



2007 Minerals Yearbook

LATIN AMERICA AND CANADA

THE MINERAL INDUSTRIES OF LATIN AMERICA AND CANADA

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The 33 independent countries and 13 territories in Latin America (which includes the Caribbean) and Canada covered in this volume encompass an area of about 30.5 million square kilometers. The region had a population of 612 million, or 9.36% of the world total, in 2007. Canada and Mexico were part of the free trade area created by the North American Free Trade Agreement (NAFTA), together with the United States; Argentina, Brazil, Paraguay, and Uruguay were members of the Mercado Común del Sur (MERCOSUR) [Southern Common Market]; and Bolivia, Colombia, Ecuador, and Peru were members of the Andean Community, which was attempting to develop from a customs union into a common market but had not been able to do so by the end of 2007. In 2006, Venezuela left the Andean Community and signed an agreement on June 17 to become a member of MERCOSUR. Through the end of 2007, however, Venezuela's entry into MERCOSUR had not yet been ratified by the Governments of either Brazil or Paraguay. In 2006, El Salvador, Guatemala, Honduras, and Nicaragua ratified the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA) with the United States; Costa Rica and the Dominican Republic ratified DR-CAFTA in 2007 (U.S. Central Intelligence Agency, 2007; World Bank, The, 2007; International Monetary Fund, 2008).

A number of countries in Latin America were major producers and exporters of metallic and industrial minerals, mineral fuels, and related materials, mostly in crude form. In 2007, record prices for many of the minerals produced in the region encouraged a widespread increase in production compared with that of 2006. With respect to 2007 production of the minerals highlighted in this report, Bolivia was one of the top five mine producers of tin in the world. Brazil was the second ranked producer of iron ore (Fe content) in the world and one of the top five mine producers of bauxite and tin. Canada was the leading mine producer of potash and uranium; the second ranked mine producer of nickel; and one of the top five producers of aluminum, gem-quality diamond, palladium, platinum, mined zinc, and zinc metal in the world. Chile was the leading mine producer of copper and the second ranked producer of refined copper in the world. Peru was one of the top five mine producers of copper, gold, lead, tin, and zinc in the world and was among the top five producers of tin metal. Mexico was one of the top five mine producers of lead in the world. The roles of most countries in Latin America and the Caribbean in the global mineral industry were as suppliers of metallic mineral ores and concentrates and of other minerals in crude form, and a few of these countries were significant suppliers of refined mineral products in the world. Greater mineral processing capacity may be developed in some countries, however, if consumption of minerals produced domestically increases and transportation

costs for shipping minerals in raw form for processing abroad continue to increase (as they did in 2007 and 2008). Canada was a significant global supplier of many minerals in both crude and refined forms (table 4; Economic Commission for Latin America and the Caribbean, 2008a, p. 18-19, 36-37, 45-49; 2008b, p. 47-49; MinerAndina y Sociedad, 2008, p. 22-23; World Bank, The, 2008, p. 153-157; Birchfield and Trelawny, 2009).

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- Brazil—Departamento Nacional de Produção Mineral;
- Canada—Natural Resources Canada;
- Chile—Corporación Nacional del Cobre de Chile (CODELCO), Comisión Chilena de Cobre, and Servicio Nacional de Geología y Minería;
- Colombia—Unidad de Planeación Minero Energética and Instituto Colombiano de Geología y Minería;
- Dominican Republic—Dirección General de Minería;
- Ecuador—Ministerio de Energía y Minas and Dirección Nacional de Minería;
- El Salvador—Dirección de Hidrocarburos y Minas;
- Guatemala—Ministerio de Energía y Minas, Dirección General de Minería, and Departamento de Desarrollo Minero;
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General Economic Conditions

In 2007, the production and export of mineral commodities, including mineral fuels, accounted for a significant percentage of the gross domestic products (GDPs) and export revenues

in many countries in Latin America and Canada. During the boom in mineral prices from mid-2003 through the first half of 2008, many countries in the region appeared to enjoy economic benefits, low interest rates and inflation, and expansion of their export volumes. Revenues for already active mineral producers in the region increased exponentially during this timeframe, and many Governments were able to obtain corresponding increases in revenues from the mineral industries in their countries. For example, CODELCO (a state-owned copper mining company in Chile) produced about 1.63 million metric tons (Mt) of copper and received \$3.5 billion in revenue from sales in 2002 (of which \$326 million was contributed to the Treasury of the country). In 2007, however, CODELCO produced a similar amount of copper (about 1.67 Mt) but received about \$17 billion in revenue (of which the company contributed about \$7.94 billion to the Chilean Treasury). Depending on each country's tax and royalty structures and fiscal policies as they relate to collection and redistribution of revenue from the mineral industry, many Governments were able to use increased revenues related to the increases in the value of production and exports of minerals to pay down debt, balance budgets, and even increase monetary reserves. During 2006, 2007, and 2008, annual Government revenues tied to natural resource (mineral) extraction in their respective countries was estimated to have accounted for greater than 30% of total Government revenues in Bolivia, Ecuador, Mexico, Trinidad and Tobago, and Venezuela (almost entirely related to extraction of mineral fuels in these countries), and between 14% and 18%, on average, of those in Argentina, Chile, Colombia, and Peru (Turner and Ecclestone, 2007; Economic Commission for Latin America and the Caribbean, 2008b, p. 16-17, 29, 47; 2009a, p. 31, 37-38; Gallagher, 2008; Goodman and Boyd, 2008; Haar, 2008; World Bank, The, 2008, p. 104; Moffett, 2009).

In 2008, analysts at Morgan Stanley conducted an exercise in which they estimated the possible effect on the average fiscal budget balance across five of the largest economies in Latin America (Argentina, Brazil, Chile, Mexico and Peru) of a decrease in commodity prices (including the prices of copper, gold, and crude petroleum) to their 10-year averages. They estimated that the average annual budget across these five countries (approximately balanced at the time of the study) could exhibit a 4% average fiscal deficit if this were to occur (and corresponding decreases in spending or increases in other revenues did not occur). Commodities (including minerals) annually account for about one-fifth of the total value of all exports from Mexico and range from slightly less than one-half of the total value of all exports from Brazil to two-thirds or slightly more in the rest of Latin America. In Canada, total revenue from exports began to decrease in mid-2008 primarily owing to decreases in commodity prices. In 2007, increases in commodity prices appeared to be an important factor in the 2.7% rate of growth of the country's real GDP, and continuing demand for minerals in emerging destination markets (especially for metals and mineral fuels in China) had supported many mineral commodity prices. The growth rates of real GDP in China and India were lower in 2008 than in 2007, however, and were expected to be slightly lower again in 2009 compared with 2008 before an expected increase in the economic growth

rates in both China and India in 2010 (Economic Commission for Latin America and the Caribbean, 2008b, p. 16-17, 30, 35, 38-42; 2009c; Newman and others, 2008; Birchfield and Trelawny, 2009; International Monetary Fund, 2009; Volberg and Arcentales, 2009).

The continuing growth in China's (and other emerging economies') demand for minerals could affect the GDPs of mineral producing countries in Latin America and Canada through both direct and indirect channels. An important direct channel is by way of the revenue gained from exports of minerals and mineral products to China, and China did appear to have increased its share of exports from many commodity-exporting countries in Latin America from 2000 through 2008. For example, the share of all Brazilian exports to China (not just commodities) in the value of Brazil's total exports was 12.7% during the second half of 2008 and first half of 2009 compared with 1.8% in 2000. (Exports of iron ore accounted for about 30% of the total value of Brazilian exports to China in 2008.) In 2008, Brazilian exports to China still only accounted for less than 2% of Brazil's GDP, however, and the annual rate of change of Brazil's real GDP does not appear to have been as strongly correlated with the annual rate of change in the value of Brazilian exports to China as with the simple annual rate of change in commodity prices (Economic Commission for Latin America and the Caribbean, 2008b, p. 16-17, 30, 37-40, 43-49; Economist, The, 2008, p. 14-17; Carvalho, 2009; Gallagher and Porzecanski, 2009, p. 6).

The effect of direct trade with China on Brazil's GDP may be unusually strong relative to other countries in Latin America, although the direct trade effect was possibly also significant in Argentina, Chile, Colombia, Mexico, and Peru. In 2006, primary commodity (including minerals) exports from Latin America and the Caribbean accounted for about 22% of all China's (primary) commodity imports, and exports of metals and crude petroleum to China from just these six countries accounted for slightly less than 60% of primary commodity exports to China from all of Latin America and the Caribbean. Direct exports to China, including of mineral commodities, appeared to play a lesser role in the total value of exports by all Latin American countries combined, however, and exports to China accounted for only about 4% of the total value of all Latin American exports in 2006. Even for Colombia and Mexico in 2006, China appeared to be a more significant customer for exports of nonferrous base-metal scrap than for exports of other metallic mineral products or crude petroleum from these countries. China and other countries in Asia were still not significant export markets for much of Latin America. Although the value of commodity exports (including mineral-based products) also directly accounted for a significant percentage of the GDPs of Bolivia, Ecuador, Guyana, Trinidad and Tobago, and Venezuela in 2006, most of these direct trade contributions to these countries' GDP did not appear to be from exports to China (Economic Commission for Latin America and the Caribbean, 2008b, p. 25-26, 47; Haar, 2008; Gallagher and Porzecanski, 2009, p. 6-9).

Growth in the average Latin American GDP and exports from 2000 through mid-2008 appears to be highly correlated with increases in mineral commodity prices and the prices of the other leading exports of the region. In turn, these global

commodity prices have been supported by increased demand for the leading exports of Latin America (and Canada), including many mineral commodities, by China. From mid-2003 through mid-2008, the boom in mineral commodity prices could have had indirect (positive) effects on the GDPs of Latin America and Canada through a variety of channels, including through helping to promote relative appreciation of domestic currencies (which can, in turn, facilitate imports of capital and support domestic investment), encouraging greater foreign direct investment (FDI), and allowing Governments to approve looser monetary policy (which could facilitate economic growth), as well as through terms-of-trade (the average price of a country's exports relative to that of its imports) effects. Although the exact channels may not be clear, China's economic growth and increasing demand appear to have had a significant effect on (mineral) commodity prices and the GDPs of countries in Latin America and Canada from at least 2003 through mid-2009 (Economic Commission for Latin America and the Caribbean, 2008b, p. 22, 37-38, 43-49; Economist, The, 2008, p. 14-17; Gallagher, 2008; World Bank, The, 2008, p. 16; Carvalho, 2009; Gallagher and Porzecanski, 2009, p. 5-6, 11-12).

Although the U.S. share in the value of total exports from the countries of Latin America and Canada was decreasing in 2007, the United States was still the largest single (country) destination for the region's exports. In 2007, U.S. imports accounted for 79% of the value of Canada's total exports, 76% of Mexico's, 45% of the Caribbean's, 39% of Central America's, and 21% of South America's (although 52% of Venezuela's); European Union (EU) (27 countries) imports accounted for a greater share of exports than China's imports did for every country in Latin America and Canada other than Cuba. If demand in established markets in the EU and the United States were to decrease substantially for an extended period of time, then the prospects for the countries of Latin America and Canada to be able to rely on exports (of mineral-based products) to substantially stimulate economic growth could be highly uncertain (Economic Commission for Latin America and the Caribbean, 2008b, p. 22, 30-31, 35-38, 41-48; World Bank, The, 2008, p. 27-34; Volberg, 2009).

Primarily owing to widespread decreases in (mineral) commodity prices at the end of 2008, decreases in the terms of trade are expected to be most pronounced in the countries of the region for which exports of metals and mineral fuels account for a significant proportion of the total value of trade. The decrease in commodity prices was actually expected to help increase the terms of trade slightly for countries in Central America and the Caribbean, on average, because most of these countries experienced worsening terms of trade during the boom in commodity prices mostly owing to substantial imports of mineral fuels. Although there are a few exceptions to this pattern, Latin America (including the Caribbean) is a net exporter of metals and mineral fuels, so increases in global prices for these mineral commodities can be viewed as beneficial to the economies of Latin America, on average (Economic Commission for Latin America and the Caribbean, 2008b, p. 47; 2009a, p. 26-28).

The downturn in mineral commodity prices already appeared to begin to have a real effect on the mineral industries (and

economies) of Latin America and Canada toward the end of 2008. The nominal earnings from the base metals, industrial minerals, and mineral fuels sectors appear to have all been negatively affected to varying degrees across countries within the region. The effect of fluctuations in commodity prices on local currencies appears to also have differed between countries in the region. The prices of precious metals experienced increased volatility during the downturn, but did not follow as strong of a decreasing trend as prices of most base metals did; precious metals accounted for much of the export revenue of the mining sectors of many countries in the region. Brazil was expected to produce and export substantially less iron ore in 2009, as the main producer in the country (and a leading producer in the world) planned to limit supply in an effort to support price. Chile and Peru may have been most affected by lower copper prices. There may also have been a negative employment effect across much of Latin America from marginal mines being shut down and a longer term effect from reduced flows of investment (including FDI) into such activities as mineral exploration. National employment effects resulting from fluctuations in the mineral industry may be significant. For example, it has been estimated that approximately seven additional jobs are crucially tied to the existence of a single job in the mining sector in Chile (Economist, The, 2007; United Nations Conference on Trade and Development, 2007, p. 133-135; Ecclestone, 2008a, b; McDonnell, 2008; MinerAndina y Sociedad, 2008, p. 22-23; World Bank, The, 2008, p. 102-110, 153-158; Carvalho, 2009; Economic Commission for Latin America and the Caribbean, 2009a, p. 38-42; 2009b, p. 30-32).

Looking forward toward the prospects for the mineral industries and economies of Latin America and Canada, if the downturn in mineral commodity prices results in a substantial enough curtailment of investment in the production of minerals in the region to have a lasting effect on the global supply of these minerals yet demand continues to increase in China, India, and other emerging markets, as well as approach long-run averages in established markets for minerals in the EU and in the United States, then mineral commodity prices that are important (both directly and indirectly) to the growth of the GDPs of the countries of Latin America and Canada could be expected to increase again in 2010 and remain higher at least through 2011 (compared with real prices at the end of 2008). For most mineral commodity prices to increase to 2007 levels or above, however, there probably needs to be a consistent supply-demand imbalance (tilted toward global demand for minerals increasing at least somewhat more rapidly than supply). If emerging economies (especially China) do not continue to grow in a mineral-commodity-intensive manner, if the demand for minerals is not close to long-run averages in the EU and the United States, or if the mineral supply response is rapid and substantial enough (including in the countries of Latin America and Canada), then it is possible that potential increases in mineral commodity prices (and corresponding effects on the GDPs of the mineral producers and exporters) could be at least somewhat muted. In any scenario, Governments' macroeconomic policies and ability or inability to manage revenue streams by taxing private mineral production, state-run

mineral industry companies, and (or) trade in minerals could be a key factor in how well the countries of Latin America and Canada weather the downturn in commodity prices and take advantage of any potential increases in the prices (Saxena, 2007; Ecclestone, 2008a, b; Economic Commission for Latin America and the Caribbean, 2008b, p. 39-42; Gallagher, 2008; Goodman and Boyd, 2008; Haar, 2008; World Bank, The, 2008, p. 2-7, 16, 27-34, 60-61; 69-71, 78, 95, 102-110; Birchfield and Trelawny, 2009; Blas, 2009; Moffett, 2009; Volberg, 2009; Watling, 2009).

