

LATIN AMERICA AND CANADA¹

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Introduction

The United States and the 44 geographic entities in the Western Hemisphere (the Americas), have an area of about 40.1 million square kilometers, which is almost 27% of the world's land area (149 million square kilometers), and had a population of more than 857 million inhabitants, which was about 14% of the world's population (6.2 billion people). In 2001, these countries had a combined purchasing power of \$15 trillion, or almost 31% of the world's purchasing power of \$47 trillion (table 2; U.S. International Monetary Fund, 2003§²). Canada and several Latin American countries are endowed with an abundance of mineral resources that include ferrous and nonferrous metals, a wide variety of industrial minerals, and all forms of fossil fuels. For several of these countries, the mineral commodities were significant factors in their economies by earning export revenues, gaining foreign exchange reserves, and offering business opportunities via globalization, internationalization, and privatization processes.

Canada, Mexico, and the United States, which are members of the North American Free Trade Agreement (NAFTA), were the largest and wealthiest trading bloc in the world in 2001—482 million consumers and almost \$12 trillion of purchasing power parity (table 1). NAFTA partners were each other's largest trade markets. The largest trading bloc in Latin America was the Mercado Común del Cono Sur (Common Market of the Southern Cone) (Mercosur), which included Argentina, Brazil, Paraguay, and Uruguay plus Bolivia and Chile as associate members, had about 247 million consumers and an economy worth about \$2.0 trillion. The second largest market in Latin America was the Pacto Andino (Andean Pact) (Colombia, Ecuador, Peru, and Venezuela) with 107 million consumers and about \$717 billion of purchasing power parity. The Central American Common Market (Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) had 34.4 million consumers and about \$320 billion of purchasing power. The Caricom bloc (Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines and Suriname) had 12.3 million consumers and about \$39 billion of purchasing power parity (table 1; U.S. Central Intelligence Agency, 2002§). Latin America's economic growth, especially that of Mercosur, was affected by the following factors: volatility of the international financing market; depressed prices for mineral exports; the intensification

of the Argentine financial crisis; Brazil's power shortage owing to its worst drought in decades, which affected the region's hydroelectric-power-generating capacity; the civil unrest in Venezuela; and the terrorist attacks of September 11.

The data presented in this summary were derived from the United Nation's Economic Commission for Latin America and the Caribbean, the U.S. Central Intelligence Agency, the U.S. Energy Information Administration, the World Bank Group, and the countries' central banks, mineral ministries, and production and geological departments (through the U.S. Geological Survey's mineral questionnaires), which included the following:

- Argentina—Dirección de Economía Minera y Desarrollo
- Belize—Geology and Petroleum Department
- Bolivia—Instituto Nacional de Estadística
- Brazil—Departamento Nacional de Produção Mineral
- Canada—Natural Resources Canada
- Chile—Corporación Nacional del Cobre de Chile's (CODELCO) Comisión Chilena de Cobre
- Ecuador—Ministerio de Energía y Minas
- El Salvador—Dirección de Hidrocarburos y Minas
- Mexico—Consejo de Recursos Minerales
- Nicaragua—Estadísticas de Producción Minera, Ministerio de Fomento Industria y Comercio
- Panama—Dirección General de Recursos Minerales
- Paraguay—Dirección de Recursos Minerales
- Peru—Ministerio de Energía y Minas
- Trinidad and Tobago—Ministry of Energy & Energy Industries
- Uruguay—Dirección Nacional de Minería y Geología, and
- Venezuela—Ministerio de Energía y Minas.

General Economic Conditions

From 1995 to 2001, the Western Hemisphere's gross domestic product (GDP) growth averaged about 4.1% per year. During the same period, population growth averaged about 2% per year. In 2001, the GDP of the Americas' grew by about 3% after growing 3% in 2000. In 2001, the Latin Americas' GDP growth slowed because of a slowdown in major markets (Europe, Japan, and the United States) and the increasing of interest rates by Central Banks in the region to fight inflationary restraints. Inflation remained in the single digits, and currency devaluations helped moderate the downturn in economic growth during the second half of 2001 and continued into 2002 (table 2; Economic Commission for Latin America and the Caribbean, 2002a§; World Bank Group, 2002§).

In early 2001, there was optimism that Brazil would achieve strong economic growth because of the buoyancy of the economy during the last quarter of 2000. The Brazilian

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²References that include a section twist (§) are found in the Internet References Cited section.

mining and processing sectors were adversely affected by the downturn of the domestic and worldwide economies, the volatility of the international financing market, depressed prices for mineral exports, and the country's power shortage owing to its worst drought in decades, which adversely affected the country's hydroelectric power generating capacity (Prates, 2001; Mining Journal, 2002b, c). All these combined factors resulted in several mining companies curtailing or postponing major new investments in the country. Brazil, which is one of the world's most important mining countries with significant mineral production, continued to offer a favorable climate for investors by keeping inflation under control, resolving its fiscal deficit, providing stable rules for capital repatriation and profit remittances, and reducing the tax burden, tariffs, and nontariff barriers. Brazil's mineral commodity exporting sector will gain from the continued depreciation of the Brazilian real caused by the financial risks, which, in part, have been triggered by the more severe crisis in Argentina.

Mining continued to diversify and strengthen the Canadian economy. Canada's mineral industry has been encouraged by the Federal Government's commitment to work with the mineral sector to improve the permitting process. Government and industry are enthusiastic about the prospect of a Northern Mines Ministers Conference to be held each year to report on progress, to identify challenges, and to network with all affected stakeholders. The Conference will help reestablish an attractive investment climate and reverse economic difficulties, especially in the Yukon Territory, which has been battered by economic and environmental problems (Excell, 2002; Steele, 2002). Canada's dollar weakened slightly once more against the U.S. dollar; the weakening presumably helped exports but discouraged imports of certain necessary commodities, specialized equipment, and ad hoc professional expertise.

The Peruvian economy grew in 2001 in spite of the effects of the Asian financial crisis, the instability of the Argentinian and Brazilian markets, and lower prices for its major mineral exports, mainly copper, gold, lead, and zinc. 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. 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 (Instituto de Ingenieros de Minas del Perú, 2001a, p. 14; 2001b, p. 31).

