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MINING SECTOR *SECTEUR MINIER*

GEOLOGICAL SURVEY OF CANADA
COMMISSION GEOLOGIQUE DU CANADA

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MINERAL INDUSTRY QUARTERLY REPORT

FALL 1993

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MINERAL INDUSTRY QUARTERLY REPORT

FALL 1993

Natural Resources Canada Ressources naturelles Canada

Canada

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Preface

This publication is prepared by the Mining Sector of Natural Resources Canada. Data appearing in this publication are compiled from many sources using the best information available to us. This report is intended to provide the reader with a digest of general information on the status of the mineral industry in Canada. It should not be considered an authority for exact quotation or an expression of the official views of the Government of Canada.

Your comments on the format and contents of this report are welcome. Specific comments can be directed to:

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Mineral and Metal Statistics Division
Mining Sector
Natural Resources Canada
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Ottawa, Ontario
K1A 0E4

Telephone: (613) 996-6384
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Mineral Industry Information Contact Point

In order to provide our clients with timely access to information describing the mineral industry, the Mining Sector has established a contact point through which requests for specific statistical information on the mineral industry can be channelled. Once a request has been received, it will be immediately directed to the officer most able to address that request.

This contact point is:

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Introduction

The key ingredient to a sound mineral statistics program is the responsiveness of the mining industry to requests for information directed to them. The quality of the data used to make decisions is, in fact, only as good as the data supplied by the industry. Over the years, the response of the mining industry to requests for information has been excellent. Accordingly, the Mining Sector and other users of our information are extremely grateful to the industry.

Suppliers of information should be aware that every effort is being made to minimize the number and magnitude of data requests made to the industry while providing information of critical use to the Canadian statistical system. We are therefore interested in identifying situations in which an unwarranted duplication of requests for statistical information seems to be occurring. Readers who have any knowledge of such situations are asked to relay this information to Rob Dunn at the address and telephone number given in the Preface.

Again, the Mining Sector wishes to thank all those in the mineral industry who are continuing to provide the statistical information that is the foundation of its information base.

McLellan Appointed New Minister of NRCan

A native of Nova Scotia, Anne McLellan was elected M.P. for Edmonton Northwest on October 25, 1993, and appointed Minister of Natural Resources Canada (NRCan) on November 4 by Prime Minister Jean Chrétien.

Ms. McLellan holds a Bachelor of Arts degree and a Law degree from Dalhousie University, and a Master of Laws from Kings College, University of London. She was admitted to the Bar of Nova Scotia in January 1976.

Between 1976 and 1980, Ms. McLellan was an Assistant Professor of Law at the University of New Brunswick, including a year and a half as Acting Associate Dean. In 1980, she moved to Edmonton to take a position as Associate Professor of Law at the University of Alberta. She served as Associate Dean of the University's Faculty of Law between 1985 and 1987, and she became a professor in 1989. Between July 1991 and June 1992, she was Acting Dean.

A well-known local and national commentator on the Canadian Charter of Rights and Freedoms, and relevant human rights issues, she has written and contributed to an extensive number of publications and research projects in the areas of constitutional reform, pay equity, sexual harassment, affirmative action, employment equity, and the Charter of Rights and Freedoms.

Ms. McLellan's experience also includes past membership on the Board of Directors of the Canadian Civil Liberties Association and Alberta Legal Aid, and as Vice-President of the University of Alberta's Faculty Association.

Notes

MAP 900A

The 1993 edition of MAP 900A is now available. This map pinpoints some 220 metallic, non-metallic and industrial mineral mines or groups of mines, as well as about 200 oil and gas fields within a geological setting. An index provides the name of the company and the location and principal mineral for each mine or group of mines and each oil and gas field. Seven inset maps of the country show the locations of nonferrous smelters and refineries; pig iron, reduced iron and ferroalloy plants; mines being developed for production; and major producing areas for minerals such as uranium, gold, silver, nickel, copper lead, zinc, molybdenum, iron and titanium, and, as well, industrial minerals. Charts provide mineral production statistics by province and territory for fuels and for metallic, nonmetallic and industrial minerals.

Map 900A is available in either English or French free of charge. To obtain copies contact the Mining Sector's Publications Distribution Office listed below.

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Please remember that we have not yet established a system to distribute information electronically. Your interest will be recorded, however, and will be used in making future publication decisions.

HIGHLIGHTS OF RECENT MINERAL INDUSTRY PUBLICATIONS BY STATISTICS CANADA

Statistics Canada has recently released three publications of interest to the mineral industry:

- *Metal Mines – 1991*, catalogue no. 26-223;
- *Nonmetal Mines – 1991*, catalogue no. 26-224; and
- *General Review of the Mineral Industry – 1991*, catalogue no. 26-201.

Metal Mines – 1991

Catalogue no. 26-223

Establishment Statistics

The total value of production by establishments classified in the metal mines industry group dropped to $10 095 million in 1991, compared to $11 714 million in 1990 and $12 902 million in 1989. All metal mine industries except for iron mines registered decreases in the value of production from 1990.

Nickel-copper-zinc mines continued to lead in value of production by the metal mines industry, contributing 48.5% ($4898 million), followed by gold mines, 22.1% ($2228 million); iron mines, 12.1% ($1227 million); silver-lead-zinc mines, 9.7% ($979 million) and uranium mines, 6.0% ($609 million). Other metal mines accounted for 1.5% ($155 million).

Total employment in the metal mining industry was 42 092 in 1991, a decline of 7.0% from the 45 248 recorded in 1990. The number of production and related workers in the mining activity was 31 168, down from 33 895 in 1990.

Total salaries and wages of those employed in metal mines were $2254 million, a marginal decrease from the $2278 million recorded in 1990. Production and related workers accounted for $1627 million of this amount.

The number of metal mines establishments surveyed dropped to 114 in 1991, a decline of 13 from the number surveyed in 1990.

Production Statistics

In 1991, the total value of metallic mineral production by all establishments in Canada, regardless of their industrial classification, was $10 462 million, a decrease of 16.3% from the 1990 level of $12 500 million.

Ontario accounted for 36.2% ($3784 million) of the total value of metal production, followed by Quebec, 18.0% ($1888 million); British Columbia, 14.4% ($1511 million), and Manitoba, 9.1% ($948 million). The other provinces and territories accounted for the remaining 22.3%.

Gold, copper, nickel, zinc, iron ore and uranium accounted for 90.5% of the total value of metal production in 1991. Their quantities and values of production are summarized below:

	Quantity	Unit	Value	% Share of Total Value
			($ millions)	
Gold	175 282	kg	2 339	22.4
Copper	780 362	tonnes	2 112	20.2
Nickel	188 098	tonnes	1 808	17.3
Zinc	1 083 008	tonnes	1 385	13.2
Iron ore	35 421 000	tonnes	1 228	11.7
Uranium	8 162	tonnes	595	5.7

Nonmetal Mines – 1991

Catalogue no. 26-224

Establishment Statistics

The total value of production by establishments classified in the nonmetal mines industry group showed virtually no change, increasing to $1806.6 million in 1991 from $1802.1 million in 1990. The value of production by the potash mining industry, which had declined dramatically in 1990, rebounded in 1991 to show an increase of 2.0% (or $19.8 million) to $988.4 million.

The potash mining industry accounted for 54.7% of the total value of production by the nonmetal mines industry group. The remaining production was distributed as follows: asbestos mines, 15.2%; peat mines, 7.3%; and other nonmetal mines, 22.8%.

Saskatchewan accounted for 47.0% ($848.3 million) of the total value of production in 1991, followed by Quebec with 18.4% ($332.7 million) and Ontario with 10.5% ($188.9 million). The remaining 24.1% was shared by the other provinces.

Total employment in the nonmetal mining industry was 10 812 in 1991, down by 6.1% from 11 515 in 1990. A total of 8055 production and related workers were employed in 1991 compared to 8736 in 1990, a drop of 7.8%.

The total wages and salaries of those employed in the nonmetal mining industry was $434.7 million in 1991. Of this amount, mining activity employment accounted for $301.5 million.

Production of Leading Nonmetals

The total value of nonmetallic minerals produced by all establishments in Canada, regardless of their industrial classification, was $2381.7 million in 1991, a decrease of 4.4% from the 1990 level of $2492.2 million.

Potash, sulphur, asbestos, salt, peat and gypsum accounted for 86.4% of the total value of nonmetallic mineral production in 1991. Their quantities and values of production are summarized below:

	Quantity	Value of Production	% Share
	(kilotonnes)	($ millions)	
Potash	7 087	931.9	39.1
Sulphur (elemental)	6 180	335.4	14.1
Asbestos	686	271.0	11.4
Salt	11 871	259.2	10.9
Peat	833	100.1	4.2
Sulphur (in smelter gas)	749	89.2	3.7
Gypsum	6 727	71.7	3.0

General Review of the Mineral Industry – 1991

Catalogue no. 26-201

Production Statistics

In 1991, the total value of mineral production by all establishments in Canada, regardless of their industrial classification, was $35 190 million (including metallic minerals, nonmetallic minerals, structural minerals and mineral fuels). This total represented a decrease of 13.7% from 1990.

VALUE OF CANADIAN MINERAL PRODUCTION, 1990 AND 1991

	1990	1991	Change
	($ millions)		(%)
Metals	12 500	10 462	–16.3
Nonmetals	2 492	2 382	–4.4
Structurals	2 796	2 401	–14.1
Total non-fuels	17 788	15 245	–14.3
Fuels	22 990	19 945	–13.2
Total minerals	40 778	35 190	–13.7

Non-fuel minerals (metals, nonmetals, and structurals) accounted for 43.3% of the total value of mineral production in 1991, while mineral fuels (crude petroleum, natural gas, natural gas by-products and coal) accounted for 56.7% of the total.

The leading metals in 1991 were: gold ($2339 million), copper ($2112 million), nickel ($1807 million), zinc ($1385 million), iron ore ($1228 million) and uranium ($595 million).

Potash was the leading nonmetal with a 1991 value of $932 million, while cement ($811 million) and sand and gravel ($738 million) led the structural materials group.

Within the mineral fuels sector, all of the fuel commodities continued to be major contributors to Canada's total value of mineral production: crude petroleum, $10 456 million; natural gas, $5394 million; natural gas by-products, $2178 million; and coal, $1917 million.

Establishment Statistics

The total number of establishments classified in the mining industry declined from 1233 in 1990 to 1169 in 1991. The 1991 total included 114 establishments in metal mining, 111 in nonmetal mining, 240 in structural materials, and 704 in the fuel industries.

The total value of production by establishments classified in the mining industry was $30 461 million in 1991, a decrease of 12.6% from the 1990 level of $34 848 million. The nonmetal mines industry was the only group to record a gain over the 1990 value of production.

The contribution by the industry to Canada's Gross Domestic Product (GDP) was $20 126 million (at 1986 prices), representing 4.0% of total GDP in 1991.

Employment in the industry declined by 4.6% to 100 617 in 1991, compared to the 1990 level of 105 471. Of the total employment, production and related workers numbered 60 844.

Although employment dropped in all sectors of the mining industry (down by 4854 overall), most of the decline occurred in metal mining (down by 3156). In 1991, the metal mining industry employed 42 092 people, nonmetal mining employed 10 812, the fuel industries employed 42 687, and the structural materials industries employed 5026 people.

The wages and salaries of those employed in the mining industry totalled $5363 million in 1991. Of this total, production and related workers accounted for $2980 million.

On a regional basis, Alberta had 31.7% of the total employment in Canada's mining industry in 1991, followed by Ontario (19.8%), Quebec (14.2%), British Columbia (12.4%), and the remaining provinces and territories (21.9%).

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Calendar of Events

Date	Event	Contact
To be announced	3rd Annual Field Conference Geological Society Bathurst, New Brunswick	Jayanta Guha Tel.: (418) 545-5404
March 5 to 9, 1994	62nd Annual PDAC Convention and Trade Show Toronto, Ontario	Prospectors and Developers Association of Canada 74 Victoria Street Toronto, Ont. M5C 2A5 Tel.: (416) 362-1969
May 1 to 4, 1994	Toronto '94 Toronto, Ontario	Jackie Luke (Toronto) Tel.: (416) 622-3130 John Gaydos (Montréal) Tel.: (514) 939-2710 Ron Ganton (Vancouver) Tel.: (604) 274-9091
May 4, 1994	Mineral Outlook Conference Toronto, Ontario	Robert Clark Mining Sector Natural Resources Canada Tel.: (613) 996-3286 Fax: (613) 943-8453
October 17 to 19, 1994	First International Conference on Mining Environmental Management Reno/Sparks, Nevada U.S.A.	Mining World News (MEM Conference) 90 West Grove Street - Suite 200 Reno, NV 89509 U.S.A. Tel.: (702) 827-1115 Fax: (702) 827-1292

Reviews

The Mineral Industry in the Canadian Economy, 1992

A.B. Siminowski and J. Currie

The authors are with the Mining Sector, Natural Resources Canada.
Telephone: (613) 943-8096 and (613) 992-5798 respectively.

This article summarizes the mineral industry's performance in 1992 and highlights its importance within the context of the Canadian economy. Table 1 ("Economic Dimensions") provides an economic snapshot of the mineral industry in 1992. The data in the table and in the charts accompanying this article include the coal and uranium industries, but exclude petroleum and natural gas. The information is presented in terms of four stages of processing activity within the mineral industry. It should be noted that activities associated with recycling are an important and integral part of mineral industry operations.

The four stages of processing activity are defined as follows:

- 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.

The following sections, which briefly discuss industry output, employment, investment and trade, illustrate the overall importance of the industry to the economy, as well as the relative significance of each of the four stages of activity. The 1992 data are preliminary, while the 1991 figures incorporate revisions to the data originally presented in last year's corresponding article.

OUTPUT

The overall value of shipments of minerals and mineral products by all four stages of the mineral industry, including semi-fabricated and fabricated products, totalled $52.5 billion in 1992 compared with $54.3 billion in 1991. Each of the four stages accounted for about one quarter of the total. Although the value of shipments declined by 3.2% in 1992, this was significantly less than the 10.6% decline in 1991.

Figure 1
Value of Shipments, 1992

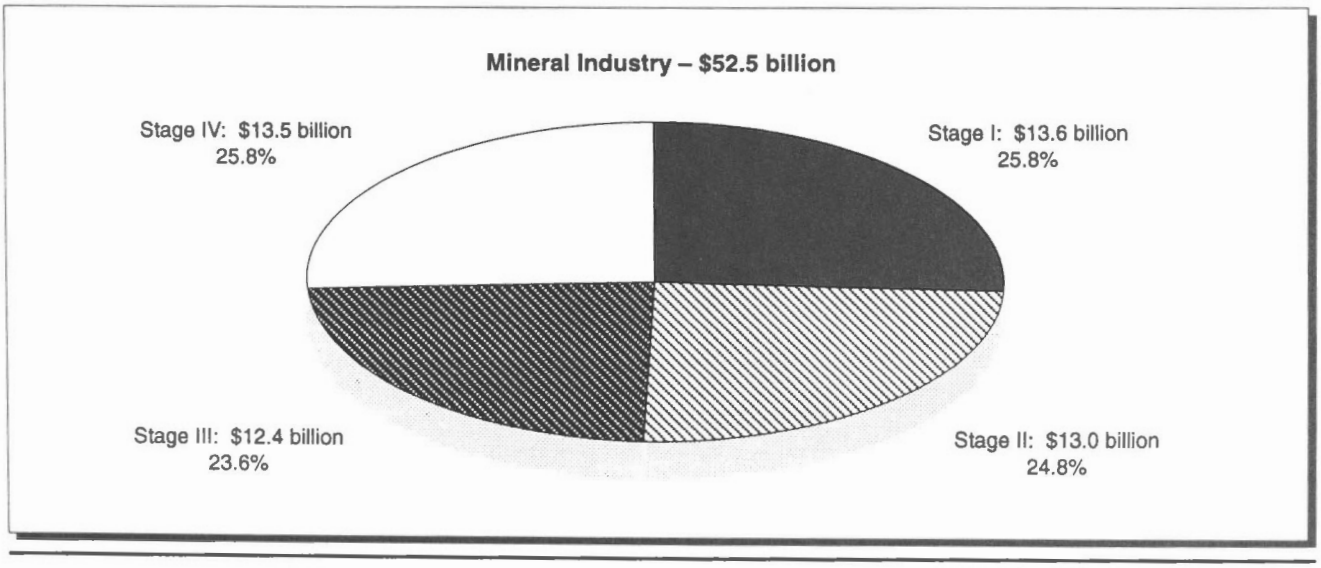


TABLE 1. ECONOMIC DIMENSIONS OF THE MINERALS AND METALS SECTOR, 1992P

Economic Indicator	STAGE I Mining and Concentrating	II Smelting and Refining	III Semi-fabricating	IV Metal Fabricating	Stages I + II	Stages I+II+III	Stages I+II+III+IV
OUTPUT							
Value of shipments (billions of 1992 dollars)	13.6	13.0	12.4	13.5	26.6	39.0	52.5
Gross Domestic Product (billions of 1986 dollars)	6.5	5.1	4.5	4.8	11.7	16.2	20.9
Percent share of total GDP	1.3	1.0	0.9	1.0	2.3	3.2	4.2
EMPLOYMENT							
Employment	64 000	58 000	82 000	134 000	122 000	204 000	338 000
Percent share of total employment	0.5	0.5	0.7	1.1	1.0	1.7	2.8
INVESTMENT							
Investment (capital and repair) ($ billions)	3.2	2.4	1.1	0.5	5.5	6.6	7.1
Percent share of total investment	2.0	1.5	0.7	0.3	3.5	4.2	4.5
New investment (capital only) ($ billions)	1.4	1.1	0.4	0.3	2.5	2.9	3.2
Percent share of total new investment	1.2	0.9	0.3	0.3	2.1	2.4	2.6
EXTERNAL TRADE							
Exports ($ billions)	9.2	8.7	5.0	2.0	17.9	22.9	24.9
Percent share of total domestic exports	6.0	5.7	3.2	1.3	11.7	14.9	16.2
Imports ($ billions)	2.8	3.0	5.5	2.5	5.8	11.4	13.9
Percent share of total imports	1.9	2.1	3.7	1.7	3.9	7.7	9.4
Balance of trade ($ billions)	6.4	5.7	–0.6	–0.5	12.1	11.6	11.0

Sources: Mineral and Metal Statistics Division, Mining Sector, Natural Resources Canada; Statistics Canada.
P Preliminary (July 6, 1993).
Notes: Numbers may not add to totals due to rounding. All dollar figures are in current dollars, except Gross Domestic Product, which is the GDP by industry at factor cost at 1986 prices. Data include coal and uranium, but exclude petroleum and natural gas and their products.
Stage I includes crude mineral ores and concentrates.
Stage II includes ferrous and nonferrous smelting and refining.
Stage III includes metal semi-fabricated products, wire and wire products, and nonmetallic mineral products.
Stage IV includes fabricated metal products, except wire and wire products which are in Stage III.

The total value of shipments of nonfuel minerals declined in 1992 as commodity prices generally remained low. In comparison to 1991, the results for individual commodities were mixed, as advances in the value of output of some minerals were offset by losses in others. Natural Resources Canada's (NRCan's) Metal Price Index, which tracks the monthly prices of copper, nickel, lead, zinc, gold and silver, followed an upward trend through to mid-year, but then began to decline. Although the index turned upward again in December, by that time it was lower than at any time since 1987. The average annual prices for five of the six metals in the index were lower in 1992 than in 1991. Only the average price for zinc was higher on the basis of mid-year strength.

Statistics Canada's Industrial Product Price Indexes, which track changes in the prices of the products of Canadian industry, also showed a general decrease in mineral and metal product prices. The overall price index for primary metal products in 1992 fell by 2.6% compared to its 1991 average, while the indexes for fabricated metal products and nonmetallic mineral products fell by 0.1% and 0.5%, respectively.