Investment Data and Political Risk

During the commodity price boom (mid-2003 through mid-2008), policies were implemented in many mineral-producing countries in Latin America and in some Provinces of Canada that could increase the Governments' shares of the increasing revenues in the mineral industry. Most frequently, the policies that were implemented or considered involved establishing new mineral production royalties or mineral industry-specific taxes, or increasing the rates for existing royalties or taxes. The Governments of a few countries renegotiated investment contracts or expropriated the rights of private, international mineral companies to extract minerals. These measures appeared to have reduced investment by foreign companies in some markets in the region to varying degrees, at least temporarily, but total FDI in the region still increased substantially during the commodities price boom. Transforming the increased flows of FDI (especially in the mineral industry) into consistent growth and diversification of recipient economies appeared to be a challenge for many countries in the region. During the second half of 2008, decreasing investment and FDI spread to the most productive mineral industries (and economies) in Latin America and Canada as projects were delayed, temporarily suspended, or placed under indefinite reconsideration. Although many investments in the mineral industry continued during the second half of 2008, substantial decreases in investment in the mineral industry (and in other sectors of the region's economies) were expected for 2009 (United Nations Conference on Trade and Development, 2007, p. 136-139; 2009, p. 68; Economic Commission for Latin America and the Caribbean, 2008a, p. 45-48, 54, 152-155; 2009b, p. 7, 20, 46-47; Gallagher, 2008; World Bank, The, 2008, p. 2-7, 34, 42-43, 60-61, 104, 134-137; Birchfield and Trelawny, 2009; Blas, 2009; Gonzalez, 2009).

Within the mineral industry of Latin America and the Caribbean, FDI in the mining sector grew significantly more rapidly during the commodities price boom than FDI in the petroleum and natural gas sector of the subregion. An important cause of this disparity was the relatively higher average level of Government ownership and regulatory controls in the latter sector, especially in the countries with the greatest petroleum and natural gas reserves. There appear to have been net foreign disinvestments (negative inflows of FDI) in the petroleum sector of Venezuela of about \$1.96 billion in 2006, \$180 million in 2007, and \$230 million in 2008. There were also negative flows of FDI into the natural resources sector of Ecuador (also dominated by investment interests in the production of crude petroleum) amounting to \$69 million in 2006 and \$100 million

in 2007. Although total net FDI in Venezuela actually expanded in both 2007 and 2008 (mainly owing to increasing inflows of FDI into the services sector), major divestments occurred in the mineral fuels (petroleum) sector, including those caused by the state-owned oil company *Petróleos de Venezuela S.A.* (PDVSA) acquiring a majority ownership share (78%, on average, compared with 39% before) of four petroleum joint ventures between PDVSA and foreign companies in Venezuela's Orinoco River basin in 2007 (Economist, The, 2006; United Nations Conference on Trade and Development, 2007, p. 59, 163-165, 185; Economic Commission for Latin America and the Caribbean, 2008a, p. 45-51, 54, 65, 162-165; 2009b, p. 27, 32-33, 44-45, 47, 49-51; Blas, 2009; Gonzalez, 2009).

Increased taxation of the exports of mineral fuels in Argentina in 2007 (the tax rate on exports of natural gas increased to 45% from 20%) and the nationalization process in the petroleum and natural gas sector of Bolivia (announced in 2006, although many of the newly negotiated operations contracts between the Bolivian Government and foreign companies did not come into effect until sometime in 2007) did not result in net foreign disinvestment as similar policy measures appeared to have done in the natural resources sector of Ecuador during this timeframe. A probable reason is that a higher value of assets actually ended up being expropriated by the Government of Ecuador in this sector, although the revised (2006) hydrocarbon law in Ecuador did not require a transfer of ownership (even temporarily) to the Government (or to the state-owned petroleum company *Empresa Estatal Petróleos del Ecuador*). Also, in the mineral industry of Bolivia there were at least two significant FDI investment projects in the metallic mineral mining sector that caused total FDI in the mineral industry of that country to increase in 2005, 2006, and 2007, whereas commercial mining of metals was still in the formative stages in Ecuador and positive flows of FDI into the mining sector were not sufficient to balance negative flows in the minerals fuels sector. During both 2007 and 2008, Colombia received the highest inflows of FDI in the mineral fuels sector of any country in Latin America and the Caribbean mostly owing to favorable regulations on exploration and development of mineral fuels properties relative to many other countries in the region and to the Government's offering of private shares in the state-owned petroleum company, *Ecopetrol S.A.* In 2007, The Government of Trinidad and Tobago adjusted the terms of oil and gas production contracts to make them more favorable to foreign investors and offered tax incentives for exploration to counteract decreases in the country's reserves of natural gas. In 2008, the Government of Mexico began to allow foreign investors to bid to become subcontractors on oil and natural gas exploration and service contracts in certain areas of Mexico, although foreign companies would still not be allowed to share in production of crude petroleum and (or) natural gas (including from the deepwater reserves in the Gulf of Mexico) or in risk contracts with the state-owned monopoly oil company *Petróleos Mexicanos, S.A. de C.V.* (United Nations Conference on Trade and Development, 2007, p. 58-60, 163-165, 185; 2009, p. 71; Economic Commission for Latin America and the Caribbean, 2008a, p. 30, 48-49; 2009b, p. 32-33, 48).

The leading transnational mining companies in the world are smaller (in terms of the value of foreign assets held), on

average, than the leading oil and natural gas companies, but the largest mining companies typically exhibit greater levels of FDI in extractive operations than their counterparts in oil and natural gas. This appears to be at least partially owing to relatively greater Government ownership in the petroleum and natural gas sector. Still, some Governments also made various attempts (some more direct than others) to acquire greater shares of company revenues in the mining sectors of some of the most productive mineral industries in Latin America during the commodity price boom. In 2008, significant nationalizations in the nonfuel sectors of the mineral industry of Venezuela included the expropriation of cement manufacturing properties owned by CEMEX S.A. de C.V. (of Mexico) and acquisition of majority Government ownership of the Sidor iron and steel production properties controlled by a subsidiary of the Argentina-based company Techint S.A. During 2007, although the Government of Bolivia made multiple announcements that nationalization of the mining sector might be necessary, it relied on revisions to the country's mining tax scheme to increase Government revenue from metallic mineral mining operations. In 2006, a new royalty tax on mining companies (based on their annual sales) was first implemented in Peru, and the Government of Chile began implementation of a mining-specific tax based on the relative price of copper in February 2006. Despite the continuing boom in mineral prices in 2007 (the first full year following implementation of the mining tax in Chile), FDI in the mining sector in Chile decreased to \$304 million compared with \$1,126 million in 2006, although this decrease in mining FDI appeared to be partially compensated for by an increase in Government investment in the mining sector to \$1,630 million compared with \$1,233 million in 2006 (mostly through the state-owned copper mining company CODELCO). In 2008, FDI in the mining sector of Chile did appear to recover substantially (increasing to \$2,366 million), although it was expected to decrease substantially again in 2009 with the widespread decrease in commodity prices (Kosich, 2007a; United Nations Conference on Trade and Development, 2007, p. 115-116, 122-127, 131, 136-138; 2009, p. 70; Economic Commission for Latin America and the Caribbean, 2008a, p. 32-34, 45, 161-167, 184-185; 2009b, p. 44-45; World Bank, The, 2008, p. 102-110, 134-137; Comisión Chilena del Cobre, 2009, p. 73).

In results from the Fraser Institute's annual surveys of international mining companies, Chile was considered the 27th ranked destination in the world for investment by mining companies at the beginning of 2007 compared with being ranked 4th at the beginning of 2006, although the country's ranking increased back up to 6th by the beginning of 2008. This pattern in the Fraser Institute's rankings correlates very well with the level of FDI in the mining sector of Chile in 2006, 2007, and 2008. During this same timeframe (that is, the time during which mineral prices were booming), the Canadian Provinces of Alberta, Manitoba, and Quebec were consistently ranked among the top 10 (and usually in the top 5) out of up to 68 international jurisdictions delineated by the Fraser Institute's mining survey, and the Provinces of New Brunswick, Newfoundland and Labrador, Ontario, and Saskatchewan were often close to or in the top 10; Bolivia, Ecuador, and Venezuela

were most frequently ranked in the bottom 10 (often in the bottom 5). At the end of 2007 or beginning of 2008, the average ranking across all Canadian Provinces included in the survey was about 18th (out of 68 jurisdictions) and that of the countries of Latin America that were included in the survey was about 47th (McMahon and Vidler, 2008, p. 5, 10-11, 21, 30).

In indexed results from the Fraser Institute's annual surveys of international oil and gas companies, Bolivia was considered to have the highest barriers to investment in the petroleum and natural gas sector (in the world) in 2008 and thus ranked 81st out of the 81 worldwide jurisdictions considered. Ecuador was ranked 80th, Venezuela was ranked 79th, and Argentina was also ranked in the bottom 10 (74th). These countries also ranked in the bottom 10 (out of 54 jurisdictions) in the Fraser Institute's 2007 oil and gas survey. (Bolivia was ranked 54th; Venezuela, 53rd; Ecuador, 52nd; and Argentina, 49th.) Cuba was not included in the 2008 survey (because of insufficient responses to the survey by investors that gave an opinion on the investment opportunities in Cuba) but ranked 48th in 2007. Mexico was excluded from this survey in both 2007 and 2008 because policies in the country in the petroleum and natural gas sector were viewed as effectively prohibiting private-company investment shares in production of petroleum or natural gas (even potential). Saskatchewan was the only Canadian Province ranked in the top 10 of the 2008 oil and gas survey (it was ranked 6th), although it was not ranked among the top 10 jurisdictions globally for investment in the petroleum and natural gas sector in 2007. Both the Province of Alberta and the Northwest Territories were notable Canadian Provinces in these surveys, because Alberta ranked better in the 2007 survey (22d out of 54 jurisdictions) than in the 2008 survey (50th out of 81 jurisdictions), as was the case for the Northwest Territories (34th and 69th, respectively). This was mostly owing to an expected increase in royalties collected by the Government of Alberta (on production of petroleum from oil sands in the Province) and uncertain regulatory costs and conflicts over indigenous land claims in the Northwest Territories (Angevine and Thomson, 2008, p. 5, 8, 11-14, 19, 23-25, 42, 45).

In comparison with the leading mining companies in Canada, the leading Canadian oil and natural gas companies invested much less abroad and focused instead on exploring and developing properties domestically, especially the oil sands areas in western Canada. In addition to a substantial number of Canadian companies investing domestically in the mineral industry, foreign investment in energy and metallic minerals projects in Canada was the leading (combined) sector for flows of FDI into Canada from the rest of the world in 2007. In 2006, Companhia Vale do Rio Doce (CVRD) of Brazil (company name changed to Vale S.A. in 2009) began acquisition of Inco Ltd. of Canada and the deal was completed in 2007. At the time, this was the most valuable acquisition in the world by any company from a developing country (in terms of acquired asset value). In addition to this acquisition, FDI in Canada during the boom in commodities prices involved foreign acquisitions of many of the leading companies in Canada, including of Alcan Inc., Dofasco Inc., Falconbridge Ltd. and Hudson's Bay Co. (all in the mineral industry). In Canada, it appears as though foreign investors in the mineral industry may confront more political

risk from changes in Government policies at the Province level than at the Federal level. However, these high-profile foreign acquisitions in the mineral industry of Canada, increased prices for petroleum, and an increase in the investment interest and actual investment by foreign state-owned companies (mostly based in China and the Middle East) in oil sands properties in Canada led to a review by the Federal Government of Canada's policies governing inflows of FDI, which was expected to be completed in June 2008 (United Nations Conference on Trade and Development, 2007, p. 6, 44, 57, 67-68, 90-100, 119, 127; Economic Commission for Latin America and the Caribbean, 2008a, p. 9, 14, 17-19, 55, 63-64, 143-146, 149, 152-158, 162-174; Birchfield and Trelawny, 2009).

In 2007 and 2008, companies from the United States accounted for the leading share of all FDI into Latin America and the Caribbean, followed by Spain, Canada, the Netherlands and Japan. During the commodities price boom, both Canada and Japan increased FDI in the extraction of natural resources in the subregion. The mining sector was the leading sector for flows of FDI into Latin America and the Caribbean from Canada, mostly into Argentina, Brazil, Chile, Mexico, and Peru. Canadian companies that have invested in the mineral industry of Latin America and the Caribbean were mostly focused on precious metals (such as Barrick Gold Corp.) but also in the production of base metals (Teck Cominco Ltd.), industrial minerals (Potash Corp. of Saskatchewan Inc.), and mineral fuels and related materials (Cameco Corp.). In addition to these major companies, there was a whole host of mid-tier and junior mining companies from Canada that had invested heavily in the mining sector of Latin America and the Caribbean. Notable acquisitions by Japanese companies in the mineral industry included acquisition of 40% of Nacional Minerios S.A. from Companhia Siderúrgica Nacional in Brazil and a substantial share of El Tesoro copper mine and La Esperanza copper mining project from Antofagasta plc in Chile (United Nations Conference on Trade and Development, 2007, p. 6, 44, 57, 67-68, 90-100, 119, 127; Economic Commission for Latin America and the Caribbean, 2008a, p. 9, 14, 17-19, 55, 63-64, 143-146, 149, 152-158, 162-174; 2009b, p. 28-29, 58; Birchfield and Trelawny, 2009).

In data on annual FDI flows into Latin America and the Caribbean from 2004 through 2007, it appears as though investment in three countries dominated the increase in FDI into natural resource extraction and processing in the subregion: they were Brazil and Chile (almost entirely owing to FDI in the mining sector) and Colombia (mineral fuels sector). It appeared likely that FDI in the mineral industries of Argentina and Peru also accounted for a substantial proportion of total FDI flows in the subregion, but data on FDI at the level of the mineral industry were not available for Argentina (after 2004) and the data for Peru did not appear to include even a majority of registered FDI. Mexico and Colombia appeared to have attracted a substantial share of the FDI flows into the mining sector of the subregion in 2007 but still ranked a distant 3d and 4th, respectively, to the levels of mining FDI in Brazil and Chile. The leading foreign mining companies to invest in the production of base metals in Latin America and the Caribbean (in terms of the value of assets owned in the subregion by the

end of 2007) were Anglo American plc of the United Kingdom, BHP Billiton Ltd. and BHP Billiton plc of Australia and the United Kingdom (BHP Billiton), Freeport-McMoRan Copper & Gold Inc. of the United States, and Xstrata plc of Switzerland. In 2007, companies based in Canada accounted for most of the FDI in exploration for and production of precious metals in Latin America and the Caribbean, including investments by Barrick. Although many of the major companies with plans to invest in the mineral industry of Latin America and Canada could probably continue to secure necessary financing during the downturn in commodity prices and although there is a lot of inertia in mining investment projects (owing to the large sunk costs involved, the amount of mine construction already completed, licensing agreements with the Governments of host countries, and other factors), many mining projects in Latin America and Canada were expected to be suspended in 2009 and it is unclear if or when they may be restarted (Economic Commission for Latin America and the Caribbean, 2008a, p. 45-47, 152-153; 2008b, p. 39-40; 2009b, p. 30-34).