As a result of NAFTA, Mexico's investment and trade increased and mineral exports diversified to other markets, such as Asia, Europe, and Latin America. The interactions and attitudes of the three partners, however, will depend largely on the way they define their interests by engaging in sectors where the three economies have interests at stake, which will dictate the future development and scope of their economic relationships.

Investment Interest and Political Risk

In 2001, foreign direct investment (FDI) inflows to the Latin American and Caribbean region amounted to about \$79.7 billion,

which was almost 10% lower than that of 2000 (\$88.5 billion). Mexico, however, set a record of more than \$24.7 billion of FDI in 2001, but Brazil's share of the region's net FDI inflows (\$22.6 billion), which was second to that of Mexico, decreased by 31.1% compared with that of 2000 (\$32.8 billion), although it was significantly up from the \$1.5 billion at the beginning of the past decade (Banco Central do Brazil, 2002b§). Within Mercosur, Brazil was followed at a considerable distance by Chile with \$4.6 billion; Argentina, \$3.2 billion; Bolivia, \$550 million; Uruguay, \$320 million; and Paraguay, \$152 million. Recipients of FDI in the region were the previously state-owned mineral assets, the service sector, and the energy, finance, and telecommunications sectors (Banco Central do Brazil, 2002a§; Economic Commission for Latin America and the Caribbean, 2002a§, b§).

The International Monetary Fund endorsed Brazil's move to a system of inflation targets and currency devaluation to guide its monetary policy into 2002. This action indicated that the country could reduce its 2001 account deficit of \$35.2 billion to an equivalent of 5.8% of the GDP, thus helping restore confidence in the Government's economic management and creating conditions for lower interest rates and economic recovery (Banco Central do Brazil, 2002b§).

Brazil's strategic plan continued to be based on macroeconomics, constitutional reviews, and direct sales of assets via mergers and joint ventures to the private sector. The plan was designed to achieve Brazil's goals of promoting and encouraging new capital flows into its economy. Given that its economy was in recovery, however, the currency devaluation and the tough fiscal austerity plan helped restore confidence in the Government's economic management and create favorable conditions for lower interest rates (Economic Commission for Latin America and the Caribbean, 2002c§).

In January, Argentina's Government approved Decree No. 111 to replace Article 5 of Decree No. 2.686/93 and to regulate law 24.196. The new Decree intends to modernize regulations in light of new technical requirements and to address future issues that may result from Argentina's integration with neighboring countries on mining, which began with the ratification of the Treaty on Mining Integration and Complementation between Argentina and Chile as approved by law No. 25.243 of 2000.

Investment in the nonfuel mineral mining sector in Argentina decreased to \$267 million from \$371 million in 2000. This was significantly lower than those of 1997 and 1996 when investment totaled \$788 million and \$818 million, respectively, but was almost four times the investment level of 1994.

The present legal framework for the development and use of mineral resources in Brazil was established by the Federal Constitution of October 5, 1988. On August 15, 1995, the Brazilian Congress approved Constitutional Amendments Nos. 6 and 9, which allow the participation of the private sector via privatization, joint ventures, and deregulated investment in the sectors of mining, petroleum, natural gas, coastal and river shipping, transportation, and telecommunications. *Petróleo Brasileiro S.A. (Petrobrás)* continued to enter into joint ventures with foreign investors, with *Agencia Nacional do Petróleo* in turn regulating the petroleum industry (Ferraz, 2002, p. 6; *Petrobrás*, 2002, p. 7, 14; *Pimentel*, 2002a, p. 3-5).

In Chile, *Alliance Copper Ltd.* (owned by *CODELCO* and *BHP-Billiton*), was planning to develop a bioleaching process

to treat copper concentrates that contain 2% to 4% arsenic in 2001. A prototype plant was expected to begin operations by the second half of 2003 at the Chuquicamata Mine.

After years of consideration, the new mining code (law 685 of 2001) in Colombia was promulgated in August. The purpose of this law is to encourage exploration and production of mineral resources and to redefine the role of the Government in the mining sector along with its interaction with the private sector. The Government's role has become limited to one of a regulatory and administrative entity. The law also clarifies the provisions for mining contracts. It establishes the concession as the only instrument to enter into a contract with the Government for exploration and production of nonrenewable resources. The legal rights of contracts under previous laws are protected.

Cuba's principal European trading partner continued to be Spain, which is Cuba's third major market for exports. European Union (EU) member countries made up more than 50% of foreign joint ventures in Cuba. Spanish investors have traditionally focused on tourism, but in 2000 and 2001, their interests shifted to other industries, such as cement factories, offshore oil exploration, and powerplants (Amuchastegui, 2002). At yearend, the number of economic associations that were operating with foreign capital in Cuba increased to 405 from 392 in 2000. Countries with the greatest investment participation were Canada, Italy, and Spain. In 2001, Cuba signed investment protection and promotion agreements with the following countries: Cambodia, Croatia, the Caribbean Community (CARICOM), Denmark, Finland, Honduras, Mexico, Mozambique, and Qatar (Naciones Unidas, 2002§).

The special financial agreements that allowed Venezuela to sell petroleum to Cuba under preferential conditions collapsed, which left the island about 53,000 barrels per day short of domestic demand. The country's proven crude oil reserves as of January 2002 were estimated to be 750 million barrels (Mbbbl), and proven natural gas reserves were about 2,500 billion cubic feet (U.S. Energy Information Administration, 2002c§).

Among the many steps the Government of the Dominican Republic has taken to address the restructuring of the mining industry was the creation of the Consejo Nacional para el Desarrollo Minero and Unidad Corporativa Minera (UCM) through Decree 613-00 of 2000. The purpose of the UCM is to followup and serve as an operational collaborator in all mining projects in which the Dominican Government is a participant. The UCM will also arrange for private investments in the mining sector, assist Rosario Dominicana S.A. in the search for strategic partners, and represent the Government's mining rights over the bauxite deposits in Cabo Rojo.

The 1998 free trade agreement between the Government of the Dominican Republic and CARICOM was finally ratified and implemented in December 2001 by Barbados, the Dominican Republic, Jamaica, and Trinidad and Tobago. Ratifications were pending with Belize, Guyana, and the Eastern Caribbean states. The country's principal Caribbean trading partner in 2001 was Trinidad and Tobago (Revista Inter-Forum, 2002§).