It should be noted that the "value of shipments" measure for each stage of activity is gross, not net. Therefore, since the output of one stage is the input for the next stage, there is an element of double counting in terms of value added. Gross Domestic Product (GDP) is another useful measure of output and eliminates the double counting inherent in the "value of shipments" measure.[1]

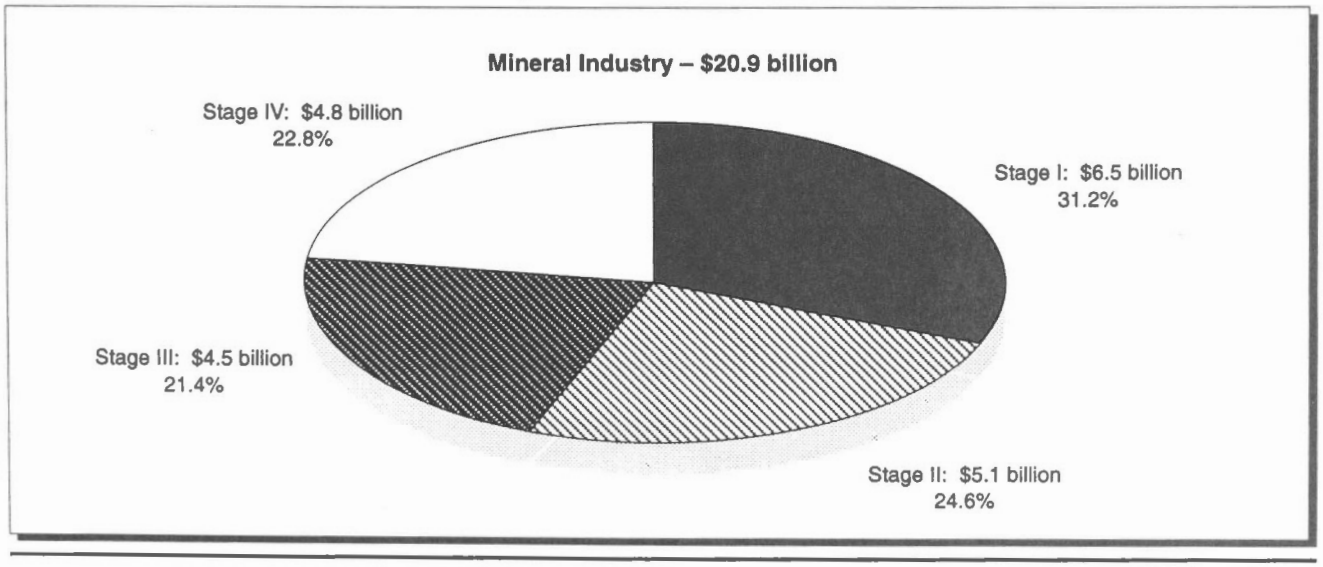
In terms of GDP by industry at factor cost (measured on the basis of 1986 prices), Statistics Canada reported that the minerals and metals industry contributed $20.9 billion to the Canadian economy in 1992.[2] This level of output, however, represented a decline of 3.2% from the 1991 level of $21.6 billion. This decrease reflected the general weakness of the goods-producing industries of the economy, which declined as a group for the third consecutive year, although the year-to-year decreases have been moderating. The mining, semi-fabricating and fabricating stages of the industry all recorded lower production in 1992, but that was partly offset by increased production by the smelting and refining industries.

Including all four stages, the mineral industry accounted for 4.2% of total industry GDP in 1992, somewhat below its average share of 4.6% for the period 1981 to 1992. Although the mineral industry's share of GDP has been gradually declining over the past four years, the decline has taken place entirely in the semi-fabricating and fabricating stages, as manufacturing industries of the economy were hit particularly hard during the recent economic downturn. The mining sector (Stage I) has generally represented about 30% of mineral industry GDP.

EMPLOYMENT

Total employment in the mineral industry continued the decline which began in 1989 when the number of jobs peaked at 422 000. Preliminary estimates for 1992 indicated that mineral industry employment

Figure 2
GDP at Factor Cost, 1992 (in 1986 dollars)



was about 338 000, down 3.7% from 351 000 in 1991. All stages of the mineral industry experienced a decline in employment in 1992. This decline reflected the fragile state of the Canadian economy and the continued weakness in labour markets, particularly in the goods-producing industries. Overall employment in the goods-producing sector, which has been on a downward trend since 1989, fell to its lowest level since 1983.

The mineral industry accounted for 2.8% of total national employment in 1992 compared to 3.4% in 1989. Most of the decline in the percentage share since 1989 took place in the semi-fabricating and fabricating stages, which together account for about two thirds of mineral industry employment.

The total number of employees in Stage I (metal mining, nonmetal mining, quarrying and coal mining) was estimated at 64 000, down from 69 000 in 1991. In addition, there were approximately 8600 people employed in diamond drilling and other services incidental to mining operations. Employment in Stage II (nonferrous smelting and refining and the primary steel industries) was estimated at 58 000, down from 64 000 in 1991.

Employment in Stages III and IV (semi-fabricating and fabricating mineral industries) fell from 218 000 in 1991 to 216 000 in 1992. Total employment in Stages I and II fell by 8.3% compared with 0.9% for Stages III and IV combined. The semi-fabricating and fabricating industries, however, had recorded a 13.0% decline in the previous year compared to 7.3% for the mining, smelting and refining industries.

INVESTMENT

Based on its annual survey of public and private investment, Statistics Canada reported that preliminary estimates of capital spending by the mineral industry on construction, machinery and equipment totalled $3.2 billion in 1992, down from $5.2 billion in 1991. As in 1991, all stages of the mineral industry recorded lower levels of capital spending. Stages I and II, which accounted for more than three quarters of capital investment by the mineral industry in 1992, registered major reductions in investment spending.

Capital spending by the mining industries (Stage I) fell to $1.4 billion in 1992, a reduction of $0.5 billion from the previous year. Investment in nonferrous smelting and refining and in the primary steel industries (Stage II) fell to $1.1 billion, $1.2 billion less than in 1991. Overall, capital spending by the mineral industry in 1992 represented 2.6% of total capital spending in the Canadian economy, down from 4.1% in 1991.

Repair expenditures were $3.9 billion in 1992, down from $4.3 billion in 1991. Including these outlays, the combined spending for capital investment and repair was $7.1 billion in 1992 compared to $9.4 billion the year before. This level of spending by the mineral industry in 1992 represented 4.5% of the total capital and repair expenditures by all sectors of the Canadian economy, down from 5.7% in 1991.

Figure 3
Employment, 1992

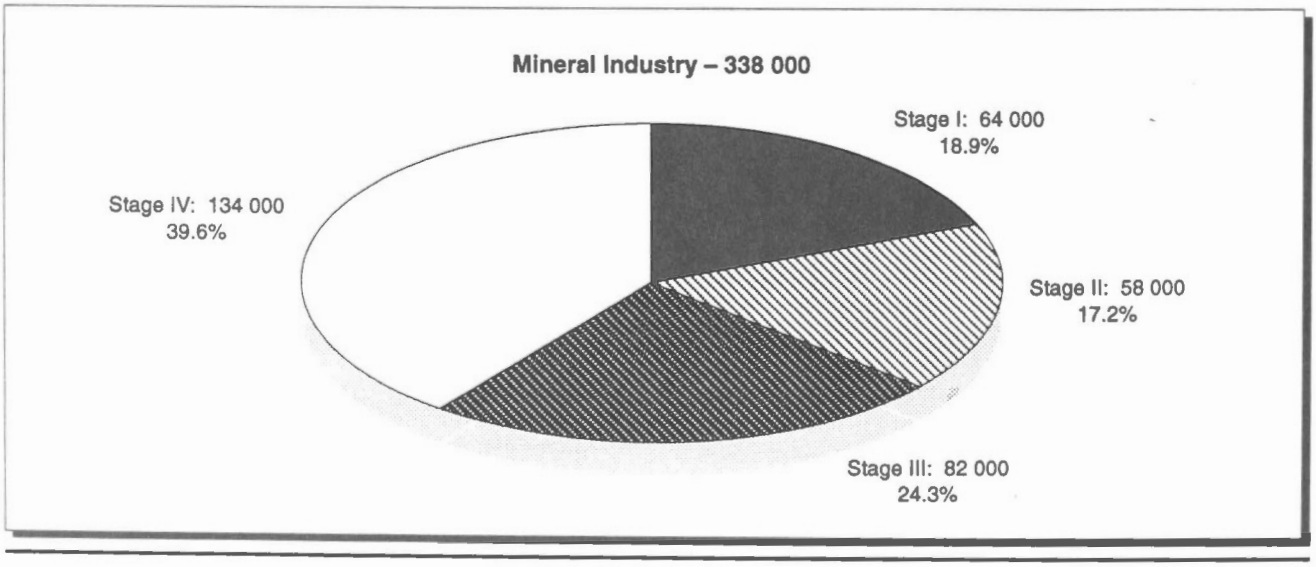


Figure 4
Capital Expenditures, 1992

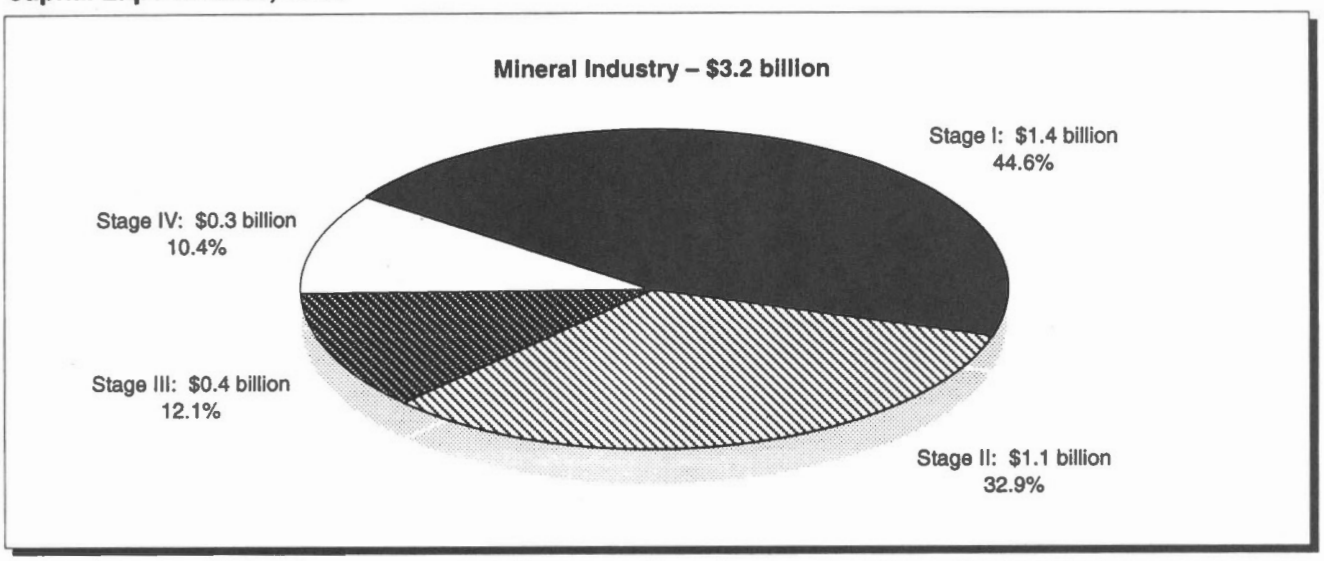
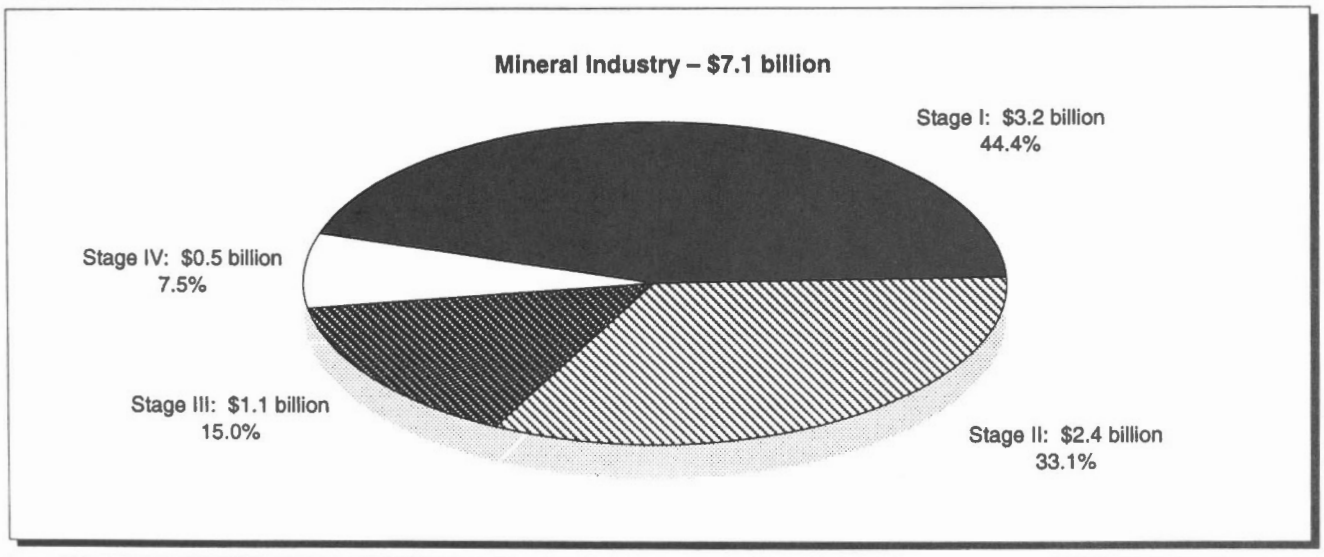


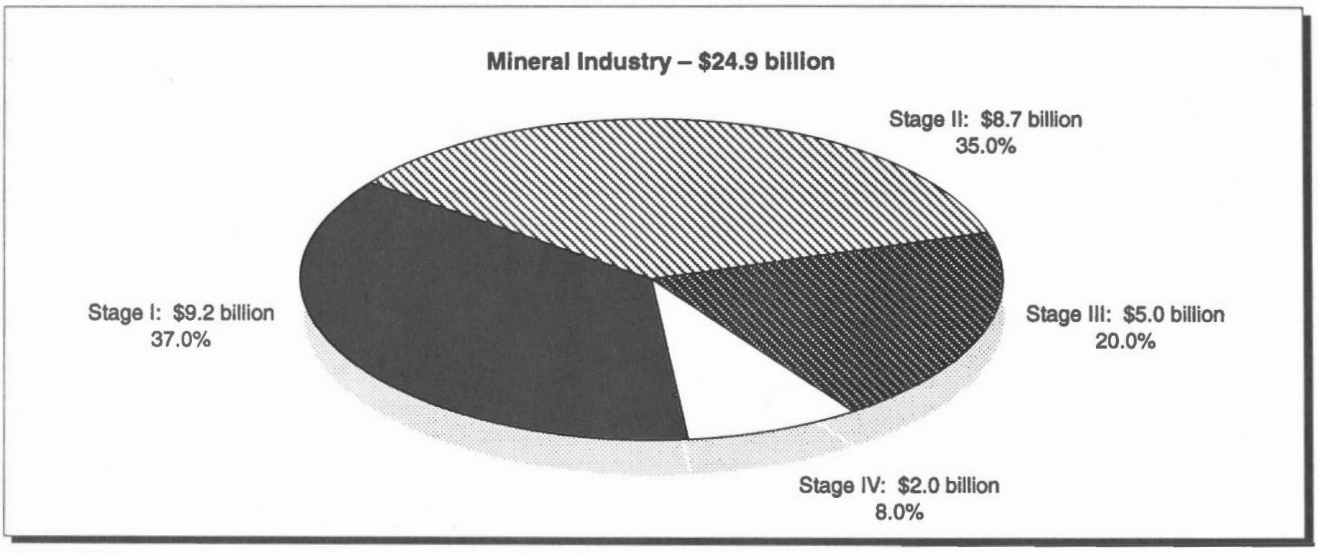
Figure 5
Capital and Repair Expenditures, 1992



TRADE

The total value of exports of nonfuel minerals, mineral products and coal increased by 5.6% in 1992 to $24.9 billion, representing the products of all four stages of the mineral industry.[3] This included crude minerals, smelted and refined products, semi-fabricated and fabricated forms, as well as waste and scrap for recycling. Mineral and mineral product exports, including coal, continued to account for a significant share of total domestic exports, accounting for 16.2% of the total in 1992, compared to 17.0% in 1991.[4]

Figure 6
Exports, 1992



The United States continued to be Canada's major minerals export market. In 1992, mineral and mineral product exports valued at $14.7 billion went to the United States, representing 59.0% of such exports, while 13.0% went to the European Community and 9.5% to Japan.

Imports of nonfuel minerals, mineral products and coal were valued at $13.9 billion in 1992, up from the previous year's level of $12.8 billion. About 69.9% ($9.7 billion) of imports in 1992 came from the United States, 9.9% from the European Community and 2.7% from Japan.

Overall, the Canadian mineral industry contributed a trade surplus of $11.0 billion to Canada's merchandise balance of trade in 1992, an increase of $0.3 billion over the 1991 mineral trade surplus. Following the general pattern of recent years, Stages I and II recorded a trade surplus ($12.1 billion in 1992) while Stages III and IV recorded a trade deficit (–$1.1 billion).

SUMMARY

Although the mineral industry slipped a little in terms of its relative importance in the context of the overall economy in 1992, the industry nonetheless continues to hold a position of significant economic importance. The industry accounted for 4.2% of GDP (down from 4.4% in 1991), 2.8% of national employment (the same as in 1991), and 16.2% of Canadian exports (down from 17.0% in 1991).

In regard to capital investment and repair spending, however, the mineral industry recorded a marked decline in its share of the Canadian total, falling to 4.5% in 1992 from 5.7% in 1991 (down from an average of over 6% during the previous several years). Nevertheless, expenditures by the mineral industry on capital investment and repair continue to represent major spending within the Canadian economy.

The charts at the end of this article (Figures 7 through 12) provide an historical overview of the mineral industry's performance over the past seven years in terms of the value of shipments, GDP, capital investment and repair expenditures, employment and exports.

The material in this article supplements and updates the information contained in an earlier article, "General Review of the Mineral Industry in 1992," which appeared in the June 1993 issue of the "Mineral Industry Quarterly Report." Information contained in this review was current as of July 15, 1993.

