



# 2011 Minerals Yearbook

---

## CANADA

---

# THE MINERAL INDUSTRY OF CANADA

By Philip M. Mobbs

As one of the major mining countries in the world, Canada leads the world in the production of potash (by volume). In 2011, the country was estimated to rank second in the mine production of cobalt and uranium and was among the top five countries in the mine production of asbestos, gem-quality diamond, nickel, platinum-group metals (PGMs), and tungsten. Canada also was among the top five countries in the manufacture of aluminum, the production of refined indium, and the recovery of sulfur (Apodaca, 2012; Bray, 2012; Jasinski, 2012; Kuck, 2012; Loferski, 2012; Olson, 2012; Shedd, 2012a, b; Tolcin, 2012; Virta, 2012; World Nuclear Association, 2012).

## Minerals in the National Economy

Crude oil and natural gas were produced in the Provinces of Alberta, British Columbia, Manitoba, Newfoundland and Labrador, Nova Scotia, Ontario, and Saskatchewan, and in Northwest Territories. Solid minerals were produced in all 10 Provinces and 3 Territories of Canada.

In 2011, the construction industry accounted for 6% of Canada's real gross domestic product (GDP); the extraction of natural gas and petroleum accounted for about 3.3%; and mining and quarrying, about 0.7%. Other mineral-related sectors that contributed to real GDP included primary metal manufacturing, which accounted for 0.8% of real GDP; support activities for mining and oil and gas extraction, 0.7%; and petroleum and coal products manufacturing, 0.24% (Statistics Canada, 2012c, d).

Natural gas and oil production activity was valued at about \$41 billion<sup>1</sup> in 2011. Industrial mineral mining activity was valued at about \$4.3 billion; metal mining activity, about \$3.6 billion; and coal mining activity, \$900 million. Support services for the hydrocarbon and mining sectors were valued at \$8.5 billion. Primary metal manufacturing activity was valued at about \$10.2 billion, and petroleum products manufacturing activity was valued at about \$3 billion (Statistics Canada, 2012c, d).

## Government Policies and Programs

In general, Provincial governments are responsible for mining activity within their respective Province. Provincial legislatures make laws concerning matters for which they have jurisdiction, which include exploration, development, production, and conservation and management of most nonrenewable natural resources. Parliament makes laws for the entire country with respect to matters assigned to it by the Canadian Constitution, and it has responsibility for the Territories. The Federal Government is responsible for the mineral activities of Federal Crown corporations; mineral activities on Federal lands and offshore; and, through the Canadian Nuclear Safety Commission,

for uranium exploration, production, and waste disposal. Local or municipal governments promulgate laws on local matters, such as zoning regulations and the issuance of construction permits.

The Canadian Securities Administrators' National Instrument 43-101 sets the standards for all technical public disclosure for mineral projects. National Instrument 51-101 sets the standards for disclosure for oil and gas activities.

## Production

The volume of production increased notably for a number of mineral commodities in 2011. Mine production of tungsten increased by about 464% in 2011 compared with that of 2010; PGM, by about 130%; and gemstones, by about 91%. Mine production of cobalt increased by about 55%; talc, by 53%; nickel, by 37%; salt, by about 20%; industrial sand and gravel, by 22%; stone, by about 14%; and potash, by about 13%. Production of nickel metal increased by 35%, and cobalt metal, by 28% (table 1).

Estimated mine production of graphite increased by 25% and antimony, by 11% in 2011 compared with that of 2010. Estimated output of secondary aluminum increased by 25%; direct-reduced iron, by about 17%; and ferroniobium, by 14% (table 1).

A significant decrease in output was noted for several minerals in 2011 compared with that of 2010. Mine production of selenium decreased by about 56%; asbestos, by an estimated 50%; cadmium, by 26%; tellurium, by 25%; titanium, by an estimated 19%; lead, by 15%; and peat, by 11%. Production of ferrosilicon decreased by an estimated 38%; refined copper, by 14%; and cadmium metal, by 11%. Recovery of sulfur decreased by 10% (table 1).

## Structure of the Mineral Industry

Canada was one of the world's most active mining countries, and it had numerous mineral exploration, mine development, and mining projects underway. Table 2 lists the structure of the Canadian mineral industry by principal mineral commodities and major operating companies.

## Mineral Trade

In 2011, Canada's total domestic exports amounted to about \$462 billion compared with a revised \$391 billion in 2010. Exports of crude petroleum were valued at about \$68 billion compared with a revised \$48 billion in 2010, exports of natural gas were valued at \$15 billion compared with a revised \$17 billion in 2010, and exports of refined petroleum products were valued at \$10 billion compared with about \$8.7 billion in 2010. The decrease in Canadian natural gas exports was attributed to increased shale gas production in the northeastern United States. In 2011, exports of intermediate metal products

<sup>1</sup>Where necessary, values have been converted from Canadian dollars (CAN\$) to U.S. dollars (US\$) at an average rate of CAN\$0.989=US\$1.00 for 2011 and CAN\$1.03=US\$1.00 for 2010.

were valued at \$47 billion compared with \$38 billion in 2010, exports of industrial minerals were valued at about \$10 billion compared with about \$8.3 billion in 2010, and exports of metal ores and concentrates were valued at \$9.7 billion compared with about \$6.9 billion in 2010 (Statistics Canada, 2012b; U.S. Energy Information Administration, 2012).

Canada's total domestic imports amounted to about \$451 billion in 2011 compared with about \$402 billion in 2010. Imports of intermediate metal products were valued at about \$28 billion compared with about \$22 billion in 2010, and imports of metal ores and concentrates were valued at \$9.8 billion in 2011 compared with about \$8.2 billion in 2010. Imports of crude petroleum were valued at \$27 billion in 2011 compared with \$23 billion in 2010, and imports of refined petroleum products were valued at about \$12 billion compared with \$7 billion in 2010 (Statistics Canada, 2012e).

## Commodity Review

Additional information on other Canadian mineral commodities is available on the Web site for Natural Resources Canada's Canadian Minerals Yearbook at <http://www.nrcan.gc.ca/minerals-metals/business-market/canadian-minerals-yearbook/4070>.

## Metals

**Aluminum.**—Production of primary aluminum slightly increased in 2011 to about 2.99 million metric tons (Mt) compared with 2.96 Mt in 2010 and 3.12 Mt in 2008. In December, the Kitimat modernization project was approved by Rio Tinto Alcan Inc. The smelter's production capacity was to be increased to 420,000 metric tons per year (t/yr) from the current 184,000 t/yr (table 1, 2; Rio Tinto plc, 2012, p. 21, 62).

**Nickel.**—Operations at Crowflight Minerals' Bucko Lake nickel mine, which had been suspended in October 2010, resumed in April 2011. In June, the company changed its name to CaNickel Mining Ltd., and in December, the company announced that operations activity would be slowed down owing in part to the decline in nickel prices. In 2011, CaNickel produced 740 metric tons (t) of nickel in concentrate, which was a 23% decrease from the output of about 10,036 t in 2010, when the mine was in operation for only part of the year (CaNickel Mining Ltd., 2012, p. 3–4; London Metal Exchange Ltd., The, 2013).

First Nickel Inc. restarted production operations at the Lockerby Mine in 2011 and shipped concentrate that contained about 409 t of payable nickel to Xstrata's Strathcona Mill. The Lockerby Mine had been on care-and-maintenance status since October 2008 owing to decreased metal prices.

In 2011, Liberty Mines Inc. produced concentrate that contained 125.5 t of nickel, which was a 90% decrease from the 1,264 t of nickel produced in 2010. The company also produced cobalt and copper in concentrate. Liberty Mines placed the Redstone Mine on care-and-maintenance status at the beginning of 2011 owing in part to safety issues related to ground conditions. Operations at the Redstone nickel concentrator were suspended in February, partly because of issues concerning the tailings dam and pond; as a result, operations at the McWatters Mine also were limited after February, and the mine subsequently was placed on care-and-maintenance status.

The company received Provincial approval to repair the tailings pond facility in November and proposed to restart production in early 2012 when work on the tailings facility was expected to be completed (Liberty Mines Inc., 2012, p. 3–4).

Nickel was a coproduct of PGM production at the Lac des Iles palladium mine of North American Palladium Ltd. In 2011, the company recovered 370 t of nickel, which was a 106% increase from the 179 t recovered in 2010 (North American Palladium Ltd., 2012, p. 10).

North American Palladium continued its Lac des Iles expansion program, which was expected to increase metal output by an additional 50%. The sinking of a 795-meter (m) shaft to access the mine's Offset Zone continued in 2011 and was expected to be completed in late 2012. The shaft's 7,000-metric-ton-per-day (t/d) design capacity was expected to allow the company to increase its underground mining rate to 5,500 t/d in 2015 from a projected 3,500 t/d rate prior to the shaft's completion. In 2011, the company also completed a 261-hole, 84,686-m surface and underground drilling campaign to better define the Cowboy, Offset, Outlaw, Roby, and Sheriff Zones (North American Palladium Ltd., 2012, p. 5, 10–11, 25).

In 2011, Quadra FNX Mining Ltd. produced about 4,536 t of payable nickel in ore from its Levack Complex (which includes the McCreedy West Mine and the Morrison deposit) and Podolsky Mine in the Sudbury Basin of Ontario. The mines also produced ore that contained copper, gold, and PGMs. Late in the year, Quadra FNX and Xstrata Nickel completed the Craig Mine Lease Agreement, which would allow Quadra FNX to use the underground infrastructure of the 1,534-m Craig Shaft to develop the Morrison deposit, which before May 2010 was known as the Levack Footwall deposit. Xstrata had placed the Craig Mine on care-and-maintenance status in 2009 (Mining.com, 2011; Quadra FNX Mining Ltd., 2012).

Vale S.A. of Brazil reported that the Birchtree and the Thompson nickel mines in Manitoba produced 1.9 Mt of ore at an average grade of 1.61% nickel in 2011 compared with 2.158 Mt of ore at an average grade of 1.67% nickel in 2010. The Coleman, the Copper Cliff North, the Creighton, the Ellen, the Garson, the Stobie, and the Totten Mines in Ontario produced 5.6 Mt at an average grade of 1.45% nickel compared with 2.66 Mt of ore at an average grade of 1.53% nickel in 2010. Production from Vale's operations in Ontario rebounded in 2011 in response to the resolution of a labor strike that ran from July 2009 to July 2010. The Ovoid Mine in Newfoundland and Labrador produced 2.37 Mt at an average grade of 3.38% nickel compared with 1.51 Mt of ore at an average grade of 3.2% nickel in 2010. The more than 50% increase in output was attributed to the January 2011 resolution of the strike of unionized workers at the Ovoid Mine that began in August 2009. The ore from the Birchtree, the Ovoid, and the Thompson Mines also contained cobalt and copper. The mines in Ontario also contained cobalt, copper, gold, PGMs, and silver. The company's total Canadian production in 2011 was about 194,269 t of nickel contained in ore, which was a 53% increase from about 127,000 t produced in 2010 (Vale S.A., 2012, p. 34–35, 37).