In Jamaica, the National Environment and Planning Agency (NEPA) was created in April 2001. The NEPA was a merger of the Natural Resources Conservation Authority, the Town Planning Department, and the Land Development and Utilization Commission. Among the NEPA's objectives

are the integration of Jamaica's environmental, planning, and sustainable development policies and programs. In 1996, Clarendon Mining Ltd. and Ausjam Pty, which was an Australian company, formed a joint partnership to develop a gold mine in Main Ridge in Clarendon, central Jamaica. The mining lease was granted in June 1997. Ausjam began operating the Pennants gold mine in May 2001 (Carlton Baxter, Director of Economic Minerals Section, Ministry of Mining and Energy of Jamaica, written commun., August 2002). In 2001, the Pennants Mine produced 214 metric tons (t) (6,866 troy ounces) of gold and 95 t (3,049 ounces) of silver. Gold mined at Pennants was exported to Australia and Canada.

Venezuela's new Reglamento General de la Ley de Minas (Decreto No. 1.234) was published in the Gaceta Oficial de la República Bolivariana de Venezuela on March 9, 2001. It establishes the terms, conditions, and administrative procedures to implement the mining law of 1999. A new hydrocarbon law was passed in Venezuela in November 2001. The law (Decreto No. 1.510) was published in November in the Gaceta Oficial de la República Bolivariana de Venezuela no. 37.323 and became effective on January 1, 2002. Under the decree, all hydrocarbon deposits belong to the Republic of Venezuela. In agreement with article 302 of the Constitution of 1999, all primary hydrocarbon activities are reserved for the Government. Refining and marketing of hydrocarbons (secondary activities) can be performed by the State and the private sector jointly and/or separately. The creation of a mixed enterprise for primary production of hydrocarbons requires the approval of the National Assembly. The Government has the right to 30% of production from any deposit as royalty payment. The rate can be decreased to 20% if the economics of production are affected by the higher rate. Production royalty from mixed bitumen from the Orinoco Belt can be reduced to 16 $\frac{2}{3}$ % if the projects are not viable at the 30% rate. In both cases, the higher royalty rate can be reestablished at the discretion of the Government.

In general, investment opportunities for U.S. and foreign companies in Latin America have increased because of the liberalization of the Pacto Andino, the Mercosur countries' economies, and the privatization of many Latin American mineral, oil and gas, utilities, and infrastructure sectors. In the mineral industries of Latin America, 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. 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 (gas, electricity, 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 have led to the establishment of increasingly effective environmental regulations and controls (EERCs) for all Latin American industries. With respect to economic, environmental, and social impacts in the region, the implementation of EERC's,

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 fosters vigorous growth and leads to enhanced revenues. For many countries, this results in 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.

Brazil's reduced FDI reflected the general uneasiness in the financial markets. Foreign investors, however, continued to have confidence in the country and are expected to continue to support economic growth and investments in technology well into the new millennium. There were no reports of major investment decisions being deferred. Even firms that have financed with funds borrowed in U.S. dollars, which included Brazil's mineral resources giant Companhia Vale Rio Doce (CVRD) have the natural hedge provided by their exports. CVRD will invest about \$6 billion in mineral project developments and acquisitions by 2007. The significance of the investment would be to increase CVRD's market capitalization to \$25 billion from its current level of about \$10 billion (Mining Journal, 2002b).

Now that the steel industry, CVRD, and other sectors of the Brazilian economy, such as energy, services, telecommunications, and transportation, have been privatized, consideration has turned to crude oil and natural gas opportunities. New projects in the oil and gas sectors are now open to mergers and joint ventures among domestic and foreign investors; thus, the Brazilian economy should remain sustainable and competitive within an inclusive globalization, internationalization, and privatization processes into the new century. The new Brazilian Administration has recognized the need for fiscal stability and is working with the international financial markets (Mining Journal, 2002c).

Energy, mining, telecommunications, and related industries remained the most attractive sectors of the Peruvian economy for investment. This continued capital flow from domestic and foreign investors is expected to provide long-term benefits to the country. According to the Comités de Privatización (CEPRIs), the privatization process is expected to continue to generate additional investments in every sector of the Peruvian economy, particularly in the mining and energy industries (Ministerio de Energía y Minas, 2002b, p. 21-25). In 2001, investments were being used to modernize Peru's industrial infrastructure. Future foreign investments in the minerals sector are projected to be about \$17 billion for 2007, which is the largest committed capital to date, and will contribute significantly to the future of Peru's economic development (Ministerio de Energía y Minas, 2002b, p. 10).

In September 2001, Alcoa, Inc. of the United States proposed investing more than \$2.0 billion to strengthen the bauxite industry and energy generation in Suriname. Plans included

exploiting bauxite from the Bakhuy's Mountains in western Suriname, construction of a new smelter, and reactivating the Paranám smelter, which had been shut down in 2000. Alcoa officials noted that the additional energy required could come from a proposed Kabalebo hydroelectric project near the Van Blommenstein Lake France (De Ware Tijd, 2001§).

Exploration

Statistics released by the Canadian Government indicate anticipated 2001 exploration spending for Canada to be \$302 million, which was only about 40% of the reported exploration expenditure for 1997 (Natural Resources Canada, 2001§). Metals Economics Group (MEG) of Halifax, Nova Scotia, Canada, reported budgeted exploration spending in Canada for 2001 at \$333 million, which accounted for 16.6% of the overall worldwide exploration budget (Metals Economics Group, 2001a).

Exploration activity in 2001, as reported by the Canadian Government, was greatest in Ontario (about 22% of Canadian total exploration budget), Quebec (15%), the Northwest Territories (13%), Nunavut (12%), and British Columbia (10%). Compared to 2000 exploration expenditures, spending in British Columbia was expected to increase by about 30%, and that in Quebec was expected to decrease by about 31%. Approximately 70% of the reported Canadian exploration budget was allocated for initial exploration (up to and including the first delineation of a mineral deposit). Spending by junior companies was expected to increase to \$110 million in 2001 from \$98 million in 2000, and spending by senior companies was expected to decline to \$192 million in 2001 from \$214 million in 2000. If this estimate were confirmed, then the 2001 senior expenditures would be the lowest in the past 30 years (in constant 2000 dollars) (Natural Resources Canada, 2002; 2002§).

