

General Review

Greig Birchfield and Peter Trelawny

The authors are with the Minerals and Metals Sector, Natural Resources Canada.

Telephone: Greig Birchfield at 613-990-5758 or Peter Trelawny at 613-990-6142

E-mail: greig.birchfield@nrcan-mcan.gc.ca or peter.trelawny@nrcan-mcan.gc.ca

INTRODUCTION

In the years leading up to 2008, and into the first half of 2008, the mining industry had been enjoying unprecedented prosperity. Examples of such prosperity included billion-dollar exploration expenditure levels, significant capital investment expenditures, and levels of employment not seen in a decade. However, reflecting on the historical trajectory of mining in Canada, periods of strong growth are typically followed by periods of decline, and it appears that the apex of the most recent growth was reached around mid-2008. To summarize, the industry experienced growth during the first half of the year, and many commodities reached record or near-record prices due to high demand. In the second half of the year, however, a decline in global demand, brought on by a severe economic slowdown that began in the third quarter and accelerated in the fourth, slowed growth in the industry.

Besides a global economic slowdown, other notable developments affecting the Canadian mineral industry included:

- a significant downturn in base-metal prices in the second half of the year;
- increased corporate profits in the mining industry for the seventh straight year;
- record levels of exploration and deposit appraisal expenditures;
- increased capital investment in construction, but a slight decline in machinery and equipment investment;
- sharp declines in the value of production of nickel, uranium, and zinc, and large increases in the values of potash and sulphur;

- the opening of the De Beers Victor diamond mine in northern Ontario, where the first diamonds were produced in late 2007 and full production is to commence in July 2008;
- increased employment in the mining industry in 2008 relative to 2007 (employment peaked in July and then began declining); and
- more mine closings and suspensions than openings and re-openings.

The 2008 General Review presents a brief summary of the global economic situation followed by a snapshot of the Canadian economy. It then focuses on the Canadian mining and mineral processing industries before concluding with a look ahead at the prospects for the Canadian mining industry in 2009 and an outlook for specific mineral commodities.

It is important to note that the mining and mineral processing industry can be characterized by the following four stages:

- Stage 1 - Mineral extraction and concentrating (comprised of North American Industry Classification [NAICS] class 212): Mining and quarrying (except oil and gas), e.g., gold mining, coal mining, and sand and gravel mining and quarrying;
- Stage 2 - Smelting and refining (comprised of parts of NAICS class 331): Primary metal manufacturing, e.g., nonferrous smelting and refining and the production of primary steel;
- Stage 3 - Nonmetals- and metals-based semi-fabrication (comprised of NAICS class 327): Non-metallic mineral product manufacturing and parts of class 331, e.g., copper rolling and concrete products; and
- Stage 4 - Metal fabricating (comprised of NAICS class 332): e.g., ornamental metal products and machine parts.

While all four of these stages will be included in this review, the emphasis will be on Stage 1, the mining

industry. Unless otherwise noted, the mining industry includes coal and uranium mining, but excludes the extraction and processing of crude petroleum and natural gas.

GLOBAL ECONOMIC CONTEXT

The rate of growth of global economic activity declined to about 3.0% in 2008 (from 5.2% in 2007) as growth rates of all major countries' economies were lower than in 2007. The declines were most evident in the third, and particularly the fourth, quarters. Developing Asia, especially China and India, maintained relatively strong growth in 2008, although at rates lower than the very strong rates of 2007.

Underneath this global trend of decline, growth rates among individual countries and regions varied in 2008. China again led the way (9.0%) followed by India (7.3%). The economies of Hong Kong and Singapore suffered severe reductions compared to 2007 with growth rates falling from 6.4% and 7.7%, respectively, to 2.6% and 1.2%. The European Union's (EU-27) economy expanded by just 1%, with the economy of Italy actually contracting by 0.9%. The Japanese economy also contracted by 0.6%. The U.S. economy expanded by 1.1%, but with a 0.5% annualized contraction in the third quarter and a 6.2% contraction in the fourth.

In the United States, the slowing U.S. economy resulted in the Federal Reserve Bank being very aggressive in its rate cutting. The federal funds rate, which stood at 3.75% at the beginning of 2008, increased briefly to 4.25% and then declined rapidly through the year, finishing at virtually 0% (in the week ending December 31, the federal funds rate averaged 0.10%).

CANADIAN ECONOMIC CONTEXT

For 2008 as a whole, the Canadian economy expanded, but at a considerably slower pace than in 2007. In 2008, GDP grew by 0.5% to \$1.33 trillion, compared to a 2.7% growth rate the previous year (expressed in chained 2002 dollars). It is misleading, however, to consider annual averages as the economic performance of the economy could easily be divided into two distinct time periods. The year started slowly with a quarter-over-quarter contraction of 0.2% while many commodity prices reached record levels early in the year. Growth resumed in the second and third quarters, albeit at very modest rates of 0.1% and 0.2%, respectively. However, global demand and commodity prices began to slow in late summer, with the decline accelerating as credit markets tightened in September. The Canadian economy weakened sharply in the fourth quarter as it contracted by 0.8% quarter over quarter (a 3.4% annualized decline).

The Canadian dollar averaged US\$0.9381 in 2008, up slightly from 2007. However, after surpassing parity in February and May, the Canadian dollar declined through the second half of the year, especially in the fourth quarter, finishing the year at US\$0.8166. Exports increased by 5.7% in 2008 to \$489.5 billion and imports increased by 6.7% to \$442.8 billion. Export earnings began to falter in the summer as commodity prices weakened, a trend that became much more pronounced in the fourth quarter. This sudden drop in exports was the main driver affecting the overall economy in the latter part of the year. In 2008, personal income remained relatively strong, increasing by 4.8% (in current dollars), mainly on the strength of first-half growth; the fourth quarter saw an increase of 3.7%.