In Brazil, the main vehicles for FDI inflows, in the short and medium terms, were expected to be joint ventures and acquisitions in new projects mainly together with *Petróleo Brasileiro S.A.* and *CVRD*. Investments in the Brazilian mining industry were expected to continue to increase exploration and mine development activities, particularly in, in order of importance, iron ore, gold, copper, diamond, and emerald. Most of the investment in the mining sector in Chile continued to be for copper, although the leading single project, which was scheduled for completion by 2010, was the Pascua-Lama copper, gold, and silver project (a joint effort with Argentina) (*Banco Central do Brasil*, 2008b; *Companhia Vale do Rio Doce*, 2008).

The Government of Peru has enacted a law that would facilitate the advancement of 20 mining exploration and development projects that it has designated as Projects of National Importance. The energy, mining, and related sectors are expected to continue to attract capital flows by way of joint ventures and consortia, privatizations, and direct acquisitions. According to *ProInversión*, the privatization process in the mineral industry and investment in every sector of the Peruvian economy, particularly in the banking and energy industries, are expected to continue to generate additional investments. There are currently four copper projects requiring investment of about \$9 billion in Peru, whereas the total for all copper projects in the country is of the order of \$21 billion. Peru's greenfield copper projects are more likely to continue to attract new foreign and local investors (*Banco Central de Reserva del Perú*, 2008; *Camisea Project*, 2008; *MinerAndina y Sociedad*, 2008; *Ministerio de Energía y Minas*, 2008b; *ProInversión—Private Investment Promotion Agency in Peru*, 2008).

During the boom in commodities prices, the countries of Latin America and Canada received increased flows of FDI from China to help secure resources for China's growing consumption of minerals. Investment in the mineral industry by Chinese mineral companies took the form of acquiring mining, petroleum, and natural gas exploration and production rights, as well as acquisition of shares in some of the most active mineral exploration and production companies in the region.

During the downturn in prices, China's demand for minerals was expected to continue to increase, and acquisition of even greater shares in foreign minerals companies by Chinese mining and oil and gas companies could accelerate as the price of mineral company shares may decrease substantially with the decrease in commodity prices. China's FDI into the mineral industry of Latin America and the Caribbean was perhaps most apparent in Peru, and included the acquisition of Perú Copper Inc. by Aluminum Corporation of China (Chinalco), Chinalco's investments as part of a joint venture with Empresa Mineral del Centro de Peru (Centromin), acquisition of Monterrico Metals plc. by Xiamen Zijin Tongguan Investment Development Co. Ltd., and investment by China National Petroleum Corp. (CNPC) in production of crude petroleum in northern Peru. Chinese investment in copper projects in Peru was expected to increase even during the downturn in the price of copper owing to both Governments planning to sign a free trade agreement (FTA) in April 2009 that would, among other things, create investments. Chinese companies were also active in a variety of projects in the mineral industry elsewhere in the region, including investment by China's Minmetals Non-Ferrous Metals Co. Ltd. in the Gabriela Mistral (Gaby) copper mine in Chile; acquisition of the Linden Bauxite Co. in Guyana by the China Metallurgical Group Corp.; investment by China Petroleum & Chemical Corp. (Sinopec) and CNPC to establish joint ventures with PDVSA in Venezuela and produce crude petroleum in Ecuador; investment by Sinopec in Colombia; and China National Offshore Oil Company (CNOOC) Ltd. and Sinopec's acquisition of shares in MEG Energy Corp. of Canada (United Nations Conference on Trade and Development, 2007, p. 57, 117-119, 127; Ecclestone, 2008b; Economic Commission for Latin America and the Caribbean, 2008a, p. 30-31, 47-49; Economist, The, 2008, p. 4, 6, 10, 12-14, 16-17, 21-22; Bolsa de Valores de Lima, 2009).

Legislation

In Brazil, the current Concessions Law created opportunities for the private sector's participation in public utilities previously reserved for the Government. The amended law stipulates that the exploitation of mineral deposits will depend upon the exploration authorization permit granted by the General Director of the Departamento Nacional de Produção Mineral (DNPM) and the development concession issued by the Ministro de Minas e Energia. Licensing is a restricted system applicable exclusively to the exploitation of industrial minerals. The DNPM is responsible for enforcing the 1997 Mining Code and for implementing its legal provisions. Brazil's Federal tax exemptions on imports of equipment for minerals prospecting, exploration, development, and production are expected to continue in the medium and long terms. The Agencia Nacional do Petróleo was planning to extend these exemptions for the fuels sector into 2020. Petroleum companies and other investors have shown confidence in the country, which could support continued economic growth and FDI in new technologies well into the next decade (Ferraz, 2007, p. 7; Banco Central do Brasil, 2008a, b; Companhia Vale do Rio Doce, 2008; Departamento Nacional de Produção Mineral, 2008).

Mineral exploration in Canada has been influenced by recent legislation directed at the mining industry. The Canadian Government extended its 15% nonrefundable Investment Tax Credit for Exploration (ITCE) in its 2007 budget as a means of maintaining revenues generated by the recent high level of mineral exploration investment in the country. Incentives for exploration also have occurred on a regional or local level. Natural Resources Canada was awarded approximately \$5.6 million to conduct energy and mineral surveys in areas within British Columbia affected by pine beetle infestation. Geoscience BC launched a \$4.7 million companion project to conduct large-scale geochemical surveys of the Province. A nearly \$930,000 program of mapping, geochemical sampling, and airborne geophysical surveys, which make up the second part of an ongoing three-part regional exploration program, was to be conducted jointly by the Ontario Prospectors Association and the town of Atikokan. On the other hand, the 2007 Ontario budget contained a provision that would introduce a new tax of up to 13% on any diamond mined in Ontario (Godfrey, 2007; Preston, 2007; Puxley, 2007; Ross, 2007).

First Nation issues continued to affect mineral exploration and development in Canada. Canada's Assembly of First Nations and the Mining Association of Canada signed a letter of intent in November 2007 to collaborate on Federal consultation and land claims policy, human resource development, and land-use planning issues to improve continuity and communication among mining companies, Government entities, and the various First Nation tribes. The Taku River Tingit First Nation produced a mining policy document that describes how it will deal with proposals for mining-related activities on its lands (Kosich, 2007b; Mining Environmental Management, 2007).

On October 4, 2006, the Government of Peru issued Supreme Executive Order no. 058-2006-EM, including contracting with the Peruvian company Activos Mineros S.A.C. to assume the direction and implementation of the Environmental Management and Adaptation Programs (PAMA) projects, closure, and environmental remediation plans of Centromin Perú S.A. and other state-owned (mining) companies. This legislation included assigning Activos Mineros to carry out environmental studies and remediation projects in contaminated areas around the La Oroya polymetallic smelting and refining complex during 2007. After nationalization in 1974, La Oroya was controlled and operated by Centromin until 1997, when it was acquired by the private company Doe Run Peru S.R. Ltda. (Activos Mineros S.A.C., 2008, p. 10-12; Alfaro, 2009).

Exploration

According to Metals Economics Group (MEG), Latin America maintained its top position as a destination for proposed exploration capital, and its share of the world exploration budget remained at about 24%. Based on data compiled by the USGS, Latin American countries with the greatest exploration activity were, in descending order by number of sites for which data were compiled, Mexico, Brazil, Peru, Argentina, and Chile. Mexico, Peru, Chile, and Brazil were also on MEG's list of top 10 countries for anticipated exploration spending in 2007. Gold attracted about 52% of

total exploration activity, but interest in base metals reached 24% and silver achieved about 14% of the total. Investment in 2007 was used primarily to further define newly discovered resources (84%), conduct exploration at a producing site (8%), conduct feasibility studies of promising discoveries (6%), and further explore for resources of deposits under development (2%). Companies exploring in Canada have benefited from the country's well-defined geologic conditions, solid legal environment, and skilled labor force. More than 60 mineral-related commodities were produced in Canada, and its future resource potential is large. Federal and Provincial regulations provide tax incentives for mining, and the ITCE, which encouraged investors into higher-risk mineral development projects, was extended in 2006 (Godfrey, 2007; Metals Economics Group, 2007a, p. 1-2).

Exploration activity in Mexico had focused on gold and silver projects for many years, and in 2007, more than 70% of the active exploration projects in Mexico were focused on these precious metals. High base-metal prices increased the interest in deposits rich in base metals; copper deposits accounted for 13% of the active exploration projects and polymetallic base-metal deposits accounted for an additional 9%. Precious-metal exploration, principally by Canadian junior exploration companies, had in recent years focused on the Sierra Madre mineral belt in central and western Mexico, as evidenced by the many new mines and advanced exploration projects that were taking place there. Of the 210 foreign companies active in the Mexican mining sector, Canadian companies accounted for 75% (O'Connell, 2007).

Canada continued to be a focus of global mineral exploration. Statistics as of November 2007 released by the Canadian Government show anticipated 2007 exploration spending to be \$2.3 billion, which is up by 33% from an expenditure of \$1.7 billion in 2006. The MEG reported budgeted exploration spending in Canada for 2007 to be \$1.9 billion, or about 19% of the estimated overall worldwide exploration budget. Canadian statistics include expenditures for coal, industrial minerals, and uranium exploration, which are excluded from these MEG estimates. It is also important to note that the total revised spending intention for Canada reported by Natural Resources Canada in November was 35% higher than its March 2007 estimate. In 2006, precious metals (gold and silver) accounted for \$725 million; base metals, \$412 million; diamond, \$342 million; and uranium \$214 million of the \$1.9 billion exploration total. Although data were not available at the time of this writing, it is anticipated that Canadian coal, industrial mineral, and uranium exploration in 2007 surpassed the level of exploration reported for 2006, thereby reducing the anticipated Canadian total (when these commodities are excluded) to about \$2 billion, or within 5% of the 2007 value of \$1.9 billion reported by MEG (Metals Economics Group, 2007b, p. 1-2; Natural Resources Canada, 2007).

Exploration budget allocations for 2007 as reported by the Canadian Government as of November 2007 were greatest in the Provinces of Ontario (about 20% of the total Canadian exploration and deposit appraisal budget), British Columbia (17%), Quebec (15%), and Saskatchewan (11%), and in the Territory of Nunavut (10.5%), the Northwest Territories

(7.5%), and the Province of Newfoundland and Labrador (6%). Canadian Provinces or Territories with an anticipated increase of more than 50% in exploration activity in 2007 from 2006 based on reported November 2007 budget estimates were Nova Scotia (+145%), New Brunswick (+128%), Manitoba (+95%), Newfoundland and Labrador (+59%), and Ontario (+50%). Alberta (-7%) was the only Canadian Province for which an estimated reduction in the 2007 exploration budget was reported, but this region saw a sizable increase in exploration between 2005 and 2006. Budgets of junior exploration companies accounted for about 61% of total expenditures in 2007 compared with 41% in 2003, 51% in 2004, 61% in 2005, and 65% in 2006. The budget allocation for precious metals received the largest exploration budget followed by base metals, diamond, and uranium (Natural Resources Canada, 2007).

Canadian Provinces or Territories with the greatest exploration activity were, in descending order by number of sites as compiled by the USGS, Ontario, Quebec, British Columbia, Saskatchewan, Yukon Territory, and Manitoba. Based on the site data, exploration for gold accounted for approximately 37% of 2007 Canadian exploration activity; copper, for about 15%; uranium, for 14%; nickel, for 10%; lead and zinc, for 8%; and diamond, for 6%. Approximately 79% of all reported exploration sites were considered early-stage sites. Canadian gold exploration activity based on the number of sites in 2007 for which data were collected focused primarily on British Columbia, Ontario, and Quebec; base metals exploration focused on British Columbia, Manitoba, Ontario, and Quebec. Diamond exploration focused on the Northwest Territories, Nunavut, and Ontario. Uranium exploration focused on Newfoundland and Labrador, Nunavut, Ontario, Quebec, and Saskatchewan.

The uranium exploration rush generated by high uranium prices was forcing many communities to develop strategies for uranium exploration and development. Across Canada, the debate on whether to permit uranium exploration and mining continued. Efforts in 2007 to ban or limit uranium exploration and mining continued in British Columbia, New Brunswick, Newfoundland and Labrador, the Northwest Territories, Nova Scotia, Ontario, Quebec, and Saskatchewan (Mining Watch, 2008).

In Brazil, the Amazon region contains considerable natural gas resources that remained nonproductive in 2007; especially the Urucu field, which contains Brazil's largest onshore natural gas reserves. There was also an important potential for major undiscovered mineral resources in addition to the large reserves of, in order of value, iron ore, manganese, bauxite, gold, and tin (Departamento Nacional de Produção Mineral, 2008; U.S. Energy Information Administration, 2008a).

The discovery of several large gold deposits in Peru during the past decade had been followed by aggressive exploration in the country. Higher metals prices also encouraged extensive exploration in 2006 for base metals, gold, and silver in Peru. As exploration and mineral production in Peru increased, antimining sentiment also increased with the perception that company profits were not being used adequately in the communities from which they were generated (Kosich, 2006).

Gold exploration and investment activities in French Guiana (depending on the new Mining Framework) were likely to continue at projects with significant gold anomalies, such as

the Wayamaga contact between the Armina and the Orapu formations, within graphitic and tuffaceous Armina sediments where Golden Star Resources Ltd. of the United States outlined a potential for gold resources. IAMGOLD Corp. of Canada's Paul Isnard project contains gold mineralization in the form of pyritic disseminated zones and sulfide-rich shear zones as well. Depending on gold markets and prices, Golden Star and IAMGOLD could move forward with their Paul Isnard and Camp Caiman gold projects, respectively. Tullow Oil plc of the United Kingdom's petroleum exploration projects were expected to progress and expand through exploration, license rounds, new ventures, and portfolio management; Tullow's key exploration campaigns were planned for 2011 and 2012 (Golden Star Resources Ltd., 2009; IAMGOLD Corp., 2009; Tullow Oil plc, 2009).

Gold exploration activities in Guyana were likely to continue as a result of several gold exploration projects that progressed during 2007. Offshore hydrocarbon exploration in Guyana would likely increase because of the progress in the resolution of the maritime boundary disputes between Guyana and Suriname. The future plans of Prometheus Resources, Inc. (a subsidiary of U3O8 Corp. of Canada) in Guyana included a detailed exploratory program in the company's uranium permit areas (Guyana Geology & Mines Commission, 2009).

In Suriname, Rosebel Gold Mines N.V. (95% owned by IAMGOLD) continued to plan exploration for new deposits on the Rosebel property, on the adjacent Headley's Reef and Thunder Mountain concessions, and at the Sara Creek project, which is located 80 kilometers (km) south of Rosebel. Golden Star announced that exploration was to be carried out on its Saramacca gold project in Suriname, which lies within the same geologic-structural region as the adjacent Gross Rosebel Mine. Exploration activities in the Paraguayan mineral fuels sector were set to continue during 2008 and beyond owing to continued exploration efforts by Chaco Resources plc (which changed its name to Amerisur Resources plc in July 2007) of the United Kingdom (Amerisur Resources plc, 2008, p. 4, 7-8; Banco Central del Paraguay, 2008; Golden Star Resources Ltd., 2008).

In April 2008, the Government of Ecuador announced a ban on mining activities (apparently including exploration and development) and conducted a review of the country's mining laws. During 2007 and the first half of 2008, mining companies from Canada that were interested in continuing exploration and development operations in Ecuador included Corriente Resources Inc. (Mirador, Mirador Norte, Panantza, and San Carlos copper mining projects); Dynasty Metals & Mining Inc. (Zaruma gold mining project), IAMGOLD (Quimsacocha gold mining project), and Kinross Gold Corp. (Fruta del Norte gold mining project). The commercial (nonartisanal) metals mining sector in Ecuador was still almost entirely in the exploration and development phase during this timeframe (James, 2009; Kosich, 2009; Norris, 2009).