U.S. Geological Survey (USGS) research suggests that gold targets accounted for approximately 20% of reported Canadian exploration in 2001. On the basis of the number of active sites, the greatest amount of gold exploration activity took place in British Columbia, Ontario, and Quebec. Base metals accounted for about 31% (copper targets accounted for about 40%, and nickel targets, about 36% of base metals) with copper exploration focused on British Columbia and Ontario, and nickel exploration focused on Ontario and Quebec. On the basis of data compiled by the USGS, diamond exploration activity increased in 2001 to about 20% of all Canadian exploration targets mainly in the Northwest Territories, Nunavut, Ontario, and Quebec. Exploration was encouraged by recent discoveries and renewed interest by De Beers Canada Mining Inc., which spent 50% of their 2001 exploration budget on Canadian diamond projects. Platinum-group metals (PGM), which are found primarily in Ontario, were also targeted in 2001 and accounted for about 17% of reported Canadian exploration projects. Tantalum was also a sizeable exploration target in 2001. Approximately 92% of all reported exploration targets were considered to be early-stage sites, which is consistent with Government statistics; junior companies have been conducting much of the Canadian exploration activity.

During 2001, progress was reported in defining diamond potential at the AK/Kennedy Lake deposits (Northwest

Territories), nickel and PGM potential at Ferguson Lake (Nunavut) and River Valley (Ontario), and gold potential at Hope Bay (Nunavut). Development or expansion activities centered around diamond at Snap Lake (Northwest Territories), PGM at Lac des Iles, and gold at the Red Lake Mine in Ontario; and the Joe Mann, LaRonde, and the Sleeping Giant Mines in Quebec. At least 17 companies have staked ground for diamond in the Otish Mountains region of Quebec after promising core results were reported by Ashton Mining of Canada Inc. Negotiations for the development of the Voisey's Bay nickel-copper deposit continued with the Provincial Government of Newfoundland and Labrador (Inco Limited, 2002§).

During 2001, several pieces of legislation were implemented or proposed in Canada to encourage investment in mineral exploration. The new government in British Columbia recommended a 20% flow-through share tax credit for mining-related investment and proposed the staged elimination of the general corporation capital tax, the provincial sales tax on machinery and equipment, and a reduction in the corporate income tax rate (Northern Miner, 2001a). The National Geoscience Mapping Program continues to focus on evaluating the gold potential of Nunavut. Saskatchewan is providing funding for several mining industry projects to stimulate mineral exploration in the province (Government of Saskatchewan, written commun., November 26, 2001). Yukon Territory has extended its mineral exploration tax credit to April 1, 2003. In Ontario, Operation Treasure Hunt, which is that Government's ongoing 3-year \$20 million geoscience mapping program, continues to identify areas with high mineral potential, such that staking rushes have occurred in several areas of Ontario.

Although Latin America maintained its top position as a destination for proposed Canadian exploration spending, it incurred a 13% drop in exploration spending in 2001 compared with that of 2000 on the basis of data reported by the MEG. According to the MEG, Latin America was targeted for about 26% of the world gold exploration budget and nearly 39% of the budget for base metals in 2001 (Metals Economics Group, 2001b). Argentina, Brazil, Chile, Mexico, and Peru were ranked in the MEG's top 10 countries for 2001 exploration on the basis of planned exploration budgets. Similarly, an annual survey of executives from leading international mining companies conducted by the Fraser Institute ranked Brazil and Chile at the top of its emerging country rating for exploration investment on the basis of their financial attractiveness for investment in 2000. Investment appeal is reportedly based on the geologic potential, property value, ease of doing business, and political stability of these countries (Fraser Institute, 2001§).

USGS research suggests that countries with the greatest exploration activity were, in descending order by number of reported sites, Mexico, Argentina, Peru, Argentina, Chile, and Brazil. Gold attracted about 49% of total exploration activity, but interest in base metals reached 34% and silver achieved about 9% of the total. Investment in 2001 was primarily used to define further newly discovered resources and to conduct feasibility studies of promising deposits. In spite of continued interest in exploration in Mexico, the country's mining industry appeared to be faltering. Mexico's major mining companies reported lower financial returns in light of depressed metals prices and adverse currency exchange rates. The Mexican

Chamber of Mines reported that of the 400 small mining and exploration companies operating in Mexico a decade ago, only 70 firms survived (Metals & Materials Latin America, 2001). A number of incentives have been proposed to boost the Mexican mining industry.

The opening of the Antamina copper mine in Peru continues to stimulate exploration interest in the region. Antamina is just one of the region's recent mineral discoveries. This property is expected to add 69 million metric tons (Mt) of copper, 5.7 Mt of zinc, 7.6 Mt (244 million troy ounces) of silver, and 160,000 t of molybdenum to the world's mineral reserve base (Baertl, 2001; Mining Magazine, 2001b). It is expected to boost Peru's mineral exports by 30% (Botts, 2001; Mining Engineering, 2001). The Peruvian Ministry of Energy and Mines is projecting that between 1999 and 2008, almost \$1 billion would be directed to the expansion of existing operations; \$2.5 billion, to the construction of new projects; \$3.6 billion, on feasibility studies; and approximately \$1.6 billion, for early-stage exploration (Mining Magazine, 2001a; Ministerio de Energía y Minas, 2002a).

The border region between Argentina and Chile has also been heavily explored in anticipation of ratification of a 2001 agreement that allows companies to explore and exploit mineral deposits along this border. Discoveries of the Veladero gold-silver deposit by Argentina Gold Corp. (acquired by Homestake Mining Corp. in 2000) and the Pascua-Lama gold-silver deposit by Barrick Gold Corp. have intensified the search for precious metals in the region. With the completed merger between Homestake and Barrick in 2001, there is the potential for the joint development of a combined resource currently (2001) containing a reserve of about 777,600 t (25 million ounces) of gold and 22.5 Mt (724 million ounces) of silver. Delineation of both deposits is continuing.