Xstrata Nickel, which was a division of Xstrata plc of Switzerland, reported that the Raglan Mine in Quebec

produced 27,274 t of nickel in concentrate from 1.3 Mt of ore in 2011 compared with 28,237 t of nickel in concentrate from 1.32 Mt of ore in 2010. The planned decrease was attributed to the production of lower grade ore. Xstrata expected that production from the mine would increase to 40,000 t of nickel in concentrate by 2016 with the planned development of the Mine 2 Lower Zone and the Qakimajurq deposits. Xstrata also reported combined output of 19,795 t of nickel in concentrate from the Fraser Mine and the Nickel Rim South Mine in Ontario in 2011, which was about a 28% increase from the combined output of 15,472 t in 2010 (Xstrata plc, 2012, p. 64).

**Niobium.**—In 2011, the niobium content of ferroniobium production from the Niobec facility in Quebec increased to 4,632 t compared with 4,419 t in 2010. IAMGOLD Corp. attributed the increase to the full year of operations of the facility's concentrator, the ore-processing capacity of which was increased to 2.2 million metric tons per year (Mt/yr) in 2010. The larger mine output, which increased by 16% to 2,087,000 t of ore compared with 1,792,000 t in 2010, was offset by a lower grade of niobium oxide ( $\text{Nb}_2\text{O}_5$ ) contained in the ore (0.57% in 2011 compared with 0.61% in 2010). In 2011, Niobec completed a 16,764-m exploration and reserve development diamond-drilling program and 9,144 m of deposit definition drilling (IAMGOLD Corp., 2012a, p. 95; 2012b, p. 31; undated).

**Silicon.**—In October 2010, Bécancour Silicon Inc, which was a subsidiary of Timminco Ltd., transferred its silicon metal production facility to Québec Silicon Ltd., which was a newly formed partnership of Bécancour (51% equity interest) and Dow Corning Corp. of the United States (49%). Timminco Solar, which also was a subsidiary of Bécancour Silicon, continued to produce silicon for the solar photovoltaic industry. In early January 2012, Bécancour Silicon and Timminco Ltd. filed for bankruptcy. Québec Silicon remained a going concern (Timminco Ltd., 2011, p. 2; Thomson Reuters, 2012).

**Tungsten.**—North American Tungsten Corporation Ltd. continued to ramp up operations at the CanTung Mine, which was reopened in October 2010 after a year on care-and-maintenance status, during which time the company upgraded mill and mine equipment and the power generation system. Evaluation of a project to recover low-grade ore from the reprocessing of tailings also was begun in 2011 (North American Tungsten Corporation Ltd., 2011, p. 6–8; 2012, p. 6).

### **Industrial Minerals**

**Asbestos.**—In July, labor issues adversely affected mining and milling activity at the underground Lac Amiante Mine of LAB Chrysotile, Inc., which subsequently suspended operations in October. LAB Chrysotile declared bankruptcy in late December, but the mine was expected to remain on care-and-maintenance status through 2012 while the management sought investment to reopen the mine (Industrial Minerals, 2011a; Radio-Canada, 2012).

By October, an international investment group raised more than \$24 million (CAN\$25 million) as part of an effort to secure a \$57 million (CAN\$58 million) loan guarantee from the Province of Quebec, which would allow the Jeffrey Mine to resume work on a proposed 180,000-t/yr-capacity underground

extension. The mine's transition to an underground operation had been suspended in 2003 owing to the lack of funds. The reserves of the Jeffrey Mine's open pit were nearly exhausted, and the mine operated only intermittently (Industrial Minerals, 2011a, b).

**Cement.**—Canadian cement production decreased by about 3.5% in 2011 to 12 Mt compared with 12.4 Mt in 2010. Portland cement (including white cement) accounted for 95% of cement production; masonry and other cements, about 5%. Shipments of cement increased by about 2.8% to 11.4 Mt in 2011 from about 11.1 Mt in 2010. The percentage of portland and white cement shipments that were exported in 2011 increased to 27.2% compared with 25% in 2010, and the percentage of masonry and other cement that were exported in 2011 decreased to 11% compared with 11.5% in 2010 (table 1; Statistics Canada, 2012f, g).

In 2011, commercial production of portland-limestone cement (also known as Contempra™) was started in British Columbia, Ontario, and Quebec by Lafarge Canada Inc. and in Ontario and Quebec by Holcim (Canada) Inc. Standards for portland-limestone cement that were published in 2008 and 2009 by the Canadian Standards Association were included in the 2010 National Building Code of Canada. By yearend 2011, portland-limestone cement was approved for use in British Columbia, Manitoba, Ontario, Quebec, and Nova Scotia. Canadian portland-limestone cement standards allowed between 6% and 15% limestone in the cement compared with less than 5% limestone in traditional portland cement. The increased volume of limestone allowed a smaller volume of cement clinker to be used to produce the cement, which resulted in reduced fuel consumption by the cement kilns to produce the clinker, and an associated reduction in carbon dioxide emissions (up to 10% compared with traditional portland cement) (Cement Association of Canada, 2011; undated.).

Lafarge Canada continued planning for an expansion of the production capacity of the Exshaw cement plant in Alberta to 2.2 Mt/yr from 1.4 Mt/yr. In September, Colacem Canada Inc. proposed to build a cement plant near L'Orignal, Ontario. In December, Gisement McInnis and Cimbec Canada Inc. formed a partnership to develop the long-proposed Port Daniel cement plant in Quebec (ICR Research, 2011).

**Diamond.**—The preliminary estimate of Canada's diamond production in 2011 was 10,795,000 carats, which was a decrease from the 11,804,000 carats produced in 2010. The value of produced diamond in 2011 was \$2.5 billion compared with about \$2.4 billion in 2010 (Natural Resources Canada, 2011b, 2012).

The joint venture of Diavik Diamond Mines Inc., which was a subsidiary of Rio Tinto plc (60% interest) and Harry Winston Diamond Limited Partnership (40%), increased output to about 6.7 million carats, which was about a 3% increase compared with 2010 production. The Diavik mines accounted for about 62% of Canada's diamond production in 2011. Open pit operations were expected to be depleted by 2012, but Rio Tinto expected that the underground mining operations would continue past 2020 (Kimberley Process Certification Scheme, 2012; Rio Tinto plc, 2012, p. 25, 45).

The Ekati Mine, which is located in the Northwest Territories, recovered diamond from several kimberlites. Production



operations at each individual surface pit or underground mine were relatively short lived, although BHP Billiton Canada, which was a subsidiary of BHP Billiton Ltd. of Australia, expected to produce from the Ekati Mine until at least 2019. Processed ore decreased slightly in 2011 to about 2.3 Mt, from which 938,000 carats was recovered, which was a 32% decrease in diamond production compared with that of 2010. The mine accounted for about 9% of Canada's diamond production in 2011 and about 1% of the world's diamond output (CBC News, 2011; BHP Billiton Ltd., 2012; Kimberley Process Certification Scheme, 2012).

In 2011, BHP Billiton Canada approved the Misery Deep project and began the expansion of the Misery open pit (which produced from 2001 until 2005). The new Misery project was expected to produce diamondiferous-material economically from 2015 until 2017. Evaluation of open pit mining at the Pigeon project continued, as did BHP Billiton's evaluation (BHP Billiton Canada Inc., 2012, p. 17).

At the Snap Lake underground and the Victor open pit mines, De Beers Canada Inc. recovered 1.66 million carats in 2011, which was a 5.2% decrease compared with that of 2010. De Beers completed an optimization study of the Snap Lake Mine and projected an additional 20 years of operations at Snap Lake (De Beers Group, 2012, p. 10, 22).

**Perlite and Vermiculite.**—Perlite Canada Inc. processed imported perlite and vermiculite at its plants in Lachine and Saint-Pacome, Quebec. In 2008, Perlite Canada had acquired the Lachine plant from V.I.L. Vermiculite Inc. of Canada. In 2010, the company had closed its Baie-du-Febvre, Quebec, plant and transferred the activity to Lachine and Saint-Pacome. Raw vermiculite was imported primarily from South Africa.

In November, Vermiculite Acquisition Corp. (VAC) of the United States acquired the Edmonton, Alberta, and the Winnipeg, Manitoba, vermiculite exfoliation plants from W.R. Grace & Co.'s subsidiary, Grace Specialty Vermiculite. On January 1, 2012, Specialty Vermiculite Corp., which was affiliated with VAC, assumed operational control of the exfoliation plants, which processed vermiculite imported from South Carolina.

**Sand and Gravel (Industrial).**—Silica sand had a number of industrial uses, including as a proppant (also known as frac sand), which was used in hydraulic fracturing operations for the production of crude oil and natural gas; as a raw material in the production of ferrosilicon metal, various types of glass, and silicon metal; as foundry sand; and as a filler in ceramics. Silica sand also was used in the abrasives, adhesives, coatings, electronics, and optical refractory industries.

Projected demand for silica sand resulted in a number of proposed sand development projects in Canada. Many of the projects involved the quarrying of consolidated sandstone, which would be crushed onsite to sand-sized particles and cleaned of other materials, such as clay, mica, and silt. Proposed development of frac sand projects, however, could be adversely affected by a continued fall in natural gas prices, which decreased throughout 2011 (Statistics Canada, 2012a, p. 3).

Frac sand facilities in operation included that of Canada Silica Industries, which was a member of the LaPrairie Group of Companies and which processed unconsolidated river sand

at its facility near Peace River, Alberta. The mine was operated seasonally and had a production capacity of 500,000 t/yr of silica sand. Sil Industrial Minerals processed unconsolidated river sand at its frac sand plant near Bruderheim, Alberta. Winn Bay Sand Limited Partnership had the capacity to produce about 850,000 t/yr of silica sand from the Hanson Lake quarry in Manitoba. In January 2012, Preferred Sands LLC of the United States acquired Winn Bay Sand's Hanson Lake quarry (Rock Products, 2012; LaPrairie Group of Companies, undated; Preferred Sands LLC, undated).

Proposed frac sand development projects included the Firebag project of Athabasca Minerals Inc. The company applied for permits to build a 45,000-t/yr-capacity pilot plant and a 1,000,000-t/yr-capacity frac sand facility at Firebag. World Industrial Minerals of the United States completed preliminary marketing studies for Gossan Resources Ltd.'s Manigotagan frac sand prospect that was located near Lake Winnipeg, Manitoba. Heemskirk Canada Ltd. reported a positive feasibility study for the development of the 300,000-t/yr-capacity frac sand processing plant at its Moberly sand operation in British Columbia (Athabasca Minerals Inc., 2011; Heemskirk Consolidated Ltd., 2011).

Silica North Resources Ltd. (formerly Jayhawk Frontier Exploration Ltd.) continued work on the Fort Liard project, which was located in the Northwest Territories. Initial production was expected to begin in 2012 with an initial production capacity of 400,000 t/yr. Stikine Energy Inc. (formerly Stikine Gold Corp.) reported the completion of preliminary economic assessments of the Angus and the Nonda frac sand projects, which were located in British Columbia. Production could begin in 2014, subject to the availability of funding and completion of permitting. Victory Nickel Inc. planned to develop the sandstone layer that was located above its Minago nickel deposit. The sandstone would have to be removed in order to develop the proposed open pit Minago nickel mine (Industrial Minerals, 2011c; Silica North Resources Ltd., 2011; Victory Nickel Inc., undated).