Commodity Overview

This section summarizes the supply and demand trends and potential developments for the leading mineral commodities in Canada and Latin America. The region's share of world

production of selected commodities is listed by mineral commodity in table 4.

Estimates for production of major mineral commodities for 2009 and beyond have been based upon supply-side assumptions, such as announced plans for increased production (new capacity) construction, announced plans to reduce production and close production facilities either temporarily or permanently, and bankable feasibility studies. The outlook tables in this summary chapter show historic and projected production fluctuations and trends; therefore, no indication is made about whether the data are estimated or reported and revisions are not identified. Data on individual mineral commodities in tables in the individual country chapters are labeled to indicate estimates and revisions. The outlook segments of the mineral commodity tables are based on current (first half of 2009) producing facilities, official announcements of planned production, and on planned new facilities that operating companies, consortia, or Governments have projected to come online within indicated timeframes. Forward-looking information, which includes estimates of future production, exploration, and mine development; cost of capital projects; and timing of the start or closure of operations, are subject to a variety of risks and uncertainties that could cause actual events or results to differ significantly from expected outcomes. Projects listed in the following section are presented as an indication of industry plans and are not a USGS prediction of what will take place.

Metals

Aluminum and Bauxite and Alumina.—Latin America accounted for 26% of the world's production of bauxite but only 7% of primary aluminum metal. Canada, however, accounted for about 8% of the world's production of primary aluminum metal even though no bauxite appeared to have been mined in the country in 2007. This was probably owing to the abundance of hydropower in Canada, because production of primary refined aluminum requires a substantial amount of electrical power. Canada was the leading producer of aluminum in the region, and Brazil was the second ranked producer. About 86% of the total regional production of aluminum metal was primary production. Brazil's Associação Brasileira do Alumínio (ABAL) expected that the country's production of primary aluminum could be about 1.54 Mt in Brazil in 2009, which would be about 7% lower than in 2008. This expected decrease was mostly owing to an expected decrease of about 12% in the production of primary aluminum by Alcoa Alumínio S.A. compared with that of 2008, a 4% decrease in the annual production of primary aluminum by BHP Billiton Metais S.A. during the same timeframe, and the temporary closure of the primary aluminum plant operated by Valesul Alumínio S.A. (owned by Vale) during the second quarter of 2009. Information concerning expected production of secondary aluminum in Brazil was not available and it is assumed in table 6 that secondary production in the country will remain approximately at the estimated level of 255,000 metric tons per year (t/yr) in 2007 (tables 4, 6; Vale S.A., 2008, 2009; Associação Brasileira do Alumínio, 2009).

In November 2008, Alcoa Inc. of the United States announced that it would partially or fully curtail production

of aluminum metal at some of the company's smelters in response to decreases in global demand for aluminum, including permanently closing one potline at its primary aluminum smelter in Baie Comeau, Canada. In January 2009, Rio Tinto Alcan Inc. (which was a subsidiary of Rio Tinto plc of the United Kingdom) implemented cutbacks in the production of alumina and primary aluminum at some locations in Canada, including permanent closure of the Beauharnois aluminum smelter [which produced about 50,000 metric tons (t) of aluminum in 2008]. The country's production was expected to decrease in 2009 compared with that of 2007. If most 2009 curtailments of production of alumina and aluminum in Canada prove to be temporary and end by sometime in 2010, if Rio Tinto Alcan gives final approval to modernize the company's Kitimat aluminum smelter (annual production capacity of 252,000 t/yr of primary aluminum) in time to implement the project by sometime in 2009, and if other projects to expand production of primary aluminum by other companies in Canada (which were at least at a feasibility stage of development) are approved, then production of aluminum in Canada is expected to increase significantly above 2007 levels in 2011. In 2008, actual production at Kitimat was about 245,000 t/yr of primary aluminum, which was expected to increase to approximately 400,000 t/yr if the modernization is completed. In the longer term, if Rio Tinto Alcan approves an expansion of the company's Alma aluminum smelter to increase production capacity by 170,000 t/yr of primary aluminum (currently in the prefeasibility stage of development) and other longer term projects to expand production of aluminum in Canada are approved in time, then production of aluminum metal in the country is expected to increase significantly again in 2013 compared with 2011 (Alcoa Inc., 2008; 2009, p. 9; Rio Tinto plc, 2009, p. 26, 52, 57, 68, 71, 74-75).

Production of bauxite in Latin America was expected to decrease in 2009 mostly owing to decreased production in Jamaica in response to a decrease in demand for aluminum globally. The West Indies Alumina Company (WINDALCO) closed mining operations in Jamaica in February 2009; Century Aluminum Co. and Noranda Aluminum Holding Corp. announced that they had reduced production at their jointly owned St. Ann Mine in the country to about 50% or 60% of the bauxite mine's production capacity during the second quarter of 2009, and planned to continue production at this reduced level until global demand for aluminum increased substantially. Alumina Partners of Jamaica (Alpart) closed alumina refining operations in May 2009, and Alcoa and the Jamaican Government decided not to expand alumina refining capacity at the Jamalco refinery, which reduced domestic demand for bauxite (tables 4, 5; Alcoa Inc., 2009, p. 6-7, 44, 98; Century Aluminum Co., 2009, p. 35; United CompanyRUSAL, 2009a, b).

Brazil was the leading producer of bauxite in the region. In 2009, Brazil's Departamento Nacional de Produção Mineral (DNPM) indicated that it might revise its preliminary reported production of bauxite in Brazil in 2007 downward, despite startup of the Paragominas Mine (which was owned by Vale). Owing to unexpectedly smaller granule size, Vale was experiencing some technical difficulties with ramping up production at Paragominas during the first half of 2009

but it still appeared to be increasing the rate of production, so it is uncertain whether the production of bauxite in Brazil in 2009 will be above or below the level estimated in table 5. Production of bauxite dominated production in the mining sector of Guyana. Noranda planned to ramp up production of bauxite at St. Ann to near capacity, which was about 4.5 million metric tons per year (Mt/yr), sometime in 2010, and the owners of Alpart and WINDALCO announced that the closures of these facilities were considered to be temporary. Therefore, production of bauxite in Latin America was expected to increase dramatically in 2011 compared with expected production of bauxite in 2009, but the actual level of expected production in 2011 was uncertain and dependent on many contingencies, including whether either Alpart or WINDALCO would be reopened by then, whether the project to expand Jamalco is restarted, and whether projects to expand production capacity in Brazil are restarted (tables 4, 5; Alcoa Inc., 2009, p. 6-7, 44, 98; Departamento Nacional de Produção Mineral, 2009, p. 11; Noranda Aluminum Holding Corp., 2009; United Company RUSAL, 2009a, b; Vale S.A., 2009).

Copper.—Mine production of copper (contained copper) in Latin America and Canada contributed more than 52% of the world output, and the region was expected to increase its production by more than 12% in 2015 compared with that of 2007 in response to continued growth in consumption of copper globally, especially in China and India. In 2009, however, copper production in the region was expected to decrease by about 5% compared with that of 2007 mostly owing to decreased production at the Escondida Mine in Chile. Escondida was the leading single copper mine in the world, and Chile was the leading producer in the world, accounting for about 35% of global production of copper in 2007. BHP Billiton reported that lower grades of copper ore were mined at Escondida during the first half of 2009 compared with that during the first half of 2008, and that copper production from milling operations at Escondida was lower during this same timeframe, including lower production by the Laguna Seca SAG Mill owing to an electrical motor failure. The company expected to complete repair of this mill during the third quarter of 2009 and to be able to increase copper production at Escondida Mine in 2010 compared with that expected in 2009, if global demand for copper were to increase. BHP Billiton also reported, however, that China probably completed most of that country's restocking of copper during the first half of 2009 and that the company would need to continue to monitor global demand trends for copper carefully. BHP Billiton reported that total production of copper contained in concentrate and cathodes at the Escondida Mine decreased by about 27% during the company's fiscal year that ended on June 30, 2009, compared with the fiscal year that ended on June 30, 2008. During the first half of 2009, the Escondida Mine produced about 521,000 t of copper compared with 759,000 t during the first half of 2007 (tables 4, 7; BHP Billiton Ltd., 2009a, p. 7, 10, 28, 51, 100-103, 106, 112, 141; 2009b, p. 3, 6, 12; Comisión Chilena de Cobre, 2009, p. 16).

Mine production of copper in Peru was expected to continue to increase gradually through 2013 mainly owing to capacity expansions at the Cerro Verde Mine in the Department of Arequipa and at the Cuajone and the Toquepala Mines in

the Department of Tacna. During the first half of 2009, mine production of copper in the country increased by about 3% compared with that during the first half of 2008. The increase was mostly owing to increased production by Southern Peru Copper Corp. and Xstrata Tintaya S.A. during this timeframe. Copper production was expected to increase by 118% in 2015 compared with that of 2007 in Brazil because Vale planned to complete development of the company's Salobo copper mining project in Carajas, State of Para, sometime during 2011 and an expansion of the copper production capacity at Salobo by sometime in 2013 (table 7; MinerAndina y Sociedad, 2008; Companhia Vale do Rio Doce, 2009, p. 16, 42-43; Ministerio de Energía y Minas, 2009a, p. 30; 2009b).

Production of refined copper in Latin America and Canada was expected to increase significantly (by about 6.8%) in 2009 compared with that of 2007, and by about 8.5% in 2011 compared with that of 2009. Chile was the world's leading producer of primary refined copper in 2007 and accounted for about 19% of the world's output (not including global production of secondary refined copper). In 2009, total production of refined copper in Chile was expected to increase significantly compared with that of 2007 mostly owing to increased production of solvent extraction-electrowon (SX-EW) cathodes at the Gaby Mine (which started production in May 2008) and owing to the continued rampup of production of SX-EW cathodes at the Spence Mine (which started production in December 2006) and by the Escondida Sulfide Leach project (which started production in June 2006). Production of electrolytic and fire-refined copper in Chile was expected to increase significantly by 2013 and to account for most of the expected increase in the production of refined copper in Chile compared with that expected in 2011; this increase, however, was contingent on some projects being completed, possibly including the Andacollo, the Caserones, and the Franke copper projects and an extension of the Lomas Bayas Mine (Ávila and Jara, 2009; BHP Billiton Ltd., 2009a, p. 29, 112; International Copper Study Group, 2009, p. 15; Vidal, 2009, p. 14-16).

Production of refined copper in Peru decreased significantly in the first half of 2009 compared with the first half of 2008, although it was still significantly higher than during the first half of 2007. The Ilo copper smelter and refinery complex (operated by Southern Peru Copper Corp.) was by far the leading independent copper refinery in the country, and La Oroya Metallurgical Complex (operated by Doe Run Peru) was ranked a distant second. Production at La Oroya had been greatly reduced since March 2009 after banks cut its credit line amid worries about falling metals prices. In April 2009, the Government brokered a deal for Doe Run Peru to obtain a credit line of \$75 million from banks in order to continue operating and a second line of credit for \$100 million from a group of mining companies that sold concentrates to Doe Run Peru. According to Peru's Ministerio de Energía y Minas, La Oroya stopped producing refined copper in June 2009. SX-EW plants associated with copper mines in the country combined to account for about 43% of Peru's production of refined copper in 2007. Production of refined copper in Peru was expected to increase substantially by 2011 compared with that of 2007 mostly owing to capacity expansions at SX-EW plants,

possibly including those at the Cuajone, the Cerro Verde, and the Toquepala Mines. Peru's production of refined copper could increase by about an additional 40,000 t in 2011 compared with that of 2009 if production at La Oroya is restarted. An expansion of the Ilo copper refinery was expected to be completed sometime in 2012 (Ministerio de Energía y Minas, 2008a; 2009b, c; Cespedes, 2009; International Copper Study Group, 2009, p. 16; Ryan's Notes, 2009; Southern Copper Corp., 2009, p. 16, 32, 35-36).

Production of refined copper in Brazil was expected to decrease significantly in 2009 compared with that of 2007 mostly owing to decreased production of refined copper by Caraiba Metais S.A. (a subsidiary of Paranapanema S.A.) during the first quarter, including a temporary shutdown for technical reasons in March. During the second quarter of 2009, Caraiba Metais increased production of refined copper by about 25% compared with the first quarter, and the company expected to increase production capacity to about 240,000 t/yr of refined copper by the end of the year compared with 220,000 t/yr in 2007. Caraiba Metais expected to expand the production capacity further to 277,000 t/yr by the end of 2010 as a result of the company completing an investment project to refurbish the electrolytic cells of the refinery. In December 2008, Vale completed construction of the Usina Hidrometalúrgica de Carajás pilot plant at the Sossego Mine to test the application of hydro-metallurgical technology for producing copper cathodes from the complex copper ores being mined there. The plant's capacity was 10,000 t/yr of copper cathodes, and the company planned to make a decision whether to build a full-scale plant at Sossego sometime after the end of the evaluation period for the pilot plant (sometime during the final quarter of 2010). If the full-scale plant is approved, it could substantially increase Brazil's production of refined copper by 2015. During the first half of 2009, Vale was still waiting for environmental approval before deciding whether to proceed with the company's Corpo 118 project to produce 35,000 t/yr of copper cathodes, and the company did not expect to begin the project in 2009 (Brazilian Securities Commission, 2009; Companhia Vale do Rio Doce, 2009, p. 16, 42-43; International Copper Study Group, 2009, p. 15).

Gold.—In 2007, Latin America and Canada accounted for about 22% of the world's production of gold. Peru and Canada were the first and second ranked producers, respectively, in the region and accounted for about 52% of the regional production. Peru and Canada also ranked fifth and eighth, respectively, in terms of annual gold production in the world. From 1997 through 2008, Peru led all Latin American countries in discoveries of gold (tonnage of gold reserves and resources discovered), and about 21% of the gold discovered in Latin America during this timeframe was located in the country. Additionally, 18% of the gold discovered in Latin America during this timeframe was located in Argentina, followed by Mexico (18%), Chile (17%), Ecuador (12%), Colombia (7%), Brazil (5%), and Guatemala (2%). Owing to development of some of the recent discoveries in Peru, the country was expected to increase production of gold through 2011 and to just replace decreasing production with new production of gold from 2011 through 2015. Canada was estimated to have attracted about

18% of the total expenditures budgeted for gold exploration in the world in 2007, and development of recent gold discoveries in Canada was expected to increase production of gold in the country significantly in 2009, substantially in 2011, and by just enough to replace decreasing production from existing mines in 2013 and 2015 (tables, 4, 9; Metals Economics Group, 2007b; Chender, 2009).

During the first half of 2009, production of gold at Newmont Mining Corp. of the United States's Yanacocha Mine (in Peru) increased substantially compared with that during the first half of 2008 mostly owing to a full semester of production by the new mill at Yanacocha, which began production in the second quarter of 2008. In addition, about 39% more gold ore was mined at Yanacocha during this same comparative timeframe. The Yanacocha Mine was the leading producer of gold in Peru and was expected to be the leading contributor to the expected increase in gold production in the country in 2009 compared with that of 2007. Yanacocha Mine produced about 7,600 kilograms (kg) more gold in 2008 than in 2007 and could increase production again in 2009 by about 5,800 kg. The second ranked contributor to the expected increase in gold production in Peru in 2009 was likely to be the Cerro Corona Mine (which was majority owned by Gold Fields Ltd. of South Africa), where production of gold was first ramped up close to nameplate capacity (about 6,800 kilograms per year of gold) at the end of 2008. During the first half of 2009, the Cerro Corona Mine produced 2,243 kg of gold, and about 40 other mines in Peru produced substantially smaller amounts of gold (ranging from less than 1 kg to about 182 kg) after not producing any gold during the first half of 2008 (Gold Fields Ltd., 2009, p. 38, 97-101; Ministerio de Energía y Minas, 2009b; Newmont Mining Corp., 2009a, p. 20, 25; 2009b, p. 54-55).