Improvement in available geologic data and mining law reform continued to encourage mineral exploration in Latin America in 2001. The Multinational Andean Project, which is a 5-year international mapping effort, is nearing completion. The \$7 million project was funded by the Canadian International Development Agency and the geoscience agencies of Argentina, Bolivia, Chile, and Peru. Airborne geophysical surveys of northwestern Argentina, the border area between Argentina and Chile, and areas of Bolivia, Chile, and Peru have been or are being completed and metallogenic maps of these regions are being prepared (Northern Miner, 2001c). Ecuador has overhauled its mining code by increasing mining and exploration titles to 30 years, abolishing royalties, and increasing the efficiency of mining administration (Northern Miner, 2001d).

A series of revisions to the mining law of El Salvador were passed during 2001. Among the changes, mineral royalties were reduced, the length of exploration licenses was increased, and concession size restrictions were eliminated (Northern Miner, 2001b). Mexico plans to launch a venture capital fund to encourage mineral exploration. The Governments of Mexico and Japan have signed an exploration and development agreement for the Zacualpan-Mamantla region east of Mexico City (Mining Journal, 2001a). In 2001, the Peruvian Government promulgated a law that exempted the sales taxes on mining and oil exploration (Metals & Minerals Latin America,

2002). On April 9, 2001, Legislative Decree 912 reduced mining claim fees in Peru to \$4 per hectare from \$5 per hectare during 2001 and to \$3 per hectare thereafter (Mining Journal, 2001b).

Among the most popular geologic exploration targets continued to be the Cordillera and the Guyana Shield. The Cordillera extends southward through Canada, the United States, Mexico, and Central America to the Andes of South America virtually to Tierra del Fuego. The Guyana Shield comprises northwestern Brazil, southeastern Venezuela, French Guiana, Guyana, and Suriname. Investments into the regional mining industry should continue enhancing exploration and mine development activities in gold, iron ore, and emeralds, in order of importance. This trend should continue because several corporations were forming consortiums and acquiring exploration properties, mining prospects, and permits, particularly for gold, iron ore, diamond, base metals, and oil and gas, in order of importance (tables 3, 4).

Commodity Review

In 2001, the most important mineral commodities produced in Latin America, Canada, and the United States with their shares of world total are listed in table 5. This Western Hemisphere summary includes a review of production, consumption, and potential developments for leading mineral commodities. In the Americas, 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 Latin American countries in spite of the recessionary cycle, slow economic recovery, and lower prices for major mineral exports as discussed in the following country chapters. The commodity outlook section data are based on trends of potential production owing to augmented ore reserves, planned expansion capacities, new processing facilities, and/or market conditions in the globalized economy. Projects of operating companies, consortia, and/or Governments are listed as indication of their current (2001) plans and are not a USGS prognosis of presumable outcomes. The USGS assigns no warranty, expressed or implied, as to the accuracy, reliability, or completeness of provided data and is under no obligation to correct or update any forward-looking statements, whether as a result of future events, new information, or otherwise.

Metals

Aluminum.—*Production.*—In 2001, the Americas' aluminum output (7.2 Mt) decreased by almost 12% compared with that of 2000 (8.2 Mt) and was 30% of world production. Latin America and Canada contributed with 4.6 Mt, which remained at about the same level as that of 2000 (table 6). The largest producers of the metal in the Americas were the United States, Canada, and Brazil, in order of importance (tables 5, 6). The United States remained the largest producer in the Americas and the third largest aluminum-producing country in the world with an output of about 2.6 Mt (Plunkert, 2002a). Latin America's production of bauxite increased by 7.0% to 37.2 Mt, which was about 27% of world production (tables 5, 7). Brazil remained the largest producer in Latin America and the third largest

bauxite-producing country in the world with an output of nearly 14 Mt (Plunkert, 2002b). The United States (4,340 t), Brazil (3,750 t), Jamaica (3,542 t), Venezuela (1,700 t), and Canada (1,036 t) were the main producers of alumina in the Americas in 2001; combined production was about 14 Mt, which represented about 30% of global alumina output.

Consumption.—The Americas' share of the world's primary aluminum consumption in 2001 was about 29%. In the Americas', consumption reportedly decreased to 6.8 Mt of primary aluminum in 2001 from 7.8 Mt in 2000 and 7.5 Mt in 1998. The United States accounted for almost 75% of total primary aluminum consumption in the Americas followed by Brazil (11%) and Argentina (8%) (World Bureau of Metal Statistics, 2002, p. 9).

Outlook.—The major development in this sector in the Western Hemisphere in 2001 was the \$1.6 billion committed investment for expansions of the facilities at Albras, Alunorte, and Mineração Rio do Norte in Brazil in the short-term, which should help balance the loss of U.S. production cutbacks of 1.6 million metric tons per year (Mt/yr) in smelter capacity in the Western United States. A continued volatility in aluminum prices was expected.

Copper.—*Production.*—In 2001, the Americas' mine production of copper increased to 8.0 Mt from 7.8 Mt in 2000. Chile was the largest copper producer in the world; output increased by about 3%. Peru's output, which increased by about 30% compared with that of 2000, was very significant because the Antamina Mine came onstream on May 28, 2001 (Baertl, 2001). In 2001, Latin America and Canada produced about 6.6 Mt of copper ore (tables 5, 8). Chile accounted for almost 59% of the Americas' copper mine production; the United States, 17%; Peru, 9%; and Canada, 8%. The Western Hemisphere's copper mine production was about 59% of world production, and it was up by 63% compared with that of 1995 and by 86% compared with that of 1990 (table 5).

In 2001, refined copper production increased by 6.5% in Latin America and Canada and by 5.3% in the Western Hemisphere. Significant metal output increases were registered in Brazil (about 6%), Mexico (3%), Chile (7%), and Peru (4%) (table 9).

Consumption.—The Americas' consumption of copper decreased to 3.8 Mt in 2001 from 4.3 Mt in 2000 and 4.0 Mt in 1998. In 2001, the Western Hemisphere's share of the world's copper consumption was 26.5%. The United States, which was the dominant consumer in the region, accounted for 67.4% of the Americas' copper consumption; Mexico, 11.6%; Brazil, 9%; and Canada, 7% (World Bureau of Metal Statistics, 2002, p. 41).

