

THE MINERAL INDUSTRIES OF LATIN AMERICA AND CANADA¹

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INTRODUCTION

Canada and several Latin American countries are endowed with a great diversity of mineral resources that comprise ferrous and nonferrous metals, a wide variety of industrial minerals, and all forms of fossil fuels. For several of these countries, the prospecting, exploring, mining, processing, and marketing of their mineral commodities play significant roles in supporting their economies; in many instances, earning export revenues and gaining foreign exchange reserves; and offering business opportunities through privatization of state-owned assets, direct acquisitions made by foreign and domestic investors, joint-venture projects (investment in equity), and debt flows (credits).

For 2000, the most important mineral commodities produced in Latin America, Canada, and the United States are listed in table 1; the percentage of world mineral production by Latin America is shown in table 2; the significant flows of foreign direct investments (FDI) to mineral-producing countries in Latin America and the Caribbean and domestic, world, and U.S. investments and joint ventures in their respective mineral industries are listed in table 3; and the selected significant Latin American and Canadian exploration sites are listed in tables 4 and 5.

In the Western Hemisphere, the abundant and varied mineral endowment of Latin America and Canada complement the mineral resources of the United States. Interest and investment flows continued to many of these countries in spite of the recessionary cycle and slow economic recovery and lower prices for Latin America's major mineral exports as discussed in the ensuing country chapters.

Position in the World Mineral Economy²

In 2000, Latin America produced 43% of the world's copper, 41% of tin, 39% of silver, and 26% of bauxite; it also produced 24% of iron ore, 19% of zinc, 17% of nickel, 15% of gold, and 14% of lead (table 2). Latin America and Canada produced 48% of the world's copper, 45% of silver, and 32% of nickel, as well as 30% of zinc, 27% of iron ore, 21% of gold, 19% of lead and primary aluminum each, 18% of salt, and 15% of crude oil (table 1). Moreover, Latin America and Canada, separately and together, were of great significance to the global economy as producers of metals and steel, crude oil and natural gas, petroleum refinery products, and coal, significant amounts of which were exported.

¹Based on information available as of December 31, 2001.

²Unless otherwise noted, all listings of mineral commodities or countries for enumerative or comparative purposes are listed in order of importance on the basis of volumes produced, exported, or imported.

Canada led the world in the production of uranium, and with Peru were the third largest producers of zinc after China and Australia (Plachy, 2001). Canada had a strong showing in output of gold, nickel, and silver. Chile led the world in the production of copper, and Mexico led the world in the production of silver and strontium. Peru was second in world production of silver after Mexico. Brazil led in output of columbium (niobium) and, although not the largest producer of iron ore, has been the leading exporter in recent years as well as sixth largest steel producer in the world. In the Western Hemisphere, Brazil, Canada, and Mexico were second, third, and fourth largest producers of steel after the United States (table 1). Brazil was also the sixth ranking source of manganese in the world followed by Mexico in Latin America (Jones, 2001). After Russia, Canada was the second largest world nickel producer with other significant production in the hemisphere by Cuba, Colombia, Brazil, and the Dominican Republic (Kuck, 2001). Brazil and Jamaica were the world's third and fourth largest producers of bauxite after Australia and Guinea (Plunkert, 2001).

The inclusion of the United States in table 1 shows the position of the entire Western Hemisphere in the world supply of mineral commodities. This Hemisphere produced 59% of the world's copper; 57% of silver; 39% of zinc; 34% each of aluminum, gold, and lead; 33% of iron ore; and 32% of nickel. Among the industrial minerals, the Western Hemisphere produced 42% of the world's gypsum, 41% of sulfur, 39% of salt, and 33% of phosphate rock. Of the mineral fuels, this Hemisphere produced 38% of the world's output of natural gas, 27% of crude oil and coal each; farther in the processing stream, it produced 35% of refined petroleum products.

Production Trends

Nonfuel Minerals.—For Latin America, the most significant production in terms of share of world output included copper, tin, silver, bauxite, iron ore, zinc, nickel, gold, lead, and primary aluminum, as listed in table 2. During the past 10 years, investments in prospecting, exploration, and development have taken various new discoveries of such minerals as bauxite, copper, iron ore, nickel, silver, and tin to the point of production. Expansions and new mines had come on-stream and increased Latin America's world position in the production of those minerals.

Latin America's world share of output of silver, tin, nickel, and gold has increased, and conspicuous effort has been exerted to find and produce diamond, copper, and gold. In particular, gold has been the center of attention in the Guyana Shield of Guyana and Venezuela as well as in most of the Andean

countries, and diamond, in Canada. The bauxite industry has been the object of increased interest in Brazil and Venezuela for domestic aluminum production. Jamaica continued exporting most of its bauxite production.

Energy Minerals.—The world share of Latin American production of crude oil decreased to 12% from 14% in 1999, and resultant derivatives of petroleum (products) increased to 8% from 7% in 1995. Natural gas production increased to 8% from 5% in 1995 after fluctuating unevenly since 1985. Output of crude oil reached new peaks in Brazil, Ecuador, Mexico, and Venezuela. The top producers were, in order of importance, Venezuela, Mexico, Brazil, Argentina, Colombia, Ecuador, and Trinidad and Tobago and represented 97.7% of the regional total. Venezuela, Mexico, Argentina, Bolivia, Trinidad and Tobago, Brazil, and Colombia, in order of importance, also reached new peaks in the production of natural gas by volume (tables 1, 2).

In the Western Hemisphere, Canada, Latin America, and the United States have reached new highs in the production of crude oil (27%) and natural gas (38%). Brazil, Mexico, Venezuela, and Argentina, in order of importance, led Latin American production of refinery derivatives, and, with Canada and the United States, the region achieved a world share of 35% (table 1).

In Latin America, coal output was led by Colombia, Mexico, Venezuela, and Brazil (table 1). Products were generally competitive in world markets and increased local and regional market shares during the past 10 to 20 years. Depending upon the country, anthracite, semianthracite, bituminous, and subbituminous, plus some lignites (used locally in most cases), were mined. Latin American coals are suitable for metallurgical and thermal use, as are Canadian and U.S. coals. The Western Hemisphere coal output amounted to a 27% world share (table 1).

Trade Liberalization Developments

Canada, Mexico, and the United States, which are members of the North American Free Trade Agreement (NAFTA), constituted the largest and richest trading bloc in the world—412 million consumers and about \$11.7 trillion of gross domestic product (GDP) as purchasing power parity, and the Mercado Común del Cono Sur (Mercosur), which included Argentina, Brazil, Paraguay, and Uruguay, plus Bolivia and Chile as associated members, had almost 245 million consumers and an economy worth about \$1.8 trillion (U.S. Central Intelligence Agency, 2001).

The excellent infrastructural networks, which included telecommunications, railroads, highways, and pipelines to Mexico through the United States from Canada, were a significant factor in the marketing of mineral commodities. Mercosur's shares of the total trade with the major economic blocks were 59% within the European Union, 42% within NAFTA, and 25% within Mercosur. For other Latin American nations, Chile in particular, joining NAFTA would provide greater freedom of mineral trade and, ultimately, greater efficiencies of production. Canada and Chile signed a bilateral trade pact on November 19, 1996. Since 1996, Canadian FDI has increased noticeably in Chile (table 3).

During the past 30 or more years, the Latin American countries have entered trade agreements among themselves. Examples include Chile's bilateral Free Trade Agreement with Mexico, the Venezuelan-Colombian agreement with the Central American Common Market, Venezuela's agreement with Chile to begin phasing out tariffs within a 6-year period, and a free trade pact among Colombia, Mexico, and Venezuela to phase out tariffs. The Chile-Colombia agreement eliminated tariffs entirely by the end of 2000. In 1993, Argentina and the United States signed a bilateral investment treaty whereby investors received most-favored-nation treatment, a guarantee of free transfer of profits, and access to international arbitration.