### ***Mineral Fuels and Related Materials***

**Uranium.**—In 2011, Canadian production of uranium decreased to 8,923 t (uranium content) from a revised 9,518 t in 2010. The decrease was attributed to the suspension of operations at the McClean mill.

Cameco's Key Lake mill upgrade continued; the new acid plant, the new oxygen plant, and the new steam plant were all completed in 2011, and the steam plant was commissioned. Work continued on a feasibility study for increasing the output capacity of the McArthur River Mine to about 10,000 t/yr of uranium oxide ( $U_3O_8$ ) contained in ore from about 8,500 t/yr. Cameco also proposed to increase the capacity of the Key Lake mill to 11,340 t/yr (Cameco Corp., 2012, p. 70).

Cameco completed the rehabilitation of the underground Cigar Lake Mine, which had flooded twice in 2006 and once in 2008, and resumed the development of the south end of the mine. The Cigar Lake project was expected to begin production in late 2013 and the mine to ramp up to full production of 8,200 t/yr of  $U_3O_8$  by 2017. The Cigar Lake joint venture (which

included Cameco, 50% equity interest; AREVA Resources Canada Inc., 37%; Idemitsu Resources Canada Inc., 8%; and Tepeco Resources Inc., 5%) and the McClean Lake joint venture (which included AREVA Resources Canada Inc., 70% equity interest; Denison Mines Inc., 22.5%; and OURD Canada Company Ltd., 7.5%) amended their toll-milling agreement in December. The new agreement designated that the McClean Lake mill would process 100% of the output from the Cigar Lake Mine; which would require an expansion of the capacity of the McClean Lake mill to about 10,000 t/yr of U<sub>3</sub>O<sub>8</sub> from about 5,400 t/yr (Cameco Corp., 2012, p. 83–86; Denison Mines Corp., 2012, p. 10).

## Reserves and Resources

Table 3 lists the levels of Canadian reserves of selected mineral commodities at the beginning of 2010 (the latest year for which data were available). Data are shown in terms of metal contained in ore for the base and precious metals or recoverable quantities of mineral fuels. Reported reserves of major metals include metal in mines where production has been suspended temporarily. Crude petroleum reserves include estimated recovery from oil sands projects that were under active development (Natural Resources Canada, 2011a; BP p.l.c., 2012, p. 6).

The reserves of major metals, which are distributed unevenly throughout Canada, are located primarily in the Precambrian shield, the Rocky Mountains (Cordillera), and the Coast Ranges. In terms of proven and probable (minable) reserves of major metals, the Provinces of British Columbia, Manitoba, New Brunswick, Ontario, and Quebec were dominant (Natural Resources Canada, 2011a).

## Outlook

Canada's mineral industry is primarily export oriented, and the United States is the main destination for exported Canadian minerals. Canada's continuing challenges in the mineral sector include globalization of the industry, especially competition from developing countries with mineral resources that are less costly to develop. The Canadian mineral industry is well positioned to expand, based on its mineral resource base and its access to the markets of China, Europe, Japan, and North America.

## References Cited

- Apodaca, L.E., 2012, Sulfur: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 158–159.
- Athabasca Minerals Inc., 2011, Applications for frac sand mining project submitted to Government of Alberta—National Instrument 43–101 report initiated: Athabasca Minerals Inc., December 19. (Accessed January 28, 2013, at <http://www.athabascaminerals.com/s/news.asp?ReportID=538626>.)
- BHP Billiton Canada Inc., 2012, Ekati diamond mine 2011 year in review: Yellowknife, Northwest Territories, Canada, BHP Billiton Canada Inc., 60 p.
- BHP Billiton Ltd., 2012, BHP Billiton production report for the half year ended 31 December 2011: BHP Billiton Ltd., 15 p. (Accessed January 25, 2013, at [http://www.bhpbilliton.com/home/investors/reports/Documents/2012/120118\\_BHP Billiton Production Report for the Half Year Ended 31 December 2011.pdf](http://www.bhpbilliton.com/home/investors/reports/Documents/2012/120118_BHP%20Billiton%20Production%20Report%20for%20the%20Half%20Year%20Ended%2031%20December%202011.pdf).)
- BP p.l.c., 2012, BP statistical review of world energy: London, United Kingdom, BP p.l.c., June, 45 p.
- Bray, E.L., 2012, Aluminum: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 16–17.
- Cameco Corp., 2012, 2011 annual financial review: Saskatoon, Saskatchewan, Canada, Cameco Corp., 171 p.
- CaNickel Mining Ltd., 2012, Annual information form for the year ended December 31, 2011: Vancouver, British Columbia, Canada, CaNickel Mining Ltd., March 30, 41 p.
- CBC News, 2011, Ekati could thrive after BHP, say experts: Canadian Broadcasting Corp., November 29. (Accessed February 16, 2012, at <http://www.cbc.ca/news/canada/north/story/2011/11/29/north-ekati-after-bhp.html>.)
- Cement Association of Canada, 2011, Background: Cement Association of Canada, 2 p. (Accessed January 28, 2013, at [http://www.rkil.com/storage/cac/2012\\_Contempra\\_fact\\_sheet.pdf](http://www.rkil.com/storage/cac/2012_Contempra_fact_sheet.pdf).)
- Cement Association of Canada, [undated], Portland-limestone cement: Cement Association of Canada. (Accessed January 28, 2013, at <http://www.cement.ca/en/Newsroom/Portland-Limestone-Cement.html>.)
- De Beers Group, 2012, Operating & financial review 2011: London, United Kingdom, De Beers Group, 28 p.
- Denison Mines Corp., 2012, 2011 annual report: Toronto, Ontario, Canada, Denison Mines Corp., 77 p.
- Heemskirk Consolidated Ltd., 2011, Positive outcome from Moberly frac sand feasibility study: Melbourne, Victoria, Australia, Heemskirk Consolidated Ltd., November 14, 2 p.
- IAMGOLD Corp., 2012a, Annual information form: IAMGOLD Corp., 143 p. (Accessed January 30, 2013, at [http://www.iamgold.com/files/pdf/AIF for 2011.pdf](http://www.iamgold.com/files/pdf/AIF%20for%202011.pdf).)
- IAMGOLD Corp., 2012b, Management's discussion and analysis of financial position and results of operations 2011: IAMGOLD Corp., 140 p. (Accessed March 15, 2012, at [http://www.iamgold.com/files/pdf/2011\\_Financial Review.pdf](http://www.iamgold.com/files/pdf/2011_Financial%20Review.pdf).)
- IAMGOLD Corp., [undated], Niobec niobium mine, Quebec: IAMGOLD Corp. (Accessed January 30, 2013, at <http://www.iamgold.com/English/Operations/Operating-Mines/Niobec-Niobium-Mine/default.aspx>.)
- ICR Research, 2011, Canada's sustainable goals: International Cement Review, October 20. (Accessed March 27, 2012, at <http://www.cemnet.com/Articles/story/39859/canada-s-sustainable-goals.html>.)
- Industrial Minerals, 2011a, Canadian asbestos mine thrown another lifeline: Industrial Minerals, no. 528, September, p. 18.
- Industrial Minerals, 2011b, Investors confirm funding for asbestos mine expansion: Industrial Minerals, October 7. (Accessed October 12, 2011, at <http://www.indmin.com/Print.aspx?ArticleId=2914371c>.)
- Industrial Minerals, 2011c, Transport costs dictating North American frac sand prices: Industrial Minerals, March 16. (Accessed March 16, 2011, at <http://www.indmin.com/Print.aspx?ArticleId=2788227>.)
- Jasinski, S.M., 2012, Potash: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 122–123.
- Kimberley Process Certification Scheme, 2012, Annual global summary—2011 production, imports, exports and KPC counts: Kimberley Process Certification Scheme, July 18, 1 p. (Accessed August 7, 2012, at [https://kimberleyprocessstatistics.org/static/pdfs/public\\_statistics/2011/2011GlobalSummary.pdf](https://kimberleyprocessstatistics.org/static/pdfs/public_statistics/2011/2011GlobalSummary.pdf).)
- Kuck, P.H., 2012, Nickel: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 108–109.
- LaPrairie Group of Companies, [undated], Operations: LaPrairie Group of Companies. (Accessed January 28, 2013, at <http://laprairiegroupp.com/companies/canadian-silica-industries/mine-operations>.)
- Liberty Mines Inc., 2012, Management's discussion and analysis for the year ended December 31, 2011: Liberty Mines Inc., 24 p. (Accessed January 31, 2013, at [http://www.libertymines.com/files/LBE Q4 2011 MD&A\\_v001\\_x5sp82.pdf](http://www.libertymines.com/files/LBE%20Q4%202011%20MD&A_v001_x5sp82.pdf).)
- Loferski, P.J., 2012, Platinum-group metals: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 120–121.
- London Metal Exchange Ltd., The, 2013, LME nickel price graph: The London Metal Exchange Ltd. (Accessed January 31, 2013, via [http://www.lme.com/nickel\\_graphs.asp](http://www.lme.com/nickel_graphs.asp).)
- Mining.com, 2011; Quadra FNX and Xstrata Nickel to create an access arrangement on the Craig Mine: Mining.com, October 14. (Accessed January 31, 2013, at <http://www.mining.com/quadra-fnx-and-xstrata-nickel-to-create-an-access-arrangement-on-the-craig-mine>.)
- Natural Resources Canada, 2011a, Canadian reserves of selected major metal information bulletin: Natural Resources Canada, February. (Accessed March 7, 2011, at <http://www.nrcan-ncan.gc.ca/mms-smm/pubr-pubr/cmaib-biamce-eng.htm>.)