In 2007, about 90% of Canada's gold production came from hard-rock underground and open pit gold mines. The remainder was from base-metal mines and from placer mining operations located in the Provinces of Alberta and British Columbia, and the Yukon Territory. From 2001 through 2008, annual production of gold in Canada decreased because new production was insufficient to replace output from large mines that closed during this timeframe. Production was expected to increase in 2009 compared with that of 2008, however, as a result of recent increases in the exploration for and development of potential gold-producing properties in Canada. This wave of increased investment in potential gold production in Canada was expected to continue into 2010 and to contribute to the substantial expected increase in the production of gold in Canada in 2011. During the first half of 2009, Canada produced about 2.9 t more gold than during the same period in 2008. In May 2009, Barrick announced that the company would begin construction on the Pascua-Lama project sometime during the second half of the year. At Pascua-Lama, about 75% of the ore body was estimated to be located in Chile and the rest was located in Argentina. The company expected production of gold at Pascua Lama to begin sometime in 2013 and for the production capacity eventually to ramp up to about 24 t/yr of gold at the mine, although a definite timeline was not available (Metals Economics Group, 2007b; Grima, 2008; Barrick Gold Corp., 2009, p. 8, 12; Natural Resources Canada, 2009b; Wagner, 2009).

Iron Ore and Iron and Steel.—In 2007, Latin America and Canada accounted for approximately 22% of the world's gross weight of iron ore production. In terms of iron content, Brazil was the leading producer in the region and accounted for about 81% of the region's production of iron ore. Canada and Venezuela were ranked a distant second and third to Brazil, respectively, in production of iron ore in the region. The World Steel Association estimated that Venezuela produced 20.65 Mt of iron ore (gross weight) in 2007, but reported data on production of iron ore in the country in 2007 or 2008 were not available at the time of this writing (tables 4, 10; World Steel Association, 2009d, p. 113).

Production of iron ore in Latin America and Canada was expected to decrease substantially in 2009 compared with that of 2007 mostly owing to an expected decrease in production by Vale in Brazil. Vale produced about 104 Mt of iron ore (gross weight) during the first half of 2009 compared with about 153 Mt during the first half of 2008, and the company produced about 293 Mt during the entire year of 2008 compared with 296 Mt in 2007. The company expected to increase production of iron ore gradually through the second half of 2009, however. During 2010, Vale expected to expand the iron ore production capacity at the Carajas Mine in the State of Para and that expansion was expected to be primarily responsible for Brazil attaining a level of iron ore production in 2011 that could be at least equal to that of 2007. In 2007, Vale led all companies in the world in terms of the volume of seaborne shipments of iron ore, and the company accounted for about 33% of the global market to receive seaborne shipments of iron ore. The company expected to increase shipments of iron ore to China in 2010 and 2011 compared with that expected in 2009 owing to a continuation of long-run economic growth in that country and an increasing demand for imports of iron ore to produce crude steel in China. In 2008, Vale's shipments of iron ore and iron ore pellets to China (from Brazil) accounted for about 29% of total shipments of iron ore by the company during the year (tables 4, 10; Companhia Vale do Rio Doce, 2009, p. 25, 28, 86-87; Vale S.A., 2009; World Steel Association, 2009a, p. 24).

Canada's production came from its major iron ore producing companies, which included ArcelorMittal Mines Canada Inc.; Iron Ore Company (IOC) of Canada [Rio Tinto plc (58.72%), Mitsubishi Corp. (26.18%), and Labrador Iron Ore Royalty Income Fund (15.1%)]; ArcelorMittal Dofasco Inc. (100%); and Wabush Mines Ltd. [United States Steel Corp. (44.6%), ArcelorMittal Dofasco Inc. (28.6%), and Cliffs Natural Resources Inc. (26.8%)]. Production in 2009 was expected to be slightly less than that of 2007 primarily owing to reduced production by IOC, including a planned suspension of production for 4 weeks in July 2009. Production of iron ore in Canada could increase substantially in 2011 compared with that expected in 2009 and incrementally in 2013 compared with 2011 depending on when Rio Tinto decides to resume an \$800 million expansion program for IOC to increase production capacity to 22.8 Mt/yr of iron ore concentrate compared with 17.5 Mt/yr in 2008. This expansion program was suspended in December 2008. Consolidated Thompson Iron Mines Ltd.'s development of the company's Bloom Lake project was ongoing during the first half of 2009 and the company expected mining

to begin there sometime before the end of 2009. The Bloom Lake project was expected to have a capacity to produce 7 Mt/yr of iron ore concentrate and could contribute substantially to the expected increase in Canada's production of iron ore in 2011 compared with that expected in 2009 (table 10; Consolidated Thompson Iron Mines Ltd., 2009; Dumont, 2009; Rio Tinto plc, 2009, p. 50, 57, 104-107).

In 2007, Latin America and Canada accounted for more than 6% of the world's production of crude steel, and the leading producers in the region were Brazil, Canada, and Mexico. According to the World Steel Association, production of crude steel in Canada was about 50% lower during the first half of 2009 compared with the same period in 2008, about 40% lower in Brazil, and about 30% lower in Mexico. The primary causes for these decreases in production of crude steel in the region appeared to be related to decreases in capacity utilization. Global demand for steel was expected to increase during the second half of 2009 compared with that during the first half of 2009, including demand for crude steel produced in Latin America and Canada. Therefore, the decrease in production of crude steel in the region during the entire year of 2009 was not expected to be as pronounced as the production data from the first half of 2009 might suggest. Apparent steel use in the world was expected to be approximately equal to the 2008 level in 2010, after an expected decrease to about 91% of the 2008 level in 2009. In response to an expected increase in demand, production of crude steel in Latin America and Canada was expected to increase substantially in 2011, mostly owing to the resumption of expansion projects in Brazil and increased capacity utilization in the region. Average apparent steel use across Canada, Mexico, and the United States was expected to be at only about 75% of the 2008 level in 2010, and that across the countries of Central and South America was expected to be at about 83%. Especially for steel producers in Latin America and Canada that supply markets that were not expected to recover before late in 2010 or sometime in 2011, the timing and levels of increased production of crude steel in the countries of the region (if any) may be quite uncertain. (For example, automotive and nonresidential construction account for about 70% of steel use in the markets for steel produced in Canada, and these sectors in those markets were expected to recover more slowly than elsewhere.) United States Steel Corp. suspended some steelmaking operations in Canada in 2009 (tables 4, 11; Dumont, 2009; United States Steel Corp., 2009; World Steel Association, 2009a, p. 8-9; 2009b, c).

Lead and Zinc.—In 2007, Latin America and Canada accounted for 28% of the world's mine output of zinc and about 17% of lead. Mine production of lead in the region was expected to increase by about 11% in 2009 compared with that of 2007, and mine production of zinc was expected to increase by about 5% during the same timeframe mostly owing to the ramping up of production at the San Cristobal Mine in Bolivia. In 2008, San Cristobal produced about 196,000 t of zinc compared with about 39,000 t in 2007 and 64,000 t of lead compared with about 11,000 t in 2007. Canada produced 716,000 t of zinc in 2008, although production during the first half of 2009 was about 1.2% lower than that during the first half of 2008. Canada was expected to increase mine output of zinc in 2011 significantly

compared with that expected in 2009 primarily owing to the expected ramping up of production at the Perseverance Mine (Xstrata started commercial mining at Perseverance in July 2008) and to the possible development of the Wolverine zinc deposit by Jinduicheng Molybdenum Group Ltd. and Northwest Nonferrous International Investment Company Ltd. of China (tables 4, 12, 19; López and Ferrufino, 2009, p. 63; Natural Resources Canada, 2009b; Panagapko, 2009b).

Peru was by far the leading mine producer of both lead and zinc in the region, but mine output of neither metal was expected to change significantly in the country in 2009 compared with that of 2007. In 2008, Peru produced 1.6 Mt of zinc contained in concentrate and about 345,000 t of lead contained in concentrate, but the country's leading mine producer of lead and second ranked mine producer of zinc, Volcan Compañía Minera S.A.A., decreased mine production of both metals during the first half of 2009 compared with that during the same period in 2008. Mine output of both lead and zinc in Peru was expected to increase significantly in 2011 compared with that expected in 2009, however, and was expected to account for at least the majority of the expected increases in the mine production of both metals in the region during this timeframe. Increased mine output of zinc in Peru (and the region) in 2011 was expected to come mainly from an expansion of copper and zinc production capacity at the Antamina Mine (tables 12, 19; Ministerio de Energía y Minas, 2009b, c).

Canada was the leading producer of refined lead in the region and by far the leading producer of refined zinc. In 2007, about 60% of the country's production of refined lead was secondary, and this was approximately the case in 2008 as well. In 2008, total production of refined lead in Canada was about 259,000 t, and production of secondary lead in the country during the first half of 2009 decreased about 8.9% compared with that during the same period in 2008. Production of primary lead during the first half of 2009 increased about 2.5% compared with that during the first half of 2008 owing to increased imports and processing of lead concentrates originating outside of the country. (Canada's mine output of lead decreased by approximately 30% during the same timeframe.) If Canada's imports of lead concentrates decrease during the second half of 2009 or if secondary production of refined lead (mostly from recycled batteries) does not increase to approximately the same level as during the second half of 2008, then actual production of refined lead in Canada will be significantly less than expected in 2009. Teck Cominco Ltd. owned the Trail smelter and refinery complex, which was the leading producer of primary refined lead and refined zinc in Canada in 2008 after temporarily shutting down during part of 2007 to complete major maintenance. In November 2008, Teck reduced production of refined zinc by about 5,000 metric tons per month at Trail in response to market conditions, and the cutback was expected to continue until at least May 2009; the company expected to produce about 270,000 t of refined zinc there during 2009. Teck did not similarly plan to reduce production of refined lead at Trail, and the company expected the facility to produce about 85,000 t of refined lead during 2009. Similar to steel in Canada, about 70% of zinc use in the country is by the automotive and construction sectors. Because the Government expected some

recovery in those sectors by the end of 2010, production of zinc (both contained in concentrate and refined) in Canada was expected to increase substantially in 2011 compared with the levels of production expected in 2009 (tables 13, 20; Natural Resources Canada, 2009b; Panagapko, 2009a, b; Teck Cominco Ltd., 2009, p. 6, 21-22).

Production of refined lead in Mexico was expected to decrease significantly in 2009 compared with that of 2007 primarily owing to a labor strike at the Met-Mex Peñoles metallurgical complex in Torreon, Mexico, during the first quarter of 2009. Industrias Peñoles, S.A. de C.V. was the leading producer of refined lead in Mexico. The strike ended on April 14 but resulted in substantially lower production by the company through almost all of the first half of 2009. Peñoles expected that demand for the company's production of refined metals (including lead) would continue to be strong in the company's main markets (including in Brazil, Chile, and Peru) through the end of 2009, in part because operations remained suspended into the second half of 2009 at La Oroya refinery in Peru (which had been a significant competitor with Peñoles in the South American markets for refined metals). If demand remains strong and Peñoles is able to avoid many further interruptions in production, then Mexico's production of refined lead was expected to recover to about the same level as in 2007 (table 13; Industrias Peñoles, S.A. de C.V., 2009).

Votorantim Metais Zinco S.A. (a subsidiary of Votorantim Participações S.A. of Brazil) was the leading producer of zinc (Zn content) in Latin America. The company acquired the Cajamarquilla zinc refinery in 2004 and about 25% of Milpo Minerals Company in 2005 in Peru; the company increased its ownership share of Milpo to 35% in 2008. Cajamarquilla was the leading producer of refined zinc and Milpo was the fourth ranked mine producer of zinc in Peru in 2007. Votorantim Metais Zinco expected to double the production capacity at Cajamarquilla to 320,000 t/yr of Zn content by the beginning of 2010. According to the Departamento Nacional de Produção Mineral, Brazil's production of zinc decreased significantly in 2008 compared with that of 2007 at least partially owing to decreased production by Votorantim Metais Zinco and to the closure of a mine by Prometalica Mineração Ltda. (Votorantim Participações S.A., 2008; [undated], p. 37; Departamento Nacional de Produção Mineral, 2009, p. 28; Ministerio de Energía y Minas, 2009c).

Nickel.—Canada was by far the leading producer of nickel in the region and accounted for about 11% of the world mine output of nickel in 2007. The Brazil-based company CVRD completed an acquisition of a 76% share in the Canada-based company Inco Ltd. in January 2007. CVRD Inco Ltd. was the new company name (in Canada), and it was changed to Vale Inco Ltd. in 2009. Despite significant decreases in global nickel prices and increasing inventories of nickel worldwide during the last 4 months of 2008 and the first half of 2009, production of nickel in Canada was not expected to decrease significantly compared with that of 2007 owing to the opening of the Podolsky Mine in 2008 and the planned opening of the Bucko Lake Mine in 2009. Additionally, continued production of nickel at a level similar to that of 2008 was expected at Vale Inco's Voisey's Bay nickel operation and at some other major

nickel mines in Canada that had completed projects in 2008 to at least maintain similar nickel production levels in 2009. The Lac des Iles, the Lockerby, the McWatters, and the Redstone nickel mines and the nickel-producing section of the Levack/McCreedy West Mine were closed in 2008, however, and the Copper Cliff South, the Craig, and the Thayer-Lindsay nickel mines were expected to be closed sometime in 2009. The greatest uncertainty concerning the expected level of nickel production in Canada in 2009 was caused by expected labor strikes at Vale Inco's nickel operations in Sudbury and Voisey's Bay during the second half of 2009. After 2009, however, Vale Inco planned to complete an expansion at the company's Clarabelle Mine and to complete development of the Totten Mine by sometime in 2011. Thus, annual production of nickel was expected to remain basically even in Canada from 2011 to 2015. Vale Inco also still planned to complete an eventual expansion of underground mining at Voisey's Bay by sometime in 2018 (Natural Resources Canada, 2009a; Vale S.A., 2009).

Platinum-Group Metals.—Only two countries, Canada and Colombia, produced platinum-group metals (PGM) in the Latin America and Canada region in 2007. Canada produced about 6% of the world's output of palladium and about 3% of the world's output of platinum. Canada supplied 100% of the reported mine production of palladium and about 79% of the region's estimated mine output of platinum. Canada's production came from the Lac des Iles open pit, which is located west of Thunder Bay in northern Ontario Province and was the only primary PGM mine, and two byproduct producers. The country's PGM production capacity was expected to increase substantially in 2009 with the planned development of an additional underground zone at the Lac des Iles Mine of North American Palladium Ltd. (tables 15, 16; Chevalier, 2006).