REFERENCES

[1] Gross Domestic Product by Industry at Factor Cost represents the economic output of the various industries of the economy, i.e., it is an industry-based measure of GDP. It is a value-added concept in that it measures only the net output of an industry, namely, the value produced at a given stage of production after subtracting the costs of intermediate goods and services. Valuation

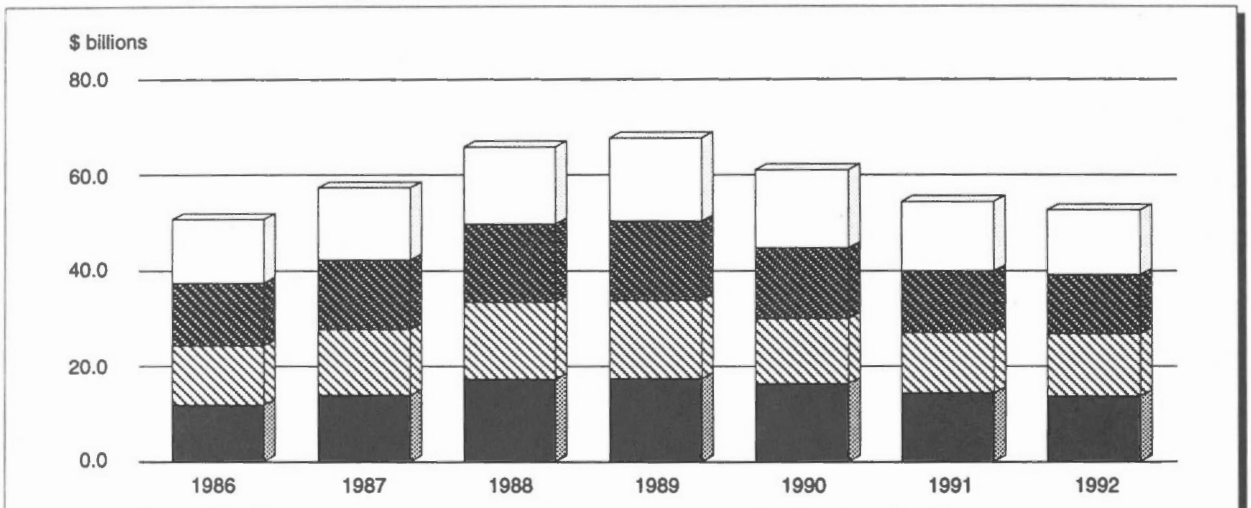
at factor cost represents the costs of the factors of production (land, labour and capital) that are used in producing the output. The valuation is expressed in terms of the expense of the producer, rather than of the purchaser. It excludes all indirect taxes, such as sales tax, excise tax, customs duties and property taxes. Total GDP at factor cost, therefore, equals the sum of the values added, i.e., the net contributions made by all industries in the economy. Gross Domestic Product can also be measured at market prices. This is an expenditure-based measure of GDP whereby valuation at market prices is expressed in terms of the prices actually paid by the purchaser. It includes all indirect taxes, such as sales tax, excise tax, customs duties and property taxes, and also reflects the impact of subsidy payments. GDP at Market Prices is usually simply referred to as "GDP." In principle, the difference between "GDP by Industry at Factor Cost" and "GDP at Market Prices" (or simply GDP) is the component known as net indirect taxes (i.e., indirect taxes less subsidies).

[2] In 1990, Statistics Canada converted its constant price GDP series to a new base year, using 1986 prices. The previous base year had been 1981. This change continued the policy of updating the time base from time to time in order to reflect more recent price structures. Constant price GDP estimates provide the necessary data to measure real economic growth from one period to another. By using the prices from a particular base year (say, 1986 prices), the effect due to price changes is removed.

[3] As of January 1, 1988, Canadian external trade statistics have been classified and reported by Statistics Canada according to a new international commodity coding system referred to as the "H.S." or "Harmonized System" (Harmonized Commodity Description and Coding System). Starting with the year 1988, total exports and imports referred to in this article are based on data as reported according to H.S. chapter summaries, i.e., those classes or commodity chapters that represent the mineral and metal product groups. Due to the implementation of the new H.S. coding system, as well as other changes in data collection and reporting procedures at Statistics Canada, the year-to-year historical data may not be directly comparable. The breakout of trade data by stage is based on a preliminary approximation by the Mineral and Metal Statistics Division of the Mining Sector, Natural Resources Canada. A computer system to segregate the data by stage of processing is currently being developed within the Sector.

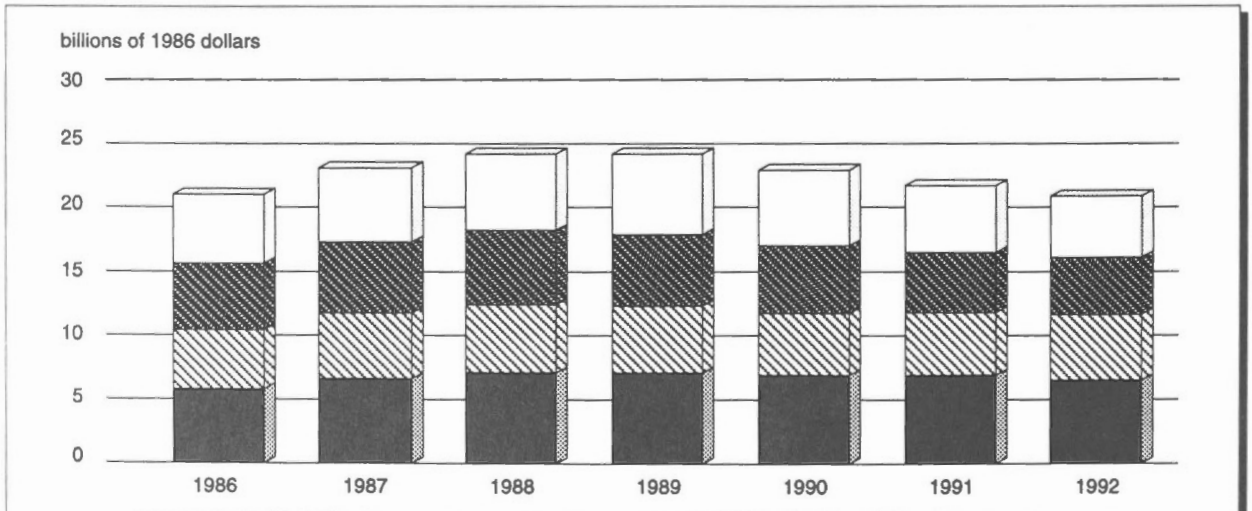
[4] The mineral industry's share of Canadian exports is based on "domestic exports," i.e., total Canadian exports less re-exports. Re-exports are exports of goods of foreign origin which have not been materially transformed in Canada.

Figure 7
Mineral Industry, Value of Shipments, 1986-92



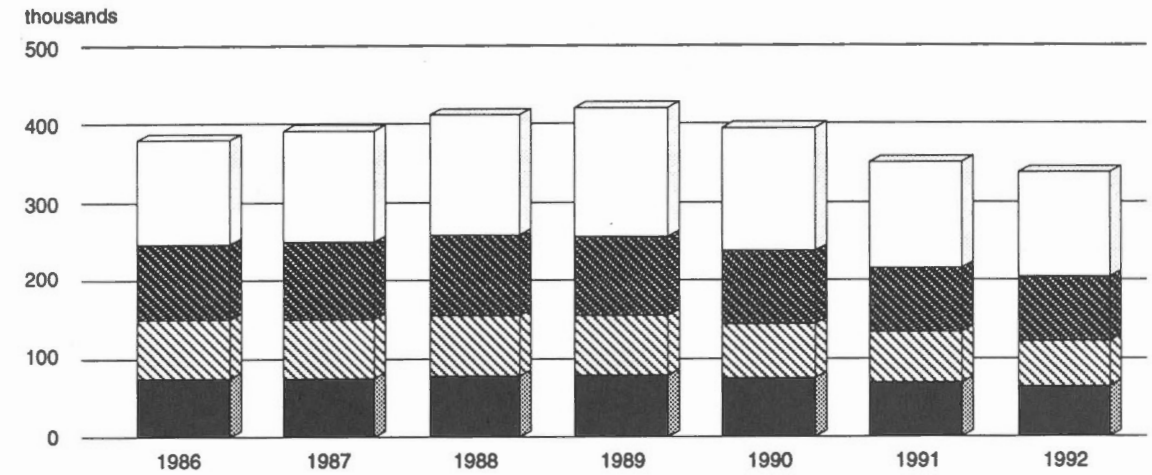
	1986	1987	1988	1989	1990	1991	1992
Stage I	11.7	13.7	17.1	17.4	16.2	14.2	13.6
Stage II	12.5	13.9	16.2	16.4	13.6	12.7	13.0
Stage III	13.1	14.5	16.2	16.3	14.7	12.8	12.4
Stage IV	13.2	15.0	16.1	17.3	16.3	14.5	13.5
Total	**50.5**	**57.2**	**65.5**	**67.4**	**60.7**	**54.3**	**52.5**

Figure 8
Mineral Industry, GDP, 1986-92
Factor Cost at 1986 Prices



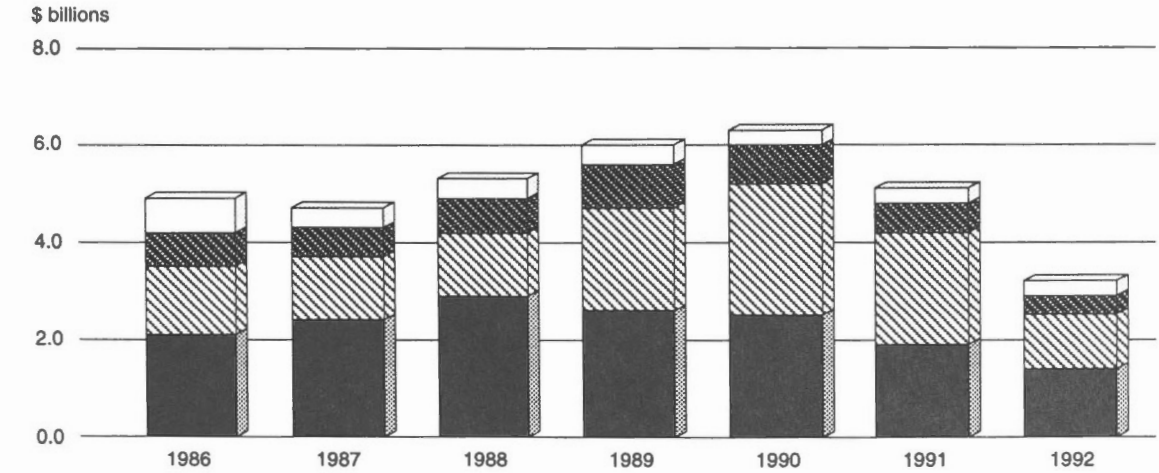
	1986	1987	1988	1989	1990	1991	1992
Stage I	5.8	6.6	7.1	7.1	6.9	6.9	6.5
Stage II	4.6	5.1	5.3	5.2	4.8	4.9	5.1
Stage III	5.2	5.6	5.8	5.6	5.3	4.7	4.5
Stage IV	5.4	5.8	6.0	6.3	5.9	5.2	4.8
Total	**21.0**	**23.1**	**24.2**	**24.2**	**22.8**	**21.6**	**20.9**

Figure 9
Mineral Industry, Employment, 1986-92



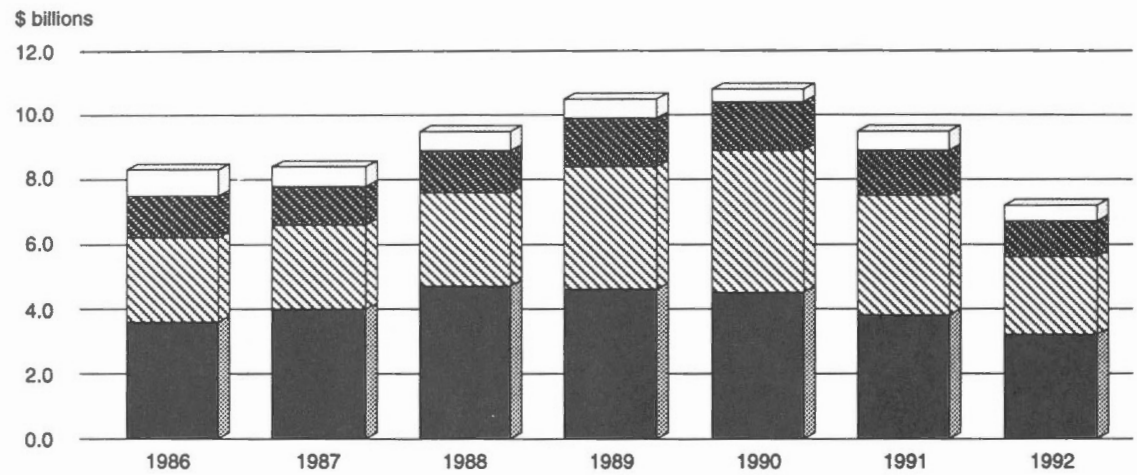
	1986	1987	1988	1989	1990	1991	1992
Stage I	74	74	77	78	74	69	64
Stage II	76	76	78	77	70	64	58
Stage III	97	100	103	101	94	83	82
Stage IV	133	142	154	165	157	135	134
Total	**379**	**391**	**412**	**422**	**394**	**351**	**338**

Figure 10
Mineral Industry, Capital Expenditures, 1986-92



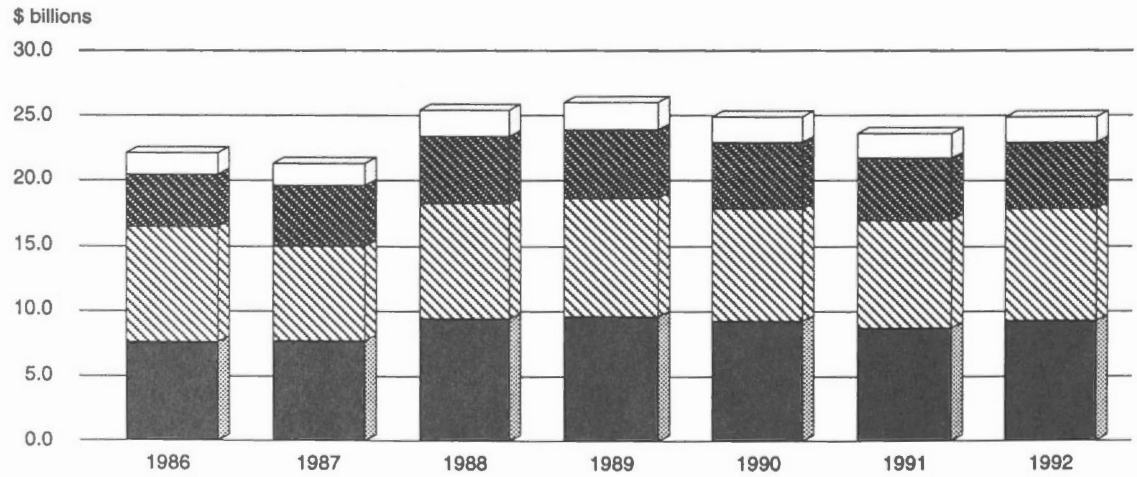
	1986	1987	1988	1989	1990	1991	1992
Stage I	2.1	2.4	2.9	2.6	2.5	1.9	1.4
Stage II	1.4	1.3	1.3	2.1	2.7	2.3	1.1
Stage III	0.7	0.6	0.7	0.9	0.8	0.6	0.4
Stage IV	0.7	0.4	0.4	0.4	0.3	0.3	0.3
Total	**4.8**	**4.7**	**5.3**	**6.0**	**6.2**	**5.2**	**3.2**

Figure 11
Mineral Industry, Capital and Repair Expenditures, 1986-92



	1986	1987	1988	1989	1990	1991	1992
Stage I	3.6	4.0	4.7	4.6	4.5	3.8	3.2
Stage II	2.6	2.6	2.9	3.8	4.4	3.7	2.4
Stage III	1.3	1.2	1.3	1.5	1.5	1.4	1.1
Stage IV	0.8	0.6	0.6	0.6	0.4	0.6	0.5
Total	**8.3**	**8.4**	**9.5**	**10.4**	**10.9**	**9.4**	**7.1**

Figure 12
Mineral Industry, Exports, 1986-92



	1986	1987	1988	1989	1990	1991	1992
Stage I	7.6	7.7	9.4	9.6	9.2	8.7	9.2
Stage II	8.9	7.3	8.9	9.1	8.7	8.3	8.7
Stage III	4.0	4.6	5.1	5.2	5.0	4.7	5.0
Stage IV	1.6	1.7	2.0	2.1	2.0	1.9	2.0
Total	**22.2**	**21.2**	**25.3**	**25.9**	**24.9**	**23.6**	**24.9**

Actual and Anticipated Mine Openings, Re-Openings, Expansions, Closures and Suspensions in 1993 (as of July 1, 1993)

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Based on information available at the beginning of July 1993, the re-openings of gold mines and the closures and suspensions of base-metal mines will be significant in 1993 (Table 1). With an anticipated 16 mine openings and 17 mine closures in 1993, there is a near-balance between the number of Canadian mine openings and closures for the first time since the beginning of 1990.

Nearly all gold mine openings and re-openings, as well as gold mine closures and suspensions, are expected to occur in Quebec and Ontario. Most base-metal mine closures and suspensions will likely occur in Manitoba and the Yukon (Table 2).

During the first half of 1993, eight mines opened and an equal number closed. One new gold mine came on stream, and four gold mines, one base-metal mine and two coal mines re-opened. During the same period, one gold mine and one base-metal (copper-zinc) mine closed; another two gold mines and four-base metal (lead-zinc and zinc-copper) mines suspended operations.

In the second half of 1993, eight mine openings and nine mine closures are expected. The openings include a new palladium-platinum mine, a new gold tailings operation, and six gold mine re-openings. Two gold and five base-metal mines are scheduled to close, and a copper and a nickel-copper mine are expected to suspend operations. Details are provided in Table 3 at the end of this article.

Because of persistently low base-metal prices and high world base-metal inventories, it is unlikely that any new base-metal mines will be opened, or that any old ones will be reactivated before year-end 1993, although several were scheduled to do so. There have already been postponements and delays in new base-metal mine openings and re-openings. In contrast, still other gold mines may re-open before year-end because of the improvement in the price of gold since April, and barring a significant drop in the price for the remainder of 1993.

All mine closures in 1993 will result from ore depletion whereas most mine suspensions are likely to be due to low metal prices.

From a regional perspective in 1993, five provinces and the Yukon Territory were affected by mine openings and closures (Table 2). The Bathurst area of northern New Brunswick is expected to see permanent closure of one base-metal mine. With six mine openings (4 gold, 1 platinum metals and 1 base-metal) and two suspensions (1 gold and 1 base-metal), Ontario is expected to fare best among the provinces and territories. With six mine openings (all gold) and five mine closures (3 gold and 2 base-metal), the decline in mine openings in northwestern Quebec that began in the second half of 1989 has finally halted. With four mine openings (2 gold and 2 coal) and three mine suspensions (1 gold and 2 base-metal), British Columbia also halted its decline in mine openings which began in 1990. However, with the suspension of all three base-metal mines in the Yukon, the expected closures of three base-metal mines in the Flin Flon-Snow Lake region of northern Manitoba, and no mine openings expected before year-end, both regions are expected to be the mining areas in Canada hardest hit in 1993.

In 1993, new and re-opened mines will add 49 300 t of daily ore production capacity and over 2260 jobs, while mine closures and suspensions will remove 63 700 t of daily capacity and some 2400 jobs, resulting in net losses of 14 400 t of daily capacity and 140 jobs – the smallest annual net losses since 1989. Some 80% of the capacity losses and 45% of the employment losses resulting from mine closures and suspensions were related to mine suspensions. In contrast, only 10% of the capacity gains and 5% of the employment gains due to new and re-opened mining operations were from new mines.

The largest mines contributing to capacity and employment gains are the Copper Rand gold-copper

mine in Quebec and the Elkview (formerly Balmer) and Greenhills coal mines in southeastern British Columbia. The most significant contributors to losses are the Similco copper mine in British Columbia and the Faro and Vangorda zinc-lead-silver mines in the Yukon.