Outlook.—Between 2002 and 2007, the mine production of copper from Latin America and Canada is expected to increase to 8.4 Mt from 6.6 Mt, or almost 30%, owing to startups of mines—La Alumbrera in Argentina by 2003, Sossego in Brazil by 2005, Voisey's Bay in Canada by 2006, and future expansions and lixiviation of oxide copper ores in Chuquicamata, Escondida, and others in Chile; Cerro Verde, Cujane, Tintaya, and Toquepala in Peru; and others in the region. In 2007, mine production of copper could be increased, for instance, in Chile, to about 6.1 Mt; Peru, to 910,000 t; and Canada, to 650,000 t. In 2002, the production of refined copper was likely to increase about 4% above that of 2000 and then

increase by 10% in 2003 and by 16% from 2003 to 2007. For the first 9 months of 2002, the Americas' consumption of refined copper was about 10.6% lower than that of the same period in 2001. The largest consumer of refined copper continued to be the United States (70%) followed by Mexico (10%), Canada (8%), and Brazil (7%) (World Bureau of Metal Statistics, 2002, p. 41).

Gold.—Production.—In the Americas, gold mine production fell to 859 t in 2001 from 880 t in 2000 and increased from 759 t in 1995. In the United States, gold production fell by 5.1% compared with that of 2000. In 2001, output increased in Argentina, Canada, and Peru by 18%, 2.4%, and 2.3%, respectively, compared with that of 2000 (table 10). The Americas' share of world gold mine production amounted to 33%. The United States accounted for 39% of the Western Hemisphere's gold production; Canada, 19%; Peru, 16%; and Brazil, 6% (table 5).

Outlook.—Gold mine production was expected to decrease in 2002 owing to consolidations and takeovers worldwide and could slightly increase again by 2.5% between 2004 and 2007. Canadian and Latin American combined output is likely to increase to 518 t in 2002, 536 t in 2003, 563 t in 2005, and 589 t in 2007 (table 10). By 2007, gold production in Canada, Peru, and Argentina is expected to reach 175 t, 165 t, and 55 t, respectively (table 10). Output is expected to rise with the development of gold deposits associated with the Sistem Veladero Breccia in Argentina and the Mundo Novo Greenstone Belt in Brazil and increased capacity at the Pierina and Yanacocha gold mines in Peru.

Iron and Steel.—Production.—In 2001, the Americas' share of global iron ore production amounted to 31%, and that of crude steel, 19%. Production of iron ore in Canada and Latin America decreased by 3.8%; production decreased in Canada by 22.6% and Brazil by about 1% compared with that of 2000 (table 11; Perron, 2001; Mining Journal, 2002a). In 2001, the iron ores produced in Canada and Latin America had higher iron content (about 65%), which reflected higher tonnage (182 Mt) compared with that of 2000 (173 Mt) (table 12). In 2001, Latin America and Canada's output of crude steel decreased by 4.5%, but that of the Americas, however, increased by 8.6%. The United States accounted for 57% of the Americas' crude steel production; Brazil, 17%; Canada, 10%; and Mexico, 8% (tables 5, 13).

Consumption.—In 2001, the Western Hemisphere accounted for almost 21% of global steel consumption. The United States consumed 107 Mt of finished steel products in 2001, which was a decrease from 120 Mt in 2000 and an increase from 102 Mt in 1995. From 1995 to 2001, Brazil's consumption of steel products increased to 16.7 Mt from 12.0 Mt; Canada's, to 15.2 Mt from 12.8 Mt; and Mexico's, to 12.6 Mt from 5.9 Mt. The demand for steel by other Central American and South American countries remained almost constant at 11.1 Mt in 2001 and 11.2 Mt in 1995 (Instituto Brasileiro de Siderurgia, 2001, p. 55; International Iron and Steel Institute, 2002§).

Outlook.—The Americas' apparent consumption of finished steel is expected to decrease by about 1% in 2002 and to increase by 4.5% per year from 2003 to 2006. In 2006, the

Americas are likely to account for about 22% of world steel consumption (MEPS (International) Ltd., 2002§).

Lead.—Production.—In 2001, the Western Hemisphere's lead mine production remained about the same level as that of 2000 (1.06 Mt) and 1995 (1.05 Mt). In 2001, Latin America and Canada's combined lead mine output increased by about 4% compared with that of 2000 (table 14). The Americas' production of primary refined lead decreased to 2.2 Mt in 2001 from 2.3 Mt in 2000, and Latin America and Canada's combined primary refined lead output increased by about 5% compared with that of 2000 (table 15). The United States accounted for 63% of the Americas' primary refined lead production, although its output fell by about 6% in 2001. Mexico accounted for 15% of primary lead production. The United States accounted for nearly 68% of the Americas' secondary (recycled) refined lead output. In 2001, the production of recycled refined lead decreased by 4% compared with that of 2000. In 2001, the Americas' share of global lead mine production amounted to 34% (table 5); primary refined lead, 33%; and secondary refined lead, 36% (World Bureau of Metal Statistics, 2002, p. 80-81, 83).

Consumption.—In 2001, the Americas' lead consumption remained about at the same level as that of 2000 and 1998 (2.2 Mt). Their share of the world's lead consumption was nearly 34%. The United States accounted for 77% of the Americas' lead consumption; Mexico, 11%; and Brazil, 6% (World Bureau of Metal Statistics, 2002, p. 82).

Outlook.—Latin America and Canada's lead mine production was expected to increase by 2.4% in 2002, 3.6% in 2003, and 4% from 2003 to 2007. By 2005, output in Peru, Canada, and Mexico was likely to reach 315,000 t, 175,000 t, and 143,000 t, respectively. The production of their primary refined lead was expected to increase in 2003 to 289,000 t in Peru, 162,000 t in Canada, and 150,000 t in Mexico, and their secondary refined lead production was expected to remain unchanged (tables 14-16). The consumption of lead in the Americas is likely to remain unchanged; in the United States, however, consumption for the first 9 months of 2002 was about 0.7% less than that of the same period in 2001 (World Bureau of Metal Statistics, 2002, p. 82).

Nickel.—Production.—In 2001, the Americas' share of global nickel mine production amounted to 31%, and that of refined metal, 23%. Production of nickel mine in Canada and Latin America increased slightly by almost 1%; production increased in Venezuela by more than 200%, in Canada by about 1%, and in Cuba by about 4%. In 2001, the Americas' production of refined nickel increased by about 4%; production increased in Canada by 53%, in Cuba by 16%, in Colombia by 14%, and in Brazil by 9% (tables 5, 17; Rochon, 2002).