Tin.—Peru was the leading producer of tin (both contained in concentrate and refined metal) among the few countries in Latin America and Canada that produced tin, and it was expected that production in the country would be lower in 2009 compared with that of 2007. During the first 6 months of 2009, Peru produced about 18,486 t of tin contained in concentrate compared with 19,520 t during the first half of 2008. This decrease in production was apparently a result of decreased production by Minsur S.A. in response to market conditions. During the entire year of 2008, production of tin in concentrate in Peru was about the same as in 2007. According to the Central Bank of Peru, the average price of tin during the first half of 2009 was about 34% less than the average price during all of 2008. If these market conditions are applicable to tin producers in the other countries in the region and continue through the end of 2009, then it is highly uncertain whether production of tin (either contained in concentrate or as refined metal) will actually increase in most of those countries in the region in 2009 compared with that of 2007 (tables 17, 18; Ministerio de Energía y Minas, 2009a, p. 93; 2009b, c).

Industrial Minerals

Diamond.—Canada was by far the leading producer of diamond in the region; the world's fourth ranked diamond producer, by value, after Botswana, Russia, and Australia;

and the world's sixth ranked producer of natural diamond, by volume, after Russia, Botswana, Australia, Congo (Kinshasa), and South Africa. In 2007, Canada's diamond production was mainly from the Diavik Mine and the Ekati Mine, and new mines were opened in 2008 that were expected to help replace production as it decreases at Diavik and Ekati. De Beers Canada Inc. officially opened the company's Snap Lake underground mine, which is located 220 km northeast of Yellowknife in the Northwest Territories and was expected to have the capacity to produce 1.5 million carats per year as of July 25, 2008; the Victor open pit mine, which is located in James Bay, Ontario, and was expected to have the capacity to produce 600,000 carats per year as of July 26, 2008; and the Gahcho Kue project, which is located south of Lac de Gras and 300 km northeast of Yellowknife in the Northwest Territories, and was expected to begin production of about 3 million carats per year by sometime in 2014 (table 21; De Beers Canada Inc., 2007a, b; Perron, 2009).

Phosphate Rock.—In terms of phosphorus pentoxide, the region of Latin America and Canada was a small producer, accounting for only about 6% of the world's total. The leading producer in the region was Brazil; it was also the world's sixth ranked producer and accounted for about 4% of the world's output. Canada was the second ranked producer in the region and produced less than 1% of the world's total. Production in Brazil was expected to increase by more than 14% in 2013 compared with that of 2007. The three leading producers in Brazil were Bunge Brasil S.A., Copebrás of Grupo Anglo American, and Fosfertil and Ultrafertil S/A. Most of the production was in the States of Goiás, Minas Gerais, and São Paulo. Production of phosphate rock in Canada was expected to decrease from 2007 to 2015 owing to the lower grade of the ore that was being mined from Kapuskasing Mine in Ontario Province. CVRD won an international bid on March 16, 2005, to explore further the Bayovar phosphate deposit in Peru. The feasibility study to produce about 3.3 Mt/yr was expected to be completed in the second quarter of 2007, and production was to begin in 5 years. Under the terms of the concession, Peru could begin production in 2012. Also in 2007, phosphate rock production in Mexico amounted to about 14,000 t because of the reactivation of the Rofomex operation in San Juan de la Costa in the State of Baja California (tables 4, 22; Agrium Inc., 2007, p. 4; Departamento Nacional de Produção Mineral, 2007, p. 165-167; Companhia Vale do Rio Doce, 2008; Ministerio de Energía y Minas, 2009c; Servicio Geológico Mexicano, 2009, p. 441).

Potash.—Canada was by far the leading producer of potash in the region and Potash Corp. of Saskatchewan was one of the top three producers in the world. However, production in Canada was expected to decrease drastically in 2009 compared with that of 2007 (table 23).

Mineral Fuels and Related Materials

Coal.—In Latin America and Canada, Colombia was the leading producer of coal followed closely by Canada. Production in the region was expected to increase substantially in 2011 compared with that of 2007, and the majority of the increase was expected to come from Colombia's El Descanso

Mine, which was expected to produce about 25 Mt/yr, and from Venezuela's expansion of operations in Zulia State by 2010. Both the Colombian and the Venezuelan Governments proposed greater production-capacity expansions than those expected by coal industry analysts. Among the issues limiting the planned expansions, however, was the infrastructure necessary to bring the coal to the export markets, which were the destination for most of the coal produced in both countries. Chile's Isla Riesco coal deposit, which is located in Region XII, reported at least 1 billion metric tons of coal reserves, and production was expected to start by 2012 (table 24).

Natural Gas and Petroleum.—MERCOSUR has undergone dramatic changes in the natural gas and power markets owing to the increase in cross-border energy investment opportunities, domestic gas consumption, and regionalization of the energy sector. Brazil had become the center of an increasingly rapid process of energy integration in South America owing to the country's natural gas market, which was evolving rapidly with an unsatisfied energy demand and a great potential for growth (Petróleo Brasileiro S.A., 2008, p. 31; U.S. Energy Information Administration, 2008b).

During the first half of 2009, Chevron Corp. of the United States's operations in Venezuela's heavy oil belt continued under the Government's tax and ownership regime. Chevron remained in Venezuela, unlike other U.S. companies Exxon Mobil Corp. and ConocoPhillips Corp., which pulled out of the country after the Venezuelan Government took over as operator of their investments. Chevron's decision to stay in Venezuela was apparently driven by the need of the company to continue to have access to the country's vast crude oil and natural gas reserves. Chevron and other foreign oil companies had invested in many profitable heavy-oil projects in Venezuela for many years, but the company expected that the costs of further expansion of its operations in the country would be substantially more expensive (Gonzalez, 2009).

The Government of Venezuela proposed to encourage additional development of hydrocarbon resources, including increasing its production of crude petroleum to 5.8 million barrels per day by 2012 (subject to constraints set by the Organization of the Petroleum Exporting Countries), to build new crude oil refineries at Cabruta and Llanos de Barinas (Batalla de Santa Ines), and to build an asphalt plant at Caripito. The Government also proposed to increase marketable production of natural gas in Venezuela (for potential distribution to nearby markets), the proposed projects included the development of the offshore nonassociated natural gas resources in the Plataforma Deltana area, which is located south of Trinidad and Tobago in the Atlantic Ocean; and the development of natural gas resources in the Gulf of Venezuela and the State of Falcon (U.S. Energy Information Administration, 2008b; Daniel, 2009).

Production of crude petroleum in Suriname was expected to continue to increase. Staatsolie Maatschappij Suriname N.V.'s exploration strategy was driven by its objective to increase onshore crude production to 16,000 bbl/d by 2012. In 2007 and 2008, production of crude petroleum in Mexico continued to decrease gradually (Staatsolie Maatschappij Suriname N.V., 2008).

Uranium.—Canada was by far the leading producer of uranium in Latin America and Canada, and was also the world leader in uranium production. Brazil was the other producer in the region in 2007. Argentina, which had last produced uranium in 1995, announced plans to possibly resume uranium production by the end of 2010. Production of uranium was expected to increase in Canada with the opening of the Cigar Lake underground mine. Construction of the mine was expected to be completed by sometime in 2010 (table 25; Calvert, 2007; Cameco Corp., 2007).

Trade Review

Venezuela remained a leading supplier of crude oil and refined petroleum products to the United States, although the U.S. share as a direct destination for Venezuela's exports of crude petroleum and petroleum refinery products continued to gradually decrease (since 1996). China, however, continued to increase its share in consumption of the exports of crude petroleum and some petroleum refinery products from Venezuela. As part of the Government's proposal to increase natural gas production in Venezuela, it also proposed to construct the Center West Interconnection Project gas pipeline, the Gran Mariscal de Ayacucho industrial complex, and the Mariscal Sucre natural gas liquefaction plant (within the Gran Mariscal de Ayacucho industrial complex). If there is adequate production of natural gas from the Plataforma Deltana area and other proposed sources, it was expected that the earliest the country might be able to export liquefied natural gas (LNG) could be by sometime in 2013 (U.S. Energy Information Administration, 2008b).

It was expected that the LNG plant (located at Pampa Melchorita on the Pacific coast of Peru) would be operational by sometime in 2010 and that first exports of LNG from the associated marine terminal would commence sometime shortly thereafter. The plant was designed for the liquefaction of natural gas from the Camisea fields in Peru, and the LNG produced at the plant was expected to be exported to China, MERCOSUR, North America, and other markets and trading partners. Therefore, completion of the project to get the plant operational was expected to increase Peru's mineral exports substantially. Peru LNG S.R.L. announced that it expected to secure \$2.3 billion, or about 60% of the total project cost, which was estimated to be \$3.8 billion (Banco Central de Reserva del Perú, 2008; Camisea Project, 2008; Ministerio de Energía y Minas, 2008b; ProInversión—Private Investment Promotion Agency in Peru, 2008; Repsol YPF, S.A., 2009, p. 51, 78, 85-87).

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TABLE 1
THE AMERICAS: AREA AND POPULATION IN 2007¹

	Area (square kilometers)	Population (thousands)
North America:		
Canada	9,984,670	32,976
Mexico	1,964,375	105,281
United States	9,826,675	301,290
Total	21,775,720	439,547
Central America and the Caribbean:		
Antigua and Barbuda	443	85
Aruba	193	104
Bahamas, The	13,940	331
Barbados	431	255
Belize	22,966	304
Bermuda	53	64
Costa Rica	51,100	4,462
Cuba	110,860	11,257
Dominica	754	73
Dominican Republic	48,730	9,726
El Salvador	21,040	6,107
Grenada	344	106
Guadeloupe	1,780	453
Guatemala	108,890	13,348
Haiti	27,750	9,612
Honduras	112,090	7,104
Jamaica	10,991	2,676
Martinique	1,100	436
Montserrat	102	9
Netherlands Antilles	960	191
Nicaragua	129,494	5,605
Panama	78,200	3,341
Saint Kitts and Nevis	261	49
Saint Lucia	616	168
Saint Vincent and the Grenadines	389	109
Trinidad and Tobago	5,128	1,333
Other ²	16,385	4,150
Total	764,990	81,455
South America:		
Argentina	2,780,400	39,503
Bolivia	1,098,580	9,518
Brazil	8,514,875	190,120
Chile	756,950	16,595
Colombia	1,138,915	43,987
Ecuador	283,560	13,340
French Guiana	91,000	196
Guyana	214,970	764
Paraguay	406,750	6,120
Peru	1,285,215	28,508
Suriname	163,820	510
Uruguay	176,215	3,324
Venezuela	912,050	27,483
Total	17,823,300	379,969
Americas total	40,364,010	900,970
Share of world total	27	14
World total	148,940,000	6,612,040

¹Table includes data available as of May 1, 2008.

²Includes Anguilla, British Virgin Islands, Cayman Islands, Puerto Rico, Turks and Caicos Islands, and U.S. Virgin Islands.

Sources: U.S. Central Intelligence Agency, World Factbook 2007; World Bank, 2007 World Development Indicators database.

TABLE 2
THE AMERICAS: ECONOMY IN 2007^{1,2}

	Gross domestic product based on purchasing power parity		Real gross domestic product
	Total (million dollars)	Per capita (dollars)	growth rate (percentage)
North America:			
Canada	1,269,690	38,614	2.7
Mexico	1,486,302	14,120	3.2
United States	13,807,550	45,725	2.0
Total	16,564,000	XX	XX
Central America and the Caribbean:			
Antigua and Barbuda	1,527	18,353	6.1
Aruba	NA	NA	NA
Bahamas, The	8,310	24,961	2.8
Barbados	5,100	18,559	3.3
Belize	2,399	7,721	1.2
Bermuda	NA	NA	NA
Costa Rica	46,021	10,358	7.3
Cuba	NA	NA	NA
Dominica	687	9,582	1.5
Dominican Republic	71,228	8,116	8.5
El Salvador	41,687	5,847	4.7
Grenada	1,127	10,633	4.3
Guadeloupe	NA	NA	NA
Guatemala	62,580	4,702	5.7
Haiti	11,150	1,292	3.2
Honduras	30,676	4,085	6.3
Jamaica	20,650	7,688	1.2
Martinique	NA	NA	NA
Montserrat	NA	NA	NA
Netherlands Antilles	4,220	22,750	0.7
Nicaragua	15,912	2,629	3.8
Panama	34,605	10,351	11.5
Saint Kitts and Nevis	720	13,873	3.1
Saint Lucia	1,772	10,521	1.7
Saint Vincent and the Grenadines	1,043	9,759	6.6
Trinidad and Tobago	23,928	18,385	5.5
Other ³	NA	NA	NA
Total	385,000	XX	XX
South America:			
Argentina	524,140	13,318	8.7
Bolivia	40,140	4,084	4.6
Brazil	1,892,149	9,800	5.4
Chile	230,863	13,921	5.1
Colombia	378,624	7,968	7.7
Ecuador	99,430	7,242	2.5
French Guiana	NA	NA	NA
Guyana	2,924	3,841	5.3
Paraguay	27,207	4,510	6.4
Peru	219,196	7,809	8.9
Suriname	4,077	7,762	5.5
Uruguay	38,290	11,674	7.4
Venezuela	341,250	12,176	8.4
Total	3,798,000	XX	XX
Americas total	20,747,000	XX	XX
World total	65,440,000	XX	XX

NA Not available. XX Not applicable.

¹Table includes data available as of April 1, 2009.

²Gross domestic product (GDP) based on purchasing power parity. Totals are rounded to the nearest billion dollars.

³Includes Anguilla, British Virgin Islands, Cayman Islands, Puerto Rico, Turk and Caicos Islands, and U.S. Virgin Islands.

Source: International Monetary Fund, World Economic Outlook Database, October 2008.