The most important mine expansion programs announced in 1993 were in Ontario and British Columbia. These are: (1) the mine re-opening and expansion program at Inco Limited's Garson nickel-copper mine at Sudbury, Ontario; (2) the expansion plan for Placer Dome Inc.'s Dome gold mine in Timmins, Ontario; and (3) the expansion plan for the Gibraltar copper mine of Gibraltar Mines Limited in British Columbia. Gibraltar is planning a major expansion at its McLeese Lake open-pit operation to raise copper production by 49% to 105 million pounds by 1996 and thereby reduce operating costs. Mill expansion is to be completed in 1995. Major expansions at Lac Minerals Ltd.'s Est-Malartic gold mill and its Bousquet No. 2 gold mine, which started in 1989, both near Malartic, Quebec, are now near completion. An expansion program at Inco's Birchtree nickel-copper mine at Thompson, Manitoba, will continue throughout 1993. Expansion is also continuing at Deak Resources Corporation's three-circuit Kerr mill which, in addition to treating ore from the company's Kerr and Astoria gold mines, custom-mills ore from several nearby mines. The Quinsam coal mine at Campbell River, British Columbia, which doubled its coal production in 1992, will increase production to 600 000 t in 1993, up from 500 000 t in 1992. The company's latest plan is to further increase production to one million tonnes annually by 1994.

TABLE 1. NUMBER OF MINE OPENINGS AND CLOSURES IN CANADA IN 1993, BY COMMODITY TYPE

Commodity Type	New Mines	Re-Openings	Suspensions	Closures
Precious metal	3	10	2	3
Base-metal	–	1	6	6
Other commodities	–	2	–	–
Total	3	13	8	9

– Nil.

TABLE 2. MINE OPENINGS AND CLOSURES IN CANADA IN 1993, BY PROVINCE

	Openings	Re-Openings	Suspensions	Closures
New Brunswick	–	–	–	1
Quebec	1	5	–	5
Ontario	1	5	2	–
Manitoba	–	–	–	3
British Columbia	1	3	3	–
Yukon	–	–	3	–
Total	3	13	8	9

– Nil.

TABLE 3. CANADIAN MINE OPENINGS, RE-OPENINGS, EXPANSIONS, SUSPENSIONS, AND CLOSURES IN 1993

Mining Operation	Location	Province	Capacity (tonnes/day)	Employment[1]	Date of Opening, Re-Opening, Expansion, Closure or Suspension	Mine or Plant Type	Main Commodities	Companies	Remarks
NEW OPERATIONS									
Precious Metals									
Astoria	Rouyn-Noranda	Que.	500	30	April 20	U/G	Gold	Yorbeau Resources Inc. and Deak Resources Corporation	Deak acquired Astoria from Yorbeau in 1992. Ore reserves are estimated at 1.18 million st grading 0.20 oz/st gold. Ore is milled at the nearby Kerr mill. Mine plans to produce 35 000 oz of gold in 1993.
Lac des Îles	Thunder Bay	Ont.	2 700	45	September	O/P	Palladium, platinum, gold	North American Palladium Ltd. and The Sheridan Platinum Group	The mine is North America's second primary palladium mine. Probable ore reserves stand at 7.4 million st grading 0.18 oz/st platinum metals, chiefly palladium, 0.01 oz/st gold, 0.1% copper and 0.1% nickel.
Mascot gold tailings	Hedley	B.C.	2 000	30	September	Surface	Gold	Candorado Mines Ltd.	The project will see the treatment of approximately 510 000 t of tailings over a two-year period.
RE-OPENINGS									
Precouis Metals									
Copper Rand and Portage	Chibougamau	Que.	3 000	300	March	U/G	Gold, copper	MSV Resources Inc.	The mine will produce 45 000 oz of gold and 11 million lb of copper annually. Mine life is 3 years but could be increased to 50 years. The mines were closed in November 1992 by the previous owner Westminer Canada Limited. MSV purchased the mines in February 1993.
Casa Berardi Est	La Sarre	Que.	1 500	170e	April 19	U/G	Gold	TVX Gold Inc. and Golden Knight Resources Inc.	The mine began production in September 1988 at 800 t/d. Operations were suspended in April 1992 due to ground problem. As of January 1, 1992, mineable ore reserves were 1 508 500 t grading 0.24 oz/st gold. The mine has the potential to increase its workforce to 182.
Cheminis	Virginiatown	Ont.	350	20	June	U/G	Gold	Northfield Minerals Inc.	The mine was first opened in 1991. It closed in 1992, re-opened in January 1993, closed again in March, but re-opened in June after the present owner took control of the mine from Deak Resources Corporation.

TABLE 3 (cont'd)

Mining Operation	Location	Province	Capacity (tonnes/day)	Employment[1]	Date of Opening, Re-Opening, Expansion, Closure or Suspension	Mine or Plant Type	Main Commodities	Companies	Remarks
Sleeping Giant	Amos	Que.	900	65	July 15	U/G	Gold	Cambior inc. and Aurizon Mines Ltd.	Mineable ore reserves stand at 458 300 st grading 0.22 oz/st gold. The annual milling rate is expected to be 170 000 st and the average annual production will be about 35 000 oz of gold. The mine expects to employ 96 workers during commercial production.
Johnny Mountain	Terrace	B.C.	270	80	August	U/G	Gold, copper	International Skyline Gold Corp. and Cheni Gold Mines Inc.	The mine began production in August 1988. Operation was suspended in August 1990 due to shortage of ore and low gold price. Current plan is to produce gold from mining ore left in remnant pillars and old stopes. Milling to resume in September 1993.
Kerr	Virginiatown	Ont.	2 700	200	August	U/G	Gold	Deak Resources Corporation	Mining suspended in February 1993 due to refinancing problems. Company plans to increase capacity to 3000 t/d in 1993.
Donalda	Rouyn-Noranda	Que.	500	50	November	U/G	Gold	Orco Resources Inc., Metall Mining Corporation and Thunderwood Resources Inc.	Mining of a 20 000-t bulk sample began on July 19, 1993; production is scheduled to begin immediately after this sampling program. Current proven and probable ore reserves stand at 661 000 t grading 0.26 oz/st gold. Orco Resources is the operator.
Hislop East	Timmins	Ont.	550	25	October	O/P & U/G	Gold	St. Andrew Goldfields Ltd.	Mining will start with the open-pit, which will provide a three-month supply of ore. Ore to be milled at the nearby Stock Township mill. The mine was closed in 1991 for economic reasons.
Buffonta	Virginiatown	Ont.	270	12	November	O/P	Gold	Deak Resources Corporation and Gwen Resources Ltd.	Mining suspended in March 1991 due to a lack of funds. The present owners are 50-50 joint venture partners. Ore to be custom-milled at the nearby Kerr mill.
Base Metals									
Garson	Sudbury	Ont.	500	500e	March	U/G	Nickel, copper	Inco Ltd.	The mine was first opened in 1907. Operation was suspended in 1986. Production is currently on a limited scale while development work towards accessing the main orebody continues. Full production at a rate of 2000 st/d is planned for 1995.

Others									
Greenhills	Sparwood	B.C.	3 550	319	March	O/P	Coal	Fording Coal Ltd.	Mine was closed in November 1992 because of financial difficulties. A total of 350 workers will be hired by year-end 1993 and employment will be increased gradually to 475 by 1995, when the mine reaches a full production rate of 3 Mt/y.
Elkview (formerly Balmer)	Sparwood	B.C.	30 000	419	End of April	O/P	Coal	Teck Corporation	Mine was closed May 1, 1992, due to financial difficulties of the former owner, Westar Group Ltd. Plans are to produce 10 Mt of coal in 1993, all for export. Employment is expected to increase as production rises.
EXPANSIONS									
Precious Metals									
Est Malartic Mill	Malartic	Que.	2 500	43	June	Mill	Gold, silver, copper	Lac Minerals Ltd.	The overall mill capacity expansion program, which began in 1991, is now complete. The expansion was necessary to accommodate increased ore production at the Bousquet No. 2 mine.
Bousquet No. 2	Malartic	Que.	1 650	235	June	U/G	Gold	Lac Minerals Ltd.	Commercial production began in October 1990. The plan was to increase gold production from the 169 500-oz level in 1991 to 200 000 oz in 1993. This is in conjunction with expansion at the Est Malartic mill.
Kerr	Virginiatown	Ont.	2 700	200	1991-93	Mill	Gold	Deak Resources Corporation	Company plans to increase capacity to 3000 t/d in 1993.
Dome	Timmins	Ont.	4 000	353	1993-94	O/P & U/G	Gold	Placer Dome Inc.	Recent installation of a computer expert system has resulted in an increase in the mining and ore processing rate from 3000 t/d to 4000 t/d. A feasibility study on expanding the open-pit and mill is scheduled for completion in the fourth quarter of 1993.
Base Metals									
Birchtree	Thompson	Man.	3 000•	85	1991-97	U/G	Nickel, copper	Inco Limited	Work continues to double production to 34 million lb of nickel annually by 1997. Some 200-300 temporary construction jobs will be created.

TABLE 3 (cont'd)

Mining Operation	Location	Province	Capacity (tonnes/day)	Employment[1]	Date of Opening, Re-Opening, Expansion, Closure or Suspension	Mine or Plant Type	Main Commodities	Companies	Remarks
Gibraltar	McLeese Lake	B.C.	38 000	94	1993-96	O/P	Copper	Gibraltar Mines Ltd.	Company plans to expand milling capacity to 57 000 st/d from 38 000 st/d by 1995 and to complete the entire mine expansion by 1996. By doing so, the company hopes to trim operating costs by US7-8¢/lb. The cost of the expansion is estimated at $35 million. Placer Dome Inc., which owns 68.1% of Gibraltar Mines, plans to provide substantial financial assistance.
Other Minerals									
Quinsam	Campbell River	B.C.	1 650	104	1992-94	O/P & U/G	Coal	Hillsborough Resources Limited	Company plans to increase coal production to 600 000 t in 1993 from 500 000 t in 1992 and a further increase to 1 000 000 t in 1994. The mine produced 250 000 t of thermal coal in 1991.
SUSPENSIONS									
Precious Metals									
Kerr	Virginiatown	Ont.	2 700	200	Feb. 1993	U/G	Gold	Deak Resources Corporation	Operation at the mine was suspended while the company seeks financing to carry out development work. Approximately 50 employees remain at the Kerr mill, which processes ore from the Francoeur gold mine in Quebec.
Dome Mountain	Smithers	B.C.	320	25	April	U/G	Gold	Timmins Nickel Inc. and Habsburg Resources Limited	Mining suspended because of disputes between the companies.
Base Metals									
Faro	Faro	YT	12 300	430 (Faro & Vangorda)	April 2	O/P	Zinc, lead, silver	Curragh Inc.	Mining operations suspended in early April 1993 because of low metal prices and company financial problems.
Vangorda	Faro	YT	8 000		April 2	O/P	Zinc, lead, silver	Curragh Inc.	Mining operations suspended in early April 1993 because of low metal prices and company financial problems.
Sa Dena Hes	Watson Lake	YT	2 000	100	April 2	O/P & U/G	Zinc, lead, silver	Curragh Inc.	Mining operations suspended in early April 1993 because of low metal prices and company financial problems.
Silvana	New Denver	B.C.	130	15	April 2	U/G	Lead, zinc, copper	Treminco Resources Ltd.	Mine closed due to low metal prices.

Levack	Sudbury	Ont.	3 000e	300	July 5	U/G	Nickel, copper	Inco Limited	Mining suspended because of high costs and low metal prices. The 300 workers affected will be relocated to company's other mining operations in the area.
Similco	Princeton	B.C.	22 680	300	End of November	O/P	Copper	Princeton Mining Corporation	Mine to shut down because of low copper prices.
CLOSURES									
Precious Metals									
Norlartic	Val-d'Or	Que.	1 650	52	January	U/G	Gold	Aur Resources Inc.	Mine closed due to depletion of ore reserves. Production began in July 1991.
Lucien C. Béliveau	Val-d'Or	Que.	1 635	72	4th quarter 1993	U/G	Gold	Cambior inc.	Mine to close due to depletion of reserves.
Pierre Beauchemin	Rouyn-Noranda	Que.	1 400	134	4th quarter 1993	U/G	Gold	Cambior inc.	Mine to close due to depletion of reserves.
Base Metals									
Ansil	Rouyn-Noranda	Que.	1 250	160	April 13	U/G	Copper, zinc, silver, gold	Minnova Inc.	Mine closed due to ore depletion. Mine was discovered in 1981; production began in July 1989.
Stratmat	Bathurst	N.B.	1 000	280	July	U/G	Copper, lead, zinc, silver	Brunswick Mining and Smelting Corporation Limited and Heath Steele Mines Limited	Mine closed due to depletion of ore reserves. Production began on March 1, 1989; the open-pit operation ceased in 1992.
Stall Lake	Snow Lake	Man.	1 150	114	End of 1993	O/P	Zinc, copper	Hudson Bay Mining and Smelting Co., Ltd.	Mine to close due to depletion of ore reserves. Production began in 1994.
Chisel Lake	Snow Lake	Man.	900	136	End of 1993	O/P	Zinc, copper	Hudson Bay Mining and Smelting Co., Ltd.	Mine to close due to depletion of open-pit ore reserves. Production began in January 1989.
Namew Lake	Flin Flon	Man.	1 900	176	End of 1993	O/P	Nickel, copper	Hudson Bay Mining and Smelting Co., Ltd. and Outokumpu Mines Ltd.	Mine to close due to depletion of ore reserves. Production began in September 1989.
Selbaie underground	Joutel	Que.	1 650	250	End of 1993	U/G	Copper, zinc, gold, silver	Billiton Metals Canada Inc.	Underground operation to end due to depletion of underground ore reserves. Open-pit operation continues. Cessation of the underground operation will affect 250 of the 550 workers at the Selbaie property. Company has budgeted $3 million to modify the concentrator to allow for future use of the circuit now serving the underground mine. Current open-pit has an ore production capacity of 6300 t/d. Open-pit resources are good for at least 10 years.

Source: Natural Resources Canada, based on company reports.
O/P Open-pit; U/G Underground.
e Estimated; oz Troy ounce; st Short ton; t Metric tonne.
1 Employment refers to workers on the company's payroll and to contract workers at an operation, or at an operation prior to its closure.
Note: A mine that closed and re-opened in the same year is shown under both categories.

Decentralized Collection of Mining Establishment Data within the Canadian Statistical System

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Canada's national statistical system, recognized as a leading force in international statistical development, is largely centralized within the federal government agency, Statistics Canada. Under the *Statistics Act,* Statistics Canada has responsibility to "collect, compile, analyze, abstract and publish statistical information relating to the commercial, industrial, financial, social, economic and general activities and condition of the people." It is also required "to promote and to develop integrated social and economic statistics pertaining to the whole of Canada and to each of the provinces thereof and to coordinate plans for the integration of those statistics."[1]

To satisfy these responsibilities, Statistics Canada has developed and implemented a broad spectrum of establishment surveys covering the entire Canadian industrial base. These surveys have been designed to provide an accounting of the contribution of every sector to the economy. Nurtured by a statistical organization large enough to support major statistical initiatives, the creation of this survey structure has been paralleled in Statistics Canada by the development of "leading edge" tools and systems to support its survey designs. These tools include the central Statistics Canada frame (the *Business Register* (BR)), computer software generalized to meet the varied needs of the agency's surveys, etc. The very size of the organization has led to its ability to create central pools of mathematical, statistical and technological expertise and to its capability to organize its internal operations to take advantage of the efficiencies engendered by large-scale survey operations. Over the years, the Canadian statistical system has been regarded as perhaps the best in the world and this fact has been recently recognized in *The Economist* magazine (September 1991).[2]

In 1978, a decision was made to transfer the responsibility for a complex suite of monthly and annual establishment surveys for the non-fuel mineral industry (or the mining industry) from Statistics Canada to another federal government department, then called Energy, Mines and Resources. (As of June 1993, Energy, Mines and Resources Canada was renamed Natural Resources Canada (NRCan).) The transfer of survey responsibilities was made under the terms of an agreement between these two government departments. As part of this agreement, NRCan also took responsibility for chairing and providing secretariat functions for the Federal-Provincial Committee on Mineral Statistics, which coordinates the collection and dissemination of mining industry establishment information between the provincial mines ministries and the federal government departments interested in mining statistics (including both NRCan and Statistics Canada). Responsibility for the official publication of the annual establishment data for the mining industry remained a responsibility of Statistics Canada. This unprecedented transfer continues to remain in effect at this time.

Since the time of the original agreement and transfer, arrangements under the agreement, including the provision by NRCan of the range of statistics required by Statistics Canada for its System of National Accounts, have generally worked smoothly. Nevertheless, in 1992, largely to take into account shifting systems responsibilities, NRCan initiated discussions aimed at reviewing and updating the agreement under which the original transfer was made. The decision to review this agreement raised the question as to whether it remained appropriate for these statistical survey activities to remain under the operational control of NRCan, or whether it would be more appropriate for the surveys to be repatriated into the matrix of establishment surveys conducted by Statistics Canada. A key element in

addressing this concern is the ability of NRCan to provide statistical products and services of suitable quality. Is the quality of these products at the very least consistent with the general quality level of the other establishment surveys conducted by Statistics Canada?

It is thus necessary to put in place an effective strategy that will assure the quality of the establishment data produced. By continuing to fulfill its responsibilities under the agreement to the present, NRCan already does take a number of positive measures to maintain the quality of its survey process. The data produced have been used by the System of National Accounts and, as mentioned earlier, cooperation between the two agencies has continued to the benefit of both. Nevertheless, it is necessary, within the current regime of increasing government restraint, to take advantage of the window of opportunity afforded by the review of the agreement between Statistics Canada and NRCan to propose a series of measures, formed into a strategic plan, that will ensure the efficient delivery of quality information on the Canadian mining industry to its clients.

The goal of this plan is to identify measures that the organization external to the central statistical agency should take to ensure that the quality of its products are consistent with quality standards required by the national statistical system while, at the same time, to satisfy its own information requirements. The challenge is to formulate a cohesive and effective strategy that will meet these twin goals.

By identifying the disadvantages of locating establishment surveys in a "subject matter" organization outside the framework of the central statistical organization, specific actions or methods required to overcome or to minimize the perceived disadvantages can be isolated. At the same time, the advantages of a decentralized statistical organization, once identified, can be enhanced to improve the value added to the statistical services and products provided.

It is the responsibility of the decentralized unit to ensure that a suitable level of quality for the data produced is achieved and maintained. This quality assurance must apply particularly rigorously to the data that are provided to Statistics Canada under the terms of the agreement; these data become a non-trivial component of the System of National Accounts of that agency. But, on a more general plane, one must attempt to ensure that the statistical information provided to the range of clients is at a quality level fully acceptable to their needs. Information provided must meet the needs of our users for both historical and current data. These are not easy targets within the current limits of our financial restraints. Nevertheless, they are targets which must be met.

The area within NRCan responsible for the definition of the Canadian government's mineral and metal policy[3] is the Mining Sector (MS) of the department. Part of that policy calls for the provision of timely and accurate information on the mineral and metal industry in Canada. To carry out that function, MS is drawing together a program that will ensure the quality of its statistical products and services.

The basic activities in this program include:

1. Maintaining and improving its statistical processes. A cornerstone to any quality assurance program must be to seek to improve the statistical quality of its data in terms of minimizing traditional survey errors (both non-sampling and, where appropriate, sampling errors). These "traditional" survey errors are discussed in standard literature such as Fellegi and Sunter.[4] Methods of compensating for or evaluating each type of error are provided in the Statistics Canada publication, *Quality Guidelines*,[5] which can be used as a guide in this process. Although MS has had a program designed to consistently and constantly edit survey responses and validate the data produced on an ongoing basis, there is a need to restructure this program into a cohesive and efficient editing scheme involving both electronic procedures and specialist review.

2. Using the policies, standards and methods developed by Statistics Canada as a guide in improving the quality of NRCan's process. By the selective imitation of the policies, standards and methods that the central agency has set in place to ensure the high quality of its products and reputation, NRCan can share the benefits accrued by using these policies, etc., as models where feasible.