The Brazilian Government indicated that Mercosur made progress in trade talks with Mexico, the Pacto Andino (Colombia, Ecuador, Peru, and Venezuela), and South Africa. The private sector continued favoring strong ties with Mercosur, although trade liberalization was proceeding at a slow pace. The expansion of Mercosur has been a strategic objective of Brazil in the planned talks towards a Free Trade Area of the Americas (FTAA). Repeated efforts during the past 5 years between Mercosur and the Pacto Andino to create a larger South American Free Trade Area (SAFTA) have not produced any visible results. NAFTA and SAFTA at the regional levels and FTAA in the Western Hemisphere as trade blocs would enhance world trade relations and bring benefits to all parties involved.

Investment opportunities for U.S. and foreign companies have increased because of the liberalization of the Andean Pact and the Mercosur countries' economies and the privatization of many Latin American mineral, oil and gas, utilities, and infrastructure sectors. In the mineral industries, 100% of equity ownership was allowed by means of privatization or by direct acquisition, profits were allowed to be expatriated, and, more importantly, restrictions on foreign investments were removed. Between 1999 and 2000, Latin America's FDI decreased by more than 20% to about \$74.2 billion from \$93 billion compared with the increase in Asia's net inflow of FDI to \$100 billion from \$76.3 billion. That region's considerable FDI increase was attributed to the attractiveness of the People's Republic of China to investors, who invested \$39 billion in 2000, which was about the region's average of FDI in the past 5 years (Economic Commission for Latin America and the Caribbean, April 18, 2001, Regional overview of foreign investment in Latin America and the Caribbean—2000 report, accessed October 22, 2001, at URL <http://www.eclac.cl/cgi-bin/getProd.asp?xml=publicaciones/xml/0/6540/P6540.xml&xsl=ddpeuiee/tpl-i/p9f.xsl&base=\tpl-i\top-bottom.xsl>).

In 2000, Brazil had record inflows of capital, which included investments on significant joint-venture projects (mergers in the private sector) and direct acquisitions via privatization of state-owned assets. The United Nation's Economic Commission for Latin America and the Caribbean reported that the country received \$30.3 billion, or 45.1% of FDI, followed by Mexico, \$13 billion, or 19.3%; Argentina, \$12 billion, or 17.8%; Venezuela, \$4.1 billion, or 6.1%; and Chile, \$3.7 billion, or 5.5%. It continued to be the second most popular emerging market after China for foreign investments (Economic Commission for Latin America and the Caribbean, April 18, 2001, Regional overview of foreign investment in Latin

America and the Caribbean—2000 report, April 18, 2001, accessed October 22, 2001, at URL <http://www.eclac.cl/cgi-bin/getProd.asp?xml=publicaciones/xml/0/6540/P6540.xml&xsl=ddpeuiee/tpl-i/p9f.xsl&base=\tpl-i\top-bottom.xml>).

Between 1999 and 2000, Brazil sold 12 state-owned companies to the private sector and realized about \$8 billion and 48 privately owned firms mainly in the mining, oil and gas, electricity, and telecommunication sectors through its privatization program and about \$29.2 billion through its mergers and acquisitions (Economic Commission for Latin America and the Caribbean, April 18, 2001, Regional overview of foreign investment in Latin America and the Caribbean—2000 report, accessed October 22, 2001, at URL <http://www.eclac.cl/cgi-bin/getProd.asp?xml=publicaciones/xml/0/6540/P6540.xml&xsl=ddpeuiee/tpl-i/p9f.xsl&base=\tpl-i\top-bottom.xml>).

In 2000, some countries of Latin America received the following total and mineral direct investments: Argentina, \$30.9 billion and \$15.4 billion; Brazil, \$35.9 billion and \$1.8 billion; Peru, \$6.2 billion and \$1.7 billion; Chile, \$14.9 billion and \$1.6 billion; and Ecuador, \$859 million and \$356 million, respectively. The following countries received mostly mineral FDI's: Trinidad and Tobago, \$1.0 billion; Suriname, \$700 million; Bolivia, \$695 million; and Uruguay, \$27 million (table 3).

Privatization and Investment Interest

Latin America's economic growth was characterized by privatization, joint-venture projects, direct acquisitions, and reduced trade barriers. Privatization and FDI have been changing the industrial operating mode to a privately owned/State-regulated regime from a State-owned/State-operated regime. The establishment of joint ventures, such as in construction and management of infrastructure, energy and mining projects, and deregulated industries (electricity, gas, telecommunications), was a common practice in the region. Foreign investors have been attracted to Latin America's open-market economies. These changes and the growing awareness of environmental protection were leading to the establishment of increasingly effective environmental regulations and controls (EERCs) for all Latin American industries. With respect to environmental, geologic, economic, and social impacts in the region, the implementation of EERCs, however, will require further consideration of many factors to find a balance between sustainable industrial profitability and environmental protection.

Governments of the region recognize that privatization and acceptance of foreign investment foster vigorous growth, not least in the mining industry, and lead to enhanced revenues and, for many countries, expanded overall economic strength in labor, wages, and social welfare.

The lure of rights to private ownership in Latin American countries, such as Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Mexico, Peru, Suriname, Trinidad and Tobago, and Venezuela, attracted great interest in the mineral endowment of those countries. Seeking sources of hard currency for its economy, Cuba has increasingly allowed foreign companies to participate in prospecting and exploring, producing, and refining of metals and crude oil.

Among the most popular geologic exploration targets continued to be the Cordillera and the Guyana Shield. The Cordillera extends southward through Mexico and Central America to the Andes of South America virtually to Tierra del Fuego, and the Guyana Shield comprises northwestern Brazil, southeastern Venezuela, French Guiana, Guyana, and Suriname.

Venezuela promoted foreign exploration for metals, particularly gold, and encouraged joint efforts in petroleum operations. Venezuela's major gold project Las Cristinas, which is in the "Kilometro 88" area on Highway 10 south of El Dorado, was a joint-venture operation between Placer Dome Inc. and the state-owned Corporación Venezolana de la Guayana. Las Cristinas' production was postponed because of the prevailing lower gold prices.

In 2000, Argentina's loss in comparative competitiveness deepened with its financial crisis despite the slight economic growth in Brazil. Changes in the national mining legislation, however, opened up business opportunities in its mining and oil sectors. After peaking in 1997-98, exploration continued on a smaller scale by a reduced number of firms with long-term commitments in the country. In the country, FDI appeared to be strong. A consortium led by Mount Isa Pacific Pty. Ltd. invested \$1.2 billion in 2000 in the Bajo de la Alumbrera Mine, which was Argentina's first copper producer; it is located in Catamarca in northwestern Argentina.

In 2000, the Corporación Minera de Bolivia, which was once the leading mineral producer in the country, sought private partners to operate its existing mines mostly under joint-venture agreements. The Bolivian Government undertook significant legal and regulatory reforms, such as a single corporate income tax rate of 25%, enactment of environmental laws to protect the environment and to pursue sustainable development, and revision of its mining code to ensure equal treatment of foreign and domestic investors. The \$2 billion, 3,300-kilometer Bolivian-Brazilian gas pipeline started operating and will increase the supply of natural gas to southern and southeastern states to 8 million cubic meters per day until 2005 and to 30 million cubic meters per day from 2010. In 2000, Brazil's energy mix was 2.6% of natural gas, which will be increased to about 12% in 2010 (Ferraz, 2001).

Following Brazil's real devaluation and subsequent economic downturn in 1999, intraregional trade decreased to \$15 billion from the higher level of \$20 billion in 1998. The Brazilian foreign reserves decreased by about \$3 billion to about \$33 billion at the end of 2000 from a balance of \$36.3 billion at the end of 1999. The highest level of positive balance was \$45 billion at the end of 1998 (Ferraz, 2001). Despite the financial difficulties, the Brazilian Government was able to identify \$160 billion in investment opportunities for U.S. and foreign investors, particularly in the telecommunication, service, and energy sectors.