In 2008, total private and public investment grew by an estimated 5.2% to \$346.0 billion; however, intentions for 2009 indicate a potential decline. Canadian manufacturing shipments peaked at \$54.0 billion in July 2008 and then declined steadily to finish the year at \$44.0 billion. For the year, shipments were 0.5% lower than in 2007 at \$604.3 billion. Statistics Canada's Composite Leading Indicator¹ index (1992=100) remained relatively steady, declining from 228.3 in December 2007 to 225.5 in December 2008.

Industrial capacity utilization averaged 77.8% in 2008, down from 82.1% in 2007. In the manufacturing sector, the average for 2008 was 82.9%. For both of these, the rate declined in each of the four quarters, with the industry composite utilization rate dropping to 74.7% (its lowest quarterly rate since 1983) and the manufacturing sector utilization rate dropping to 73.8% (its lowest quarterly rate since 1990).

The Bank of Canada, which announces its key interest rate on eight pre-set dates per year, began the year with its target overnight rate at 4.25%. In an effort to stimulate the slowing economy, the Bank began reducing the rate by 0.25% later in January and then by 0.5% in early March. Another 0.5% reduction followed in April, bringing the rate to 3.0%, where it remained until October. More aggressive cuts began in October with two decreases totaling 0.75% in that month. A further 0.75% reduction took place in December, bringing the rate at year-end to 1.50%.

The annual inflation rate, as measured by the Consumer Price Index (CPI), averaged 2.3% in 2008 (the rate, excluding food and energy, averaged 1.2%). The inflation rate peaked at 3.5% in August but, as the economy slowed, it declined sharply to finish the year at 1.2%. The Bank of Canada, through monetary policy, aims to keep inflation at 2% (with a control range of 1-3% around this target) at least until 2011.

After growing modestly throughout most of the year, personal spending fell in the fourth quarter of 2008, with both goods and services contributing to the decline. After 15 quarterly advances, spending on furniture and other household expenditures fell in the fourth quarter. Expenditures on new and used motor vehicles dropped by 5.5% in the

fourth quarter following declines in the second and third quarters. On the production side, automotive manufacturers in Canada produced 2.1 million passenger cars, trucks, and vans in 2008, down from 2.3 million the previous year. The decline was wholly attributable to a decline in truck and van production; passenger car production actually increased.

Building construction suffered in 2008 as consumer confidence and tighter credit affected the housing market. The value of building permits declined by 5.3% in 2008 from the record high achieved in 2007. A decline in residential permits was not offset by a slight increase in the non-residential sector. The decline was especially noticeable in the last quarter as the year-over-year value of permits declined by 20.0%, 21.1%, and 24.0% in October, November, and December, respectively. Housing starts declined and existing home sales (which peaked in July 2008, the month before the onset of the global financial crisis) declined 34% by December 2008.

CANADIAN ECONOMIC CONDITIONS

Leading Indicators	2007	2008	% Change
Real GDP (\$ billions, 2002 chained dollars)	1 319.7	1 325.7	+0.5
Consumer prices (% annual change)	+2.2	+2.3	n.a.
Operating profits (\$ billions)	269.0	283.6	+5.4
Unemployment rate (% annual average)	6.0	6.1	+1.7
Merchandise trade balance (balance of payments basis) (\$ billions)	48.05	46.70	-2.8
Housing starts (000)	228.3	211.1	-7.6
Canada/U.S. exchange rate (annual average)	0.9304	0.9381	+0.8
International current account balance (\$ millions)	13 607	10 239	-24.8
Global output (% change)	+5.2	+3.2	n.a.

Sources: Statistics Canada; Bank of Canada; Canada Mortgage and Housing Corporation; International Monetary Fund.
n.a. Not applicable.

The average annual unemployment rate inched up to 6.1% in 2008 from 6.0% in 2007. From January to October, the monthly rates ranged from 5.8% to 6.2%. In November and December, these rates rose to 6.3% and 6.4%, respectively. Employment rose by 1.5%, making 2008 the 16th straight year of employment growth. The employment level remained consistently just above 17 million (the annual level for each month of the year). Of these jobs, 14 million were full-time positions. Employment in the manufacturing sector continued to decline, however, falling from 2.0 million in January to 1.95 million in December.

In 2008, the balance of trade fell to \$46.7 billion from \$48.0 billion in 2007 (balance of payments basis). However, on a customs basis, the balance in 2008 was \$51.1 billion, compared to \$43.7 billion the previous year. Canadian merchandise exports (customs basis) rose 7.5% to \$484.4 billion in 2008. Imports (customs basis) totaled \$433.2 billion, a 6.5% increase over 2007.

According to the Office of the Superintendent of Bankruptcy Canada, consumer bankruptcies and proposals in Canada reached 115 800 in 2008, up 14.3% from 2007. In 2008, assets of consumer bankruptcies and proposals totaled \$6.3 billion while liabilities totaled \$10.1 billion.

Since peaking in 1996, business bankruptcies, both corporations and non-corporate businesses, have trended downward. This trend continued in 2008 when 7445 business bankruptcies and proposals were reported, down 2.2% from 2007. Assets of business bankruptcies and proposals totaled \$1.6 billion in 2008 while liabilities totaled \$8.4 billion. The mining and oil and gas extraction industry accounted for 31 bankruptcies and 18 proposals with assets totaling \$60.6 million and liabilities totaling \$154.5 million.