3. Undertaking a process of "benchmarking" its operations against the central statistical organization in a way similar to the "benchmarking" exercises described in Almdal.[6] In this way, operational efficiencies can be identified and harnessed. Likewise, by participating in international data review processes and by ongoing communication with the international fraternity of organizations involved in parallel survey activities, NRCan's data assurance measures can be consistent with international standards.

4. Utilizing highly qualified personnel and systems available off-site. NRCan proposes to take advantage of the resource pool available at, for

example, Statistics Canada by means of personnel exchanges and agreements to jointly sponsor projects of mutual interest. It is hoped that these efforts will contribute to the development of a more extensive bank of internal statistical expertise. In addition, NRCan wishes to take full advantage of the training opportunities available through the central statistical agency.

5. Forging fair and workable agreements with NRCan's partners in Statistics Canada and the ministries in the provincial governments, leading to the minimization of duplication of activity between government agencies.

6. Reinforcing communication links with NRCan's statistical partners, Statistics Canada and the provincial ministries. A primary vehicle for promoting these communication links is the Federal-Provincial Committee on Mineral Statistics, part of the network of consultative committees established by Statistics Canada.

7. Vigorously pursuing feedback with NRCan's total client base to ensure that their needs are being properly addressed and the products and services provided are of sufficient quality. This feedback will be gathered by both systematic and periodic surveys of, and informal interactions with, NRCan's various client bases.

8. Establishing an overall strategy for the dissemination and evolution of survey products. Part of the Sector's communications strategy involves continuing opportunities for client feedback. The Sector has initiated planning aimed at recovering costs for certain products and services that it provides.

9. Making senior management aware of the real benefits, needs and costs of a statistical program on an ongoing, and not only a crisis, basis. The visibility of the statistical program should be promoted both inside and outside the host organization.

10. Continuously looking forward:

    - to a full structural review of NRCan's surveys with the central agency;
    - to participation in the review and amendment of common classification systems; and
    - to respond to the evolving nature of both the statistical system and the governmental structure in which it finds itself with a program of continual improvement.

THE MINING INDUSTRY FRAME

In most statistical surveys, it is absolutely critical that the frame chosen is a close approximation of the target population. Moreover, in the context of the mining industry establishment surveys, it is important that the frame is consistent in its treatment of companies across all establishment surveys and industrial groupings. For example, mining companies will often operate both production establishments (producing mines) and refining or smelting establishments. The first set of establishments is surveyed by NRCan, while the second is the survey responsibility of Statistics Canada. Under these circumstances, it is necessary that the parties cooperate to ensure not only that the establishment coverage is complete and that updates are exchanged, but also that the collection and editing of the survey data are harmonized, thus removing duplication of collection cost and minimizing the data collection burden on the respondent.

For the most part, the mining industry consists of large and long-term companies. These are readily identifiable and coverage of this population is considered to be virtually complete. This fact is verifiable by the commodity specialists who will quickly notice the impact of the omission of even one company in a total or a count. However, certain subpopulations covered by the mining industry surveys, particularly the population of sand and gravel pit operators, are highly volatile not just in terms of the length of their operating existence, but also in terms of the industrial classification to which they may be assigned. This year's farming operation may become next year's gravel pit operator and then may revert to farming again in the succeeding year, and so on.

Statistics Canada operates the *Business Register*, a comprehensive business survey frame covering all establishments and other statistical units of interest across the complete range of industrial classifications. The *Business Register*, therefore, has been developed by Statistics Canada as a frame for certain of its own surveys of the mining industry. Its monthly employment survey, the Survey of Employment, Payroll and Hours (SEPH), covers a cross-section of Canadian employers, including those in the mining industry. In order to ensure that estimates from the respective surveys can be consistently used by industry analysts, it is necessary to assure that the frames and the associated classification structures used as a basis to survey the populations are similar and compatible.

NRCan and Statistics Canada will develop a protocol for the exchange of updates. In its agreements with those provinces with mining industries, NRCan will

continue to collect and exchange frame updates with each participating province. By systematizing this information flow, the various partners in the collection of data on the Canadian mining industry can be assured that the frame information is both reasonably up-to-date and consistent with that used by all parties to the interchange agreements. Statistics Canada has also agreed to initiate the process of reconciling the current NRCan frame with the *Business Register* within the next year.

QUALITY OF THE DATA PRODUCED

It is worth noting at the outset that the transfer of the survey responsibility to the decentralized organization brought with it no known direct deterioration of data quality. Response rates to survey questionnaires remain at well above 90%. Moreover, it is NRCan's intention to collect and retain a greater database of quality measurement information. Contacts established by MS at various levels of the corporate structures of its major respondents have, it is believed, improved the quality of data provided and will aid in the restructuring of the data collected as the industry itself evolves. This relates particularly to the growing importance of the use of secondary materials in the mining industry and the need to capture information related to environmental initiatives. Another area in which work is currently being undertaken is the categorization of exploration expenditures under the aegis of the Federal-Provincial Committee.

Data on mines openings and closings, and the impact on industrial employment, collected in MS are being compared with changes in employment levels generated by the SEPH at Statistics Canada to ensure that these data sources show consistent trends. Any discrepancies noted can be compared. Similarly, data collected through the industrial surveys will be compared for consistency with Statistics Canada employment levels.

With the advent of new statistical data systems, increased efforts are being made to develop electronic databases which can be shared among the data-gathering partners. This will collectively reduce data-capture costs, minimize the joint data editing costs, and provide an opportunity to fully ensure the production of consistent statistical tabulations between the parties involved.

In order to control workloads on personnel, including those workloads shared with the provinces in the face of fiscal restraint, NRCan expects to introduce sampling methods and other survey design measures into what had formerly been full census coverage. This will naturally add a sampling error component to survey errors, a component which will be fully estimated and documented. A greater effort will be made to control respondent and data-capture errors through a systematic approach to electronic editing, through a revitalization of the current editing notes and, perhaps, through the introduction of selective editing processes within the framework of this system. Interest is being taken in the selective editing processes being developed at Statistics Canada.

PRIMARY STATISTICAL ANALYSIS

In order to make the issue of data quality visible, a data quality statement will be phased into each regular publication used as a primary release mechanism for the data produced. Statistics Canada maintains a clear and concise policy on data quality statements that appears in its releases. The first stage of this initiative will be the preparation of a quality statement consistent with Statistics Canada policy in all Statistics Canada releases in which NRCan provides data; the second stage will be the satisfaction of this requirement for all systematic data releases of the NRCan statistical unit.

Analyses of the impact of the Canadian mining industry on the Canadian economy often involves not only the analysis of the mining industry itself, but also the industries directly dependent on that industry or downstream industries. These industries include the smelting and refining and metal semi-fabrication and fabrication industries. Since data for the downstream industries are collected by Statistics Canada, it is necessary to build analyses from the data sources from the two agencies. It is also necessary, and this is a very current concern, that NRCan develop the industrial structure profile in concert with Statistics Canada and other statistical organizations undertaking similar analyses.

Finally, an ongoing program to seek feedback from NRCan's client base and, indeed, to periodically redefine that client base is absolutely essential in defining the statistical products and services that NRCan produces. This comes not only through a systematic and continuing program of client surveys and consultation, but also through day-to-day contacts with Statistics Canada, NRCan's commodity officers and policy analysts, and meetings with provincial and international counterparts.

In a paper prepared for the International Statistical Institute (ISI) in 1975, Norwood[7] concludes that, provided objectivity and impartiality are maintained, the organization which produces the statistics should indeed analyze them. While Statistics Canada holds

its objectivity and impartiality as a keystone value to its operations, it may be difficult to assure the general public that other line government departments can maintain the same overall level of objectivity in their operations, as they are often seen as advocates of an industry or an issue. It is a continuing challenge for MS to be seen as objective and impartial in its construction of its statistical outputs, including any data analyses that it conducts.

CONCLUSIONS AND DIRECTIONS

It is the conclusion of this review that the placement of a survey unit responsible for the collection and dissemination of industrial establishment statistics outside of the central agency presents a viable alternative to its location within the administrative umbrella of that agency. In fact, there can be major, perhaps over-riding, advantages for the organization hosting that unit, for the responding business, and for the national statistical system as a whole. But it is incumbent upon the decentralized survey organization to operate under a strategy that will ensure the quality of its statistical contributions are subject to standards essentially as rigorous as those observed by the central agency. As a consequence, it is also important that the decentralized unit take advantage of the expertise, experience and facilities of the central agency to meet that goal.

Given good will and sound communication links between the organizations involved, and resourcing to allow suitable quality assurance activities to be supported, the maintenance of decentralized establishment data collection activity is indeed possible and, in some instances, a preferable option. In fact, the central agency can benefit from the existence of small decentralized units to provide a positive, and perhaps critical, input into its activities.

However, it remains crucial that resources in the organization hosting the decentralized establishment statistics activity be sufficient to support an adequate quality assurance program. And it is important to recognize that, without the leadership and investment of the central agency, the success of the decentralized unit would be compromised.

REFERENCES

[1] The *Statistics Act*, An Act respecting statistics in Canada, Office consolidation, March 1992.

[2] *Economist, The*, September 1991.

[3] Energy, Mines and Resources Canada, *The Mineral and Metal Policy of the Government of Canada*, May 1987.

[4] Fellegi, I.P. and Sunter, A.B., *Balances Between Different Sources of Survey Errors – Some Canadian Experiences*, Sankhya, 36 Series C, (1974), pp. 119-142.

[5] Statistics Canada, *Quality Guidelines*, Second Edition, 1987.

[6] Almdal, Bill, *Continuous Improvement with Benchmarking*, Paper presented to the 95th Annual General Meeting of The Canadian Institute of Mining and Metallurgy (CIM), May 1993.

[7] Norwood, Janet L., *Should Those Who Produce Statistics Analyze Them? How Far Should the Analysis Go?*, Invited paper, ISI, Warsaw, 1975.

Statistical Tables

TABLE 1. CANADA, PRODUCTION OF LEADING MINERALS

		1992			1993			Percentage Changes		
		April	May	Total 5 Months	April	May	Total 5 Months	May 1993 / May 1992	May 1993 / April 1993	5 Months 1993 / 1992
		(000 tonnes except where noted)								
METALS										
Copper		64.8r	60.9r	316.7r	66.2r	61.7	301.2	1.3	–6.8	–4.9
Gold	kg	13 444.7r	12 704.2r	65 414.0r	12 070.8r	11 600.2	60 604.6	–8.7	–3.9	–7.4
Iron ore		3 093.2	3 111.8	9 905.2	2 532.8	3 036.0	8 777.9	–2.4	19.9	–11.4
Lead		22.8r	26.6r	116.0r	13.0	11.0	84.4	–58.6	–15.1	–27.3
Molybdenum	t	587.3	697.2	3 576.2	766.4	725.8	4 258.5	4.1	–5.3	19.1
Nickel		18.7r	18.2r	87.3r	17.0r	17.3	79.9	–5.0	2.2	–8.4
Silver	t	98.0	101.8	485.1	71.0r	62.1	367.7	–39.0	–12.6	–24.2
Uranium[1]	t	668.8r	884.2r	3 560.2r	659.7	876.0	3 505.6	–0.9	32.8	–1.5
Zinc		92.1r	122.9r	457.8r	76.1	56.3r	361.9r	–54.2	–26.0	–20.9
NONMETALS										
Asbestos		60.0	51.0	254.5r	47.4	42.8	215.0	–16.0	–9.6	–15.5
Clay products	$000	10 264.8	12 471.3	37 980.4	9 582.6	10 698.5	37 228.3	–14.2	11.6	–2.0
Gypsum		582.7r	742.8r	3 006.0r	653.1r	613.1	2 920.6	–17.5	–6.1	–2.8
Potash K_2O		776.9	665.4	3 289.9	818.0	821.2	3 484.5	23.4	0.4	5.9
Cement		656.4r	871.9r	2 594.7r	663.7	912.7	2 628.4	4.7	37.5	1.3
Lime		196.0	204.4	980.3	212.9	216.9	1 000.3	6.1	1.9	2.0
Salt		798.0	973.9	3 790.7	711.6r	935.5r	3 840.0r	–3.9	31.5	1.3
FUELS										
Coal		6 011.6	5 086.1r	30 076.9r	5 370.5	5 478.6	28 187.5	7.7	2.0	–6.3
Natural gas	million m^3	11 714.0	11 464.0r	59 234.0r	13 134.0	. .	. .	. .	. .	. .
Crude oil and equivalent	000 m^3	8 053.0r	8 056.0r	41 171.0r	8 355.0	. .	. .	. .	. .	. .

Sources: Natural Resources Canada; Statistics Canada.
. . Not available; r Revised.
[1] Tonnes uranium (1 tonne U = 1.2999 short tons U_3O_8).
Note: Percentage changes are calculated on the basis of actual production figures as opposed to the rounded figures as shown.

TABLE 1A. CANADA, PRODUCTION OF LEADING MINERALS

		1992			1993			Percentage Changes		
		May	June	Total 6 Months	May	June	Total 6 Months	June 1993 / June 1992	June 1993 / May 1993	6 Months 1993 / 1992
		(000 tonnes except where noted)								
METALS										
Copper		60.9r	64.4r	381.1r	61.7	58.7	359.9	–8.9	–4.8	–5.6
Gold	kg	12 704.2r	14 024.9r	79 438.9r	11 600.2	12 941.7	73 546.3	–7.7	11.6	–7.4
Iron ore		3 111.8	3 126.5	13 031.7	3 036.0	3 504.7	12 282.6	12.1	15.4	–5.7
Lead		26.6r	24.4r	140.4r	11.0	11.1	95.4	–54.8	0.3	–32.0
Molybdenum	t	697.2	711.3	4 287.5	725.8	672.5	4 931.0	–5.5	–7.3	15.0
Nickel		18.2r	17.9r	105.2r	17.3	17.1	97.1	–4.4	–1.1	–7.8
Silver	t	101.8	97.6	582.7	62.1	62.1	429.9	–36.3	0.1	–26.2
Uranium[1]	t	884.2r	1 049.0r	4 609.2r	876.0	1 037.2	4 542.8	–1.1	18.4	–1.4
Zinc		122.9r	85.0r	542.8r	56.3r	78.0	439.9	–8.2	38.5	–19.0
NONMETALS										
Asbestos		51.0	51.4	305.9r	42.8	38.5	253.5	–25.1	–10.0	–17.1
Clay products	$000	12 471.3	14 213.1	52 193.5	10 698.5	11 067.3	48 295.6	–22.1	3.4	–7.5
Gypsum		742.8r	683.6r	3 689.5r	613.1	694.0	3 614.5	1.5	13.2	–2.0
Potash K_2O		665.4	519.8	3 809.7	821.2	462.2	3 946.7	–11.1	–43.7	3.6
Cement		871.9r	1 066.0r	3 660.8r	912.7	1 057.8	3 686.2	–0.8	15.9	0.7
Lime		204.4	201.3	1 181.7	216.9	204.6	1 204.9	1.7	–5.7	2.0
Salt		973.9	940.9	4 731.6	935.5r	1 051.9	4 891.9	11.8	12.4	3.4
FUELS										
Coal		5 086.1r	4 984.8r	35 061.7r	5 478.6	. .	. .	. .	. .	. .
Natural gas	million m^3	11 464.0r	10 634.0r	69 868.0r	. .	. .	. .	. .	. .	. .
Crude oil and equivalent	000 m^3	8 056.0r	8 053.0r	49 224.0r	. .	. .	. .	. .	. .	. .

Sources: Natural Resources Canada; Statistics Canada.
. . Not available; r Revised.
[1] Tonnes uranium (1 tonne U = 1.2999 short tons U_3O_8).
Note: Percentage changes are calculated on the basis of actual production figures as opposed to the rounded figures as shown.

TABLE 2. METAL PRICES, 1993

	April	May	June	July
COPPER				
Electrolytic, U.S. producer f.o.b. refinery, cents (US)	92.018	86.228	87.201	89.615
Electrolytic, COMEX, 1st pos. plus 5 cents (US)	87.031	80.350	82.975	85.936
Electrolytic, LME Grade A settlement, cents (US)	88.445	81.397	84.070	87.414
LEAD				
U.S. producer, cents (US)	30.000	30.000	30.000	30.000
Montréal, cents (C)	44.000	44.000	44.000	44.000
LME cash, cents (US)	19.065	18.455	17.856	17.599
SILVER				
Handy & Harmon, cents per troy oz (US)	396.357	445.025	437.500	503.738
Handy & Harmon, cents per troy oz (C)	500.203	565.226	559.431	645.641
ZINC				
LME SHG cash, cents (US)	45.567	44.469	42.004	42.074
North American SHG, cents (US)	48.106	47.220	44.814	45.089
TIN				
New York, dealers, cents (US)	258.500	254.656	236.767	230.417
Metals Week, composite, cents (US)	374.124	369.825	347.553	339.793
GOLD				
London, p.m., US$ per troy oz	342.150	367.179	371.891	392.189
NICKEL				
New York, dealers, cathode, US$	2.739	2.622	2.510	2.284
LME cash, US$	2.709	2.614	2.509	2.284
ANTIMONY				
New York, dealers, cents (US)	78.000	78.000	76.364	76.000
PLATINUM				
London p.m. fix, US$ per troy oz	368.938	384.500	383.016	403.418
CADMIUM				
New York, dealers, US$	0.466	0.438	0.384	0.380
ALUMINUM				
LME cash, cents (C)	63.456	64.752	67.588	69.887
LME cash, cents (US)	50.282	50.982	52.857	54.527
COBALT				
Shot/cathode/250 kg, US$	18.000	18.000	18.000	18.000
U.S. spot cathode, US$	15.025	14.400	12.813	12.250
TUNGSTEN				
U.S. spot ore, US$/MTU	41.888	41.888	41.888	41.888
MOLYBDENUM				
Metals Week dealer oxide, US$	2.188	2.212	2.230	2.300
URANIUM				
Nuexco, US$, U_3O_8	7.613	7.570	7.100	7.100

Sources: Metals Week; The Northern Miner.
Average U.S. Exchange Rate for April = 1.262, May = 1.2701, June = 1.2787, July = 1.2817.
Note: Prices are per pound unless otherwise stated.