The situation in Colombia continued as before with no realistic resolution in sight among the various political factions. The country ended 2000 in an apparent recovery from the severe recession of 1999 when the GDP fell by about 4%. Colombia's GDP increased for more than six decades and was the only Latin American country not to default on or to restructure its foreign debt during the 1980s, probably owing to the conservative monetary policy implemented by its independent Central Bank. The Colombian Government was

taking steps to lower interest rates and to shore up the financial system. Colombia's main exports, oil and coffee, face an uncertain future; new exploration is needed to offset the declining oil production. Efforts to expand the mineral sector were hindered by continuing terrorist activities, which included destruction of oil pipelines and attacks on mines, petroleum-production facilities, and personnel. The lack of public security continued to be a key concern for investors. Colombia was seeking international financial assistance to boost economic recovery and peace prospects. Privatization continued, in descending order of revenues received, in the electric power, mining, natural gas, and telecommunications sectors.

In 2000, Chile's economic growth rebounded to 5.5%. Despite the effects of the recession in 1999, the country maintained its reputation for strong financial institutions and sound macroeconomic policies. By the end of 1999 and early 2000, exports and economic activities had begun to recover. Foreign investment has played an important role in the modernization and growth of the Chilean economy. In 2000, Chile's total FDI was \$14.9 billion, or a 59.8% increase compared with that of 1999. The minerals sector received about \$1.6 billion, or 11% of the that total investment. Most of the foreign capital (\$13.3 billion) went to services such as telecommunications, banking, retail trade, and infrastructure (table 3).

Mexico has a free market economy with augmented participation by the private sector. The number of state-owned firms have dwindled to fewer than 200 from more than 1,000 in 1982. In 2000, the Government revised its mining and environmental laws. A strong export performance and new foreign investments in many of its basic industries helped to cushion the economy's decline in 1995 and led the recovery from 1996 to 2000.

Trade with Canada and the United States has nearly tripled since NAFTA was implemented in 1994. Mexico completed free-trade agreements with the European Union, Guatemala, Honduras, Israel, and El Salvador in 2000 and was pursuing additional trade agreements with countries in Asia and Latin America to lessen its dependence on the United States. At the same time, the Government was pursuing conservative macroeconomic policies to avoid another economic crisis.

As an important mineral producer, Mexico ranked among the top world producers in a variety of nonfuel minerals. The country was the world's leading producer of silver and celestite and a significant supplier of mineral products to world markets (table 1).

In spite of the effects of the Asian financial crisis, the instability of the Argentinian market, and the lower prices for its major mineral exports, mainly copper, gold, lead, and zinc, the Peruvian economy had a positive growth for 2000. The privatization of state-owned firms and the formation of joint ventures in the mining and energy sectors continued, and foreign investors viewed Peru as an attractive open-market economy. In Peru, FDI for 1999 and 2000 amounted to about \$6.2 billion, and revenues from the mining sector were \$1.7 billion with projected investments of \$4.5 billion. The privatization program was expected to continue to generate capital flows in every sector of the Peruvian economy, particularly in the energy, mining, and telecommunications sectors. The Government also slashed subsidies and tariffs,

freed foreign exchange and interest rates, established concessions for construction and operation of public infrastructure (roads, ports, and airports), and embarked on fiscal austerity and investment in social development and agriculture.

Exploration, primarily for gold, continued in the Central American countries. Production was somewhat significant only in Nicaragua and Panama (table 1). Guatemala produced antimony, and Honduras continued its output of lead, silver, and zinc. Panama has huge copper resources that were not being fully evaluated.

The French aluminum company Pechiney S.A. signed a preliminary deal on March 6, 2000, to build a \$700 million aluminum plant in western Suriname (American Metal Market, March 6, 2000, Pechiney to build plant in Suriname report, accessed November 30, 2001, at URL <http://www.aluminum.org/dailya.cfm?docid=108>).

In August 2000, an agreement for an expansion of the Atlantic LNG facility at Point Fortin, Trinidad, was signed by the joint partners (British Petroleum plc, British Gas plc, Cabot Inc., and the National Gas Company of Trinidad and Tobago) to finance the \$1 billion project. Site preparation began at the end of March 2000, and it was scheduled to be completed during 2002-2003 (Atlantic LNG, February 14, 2001, Expansion of the Point Fortin facility, Media Release, accessed November 30, 2001, at URL <http://www.atlanticlng.com/media032300.html>).

As an affluent high-tech industrialized country, Canada closely resembled the United States in its market-oriented economy, similar pattern of productivity, and high living standards. Real rates of growth have averaged nearly 3% since 1993. NAFTA created a dramatic increase in trade and economic integration with the United States. With its great natural resources, skilled labor force, and modern technology, Canada enjoyed solid economic prospects.

The decline in metals prices from 1997 and throughout 2000 led to a decrease in Canadian mine output of base and precious metals that was compensated, in part, by greater production of industrial minerals and so-called structural mineral materials. The lower prices for gold, however, were marginalizing several gold mines in the country.

Canada's GDP increased to 4.1% compared with 3.6% in 1999 and showed that all sections with the exception of mining were doing well. Exploration for diamond continued with less public interest. With an increasing number of discoveries and openings, such as the Ekati Mine in the Northwest Territories, however, Canada became a factor in the world diamond markets for the first time. In 2000, production of gem-quality diamond increased by 5.3% compared with that of 1999. Inco Ltd.'s huge nickel-copper-cobalt discovery at Voisey's Bay on the Labrador coast languished after the Provincial Government of Newfoundland demanded that the ore be smelted and refined in that Province rather than in the Sudbury District of Ontario, which had been the company's intention. Negotiations between the Province of Newfoundland and Inco to develop this property were halted in January 2000, and no further negotiations were planned during the year (McCutcheon, 2001). Some Canadian companies sought mineral properties in Central America and South America where foreign investments were welcomed, mining laws were reformed, countries were open-market-oriented economies, and profits could be repatriated.

Latin American Exploration

Since 1993, Latin America has sustained the greatest amount of exploration activity in terms of total dollars budgeted and world share, according to the Metals Economics Group (MEG) of Halifax, Nova Scotia. The MEG based its annual surveys on planned corporate budgets for the year under review. Although Latin America maintained its world share for mineral exploration above 28% during 2000, budget allocations for Latin American exploration fell by about \$58 million between 1999 and 2000. Total exploration dollars budgeted for Latin America in 2000 was reported at \$662 million by 656 companies (Metals Economics Group, 2000a, 2001a). The overall budget decline reflected the continued depressed gold price and investor wariness for funding exploration activities.

Latin American countries with the greatest exploration activity by number of reported exploration sites were, in descending order, Mexico, Peru, Argentina, Brazil and Chile. Gold attracted about 57% of total exploration activity in Latin America. On the basis of the number of sites explored, interest in base metals reached 25%, and silver was about 9% of the total. Investment in 2000 was primarily used to further define newly discovered resources. Significant exploration sites are listed in table 4.

The search for gold in Latin America during 2000 accounted for about 24% of the total gold exploration budget and nearly 39% of the budget for base metals. Chile, Peru, Brazil, Mexico, and Argentina were ranked in the MEG's top 10 countries for 2000 exploration. Similarly, the Fraser Institute ranked the Latin American countries of Chile, Peru, and Brazil at the top of its emerging-country rating for exploration investment on the basis of their financial attractiveness for investment in 2000. Investment appeal was based on the geologic potential, property value, ease of doing business, and the political stability of these countries (Fraser Institute, December 18, 2000, Mining executives rate the investment climate of jurisdictions around the world, News Release, accessed November 30, 2001, at URL <http://www.fraserinstitute.ca/shared/readmore.asp?sNav=nr&id=286>).