TABLE 3
SELECTED SIGNIFICANT LATIN AMERICA AND CANADA EXPLORATION IN 2007¹

Location	Type ²	Site	Commodity	Company	Resource ³	Exploration ⁴
Brazil	E	Santa Fe/Ipora	Ni, Co	Int'l. Nickel Ventures Corp.	410,000 t Ni, 29,000 t Co	Extensive work program.
Canada	E	Central Mineral Belt	U	Crosshair Exploration & Mining Corp.	Data not released	Extensive drilling.
Do.	E	Contact Lake	Cu, Au	Alberta Star Development Corp.	Data not released	Do.
Do.	E	Copper Mountain	Cu	Copper Mountain Mining Corp.	841,000 t Cu	Do.
Do.	E	Darby	Diamond	Teck Cominco Ltd.	Data not released	Extensive work program.
Do.	E	Detour Lake	Au	Pelangio Mines Inc.	4.8 Moz Au	Extensive drilling.
Do.	F	Fort a La Corne/Star	Diamond	Shore Gold Inc.	158,000,000 t kimberlite	Do.
Do.	E	Ferguson Lake	Cu, Ni, Pd, Pt	Starfield Resources Inc.	80,000 t Cu, 58,000 t Ni, 411,000 oz Pd, 58,000 oz Pt	Do.
Do.	F	Fort a La Corne/Orion/Star	Diamond	Shore Gold Inc.	Data not released	Extensive work program.
Do.	F	Hope Bay	Au	Miramir Mining Corp.	3.7 Moz Au	Do.
Do.	E	Jubilee	Zn, Pb	Merrex Gold Inc.	120,000 t Zn, 27,000 t Pb	Extensive drilling.
Do.	E	Keno Hill	Au	Claude Resources Inc.	Data not released	Do.
Do.	E	Madsen	Au	do.	Data not released	Do.
Do.	E	Malartic	Au	Osisko Exploration Ltd.	8.4 Moz Au (inferred)	Do.
Do.	D	Marathon	Pd, Pt, Au, Cu, Ag	Marathon PGM Corp.	2.2 Moz Pt, 670,000 oz Pd, 240,000 oz Au, 240,000 t Cu, 4.5 Moz Ag	Do.
Do.	F	Meliadine West	Au	Comaplex Minerals Corp.	1.8 Moz Au	Do.
Do.	P	Minto	Cu, Au, Ag	Sherwood Copper Corp.	260,000 t Cu, 300,000 oz Au, 3.2 Moz Ag	Do.
Do.	E	Mt. Milligan	Cu, Au	Terrane Metals Corp.	700,000 t Cu, 4.3 Moz Au	Do.
Do.	D	Podolsky	Cu, Ni, PGE	FNX Mining Company Inc.	26,000 t Cu, 2,100 t Ni, 55,000 oz PGE	Do.
Do.	E	Prairie Creek	Pb, Zn, Ag, Cu	Canadian Zinc Corp.	580,000 t Pb, 620,000 t Zn, 30 Moz Ag, 19,000 t Cu	Do.
Do.	E	Rahill-Bonanza	Au	Goldcorp Inc.	Data not released	Do.
Do.	P	Seabee/Santoy	Au	Claude Resources Inc.	211,000 oz Au	Do.
Do.	E	Selwyn/Howard's Pass	Zn, Pb	Selwyn Resources Ltd.	4.2 Mt Zn, 1.5 Mt Pb	Do.
Do.	E	Storie	Mo	Columbia Yukon Explorations Inc.	68,000 t Mo	Do.
Do.	E	Turnagain	Ni, Co	Hard Creek Nickel Corp.	800,000 t Ni, 59,000 t Co	Do.
Do.	E	Upper Beaver	Au, Cu	Queenston Mining Inc.	Data not released	Do.
Do.	E	Westwood	Au	IAMGOLD Corp.	3.3 Moz Au	Do.
Do.	E	WO	Diamond	Peregrine Diamonds Ltd.	Data not released	Do.
Chile	E	Relincho	Cu, Mo	Global Copper Corp.	2.3 Moz Au, 115,000 t Mo	Do.
Do.	E	Volcan	Au	Andina Minerals Inc.	2.9 Moz Au	Do.
Colombia	F	Angostura	Au, Ag	Greystar Resources Ltd.	10 Moz Au, 53 Moz Ag	Do.
Dominican Republic	E	Pueblo Viejo	Au, Ag	Barrick Gold Corp.	2.1 Moz Au, 7.6 Moz Ag	Do.
Ecuador	F	Gaby	Au	International Minerals Corp.	Data not released	Do.
Guyana	E	Tassawini	Au	StrataGold Corp.	210,000 oz Au	Extensive work program.

See footnotes at end of table.

TABLE 3—Continued
SELECTED SIGNIFICANT LATIN AMERICA AND CANADA EXPLORATION IN 2007¹

Location	Type ²	Site	Commodity	Company	Resource ³	Exploration ⁴
Mexico	P	Bolivar	Cu, Zn	Dia Bras Exploration Inc.	16,600 t Cu, 18,600 t Zn	Extensive drilling.
Do.	E	Cusi	Ag, Au, Cu	do.	Data not released	Do.
Do.	E	Guadalupe	Ag, Au	Palmarejo Silver and Gold Corp.	3.8 Moz Ag, 49,000 oz Au	Do.
Do.	E	Juancipio	Ag, Au	Mag Silver Corp.	Data not released	Do.
Do.	F	El Limon/Morelos	Ag, Au, Zn, Pb	Teck Cominco Ltd.	Data not released	Do.
Do.	E	San Anton	Au, Ag, Cu	San Anton Resources Corp.	3.3 Moz Au, 108 Moz Ag, 250,000 t Cu	Do.
Do.	E	San Miguel	Au, Ag	Paramount Gold Resources Corp.	417,000 oz Au, 66.6 Moz Ag	Do.
Do.	E	Tres Marias	Zn, Ge	War Eagle Mining Co.	88,000 t Zn, 75 t Ge	Do.
Do.	E	Velardeña	Au, Ag	ECU Silver Mining Inc.	64,000 oz Au, 8 Moz Ag	Do.
Panama	F	Molejon (Petaquilla)	Au	Petaquilla Minerals Ltd.	910,000 oz Au	Do.
Peru	E	Antapaccay	Cu, Au, Mo	Xstrata plc.	2.7 Mt Cu, 1.7 Moz Au, 21.7 t Mo	Do.
Do.	E	Constancia	Cu, Ag, Mo	Norsemont Mining Inc.	370,000 t Cu, 9 Moz Ag, 9,100 t Mo	Do.
Do.	E	Galeno	Cu, Au, Ag, Mo	Northern Peru Copper Corp.	3.8 Mt Cu, 2.9 Moz Au, 66 Moz Ag, 110,000 t Mo	Do.
Do.	E	Las Bambas	Cu, Mo, Au	Xstrata Copper Corp.	5.8 Mt Cu, 110,000 t Mo, 1.8 Moz Au	Do.
Do.	F	Marcona	Cu	Chariot Resources Ltd.	2.5 Mt Cu	Do.
Do.	E	Pinaya	Au, Cu	Acero-Martin Exploration Inc.	500,000 oz Au, 122,000 t Cu	Do.
Do.	E	Pukaqaga	Cu, Au, Ag, Mo	Tiommin Resources Inc.	550,000 t Cu, 290,000 oz Au, 10,000 t Mo, 5.4 Moz Ag	Do.
Venezuela	E	Incredible 6	Au	Rusoro Mining Ltd.	1.6 Moz Au	Do.

¹ Abbreviations used in this table for commodities are as follows: Au, gold; Ag, silver; Co, cobalt; Cu, copper; Ge, germanium; Mo, molybdenum; Ni, nickel; Pb, lead; Pd, palladium; PGE, platinum-group elements; Pt, platinum; U, uranium; and Zn, zinc. Abbreviations used in this table for units of measurement are as follows: Moz, million troy ounces; Mt, million metric tons; oz, troy ounces; t, metric tons.

² D Approved for development; E Active exploration; F Feasibility work ongoing/completed; P Exploration at producing site.

³ Based on 2007 data reported from various sources; resource values reflect measured + indicated resources, unless otherwise reported. Data not verified by U.S. Geological Survey.

⁴ Significance of activity defined by either quantity of drilling or investment expenditure for exploration work program.

TABLE 4
LATIN AMERICA AND CANADA: PRODUCTION OF SELECTED MINERAL COMMODITIES IN 2007¹

(Thousand metric tons unless otherwise specified)

Country	Metals																	
	Aluminum		Copper,		Gold,		Iron and steel		Lead,		Nickel,		Silver,		Tin,		Zinc,	
	Bauxite	Metal, primary	mine output, Cu content	Au content (kilograms)	Iron ore, gross weight	Steel, crude	mine output, Pb content	mine output, Ni content	mine output, Ag content (metric tons)	mine output, Sn content (metric tons)	mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)	mine output, mine output, Zn content (metric tons)
Argentina	--	273 ^e	180	42,021	--	5,600 ^e	17	--	--	256	--	--	--	--	--	--	27,025	--
Bolivia	--	--	1	8,818	--	--	23	--	--	525	--	--	--	--	15,972	--	214,053	--
Brazil ^p	24,754	1,655	206	49,613	354,674	33,782	25	58	36	1,936	58	36	1,936	12,596	193,899	36,453	--	--
Chile	--	--	5,557	41,527	8,818	1,666 ^p	1	--	--	10	--	--	--	--	--	--	--	--
Colombia	--	--	4	15,482	624	1,260	--	100 ^e	--	--	--	--	--	--	--	--	--	--
Costa Rica	--	--	--	2,065 ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cuba	--	--	--	--	3	262	--	74	--	--	74	--	--	--	--	--	--	--
Dominican Republic	NA	--	--	--	--	60 ^e	--	47	--	--	47	--	--	--	--	--	--	--
Ecuador	--	--	--	3,186	--	87 ^e	--	--	--	--	--	--	--	--	--	--	--	--
El Salvador	--	--	--	--	--	72 ^e	--	--	--	--	--	--	--	--	--	--	--	--
French Guiana	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Guatemala	--	--	--	2,000 ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Guyana	2,249	--	--	7,068	--	349	(2)	--	--	88	--	--	88	--	--	--	--	--
Honduras ^e	--	--	(2)	7,412	--	--	12	--	--	50	--	--	50	--	--	38,000	--	--
Jamaica	14,568	--	--	4,100	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mexico	--	--	336	47,710	12,205	17,563	137	--	--	3,135	NA	2	3,135	39,019	1,444,354	452,012	--	
Nicaragua	--	--	--	2,059	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Panama ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Paraguay	--	--	--	--	--	132	--	--	--	--	--	--	--	--	--	--	--	--
Peru ^p	--	--	1,190	170,128	7,614	750 ^e	329	--	--	3,494	--	--	3,494	--	--	--	--	--
Suriname	4,924	--	--	9,362	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trinidad and Tobago	--	--	--	--	--	675	--	--	--	--	--	--	--	--	--	--	--	--
Uruguay	--	--	--	2,820	16	71 ^e	--	--	--	--	--	--	--	--	--	--	--	--
Venezuela	5,500	610 ^e	--	10,092	23,000 ^e	4,900 ^e	--	20 ^e	--	--	--	--	--	--	--	--	--	--
Other ³	--	--	--	5 ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	52,000	2,540	7,470	425,000	407,000	67,200	544	299	9,530	67,600	2,410,000	67,600	2,410,000	67,600	2,410,000	2,410,000	2,410,000	2,410,000
Share of world total	26%	7%	48%	18%	20%	5%	15%	13%	45%	22%	22%	22%	22%	22%	22%	22%	22%	22%
Canada ^p	--	3,083	596	102,377	32,774	15,718	75	255	862	862	630,485	862	630,485	862	630,485	630,485	630,485	630,485
Share of world total	--	8%	4%	4%	2%	1%	2%	11%	4%	4%	6%	4%	6%	4%	6%	6%	6%	6%
United States	NA	2,550	1,170	238,000	52,500	98,100	434	--	1,260	1,260	803,000	1,260	803,000	1,260	803,000	803,000	803,000	803,000
Share of world total	NA	7%	7%	10%	3%	7%	12%	--	6%	6%	7%	6%	7%	6%	7%	7%	7%	7%
Total Western Hemisphere	52,000	8,180	9,240	766,000	492,000	181,000	1,050	554	11,700	67,600	3,840,000	11,700	3,840,000	11,700	3,840,000	3,840,000	3,840,000	3,840,000
Share of world total	26%	21%	59%	33%	24%	13%	28%	24%	55%	22%	36%	55%	36%	22%	36%	36%	36%	36%
World total	200,000	38,100	15,700	2,360,000	2,040,000	1,350,000	3,750	2,260	21,200	301,000	10,800,000	21,200	10,800,000	21,200	10,800,000	10,800,000	10,800,000	10,800,000

See footnotes at end of table.

TABLE 4—Continued
LATIN AMERICA AND CANADA: PRODUCTION OF SELECTED MINERAL COMMODITIES IN 2007¹

(Thousand metric tons unless otherwise specified)

Country	Mineral fuels and related materials														
	Industrial minerals					Natural gas					Petroleum				
	Cement, hydraulic	Gypsum	Phosphate rock, P ₂ O ₅ content	Salt	Coal, all grades	Dry (million cubic meters)	Plant liquids (thousand 42-gallon barrels)	Crude, including condensate (thousand 42-gallon barrels)	Refinery products (thousand 42-gallon barrels)	42-gallon barrels	42-gallon barrels	42-gallon barrels	42-gallon barrels	42-gallon barrels	42-gallon barrels
Argentina	9,602	1,227	--	2,358	220	41,000 ^e	18,000 ^e	233,824	141,687						
Bolivia	1,739	4	--	45 ^e	--	14,301 ^p	4,800 ^e	15,027 ^p	11,617 ^p						
Brazil ^p	46,406	1,923	2,185	6,986	6,220 ^e	18,152	4,700	638,018	656,173						
Chile	4,440	773	4 ^e	4,404	288	2,015	3,500 ^e	931	82,208						
Colombia	11,068	200	7 ^e	514	69,902	6,600 ^e	2,600 ^e	193,949	115,437						
Costa Rica	1,400 ^e	--	--	NA ^e	--	--	--	--	4,930						
Cuba	1,805	--	--	142	--	1,218	--	18,734	5,484						
Dominican Republic	4,100	350 ^e	--	50 ^e	--	--	--	--	12,000 ^e						
Ecuador	4,420 ^e	-- ^e	--	75 ^e	--	295	299	186,669	52,223						
El Salvador	1,300 ^e	6 ^e	--	30 ^e	--	--	--	--	6,180 ^e						
French Guiana	62 ^e	--	--	--	--	--	--	--	--						
Guatemala	2,500 ^e	495	--	50 ^e	--	(2) ^e	--	5,500 ^e	--						
Guyana	--	--	--	--	--	--	--	--	--						
Honduras ^e	1,800	6	--	40	--	--	--	--	--						
Jamaica	592	228	--	19 ^e	--	--	--	--	305,256						
Mexico	40,670	6,919	14	8,856	11,887	36,654	144,175	1,124,930	479,207						
Nicaragua	530 ^e	30	--	30 ^e	--	--	--	--	5,200 ^e						
Panama ^e	1,050	--	--	18	--	--	--	--	--						
Paraguay	600 ^e	5 ^e	--	--	--	--	--	--	2,660 ^e						
Peru ^p	5,000	335	17	1,185	279	1,512	13,416	28,146	64,214						
Suriname	65 ^e	--	--	--	--	--	--	4,800	2,500						
Trinidad and Tobago	800 ^e	--	--	--	--	NA ^e	12,500	43,600	56,100						
Uruguay	1,050 ^e	1,150 ^e	--	--	--	--	--	--	15,300 ^e						
Venezuela	11,000 ^e	7 ^e	115 ^e	350 ^e	7,457	28,500 ^e	78,500 ^e	920,000	433,570						
Other ³	1,034	--	--	1,327	--	12 ^e	--	303	146,800						
Total	153,000	13,700	2,340	26,500	96,300	150,000	282,000	3,410,000	2,600,000						
Share of world total	5%	8%	5%	11%	2%	5%	11%	13%	9%						
Canada ^p	14,462	7,562	250 ^e	11,862	69,363	167,195	64,700	954,000	728,500						
Share of world total	1%	4%	1%	5%	1%	6%	3%	3%	2%						
United States	96,900	17,900	8,480	44,500	1,040,000	367,000	648,000	1,850,000	6,570,000						
Share of world total	3%	10%	17%	3%	16%	13%	25%	7%	22%						
Total Western Hemisphere	264,000	39,100	11,100	82,900	1,200,000	685,000	995,000	6,220,000	9,900,000						
Share of world total	9%	23%	22%	38%	19%	25%	39%	23%	33%						
World total	2,790,000	173,000	50,000	251,000	6,320,000	2,760,000	2,570,000	27,300,000	29,800,000						

See footnotes at end of table.

TABLE 4—Continued
LATIN AMERICA AND CANADA: PRODUCTION OF SELECTED MINERAL COMMODITIES IN 2007¹

⁶Estimated; estimated data, U.S. data, and world totals are rounded to no more than three significant digits. ⁹Preliminary. NA Not available. -- Zero or zero percent.

¹Totals may not add due to independent rounding. Percentages are calculated on unrounded data. Table includes data available as of June 4, 2009.

²Less than 1/2 unit.