Consumption.—The Americas accounted for 14% of the world's refined nickel consumption. Demand for refined nickel in the Americas fell to 157,900 t in 2001 from 181,200 t in 2000. Within the region, the United States, which was the dominant consumer, accounted for nearly 77% of the Americas' nickel demand. For the first 9 months of 2002, the Americas' nickel consumption was down by about 6% compared with the same period in 2001 (World Bureau of Metal Statistics, 2002, p. 105).

Outlook.—Changes in refined nickel consumption and the output of nickel ore and refined nickel output in the Americas are expected to be modest (World Bureau of Metal Statistics, 2002, p.103-105).

Platinum-Group Metals.—*Production.*—In 2001, the Americas' production of platinum and palladium increased by 20% and 18%, respectively. Canada and the United States were the dominant producers of PGM; Canada accounted for 56% of the production of platinum, and the United States, 58% of the production of palladium. The Americas' share of world platinum output amounted almost 7%, and that of palladium, 13%. In 2001, Canada's and Colombia's combined output of platinum and palladium increased by almost 22% and 18%, respectively, compared with those outputs of 2000 (tables 18, 19).

Outlook.—In 2001, PGM production increased because of higher demand for use in autocatalysts. A sagging global economy in the second half of 2001 may lead to modest output increases in the foreseeable future (Natural Resources Canada, 2002a).

Silver.—*Production.*—In 2001, the Western Hemisphere's mine production of silver increased to 10,442 t from 9,940 t in 2000 and 8,785 t in 1995. Silver production in Argentina increased by 95%; Peru, 10%; Chile, 9%; Mexico, 5%; and Canada, 5% in 2001 (table 20). The United States' output decreased by 12% after increasing by 27% in 2000 (1,980 t) from that of 1995 (1,560 t). Mexico, which was the largest producer of silver in the Americas, accounted for 26%, and Peru, the United States, Chile, and Canada accounted for 23%, 17%, 13%, and 12%, respectively, of the output of the Americas. The Americas' share of world silver mine production amounted to 56% (table 5).

Outlook.—Latin America and Canada's silver mine production was expected to fall by 0.2% in 2002 and to increase by 0.7% in 2003 and 6% from 2003 to 2007. Mexico's production was expected to reach 2,800 t in 2003 and 3,000 t in 2007. Output was also likely to rise in Peru, Chile, and Canada, in order of importance (table 20).

Tin.—*Production.*—The Western Hemisphere accounted for 29% of global tin mine production and 17% of refined tin production. Peru's mine production of tin decreased by 2%, and its refined tin output increased by 2% in 2001. The major producers of ore, concentrates, and refined tin in the Americas, in order of importance, were Peru, Brazil, and Bolivia (tables 5, 21, 22).

Consumption.—In 2001, the Americas' consumption of refined tin decreased to 64,800 t in 2001 from 67,100 t in 2000 and 70,100 t in 1998. The Americas' share of the world's tin consumption was 23%. In 2001, the United States accounted for 77% of the region's tin consumption, and Brazil, 9% (World Bureau of Metal Statistics, 2002, p. 122).

Outlook.—The tin smelter and refinery facility, which has a capacity of 40,000 metric tons per year (t/yr) in Ica, Peru, is expected to treat about 38,800 t/yr of tin concentrate from the San Rafael tin mine to produce about 35,800 t/yr of refined tin starting in 2002 (Ministerio de Energía y Minas, 2002a). The

Americas' share of world tin mine and refined tin production was likely to remain above 1% until at least 2007. Refined tin consumption is likely to increase in 2002 owing to higher demand for new uses in nontoxic products (solders, retardant chemicals, and others) in the United States (Carlin, 2002).

Titanium.—*Production.*—In 2001, the titanium dioxide content of ilmenite in the Americas decreased by about 1.0%. The dominant producers of ilmenite, in order of importance, were Canada, the United States, and Brazil. Canada and the United States accounted for 27% of the production of ilmenite. In 2001, Brazil's and Canada's combined output of ilmenite decreased by 1% compared with that of 2000 (table 23).

Outlook.—Ilmenite production decreased in value because of a sagging global economy in the second half of 2001, which caused a decrease in the use of carbides, chemicals, and pigments. A reversal of this downturn could lead to modest output increases in the foreseeable future.

Tungsten.—*Production.*—In 2001, tungsten production in Latin America and Canada decreased by about 7.5%. Bolivia and Brazil were the main producers of tungsten. Canada was expected to be the dominant producer of tungsten in 2002. Bolivia and Canada will account for most of (99%) of the production of tungsten in the Americas (table 24).

Outlook.—Between 2002 and 2007, Canada is likely to become a major producer of tungsten because its CanTung tungsten mine recommenced operations in 2002 in spite of the sagging global economy in the second half of 2001 (Shedd, 2003).

Zinc.—*Production.*—In 2001, the Americas' mine production of zinc decreased by 1.5% compared with that of 2000. The decline was broad based except in Peru, Mexico, and Canada where outputs increased by 16%, 9%, and 8%, respectively (table 25). The Americas accounted for 42% of world zinc mine output and 18% of world refined zinc output. Peru and Canada each accounted for almost 30% of zinc mine production in the Americas; and the United States, more than 20% (table 5). In 2001, in the Americas' production of refined zinc fell by 6.5% owing to declining outputs from Canada and the United States. In Latin America, Argentina, Mexico, and Peru, where the Antamina Mine came onstream, increased production (Baertl, 2001; table 26). The expected refining capacity expansion in Peru was likely to increase the Americas' production of refined zinc by 2005-2007. Teckcominco has developed a two-stage plan to expand the production capacity to 240,000 t/yr to be completed in the near future (Teck Cominco, 2003§).

Consumption.—In 2001, the Western Hemisphere's consumption of zinc slab decreased to 1.46 Mt from 1.84 Mt in 2000 and 1.98 Mt in 1998. The Americas' share of the world's zinc slab consumption was more than 21%. In 2001, the United States accounted for 60% of the Americas' zinc slab consumption; Brazil, 11%; Canada, 10%; and Mexico, 8% (World Bureau of Metal Statistics, 2002, p. 130).