- Natural Resources Canada, 2011b, Revised statistics of the mineral production of Canada, by Province, 2010: Natural Resources Canada, 6 p. (Accessed February 21, 2013, at [http://mmsd.mms.nrcan.gc.ca/stat-stat/prod-prod/PDF/2010 Mineral Production.pdf](http://mmsd.mms.nrcan.gc.ca/stat-stat/prod-prod/PDF/2010%20Mineral%20Production.pdf).)
- Natural Resources Canada, 2012, Preliminary estimate of the mineral production of Canada, by Province, 2011: Natural Resources Canada, 6 p. (Accessed March 13, 2012, at [http://mmsd.mms.nrcan.gc.ca/stat-stat/prod-prod/PDF/2011P Mineral Production.pdf](http://mmsd.mms.nrcan.gc.ca/stat-stat/prod-prod/PDF/2011P%20Mineral%20Production.pdf).)
- North American Palladium Ltd., 2012, 2011 annual report: Toronto, Ontario, Canada, North American Palladium Ltd., 73 p.
- North American Tungsten Corporation Ltd., 2011, Annual management discussion and analysis 2011: North American Tungsten Corporation Ltd., 34 p. (Accessed January 30, 2011, at <http://www.natungsten.com/i/pdf/AR-2011-MDA.pdf>.)
- North American Tungsten Corporation Ltd., 2012, Interim management discussion and analysis Q1 2012: North American Tungsten Corporation Ltd., 25 p. (Accessed January 30, 2011, at <http://www.natungsten.com/i/pdf/MDAQ12012.pdf>.)
- Olson, D.W., 2012, Gemstones: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 62–63.
- Preferred Sands LLC, [undated], About the company—Canada: Preferred Sands LLC. (Accessed January 26, 2013, at <http://www.preferredsands.com/company/canada.html>.)
- Quadra FNX Mining Ltd., 2012, Quadra FNX announces Q4 2011 production & Victoria resource update: Vancouver, British Columbia, Canada, Quadra FNX Mining Ltd., January 16, 3 p.
- Radio-Canada, 2012, Amiante—LAB Chrysotile déclare faillite: Radio-Canada, January 5. (Accessed January 24, 2013, at <http://www.radio-canada.ca/regions/estrie/2012/01/04/002-faillite-lab-chrysotile-thetford-mines.shtml>.)
- Rio Tinto plc, 2012, 2011 annual report: London, United Kingdom, Rio Tinto plc, 220 p.
- Rock Products, 2012, Preferred Sands acquires Winn Bay Sand: Rock Products, January 9. (Accessed January 26, 2013, at <http://rockproducts.com/index.php/news-late/11100-preferred-sands-acquires-winn-bay-sand.html>.)
- Shedd, K.B., 2012a, Cobalt: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 46–47.
- Shedd, K.B., 2012b, Tungsten: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 176–177.
- Silica North Resources Ltd., 2011, Silica North Resources Ltd. announces status of its frac sand project to supply the Horn River Basin: Silica North Resources Ltd., December 5. (Accessed January 28, 2013, at <http://www.marketwire.com/press-release/silica-north-resources-ltd-announces-status-its-frac-sand-project-supply-horn-river-1594925.htm>.)
- Statistics Canada, 2012a, Consumer Price Index—August 2012: Statistics Canada, September 21, 6 p. (Accessed January 28, 2013, at <http://www.statcan.gc.ca/daily-quotidien/120921/dq120921a-eng.htm>.)
- Statistics Canada, 2012b, Exports of goods on a balance-of-payments basis, by product: Ottawa, Ontario, Canada, Statistics Canada. (Accessed January 23, 2013, at <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/gblec04-eng.htm>.)
- Statistics Canada, 2012c, Gross domestic product at basic prices, manufacturing and construction industries: Ottawa, Ontario, Canada, Statistics Canada. (Accessed January 23, 2013, at <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/manuf10-eng.htm>.)
- Statistics Canada, 2012d, Gross domestic product at basic prices, primary industries: Ottawa, Ontario, Canada, Statistics Canada. (Accessed January 23, 2013, at <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/prim03-eng.htm>.)
- Statistics Canada, 2012e, Imports of goods on a balance-of-payments basis, by product: Ottawa, Ontario, Canada, Statistics Canada. (January 23, 2013, at <http://www.statcan.gc.ca/tables-tableaux/sum-som/101/cst01/gblec05-eng.htm>.)
- Statistics Canada, 2012f, Table 303-0060—Production, shipments and stocks of cement—Monthly: Statistics Canada. (Accessed January 28, 2013, via <http://www5.statcan.gc.ca/cansim/pick-choisir?lang=eng&id3030060&pattern3030060&searchTypeByValue=1&p2=42>.)
- Statistics Canada, 2012g, Table 303-0061—Destination of shipments of cement—Monthly: Statistics Canada. (Accessed January 28, 2013, via <http://www5.statcan.gc.ca/cansim/pick-choisir?lang=eng&p2=33&id=3030061>.)
- Thomson Reuters, 2012, Canada's Timminco files for creditor protection: Mineweb, January 4. (Accessed January 4, 2012, at <http://www.mineweb.com/mineweb/view/mineweb/en/page504?oid=142467&sn=Detail&pid=92730>.)
- Timminco Ltd., 2011, Management's discussion and analysis: Toronto, Ontario, Canada, Timminco Ltd., 33 p.
- Tolcin, A.C., 2012, Indium: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 74–75.
- U.S. Energy Information Administration, 2012, Canada week—Natural gas imports from Canada continue to decline: U.S. Energy Information Administration, November 30. (Accessed January 29, 2013, at <http://www.eia.gov/todayinenergy/detail.cfm?id=8990>.)
- Vale S.A., 2012, Form 20-F—2011: U.S. Securities and Exchange Commission, 163 p.
- Victory Nickel Inc., [undated], Frac sand at Minago: Victory Nickel Inc. (Accessed January 28, 2013, at <http://www.victorynickel.ca/projects/minago/frac-sand>.)
- Virta, R.L., 2012, Asbestos: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 22–23.
- World Nuclear Association, 2012, Uranium production figures—2001–2011: London, United Kingdom, World Nuclear Association, August. (Accessed January 24, 2013, at <http://www.world-nuclear.org/info/uprod.html>.)
- Xstrata plc, 2012, Annual report 2011: Zug, Switzerland, Xstrata plc, 196 p.

TABLE 1  
CANADA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2007	2008	2009	2010	2011 <sup>p</sup>
METALS					
Aluminum:					
Alumina, aluminum oxide (Al <sub>2</sub> O <sub>3</sub> ), smelter grade	1,280,000 <sup>e</sup>	1,370,000	1,125,000	1,301,000	1,363,000
Metal:					
Primary	3,082,625	3,120,148	3,030,269	2,963,210	2,987,964
Secondary <sup>e</sup>	50,000	50,000	40,000	40,000	50,000
Total <sup>e</sup>	3,130,000	3,170,000	3,070,000	3,000,000	3,040,000
Antimony <sup>3</sup>	193	132	64	9,000 <sup>r,e</sup>	10,000 <sup>e</sup>
Bismuth:					
Mine output, Bi content <sup>3,4</sup>	137	71	86	91	92
Metal, refined <sup>e</sup>	250	150	150	150	150
Cadmium:					
Mine output, Cd content <sup>3</sup>	342	365	376	2,796 <sup>r</sup>	2,059
Metal, refined	1,388	1,409	1,299	1,357 <sup>r</sup>	1,203
Cobalt:					
Mine output, Co content <sup>3,5</sup>	8,692	8,953	3,919	4,568	7,071
Metal, refined	5,620	5,637	4,918	4,711 <sup>r</sup>	6,038
Copper:					
Mine output, Cu content <sup>3</sup>	596,249	607,957	484,605 <sup>r</sup>	522,172 <sup>r</sup>	566,124
Metal:					
Smelter:					
Primary, blister	470,713	443,710	316,510	318,006	304,724
Secondary	46,101	41,777	29,733	31,815	25,214
Total	516,814	485,487	346,243	349,821	329,938
Refined:					
Primary <sup>e</sup>	423,453 <sup>6</sup>	412,000	311,000 <sup>r</sup>	290,000	244,000
Secondary <sup>e</sup>	30,000	30,000	25,000	30,000 <sup>r</sup>	30,000
Total	453,453	442,050	335,896 <sup>r</sup>	319,619 <sup>r</sup>	273,761
Gold, mine output, Au content	102,377	96,501	97,235 <sup>r</sup>	102,693 <sup>r</sup>	100,379
Indium, metal <sup>e</sup>	61,000	57,000	50,000	67,000	64,000
Iron and steel:					
Iron ore and concentrate:					
Gross weight	32,774	32,102	31,704	37,001	33,573
Fe content <sup>e</sup>	20,751 <sup>6</sup>	20,300	20,000	23,300	21,000
Metal:					
Pig iron <sup>7</sup>	8,577	8,770 <sup>r</sup>	5,000	7,666 <sup>r</sup>	7,323
Direct-reduced iron <sup>7</sup>	911	690	300	600	700
Ferroalloys, electric arc furnace: <sup>e</sup>					
Ferrosilicon	56	60	26 <sup>r</sup>	37 <sup>r</sup>	31
Silicon metal	30	50	30	30	30
Ferromanganese	7	7	7	7	8
Ferrovandium	1	1	1	1	1
Total	90	110	90	90	70
Crude steel	15,569 <sup>7</sup>	15,100 <sup>e</sup>	9,245	13,003	12,891
Lead:					
Mine output, Pb content	75,135	99,810	68,839	64,845 <sup>r</sup>	54,797
Metal, refined:					
Primary	95,577	105,526	101,484	105,836	112,531
Secondary	141,111	153,568 <sup>r</sup>	157,370	167,101 <sup>r</sup>	169,737
Total	236,688	259,094 <sup>r</sup>	258,854	272,937 <sup>r</sup>	282,268
Magnesium, metal, primary <sup>e</sup>	16,300	2,000	--	--	--
Molybdenum, mine output, Mo content	6,681	8,602	8,721	8,648 <sup>r</sup>	8,326
Nickel:					
Mine output, Ni content <sup>3</sup>	254,915	259,651	135,037	160,063 <sup>r</sup>	219,613
Refined <sup>8</sup>	153,647	167,732	116,909	105,413	142,445

See footnotes at end of table.



TABLE 1—Continued  
CANADA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2007	2008	2009	2010	2011 <sup>p</sup>
METALS—Continued					
Niobium (columbium) and tantalum:					
Pyrochlore concentrate:					
Gross weight <sup>e</sup>	12,500	13,200	12,900	13,200	13,800
Nb content of ferroniobium	4,337	4,383	4,330	4,419	4,632
Tantalite concentrate:					
Gross weight <sup>e</sup>	201	150	110	--	--
Ta content (Ta <sub>2</sub> O <sub>5</sub> )	55	49	30	--	--
Nb content	9	6 <sup>e</sup>	5	--	--
Platinum-group metals, mine output:					
Palladium <sup>e</sup>	14,100	14,700	7,000	6,200 <sup>r</sup>	14,300
Platinum <sup>e</sup>	8,000	8,500	4,000	3,500 <sup>r</sup>	8,000
Others (iridium/rhodium/ruthenium) <sup>e</sup>	900	1,000	400	400	800
Total	23,079	24,173	11,376	10,053 <sup>r</sup>	23,079
Selenium <sup>9</sup>	144,000	156,000	173,000	79,000	35,000
Silver:					
Mine output, Ag content	860,449	755,103	617,777	591,482 <sup>r</sup>	572,333
Refined	1,213,118	1,324,499	1,287,659	1,640,612	1,555,855
Tellurium <sup>4,9</sup>	14,000	19,000	16,000	8,000	6,000
Titanium, Sorelslag <sup>®10</sup>	960,000	1,000,000	765,000 <sup>e</sup>	1,090,000 <sup>r,e</sup>	878,000 <sup>e</sup>
Tungsten, mine output, W content <sup>4</sup>	2,305	2,277	1,964	420	2,368
Zinc:					
Mine output, Zn content	630,485	750,502	699,145	649,065 <sup>r</sup>	611,577
Metal, refined, primary	802,103	764,310	685,504	690,152 <sup>r</sup>	662,151
INDUSTRIAL MINERALS					
Asbestos <sup>e</sup>	180,000	160,000	150,000	100,000	50,000
Barite <sup>4</sup>	9,000	12,000	15,000	22,000	22,000
Cement, hydraulic <sup>4</sup>	15,078	13,672	10,985	12,431	12,001
Clay and clay products <sup>11</sup>	\$195,000	\$187,768	\$135,613	\$156,554	\$139,595
Diamond	17,144,000	14,803,000	10,946,000	11,773,000	10,795,000
Diatomite <sup>e</sup>	10,000	10,000	8,000	8,000	8,000
Gemstones, includes amethyst and jade	67	67	49	22	42
Graphite <sup>e</sup>	28,000	27,000	15,000 <sup>r</sup>	20,000 <sup>r</sup>	25,000
Gypsum and anhydrite <sup>12</sup>	7,562	5,740	3,540	2,717	2,555
Lime <sup>4</sup>	2,134	2,069	1,601	1,913	1,959
Lithium, spodumene <sup>e</sup>	23,000	22,000	10,000	--	--
Magnesite, dolomite, brucite <sup>e</sup>	140,000	140,000	140,000	150,000	150,000
Mica, scrap and flake <sup>e</sup>	18,000	17,000	15,000	15,000	17,000
Nepheline syenite	690,000	734,000	513,000	581,000	610,000
Nitrogen, N content of ammonia	3,688,000 <sup>r</sup>	3,920,000 <sup>r</sup>	3,611,000 <sup>r</sup>	3,620,000 <sup>r</sup>	3,946,000
Peat	1,282	1,151	1,131	1,262	1,122
Phosphate rock, P <sub>2</sub> O <sub>5</sub> content <sup>e</sup>	210	210	200	210	200
Potash, K <sub>2</sub> O equivalent	11,085	10,455	4,318	9,788	11,055
Salt	11,862	14,386	14,651	10,537	12,625
Sand and gravel:					
Construction	240,723	239,646	216,170	205,804	206,974
Industrial (silica, quartz) <sup>4,12</sup>	1,987	1,979	1,296	1,171	1,431
Sodium compounds, including sodium sulfate, natural <sup>e,13</sup>	150	200	210	210	200
Stone <sup>12,14</sup>	149,982	145,825	135,895	147,643	167,716
Sulfur, byproduct:					
Metallurgy	1,167	1,148	890	900 <sup>e</sup>	609
Petroleum	7,622	7,008	6,577	6,355	5,914
Total	8,789	8,156	7,467	7,255 <sup>e</sup>	6,523
Talc, pyrophyllite, soapstone <sup>e</sup>	79	70	44	96	147

