premiers, promote mineral opportunities in Canada. In addition, individual provinces continue to carry out mineral trade missions abroad either in cooperation with the federal government or on their own. Industry representatives have participated in many of these missions. It is already clear that these activities have generated positive results and, as such, will continue as an ongoing effort by the respective levels of government in Canada. Indeed, seminars conducted by Natural Resources Canada can be linked to four major investments in Canada with initial capital expenditures of over \$230 million.

Benefits from improved federal and provincial/territorial cooperation are expected in 1997 with the first full year of two major collaboration efforts in the minerals field. The Intergovernmental Geoscience Accord, signed by the federal government and nearly all provinces and territories in September 1996, defines the complementary roles and responsibilities of the federal, provincial and territorial geological surveys in providing geoscience information for a broad spectrum of mining, environmental and societal needs. Under the framework of this accord, the Geological Survey of Canada is negotiating a series of bilateral agreements with its provincial and territorial

counterparts that will establish mechanisms for joint program planning and delivery to ensure effective and efficient use of limited resources. Also formalized during 1996 was the Intergovernmental Working Group on Mining, Minerals and Metals Science and Technology. This group brings together representatives from the federal, provincial and territorial governments having an interest in mining, minerals and metals technology. This working group will exchange information on topics of mutual interest, discuss issues affecting the industry, and provide advice to the Canada Centre for Minerals and Energy Technology (CANMET).

The regulatory reform efforts being made by governments in the minerals field have placed emphasis on the need to streamline regulations and to make concerted efforts to reduce or eliminate any possible duplication and overlap between the respective jurisdictions. Recent examples of such reforms include amendments to the *Fisheries Act* that provide for delegation of certain fish habitat management responsibilities to the provinces, and an agreement between the federal government and Alberta to harmonize, beginning in early 1997, the environmental assessment of the Cheviot coal project. The initiative to formally harmonize environmental regulations, which was undertaken by the Canadian Council of Ministers of the Environment, appears to be drawing to a successful conclusion with an agreement in principle reached in late 1996. It is intended that three sub-agreements be ratified in May 1997. These sub-agreements will cover environmental assessments; the establishment of Canada-wide standards; objectives and guidelines in areas such as air, water and soil quality; and inspection activities by Environment departments.

Canadian mining companies are continuing their efforts to reduce emissions and to respond to the federal government's Accelerated Reduction/Elimination of Toxins (ARET) program, a voluntary program to reduce or eliminate emissions into the air, land and water. In late 1996, The Mining Association of Canada (MAC), a strong supporter of this initiative, reported that 31 of its member companies had reduced their emissions of 12 major substances by 68% since 1988. These companies, which account for 92% of the country's base-metal production, expect a further 19% reduction by the year 2000.

The Canadian government continues to actively participate in international fora where environmental and health risks posed by minerals and metals, notably nonferrous metals, are discussed and where there are implications for trade in these and other mineral-bearing commodities. The Canadian position is based on the Safe Use Principle, which integrates the notions of "risk" and "use," recognizing that minerals and metals and their products can be produced, used, re-used, recycled and returned to the environment in a manner that is consistent with sus-

tainable development. In this context, Canada and other countries believe that it is not necessary to ban metals that may result in health and safety risks if not used properly, but rather that it is critical to advocate that proper practices and guidelines for safe use be emphasized. This approach is supported by the mineral industry.

Currently, an important area of international discussions in this field is the Basel Convention, under which the developing countries have the right to refuse importation of hazardous materials, the issue under discussion being the acceptance of common definitions for such terms as "waste," "hazard," "disposal" and "recycling" with respect to minerals and metals. Another area being discussed is the United Nations Economic Commission for Europe Heavy Metals Protocol where, under its Convention on Long Range Transboundary Air Pollution, products containing the heavy metals of cadmium, lead or mercury could be placed under strict management controls or be banned.

On behalf of the global minerals industry, the International Council on Metals and the Environment (ICME) is conducting research focussing on environmental and health issues of a generic nature affecting the minerals industry worldwide. The ICME, which is based in Canada, has been actively conducting studies and sponsoring workshops to demonstrate that nonferrous metals and precious metals can be produced, used, recycled and disposed of in an environmentally sound and socially responsible manner consistent with the Safe Use Principle.

The medium-term outlook to the year 2000 appears favourable for the Canadian mineral industry. The health of the industry will continue to be determined largely by export markets, commodity price levels and, in particular, economic activity in the United States. Levels of capital expenditures by the mineral industry will remain strong due in large part to the development of BHP's diamond mine at Lac de Gras in the Northwest Territories and Inco's Voisey's Bay mining complex in Labrador. Total non-fuel mineral exploration expenditures can be expected to soften, particularly as exploration activities for diamonds in the Northwest Territories and for nickel-copper-cobalt deposits in Labrador subside. The resolution of Aboriginal land claims and associated concerns will be important issues for mineral industry stakeholders to resolve during this time period.