³Includes Aruba, Barbados, Belize, Guadeloupe, Haiti, Martinique, and the Netherlands Antilles.

TABLE 5
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED BAUXITE MINE PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Brazil	10,200	13,800	22,100	24,754	25,000	29,500	30,000	32,000
Dominican Republic	--	--	535 ¹	--	--	--	--	--
Guyana	2,028	2,471	1,694	2,249	4,000	4,000	4,000	4,000
Jamaica	10,900	11,100	14,116	14,568	9,500	15,600	15,600	15,600
Suriname	3,530	3,610	4,757	4,924	5,500	3,500	2,000	2,000
Venezuela	5,020	4,360	5,900	5,500	6,000	6,000	6,000	6,000
Total	32,000	35,000	49,000	52,000	50,000	59,000	58,000	60,000

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

¹Sales from stockpiles.

TABLE 6
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY ALUMINUM PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Argentina	196	278	270	273	350	400	410	410
Brazil	1,272	1,490	1,749	1,910	1,800	3,800	4,350	4,500
Canada	2,170	2,518	2,942	3,133	3,000	3,500	4,000	4,000
Mexico	139	348	574	600	600	700	700	700
Suriname	28	--	--	--	--	--	--	--
Venezuela	630	571	615	610	600	600	1,080	1,100
Total	4,400	5,200	6,200	6,500	6,400	9,000	11,000	11,000

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 7
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 1995-2015

(Cu content in thousand metric tons)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Argentina	--	145	187	180	200	350	350	350
Brazil	49	32	133	206	210	410	420	450
Canada	726	634	595	596	520	670	700	700
Colombia	2	2	1	4	4	4	4	4
Chile	2,489	4,602	5,321	5,557	5,300	5,700	5,900	6,100
Mexico	335	365	429	336	250	300	330	330
Peru	444	554	1,010	1,190	1,200	1,200	1,300	1,300
Other	1	1	1	1	1	1	1	1
Total	4,000	6,300	7,700	8,100	7,700	8,600	9,000	9,200

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

TABLE 8
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED REFINED COPPER PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Argentina ¹	16	16	16	16	16	16	16	16
Brazil	219	233	224	242	230	310	350	450
Canada	614	613	515	453	400	610	650	650
Chile ²	1,492	2,668	2,824	2,937	3,300	3,300	3,400	3,400
Mexico	212	411	416	352	300	330	350	400
Peru ²	444	452	512	414	440	510	540	550
Total	3,000	4,400	4,500	4,400	4,700	5,100	5,300	5,500

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

¹Secondary only.

²Primary only.

TABLE 9
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 1995-2015

(Au content in kilograms)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Argentina	837	26,000	27,904	42,021	60,000	60,000	60,000	60,000
Belize	5	7	(1)	5	100	500	500	500
Bolivia	14,400	12,001	8,871	8,818	8,200	7,800	7,400	7,000
Brazil	63,300	50,400	38,293	49,613	50,000	50,500	51,000	51,000
Canada	152,000	156,200	120,541	102,377	110,000	135,000	135,000	135,000
Chile	44,585	54,143	40,447	41,527	40,000	40,000	45,000	58,000
Colombia	21,100	37,000	35,783	15,482	35,000	35,000	35,000	35,000
Costa Rica	400	50	424	2,065	50	1,000	2,500	2,500
Cuba	184	1,000	--	--	--	--	--	--
Dominican Republic	3,280	--	--	--	--	--	20,000	20,000
Ecuador	7,410	2,870	5,338	3,186	5,000	7,500	8,000	9,000
French Guiana	3,000	3,492	1,955	2,000	2,000	2,000	2,000	2,000
Guatemala	30	140	741	7,068	8,000	8,400	8,000	7,000
Guyana	9,005	13,510	8,325	7,412	7,500	7,500	7,500	7,500
Honduras	111	878	4,438	4,100	2,600	1,000	1,000	1,000
Jamaica	--	--	--	--	--	--	--	--
Mexico	20,300	26,400	30,356	47,710	49,700	55,000	65,000	65,000
Nicaragua	1,320	3,670	3,674	2,059	2,200	2,200	2,000	2,000
Panama	1,100	--	--	--	--	1,500	2,000	2,000
Peru	56,000	139,000	208,002	170,128	200,000	220,000	220,000	220,000
Suriname	300	300	10,619	9,362	10,000	10,000	10,000	10,000
Uruguay	900	2,180	3,151	2,820	3,000	3,500	3,500	3,500
Venezuela	7,260	7,330	10,480	10,092	13,000	30,000	35,000	35,000
Total	407,000	537,000	559,000	528,000	606,000	678,000	720,000	733,000

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

¹Less than 1/2 unit.

TABLE 10
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED IRON ORE PRODUCTION, 1995-2015¹

(Fe content in thousand metric tons)

Country	Iron content	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	68%	--	--	--	--	30	300	500	500
Bolivia	65%	--	--	--	--	--	--	--	1,000
Brazil	66%	113,000	141,000	186,891	235,504	200,000	240,000	240,000	240,000
Canada	64%	24,600	22,700	19,333	20,600	20,000	28,000	30,000	30,000
Chile	61%	5,200	5,400	4,707	5,379	5,500	6,000	6,000	6,000
Colombia	55%	300	363	325	250	360	370	380	380
Guatemala	65%	1	10	--	--	--	--	--	--
Mexico	60%	5,630	6,800	7,012	7,323	6,500	7,000	7,000	7,000
Peru	68%	3,950	2,810	4,565	5,104	5,200	5,200	5,500	5,500
Uruguay	50%	3	4	12	15	16	16	16	16
Venezuela	65%	12,600	11,100	13,000	15,200	15,000	15,000	15,000	15,000
Total	XX	165,000	190,000	236,000	289,000	253,000	302,000	304,000	305,000

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

XX Not applicable.

¹Includes beneficiated and direct-shipping ore.

TABLE 11
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED CRUDE STEEL PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	3,620	4,470	5,386	5,600	4,600	5,700	5,800	5,800
Brazil	25,100	27,900	31,631	33,782	26,500	39,000	39,500	39,500
Canada	14,400	15,900	15,327	15,718	12,000	20,000	20,000	20,000
Chile	1,010	1,350	1,537	1,666	1,200	1,600	1,700	1,700
Colombia	792	660	842	1,260	1,300	1,300	1,300	1,300
Cuba	207	327	245	262	250	270	270	270
Dominican Republic	--	36	60	60	60	60	60	60
Ecuador	35	58	84	87	90	90	90	90
El Salvador	28	41	48	72	50	80	80	80
Guatemala	NA	166	207	349	200	300	350	350
Jamaica	25	--	--	--	--	--	--	--
Mexico	12,100	15,600	16,202	17,563	15,800	17,000	17,500	19,200
Paraguay	96	77	101	132	80	135	135	135
Peru	515 ¹	749	750	750	600	750	750	750
Trinidad and Tobago	738	753	711	675	450	700	700	700
Uruguay	40	38	64	71	60	75	75	75
Venezuela	3,630	3,840	4,907	4,900	4,600	5,500	6,000	6,000
Total	62,300	72,000	78,100	82,900	68,000	93,000	94,000	96,000

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. NA Not available.

-- Negligible or no production.

¹Ingots and castings.

TABLE 12
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED LEAD MINE PRODUCTION, 1995-2015

(Pb content in thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^c	2013 ^c	2015 ^c
Argentina	11	14	11	17	17	18	18	18
Bolivia	20	10	11	23	85	95	93	90
Brazil	12	9	24	25	25	28	29	29
Canada	211	149	79	75	70	90	90	90
Chile	1	1	1	1	1	2	3	3
Colombia	(1)	(1)	--	--	--	--	--	--
Ecuador	(1)	(1)	--	--	--	--	--	--
Honduras	3	5	10	12	10	9	9	9
Mexico	164	138	134	137	150	140	150	150
Peru	238	271	319	329	330	375	375	375
Total	660	600	590	620	690	760	770	760

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

¹Less than 1/2 unit.

TABLE 13
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PRIMARY AND SECONDARY REFINED LEAD PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^c	2013 ^c	2015 ^c
Argentina	29	36	46	61	63	63	63	63
Brazil	79	50	105	142	152	157	157	157
Canada	281	284	230	237	260	270	270	270
Colombia	8	12	12	10	10	10	10	10
Mexico	176	253	214	200	180	200	220	220
Peru	221	116	122	117	90	125	125	125
Venezuela ^e	16	30	30	30	30	30	30	30
Total	810	780	760	800	780	850	870	870

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

TABLE 14
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED NICKEL MINE PRODUCTION, 1995-2015

(Ni content in metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^c	2013 ^c	2015 ^c
Brazil	29,100	45,300	74,198	58,317	60,000	75,000	75,000	75,000
Canada	182,000	191,000	199,932	254,915	250,000	260,000	260,000	260,000
Colombia	24,200	59,000	89,000	99,500	85,000	90,000	90,000	90,000
Cuba	41,000	68,100	73,753	73,934	78,000	87,000	90,000	96,000
Dominican Republic	46,500	39,900	53,124	47,125	30,000	30,000	30,000	30,000
Venezuela	--	2,540	20,000	20,000	17,000	22,000	22,000	22,000
Total	323,000	406,000	510,000	554,000	520,000	560,000	570,000	570,000

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

TABLE 15
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PLATINUM MINE PRODUCTION, 1995-2015

(Pt content in kilograms)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Canada	7,000	5,700	6,075	5,800	8,000	9,000	9,000	9,000
Colombia	973	339	1,082	1,526	1,400	1,700	1,700	1,700
Total	8,000	6,000	7,200	7,300	9,400	11,000	11,000	11,000

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

TABLE 16
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PALLADIUM MINE PRODUCTION, 1995-2015

(Pd content in kilograms)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Canada	8,900	10,400	10,400	10,200	15,000	15,000	15,000	15,000

^cEstimated; estimated data are rounded to no more than three significant digits.

TABLE 17
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED TIN MINE PRODUCTION, 1995-2015

(Sn content in metric tons)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Bolivia	14,733	12,293	18,640	15,972	17,000	17,000	17,000	17,000
Brazil	17,316	14,200	11,739	12,596	13,000	13,500	13,500	13,500
Peru	22,331	70,901	42,145	39,019	38,500	41,000	41,000	41,000
Other	1	4	1	1	1	1	1	1
Total	54,400	97,400	72,500	67,600	68,500	71,500	71,500	71,500

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

TABLE 18
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED TIN METAL PRODUCTION, 1995-2015

(Metric tons)

Country	1995	2000	2005	2007	2009 ^c	2011 ^c	2013 ^c	2015 ^c
Argentina	--	--	120	120	120	120	120	120
Brazil	17,039	14,023	9,236	10,237	10,300	10,400	10,400	10,400
Bolivia	17,664	9,353	13,841	12,251	12,500	14,000	14,000	14,000
Mexico	770	1,200	17	19	19	19	19	19
Peru	22,262	37,410	36,733	36,004	35,500	36,500	36,500	36,500
Total	57,700	62,000	59,900	58,600	58,000	61,000	61,000	61,000

^cEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

TABLE 19
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED ZINC MINE PRODUCTION, 1995-2015

(Zn content in thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	32	35	30	27	31	40	40	40
Bolivia	146	151	160	214	400	350	330	300
Brazil	189	100	171	194	170	195	195	195
Canada	1,120	1,000	667	630	700	800	800	800
Chile	35	31	29	36	20	20	35	35
Colombia	--	40	--	--	--	--	--	--
Ecuador	(1)	(1)	--	--	--	--	--	--
Honduras	27	31	43	38	30	32	30	30
Mexico	364	393	456	452	380	425	455	475
Peru	692	910	1,202	1,444	1,450	1,600	1,600	1,600
Total	2,610	2,690	2,760	3,040	3,200	3,500	3,500	3,500

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

¹Less than 1/2 unit.

TABLE 20
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED ZINC METAL PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	36	39	40	46	36	48	48	48
Brazil	206	199	267	265	220	300	300	300
Canada ¹	720	780	724	802	700	850	850	850
Mexico ¹	223	235	327	322	280	320	350	350
Peru ¹	159	200	164	162	170	200	200	200
Total	1,300	1,500	1,500	1,600	1,400	1,700	1,700	1,700

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

¹Primary only.

TABLE 21
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED DIAMOND MINE PRODUCTION, 1995-2015

(Thousand carats)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Brazil	1,280	1,600	208	182	300	300	300	300
Canada	--	2,530	12,314	17,144	10,000	16,000	16,000	16,000
Guyana	52	82	357	269	300	350	350	350
Venezuela	296	110	115	115	120	120	120	120
Total	1,600	4,300	13,000	17,700	10,700	16,800	16,800	16,800

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

TABLE 22
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PHOSPHATE ROCK PRODUCTION, 1995-2015

(P₂O₅ content in thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Brazil	1,360	1,690	2,005	2,185	2,200	2,500	2,500	2,500
Canada ¹	--	125	325	250	200	200	200	--
Chile	3	4	3	4	4	4	4	4
Colombia	10	8	8	7	9	10	10	10
Mexico	187	316	(2)	14	14	14	14	14
Peru	89	6	14	17	18	18	18	18
Venezuela	23	105	110	115	100	100	100	100
Total	1,700	2,300	2,500	2,600	2,500	2,800	2,800	2,600

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

¹Sources: Natural Resources Canada and Jasinski, S.M., 2008, Phosphate rock, *in* Metals and minerals: U.S. Geological Survey Minerals Yearbook 2007, v. I, p. 56.1-56.11.

²Less than 1/2 unit.

TABLE 23
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED POTASH PRODUCTION, 1995-2015

(K₂O content of marketable mine production in thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	--	--	--	--	--	--	--	--
Brazil	215	352	405	471	475	500	550	550
Canada	9,066	9,202	10,140	11,085	4,000	12,000	12,000	12,000
Chile	506	481	547	515	600	600	600	600
Total	9,800	10,000	11,100	12,100	5,100	13,100	13,200	13,200

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown. -- Negligible or no production.

TABLE 24
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED SALABLE COAL PRODUCTION, 1995-2015

(Thousand metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	305	246	320	220	400	600	800	800
Brazil	2,780	6,000	6,480	6,220	6,500	6,500	6,500	6,500
Canada ¹	75,000	69,200	67,555	69,363	65,000	75,000	75,000	75,000
Chile	1,490	509	732	288	500	700	1,000	1,500
Colombia	26,000	38,200	59,064	69,902	75,000	100,000	100,000	100,000
Mexico ¹	11,200	14,300	11,750	11,887	10,600	11,000	12,000	12,000
Peru ¹	80	27	22	279	300	300	300	300
Venezuela	4,260	7,910	7,195	7,457	8,000	10,000	12,000	12,000
Total	121,000	136,000	153,000	166,000	166,000	205,000	210,000	210,000

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

¹Run of mine.

TABLE 25
 LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED URANIUM PRODUCTION, 1995-2015

(U₃O₈ content in metric tons)

Country	1995	2000	2005	2007	2009 ^e	2011 ^e	2013 ^e	2015 ^e
Argentina	68	--	--	--	--	--	--	--
Brazil ¹	--	20	129	130	200	300	300	300
Canada	12,400	12,600	12,597	9,100	10,000	18,000	18,000	18,000
Total	12,500	12,600	12,700	9,200	10,200	18,000	18,000	18,000

^eEstimated; estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

-- Negligible or no production.

¹Source: Anuário Mineral Brasileiro 2002-2007.