CANADIAN MINERAL INDUSTRY

The beginning of 2008 was a time of continued growth in the mining and mineral processing industries due to, among other things, high commodity prices, significant investment and expenditure levels, and an increase in mining employment. However, towards the latter half of 2008, a decline in global demand slowed growth in certain areas of the Canadian mineral industry and, in turn, brought an end to the very high base-metal prices. By the end of 2008, most base-metal prices were trading at levels last seen in 2003 or 2004, but still above levels recorded prior to 2003. Base metals are one of the commodity groups most affected by a global downturn. Gold and to a lesser extent silver are considered safe havens in times of economic uncertainty, so prices remained strong although, as the year ended, they were down from their peaks earlier in 2008. Platinum and palladium prices peaked in March and then declined as the year continued, mainly due to the weak automotive sector.

Given the high mineral and metal prices that prevailed until about the middle of the year, Canadian companies' exploration intentions for 2008 remained high. Actual 2008 exploration expenditures were not yet available at the time of writing, but they may turn out to be lower than originally intended as companies reflect on the lower base-metal prices that occurred in the second half of the year.

All four components of Canada's GDP² for the mining and mineral processing industries, as shown in the table on the next page, combined to produce an overall decline as the contribution of the mineral industry to the Canadian economy dropped to 3.3% from 3.4% in 2007.

GROSS DOMESTIC PRODUCT OF THE CANADIAN MINERAL INDUSTRY (MILLIONS OF CHAINED 1992 DOLLARS AT BASIC PRICES)

	2007	2008	Change	% of 2008 Mineral Industry	% of Total Economy
	(\$ millions)		(%)	(%)	(%)
Mining (NAICS 212)	9 445	9 384	-0.65	23.26	0.77
Nonmetallic product manufacturing (NAICS 327)	5 961	5 710	-4.21	14.15	0.47
Primary metal manufacturing (NAICS 331)	11 910	11 833	-0.65	29.33	0.97
Fabricated metal manufacturing (NAICS 332)	14 405	13 415	-6.87	33.25	1.09
Total mineral industry (1)	41 721	40 342	-3.31	100.00	3.29
Support activities for mining and oil and gas extraction (NAICS 213)	5 893	6 320	7.25	n.a.	0.52
All industries	1 219 327	1 225 789	0.53	n.a.	100.00

Source: Statistics Canada, cat. no. 15-001-X, issued April 30, 2009.
n.a. Not applicable.

(1) This is approximate because of the nature of the chaining process; components of a larger whole are not additive.

Corporate operating profits in the Canadian mining industry were \$9.1 billion in 2008, considerably higher than the \$5.4 billion in 2007 and \$5.1 billion in 2006. Profits in 2008 continued to benefit from the strong commodity prices that prevailed during the first half of the year.

In 2008, the average annual capacity utilization rate for mining stood at 77.8%, a decline of 7.3% from 2007. For the last quarter of 2008, the rate was 69.8%. With the exception of a 69.0% rate in the second quarter, this was the lowest utilization rate in the mining industry since 1983, and far below the peak of 95.9% achieved in 2004. For primary metals, the average for the year was 91.5%, although the rate dropped in the fourth quarter to 85.4%, down from 95.8% in the third quarter. Capacity utilization in the nonmetallic mineral products industries peaked in the third quarter at 84.5%, and then declined to finish the year at 78.9%. Capacity utilization in the fabricated metals industry peaked in the first quarter at 84.3% and finished the year at 77.8%. The rather large declines in the fourth quarter in all of these sectors reflected the deteriorating overall economic situation.

Major mergers and acquisitions continued in 2008 in the Canadian mining and mineral processing sectors, but at significantly lower levels. According to Crosbie & Company Inc., the value of activity for metals and minerals reached \$21.4 billion (180 transactions). Although the number of deals decreased from 220, the value of the deals in 2008 was only \$1.8 billion lower than in 2007. In the gold sector, there were 41 transactions worth \$7.2 billion. Although the number of deals for gold increased from 30 in 2007, the value of the deals was considerably lower than the \$11.2 billion reached in 2007.

In 2008, six mines opened and four re-opened. However, eleven mines suspended operations and an additional five closed. Most of the suspensions and closures occurred in the latter half of the year in response to rapidly declining base-metal prices and the global financial crisis and attendant credit crunch. Included in the mines that opened were a gold mine in Newfoundland and Labrador, three gold-silver mines in Quebec, a zinc-copper-gold-silver mine in Quebec, and the Victor diamond mine in Ontario. Among the re-openings were an antimony mine in Newfoundland and Labrador, a copper-nickel-platinum mine in Ontario, a nickel-copper-cobalt-platinum group metals mine in Manitoba, and a copper-gold mine in British Columbia.

Mineral Production

In 2008, the overall value of production of the Canadian mining, mineral processing, and metal-producing industries totaled more than \$103 billion. This amount includes the value of production³ from Canadian mined ores, concentrates, and aggregates, which rose substantially in 2008 to a record \$45.3 billion. The remainder represents the value of production realized from the smelting and refining of domestic and imported ores, concentrates and recyclables; steel and aluminum production; and oil sands mining.

CANADIAN MINERAL INDUSTRY IN 2008

Leading Mining Indicators	2007	2008	% Change
Value of non-fuel mineral production (\$ millions)	40 522	45 278	+11.7
Exploration expenditures (\$ millions)	2 830.8	2 836.6	+0.2
Metal Price Index (1997=100)			
Precious metals	219.61	270.18	n.a.
Base metals	377.72	263.90	n.a.
Direct mining employment (000)	52.9	58.5	+10.6
Value of minerals and mineral products exports (\$ billions)	84.6	94.6	+12.6
Mining company operating profits (\$ billions)	5.40	9.05	+67.5
Canada (TSX/TSX Venture) mine equity financing (\$ billions)	21.5	11.5	-46.5

Sources: Natural Resources Canada; Statistics Canada, CANSIM and *Canada's Mineral Production*, cat. no. 26-202-XIB; Gamah International.

n.a. Not applicable.