Canada's mineral resources have played a significant role in the development of the country, and they can be expected to continue to make a major contribution to Canada's economy into the next century. However, it will be necessary for governments, the mineral industry and other stakeholders to continue to ensure that the industry remains competitive by addressing and resolving the issues that continually challenge it. In this way, Canada will maintain its position as a

world-class producer and exporter of minerals, and the mineral industry will continue to provide employment and economic benefits for all Canadians.

*Note: Information in this review was current as of March 31, 1997.*

**TABLE 1. CANADA, PRODUCTION OF LEADING MINERALS, 1995 AND 1996**

		Volume		Percent Change 1996/1995	Value		Percent Change 1996/1995
		1995	1996P		1995	1996P	
		(000 tonnes except where noted)			(\$ millions)		
<b>METALS</b>							
Gold	kg	150 867.3	164 136.1	8.8	2 557.5	2 802.9	9.6
Copper		700 .8	655.8	-6.4	2 818.0	2 037.1	-27.7
Nickel		172.1	184.5	7.2	2 031.7	1 958.2	-3.6
Zinc		1 094.7	1 187.8	8.5	1 549.0	1 652.2	6.7
Iron ore		36.6	36.0	-1.6	1 291.4	1 310.5	1.5
Uranium	tU	10 238.2	11 447.9	11.8	526.4	645.7	22.7
Silver	t	1 244.6	1 228.1	-1.3	285.1	280.5	-1.6
Lead		204.2	246.0	20.5	176.6	261.5	48.1
Cobalt	t	2 016.5	2 190.3	8.6	176.9	168.4	-4.8
<b>NONMETALS</b>							
Potash (K <sub>2</sub> O)		8 854.7	8 164.8	-7.8	1 424.3	1 263.7	-11.3
Salt		10 957.4	12 288.9	12.2	270.3	316.2	17.0
Asbestos		515.6	520.5	1.0	234.7	238.0	1.4
Peat		885.5	782.9	-11.6	139.1	128.8	-7.4
Sulphur, elemental		7 846.4	8 131.0	3.6	187.6	95.6	-49.1
<b>STRUCTURAL MATERIALS</b>							
Cement		10 440.3	11 050.0	5.8	842.4	931.4	10.6
Sand and gravel		225 991.6	217 898.0	-3.6	793.4	778.3	-1.9
Stone		98 577.9	86 057.5	-12.7	591.2	552.6	-6.5
Lime		2 461.7	2 490.5	1.2	206.9	212.3	2.6
Clay products		..	..	..	95.6	117.1	22.5
<b>MINERAL FUELS</b>							
Crude oil and equivalent	000 m <sup>3</sup>	114 372.1	116 831.7	2.2	15 321.0	19 008.5	24.1
Natural gas	million m <sup>3</sup>	148 202.6	152 985.1	3.2	6 830.7	8 718.9	27.6
Natural gas by-products	000 m <sup>3</sup>	25 040.3	25 881.9	3.4	1 772.4	2 456.5	38.6
Coal		74 920.0	75 950.0	1.4	1 834.6	1 943.1	5.9

Sources: Natural Resources Canada; Statistics Canada.

.. Not available; P Preliminary.

Note: Numbers have been rounded.

**TABLE 2. CANADA, STAGE I TO STAGE IV, VALUE OF MINERALS AND MINERAL PRODUCTS, EXPORTS BY COMMODITY, BY DESTINATION, 1996P**