See footnotes at end of table.

TABLE 1—Continued  
CANADA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2007	2008	2009	2010	2011 <sup>p</sup>	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Carbon black <sup>e</sup>	195,000	180,000	120,000	130,000	130,000	
Coal, run of mine:						
Bituminous and subbituminous	thousand metric tons	58,822	57,800	52,500 <sup>e</sup>	57,000 <sup>e</sup>	57,100 <sup>e</sup>
Lignite	do.	10,541	9,900	10,400 <sup>e</sup>	11,000 <sup>e</sup>	10,000 <sup>e</sup>
Total	do.	69,363	67,749	62,935	67,876	67,114
Coke, high-temperature	do.	4,304	3,040	2,800 <sup>e</sup>	3,000 <sup>e</sup>	3,050 <sup>e</sup>
Natural gas:						
Gross (excluding gas flared or recycled)	million cubic meters	215,649	208,653	196,168	189,589	188,849
Marketed	do.	167,195	157,949	145,133	144,378	145,285
Natural gas liquids:						
Gas plant liquids	thousand 42-gallon barrels	196,000	182,000	174,000	168,000 <sup>e</sup>	172,000 <sup>e</sup>
Pentanes plus	do.	57,000	55,000	51,900	46,000 <sup>r,e</sup>	45,000 <sup>e</sup>
Condensate	do.	10,600	11,200	9,500	8,600 <sup>r,e</sup>	8,400 <sup>e</sup>
Total	do.	263,600	248,200	235,400	223,000 <sup>r,e</sup>	225,000 <sup>e</sup>
Petroleum:						
Crude <sup>15</sup>	do.	941,000	934,000	933,000	990,000 <sup>e</sup>	1,050,000 <sup>e</sup>
Refinery products:						
Propane and butane	do.	22,019	21,339	20,400	21,600 <sup>e</sup>	20,300 <sup>e</sup>
Gasoline:						
Aviation	do.	700	700 <sup>e</sup>	550 <sup>e</sup>	500 <sup>e</sup>	400 <sup>e</sup>
Motor	do.	279,200	258,000 <sup>e</sup>	262,000 <sup>e</sup>	262,000 <sup>e</sup>	278,000 <sup>e</sup>
Petrochemical feedstocks	do.	35,000	30,000 <sup>e</sup>	20,000 <sup>e</sup>	34,000 <sup>e</sup>	28,000 <sup>e</sup>
Jet fuel	do.	31,600	32,000 <sup>e</sup>	30,000 <sup>e</sup>	30,000 <sup>e</sup>	37,000 <sup>e</sup>
Kerosene	do.	11,800	11,000 <sup>e</sup>	9,900 <sup>e</sup>	5,000 <sup>e</sup>	4,000 <sup>e</sup>
Diesel and light fuel oil	do.	228,300	226,000 <sup>e</sup>	220,000 <sup>e</sup>	225,000 <sup>e</sup>	210,000 <sup>e</sup>
Lubricants including grease	do.	7,500	8,000 <sup>e</sup>	7,000 <sup>e</sup>	7,200 <sup>e</sup>	6,900 <sup>e</sup>
Heavy fuel oil	do.	55,500	52,000 <sup>e</sup>	42,000 <sup>e</sup>	44,000 <sup>e</sup>	31,000 <sup>e</sup>
Asphalt	do.	26,000	26,000 <sup>e</sup>	25,000 <sup>e</sup>	27,000 <sup>e</sup>	26,000 <sup>e</sup>
Petroleum coke	do.	10,300	10,000 <sup>e</sup>	9,000 <sup>e</sup>	8,500 <sup>e</sup>	11,000 <sup>e</sup>
Other petroleum products	do.	29,500	30,000 <sup>e</sup>	35,000 <sup>e</sup>	34,000 <sup>e</sup>	19,000 <sup>e</sup>
Refinery fuel <sup>16</sup>	do.	38,000 <sup>r,e</sup>	36,000 <sup>r,e</sup>	36,000 <sup>r,e</sup>	35,000 <sup>r,e</sup>	31,000 <sup>e</sup>
Refinery gains and losses	do.	5,100 <sup>r,e</sup>	5,500 <sup>r,e</sup>	5,100 <sup>r,e</sup>	5,200 <sup>r,e</sup>	5,600 <sup>e</sup>
Total	do.	780,000 <sup>r,e</sup>	750,000 <sup>r,e</sup>	720,000 <sup>r,e</sup>	740,000 <sup>r,e</sup>	710,000 <sup>e</sup>
Uranium oxide, U content		9,475	9,001	10,176	9,518 <sup>r</sup>	8,923

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>p</sup>Preliminary. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through January 22, 2013.

<sup>2</sup>In addition to the commodities listed, aluminum hydroxide Al(OH)<sub>3</sub> (hydrate), cesium, ilmenite, ore containing indium, pumice, and zeolite are produced, but available information is inadequate to estimate output.

<sup>3</sup>Metal content of concentrates produced.

<sup>4</sup>Producers' shipments and quantities used by producers.

<sup>5</sup>Cobalt content of all products derived from Canadian ores, which include cobalt oxide shipped to the United Kingdom for further processing and nickel-cobalt matte shipped to Norway for refining.

<sup>6</sup>Reported.

<sup>7</sup>Source of iron and steel data: World Steel Association (Worldsteel).

<sup>8</sup>Nickel contained in products of smelters and refineries in forms that are ready for use by consumers. Natural Resources Canada has revised all refined nickel figures to conform with International Nickel Study Group (INSG) guidelines.

<sup>9</sup>Includes metal refined from imports and secondary sources. Also includes metal content of exported concentrates.

<sup>10</sup>Refined Sorelslag® has been upgraded to 95% titanium oxide.

<sup>11</sup>Includes bentonite products from common clay, fire clay, stoneware clay, and other clays. Values are in current Canadian dollars. If necessary, values can be converted from Canadian dollars (CANS) to U.S. dollars (US\$) at an average rate of CANS\$1.074=US\$1.00.

<sup>12</sup>Shipments; excludes shipments to Canadian cement, clay, and lime plants.

<sup>13</sup>Excludes byproduct production from chemical plants.

<sup>14</sup>Crushed, building, ornamental, paving, and similar stone.

<sup>15</sup>Includes synthetic crude from oil shale and (or) tar sands.

<sup>16</sup>Refinery fuel represents total production of still gas, which includes a small amount sold.

TABLE 2  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Alumina:</b>			
Smelter grade	Rio Tinto Alcan Inc. (Rio Tinto Group, 100%)	Vaudreuil refinery, Jonquiere, Quebec	1,400.
Specialty grade	do.	do.	55.
Do.	Axens Canada Specialty Aluminas Inc. (Axens S.A., 100%)	Alumina plant, Brockville, Ontario	18.
<b>Aluminum</b>			
Do.	Alcoa Ltd. (Alcoa Inc., 100%)	Smelter in Baie-Comeau, Quebec	385.
Do.	Aluminerie Alouette Inc. (Rio Tinto Alcan Inc., 40%; Aluminium Austria Metall Québec, 20%; Hydro Aluminum, 20%; Société générale de financement du Québec, 13.33%; Marubeni Québec Inc., 6.67%)	Smelter in Sept-Iles, Quebec	590.
Do.	Aluminerie de Bécancour Inc. (Alcoa Inc., 75%, and Rio Tinto Alcan Inc., 25%)	Smelter in Beacancour, Quebec	430.
Do.	Aluminerie Luralco Inc. (Alcoa Inc., 100%)	Smelter in Deschambault, Quebec	260.
Do.	Rio Tinto Alcan Inc. (Rio Tinto Group, 100%)	Smelter in Alma, Quebec	438.
Do.	do.	Smelter in Arvida, Jonquiere, Quebec	176.
Do.	do.	Smelter in Grande-Baie, Quebec	224.
Do.	do.	Smelter in Kitimat, British Columbia	184. <sup>2</sup>
Do.	do.	Smelter in Laterriere, Quebec	238.
Do.	do.	Smelter in Shawinigan, Quebec	102.
<b>Antimony:</b>			
Ore	Beaver Brook Antimony Mine Inc. (Hunan Nonferrous Metals Corp., 100%)	Beaver Brook Mine, 43 kilometers southwest of Glenwood, Newfoundland	180.
Do.	Xstrata Zinc	Brunswick Mine, about 25 kilometers southeast of Bathurst, New Brunswick	NA.
Metal	do.	Belledune lead smelter, Belledune, New Brunswick	NA.
<b>Asbestos, fiber</b>			
Do.	Jeffrey Mine Inc.	Jeffrey Mine, <sup>3</sup> Asbestos, Quebec	15.
Do.	LAB Chrysotile, Inc.	Lac d'Amiante Mine, <sup>3</sup> Thetford Mines, Quebec	160.
<b>Bismuth ore</b>			
Ore	Xstrata Zinc	Brunswick Mine, about 25 kilometers southeast of Bathurst, New Brunswick	NA.
Metal	do.	Belledune lead smelter, Belledune, New Brunswick	NA.
Do.	Teck Resources Ltd.	Trail smelter and refinery complex, Trail, British Columbia	300.
<b>Cement</b>			
Do.	Ciment Québec Inc.	Saint-Basile, Quebec	1,571.
Do.	Colacem Canada Inc. (Colacem S.p.A.)	Grenville-sur-la-Rouge, Quebec	300.
Do.	ESSROC Canada Inc. (Italcementi Group)	Picton, Ontario	792.
Do.	Federal White Cement Ltd.	Woodstock, Ontario	544.
Do.	Holcim (Canada) Inc. (Holcim AG)	Joliette, Quebec	1,475.
Do.	do.	Mississauga, Ontario	2,000.
Do.	Lafarge Canada Inc. (Lafarge North America)	Bath, Ontario	1,176.
Do.	do.	Grinding plant, Stoney Creek, Ontario	814.
Do.	do.	Exshaw, Alberta	1,422.
Do.	do.	Kamloops, British Columbia	324.
Do.	do.	Richmond, British Columbia	1,319.
Do.	do.	St. Constant, Quebec	1,157.
Do.	do.	Brookfield, Nova Scotia	621.
Do.	Lehigh Inland Cement Ltd. (HeidelbergCement Group)	Edmonton, Alberta	1,380.
Do.	do.	Delta, British Columbia	1,356.
Do.	St. Marys Cement (Canada) Inc. (Votorantim Cimentos S.A.)	Bowmanville, Ontario	1,800.
Do.	do.	St. Marys, Ontario	645.