Notes: All the indicators above, with the exception of the Metal Price Indexes, include the coal mining industry. Data for 2008 are subject to minor revision.

In 2008, the value of production of the mining industry (metallic minerals + nonmetallic minerals + coal) increased by 11.7% to a record \$45.3 billion. The increase was due to significant growth in the value of nonmetals and coal. The value of potash production increased by nearly 200% and became the top-ranked mineral by value of production, accounting for 18.6% of the total value of mineral production. According to PotashCorp, the average realized price for potash increased by 169% year over year (Table 1).

The value of metal mine production declined to \$21.0 billion in 2008 as most metal commodities lost value, primarily as a result of lower average prices for several metals, especially nickel, uranium and zinc; notable exceptions were gold, platinum group metals, and cobalt, all of which registered increases. Despite the lower value for nickel, it was the second-ranked mineral by value and accounted for 13% of total mineral production.

VALUE OF CANADIAN MINERAL PRODUCTION (1)

	2006 (r)	2007 (p)	Change
	(\$ millions)		(%)
Metallic minerals	26 213.2	21 001.8	-19.9
Nonmetallic minerals	11 573.6	19 983.6	72.7
Total	37 786.8	40 985.5	8.5
Coal	2 735.2	4 292.3	56.9
Total minerals	40 522.0	45 277.8	11.7

Sources: Natural Resources Canada; Statistics Canada, *Canada's Mineral Production, Preliminary Estimates, 2008*, cat. no. 26-202-XIB.

(p) Preliminary; (r) Revised.

(1) The value of production is based on shipments.

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

Led by the 192.9% rise in the value of potash, the value of nonmetal mine production in 2008 soared to \$20.0 billion. Other minerals contributing to the value of nonmetal production were sulphur and diamonds.

The value of production for coal increased substantially in 2008 while the volume of production declined slightly. Based on the value of production of the mining industry for 2008, the top commodities were potash, nickel, copper, gold, and diamonds.

Geographically, the importance of the mining and exploration industries is significant on a regional and community basis because, in many parts of Canada, particularly in the North, it provides major economic stimulus and employment. While six provinces and territories registered gains in the value of mineral production, seven registered declines. Led by the surge in the value of potash, Saskatchewan followed closely by Ontario were the two highest ranked provinces/territories. The large increase in the value of mineral production for the Yukon was primarily the result

of a full year of production at the Minto copper-gold mine, which opened in late 2007.

Mineral Commodity Prices

As a result of the global financial crisis and economic slowdown, the demand for minerals and metals (with the exception of some precious metals such as gold and silver) plummeted over the second half of 2008. In turn, inventories rose and prices retreated at a record pace. Nickel and zinc prices declined the most year over year, each falling by more than 40%. Nickel demand, and thus prices, has been severely affected by the continued contraction in the stainless steel sector. Zinc demand slowed throughout the year as galvanized steel producers cut back on output. After peaking at nearly US\$24/lb, nickel ended 2007 with a December monthly average price under US\$12/lb. It rallied slightly early in 2008 before the bottom fell out and it ended the year at a December average of US\$4.39/lb. Zinc also peaked in May, averaging US\$1.74/lb. The price then declined to US\$1.07/lb in December, the lowest since early 2006. Lead prices declined by 18.9% while copper finished only 2.3% below the 2007 average. The price of lead peaked at US\$1.69/lb in October 2007, dropped to less than US\$1.20/lb in December, rallied in early 2008, and then declined, particularly during the last quarter, to finish the year at US\$0.437/lb (December average). Copper prices reached US\$3.94/lb in April 2008 but, as with lead, declined rapidly over the fourth quarter to finish the year at US\$1.39/lb.

The precious metals fared much better than base metals in 2008. Gold averaged US\$871.71/oz, a 25.13% increase over the 2007 average. In May 2008, the gold price briefly passed the US\$1000/oz mark, although it did weaken somewhat in the fourth quarter to average just under US\$800/oz. The platinum price also peaked in May 2008 at US\$2182/oz, but weakened steadily thereafter, dropping to under US\$800/oz in early December before rallying to finish the year at around US\$900/oz. Aluminum prices were strong over the first seven months of 2008, reaching an average of US\$3071/t in July. The price then slid for the remainder of the year due to falling demand and rising inventories. The December average of US\$1490/t was less than half the July average.

Both metallurgical and thermal coals performed well in 2008, with metallurgical coal averaging US\$289/t (US\$89/t in 2007) and thermal coal averaging US\$125/t, compared to US\$55.65/t in 2007.

In June 2008, Rio Tinto Iron Ore subsidiary Hamersley Iron announced an agreement on contract iron ore fine and lump prices with China's Baosteel: fines, US\$144.66¢ per dry metric tonne unit (US\$80.42¢ in 2007); and lump, US\$201.69¢ per dry metric tonne unit (US\$102.64¢ in 2007).

The average spot price for uranium (U₃O₈) for 2008 was US\$61.71/lb, well off the record prices set during 2007, but still at a relatively high level. The January average of

US\$78.00/lb was the high for the year as the price declined to US\$45.00/lb in October before rebounding slightly to finish the year at US\$52.50/lb. Despite the global economic slowdown, there is still a demand for electricity, and nuclear energy is expected to provide an increasing portion of the electricity needs of both developing and developed countries.