During the past 30 years, exploration in the central Andes of Argentina, Bolivia, Chile, and Peru has had notable success. From 1970 to 1999, 11 copper deposits, 17 precious-metal deposits, and 2 polymetallic deposits were developed in this region. Notable exploration and development activities in 2000 included exploration at the Veladero base-metals deposit in Argentina; the Magistral copper-molybdenum deposit, the Tambogrande polymetallic deposit, and development activities at Antamina in Peru; and the Pascua/Lama deposit on the border of Argentina and Chile. Each dollar spent on exploration in this region has been estimated to generate 5.6 times its gross value in production. Exploration in this region provided an avenue for the discovery of metal resources with a nominal in-ground value of \$96 (Mining Journal, 2000b). The entrance of AngloGold plc into South America has also led to increased exploration activity in the region.

At the end of 1999, about 17,000 exploration titles were active in Mexico. As 2000 began, 486 foreign mining and exploration companies were reported to be operating in Mexico, up from 444 the previous year. These companies were primarily from Canada and the United States and about 54% of

them planned an increase in exploration spending for Mexican sites in 2000 (Mexican Chamber of Mines, 2000).

During 2000, exploration interest in Peru came from several sources. These included senior and junior companies based in Canada, South Africa, and the United States. Recent regulatory reforms in Peru triggered a diversification into copper and gold from the silver-lead-zinc mines that were typically exploited in the past. In 2000, the Peruvian Congress revised legislation that eliminated tax allowances on mining reinvestment profits. Peruvian exploration for 2000 was expected to be lower than its peak in 1997. As of March 31, 2000, 60 mining and exploration companies were still operating in the country (Mining Journal, 2001).

Mineral exploration in Argentina has increased in anticipation of final ratification of an agreement that would allow companies to explore and exploit mineral deposits along its common border with Chile. The agreement was expected to improve access to Argentina's Andean mineral deposits and to Chile's Pacific ports. Similarly, Chilean mineral exploration increased to US\$144 million in 2000 from US\$136 million in 1999, according to Chile's State Copper Commission (Mining Journal, 2000b). In Brazil, *Gazeta Mercantil* reported that exploration licenses issues during the first 3 months of 2000 represented a 177% increase compared with those of the same period in 1999 (Mining Magazine, 2000).

Canadian Exploration

Statistics released by the Canadian government showed anticipated 2000 exploration spending at \$348 million. This value was almost half of the reported exploration expenditure for the highest level of 1997 (Metals Economics Group, 2000b; Natural Resources Canada, 2000, Exploration and deposit appraisal expenditures, by province and territory, 1997-2000, accessed January 4, 2001, at URL <http://www.nrcan.nrcan.gc/mms/efab/mmsd/exploration/byprov.htm>). MEG reported budgeted exploration spending in Canada for 2000 at US\$348 million, accounting for 14.9% of the overall worldwide mineral exploration budget (Metals Economics Group, 2001b). Fraser Institute reported that about 35% of the companies investing in Canada projected an increase in spending for 2000, and about 29% projected a decrease in exploration spending (The Fraser Institute, December 18, 2000, Mining executives rate the investment climate of jurisdictions around the world, News Release, accessed November 30, 2001, at URL <http://www.fraserinstitute.ca/shared/readmore.asp?sNav=nr&id=286>).

On the basis of spending allocations for 2000 reported by the Canadian Government, exploration activity was greatest in the Northwest Territories (about 24% of the Canadian exploration budget), Ontario (20%), and Quebec (15%). About two-thirds of the exploration budget was allocated for initial exploration (up to and including the first delineation of a mineral deposit). Deposit appraisal activities accounted for the remainder of the exploration budget. Junior companies accounted for about one-third of Canadian exploration.

U.S. Geological Survey (USGS) research suggests that gold targets accounted for about 30% of reported Canadian exploration based on the total number of exploration sites for which data were collected. The greatest amount of gold

importance, Ontario, British Columbia, and Quebec. Base metals accounted for about 30% (with about equal interest in copper, lead/zinc, and nickel targets). Activity, which was prioritized on the basis of the number of exploration sites, focused in the newly created territory of Nunavut and in Newfoundland, Ontario, and Quebec.

On the basis of data compiled by the USGS, diamond exploration activity increased to about 19% of all Canadian exploration targets in 2000. Activity was mainly in the Northwest Territories, Ontario, and Nunavut and was based on the number of sites undergoing active exploration in each province. Exploration was seen to be encouraged by development approval given for the Diavik project and renewed interest by De Beers Canada Exploration Inc. in other Canadian diamond prospects. Platinum-group metals (PGM), primarily in Nunavut, were also targeted in 2000. About 15% of Canadian exploration projects targeted PGM.

The significant Canadian highlights for exploration activities for 2000 included base-metals discoveries at Matagami (Quebec) and gold at George Lake (Nunavut) (table 5). Continued resource definition for gold took place at Hope Bay (Nunavut), and heavy minerals exploration was active at Truro (Nova Scotia). Exploration for base metals took place at McIlvenna Bay (Saskatchewan), and nickel and PGM were targets at Ferguson Lake (Nunavut). Development or extension of resources took place at the Red Lake (Ontario) and Casa Berardi (Quebec) gold deposits, the LaRonde and Raglan base-metals mines (Quebec), and the Lac des Iles area (Ontario).

Exploration in Nunavut continued to be strong. Ownership consolidation of several base-metals deposits in the Yukon improved operational economics and provided stimulus for possible development in the region. Development of the Voisey's Bay nickel-copper deposit in Labrador and processing in Newfoundland continued to be delayed owing to environmental, political, and technical issues.

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TABLE 1
PRODUCTION OF SELECTED MINERALS IN LATIN AMERICA AND CANADA, 2000

(Thousand metric tons unless otherwise specified)

	Metals										
	Aluminum primary metal	Bauxite	Copper mine output	Gold (tons)	Iron ore, gross weight	Lead mine output	Nickel mine output	Silver (tons)	Steel, crude	Tin mine output	Zinc, mine output
Argentina	262	--	145	26	--	14	--	78	4,474	--	35
Bolivia	--	--	(1/)	12	--	10	--	434	--	12	149
Brazil	1,277	13,846	32	50	210,000	9	45	41	25,700	14	100
Chile	--	--	4,602	54	8,729	(1/)	--	1,242	1,300	--	31
Colombia	--	2	2	37	660	(1/)	59	8	660	--	(1/)
Costa Rica	--	--	--	1	86	--	--	(1/)	--	--	--
Cuba	--	--	1	1	--	--	68	--	336	--	--
Dominican Republic	--	--	--	--	--	--	40	--	36	--	--
Ecuador	--	--	(1/)	3	--	(1/)	--	2	50	--	(1/)
El Salvador	3	--	--	--	--	--	--	--	--	--	--
Guatemala	--	--	--	(1/)	3	(1/)	--	--	--	--	--
Guyana	--	2,404	--	14	--	--	--	--	--	--	--
Honduras	--	--	--	(1/)	--	5	--	53	--	--	43
Jamaica	--	11,127	--	--	--	--	--	--	--	--	--
Mexico	65	--	365	26	11,325	138	--	2,620	15,659	(1/)	393
Nicaragua	--	--	--	3	--	--	--	1	--	--	--
Panama	--	--	--	2	--	--	--	2	--	--	--
Paraguay	--	--	--	--	--	--	--	--	68	--	--
Peru	--	--	554	133	3,892	271	--	2,438	510	71	910
Suriname	--	3,600	--	(1/)	--	--	--	--	--	--	--
Trinidad and Tobago	--	--	--	--	--	--	--	--	741	--	--
Uruguay	--	--	--	2	4	--	--	--	49	--	--
Venezuela	570	4,361	--	7	17,350	--	--	--	3,835	--	--
Others 2/	--	--	--	3	--	--	--	--	--	--	--
Total Latin America	2,177	35,340	5,701	374	252,049	447	212	6,919	53,418	97	1,661
Share of world total (percent)	9	26	43	15	24	14	17	39	6	41	19
Canada	2,373	--	623	154	35,707	153	181	1,188	16,000	--	936
Total Latin America and Canada	4,550	35,340	6,324	528	287,756	600	393	8,107	69,418	97	2,597
Share of world total (percent)	19	26	48	21	27	19	32	45	8	41	30
United States	3,668	W	1,445	341	63,089	468	--	2,060	102,000	--	829
Total Western Hemisphere 3/	8,218	35,340	7,769	869	350,845	1,068	393	10,167	171,418	97	3,426
Share of world total (percent)	34	26	59	34	33	34	32	57	20	41	39
Total world	24,000	135,000	13,197	2,546	1,061,148	3,100	1,230	17,900	846,000	239	8,730

See footnotes at end of table.