TABLE 3. CANADA, REAL GROSS DOMESTIC PRODUCT AT FACTOR COST BY INDUSTRY, IN 1986 PRICES, QUARTERLY (SEASONALLY ADJUSTED AT ANNUAL RATES)

Industry Sector	1992 1st Quarter	1992 2nd Quarter	1992 3rd Quarter	1992 4th Quarter	1993 1st Quarter	% Change 1st Quarter 1993 / 4th Quarter 1992	% Change 1st Quarter 1993 / 1st Quarter 1992
			($ millions)				
TOTAL ECONOMY	499 673.2	500 573.7	502 865.8	505 216.0	510 081.5	1.0	2.1
Business Sector							
Agriculture	10 914.0	10 686.7	10 293.2	10 242.7	10 484.5	2.4	–3.9
Fishing and trapping	915.8	935.0	889.1	866.1	853.9	–1.4	–6.8
Forestry	2 448.2	2 473.6	2 580.8	2 708.9	2 943.9	8.7	20.2
Mines, quarries and oil wells	**20 070.6**	**20 273.2**	**20 637.0**	**20 142.4**	**20 640.2**	**2.5**	**2.8**
Mining industries	6 224.7	5 983.8	5 975.2	5 557.5	5 712.8	2.8	–8.2
Gold mines	1 517.8	1 467.7	1 496.9	1 422.8	1 528.7	7.4	0.7
Other metal mines	2 360.3	2 387.3	2 456.9	2 179.1	2 111.7	–3.1	–10.5
Iron mines	492.0	499.8	402.4	470.5	447.4	–4.9	–9.1
Asbestos mines	91.5	85.7	79.8	83.9	79.7	–5.0	–12.9
Other nonmetal mines	551.1	514.5	604.4	531.6	524.2	–1.4	–4.9
Salt mines	150.6	148.1	146.0	148.4	145.7	–1.8	–3.3
Coal mines	1 061.3	880.6	788.9	721.3	875.5	21.4	–17.5
Crude petroleum and natural gas	12 260.6	12 607.1	12 988.3	12 678.1	12 871.4	1.5	5.0
Quarry and sand pit industries	569.3	606.4	600.9	583.4	576.9	–1.1	1.3
Services related to mineral extraction	1 016.0	1 075.9	1 072.6	1 323.4	1 479.1	11.8	45.6
Manufacturing	84 331.6	84 577.7	85 071.6	87 243.7	89 128.9	2.2	5.7
Construction industry	30 432.7	29 179.0	28 494.7	27 575.8	27 514.4	–0.2	–9.6
Transportation and storage	21 684.8	21 770.1	22 001.3	21 836.5	22 078.9	1.1	1.8
Communications	19 280.4	19 409.7	19 356.8	19 513.5	19 699.0	1.0	2.2
Other utilities	16 022.3	16 058.6	16 120.6	16 487.4	16 668.5	1.1	4.0
Wholesale trade	28 653.5	29 257.1	29 789.9	30 071.7	30 415.7	1.1	6.2
Retail trade	29 880.5	29 951.0	30 213.5	30 464.0	30 775.3	1.0	3.0
Finance, insurance and real estate	82 842.7	83 315.7	84 336.3	84 271.4	84 554.6	0.3	2.1
Community, business and personal services	60 000.8	60 584.1	60 719.7	60 930.6	61 245.8	0.5	2.1
Non-Business Sector							
Government service industries	34 106.0	34 012.5	34 103.9	34 359.9	34 329.9	–0.1	0.7
Community and personal services	53 722.8	53 719.9	53 861.4	54 063.9	54 242.8	0.3	1.0
Other non-business industries and services	4 366.5	4 369.8	4 396.0	4 437.5	4 505.2	1.5	3.2

Source: Statistics Canada.
Note: Numbers may not add to totals due to rounding.

TABLE 4. CANADA, REAL GROSS DOMESTIC PRODUCT AT FACTOR COST BY INDUSTRIES INVOLVED IN MINERAL MANUFACTURING, IN 1986 PRICES, QUARTERLY (SEASONALLY ADJUSTED AT ANNUAL RATES)

Industry	1992 1st Quarter	1992 2nd Quarter	1992 3rd Quarter	1992 4th Quarter	1993 1st Quarter	% Change 1st Quarter 1993 / 4th Quarter 1992	% Change 1st Quarter 1993 / 1st Quarter 1992
			($ millions)				
PRIMARY METAL INDUSTRIES	**6 492.3**	**6 473.0**	**6 673.1**	**7 198.2**	**7 528.2**	**4.6**	**16.0**
Primary steel industries	2 611.8	2 604.6	2 656.5	3 069.9	3 203.0	4.3	22.6
Steel, pipe and tube industries	409.3	357.2	372.0	479.9	524.1	9.2	28.0
Iron foundries	283.7	297.0	298.1	301.6	302.5	0.3	6.6
Nonferrous smelting and refining industries	2 339.9	2 361.2	2 474.5	2 467.7	2 569.4	4.1	9.8
FABRICATED METAL PRODUCTS INDUSTRIES	**5 300.7**	**5 320.6**	**5 239.9**	**5 160.5**	**5 303.0**	**2.8**	**0.0**
Power boiler and heat exchanger industry	1 023.4	999.7	908.9	859.5	887.8	3.3	–13.2
Ornamental and architectural metal products industry	605.3	604.8	586.3	527.9	522.4	–1.0	–13.7
Stamped, pressed and coated metals	1 150.8	1 173.3	1 188.4	1 207.1	1 256.3	4.1	9.2
Wire and wire products industries	461.7	468.4	485.9	473.3	489.8	3.5	6.1
Hardware, tool and cutlery industries	741.2	751.1	767.9	793.7	855.4	7.8	15.4
Heating equipment industry	171.6	187.7	204.9	208.2	192.1	–7.7	11.9
Machine shops industry	576.2	562.3	530.8	537.1	537.9	0.1	–6.6
Other metal-fabricating industries	570.4	573.3	566.8	553.5	561.4	1.4	–1.6
NONMETALLIC MINERAL PRODUCTS INDUSTRIES	**2 409.2**	**2 486.5**	**2 448.6**	**2 463.0**	**2 390.9**	**–2.9**	**–0.8**
Cement industry	315.2	334.7	335.7	333.2	290.9	–12.7	–7.7
Concrete products industries	317.6	336.8	335.1	303.6	268.0	–11.7	–15.6
Ready-mix concrete industry	362.9	383.7	389.6	409.4	354.5	–13.4	–2.3
Glass and glass products industries	524.8	540.2	506.1	537.2	559.8	4.2	6.7
Miscellaneous nonmetallic mineral products	771.4	772.9	764.1	759.4	793.0	4.4	2.8

Source: Statistics Canada.
Note: Numbers may not add to totals due to rounding.

TABLE 5. CANADA, MINERAL PRODUCTS INDUSTRIES, SELLING PRICE INDEXES, 1986-92

Base (1986=100)	1986	1987	1988	1989	1990	1991	1992p
IRON AND STEEL PRODUCTS INDUSTRIES							
Ferroalloy and steel foundry industries	100.0	100.7	106.3	116.1	108.6	108.2	109.1
Iron foundries	100.0	100.8	103.2	106.3	109.8	110.9	113.1
Primary steel industries	100.0	101.6	107.5	110.0	108.1	105.0r	97.9
Steel pipe and tube industry	100.0	100.5	104.7	105.7	102.3	101.2r	94.0
NONFERROUS PRIMARY METAL PRODUCTS INDUSTRIES							
Aluminum rolling, casting and extruding industry	100.0	104.4	123.2	117.2	100.5	91.5r	90.3
Copper rolling, casting and extruding industry	100.0	111.5	146.5	161.1	154.4	138.9	142.4
Jewellery and precious metals industries	100.0	103.8	98.8	91.0	90.8	89.7r	90.2
Other rolling, casting and extruding industry	100.0	106.3	122.4	124.3	113.7	101.7	102.8
Nonferrous metal smelting and refining industries	100.0	111.6	148.2	141.4	117.0	99.0	99.5
NONMETALLIC MINERAL PRODUCTS INDUSTRIES							
Agricultural chemicals industries	100.0	94.4	98.3	98.8	95.1	97.6	97.4
Hydraulic cement industry	100.0	100.8	102.1	104.8	106.8	110.3	109.5
Clay products industry (from domestic clay)	100.0	107.7	110.8	117.3	122.2r	119.8r	117.5
Clay products industry (from imported clay)	100.0	105.2	112.3	118.0	123.4	124.6	125.8
Concrete products industries	100.0	104.8	113.0	116.2	118.3	119.9	117.7
Glass and glass products industries	100.0	104.5	110.2	111.1	110.7	109.8	108.6
Nonmetallic mineral insulating materials industry	100.0	104.5	109.6	114.1	114.5	114.2	115.2
Refined petroleum and coal products industries	100.0	95.0	88.2	89.5	100.9	97.7	89.9
FABRICATED METAL PRODUCTS INDUSTRIES							
Agricultural implement industry	100.0	101.8	104.3	106.7	109.0	109.9	112.4
Miscellaneous fabricated structural metal products	100.0	102.1	108.1	111.8	112.8	111.4	107.8
Hardware, tool and cutlery industries	100.0	103.9	109.2	113.7	117.4	120.0	122.1
Heating equipment industry	100.0	102.3	106.3	110.6	113.1	115.6	118.0
Other metal fabricating industries	100.0	102.2	107.5	112.8	115.4	117.8	118.2
Power boiler and heat exchanger industry	100.0	107.8	112.7	120.7	125.3	130.1	136.7
Stamped, pressed and coated metal products industries	100.0	102.3	105.1	105.6	104.7	103.9	103.7
Wire and wire products industries	100.0	101.4	106.9	111.5	112.7	112.7	113.8

Source: Statistics Canada, Catalogue No. 62-011.
p Preliminary; r Revised.

TABLE 6. CANADA, SELLING PRICE INDEXES OF MINERAL RAW MATERIALS, 1986-92

Base (1986=100)	1986	1987	1988	1989	1990	1991	1992p
METALLIC MINERALS							
Copper concentrates	100.0	118.7	158.7	165.3	153.0	131.5	134.7
Iron ore	100.0	96.4	91.0	85.5	82.8	81.7	85.2
Lead concentrates	100.0	156.9	151.9	154.1	170.4	123.9	121.7
Nickel concentrates	100.0	111.1	263.3	251.6	166.0	149.9	133.0
Other base metals	100.0	107.0	130.6	119.4	96.0	80.3	81.0
Precious metals	100.0	114.5	103.9	87.8	85.4	78.0	78.0
Gold and alloys in primary form	100.0	114.2	103.9	87.8	85.9	78.8	78.7
Platinum	100.0	116.5	101.8	95.5	86.9	68.4	68.6
Silver	100.0	121.9	106.2	86.4	74.7	61.7	63.2
Radioactive concentrates	100.0	97.9	86.8	60.0	57.8	49.8	48.1
Zinc concentrates	100.0	106.2	138.8	184.8	165.7	121.9	126.9
NONMETALLIC MINERALS							
Asbestos fibres	100.0	100.1	100.9	107.2	108.9	111.0	117.0
Other crude minerals	100.0	100.4	106.0	105.7	104.6	104.7	103.9
Potash (muriate)	100.0	107.7	145.3	140.8	133.4	137.9	136.5
Quartz and silica sand	100.0	100.5	107.6	106.8	109.8	108.3	98.9
Sand and gravel	100.0	104.6	114.2	125.2	126.8	124.3	124.9
Stone	100.0	102.9	107.9	109.6	114.6	116.4	114.1
Building	100.0	103.5	106.5	111.4	117.2	119.5	119.7
Crushed	100.0	104.2	109.1	110.5	116.4	120.4	121.8
Other	100.0	103.5	106.5	111.4	117.2	119.5	119.7
Sulphur	100.0	81.4	65.8	65.9	57.6	53.0	20.6
MINERAL FUELS							
Coal (thermal)	100.0	100.7	89.7	90.0	90.7	94.6	99.9
Crude mineral oil	100.0	110.6	86.5	99.0	120.0	108.3	105.0
Natural gas	100.0	96.7	89.1	85.0	85.8	87.2r	87.4

Source: Statistics Canada, Catalogue No. 62-011.
p Preliminary; r Revised.

TABLE 7. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY,[1] 1991

		Mining Activity							Total Activity[2]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
METALS											
Nickel-copper-zinc	27	13 454	30 194	690 877	246 507	1 912 099	4 898 042	2 739 436	18 634	980 522	2 772 333
Gold	60	8 563	18 555	463 010	139 954	546 017	2 228 023	1 542 051	10 869	594 521	1 543 209
Iron	5	4 230	9 257	239 064	162 588	397 999	1 226 507	665 920	5 683	327 029	674 318
Uranium	5	1 924	3 828	93 853	43 372	69 375	609 045	496 298	2 391	130 846	495 795
Silver-lead-zinc	12	2 167	4 994	106 737	57 670	475 175	978 570	445 726	3 459	176 256	446 009
Miscellaneous metal mines[3]	5	830	1 839	33 712	17 607	51 990	154 812	85 215	1 056	44 382	87 220
Total	114	31 168	68 666	1 627 254	667 698	3 452 655	10 094 999	5 974 646	42 092	2 253 556	6 018 884
INDUSTRIALS											
Potash	11	2 854	6 292	120 649	106 277	134 869	988 361	747 215	3 825	172 675	745 379
Stone	118	2 080	4 756	73 171	31 679	90 474	386 445	264 292	2 774	101 872	268 870
Miscellaneous nonmetals[4]	34	1 686	3 643	63 692	30 446	57 674	345 556	257 435	2 409	96 105	256 748
Sand and gravel	122	1 564	3 647	52 859	25 254	74 841	313 472	213 376	2 252	77 813	218 755
Asbestos	5	1 769	3 790	72 591	32 269	57 080	273 954	184 604	2 423	107 260	190 147
Peat	51	1 229	2 747	27 723	6 280	30 713	131 783	94 790	1 519	36 823	97 044
Gypsum	10	517	1 205	16 826	6 975	15 511	66 981	44 496	636	21 873	44 145
Total	351	11 699	26 080	427 512	239 180	461 163	2 506 551	1 806 208	15 838	614 421	1 821 088
FUELS											
Oil, crude and natural gas	674	8 724	17 670	480 966	383 096	1 504 989	16 092 573	14 204 488	31 450	1 940 737	14 423 165
Coal	30	9 253	18 711	444 628	136 675	438 531	1 767 063	1 191 857	11 237	554 597	1 211 927
Total	704	17 977	36 381	925 594	519 771	1 943 520	17 859 636	15 396 345	42 687	2 495 334	15 635 092
Total mineral industry	1 169	60 844	131 127	2 980 360	1 426 650	5 857 338	30 461 187	23 177 199	100 617	5 363 311	23 475 063

Sources: Natural Resources Canada; Statistics Canada.
[1] Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. [2] Total activity includes sales and head offices.
[3] Includes molybdenum. [4] Includes salt.
Note: Numbers may not add to totals due to rounding.

TABLE 8. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY,[1] 1990

		Mining Activity							Total Activity[2]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
METALS											
Nickel-copper-zinc	28	13 705	30 821	653 915	236 549	1 991 490	5 836 150	3 608 111	19 104	945 838	3 638 147
Gold	66	9 591	20 943	492 259	135 252	559 464	2 282 757	1 588 041	11 807	604 836	1 584 276
Silver-lead-zinc	16	2 304	5 246	103 173	73 145	575 428r	1 476 505	827 931r	3 727	174 141	833 188r
Iron	7	4 384	9 400	226 563	167 528	410 416	1 214 158	636 214	5 820	306 016	632 704r
Uranium	5	3 066	6 370	161 643	54 056	125 160	735 694	556 478	3 702	198 024	556 969
Miscellaneous metal mines[3]	5	845	1 838	36 498	15 284	59 421	168 803	94 098	1 088	48 681	94 554
Total	127	33 895	74 617	1 674 050	681 814	3 721 379r	11 714 067	7 310 874r	45 248	2 277 536	7 339 838r
INDUSTRIALS											
Potash	11	2 810	6 249	111 612	101 372	137 292	968 512	729 848	3 822	162 523	732 506
Stone	123	2 270	5 165	80 360	37 522	118 233	476 858	321 104	2 951	108 954	326 558
Sand and gravel	132	1 696	3 972	58 040	28 182	86 885	365 266	250 199	2 425	85 128	259 954
Miscellaneous nonmetals[4]	34	1 804	3 956	63 789	29 642	61 567	332 826	241 616	2 468	92 392	240 712
Asbestos	4	2 080	4 752	77 772	35 802	53 618	293 731	204 311	2 699	107 764	204 902
Peat	48	1 386	3 063	28 299	5 606	27 713	118 414	85 095	1 740	39 437	85 231
Gypsum	10	656	1 515	18 853	7 105	20 292	88 575	61 178	786	23 948	61 029
Total	362	12 702	28 673	438 725	245 232	505 601	2 644 181	1 893 349	16 891	620 145	1 910 891
FUELS											
Oil, crude and natural gas	714	8 699	17 654	430 018	359 799	1 395 421	18 664 566r	16 926 515	31 926	1 742 725	17 100 697
Coal	30r	9 312r	19 019r	447 543	137 092	428 729r	1 825 127r	1 259 306r	11 406r	550 214	1 281 113r
Total	744r	18 011r	36 673r	877 561	496 891	1 824 150r	20 489 693r	18 185 821r	43 332r	2 292 939	18 381 810r
Total mineral industry	1 233r	64 608r	139 963r	2 990 336	1 423 937	6 051 130r	34 847 941r	27 390 044r	105 471r	5 190 620	27 632 539r

Sources: Natural Resources Canada; Statistics Canada.
r Revised.
1 Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. 2 Total activity includes sales and head offices.
3 Includes molybdenum. 4 Includes salt.
Note: Numbers may not add to totals due to rounding.

TABLE 9. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY[1] BY REGION, 1991

		Mines, Quarries and Oil Wells Activity							Total Activity[2]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
Atlantic provinces[3]	82	7 391	15 476	313 528	134 284	514 729	1 569 618	920 606	9 624	422 511	951 282
Quebec	175	10 401	22 587	472 169	217 523	804 665	2 425 060	1 402 872	14 285	668 759	1 427 696
Ontario	145	14 570	32 396	726 572	223 355	1 239 862	4 585 131	3 121 914	19 895	1 033 717	3 137 122
Prairie provinces	557	16 742	34 697	843 362	581 860	2 054 471	17 723 156	15 086 825	41 696	2 427 443	15 258 759
British Columbia[4]	182	9 870	21 495	508 612	213 705	1 000 195	3 224 012	2 010 112	12 502	655 301	2 060 187
Yukon and Northwest Territories[5]	28	1 870	4 476	116 117	55 923	243 417	934 210	634 870	2 615	155 580	640 018
Total	1 169	60 844	131 127	2 980 360	1 426 650	5 857 338	30 461 187	23 177 199	100 617	5 363 311	23 475 063

Sources: Natural Resources Canada; Statistics Canada.
[1] Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. [2] Total activity includes sales and head offices.
[3] Includes eastern Canada offshore. [4] Includes western Canada offshore. [5] Includes Arctic Islands.
Note: Numbers may not add to totals due to rounding.

TABLE 10. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY[1] BY REGION, 1990

		Mines, Quarries and Oil Wells Activity							Total Activity[2]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
Atlantic provinces[3]	85[r]	8 253[r]	17 354[r]	309 664	150 992	630 680[r]	1 793 866[r]	1 012 191[r]	10 640[r]	416 926	1 017 736[r]
Quebec	183	10 777	23 497	462 174	214 085	780 391	2 437 732	1 443 258	14 751	651 791	1 463 206
Ontario	152	16 297	36 215	763 508	232 569	1 432 595	5 443 462	3 778 297	21 907	1 060 611	3 801 042
Prairie provinces	597	16 849	34 897[r]	785 998	551 720	1 955 227[r]	20 372 667[r]	17 888 529[r]	42 491	2 225 155	18 040 624[r]
British Columbia[4]	180	10 095	22 435	526 293	216 949	978 542[r]	3 474 855[r]	2 282 284[r]	12 577	654 998	2 307 947[r]
Yukon and Northwest Territories[5]	36	2 337	5 568	142 698	57 624	273 694	1 325 362[r]	985 487	3 105	181 141	1 001 983[r]
Total	1 233[r]	64 608[r]	139 963[r]	2 990 336	1 423 937	6 051 130[r]	34 847 941[r]	27 390 044[r]	105 471[r]	5 190 620	27 632 539[r]

Sources: Natural Resources Canada; Statistics Canada.
[r] Revised.
[1] Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. [2] Total activity includes sales and head offices.
[3] Includes eastern Canada offshore. [4] Includes western Canada offshore. [5] Includes Arctic Islands.
Note: Numbers may not add to totals due to rounding.