As with most other non-precious metals, high-grade cobalt prices started the year relatively strongly, but declined as the year progressed, dropping especially sharply in November and December when the average price was US\$16.225/lb. The average for the year was US\$39.01/lb.

Molybdenum dealer oxide prices traded in the US\$32-\$34/lb range for the first nine months of 2008 before tumbling to average only US\$9.25/lb in December.

Potash prices rose dramatically through the year, reaching almost US\$900/t (KCl spot standard grade f.o.b. Vancouver) at the end of 2008, above the approximately US\$300/t that prevailed at the beginning of the year. Prior to 2004 when prices began to rise, potash (KCl) traded at just above US\$100/t.

Employment

Despite gains in the mining industry, combined employment for the four stages of the mineral industry declined in 2008. The manufacturing sector as a whole weakened as the global economic situation worsened in 2008. The same pattern prevailed for the primary metal and fabricated metal sectors. These two industries suffered a combined loss of nearly 14 000 employees. While average annual employment in the mining sector increased in 2008, this is somewhat deceiving. Employment peaked at almost 63 000 in July 2008 and then declined to finish the year at 57 000 as the rapidly declining world economy affected demand and the prices of many commodities. (The decline in employ-

ment numbers in the mining industry continued into 2009 as the level registered 52 300 in February.) The mineral industry accounted for approximately 2.5% of the national employment level of 14.0 million full-time workers in 2008 (or 2.1% total employment of 17.1 million).

Wages in the mining sector (NAICS 212) remained very competitive, rising 4.4% to an average weekly rate of \$1357. This compares to the national average in Canada for all sectors of \$810. NAICS class 212 represents Stage 1 of the mineral industry.

Conversely, average weekly earnings in the primary metals industry (NAICS class 331) declined by 2.2% to \$1181. Earnings in the nonmetallic minerals industry (NAICS class 327) rose to \$1008, a 4.8% increase. NAICS classes 327 and 331 combined represent Stages 2 and 3.

Average weekly earnings in the fabricated metals industry (NAICS class 332) rose 6.3% to \$960. NAICS class 332 represents Stage 4.

Trade

Canada is one of the world's largest exporters of minerals and metals. The export of these commodities and refined mineral products has a significant impact on Canada's overall merchandise balance of trade and on the national standard of living. In 2008, the value of exports of minerals and mineral products for the four stages of production (non-fuel, but including coal) increased by 11.8% to \$94.6 billion, attributable entirely to increased nonmetal and coal exports (Table 2).

The United States was again the leading destination for Canada's minerals and mineral product exports with \$53.9 billion in 2008, which represented 57.0% of exports. Following the United States were the European Union at 17.7%, Japan (Canada's third largest export customer) at 4.8%, China (Canada's fourth largest customer) at 4.2%, and Mexico (Canada's eleventh largest customer) at 1.2%. Exports to the top 20 countries accounted for 94.4% of Canadian minerals and mineral product exports. For Stage 1 (mining only), the United States remained the leading destination, accounting for 29.0% of exports.

The value of exports of metallic minerals and mineral products (four stages) declined by 0.1% to \$68.9 billion. As in past years, the major contributors to the value of metallic exports in 2008 were, in order, iron and steel, aluminum, gold, nickel, copper, and zinc.

For Stage 1 metallic commodities only, exports increased by 20.2% to \$10.6 billion in 2008. Increases in the value of iron ore, iron and steel (attributable to a price increase), and copper (attributable to a volume increase) accounted for much of the rise, and these three commodities represented 66.4% of all Stage 1 metallic exports.

EMPLOYMENT IN THE CANADIAN MINERAL INDUSTRY

	2007	2008	Change
	(number)		(%)
Metallic minerals (NAICS class 2122)	23 850	28 074	17.7
Nonmetallic minerals (NAICS class 2123)	23 183	23 988	3.5
Coal mining (NAICS 2121)	5 844	6 443	10.2
Total mining	52 877	58 506	10.6
Nonmetallic mineral manufacture (NAICS 327)	52 807	52 707	-0.2
Primary metal manufacture (NAICS 331)	78 802	69 107	-12.3
Fabricated metal manufacture (NAICS 332)	175 091	171 126	-2.3
Total	359 577	351 446	-2.3

Source: Statistics Canada, Survey of Employment, Payroll and Hours.

The value of nonmetal exports increased by 54.4% to \$19.2 billion, due largely to substantial gains for potash and potassium compounds and sulphur and sulphur compounds. These two commodities represented \$5.3 billion of the total rise in value of all nonmetal commodities. The huge increases in the potash and sulphur values were despite declines in the volumes exported. Other commodities that contributed significantly to the increase in nonmetal export values were diamonds and nitrogen. Four commodities (potash and potassium compounds, diamonds, sulphur and sulphur compounds, and nitrogen) accounted for 72.8% of nonmetallic exports.

For Stage 1 only, exports of nonmetallic commodities rose by an astonishing 89.7% to \$11.8 billion. Increases of note were sulphur and sulphur compounds (+320.9%) and potash and potassium compounds (+109.2%). Virtually all potash and potassium compounds exports occur at the Stage 1 level. Potash and potassium compounds and diamonds accounted for 75.1% of all Stage 1 nonmetallic exports in 2008. When sulphur is added, the proportion rises to 92.1%.

In 2008, the total value of exports of coal and coke rose by 104.1% to \$6.5 billion, even though volumes increased only marginally. The value of Stage 1 coal exports also more than doubled to \$6.2 billion.