TABLE 1--Continued
 PRODUCTION OF SELECTED MINERALS IN LATIN AMERICA AND CANADA, 2000

(Thousand metric tons unless otherwise specified)

	Industrial minerals						Fuels			
	Barite crude	Cement, hydraulic	Gypsum crude	Phosphate rock (P ₂ O ₅)	Salt, all forms	Sulfur, all forms	Coal, all grades	Natural gas, gross (million cubic meters)	Petroleum (million 42-gallon barrels)	
									Crude	Products
Argentina	5	7,150	514	--	1,000	--	360	44,870	278	213
Bolivia	3	1,300	--	--	(1/)	--	--	15,581	11	15
Brazil	55	39,208	1,541	1,687	6,074	323	6,461	13,291	464	607
Chile	1	3,500	376	12	5,100	1,100	509	2,702	2	67
Colombia	1	9,750	560	43	460	108	38,142	13,200	252	105
Costa Rica	--	1,150	--	--	37	--	--	--	--	6
Cuba	--	1,633	130	--	160	5	--	1,500	17	60
Dominican Republic	--	2,000	110	--	62	--	--	--	--	11
Ecuador	--	2,800	1	--	90	21	--	1,057	146	52
El Salvador	--	1,100	6	--	90	--	--	--	--	6
Guatemala	3	1,600	11	--	50	--	--	750	9	7
Guyana	--	--	--	--	--	--	--	--	--	--
Honduras	--	1,100	30	--	25	--	--	--	--	2
Jamaica	--	521	330	--	19	--	--	--	--	4
Mexico	127	31,677	7,554	1,052 4/	8,884	1,301	14,287	48,349	1,099	487
Nicaragua	--	360	23	--	15	--	--	--	--	6
Panama	--	760	--	--	23	--	--	--	--	10
Paraguay	--	650	4	--	--	--	--	--	--	2
Peru	11	3,906	141	6	836	60	62	1,000	36	59
Suriname	--	65	--	--	--	--	--	--	4	--
Trinidad and Tobago	--	743	--	--	--	15	--	14,175	44	58
Uruguay	(1/)	700	1,040	--	--	3	--	--	--	11
Venezuela	--	8,600	25	389	350	450	7,844	60,000	1,117	394
Others 5/	--	718	--	--	1,649	107	--	38	1	312
Total Latin America	206	120,991	12,396	3,189	24,924	3,493	67,665	216,513	3,480	2,494
Share of world total (percent)	4	7	11	7	12	6	1	8	12	8
Canada	67	12,612	8,548	--	11,935	9,364	69,149	195,457	828 6/	613
Total Latin America and Canada	273	133,603	20,944	3,189	36,859	12,857	136,814	411,970	4,308	3,107
Share of world total (percent)	5	8	19	7	18	22	3	14	15	10
United States	600	89,510	25,000	11,700	45,300	10,400	1,073,612	678,200	3,306	7,197
Total Western Hemisphere 3/	873	223,113	45,944	14,889	82,159	23,257	1,210,426	1,090,170	7,614	10,304
Share of world total (percent)	15	14	42	33	39	41	27	38	27	35
Total world	5,700	1,643,000	110,000	44,700	210,000	57,400	4,532,000	2,846,318	28,053	29,758

W Withheld to avoid disclosing company proprietary data. -- Zero.

1/ Less than 1/2 unit.

2/ French Guiana.

3/ Excludes Greenland.

4/ Includes only output used to manufacture fertilizers.

5/ Aruba, Barbados, French Guiana, Guadeloupe, Martinique, and the Netherlands Antilles.

6/ Includes synthetic crude (from oil shale and/or tar sands).

TABLE 2
 ROLE OF LATIN AMERICA IN WORLD MINERAL PRODUCTION

(Percentage of world output) 1/ 2/

Commodity	1985	1990	1995	1998	1999	2000
Copper	26	26	33	49	44	43
Tin	25	28	31	24	26	41
Silver	35	35	33	39	42	39
Bauxite	20	24	30	30	29	26
Iron ore	17	21	22	24	23	24
Zinc	17	17	20	20	21	19
Nickel	6 e/	11	14	15	17	17
Gold	10	9	10	13	15	15
Lead	15	13	16	15	14	14
Crude oil	12	11	12	15	14	12
Aluminum	8	10	10	9	9	9
Cement	7	7	6	8	8	7
Steel	5	5	6	7	7	6
Coal	1	1	1	2	2	1
Petroleum products	7	9	7	10	10	8

e/ Estimated.

1/ By volume.

2/ Source: U.S. Geological Survey.

TABLE 3
SIGNIFICANT INVESTMENT FLOWS TO LATIN AMERICA AND THE CARIBBEAN 1/ 2/ 3/

(Million dollars unless otherwise specified)