See footnotes at end of table.

TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Coal:</b>			
<b>Bituminous:</b>			
Coking	Grande Cache Coal Corp. <sup>4</sup>	Grande Cache Mine, near Grande Cache, Alberta	2,000.
Do.	Peace River Coal Limited Partnership (Anglo American plc, 100%)	Trend open pit mine, near Tumbler Ridge, British Columbia	2,000.
Do.	Teck Coal Partnership (Teck Resources Ltd., 100%)	Fording River open pit mine, near Elkford, British Columbia	8,900.
Do.	do.	The McLeod and the Prospect open pits, Cardinal River operations, near Hinton, Alberta	2,200.
Do.	do.	Coal Mountain open pit mine at Sparwood, British Columbia	2,700.
Do.	do.	Line Creek Mine, near Sparwood, British Columbia	3,200.
Do.	Teck Coal Partnership (Teck Resources Ltd., 95%; Nippon Steel Corp., 2.5%; POSCO Canada Ltd., 2.5%)	Elkview open pit mine, near Sparwood, British Columbia	6,000.
Do.	Teck Coal Partnership (Teck Resources Ltd., 80%, and POSCO Canada Ltd., 20%)	Greenhills open pit mine, near Elkford, British Columbia	5,100.
Do.	Western Canadian Coal Corp. (Walter Energy, Inc.)	Wolverine Creek open pit mine, near Tumbler Ridge, British Columbia	3,000.
Do.	do.	Brule Mine, near Chetwynd, British Columbia	2,000.
Do.	do.	Willow Creek Mine, 45 kilometers from Chetwynd, British Columbia	1,700
Steam	Pioneer Coal Ltd.	Stellarton Mine, near Stellarton, Nova Scotia	NA.
Do.	Coal Valley Resources Inc. (Sherritt International Corp.)	Coal Valley Mine, near Edson, Alberta	3,600.
Do.	do.	Obed Mountain Mine, Alberta	1,000.
Do.	Quinsam Coal Corp. (Hillsborough Resources Ltd.)	Quinsam underground mine, near Campbell River, British Columbia	500.
Lignite	Prairie Mines & Royalty Ltd. (Sherritt International Corp.)	Boundary Dam open pit mine, near Estevan, Saskatchewan	6,500.
Do.	do.	Poplar River open pit mine, near Coronach, Saskatchewan	4,000.
Do.	do.	Bienfait open pit mine, near Bienfait, Saskatchewan	2,800.
Subbituminous	do.	Highvale open pit mine, near Seba Beach, Alberta	13,000.
Do.	do.	Genesee open pit mine, near Warburg, Alberta	5,600.
Do.	do.	Sheerness open pit mine, near Hanna, Alberta	4,000.
Do.	do.	Paintearth open pit mine, near Forestburg, Alberta	3,500.
<b>Copper:</b>			
Ore, Cu content	Agnico-Eagle Mines Ltd.	LaRonde Mine, about 650 kilometers northwest of Montreal, Quebec	4.
Do.	Copper Mountain Mining Corp., 75%, and Mitsubishi Materials Corp., 25%	Copper Mountain Mine, British Columbia	45.
Do.	Highland Valley Copper Partnership (Teck Resources Ltd., 97.5%, and Highmont Mining Co., 2.5%)	Highland Valley Copper Mine, Kamloops, British Columbia	190.
Do.	Huckleberry Mines Ltd. (Imperial Metals Corp., 50%, and consortium composed of Mitsubishi Materials Corp., Marubeni Corp., Dowa Metals and Mining Company, Ltd., and Furukawa Company, Ltd., 50%)	Huckleberry Mine, 123 kilometers southwest of Houston, British Columbia	39.
Do.	HudBay Minerals Inc.	Trout Lake and 777 Mines, Manitoba	57.

See footnotes at end of table.



TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Copper—Continued:</b>				
Ore, Cu content—Continued		Mount Polley Mining Corp. (Imperial Metals Corp., 100%)	Mount Polley Mine at Williams Lake, British Columbia	18.
Do.		North American Palladium Ltd.	Lac des Iles Mine, about 85 kilometers northwest of Thunder Bay, Ontario	1.
Do.		Nyrstar NV	Langlois Mine, 313 kilometers northeast of Val-d'Or, Quebec	2.
Do.		do.	Myra Falls (Battle-Gap and H-W Mines), British Columbia	5.
Do.		Quadra FNX Mining Ltd.	Podolsky Mine, Ontario	13.
Do.		Capstone Mining Corp.	Minto Mine, Yukon	23.
Do.		Taseko Mines Ltd.	Gibraltar Mine, British Columbia	38.
Do.		Teck Resources Ltd.	Duck Pond Mine, about 100 kilometers southwest of Grand Falls-Windsor, Newfoundland and Labrador	15.
Do.		Vale Canada Ltd. (Vale S.A.)	Sudbury mines (includes the Coleman, Copper Cliff North, Copper Cliff South, <sup>3</sup> Creighton, Ellen, Garson, Gertrude, <sup>3</sup> Stobie and Totten Mines), Ontario	112.
Do.		Vale Newfoundland & Labrador Ltd. (Vale S.A.)	Voisey's Bay Mines (includes the Ovoid Mine), Newfoundland and Labrador	55.
Do.		Xstrata Nickel (Xstrata plc, 100%)	Kidd Creek Mine, about 20 kilometers north of Timmins, Ontario	53.
Do.		do.	Nickel Rim South Mine, Sudbury division, Sudbury, Ontario	39.
Do.		do.	Raglan Mine, Quebec	7.
Do.		Xstrata Zinc (Xstrata plc, 100%)	Brunswick Mine, 20 kilometers southwest of Bathurst, New Brunswick	7.
Do.		do.	Perseverance Mine, near Matagami, Quebec	10
<b>Smelter:</b>				
Anode		Xstrata Copper (Xstrata plc, 100%)	Horne Smelter in Noranda, Quebec	194.
Nickel-copper matte		Vale Canada Ltd. (Vale S.A.)	Copper Cliff smelter in Sudbury, Ontario	500.
Do.		Xstrata Nickel (Xstrata plc, 100%)	Sudbury smelter, Ontario	131.
Refinery (Cu cathode)		Xstrata Copper (Xstrata plc, 100%)	CCR Refinery in Montreal-Est, Quebec	276.
Diamond	carats	Diavik Diamond Mines Inc. (Rio Tinto plc, 60%, and Harry Winston Diamond Mines Ltd., 40%)	Diavik open pit mine (includes the A154 North and the A154 South kimberlite pipes), northeast of Yellowknife region, Northwest Territories	11,900,000.
Do.	do.	BHP Billiton Canada Inc. (BHP Billiton Group, 80%)	Ekati Mine (includes the Koala and the Panda underground mines and the Beartooth, Fox, Koala, and Misery open pit mines) in the Lac de Gras region, Northwest Territories	4,600,000.
Do.	do.	De Beers Canada Inc. (De Beers Group)	Snap Lake underground mine, 220 kilometers northeast of Yellowknife, Northwest Territories	1,400,000.
Do.	do.	do.	Victor open pit mine, 90 kilometers west of Attawapiskat, Ontario	600,000.
Do.	do.	Shear Diamonds Ltd.	Jericho Mine, <sup>3</sup> 430 kilometers northeast of Yellowknife, Nunavut Territory	500,000.
Gold, Au content of ore	kilograms	Agnico-Eagle Mines Ltd.	Goldex Mine, <sup>3</sup> Val-d'Or, Quebec	5,000.
Do.	do.	do.	Lapa Mine, about 60 kilometers west of Val-d'Or, Quebec	4,000.
Do.	do.	do.	LaRonde Mine, about 60 kilometers west of Val-d'Or, Quebec	5,600.
Do.	do.	do.	Meadowbank Mine, about 70 kilometers north of Baker Lake, Nunavut	10,000.

See footnotes at end of table.

TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold, Au content of ore—Continued	kilograms	Alexis Minerals Corp.	Lac Herbin Mine, about 10 kilometers northeast of Val-d'Or, Quebec	1,000.
Do.	do.	Anaconda Mining Inc.	Pine Cove Mine, near Baie Verte, Newfoundland and Labrador	500.
Do.	do.	Aurizon Mines Ltd.	Casa Berardi Mine, about 95 kilometers north of La Sarre, Quebec	5,000.
Do.	do.	Barkerville Gold Mines Ltd.	QR Mine, British Columbia	400.
Do.	do.	Barrick Gold Inc.	Hemlo operation, includes David Bell underground mine and Williams open pit and underground mine, about 350 kilometers east of Thunder Bay, Ontario	7,100.
Do.	do.	Brigus Gold Corp.	Black Fox Mine, about 75 kilometers east of Timmins, Ontario	2,800.
Do.	do.	Capstone Mining Corp.	Minto Mine, about 240 kilometers northwest of Whitehorse, Yukon Territory	650.
Do.	do.	Century Mining Corp. (White Tiger Gold Ltd.)	Sigma-Lamaque complex (includes the Sigma Mine and the Lamaque Mine), Val-d'Or, Quebec	1,000.
Do.	do.	Claude Resources Inc.	Seabee operations (includes the Seabee Deep and the Santoy 8 Mines), Laonil Lake, Saskatchewan	1,500.
Do.	do.	Goldcorp Inc.	Musselwhite Mine, 480 kilometers north of Thunder Bay, Ontario	8,100.
Do.	do.	do.	Porcupine Mine, Timmins, Ontario	10,000.
Do.	do.	do.	Red Lake Mine (includes Red Lake and the Campbell complexes), 180 kilometers north of Dryden, Ontario	26,000.
Do.	do.	Golden Band Resources Inc.	EP Mine and Roy Lloyd Mine, Saskatchewan	1,500.
Do.	do.	Huckleberry Mines Ltd. (Imperial Metals Corp., 50%, and a consortium consisting of Mitsubishi Materials Corp., Marubeni Corp., Dowa Metals & Mining Company, Ltd., and Furukawa Company, Ltd., 50%)	Huckleberry Mine, 123 kilometers southwest of Houston, British Columbia	110.
Do.	do.	Hudson Bay Mining and Smelting Company Ltd. (HudBay Minerals Inc., 100%)	777 and Trout Lake Mines, Flin Flon, Manitoba	1,400.
Do.	do.	IAMGOLD Corp.	Doyon division (includes the Doyon and the Mouska Mines), about 40 kilometers east of Rouyn-Noranda, Quebec	800.
Do.	do.	Kirkland Lake Gold Inc.	South Mine complex (Macassa Mine, Ontario)	2,400.
Do.	do.	Lake Shore Gold Corp.	Bell Creek Mine, northeast of Timmins, Ontario, and Timmins West Mine, 18 kilometers west of Timmins, Ontario	3,300.
Do.	do.	Metanor Resources Inc.	Bachelor Lake Mine and mill (located about 225 kilometers northeast of Val-d'Or, Quebec)	1,000.
Do.	do.	Mount Polley Mining Corp. (Imperial Metals Corp.)	Mt. Polley Mine, 8 kilometers southwest of Likely, British Columbia	1,700.
Do.	do.	North American Palladium Ltd.	Lac des Iles Mine, about 85 kilometers northwest of Thunder Bay, Ontario	700.
Do.	do.	do.	Sleeping Giant Mine, about 80 kilometers north of Amos, Quebec	NA.
Do.	do.	NVI Mining Ltd. (Breakwater Resources Ltd.)	Myra Falls complex (Battle-Gap and H-W Mines), British Columbia	400.
Do.	do.	Osisko Mining Corp.	Canadian Malartic Mine, about 20 kilometers west of Val d'Or, Quebec	13,000.

See footnotes at end of table.

TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold, Au content of ore—Continued	kilograms	Quadra FNX Mining Ltd.	Levack complex (includes the McCreedy West Mine and Morrison deposit), near Levack, Ontario	100.
Do.	do.	do.	Podolsky Mine, Ontario	130.
Do.	do.	Richmont Mines Inc.	Beaufor Mine, about 21 kilometers northeast of Val-d'Or, Quebec	800.
Do.	do.	do.	Island Gold Mine, near Dubreuilville, Ontario	1,600.
Do.	do.	San Gold Corp.	Hinge Mine and Rice Lake Mine, Manitoba	2,400.
Do.	do.	St. Andrew Goldfields Ltd.	Hislop Mine, Holloway Mine, and Holt Mine east of Timmins, Ontario	3,500.
Do.	do.	Vale Canada Ltd. (Vale S.A.)	Manitoba division (includes the Birchtree Mine and the Thompson Mine), Thompson, Manitoba	NA.
Do.	do.	do.	Ontario division, includes Garson Mine, Garson, Ontario; Coleman/McCreedy East Mine, near Levack, Ontario; and Stobie Mine, north of Sudbury, Ontario	NA.
Do.	do.	Wesdome Gold Mines Ltd.	Eagle River Mine, about 50 kilometers west of Wawa, Ontario	1,900.
Do.	do.	do.	Kiena Mine, about 10 kilometers west of Val-d'Or, Quebec	1,300.
Do.	do.	Xstrata Zinc (Xstrata plc, 100%)	Brunswick Mine, 20 kilometers southwest of Bathurst, New Brunswick	NA.
Indium	metric tons	Teck Resources Ltd.	Trail smelter and refinery complex, British Columbia	70.
Iron and steel:				
Iron ore:				
Ore		ArcelorMittal Mines Canada (ArcelorMittal)	Fire Lake and Mont-Wright open pit mines, Quebec	19,300.
Do.		Iron Ore Company of Canada (Rio Tinto Ltd., 58.72%; Mitsubishi Corp., 26.18%; Labrador Iron Ore Royalty Income Fund, 15.1%)	Carol Lake open pit mine, Labrador City, Newfoundland and Labrador	17,000.
Do.		Cliffs Natural Resources Inc., 75%, and Wugang Canada Resources Investments Ltd., 25%	Bloom Lake Mine, near Fermont, Quebec	8,000.
Do.		Wabush Mines Ltd. (Cliffs Natural Resources Inc.)	Scully (Wabash) Mine, near Wabush, Newfoundland and Labrador	5,600.
Magnetite for coal washing		Craigmont Mines Joint Venture	Reprocessed tailings near Merritt, British Columbia	NA.
Pellets		ArcelorMittal Mines Canada (ArcelorMittal)	Pelleting plant, Port Cartier, Quebec	9,000.
Do.		Cliffs Natural Resources Inc.	Pelleting plant, Pointe Noire, Quebec	5,200.
Do.		Iron Ore Company of Canada (Rio Tinto Ltd., 58.72%; Mitsubishi Corp., 26.18%; Labrador Iron Ore Royalty Income Fund, 15.1%)	Pelleting plant, Labrador City, Newfoundland and Labrador	13,000.
Steel, crude		AltaSteel Ltd. (OneSteel Ltd.)	Edmonton, Alberta	320.
Do.		ArcelorMittal Dofasco Inc. (ArcelorMittal)	Hamilton, Ontario	4,100.
Do.		ArcelorMittal Canada Inc. (ArcelorMittal)	Contrecoeur East and Contrecoeur West plants, Quebec	2,500.
Do.		Essar Steel Algoma Inc. (Essar Global Ltd.)	Sault Ste. Marie, Ontario	2,800.
Do.		Gerdau Steel North America Inc. (Gerdau S.A.)	Whitby, Ontario	790.
Do.		do.	Selkirk, Manitoba	430.
Do.		do.	Cambridge, Ontario	380.
Do.		Hamilton Speciality Bar (2007) Inc.	Hamilton, Ontario	360.
Do.		Ivaco Rolling Mills Inc.	L'Orignal, Ontario	380.
Do.		MMFX Steel of Canada Inc. (MMFX Technologies Corp.)	Welland, Ontario	120.
Do.		QIT-Fer et Titane Inc. (Rio Tinto Iron and Titanium Inc.)	Sorel, Quebec	500.

See footnotes at end of table.

TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Iron and steel—Continued:				
Steel, crude—Continued		SSAB Svenskt Stål AB—IPSCO Division	Regina, Saskatchewan	1,500.
Do.		U.S. Steel Canada (United States Steel Corp.)	Lake Erie Works, Naticoke, Ontario	2,400.
Do.		do.	Hamilton Works, <sup>3</sup> Hamilton, Ontario	2,300.
Lead:				
Lead-zinc ore		Maple Minerals Corp.	Caribou underground mine, <sup>3</sup> 45 kilometers west of Bathurst, New Brunswick	700.
Do.		ScoZinc Ltd. (Selwyn Resources Ltd.)	Scotia open pit mine, <sup>3</sup> Gays River, Nova Scotia	600.
Do.		Xstrata Zinc (Xstrata plc, 100%)	Brunswick Mine in Bathurst, New Brunswick	3,550.
Refined:				
Primary		Teck Resources Ltd.	Trail smelter and refinery complex, Trail, British Columbia	100.
Do.		Xstrata Zinc (Xstrata plc, 100%)	Belledune smelter and refinery, 35 kilometers north of Bathurst, New Brunswick	85.
Secondary, includes lead alloys		NovaPb Inc. (Newalta Corp.)	Ville Sainte Catherine, Quebec	100.
Do.		Tonolli Canada Ltd.	Mississauga, Ontario	35.
Do.		Metalex Products Ltd.	Richmond, British Columbia	8.
Molybdenum, ore, Mo content	metric tons	Highland Valley Copper Partnership (Teck Resources Ltd., 97.5%, and Highmont Mining Co., 2.5%)	Highland Valley Copper Mine, Kamloops, British Columbia	3,600.
Do.	do.	Huckleberry Mines Ltd. (Imperial Metals Corp., 50%, and a consortium composed of Mitsubishi Materials Corp., Marubeni Corp., Dowa Metals and Mining Co., Ltd., and Furukawa Co., Ltd., 50%)	Huckleberry Mine, 123 kilometers southwest of Houston, British Columbia	40.
Do.	do.	FortyTwo Metals Inc. (Roca Mines Inc., 100%)	Max Mine, <sup>3</sup> about 60 kilometers southeast of Revelstoke, British Columbia	1,800.
Do.	do.	Taseko Mines Ltd.	Gibraltar Mine, British Columbia	600.
Do.	do.	Joint venture of Thompson Creek Metals Company Inc., 75%, and Sojitz Moly Resources, Inc., 25%	Endako Mine, near Fraser Lake, about 160 kilometers northwest of Prince George, British Columbia	5,200.
Nickel:				
Ore, Ni content		Crowflight Minerals Inc.	Bucko Lake Mine, near Wabowden, Manitoba	2.
Do.		First Nickel Inc.	Lockerby Mine, Sudbury district, Ontario	2.
Do.		Liberty Mines Inc.	McWatters Mine, about 30 kilometers southeast of Timmins, Ontario, and the Redstone Mine, <sup>3</sup> about 25 kilometers southeast of Timmins, Ontario	3.
Do.		Quadra FNX Mining Ltd.	Levack complex (includes the McCreedy West Mine and Morrison deposit), near Levack, Ontario	5.
Do.		do.	Podolsky Mine, Ontario	1.
Do.		Vale Canada Ltd. (Vale S.A.)	Sudbury mines (includes the Coleman, Copper Cliff North, Copper Cliff South, <sup>3</sup> Creighton, Ellen, Garson, Gertrude, <sup>3</sup> Stobie and Totten Mines), Ontario	106.
Do.		do.	Manitoba division (includes the Birchtree Mine and the Thompson Mine), Thompson, Manitoba	45.
Do.		Vale Newfoundland & Labrador Ltd. (Vale S.A.)	Voisey's Bay Mines (includes the Ovoid Mine), Newfoundland and Labrador	80.
Do.		Xstrata Nickel (Xstrata plc, 100%)	Raglan Mine in Ungave, Quebec	28.
Do.		do.	Fraser Mine and Nickel Rim South Mine in the Sudbury district, Ontario	20.

See footnotes at end of table.



TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Nickel—Continued:				
Smelter		Vale Canada Ltd. (Vale S.A.)	Smelter in Sudbury, Ontario	110 (Ni oxide).
Do.		do.	Smelter in Thompson, Manitoba	82 (Ni anode).
Do.		Xstrata Nickel (Xstrata plc, 100%)	Sudbury smelter in Sudbury, Ontario	131 (Cu-Ni matte).
Refinery		The Cobalt Refinery Company Inc. (Moa joint venture of General Nickel S.A., 50%, and Sherritt International Corp., 50%)	Refinery in Fort Saskatchewan, Alberta	35 (Ni briquets and powder), 4 (Co briquets and powder).
Do.		Vale Canada Ltd. (Vale S.A.)	Refinery in Sudbury, Ontario	57 (Ni pellets and powder).
Do.		do.	Refinery in Thompson, Manitoba	NA.
Niobium (columbium)	metric tons	IAMGOLD Corp.	Niobec Mine, Chicoutimi, Quebec	4,600 (Nb content).
Petroleum, refinery products <sup>5</sup>	barrels per day	Chevron Canada Ltd. (Chevron Corp., 100%)	Burnaby refinery, Burnaby, British Columbia	55,000.
Do.	do.	Consumers' Co-operative Refineries Ltd. (Federated Co-operatives Ltd., 100%)	Regina, Saskatchewan	100,000.
Do.	do.	Husky Energy Inc.	Prince George refinery, Prince George, British Columbia	10,000.
Do.	do.	do.	Lloydminster asphalt refinery, Lloydminster, Alberta	25,000.
Do.	do.	Imperial Oil Ltd. (Exxon Mobil Corp., 69.6%)	Dartmouth refinery, Halifax Nova Scotia	82,000.
Do.	do.	do.	Nanticoke refinery, 40 kilometers southwest of Hamilton, Ontario	112,000.
Do.	do.	do.	Sarnia refinery, Sarnia, Ontario	121,000.
Do.	do.	do.	Strathcona refinery, Edmonton, Alberta	187,000.
Do.	do.	Irving Oil Ltd.	Irving refinery, Saint John, New Brunswick	250,000.
Do.	do.	Moose Jaw Refinery (Gibson Energy ULC)	Moose Jaw asphalt refinery, Moose Jaw, Saskatchewan	4,100.
Do.	do.	North Atlantic Refining Ltd. (Harvest Operations Corp.)	North Atlantic refinery, Come by Chance, Newfoundland and Labrador	115,000.
Do.	do.	Nova Chemicals Corp.	Corunna petrochemical and refinery complex, Corunna, Ontario	80,000.
Do.	do.	Shell Canada Ltd. (Royal Dutch Shell plc, 100%)	Scotford refinery, 40 kilometers northeast of Edmonton, Alberta	100,000.
Do.	do.	do.	Sarnia manufacturing center (Corunna refinery), Sarnia, Ontario	72,000.
Do.	do.	Suncor Energy Inc.	Edmonton refinery, Edmonton, Alberta	135,000.
Do.	do.	do.	Montreal refinery, Montreal East, Quebec	129,800.
Do.	do.	do.	Sarnia refinery, Sarnia, Ontario	85,000.
Do.	do.	Ultramar Ltd. (Valero Energy Corp., 100%)	Jean Gaulin refinery, Levis, Quebec	265,000.
Potash (K <sub>2</sub> O equivalent)		Agrium Products Inc.	Vanscoy, Saskatchewan	1,800.
Do.		Mosaic Potash Colonsay ULC (The Mosaic Co., 100%)	Colonsay, Saskatchewan	1,800.
Do.		Mosaic Potash Esterhazy Limited Partnership Ltd. [The Mosaic Co., 75%, and Potash Corp. of Saskatchewan Inc. (PotashCorp.), 25%]	Esterhazy, southeast Saskatchewan	5,300.
Do.		The Mosaic Co.	Belle Plaine, Saskatchewan	2,800.
Do.		Potash Corp. of Saskatchewan Inc. (PotashCorp)	Lanigan, near Lanigan, Saskatchewan	3,900.
Do.		do.	Rocanville, southeast Saskatchewan	3,100.
Do.		do.	Allan division, Allan, Saskatchewan	1,900.
Do.		do.	Cory, near Saskatoon, Saskatchewan	1,400.
Do.		do.	Patience Lake, near Saskatoon, Saskatchewan	1,100.
Do.		do.	Sussex, New Brunswick	800.

See footnotes at end of table.

TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Salt:</b>				
Rock salt and brine operations		The Canadian Salt Co. Ltd.	Rock salt mine at Ojibway, Ontario, and brine wells near Windsor, Ontario	2,600.
Do.		do.	Pugwash, Nova Scotia	1,400.
Do.		Potash Corp. of Saskatchewan Inc. (PotashCorp)	Sussex, New Brunswick	700.
Rock salt		Sifco Canada Inc. (Compass Minerals Group Inc.)	Goderich Harbour, Ontario	6,500.
Do.		Seleine Mines Division of The Canadian Salt Co. Ltd.	Iles-de-la-Magdalen, Quebec	1,625.
Do.		Mosaic Potash Esterhazy Limited Partnership Ltd. [The Mosaic Co., 75%, and Potash Corp. of Saskatchewan Inc. (PotashCorp.), 25%]	Esterhazy, southeast Saskatchewan	NA.
Do.		NSC Minerals Inc.	Salt recovery from potash tailings at Rocanville and Vanscoy, Saskatchewan	NA.
Brine		Nexen Inc. and Alchem Industries Ltd.	Plant near Bruderheim, Alberta	NA.
Do.		Dow Chemical Canada Inc.	Fort Saskatchewan, Alberta	NA.
Do.		Junex Solnat (Junex Inc.)	Becancour, Quebec	NA.
Do.		Saskatoon Chemicals Holdings, Inc.	Plant near Saskatoon, Saskatchewan	NA.
Do.		Sifco Canada Inc. (Compass Minerals Group Inc.)	Amherst, Nova Scotia	NA.
Do.		do.	Plant near Unity, Saskatchewan	NA.
Do.		The Canadian Salt Co. Ltd.	Belle Plaine, Saskatchewan	NA.
Do.		do.	Lindberg, Alberta	NA.
Tantalum, Ta <sub>2</sub> O <sub>5</sub> content	metric tons	Cabot Corp.	Tanco Mine, Bernic Lake, Manitoba <sup>3</sup>	80.
Titanium, TiO <sub>2</sub> slag		Rio Tinto, QIT-Fer et Titane, Inc. (Rio Tinto Group, 100%)	Sorel-Tracy, Quebec	1,100 (Sorelslag®); 250 (UGS™ slag); NA (RTCS™ slag).
Tungsten, WO <sub>3</sub> content		North American Tungsten Corporation Ltd.	Cantung Mine, Northwest Territories	3,500.
Uranium, oxide	metric tons	Joint venture of Cameco Corp., 69.805%, and AREVA Resources Canada Inc., 30.195%	McArthur River Mine, Saskatchewan	8,500.
Do.	do.	Joint venture of Cameco Corp., 83.33%, and AREVA Resources Canada Inc., 16.67%	Key Lake mill, Saskatchewan	6,300. <sup>3</sup>
Do.	do.	Cameco Corp.	Rabbit Lake operations, includes Eagle Point underground mine and Rabbit Lake mill, Saskatchewan	5,500.
Do.	do.	Joint venture of AREVA Resources Canada Inc., 70%; Denison Mines Inc., 22.5%; OURD Canada Company Ltd., 7.5%	McClellan Lake Mine and mill, <sup>3,6</sup> Saskatchewan	5,400.
Zeolite		HCA Mountain Minerals (Lethbridge) Ltd. (Heemskirk Canada Ltd.)	Processing plant at Lethbridge, Alberta	NA.
Do.		Heemskirk Canada Ltd. (Heemskirk Consolidated Ltd.)	Bromley Creek (Princeton) Mine, near Copper Mountain, British Columbia	NA.
Do.		do.	Z1 (Ranchlands) quarry, near Cache Creek, British Columbia	NA.
Do.		Industrial Mineral Processors Ltd.	Z2 quarry, near Cache Creek, British Columbia	NA.
Do.		do.	Processing plant at Ashcroft, British Columbia	NA.
<b>Zinc:</b>				
Lead-zinc ore		Agnico-Eagle Mines Ltd.	LaRonde Mine, 60 kilometers west of Val-d'Or, Quebec	55.
Do.		Maple Minerals Corp.	Caribou underground mine, <sup>3</sup> 45 kilometers west of Bathurst, New Brunswick	700.
Do.		ScoZinc Ltd. (Selwyn Resources Ltd.)	Scotia open pit mine, <sup>3</sup> Gays River, Nova Scotia	600.
Do.		Xstrata Zinc (Xstrata plc, 100%)	Brunswick Mine in Bathurst, New Brunswick	3,550.

See footnotes at end of table.

TABLE 2—Continued  
CANADA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Zinc—Continued:</b>			
Zinc ore	Nyrstar NV	Langlois Mine, 313 kilometers northeast of Val-d'Or, Quebec	39.
Do.	Hudson Bay Mining and Smelting Co., Ltd. (HudBay Minerals Inc., 100%)	777 and Trout Lake Mines, Flin Flon, Manitoba	2,300.
Do.	do.	Chisel North Mine, Snow Lake, Manitoba	330.
Do.	Teck Resources Ltd.	Duck Pond Mine, 90 kilometers south of Buchans, Newfoundland and Labrador	640.
Do.	Xstrata Copper (Xstrata plc, 100%)	Kidd Creek underground mine, 25 kilometers north of Timmins, Ontario	2,350.
Do.	Xstrata Zinc (Xstrata plc, 100%)	Perseverance Mine, near Matagami, Quebec	1,100.
Refined	Canadian Electrolytic Zinc Ltd. (CEZinc) (Noranda Income Fund)	Hydrometallurgical plant at Salaberry-de-Valleyfield, Quebec	290.
Do.	Hudson Bay Mining and Smelting Co., Ltd. (HudBay Minerals Inc., 100%)	Zinc plant (pressure leach and electrowinning) at Flin Flon, Manitoba	115.
Do.	Teck Resources Ltd.	Trail smelter and refinery complex, Trail, British Columbia	295.

Do., do. Ditto. NA Not available.

<sup>1</sup>Abbreviations used in this table for commodities include the following: Au—gold; Co—cobalt; Cu—copper; K<sub>2</sub>O—potassium oxide; Mo—molybdenum; Nb—niobium; Ni—nickel, and TiO<sub>2</sub>—titanium dioxide.

<sup>2</sup>Nameplate production capacity is 282,000 metric tons per year, but two potlines were closed in 2010 as part of the Kitmat modernization project.

<sup>3</sup>Mine or facility closed or operations were suspended and placed on care-and-maintenance status.

<sup>4</sup>Acquisition by 1629835 Alberta Ltd. pending

<sup>5</sup>Does not include bitumen upgraders, which processed hydrocarbons from oil sands operations.

<sup>6</sup>Processes ore from the McArthur River Mine.

TABLE 3  
CANADA: RESERVES OF MAJOR MINERALS<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Coal (anthracite, bituminous, and lignite)	6,578,000
Copper	7,290
Gold	metric tons 918 <sup>2</sup>
Lead	451
Molybdenum	215
Natural gas	billion cubic meters 2,000
Nickel	3,301
Petroleum, crude	million barrels 175,200
Silver	metric tons 6,254
Uranium, U <sub>3</sub> O <sub>8</sub>	428 <sup>3</sup>
Zinc	4,250

<sup>1</sup>As of December 31, 2009, for most minerals. Sources: Canadian Reserves of selected major metal information bulletin, February 2011, Natural Resources Canada; BP Statistical Review of World Energy, June 2012.

<sup>2</sup>Excludes metal in placer deposits.

<sup>3</sup>Recoverable resources as of January 1, 2010.