The value of imports of minerals and mineral products (four stages) increased by 10.7% to \$69.4 billion in 2008. Of this amount, shipments from the United States accounted for 57.3% of the total, with the EU-27 at 8.7%, China at 9.8%, Mexico at 3.2%, Japan at 2.0%, and all other countries combined at 19.0%. The top 20 countries accounted for 90.3% of minerals and mineral product imports. For the four stages of production, imports from the United States accounted for 77.6% of Stage 1, 22.7% of Stage 2, 63.5% of Stage 3, and 56.5% of Stage 4.

The total value of metal imports rose slightly to \$54.7 billion in 2008 from \$52.7 billion in 2007. Of the major commodities, increased levels in the import value of iron and steel, gold, and iron ore were offset by a sharp decline in the value of imported zinc, as well as by less dramatic declines in nickel and copper values. Two commodities (iron and steel, and gold) accounted for 50.5% of all metal imports in 2008. Two other commodities (aluminum and copper) contributed a further 17.0%.

For nonmetals, import values rose from \$8.8 billion in 2007 to \$10.0 billion in 2008. In order of value, the major nonmetal commodities imported into Canada were glass and glassware products, clay and clay products, nitrogen, phosphate and phosphate compounds, and salt and sodium compounds. Together these commodities accounted for 52.5% of all nonmetal imports. Two commodities alone (glass and glassware products, and clay and clay products) accounted for 35.3% of imports of nonmetals in 2008.

Coal imports increased by 22.8% to \$1.5 billion while coke imports rose by 244.2% to \$488.2 million.

China is an important customer for Canada's mining and mineral processing industry. Canada exported \$4.0 billion in minerals and mineral products to China, up from \$3.0 billion in 2007 and \$2.5 billion in 2006.

Imports of these products from China have also increased significantly. In 2008, the value of imports of minerals and mineral products reached \$6.7 billion, compared to \$5.4 billion in 2007 and \$4.7 billion in 2006, making China Canada's second largest (albeit, a distant second) importing country after the United States for the year. Both the value of exports to, and imports from, China have increased steadily over the last several years.

The balance of trade generated (total mining and mineral processing exports minus total mining and mineral processing imports) rose by 15.0% in 2008 to \$25.1 billion. The value of both exports and imports rose. For the total Canadian economy, the trade surplus was \$51.1 billion in 2008.

Financial Markets

Canada's financial markets play a strong role in providing equity financing to Canadian and foreign mining companies. During 2008, \$31.9 billion in equity financing for exploration and mining companies was raised through stock exchanges throughout the world. Of this total, 36.2% was raised on Canadian exchanges. These funds were spent on mineral exploration and to finance capital spending on mining projects in Canada and around the world.

In 2008, there were 356 mining companies listed on the Toronto Stock Exchange (TSX) and 1071 on the TSX Venture Exchange (TSXV) with a total quoted market value of \$215.7 billion. Half of the 9650 mineral exploration projects held by TSX and TSXV companies are outside of Canada.

Exploration and Capital Expenditures⁴

Preliminary estimates for exploration and deposit appraisal expenditures for 2008 reached \$2.8 billion, virtually unchanged from 2007. Intentions for 2009 indicate a substantial decrease to \$1.5 billion due to the less favourable economic context. In 2008, reductions in expenditures in eight jurisdictions were offset by gains, especially in Saskatchewan, Ontario, and Manitoba. Expenditures in the exploration phase totaled \$2.2 billion in 2008, compared to \$0.6 billion for the deposit appraisal phase.

Mine complex development expenditures (including capital and repair expenditures) totaled \$7.5 billion in 2008 (\$5.8 billion excluding repair expenditures), compared to \$7.2 billion in 2007 (also \$5.8 billion excluding repairs).

For 2009, intentions indicate a decrease to \$4.3 billion (this figure excludes repair and maintenance expenditures).

According to Statistics Canada, actual expenditures for capital for construction and machinery and equipment in the mining and mineral processing industries were \$10.2 billion in 2007. Preliminary actual figures for 2008 indicate an increase to \$11.3 billion, while intentions for 2009 are pointing to a decrease to \$9.1 billion. For the mining industry alone, comparable expenditures for 2007, 2008, and 2009 are \$6.8 billion, \$7.6 billion, and \$5.6 billion, respectively.

For the total economy in 2007, capital investment reached \$328.8 billion. Estimates for 2008 show an increase to \$346.0 billion, with intentions for 2009 dropping back to \$327.5 billion.

OUTLOOK AND TRENDS FOR THE CANADIAN MINERAL INDUSTRY

According to the International Monetary Fund (IMF), the global economy is projected to decline in 2009 by 1.3%. This would mark the first global contraction on post-war record. The rate of contraction is expected to moderate from the second quarter onward before growth resumes modestly in 2010. The contraction in 2009 is forecast to be widespread, with the economies of North America, the European Union, Japan, Russia, and Central and South America all expected to decline relative to 2008. Economic growth in developing Asia, including China and India, is forecast to continue in 2009, but at a slower pace than in 2008.

The global economic slowdown and resulting weak prices for most metals and minerals have had a significant impact on the Canadian mining industry, including mine closures and suspensions, and subsequent job losses. For the balance of 2009, additional mines are expected to reduce or suspend production temporarily and exploration activity is expected to be severely curtailed.

The global production of aluminum is likely to exceed consumption over the next year, leading to the closure of some high-cost smelters (mostly in China). Because Canada's smelters are relatively low-cost, most should survive the current recession, although several older operations employing outdated technology are slated for closure. The price of aluminum should remain relatively flat in 2009 and 2010 because, after falling by 50% in the second half of 2008, there is little room for further declines.