Country and project	Major operating companies and major equity owners	Country and investment	Product	Year
ARGENTINA				
Las Flechas, San Juan	Minas Argentinas S.A., 50%; Ima Resources Corp., 50%	Argentina/Canada	50 Gold/silver	1997
Del Carmen, San Juan	Argentina Gold Corp., 40%; Barrick Gold Corp., 60%	do.	50 Gold	1997
El Pachón, San Juan	Cía. Minera San José S.A., 50%; Cambior Inc., 50%	do.	150 Copper	2000
Bajo La Alumbreira, Catamarca	Mount Isa Pacific Pty. Ltd., 50%; North Ltd. of Australia, 25%; Rio Algom Ltd., 25%	Australia/Canada	1,200 Gold/copper	2000
Agua Rica, Catamarca	BHP Minerals Inc., 70%; Northern Orion Ltd., 30%	do.	25 do.	1997
Oil and gas, YPF	Repsol S.A., 83.2%; Yacimientos Petrolíferos Fiscales, 16.8%	Argentina/Spain	15,169 Oil/gas	1999
Oil and gas, Sodigas	Sempre Energy Co. (private, 100%)	United States	145 do.	2000
Sudelektra Argentina	Pérez Companc S.A. (PECOM) (private, 100%)	Argentina	121 do.	2000
Fenix/Salar del Hombre Muerto, Ca.	Minera del Altiplano S.A. (FMC Lithium Corp., 100%)	United States	110 Lithium	2000
Cerro Vanguardia, Santa Cruz	Minera Mincorp S.A. (Anglo American plc, 100%)	United Kingdom	190 Gold	2000
Rio Colorado, Mendoza	Potasio Rio Colorado S.A. (CRA-Minera TEA S.A., 100%)	Australia	150 Potassium	2000
San Jorge, Mendoza	Grupo Minero Aconcagua S.A., (private, 100%)	Canada	25 Gold/copper	2000
Total investment in the minerals sector to 2000 (mining, 45.8%; oil and gas, 47.2%; others, 7%) 1/ 3/			17,385	
Total U.S. investments in the minerals sector to 2000 1/			2,266	
Foreign direct investments for 1999 and 2000 (minerals, 49.9%; services, 32.8%; others, 17.3%) 2/ 3/			30,917	
Foreign direct investments to 2000 (minerals, 41.8%; services, 30.5%; others, 27.7%) 2/ 3/			32,123	
BERMUDA				
Foreign direct investments for 2000 (services, 100%) 2/ 3/			1,000	
BOLIVIA				
Kori Kollo and Llallagua, near Oruro	Inti-Raymi S.A. [Battle Mountain Gold Co., 88%; Empresa Minera Unificada S.A. (EMUSA), 12%]	United States/Bolivia	50 Gold/silver	1999
Don Mario gold mine, Santa Cruz	Orvana Minerals Corp./EMUSA	Canada/Bolivia	54 do.	2000
San Cristobal, Southern Bolivia	Apex Silver Mines Ltd., 70%; Phelps Dodge Corp., 30%	United States	413 Silver/lead/zinc	2000
Empresa Metalurgica Vinto, Oruro	Corporacion Minera de Bolivia (COMIBOL)	Bolivia	50 Tin/antimony	2000
Yacimientos gas, Santa Cruz	Petrobrás, 35%; Petrolera Andina, 50%; and Total, 15%	Brazil/Bolivia/France	2,000 Natural gas	2000
Total investments in the minerals sector for 1999 and 2000 1/ 3/			2,567	
Total U.S. investments in the minerals sector to 2000 1/ 3/			457	
Foreign direct investments to 2000 2/ 3/			800	
BRAZIL				
Serra dos Carajás, Pará State	Companhia Vale do Rio Doce (CVRD) (Consortium led by Cia. Siderurgica Nacional (CSN), 100%)	Brazil	7,600 Privatization Iron/manganese/gold	1997
Salobo Metais, Pará State	CVRD/Anglo American plc/BNDES	Brazil/South Africa	20 Copper-evaluation	1997
Sossego Metais, Pará State	CVRD/Phelps Dodge Corp.	Brazil/United States	50 Copper	1997
Nickel Tocantis, Tocantins State	Cia. Niquel Tocantins	Brazil	86 Nickel-expansion	1997
Saramenha-refinery, Minas Gerais	Alcan Alumínio do Brazil S.A. (Alcan Aluminum Ltd., 100%)	Canada	380 Aluminum-expansion	1997
São Luis-refinery, Maranhao State	Alcoa Alumínio S.A. (Aluminum Co. of America, 100%)	United States/Netherlands	400 do.	1997
Caraiba Metais-refinery, Bahia State	Grupo PARANAPANEMA	Brazil	20 Cu-expansion	1997
Campos district, Rio and São Paulo	Exxon Mobil Corp. and others (private, 100%)	United States/France Spain/Netherlands	286 Oil/gas	1999
Mineração da Trindade S.A., Minas Gerais	CVRD (private, 100%)	Brazil	706 Iron ore	2000
Corumba-plant, Mato Grosso State	Mineração Corumbaense (Rio Tinto Group)	United Kingdom	200 Hot-briquetted-iron	2000
Campos district, Rio and São Paulo	Petróleo Brasileiro S.A. Group	Brazil/United States	14,060 Oil/gas	2000
Total investments in the minerals sector to 2000 1/ 3/			23,808	
Total U.S. investments in the minerals sector to 2000 1/			6,091	
Foreign direct investments for 1999 and 2000 (services, 80.1%; others, 15.1%; minerals, 4.8%) 2/ 3/			35,945	
Foreign direct investments to 2000 (industry, 41.5%; services, 56.7%; others, 1.8%) 2/ 3/			160,276	
Total U.S. investments to 2000 (manufacturing, 74%; banking and finance, 16%; others, 10%) 2/ 3/			30,916	
CHILE				
Rodomiro Tomic	Corporación Nacional del Cobre de Chile S.A., 100%	Chile	662 Copper	1998
Collahuasi, Region I	Falconbridge Ltd., Minorco plc.	Canada/Luxembourg	2,185 do.	1998
Cerro Colorado, Region I	Rio Algom Ltd.	Canada	200 do.	1998
Quebrada Blanca, Region I	Cominco Ltd., Teck Resources International Ltd., and Empresa Nacional de Minería (ENAMI)	Canada/Chile	373 do.	1997
El Abra, Region II	Cyprus Amax Minerals Co., 51%; Corporación Nacional del Cobre de Chile S.A., 49%	United States/Chile	1,800 do.	1997
La Disputada, Region II	Exxon Minerals Company	United States	1,731 do.	1995
Zaldivar, Region II	Placer Dome Inc., Outokumpu Copper Resources	United States/Finland	600 do.	1995
Santa Barbara (expans.), Region II	Mantos Blancos S.A., Anglo American plc	Chile/South Africa	160 do.	1995
Lomas Bayas, Region II	Gibraltar Mines Ltd.	Canada	300 do.	1998
Los Pelambres (expansion), Region IV	Luksic Group of Chile and Japanese Group	Chile/Japan	1,307 do.	1999

See footnotes at end of table.

TABLE 3--Continued
SIGNIFICANT INVESTMENT FLOWS TO LATIN AMERICA AND THE CARIBBEAN 1/ 2/ 3/

(Million dollars unless otherwise specified)

Country and project	Major operating companies and major equity owners	Country and investment	Product	Year
CHILE--Continued				
La Escondida (expansion), Region II	Broken Hill Proprietary Company Ltd. (BHP Ltd.), Rio Tinto Zinc Corp. (RTZ), Japan Escondida Corp., and International Finance Corp.	Australia/United Kingdom/Japan/World Bank	1,393 do.	1997
Tulna, Region II	Minera Mahogany Ltda. and Minera Northern S.A.	United States/Chile	7 do.	TBD
Fundición La Negra, Region II	American Barrick Resources Corp., and Noranda Inc.	Canada	48 do.	1997
Andacollo Cobre, Region IV	ENAMI, Tungsten Inc., and Cía. Minera del Pacífico S.A.	Canada/Chile	55 do.	1997
Refimet, Region III	Inversiones Mineras del Pacífico, American Barrick Resources Corp. (ABRC), and Noranda Inc.	Canada/Chile	100 do.	1999
Refugio, Region III	Amex Gold Refugio Inc., and Bema Gold Ltd.	United States/Canada	130 Gold	1996
Fachinal, Region XI	Coeur d'Alene Mines Corp.	United States	85 Gold/silver	1996
Leonor/El Tesoro, Region II	Luksic Group of Chile and Equatorial of Australia	Australia/Chile	230 Copper	2000
Yolanda, Region II	KAP Resources Ltd. and Yukon Ltd.	Canada	89 Nitrates/iodine	1997
Minsal, Region II	Sociedad Química y Minera de Chile S.A.	Chile	290 Lithium	1994
Ivan-Zar, Region II	Rayrock Yellow Knife Resources Inc.	Canada	36 do.	1996
Manto Verde, Region III	Anglo American Corp., Minorco Ltd.	Canada/South Africa	180 Copper	1995
La Candelaria, Region III	Phelps Dodge Corp., Sumitomo Corp., Minorco Services Ltd., and Falconbridge Ltd.	United States/Japan/Canada	1,500 do.	1994
La Coipa, Region III	Placer Dome Inc. and TVX Gold Inc.	Canada	400 Gold/silver	1992
Andacollo Oro, Region IV	Andacollo Gold Inc., La Serena Inc. (Dayton Mining Corp.)	do.	50 Copper	1996
Nevada, Region III	Cía. Minera San José Inc. (ABRC)	do.	168 Gold	1997
Tambo (expansion), Region IV	El Indio Property	Chile	105 do.	1995
Quebrada de Pascua, Region IV	Barrick of Canada	Canada	300 do.	NA
Santa Catalina	Outokumpu Copper Resources	Finland	100 Copper	TBD
La Negra, Region II	Noranda Inc.	Canada	158 do.	2000
Pucobre	Punta del Cobre S.A.	Chile	50 do.	2000
Atacama Kosan	Cía. Minera Cominor S.A.	do.	130 do.	1998
Sierra Gorda	Yuma Gold Mines Ltd.	Canada	85 do.	TBD
Aldebarán, Region III	Placer Dome Inc.	do.	800 Gold	1997
Chimberos, Region III	do.	do.	20 Silver	1999
Pascua, Region III	Barrick of Canada	do.	400 Gold	TBD
Cerro Casale, Region III	Placer Dome Inc.	do.	792 do.	TBD
Lobo Marte, Region III	do.	do.	300 do.	TBD
Los Colorados	Mitsubishi of Japan	Japan	100 Iron ore	1998
Compañía Minera Saldivar S.A.	Placer Dome Inc., 50%; Others, 50%	Canada/Chile	251 Copper	1999
Cía. Minera Quebrada Blanca S.A.	Aur Resources Inc., 29.3%; Others, 70.7%	Canada/Chile	103 do.	2000
Cía. de Petróleos de Chile S.A.	Angelini Group, 69.9%; AntarChile S.A., 30.1%	Italy/Chile	1,233 Oil/gas	1999
Total investments in the minerals sector to 2000 1/ 3/			18,996	
Total U.S. investments in the minerals sector to 2000 1/			6,274	
Foreign direct investments for 1999 and 2000 (services, 72.9%; others, 16.4%; minerals, 10.7%) 2/ 3/			14,852	
Foreign direct investments to 1999 (mining, 43.8%; services, 22.8%; industry, 16.2%; others, 17.2%) 2/			37,285	
Foreign direct investments to 2000 (mining, 43%; services, 22.8%; industry, 16.2%; others, 20%) 2/ 3/			39,534	
Total U.S. investments to 2000 (mining, 43.8%; services, 22.8%; industry, 16.2%; others, 17.2%) 2/ 3/			16,648	
COLOMBIA				
Cerrejón Zona Norte	Anglo American plc, 33.3%; Billiton plc, 33.3%; and Glencore International A.G., 33.3%	United Kingdom/Switzerland	384 Coal	2000
Foreign direct investments for 2000 (services, 81.4%; mining, 18.6%) 2/ 3/			2,068	
Total U.S. investments for 2000 (services, 100%) 2/ 3/			590	
COSTA RICA				
Foreign direct investments for 2000 (services, 100%) 2/ 3/			279	
DOMINICAN REPUBLIC				
Foreign direct investments for 2000 (services, 100%) 2/ 3/			1,266	
ECUADOR				
Beroen, Western Quito	Ecuadorian Minerals Corp.	Canada	103 Gold/silver	2000
TVX's Santa Barbara	Valerie Gold Resources Ltd., 50%; TVX Gold Inc., 50%	do.	4 Gold/Copper	2000
Villano Oilfield of Ecuador	Agip	Italy	214 Oil/gas	1999
CMS Oil Ecuador	Crestar Energy Inc. (private, 100%)	Canada	142 do.	2000
Total investments in the minerals sector to 2000 1/ 3/			463	
Foreign direct investments for 1999 and 2000 (services, 58.6%; minerals, 41.4%) 2/ 3/			859	
EL SALVADOR				
Foreign direct investments for 2000 (services, 100%) 2/ 3/			125	
GUATEMALA				
Foreign direct investments for 2000 (services, 100%) 2/ 3/			101	
HONDURAS				
Foreign direct investments for 2000 (services, 100%) 2/ 3/			314	