	United States	EU	Japan	Mexico	Other	Total
	(\$'000)					
<b>METALS</b>						
Aluminum	5 129 466	475 230	363 804	283	363 291	6 332 074
Antimony	1 073	–	55	–	1 204	2 332
Bismuth	925	593	–	–	.. .	1 517
Cadmium	1 903	2 117	3 501	–	677	8 198
Calcium metal	860	2 044	180	247	324	3 655
Chromium	28 938	217	109	–	106	29 370
Cobalt	75 689	95 978	74 961	7	138 700	385 335
Copper	1 993 214	296 267	389 199	10 785	339 407	3 028 872
Gold	2 336 950	359 321	107 446	2 014	718 991	3 524 722
Iron and steel	7 598 415	138 543	42 692	43 333	409 191	8 232 174
Iron ore	441 070	443 286	15 591	13 931	52 543	966 421
Lead	303 466	56 711	4 879	27	65 678	430 761
Magnesium and magnesium compounds	137 728	34 940	14 564	129	34 427	221 788
Molybdenum	15 910	10 925	37 663	–	7 064	71 562
Nickel	646 560	781 821	78 221	9 028	823 414	2 339 044
Niobium	16 190	13 333	3 843	–	479	33 845
Platinum group metals	69 400	83 517	3 420	1 152	627	158 116
Silver	320 123	31 145	38 697	351	17 581	407 897
Tin	18 452	779	105	–	925	20 261
Uranium and thorium	720 202	84 537	13 832	828	141 117	960 516
Zinc	851 755	393 576	38 738	139	202 092	1 486 300
Other metals	2 700 776	278 526	208 263	8 149	281 166	3 476 880
Total metals	23 409 065	3 583 406	1 439 763	90 403	3 599 004	32 121 640
<b>NONMETALS</b>						
Asbestos	47 105	34 511	51 726	16 618	203 228	353 188
Barites and witherite	4 936	–	117	–	232	5 285
Diamonds	13 574	2 006	10	–	1 204	16 794
Graphite	96 092	14 745	1 115	1 145	19 111	132 208
Gypsum	226 683	769	1 343	–	1 706	230 501
Mica	7 554	342	1 308	–	312	9 516
Nepheline syenite	38 892	1 269	454	108	3 196	43 919
Peat	220 184	22 839	22 557	117	23 336	289 033
Potash and potassium compounds	808 504	59 567	76 426	1 237	600 421	1 546 155
Salt and sodium compounds	486 510	64	21 133	–	35 580	543 287
Sulphur and sulphur compounds	145 709	–	–	26 649	323 187	495 545
Talc, soapstone and pyrophyllite	7 459	55	–	–	93	7 607
Titanium oxides	149 906	2 012	–	–	358	152 285
Other nonmetals	2 276 456	93 437	15 558	5 107	143 959	2 534 517
Total nonmetals	4 529 564	231 625	191 747	50 981	1 355 923	6 359 840
<b>STRUCTURALS</b>						
Cement	502 317	528	271	–	3 757	506 873
Clay and clay products	31 848	1 748	1 193	716	6 304	41 809
Lime	24 661	–	–	–	40	24 701
Sand and gravel	10 992	445	–	–	407	11 844
Silica and silica compounds	10 253	293	11	–	3 475	14 032
Stone	68 584	6 307	10 659	–	7 302	92 851
Other structurals	43 540	774	614	1 494	3 782	50 204
Total structurals	692 195	10 095	12 748	2 210	25 067	742 314
<b>FUELS</b>						
Coal and coke	184 302	297 516	1 503 254	22 199	623 083	2 630 354
Natural gas	7 432 768	–	–	–	–	7 432 768
Natural gas by-products	1 154 107	–	–	–	92	1 154 199
Petroleum	16 391 033	168 240	46 560	5 437	428 840	17 040 110
Other fuels	221 257	15 150	6 235	296	19 675	262 613
Total fuels	25 383 467	480 906	1 556 049	27 932	1 071 690	28 520 044
Total domestic mining exports	54 014 291	4 306 032	3 200 307	171 526	6 051 684	67 743 838

Sources: Natural Resources Canada; Statistics Canada.  
 – Nil; . . . Amount too small to be expressed; P Preliminary.  
 Note: Numbers may not add to totals due to rounding.