The global consumption of copper is expected to decline by about 5% in 2009 and to grow modestly in 2010, but overall, the contraction of consumption should exceed a fall in production. As a result, the market for copper is expected to be in surplus and the price is forecast to decline from current levels.

Over the past few years, the nickel market has been on a spectacular ride, peaking at US\$24/lb in 2007 before succumbing to the global economic crisis. Unfortunately, those strong prices have led to an oversupply of nickel and excess capacity. Global consumption is expected to decline in 2009 and to be flat in 2010. To cope with the significant decline in consumption (about 7% in 2009), the nickel industry is likely to continue to shut down operations around the world. Even so, the combination of weak demand and high stocks will likely force the price of nickel down in 2009. In 2010, prices may rally modestly as production cuts could catch up with weak demand.

The outlook for zinc is poor over the next two years. Demand in the construction and transport sectors, which account for 70% of the use of the metal, is expected to be weak. It is expected that demand will contract by 4% in 2009, but rise by 2% in 2010. Swift cuts in production should offset the drop in consumption. As a result, the price of zinc is likely to remain at its historical level in 2009 and to rise moderately in 2010.

Jewellery consumption and industrial demand fell in the fourth quarter of 2008 and are expected to decline further in 2009. However, growth in investment demand, through derivatives, exchange-traded funds, bars, and coins, should more than offset the weak jewellery and industrial demand. On balance, the growth in demand for gold should exceed the growth in supply and, as a result, the price should rise for the eighth consecutive year. However, should the U.S. dollar appreciate significantly or financial markets stabilize, the price of gold could fall.

Over the last several years, the demand for uranium has been influenced by speculation and, as a consequence, the price has been highly volatile. Over the next two years, speculative interests are likely to be absent and the demand for uranium should therefore stabilize. In 2009, global demand for nuclear power should slow due to the general economic slowdown. Beyond 2010, the demand for uranium should surge, especially in Asia. Both India and China are planning to expand their nuclear facilities, as are other countries. Over the longer term, the supply may be of some concern as mining projects are delayed due to rising capital costs and the increasing likelihood of further delays in production at major projects. In 2009 and 2010, the price of uranium is expected to stabilize at about US\$60-\$70/lb.

Thermal coal accounts for 27% of the world's supply of energy. As a result of the global economic slowdown, demand for electricity and thermal coal has declined. As the full impact of the global slowdown is felt, steeper declines in electricity production and, consequently, the consumption of thermal coal, are expected. Despite the weaker demand, the demand for and supply of coal should be fairly balanced after the extreme tightness in the markets over the last two years. On balance, demand should equal supply in 2009 and the price of thermal coal is expected to remain at about US\$70/t.

The outlook for steel, which is the destination for metallurgical coal, is not very optimistic. In February 2009, the production of crude steel was down 42%, 54%, and 22% compared to the same month in 2008 in Europe, North America, and globally, respectively. Only China and Iran posted gains. The global automotive industry, a major consumer of steel, continues to suffer. In the United States, sales of vehicles were down 34% in April 2009 from the same month the previous year. The weak demand for metallurgical coal and ample supply should ensure that the price retreats to its historical level in 2009 (about US\$125/t) and rallies modestly in 2010.

In 2009, the consumption of potash is likely to decline in response to a variety of factors. First, distributors and farmers are predicting difficulties in accessing credit to purchase agricultural inputs such as fertilizers. Second, grain prices have fallen significantly over the last eight months. As a result, farmers will have less cash to purchase potash in 2009. Third, many farmers are expected to postpone their orders for fertilizer in anticipation of a possible further fall in input prices.

With respect to supply, several factors such as labour disruptions and significant cutbacks in production could provide some support to the price of potash. Potash Corporation of Saskatchewan alone has cut production by 2 Mt and closed three mines in Canada. However, inventories should remain relatively high. The inventories of North American producers are 42% higher than the average over the past five years. On balance, the supply of potash is likely to exceed demand in 2009 and 2010. As a result, the price of potash is expected to follow the prices of other fertilizers (for example, urea and phosphates) and decline over the next two years from the very high prices realized in 2008.

The decline in mineral and metal prices is cyclical, as opposed to structural. When the global economy recovers, the prices of most minerals and metals should rally. Over the long term, the resumption of the rapid industrialization of emerging economies such as China and India, coupled with the current under-investment in new projects, should lay the foundation for a recovery in mineral and metal prices.

Looking ahead, Canada's mining industry should be well placed to capitalize on the next rally in mineral and metal prices because Canada has a comparative advantage in exploration and mining through, for example, its extensive geological potential, expertise, well-developed capital markets, and attractive investment climate.

ENDNOTES

¹ The Canadian Composite Leading Indicator is comprised of 10 components that lead cyclical activity in the economy and that together represent all major categories of GDP. It thus reflects the variety of mechanisms that can cause business cycles.

² The GDP of the mineral industry is described statistically by the following industry groupings: mining, nonmetallic mineral product manufacturing, primary metal manufacturing, and fabricated metal product manufacturing.

³ Throughout this article, the volume and value of production are based on estimates using shipments from domestic sources as the measure of mine production, as published in *Canada's Mineral Production, Preliminary Estimates*, Statistics Canada catalogue no. 26-202-XIB. Therefore, foreign ores (e.g., bauxite) are not included.

⁴ The Canadian Intergovernmental Working Group on the Mineral Industry's *Overview of Trends in Canadian Mineral Exploration* is also a source of exploration information (available on the Internet at www.nrcan-rncan.gc.ca/mms-smm/busi-indu/cme-omc-eng.htm).