See footnotes at end of table.

TABLE 3--Continued
SIGNIFICANT INVESTMENT FLOWS TO LATIN AMERICA AND THE CARIBBEAN 1/ 2/ 3/

(Million dollars unless otherwise specified)

Country and project	Major operating companies and major equity owners	Country and investment	Product	Year	
MEXICO					
Foreign direct investments for 2000 (services, 100%) 2/ 3/			8,295		
PARAGUAY					
Exploration Program in Paraguay	Yamana Resources and Newmont Mining Corp.	United States	5	Gold	1999
Total U.S. investments in the minerals sector for 1999 1/			5		
Foreign direct investments to 2000 (mining, 100%) 2/			100		
PERU					
Smelter-refinery, La Oroya expansion	Doe Run Resources Corp., 90% (USA); Renco Resources Inc., 10% (Canada)	United States/Canada	247	Copper/lead/zinc/silver/gold	1997
Casapalca Mine, Lima	Glencore International, 80% (Switzerland); Group Gubbins, 20% (Peru)	Switzerland/Peru	120	Copper/lead/zinc/silver	1998
Expansions: Cuajone, Moquegua Toquepala, Tacna, and Ilo's Smelter and Refinery, Moquegua Department	Southern Peru Limited (United States) (ASARCO Incorporated, 63.0%; Phelps Dodge Overseas Capital Corp., 16.3%; The Marmon Group Inc., 20.7%)	United States	1,816	Copper/lead/molybdenum/gold	1997
San Cristóbal, Mahr Túnel, and Andaychagua, Junín Department	Cía. Minera Volcán S.A., 100% (Peru)	Peru	73	Copper/lead/zinc/silver	1998
Yauricocha, Junín Department	Cía. Minera San Ignacio de Morococha, 100% (Peru)	do.	4	do.	1997
La Granja, Cajamarca Department	Cambior Inc., 100% (Canada)	Canada	2,300	Copper	1999
Cerro Negro, Arequipa Department	Sociedad Minera Cerro Verde S.A., (Cyprus Amax Minerals Co., 90.9% (United States); Cía. de Minas Buenaventura, 9.1% (Peru)	United States/Peru	100	do.	1998
Electrowon at Cerro Verde					
Antamina, Ancash Department	Cía. Minera Antamina S.A., (Canada) (Noranda Inc., 37.5%; Rio Algom Ltd., 37.5%; Teck Corp., 25%)	Canada	2,520	Copper/zinc	2002
Do.	Spie Capag S.A., Ingenieros Civiles CG S.A.	France/Peru	140	Slurry line	2000
Cerro Yanacocha Mine, Cajamarca Department	Minera Yanacocha S.A., (Newmont Mining Corp., 51.4%; Cía. de Minas Buenaventura S.A., 43.6%; World Bank's International Finance Corp., 5%)	United States/Peru/World Bank	50	Gold	1997
Pierina, La Libertad Department	Minera Barrick Misquichilca S.A. (Canada)	Canada	316	do.	1998
Quellaveco, Moquegua Department	Minorco of Luxembourg, 50%; Anglo American plc, 50%	Luxembourg/South Africa	800	Copper	2000
Marcona, Ica Department	Shougang Hierro Perú S.A. (China, 100%)	China	120	Iron	1992
Refinery Expansion at Cajamarquilla, Lima Department	Refinería Cajamarquilla S.A. (Cominco Ltd. of Canada, 87%; Marubeni Corp. of Japan, 13%)	Canada/Japan	356	Zinc	2000
Tintaya, Cusco Department	BHP Tintaya S.A. (private, 100%)	Australia	273	Copper	1994
Camisea gas, Cusco Department	Pluspetrol Energy S.A., Hunt Oil Co., and SK Corporation	Argentina/United States/Republic of South Korea	1,600	Gas	2000
Total investments in the minerals sector for 2000 1/ 3/			1,740		
Total investments in the minerals sector to 2000 1/ 3/			12,931		
Total U.S. investments in the minerals sector to 2000 1/			4,237		
Foreign direct investments for 1999 and 2000 (services, 65.9%; minerals, 27.9%; others, 6.2%) 2/ 3/			6,242		
Foreign direct investments 1990-May 31, 1998 (services, 50.1%; others, 30.6%; and minerals, 19.3%) 2/			36,487		
Foreign direct investments 1993-2000 (mining, 51%; petroleum, 34%; others, 15%) 2/ 3/			36,956		
Total U.S. direct investments 1995-2000 (minerals, 84.0%; electricity, 12.5%; industry, 3.5%) 2/ 3/			7,837		
SURINAME					
Paranam, Western Suriname	Pechiney S.A. (private, 100%)	France	700	Aluminum	2000
Total investments in the minerals sector for 2000 4/			700		
TRINIDAD AND TOBAGO					
Port Fortin	Atlantic LNG (British Petroleum plc, British Gas plc, Repsol S.A., and National Gas Co. of Trinidad & Tobago)	United Kingdom/Spain/Trinidad and Tobago	1,000	Natural gas	2002
Total investments in the minerals sector for 2000-02 5/			1,000		
URUGUAY					
San Gregorio, Artigas	Crystallex International of Canada	Canada	29	Gold	1999
Total investments in the minerals sector for 1999 1/			29		
Foreign direct investments for 2000 (services, 91.2%; mining, 8.8%) 2/ 3/			300		
VENEZUELA					
Foreign direct investments for 2000 (services, 100%) 2/ 3/			2,350		

NA Not available. TBD To be developed.