TABLE 11. CANADA, PRINCIPAL STATISTICS OF THE MINERAL INDUSTRY,[1] 1984-91

		Mines, Quarries and Oil Wells Activity							Total Activity[2]		
		Production and Related Workers			Costs						
	Establish-ments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Production	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
1984	1 381	69 650	140 567	2 295 256	1 204 008	4 290 972	37 976 019	32 481 039	115 790	4 106 049	32 545 525
1985	1 385	66 945	140 092	2 347 084	1 264 619	4 442 358	38 127 807	32 420 830	116 383	4 421 553	32 495 098
1986	1 507	64 360	135 055	2 378 524	1 240 371	4 649 767	27 785 615	21 895 474	109 433	4 445 569	22 224 015
1987	1 276	64 370	138 236	2 444 934	1 233 806	4 870 150	30 652 347	24 548 391	107 676	4 449 357	24 803 839
1988	1 340	67 360	144 551	2 749 351	1 296 757	5 685 034	31 777 388	24 795 628	110 757	4 876 209	25 100 343
1989	1 262	68 704	148 555	2 985 561	1 349 568	6 065 134[r]	33 555 133[r]	26 135 430[r]	110 975	5 232 986	26 436 361[r]
1990	1 233[r]	64 608[r]	139 963[r]	2 990 336	1 423 937	6 051 130[r]	34 847 941[r]	27 390 044[r]	105 471[r]	5 190 620	27 632 539[r]
1991	1 169	60 844	131 127	2 980 360	1 426 650	5 857 338	30 461 187	23 177 199	100 617	5 363 311	23 475 063

Sources: Natural Resources Canada; Statistics Canada.
[r] Revised.
[1] Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. [2] Total activity includes sales and head offices.

TABLE 12. CANADA, CONSUMPTION OF FUEL AND ELECTRICITY IN THE MINERAL INDUSTRY,[1] 1991

	Unit	Metals	Industrials[2]	Total
Coal	000 t	153	–	153
	$000	10 941	–	10 941
Gasoline	000 litres	18 940	17 477	36 417
	$000	9 006	7 756	16 762
Fuel oil, kerosene, diesel oil	000 litres	785 070	247 098	1 032 168
	$000	186 715	65 983	252 698
Liquefied petroleum gas	000 litres	110 807	13 470	124 277
	$000	21 728	2 957	24 685
Natural gas	000 m^3	134 320	675 645	809 965
	$000	14 750	46 426	61 176
Other fuels[3]	$000	20 068	1 589	21 657
Total value of fuels	$000	263 207	124 709	387 916
Electricity purchased	million kWh	12 390	2 453	14 843
	$000	404 491	114 471	518 962
Total value of fuels and electricity purchased in the nonfuel mineral industry	$000	667 698	239 180	906 878
Total value of fuels and electricity purchased in the fuel industry	$000	. .	. .	519 771
Total value of fuels and electricity purchased in the mineral industry, all reporting companies	$000	. .	. .	1 426 650

Sources: Natural Resources Canada; Statistics Canada.
– Nil; . . Not available.
[1] Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. [2] Includes structural materials. [3] Includes wood, manufactured gas, steam purchased, and other miscellaneous fuels.
Note: Numbers may not add to totals due to rounding.

TABLE 13. CANADA, COST OF FUEL AND ELECTRICITY USED IN THE MINERAL INDUSTRY,[1] 1984-91

	Unit	1984	1985	1986	1987	1988	1989	1990	1991
METALS									
Fuel	$000	331 231	337 445	276 894	249 932	251 343	254 442	270 811	263 207
Electricity purchased	million kWh	11 672	11 504	12 066	12 128	13 264	13 396	13 097	12 390
	$000	272 932	281 373	320 828	345 068	368 369	398 188	411 002	404 491
Total cost of fuel and electricity	$000	604 163	618 818	597 722	595 000	619 714	652 630	681 813	667 698
INDUSTRIALS[2]									
Fuel	$000	169 486	165 665	153 442	137 873	130 932	127 612	131 080	124 709
Electricity purchased	million kWh	2 120	2 122	2 107	2 237	2 471	2 548	2 842	2 453
	$000	76 884	82 114	86 571	96 876	105 825	113 108	114 151	114 471
Total cost of fuel and electricity	$000	246 370	247 779	240 013	234 749	236 757	240 720	245 231	239 180
TOTAL NONFUEL MINERAL INDUSTRY									
Fuel	$000	500 717	503 110	430 336	387 805	382 275	382 054	401 891	387 916
Electricity purchased	million kWh	13 792	13 626	14 173	14 365	15 735	15 944	15 939	14 843
	$000	349 816	363 487	407 399	441 944	474 194	511 296	525 153	518 962
Total cost of fuel and electricity	$000	850 533	866 597	837 735	829 749	856 471	893 350	927 044	906 878
FUELS[3]									
Fuel	$000	89 237	101 049	73 426	67 103	68 654	. .	. .	. .
Electricity purchased	million kWh	5 840	6 569	7 183	7 822	8 726	. .	. .	. .
	$000	264 233	296 973	329 208	336 952	371 632	. .	. .	. .
Total cost of fuel and electricity	$000	353 470	398 022	402 634	404 055	440 286	456 219	496 891	519 771
TOTAL MINERAL INDUSTRY									
Fuel	$000	589 954	604 159	503 762	454 908	450 929	. .	. .	. .
Electricity purchased	million kWh	19 632	20 195	21 356	22 187	24 461	. .	. .	. .
	$000	614 049	660 460	736 607	778 896	845 826	. .	. .	. .
Total cost of fuel and electricity	$000	1 204 003	1 264 619	1 240 371	1 233 806	1 296 757	1 349 568	1 423 937	1 426 650

Sources: Natural Resources Canada; Statistics Canada.
. . Not available.
[1] Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. [2] Includes structural materials.
[3] Breakdown not available for the fuel industries from 1989 to 1991.
Note: Numbers may not add to totals due to rounding.

TABLE 14. CANADA, EMPLOYMENT, SALARIES AND WAGES IN THE MINERAL INDUSTRY,[1] 1984-91

	Unit	1984	1985	1986	1987	1988	1989	1990	1991
METALS									
Production and related workers	Number	39 181	36 618	34 941	34 329	36 140	37 451	33 895	31 168
Salaries and wages	$000	1 296 157	1 288 990	1 308 956	1 327 119	1 539 838	1 707 653	1 674 050	1 627 254
Annual average salary and wage	$	33 081	35 201	37 462	38 659	42 608	45 597	49 389	52 209
Administrative and office workers	Number	13 502	12 054	11 546	11 167	12 137	11 954	11 353	10 924
Salaries and wages	$000	518 644	487 398	489 402	489 609	561 205	600 238	603 486	626 302
Annual average salary and wage	$	38 412	40 435	42 387	43 844	46 239	50 212	53 157	57 333
Total metals									
Employees	Number	52 683	48 672	46 487	45 496	48 277	49 405	45 248	42 092
Salaries and wages	$000	1 814 801	1 776 388	1 798 358	1 816 728	2 101 043	2 307 891	2 277 536	2 253 556
Annual average salary and wage	$	34 448	36 497	38 685	39 932	43 521	46 714	50 335	53 539
INDUSTRIALS[2]									
Production and related workers	Number	13 008	12 535	12 376	12 989	12 969	12 976	12 702	11 699
Salaries and wages	$000	356 828	354 460	361 039	401 626	429 111	440 750	438 725	427 512
Annual average salary and wage	$	27 431	28 278	29 173	30 920	33 087	33 967	34 540	36 543
Administrative and office workers	Number	4 250	4 380	4 887	4 930	4 627	4 619	4 189	4 139
Salaries and wages	$000	138 012	148 090	169 237	183 979	189 650	191 558	181 420	186 909
Annual average salary and wage	$	32 473	33 811	34 630	37 318	40 988	41 472	43 309	45 158
Total industrials									
Employees	Number	17 258	16 915	17 263	17 919	17 596	17 595	16 891	15 838
Salaries and wages	$000	494 840	502 550	530 276	585 605	618 761	632 308	620 145	614 421
Annual average salary and wage	$	28 673	29 710	30 717	32 681	35 165	35 937	36 715	38 794
FUELS									
Production and related workers	Number	17 461	17 792	17 043	17 052	18 251	18 277	18 011r	17 977
Salaries and wages	$000	642 271	703 634	708 529	716 189	780 402	837 158	877 561	925 594
Annual average salary and wage	$	36 783	39 548	41 573	42 000	42 759	45 804	48 724	51 488
Administrative and office workers	Number	28 388	33 004	28 640	27 209	26 633	25 698	25 321	24 710
Salaries and wages	$000	1 154 137	1 438 982	1 408 406	1 330 835	1 376 003	1 455 629	1 415 378	1 569 740
Annual average salary and wage	$	40 656	43 600	49 176	48 912	51 665	56 644	55 897	63 527
Total fuels									
Employees	Number	45 849	50 796	45 683	44 261	44 884	43 975	43 332r	42 687
Salaries and wages	$000	1 796 408	2 142 616	2 116 935	2 047 024	2 156 405	2 292 787	2 292 939	2 495 334
Annual average salary and wage	$	39 181	42 181	46 340	46 249	48 044	52 138	52 916	58 457
TOTAL MINERAL INDUSTRY									
Production and related workers	Number	69 650	66 945	64 360	64 370	67 360	68 704	64 608r	60 844
Salaries and wages	$000	2 295 256	2 347 084	2 378 524	2 444 934	2 749 351	2 985 561	2 990 336	2 980 360
Annual average salary and wage	$	32 954	35 060	36 957	37 983	40 816	43 455	46 284	48 984
Administrative and office workers	Number	46 140	49 438	45 073	43 306	43 397	42 271	40 863	39 773
Salaries and wages	$000	1 810 793	2 074 470	2 067 045	2 004 423	2 126 857	2 247 425	2 200 284	2 382 951
Annual average salary and wage	$	39 246	41 961	45 860	46 285	49 009	53 167	53 845	59 914
Total mineral industry									
Employees	Number	115 790	116 383	109 433	107 676	110 757	110 975	105 471r	100 617
Salaries and wages	$000	4 106 049	4 421 553	4 445 569	4 449 357	4 876 209	5 232 986	5 190 620	5 363 311
Annual average salary and wage	$	35 461	37 991	40 624	41 322	44 026	47 155	49 214	53 304

Sources: Natural Resources Canada; Statistics Canada.
r Revised.
1 Cement manufacturing, lime manufacturing, clay and clay products (domestic clays) are included in the mineral manufacturing industry. 2 Includes structural materials.
Note: Numbers may not add to totals due to rounding.

TABLE 15. CANADA, PRINCIPAL STATISTICS OF THE MINERAL MANUFACTURING INDUSTRIES, 1990

		Mineral Manufacturing Activity							Total Activity[1]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Shipments	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
PRIMARY METAL INDUSTRIES											
Smelting and refining	34	21 547	46 541	956 637	538 268	2 723 598	5 926 236	2 679 881	30 573	1 412 544	2 740 455
Primary steel	66	29 388	62 716	1 248 366	491 114	4 098 911	7 640 121	2 738 273	39 120	1 728 684	2 711 834
Wire and wire products industries[2]	299	9 833	20 420	284 609	36 571	878 261	1 618 797	692 080	12 965	403 562	721 949
Iron foundries	98	7 148	15 580	272 290	54 162	395 092	1 013 596	574 566	8 397	330 968	575 366
Steel pipe and tube	50	4 194	8 719	150 117	19 839	945 341	1 447 674	481 076	5 319	201 210	484 264
Aluminum rolling, casting and extruding	68	4 205	9 269	151 157	31 022	1 289 454	1 826 344	484 004	5 463	209 305	482 621
Metal rolling, casting and extruding n.e.s.	118	4 618	9 641	142 596	26 806	558 244	943 425	357 706	5 479	183 764	360 065
Copper and alloy rolling, casting and extruding	40	1 912	3 932	59 521	12 952	283 827	446 379	146 125	2 316	78 158	145 652
Total	773	82 845	176 817	3 265 293	1 210 734	11 172 728	20 862 572	8 153 711	109 632	4 548 195	8 222 206
NONMETALLIC MINERAL PRODUCTS INDUSTRIES											
Ready-mix concrete	676	10 920	23 490	342 988	75 665	1 155 541	2 004 627	775 753	12 798	417 824	791 183
Cement	21	2 079	4 558	90 988	155 008	184 105	952 766	621 820	3 259	147 444	626 183
Glass products	172	5 212	10 863	151 634	17 102	286 307	674 194	369 799	6 222	194 396	393 423
Primary glass and glass containers	24	4 337	8 902	137 477	50 337	174 412	561 751	326 600	5 511	192 967	352 583
Mineral insulating products	47	2 215	4 896	72 496	35 402	174 589	431 862	226 757	3 294	121 974	337 435
Other concrete products	279	5 062	10 429	123 173	19 645	259 242	565 948	289 383	5 774	152 948	303 746
Structural concrete products	64	2 479	5 376	84 797	5 551	117 072	342 821	220 594	3 163	111 063	220 552
Other nonmetallic mineral products	167	2 992	6 336	78 026	12 918	124 647	318 655	180 134	3 431	95 608	182 311
Gypsum products	31	1 435	3 161	50 542	26 592	199 596	391 607	163 121	2 102	79 599	172 248
Refractory products	31	1 168	2 426	33 683	6 996	87 478	220 171	127 126	1 862	61 265	150 845
Concrete pipe	47	1 353	3 022	43 020	5 604	83 305	222 423	131 108	1 690	57 075	131 900
Abrasives	36	1 415	3 068	41 810	42 666	105 794	263 439	117 111	1 837	59 118	130 763
Lime	13	626	1 355	24 699	39 456	30 949	175 781	105 248	836	34 971	105 503
Clay products (domestic)	29	882	1 937	29 727	18 443	19 705	126 932	93 988	1 238	42 336	94 339
Clay products (imported)	48	1 111	2 202	27 379	5 936	33 834	118 685	78 275	1 325	35 228	79 420
Asbestos products industry	6	196	410	4 720	711	9 031	19 987	9 319	263	7 229	14 912
Total	1 691	43 482	92 431	1 337 159	518 032	3 045 607	7 391 649	3 836 136	54 605	1 811 045	4 087 346

TABLE 15 (cont'd)

	Mineral Manufacturing Activity								Total Activity[1]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Shipments	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
FABRICATED METAL PRODUCTS INDUSTRIES											
Stamped and pressed metal products industries	1 020	27 548	57 338	735 851	85 407	2 750 121	4 713 312	1 864 149	33 665	974 793	1 942 969
Fabricated structural metal products industries	492	16 885	34 746	527 235	33 069	1 251 713	2 617 991	1 315 046	21 277	706 034	1 333 993
Hardware, tool and cutlery industry	877	19 454	41 007	565 217	28 035	594 371	1 788 022	1 157 877	22 475	689 586	1 173 662
Other metal fabricating industries	642	14 761	30 666	412 721	38 011	1 074 097	2 217 030	1 087 108	19 298	587 254	1 127 706
Ornamental and architectural metal products industries	835	17 193	35 507	424 929	25 099	1 124 687	2 177 886	1 030 463	21 075	577 282	1 047 325
Machine shop industry	1 668	23 630	49 433	633 359	33 023	627 297	1 614 361	951 758	24 721	672 093	975 980
Power boiler and heat exchanger industry	44	3 276	7 027	119 638	5 981	232 076	579 496	305 353	5 234	198 658	312 396
Heating equipment industry	153	4 838	10 081	113 547	6 739	265 650	550 053	274 245	6 112	157 875	278 547
Total	5 731	127 585	265 806	3 532 497	255 364	7 920 012	16 258 151	7 985 999	153 857	4 563 575	8 192 578
PETROLEUM AND COAL PRODUCTS INDUSTRIES											
Petroleum refining products	33	5 471	11 654	292 025	333 257	15 796 510	18 028 692	2 554 629	13 820	726 665	2 560 874
Other petroleum and coal products	76	714	1 470	21 925	11 787	178 574	267 776	73 569	1 000	33 122	106 720
Lubricating oils and greases	29	596	1 263	20 462	6 055	191 723	272 986	75 713	1 048	39 423	93 106
Total	138	6 781	14 387	334 412	351 099	16 166 807	18 569 454	2 703 911	15 868	799 210	2 760 700
Total mineral manufacturing industries	8 333	260 693	549 440	8 469 361	2 335 229	38 305 154	63 081 826	22 679 757	333 962	11 722 025	23 262 830

Source: Statistics Canada, Catalogue No. 31-203.
n.e.s. Not elsewhere specified.
1 Total activity includes sales and head offices. 2 Wire and wire products have been included in the primary metal industries group.
Note: Numbers may not add to totals due to rounding.

TABLE 16. CANADA, PRINCIPAL STATISTICS OF THE MINERAL MANUFACTURING INDUSTRIES BY REGION, 1990

		Mineral Manufacturing Activity							Total Activity[1]		
		Production and Related Workers			Costs						
	Establishments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Shipments	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
PRIMARY METALS INDUSTRY[2]											
Atlantic provinces	9	x	x	x	x	x	x	x	x	x	x
Quebec	134	19 378	41 837	802 117	493 397	3 281 507	6 236 082	2 463 619	27 579	1 194 188	2 456 492
Ontario	230	42 332	90 697	1 722 727	505 367	5 456 485	10 139 701	3 841 046	54 055	2 317 500	3 823 991
Prairie provinces	53	x	x	x	x	x	x	x	x	x	x
British Columbia	48	5 236	11 045	219 463	19 629	435 914	909 575	454 113	6 887	298 550	528 748
Yukon and Northwest Territories	–	–	–	–	–	–	–	–	–	–	–
Total Canada	474	73 012	156 396	2 980 684	1 174 163	10 294 467	19 243 775	7 461 631	96 667	4 144 633	7 500 257
NONMETALLIC MINERAL PRODUCTS INDUSTRY											
Atlantic provinces	118	1 827	3 870	48 888	22 924	114 400	276 550	141 063	2 358	68 317	142 486
Quebec	473	10 516	21 958	299 771	123 181	654 660	1 632 915	857 035	13 021	405 738	882 797
Ontario	613	22 792	48 755	713 740	270 696	1 572 361	3 786 196	1 938 152	28 358	959 245	2 139 567
Prairie provinces	312	4 663	10 140	143 364	57 853	370 649	903 197	473 422	6 219	203 447	487 679
British Columbia	175	3 684	7 707	131 396	43 378	333 537	792 791	426 464	4 649	174 298	434 817
Yukon and Northwest Territories	–	–	–	–	–	–	–	–	–	–	–
Total Canada	1 691	43 482	92 431	1 337 159	518 032	3 045 607	7 391 649	3 836 136	54 605	1 811 045	4 087 346
FABRICATED METAL PRODUCTS INDUSTRY[2]											
Atlantic provinces	187	2 854	5 881	75 772	4 835	188 192	378 286	186 205	3 834	108 719	202 513
Quebec	1 590	30 700	62 842	814 773	69 981	1 922 417	4 072 681	2 066 447	37 954	1 074 896	2 100 465
Ontario	2 971	81 696	171 430	2 288 851	173 393	5 177 743	10 370 343	4 931 530	97 317	2 931 536	5 071 832
Prairie provinces	707	13 319	27 630	354 070	25 556	825 224	1 705 547	850 134	16 707	477 154	873 176
British Columbia	575	8 849	18 443	283 640	18 170	684 697	1 350 091	643 763	11 010	374 832	666 541
Yukon and Northwest Territories	–	–	–	–	–	–	–	–	–	–	–
Total Canada	6 030	137 418	286 226	3 817 106	291 935	8 798 273	17 876 948	8 678 079	166 822	4 967 137	8 914 527
PETROLEUM AND COAL PRODUCTS INDUSTRY											
Atlantic provinces	9	x	x	x	x	x	x	x	x	x	x
Quebec	33	1 112	2 350	56 948	77 930	3 241 898	3 514 819	389 222	1 801	93 446	408 933
Ontario	50	2 831	6 001	139 478	153 234	6 040 749	7 198 006	1 201 861	7 305	382 161	1 214 300
Prairie provinces	31	x	x	x	x	x	x	x	x	x	x
British Columbia	14	653	1 324	33 207	19 322	1 449 907	1 709 577	291 023	984	53 051	294 132
Yukon and Northwest Territories	1	x	x	x	x	x	x	x	x	x	x
Total Canada	138	6 781	14 387	334 412	351 099	16 166 807	18 569 454	2 703 911	15 868	799 210	2 760 700
TOTAL MINERAL MANUFACTURING INDUSTRIES											
Atlantic provinces	323	x	x	x	x	x	x	x	x	x	x
Quebec	2 230	61 706	128 987	1 973 609	764 489	9 100 482	15 456 497	5 776 323	80 355	2 768 268	5 848 687
Ontario	3 864	149 651	316 883	4 864 796	1 102 690	18 247 338	31 494 246	11 912 589	187 035	6 590 442	12 249 690
Prairie provinces	1 103	x	x	x	x	x	x	x	x	x	x
British Columbia	812	18 422	38 520	667 706	100 499	2 904 055	4 762 034	1 815 363	23 530	900 731	1 924 238
Yukon and Northwest Territories	1	x	x	x	x	x	x	x	x	x	x
Total Canada	8 333	260 693	549 440	8 469 361	2 335 229	38 305 154	63 081 826	22 679 757	333 962	11 722 025	23 262 830

Source: Statistics Canada, Catalogue No. 31-203.
– Nil; x Confidential.
1 Total activity includes sales and head offices. 2 For reasons of confidentiality, SIC 305 (wire and wire products), normally included in Primary Metals, is included in Fabricated Metal Products.