Notes: (1) Information in this review was current as of May 2009. (2) Sources include: Bank of Canada, company news releases, Crosbie & Company Inc., International Monetary Fund, Natural Resources Canada, Office of the Superintendent of Bankruptcy Canada, Platts Metals Week, Statistics Canada, TD Economics, and Toronto Stock Exchange (TSX) and TSX Venture. (3) This and other reviews, including previous editions, are available on the Internet at www.nrcan-rncan.gc.ca/mms-smm/busi-indu/cmy-amc/2008cmy-eng.htm.

NOTE TO READERS

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

TABLE 1. CANADA, PRODUCTION OF LEADING MINERALS, 2007 AND 2008

	Volume		Change 2008/2007	Value		Change 2008/2007	
	2007 (r)	2008 (p)		2007 (r)	2008 (p)		
	(000 tonnes except where noted)		(%)	(\$ millions)		(%)	
METALS							
Nickel	245	251	2.5	9 795.2	5 856.2	-40.2	
Copper	578	581	0.7	4 418.2	4 438.0	0.4	
Gold	kg	102 211	94 820	-7.2	2 460.6	2 823.6	14.7
Iron ore		32 774	31 273	-4.6	2 502.5	2 426.8	-3.0
Uranium	tU	9 100	8 702	-4.4	2 525.8	1 488.2	-41.1
Zinc		594	629	5.9	2 069.9	1 268.4	-38.7
Platinum group	kg	21 925	21 177	-3.4	530.9	591.7	11.4
Cobalt	t	4 289	4 467	4.2	310.5	433.9	39.8
Silver	t	829	666	-19.7	384.4	341.1	-11.3
Lead		70	69	-1.3	193.6	189.9	-1.9
Molybdenum	t	6 819	7 724	13.3	x	x	x
NONMETALS							
Potash (K ₂ O)		11 085	10 455	-5.7	2 814.6	8 243.2	192.9
Diamonds	000 carats	17 144	14 803	-13.7	1 799.7	2 403.6	33.6
Sulphur, elemental		7 456	7 961	6.8	224.5	2 388.5	963.8
Cement		14 462	14 028	-3.0	1 785.3	1 792.1	0.4
Sand and gravel		240 723	239 646	-0.4	1 482.1	1 496.1	0.9
Stone		149 982	145 825	-2.8	1 402.9	1 373.1	-2.1
Sulphur, in smelter gas		696	704	1.1	31.3	192.9	515.3
Salt		11 970	14 168	18.4	442.8	537.8	21.4
Lime		2 134	2 069	-3.0	273.4	273.6	0.1
Peat		1 282	1 151	-10.2	232.5	215.6	-7.3
Clay products		208.1	187.8	-9.8
Gypsum		7 562	5 797	-23.3	111.7	76.4	-31.6
Quartz (silica)		1 987	1 979	-0.4	68.5	71.2	4.0
Nepheline syenite		690	734	6.4	61.7	59.7	-3.4
Soapstone, talc, pyrophyllite		79	70	-11.4	26.5	24.6	-7.1
Chrysotile (asbestos)		x	x	x	x	x	x
Coal		69 131	68 106	-1.5	2 735.2	4 292.3	56.9

Sources: Natural Resources Canada; Statistics Canada, *Canada's Mineral Production, Preliminary Estimates*, cat. no. 26-202-XIB.

.. Not available; (p) Preliminary; (r) Revised; x Confidential.

Notes: Numbers have been rounded. Percentage changes are based on unrounded data.

TABLE 2. CANADA, VALUE OF DOMESTIC EXPORTS, TOTAL EXPORTS (INCLUDING RE-EXPORTS), IMPORTS, AND BALANCE OF TRADE OF MINERALS AND MINERAL PRODUCTS, STAGES 1-4 (CUSTOMS BASIS), 2004-08

	2004	2005	2006	2007	2008
	(\$ millions)				
TOTAL NON-FUEL MINING, INCLUDING COAL					
Domestic exports	54 798.7	62 266.2	72 327.7	81 049.0	91 743.0
Total exports	56 588.0	64 443.9	75 075.9	84 610.0	94 578.8
Imports	52 346.3	56 720.9	61 970.7	62 745.9	69 436.3
Balance of trade	4 241.7	7 722.9	13 105.2	21 864.1	25 142.4
NON-FUEL MINING					
Domestic exports	52 889.3	58 832.6	68 896.2	77 885.8	85 377.4
Total exports	54 646.8	60 961.3	71 638.7	81 436.1	88 100.2
Imports	51 036.5	55 184.8	60 443.4	61 407.8	67 479.2
Balance of trade	3 610.4	5 776.6	11 195.2	20 028.3	20 621.0
TOTAL MINING, INCLUDING COAL					
Domestic exports	121 830.6	145 731.9	156 550.8	171 364.8	218 610.6
Total exports	123 910.8	148 538.5	160 215.2	175 635.6	222 241.1
Imports	77 044.1	90 960.3	97 870.7	100 434.9	122 201.3
Balance of trade	46 866.6	57 578.1	62 344.4	75 200.7	100 039.8
TOTAL ECONOMY					
Domestic exports	385 525.9	408 550.3	411 492.6	420 274.9	456 168.1
Total exports	412 290.0	436 350.6	440 364.2	450 699.2	484 369.3
Imports	355 886.2	380 858.2	396 772.8	406 987.6	433 241.9
Balance of trade	56 403.8	55 492.4	43 591.4	43 711.6	51 127.5

Sources: Natural Resources Canada; Statistics Canada.

Note: Data are based on the May 2009 release of trade data from Statistics Canada.