**TABLE 3. CANADA, STAGE I TO STAGE IV, VALUE OF MINERALS AND MINERAL PRODUCTS, IMPORTS BY COMMODITY, BY ORIGIN, 1996P**

	United States	EU	Japan	Mexico	Other	Total
	(\$000)					
<b>METALS</b>						
Aluminum	2 303 554	179 446	15 176	2 547	872 509	3 373 232
Antimony	7 633	2 744	—	—	1 531	11 908
Bismuth	1 865	47	—	88	20	2 020
Cadmium	847	654	—	—	1	1 502
Calcium metal	24 261	4 275	11	12	6 026	34 585
Chromium	24 031	7 248	961	1 659	60 462	94 361
Cobalt	17 715	16 025	52	—	38 497	72 289
Copper	1 332 532	90 796	9 019	11 933	216 554	1 660 834
Gold	738 290	5 815	129	1 150	332 245	1 077 629
Iron and steel	7 263 693	1 327 504	487 496	179 336	982 928	10 240 957
Iron ore	304 110	85	...	—	30 060	334 255
Lead	410 835	12 368	11 597	13 147	45 292	493 239
Magnesium and magnesium compounds	84 331	10 053	503	200	60 260	155 347
Molybdenum	22 477	3 924	244	3 556	8 451	38 652
Nickel	196 508	92 474	49 683	8 747	410 862	758 274
Niobium	559	103	—	—	15 202	15 864
Platinum group metals	52 140	16 201	3	338	138 659	207 341
Silver	40 741	7 807	586	11 975	64 555	125 664
Tin	26 500	2 880	24	115	27 125	56 644
Uranium and thorium	33 721	5 296	20	—	208 968	248 005
Zinc	115 991	2 026	81	2 851	11 553	132 502
Other metals	4 236 659	559 957	157 075	527 136	804 311	6 285 136
Total metals	17 238 993	2 347 728	732 660	764 790	4 336 071	25 420 240
<b>NONMETALS</b>						
Asbestos	63 549	2 624	3 307	2 336	3 372	75 188
Barites and witherite	1 490	267	—	—	111	1 868
Diamonds	40 807	67 104	11	—	83 195	191 117
Graphite	256 169	40 999	18 765	3 346	16 776	336 055
Gypsum	20 960	1 124	64	1 943	865	24 956
Mica	7 322	2 465	162	—	552	10 501
Nepheline syenite	52	—	—	—	—	52
Peat	298	303	—	—	163	764
Potash and potassium compounds	30 735	1 461	6	3	3 217	35 422
Salt and sodium compounds	288 527	24 943	393	4 853	6 525	325 241
Sulphur and sulphur compounds	15 036	868	6	—	25	15 935
Talc, soapstone and pyrophyllite	14 945	89	66	—	182	15 282
Titanium oxides	121 182	53 623	749	—	4 473	180 027
Other nonmetals	2 457 788	280 181	65 799	56 391	244 719	3 104 878
Total nonmetals	3 318 860	476 051	89 328	68 872	364 175	4 317 286
<b>STRUCTURALS</b>						
Cement	142 916	5 936	424	368	2 920	152 564
Clay and clay products	285 896	192 752	25 919	18 787	143 183	666 537
Lime	4 988	40	—	—	26	5 054
Sand and gravel	16 151	119	...	7	22	16 299
Silica and silica compounds	88 155	15 150	1 689	18	4 703	109 715
Stone	38 085	27 966	28	1 792	24 803	92 674
Other structurals	12 127	4 286	246	1 044	2 862	20 565
Total structurals	588 318	246 249	28 306	22 016	178 519	1 063 408
<b>FUELS</b>						
Coal and coke	709 475	6 230	3 039	46	38 543	757 333
Natural gas	109 334	4	1	—	1	109 340
Natural gas by-products	65 719	4 094	28	—	369	70 210
Petroleum	2 093 050	2 109 597	4 538	193 648	5 321 229	9 722 062
Other fuels	669 352	51 762	7 300	1 534	4 500	734 448
Total fuels	3 646 930	2 171 687	14 906	195 228	5 364 642	11 393 393
Total mining imports	24 793 101	5 241 715	865 200	1 050 906	10 243 407	42 194 327

Sources: Natural Resources Canada; Statistics Canada.  
 — Nil; ... 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, 1993-96**

	1993	1994	1995	1996
	(\$000)			
<b>TOTAL MINING, INCLUDING FUELS</b>				
Domestic exports	46 533 551	53 443 312	61 567 463	67 743 838
Total exports	46 973 169	54 244 071	63 022 228	68 957 307
Imports	29 820 463	35 420 211	39 673 616	42 194 327
Balance of trade	17 152 706	18 823 860	23 348 612	26 762 980
<b>NON-FUEL MINING</b>				
Domestic exports	27 054 681	32 595 897	38 181 331	39 223 794
Total exports	27 454 069	33 087 047	38 845 330	39 933 019
Imports	22 253 502	27 169 884	30 293 100	30 800 934
Balance of trade	5 200 567	5 917 163	8 552 230	9 132 085
<b>TOTAL NON-FUEL MINING, INCLUDING COAL</b>				
Domestic exports	29 007 047	34 757 122	40 548 351	41 854 148
Total exports	29 406 743	35 248 646	41 216 376	42 565 004
Imports	22 770 578	27 746 758	30 983 068	31 558 267
Balance of trade	6 636 165	7 501 888	10 233 308	11 006 737
<b>TOTAL ECONOMY</b>				
Domestic exports	177 621 840	213 290 163	248 440 788	258 418 390
Total exports	187 515 000	226 475 000	264 207 000	274 884 282
Imports	169 953 000	202 737 000	225 629 195	232 937 297
Balance of trade	17 562 000	23 738 000	38 577 805	41 946 985

Sources: Natural Resources Canada; Statistics Canada.

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