TABLE 17. CANADA, PRINCIPAL STATISTICS OF THE MINERAL MANUFACTURING INDUSTRIES,[1] 1980-91

	Mineral Manufacturing Activity								Total Activity[2]		
		Production and Related Workers			Costs						
	Establish-ments	Employees	Person-Hours Paid	Wages	Fuel and Electricity	Materials and Supplies	Value of Shipments	Value Added	Employees	Salaries and Wages	Value Added
	(number)	(number)	(000)	($000)	($000)	($000)	($000)	($000)	(number)	($000)	($000)
1980	7 229	270 529	565 988	4 991 451	1 411 101	28 394 177	43 895 507	14 758 224	366 120	7 262 688	15 160 467
1981	7 196	261 364	546 732	5 393 636	1 720 151	34 570 420	51 870 979	16 791 049	361 883	8 076 300	17 200 686
1982	5 687	229 518	475 378	5 333 201	1 728 740	34 241 605	50 045 037	14 497 245	321 785	8 126 238	14 823 990
1983	7 370	216 944	447 947	5 420 307	1 905 777	34 720 416	52 773 875	15 861 491	301 112	8 143 674	16 196 749
1984	7 511	223 816	470 367	5 948 626	2 125 032	37 738 117	57 207 764	17 980 271	304 309	8 719 151	18 265 131
1985	7 625	238 544	506 377	6 507 081	2 229 270	39 497 925	61 241 939	19 305 730	313 850	9 271 447	19 646 938
1986	7 841	248 039	524 184	6 829 899	2 096 145	31 806 478	54 521 641	19 788 464	319 950	9 563 918	20 124 687
1987	7 598	..	..	..	2 154 276r	35 570 988r	59 787 220r	22 189 903r	333 536r	10 188 110r	22 733 514r
1988	8 309	277 965	586 697	8 187 249r	2 268 149r	35 436 715r	62 739 083r	25 125 477r	350 917	11 191 039r	25 725 203r
1989	8 300	288 494r	606 841r	8 893 139r	2 341 578	38 785 940	64 981 175r	24 317 984r	360 004r	12 014 330r	29 859 105r
1990	8 333	260 693	549 440	8 469 361	2 335 229	38 305 154	63 081 826	22 679 757	333 962	11 722 025	23 262 830
1991	7 820	242 783	510 984	8 226 481	2 456 144	34 628 749	58 093 646	20 169 425	309 678	11 288 852	20 698 450

Source: Statistics Canada.
.. Not available; r Revised.
[1] Includes the following industries: Primary Metals, Nonmetallic Mineral Products, Fabricated Metal Poducts, and Petroleum and Coal Products. [2] Total activity includes sales and head offices.

TABLE 18. CANADA, EMPLOYMENT, SALARIES AND WAGES IN THE MINERAL MANUFACTURING INDUSTRIES, 1984-91

	Unit	1984	1985	1986	1987	1988	1989	1990	1991
PRIMARY METAL INDUSTRIES									
Production and related workers	Number	92 336	92 695	90 035	. .	95 967	94 037	82 845	79 690
Salaries and wages	$000	2 818 413	2 940 777	2 924 986	. .	3 387 100	3 505 958	3 265 293	3 272 436
Annual average salary and wage	$	30 523	31 725	32 487	. .	35 294	37 283	39 414	41 065
Administrative and office workers	Number	30 826	29 467	28 738	. .	27 861	27 454	26 787	25 010
Salaries and wages	$000	1 131 842	1 159 060	1 182 287	. .	1 249 200	1 314 630	1 282 902	1 268 889
Annual average salary and wage	$	36 717	39 334	41 140	. .	44 837	47 885	47 893	50 735
Total primary metal industries[1]									
Employees	Number	123 162	122 162	118 773	119 372	123 828	121 491	109 632	104 700
Salaries and wages	$000	3 950 255	4 099 837	4 107 273	4 244 950	4 636 300	4 820 588	4 548 195	4 541 325
Annual average salary and wage	$	32 074	33 561	34 581	35 561	37 441	39 679	41 486	43 375
NONMETALLIC MINERAL PRODUCTS INDUSTRIES									
Production and related workers	Number	36 155	38 763	42 011	. .	45 974	46 019	43 482	38 756
Salaries and wages	$000	883 604	1 001 780	1 121 460	. .	1 309 458r	1 374 934	1 337 159	1 205 721
Annual average salary and wage	$	24 439	25 844	26 694	. .	28 483r	29 878	30 752	31 111
Administrative and office workers	Number	12 738	11 842	11 479	. .	11 863	11 298	11 123	10 578
Salaries and wages	$000	394 620	397 131	406 427	. .	464 835r	466 153	473 886	453 120
Annual average salary and wage	$	30 980	33 536	35 406	. .	39 184r	41 260	42 604	42 836
Total nonmetallic mineral products									
Employees	Number	48 893	50 605	53 490	56 822	57 837	57 317	54 605	49 334
Salaries and wages	$000	1 278 224	1 398 911	1 527 887	1 668 869	1 774 293r	1 841 087	1 811 045	1 658 841
Annual average salary and wage	$	26 143	27 644	28 564	29 370	30 677r	32 121	33 166	33 625
FABRICATED METAL PRODUCTS INDUSTRIES									
Production and related workers	Number	88 787	100 650	109 634	. .	129 187	141 465	127 585	117 317
Salaries and wages	$000	1 983 782	2 298 665	2 518 297	. .	3 172 110r	3 682 263	3 532 497	3 398 428
Annual average salary and wage	$	22 343	22 838	22 970	. .	24 554	26 029	27 687	28 968
Administrative and officer workers	Number	26 203	23 694	22 987	. .	24 455	23 686	26 272	23 684
Salaries and wages	$000	778 057	751 973	746 041	. .	882 671r	893 706	1 031 078	930 430
Annual average salary and wage	$	29 693	31 737	32 455	. .	36 094r	37 731	39 246	39 285
Total fabricated metal products industries									
Employees	Number	114 990	124 344	132 621	142 194r	153 642	165 151	153 857	141 001
Salaries and wages	$000	2 761 839	3 050 638	3 264 338	3 565 982r	4 054 781r	4 575 969	4 563 575	4 328 858
Annual average salary and wage	$	24 018	24 534	24 614	25 078r	26 391	27 708	29 661	30 701
PETROLEUM AND COAL PRODUCTS INDUSTRIES									
Production and related workers	Number	6 538	6 436	6 359	. .	6 837	6 973r	6 781	7 020
Salaries and wages	$000	262 827	265 859	265 156	. .	318 581r	329 984r	334 412	349 896
Annual average salary and wage	$	40 200	41 308	41 698	. .	46 597r	47 323r	49 316	49 843
Administrative and office workers	Number	10 726	10 303	8 707	. .	8 773	9 072r	9 087	7 623
Salaries and wages	$000	466 006	456 202	399 264	. .	407 084r	446 702r	464 798	409 932
Annual average salary and wage	$	43 446	44 279	45 856	. .	46 402r	49 240r	51 150	53 776
Total petroleum and coal products									
Employees	Number	17 264	16 739	15 066	15 148	15 610	16 045r	15 868	14 643
Salaries and wages	$000	728 833	722 061	664 420	708 309	725 665r	776 686r	799 210	759 828
Annual average salary and wage	$	42 217	43 136	44 101	46 759	46 487r	48 407r	50 366	51 890
TOTAL MINERAL MANUFACTURING INDUSTRIES									
Production and related workers	Number	223 816	238 544	248 039	. .	277 965	288 494r	260 693	242 783
Salaries and wages	$000	5 948 626	6 507 081	6 829 899	. .	8 187 249r	8 893 139r	8 469 361	8 226 481
Annual average salary and wage	$	26 578	27 278	27 536	. .	29 454r	30 826r	32 488	33 884
Administrative and office workers	Number	80 493	75 306	71 911	. .	72 952	71 510r	73 269	66 895
Salaries and wages	$000	2 770 525	2 764 366	2 734 019	. .	3 003 790r	3 121 191r	3 252 664	3 062 371
Annual average salary and wage	$	34 419	36 708	38 019	. .	41 175r	43 647r	44 393	45 779
Total mineral manufacturing industries									
Employees	Number	304 309	313 850	319 950	333 536r	350 917	360 004r	333 962	309 678
Salaries and wages	$000	8 719 151	9 271 447	9 563 918	10 188 110r	11 191 039r	12 014 330r	11 722 025	11 288 852
Annual average salary and wage	$	28 652	29 541	29 892	30 546r	31 891	33 373r	35 100	36 454

Source: Statistics Canada.
. . Not available; r Revised.
[1] Wire and wire products have been included in the Primary Metal Industries group.

TABLE 19. CANADA, AVERAGE WEEKLY WAGES AND HOURS WORKED (INCLUDING OVERTIME) FOR HOURLY RATED EMPLOYEES IN MINING, MANUFACTURING AND CONSTRUCTION INDUSTRIES, 1987-92

	1987	1988	1989	1990	1991	1992
MINING, QUARRYING AND OIL WELLS						
Average hours per week	39.7	40.7	39.8	40.0	39.5	39.8
Average weekly wage ($)	645.01	700.67	730.35	764.82	812.25	847.11
METALS						
Average hours per week	38.7	39.5	39.7r	40.2	39.6	39.8
Average weekly wage ($)	664.12	735.17	777.06	824.66	887.30	926.11
MINERAL FUELS						
Coal Mines						
Average hours per week	40.8	42.4	41.6	42.0	41.2	41.5
Average weekly wage ($)	715.09	786.06r	809.58	843.30	868.98	904.30
Crude Petroleum and Natural Gas						
Average hours per week	45.3	45.3	44.0	45.9	42.3	41.3
Average weekly wage ($)	753.40	803.18	876.78r	934.65	970.19	943.41
NONMETALS						
Average hours per week	38.4	39.1	39.5	38.8	39.1	39.6
Average weekly wage ($)	591.05	624.90	653.84	680.65	712.13	752.10
MANUFACTURING						
Average hours per week	38.7	38.9	38.7	38.2	37.8	38.3
Average weekly wage ($)	479.10	500.39	523.93r	544.63	565.11	591.93
CONSTRUCTION						
Average hours per week	38.2	38.5	38.1	38.1	37.2	36.7
Average weekly wage ($)	557.99	577.24	610.92	644.42	653.29	646.90

Source: Statistics Canada.
r Revised.

TABLE 20. CANADA, CRUDE MINERALS TRANSPORTED BY CANADIAN RAILWAYS, 1989-91

	1989	1990	1991
		(kilotonnes)	
METALLIC MINERALS			
Iron ores and concentrates	41 594	35 801	38 602
Alumina and bauxite	3 841	3 909	4 236
Nickel-copper ores and concentrates	2 961	3 262r	3 377
Copper ores and concentrates	955	1 049r	1 040
Zinc ores and concentrates	1 231	973	886
Lead ores and concentrates	465	192	122
Metallic ores and concentrates, n.e.s.	80	46	22
Nickel ores and concentrates	–	7	14
Total	51 127	45 239r	48 296
NONMETALLIC MINERALS			
Potash (KCl)	10 559	11 317r	10 740
Sulphur, n.e.s.	4 227	4 925	4 893
Gypsum	5 621	5 258	4 227
Sulphur, liquid	1 016	568	1 235
Limestone, n.e.s.	2 939	1 955	1 191
Phosphate rock	1 275	1 040	950
Salt, rock	828	934r	637
Sodium carbonate	631	531	457
Nepheline syenite	321	294	296
Sodium sulphate	291	519	264
Limestone, industrial	368	173	253
Sand, industrial	854	275	185
Clay	786	109	102
Nonmetallic minerals, n.e.s.	270	105	88
Salt, n.e.s.	137	77	71
Stone, n.e.s.	94	46	35
Barite	11	14	20
Abrasives, natural	27	9	5
Asbestos	3	3	3
Limestone, agricultural	55	6	3
Silica	19	2	1
Sand, n.e.s.	4	2	1
Peat and other mosses	2	2	1
Total	30 338	28 164r	25 658
MINERAL FUELS			
Coal, bituminous	38 856	36 861r	39 120
Coal, lignite	1 856	1 757	1 298
Natural gas and other crude bituminous substances	87	70	42
Oil, crude	12	8	6
Coal, n.e.s.	2	5	–
Total	40 813	38 701r	40 465
Total crude minerals	122 278	112 104r	114 419
Total revenue freight[1] moved by Canadian railways	247 041	226 338	233 290
Crude minerals as a percentage of total revenue freight	49.5	49.5r	49.0

Source: Statistics Canada.
– Nil; n.e.s. Not elsewhere specified; r Revised.
1 Revenue freight refers to a local or interline shipment from which earnings accrue to a carrier.
Note: Numbers may not add to totals due to rounding.

TABLE 21. CANADA, FABRICATED MINERAL PRODUCTS TRANSPORTED BY CANADIAN RAILWAYS, 1989-91

	1989	1990	1991
		(kilotonnes)	
METALLIC MINERAL PRODUCTS			
Ferrous mineral products			
Iron and steel scrap	2 254	1 251r	1 049
Sheets and strips, steel	1 196	1 053	957
Ingots, blooms, billets, slabs of iron and steel	818	658	553
Bars and rods, steel	654	571	449
Pipes and tubes, iron and steel	459	265	407
Structural shapes and sheet piling, iron and steel	453	239	212
Plates, steel	260	193	168
Castings and forgings, iron and steel	62	53	45
Rails and railway track material	191	68	42
Pig iron	55	40	22
Ferroalloys	20	17	9
Other primary iron and steel	10	6	4
Wire, iron or steel	4	2	1
Total ferrous mineral products	6 436	4 416r	3 919
Nonferrous mineral products			
Aluminum and aluminum alloy fabricated material, n.e.s.	822	703r	777
Copper and alloys, n.e.s.	373	381	396
Zinc and alloys	492	389	383
Aluminum paste, powder, pigs, ingots, shot	191	377	378
Lead and alloys	134	87	114
Other nonferrous base metals and alloys	150	120	104
Slag, dross, etc.	99	51	63
Nonferrous metal scrap	107	56	52
Copper matte and precipitates	22	1	2
Total nonferrous mineral products	2 390	2 165r	2 269
Total metallic mineral products	8 826	6 581r	6 188
NONMETALLIC MINERAL PRODUCTS			
Fertilizers and fertilizer materials, n.e.s.	2 283	2 143	2 285
Sulphuric acid	1 767	2 102	1 990
Portland cement, standard	1 716	1 559	1 400
Lime, hydrated and quick	168	181	181
Cement and concrete basic products, n.e.s.	187	189	163
Nonmetallic mineral basic products, n.e.s.	178	159	128
Natural stone basic products, chiefly structural	152	115	123
Asbestos and asbestos-cement basic products	20	25	20
Gypsum basic products, n.e.s.	248	45	17
Dolomite and magnesite, calcined	51	15	16
Refractories, n.e.s.	3	4	8
Glass basic products	36	3	7
Fire brick and similar shapes	21	6	6
Plaster	9	2	4
Bricks and tiles, clay	50	3	–
Total	6 889	6 551	6 347
MINERAL FUEL PRODUCTS			
Refined and manufactured gases, fuel type	2 744	2 377	2 416
Fuel oil, n.e.s.	802	1 185r	1 235
Diesel fuel	1 397	1 349	896
Gasoline	612	531	511
Other petroleum and coal products	509	442	367
Coke, n.e.s.	459	355	363
Petroleum coke	340	266	333
Asphalts and road oils	211	191	214
Lubricating oils and greases	331	267	213
Total	7 405	6 963r	6 547
Total fabricated mineral products	23 120	20 095r	19 081
Total revenue freight[1] moved by Canadian railways	247 041	226 338	233 290
Fabricated mineral products as a percentage of total revenue freight	9.4	8.9	8.2

Source: Statistics Canada.
– Nil; n.e.s. Not elsewhere specified; r Revised.
[1] Revenue freight refers to a local or interline shipment from which earnings accrue to a carrier.
Note: Numbers may not add to totals due to rounding.

TABLE 22. CANADA, CRUDE MINERALS AND FABRICATED MINERAL PRODUCTS TRANSPORTED BY CANADIAN RAILWAYS, 1960-91

	Total Revenue Freight[1]	Total Crude Minerals	Total Fabricated Mineral Products	Total Crude and Fabricated Minerals	Crude and Fabricated Minerals as Percent of Revenue Freight
		(million tonnes)			
1960	142.8	57.1	14.5	71.6	50.1
1961	138.9	54.1	13.6	67.7	48.7
1962	146.0	60.3	13.8	74.1	50.8
1963	154.6	62.9	15.5	78.4	50.6
1964	180.0	74.6	15.9	90.5	50.3
1965	186.2	80.9	17.3	98.2	52.7
1966	194.5	80.6	17.8	94.8	50.6
1967	190.0	81.2	17.7	98.9	52.1
1968	195.4	86.7	18.8	105.5	54.0
1969	189.0	81.9	27.6	109.5	57.9
1970	211.6	97.5	28.4	125.9	59.5
1971	214.5	95.6	27.4	123.0	57.3
1972	215.8	89.4	27.6	117.0	54.2
1973	241.2	113.1	29.1	142.2	59.0
1974	246.3	115.3	30.9	146.2	59.4
1975	226.0	110.6	26.6	137.2	60.7
1976	238.5	116.6	25.5	142.1	59.6
1977	247.2	121.1	25.7	146.8	59.4
1978	238.8	107.7	26.2	133.9	56.1
1979	257.9	127.2	26.6	153.8	59.6
1980	254.4	124.8	24.6	149.4	58.7
1981	246.6	120.7	26.4	147.1	59.7
1982	212.5	95.7	21.0	116.7	54.9
1983	222.8	95.3	22.7	118.0	53.0
1984	254.6	121.1	25.1	146.2	57.4
1985	250.6	125.2	24.3	149.5	59.7
1986	249.8	121.2	23.0	144.2	57.7
1987	261.4	122.2	22.7	144.9	55.4
1988	269.4	134.9	23.2	158.1	58.7
1989	247.0	122.3	23.1	145.4	58.9
1990	226.3	112.1[r]	20.1	132.2[r]	58.4[r]
1991	233.3	114.4	19.1	133.5	57.2

Source: Statistics Canada.
[r] Revised.
[1] Revenue freight refers to a local or interline shipment from which earnings accrue to a carrier.