1/ Ministries of Mines and Energy of Argentina, Bolivia, Brazil, Chile, Ecuador, Paraguay, Peru, and Uruguay.

2/ U.S. Department of Commerce: National Trade Data Bank, The Export Connection, December 2000.

3/ Economic Commission for Latin America and the Caribbean: Foreign Investment in Latin America and the Caribbean 2000 Report, June 2001.

4/ American Metal Market, March 6, 2000.

5/ Atlantic Liquid Natural Gas (LNG), August, 29, 2000.

TABLE 4
SELECTED SIGNIFICANT LATIN AMERICAN EXPLORATION SITES IN 2000

Location	Type 1/	Site	Commodity	Company	Resource 2/	Exploration 3/
Argentina	E	Veladero	Gold, silver	Homestake Mining Co.	5.5 million ounces gold 81 million ounces silver	Extensive drilling.
Brazil	E	Cachoeira	Gold	Brazilian International Goldfields Ltd.	Data not released	Do.
Do.	E	Moeda	Gold	Iamgold Corporation	Data not released	Do.
Do.	E	Sossego	Copper, gold	Phelps Dodge Mining Corp.	2.5 metric tons copper, 2.4 million ounces gold	Do.
Chile	P	El Peñón	Gold, silver	Meridian Gold Corp.	1.2 million ounces gold 14.4 million ounces silver	Do.
Do.	P	El Toqui	Zinc	Breakwater Resources Ltd.	517,000 metric tons zinc	Do.
Do.	P	Escondida	Copper	BHP Ltd.	32.9 million metric tons copper,	Extension of resources.
Do.	D	Pascua/Lama	Gold, silver	Barrick Gold Corp.	17 million ounces gold 558 million ounces silver	Do.
Do.	P	Zaldivar	Copper	Placer Dome Inc.	4.86 million metric tons copper	Do.
Ecuador	E	Rio Zamora area	Copper, gold	Corriente Resources Inc.	Data not released	Extensive drilling.
Mexico	E	Alamo Dorado	Silver, gold	Corner Bay Minerals Inc.	117 million ounces silver, 447,000 ounces gold	Do.
Do.	F	Dolores	Gold, silver	Minefinders Corporation Ltd.	2.4 million ounces gold 129 million ounces silver	Do.
Do.	E	Lobo 14	Silver	Far West Mining Ltd.	Data not released	Do.
Do.	E	Ocampo	Gold, silver	Gammon Lake Resources Inc.	1.3 million ounces gold 54 million ounces silver	Do.
Do.	F	San Nicolas	Gold, silver, copper, zinc	Western Copper Holdings Ltd.	1.3 million ounces gold 75 million ounces silver	Do.
Do.	E	Sierra Mojada	Zinc, silver	Metalline Mining Co.	6.28 million metric tons zinc	Do.
Peru	D	Antamina	Copper, zinc, silver, molybdenum	Rio Algom Ltd.	6.9 million metric tons copper, 5.8 million metric tons zinc, 246 million ounces silver	Development drilling.
Do.	E	Bongara/Florida Canyon	Zinc, silver, lead	Solitario Resources Corp.	Data not released	\$10 million drilling budget.
Do.	E	Luicho	Gold	Pacific Rim Mining Corp.	Data not released	Extensive drilling.
Do.	E	Magistral	Copper, molybdenum	Inca Pacific Resources Inc.	1.57 million metric tons copper, 117,000 metric tons molybdenum	Do.
Do.	F	Minas Conga	Gold, copper	Newmont Gold Corp.	12.9 million ounces gold 1.5 million metric tons copper	Feasibility drilling.
Do.	F	Tambo Grande	Gold, silver, copper, zinc	Manhattan Minerals Inc.	2.7 million ounces gold 76 million ounces silver 1 million metric tons copper	Extensive drilling.
Do.	E	Tantahuay	Gold	Co. de Minas Buenaventura	3.3 million ounces gold	Do.
Do.	P	Tintaya Antapaccay	Copper	BHP Ltd.	Data not released	Do.
Do.	P	Yanacocha area	Gold, silver	Newmont Gold Corp.	12 million ounces gold	Do.

NOTE: Resource data reflect unverified public information reported by trade journals as reported in May 2001 Mining Engineering article.

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

2/ Resources reported where available based on data from various public sources. Data have not been verified by the U.S. Geological Survey.

3/ Sites where extensive (+10,000 meters) drilling or significant (+\$4 million) expenditure have been reported.

TABLE 5
SELECTED SIGNIFICANT CANADIAN EXPLORATION SITES IN 2000

Location	Type 1/	Site	Commodity	Company	Resource 2/	Exploration 3/
Northwest Territories	F	Snap Lake	Diamond	DeBeers Canada Mining Ltd.	45.7 million carats diamond	C\$40 million exploration program.
Newfoundland	F	Duck Pond	Copper, silver gold, zinc, lead	Thundermin Resources Inc.	211,000 metric tons copper, 12 million ounces silver	Feasibility drilling.
Nova Scotia	E	Truro	Heavy minerals	Titanium Corp. of Canada Ltd.	26 Mt heavy minerals	Extensive drilling.
Nunavut	E	Ferguson Lake	Nickel, copper, cobalt, platinum- group minerals	Starfield Resources Inc.	19,000 metric tons nickel, 278,000 metric tons copper, 1.9 million ounces platinum- group minerals	Do.
Do.	E	George Lake	Gold	Kinross Gold Corp.	1.5 million ounces gold	Do.
Do.	E	Hope Bay	Gold	Cambiex Exploration Inc.	3.2 million ounces gold	C\$12 million exploration program.
Ontario	P	Lac des Îles	Palladium, platinum, gold, copper, nickel	North American Palladium Ltd.	6.4 million ounces palladium	Extension of resources.
Do.	P	Red Lake	Gold	Goldcorp Inc.	4.6 million ounces gold	Do.
Do.	E	Victor	Diamond	DeBeers Canada Mining Ltd.	953,000 ounces gold	Bulk sampling.
Quebec	D	Casa Berardi	Gold	Aurizon Mines Ltd.	1.49 million ounces gold	Development drilling.
Do.	F	Lac Dore	Vanadium	McKenzie Bay International	2.2 million metric tons V2O5	C\$6 million feasibility program.
Do.	P	LaRonde	Gold, silver, copper, zinc	Agnico-Eagle Mines Ltd.	2.49 million metric tons zinc, 3.9 million ounces silver,	Extension of resources.
Do.	E	Matagami/ Perseverance	Zinc, silver, copper, gold	Noranda Inc.	840,000 metric tons zinc, 5.4 million ounces silver	Extensive drilling.
Do.	P	Raglan	Nickel, copper	Falconbridge Inc.	557,000 metric tons nickel, 151,000 metric tons copper	Extension of resources.
Saskatchewan	E	McIlvenna Bay	Zinc, silver, gold copper	Foran Mining Corp.	811,000 metric tons zinc, 11 million ounces silver, 209,000 ounces gold	Extensive drilling.
Yukon	F	Finlayson	Zinc, silver, gold copper, lead	Expatriate Resources Ltd.	1.5 million metric tons zinc, 127 million ounces silver	Prefeasibility drilling.

NOTE: Resource data reflect unverified public information reported by trade journals as reported in May 2001 Mining Engineering article.

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

2/ Resources reported where available based on data from various public sources. Data has not been verified by the U.S. Geological Survey.

3/ Sites where extensive (+10,000 meters) drilling or significant (+\$4 million) expenditure have been reported.