Outlook.—Peru's zinc mine production was expected to rise to 1.25 Mt in 2003 and to reach 1.55 Mt by 2007. Canada's zinc mine production was expected to increase after a small decline in 2002 to 1.0 Mt in 2003 and maintain that level through 2007

because of potential zinc mine closures, such as Nanisivik and Polaris in Nunavut and the Ruttan Mine in Manitoba. This production decrease in 2002 would be due to low zinc prices in the open markets. Canada's and Latin America's zinc mine production was expected to increase by about 11% in 2003 and by almost 3% per year from 2004 to 2007. Most of the increase would be attributable to increasing production in Brazil, Mexico, and Peru. Refining capacity expansion in Peru was likely to increase the Americas' production of refined zinc by 120,000 t in 2003 owing to the startup of the Antamina Mine and to expansions in the Southern Peru and Tintaya copper mines. Peru's zinc production would account for about 37% of the Americas' refined zinc output in 2007 (table 26; Plachy, 2002).

Industrial Minerals

Cement.—*Production.*—In 2001, the Americas' production of cement increased slightly by 0.3%. The dominant producers of cement in the region, in order of importance, were the United States, Brazil, and Mexico. The United States accounted for about 40% of the Americas' production; Brazil, 18%; Mexico, 13%; and Canada, 6%. The Americas' share of world cement output amounted to 13% (table 5).

Diamond.—*Production.*—In 2001, the Americas' production of natural diamond amounted to about 4.9 million carats (table 27). Canada accounted for 75% of the Americas' diamond output; Brazil, 20%; Guyana, 4%; and Venezuela, 1%. The United States is not diamond producer. In 2001, the Western Hemisphere's diamond production increased by 36% from that of 2000 and 400% from that of 1995 (table 27; Law-West, 2002). The increase in production was based on Canada's entrance in 1998 as a global producer; output increased to 3.7 million carats in 2001 from 300,000 carats in 1998 (table 27).

In 2001, the global value of rough diamond production amounted to \$7.9 billion. The Western Hemisphere accounted for nearly 4% of the global diamond output; Canada, 7%; and Brazil, 2%. In 2001, Canada produced about \$650 million of rough diamond compared with \$454 million in 2000 (Law-West, 2002).

Outlook.—The diamond industry is in a period of change in the global economy, which will affect future production of rough diamond in the Americas. The proposed legislation for rough and polished diamond imports into Canada and the United States will impact the global diamond industry as well. Canada's diamond production was likely to increase because of several projects were in the planning stage; for example, the Diavik diamond project is to start in mid-2003, the Snap Lake project is expected to begin in 2006, and the Jericho diamond project submitted a draft environmental impact statement in early 2001 (Law-West, 2002; Ralfe, 2002).

Gemstones.—*Production.*—The Americas' production of emerald increased to 8,500 t in 2001 from 8,454 t in 2000. The Americas' production of gemstones increased to 9,148 t in 2001 from 8,902 t in 2000. Their share of world production amounted to 15%. Brazil and Colombia were the only producers of aquamarine and emerald, respectively, in the Americas (Oliveira, 2002).

Outlook.—Political instability in Colombia could result in lower production of emerald in 2002.

Phosphate Rock.—*Production.*—In 2001, the Americas' production of phosphate rock (phosphorus pentoxide content) decreased. The United States' output decreased by 21%, and Brazil's remained at about the same level as that of 2000. These reductions were due to prevailing weak market conditions. The Americas' share of world phosphate rock production amounted to 28%. The United States accounted for 80% of the Americas' phosphate rock output, and Brazil, 15% (table 5). In 2001, Brazil and Mexico were, in order of importance, the major producers of phosphate rock in Latin America; their outputs had increased by 25% and 69%, respectively, compared with those of 1995 (table 28).

Consumption.—According to the Food and Agricultural Organization of the United Nations (2001), world consumption of nitrogen fertilizers would increase by nearly 5% in 2002 on the basis of significant indicators in the Americas, China, and India. Between 2002 and 2006, phosphate fertilizer consumption was expected to increase by 3.6% per year. The Americas' consumption of fertilizers was expected to increase by 3% in 2002. The United States continues to be the world's largest producer of phosphate rock and the dominant supplier of diammonium phosphate (Jasinski, 2002).

Salt.—*Production.*—The United States accounted for 54% of the Americas' salt output; Mexico, 10%; and Brazil, 7%. In 2001, the Americas' production of salt decreased by 2.4%. Brazil's and the United States' outputs remained at about the same level as those of 2000, and Canada's output increased by about 5.1% compared with that of 2000. The Americas' share of world salt production amounted to about 37% (table 5).

Energy Minerals

Coal.—*Production.*—The Americas' share of world all grades of coal (anthracite and bituminous) production amounted to 24% (table 5). In 2001, the Americas' coal production increased by 8%. Production increased by 113.6% in Brazil, 14.1% in Colombia, 4.4% in the United States, and 1.7% in Canada (tables 5, 29). The United States, which was the dominant coal producer in the Americas, accounted for 88% of the total coal output; Canada and Colombia accounted for 6% and 4%, respectively (British Petroleum plc, 2002§).

Consumption.—The Americas accounted for about 27% of the world's coal consumption. The United States accounted for 91% of the Americas' coal consumption; Canada, 5%; and Brazil, 2%. From 1991 to 2001, the Americas' consumption of coal increased by about 17% (British Petroleum plc, 2002§).

Outlook.—In the United States, the U.S. Energy Information Administration (2003§) is forecasting higher coal consumption because of increased electricity demand; thus, coal production is expected to continue its historical annual growth rate of about 1.3% into 2005 and beyond and at lower costs because of improved coal mine productivity. In Latin America, Colombia is expected to continue to be the largest producer and exporter of coal beyond 2006. Brazil is the second largest producer of coal and probably will continue to be a net importer. Venezuela's

coal production will continue to be exported to the global markets. Canada's coal production is expected to remain at the 2001 level (70.5 Mt) through to 2005 and to increase to 80 Mt by 2010 (Stone, 2002).

Natural Gas.—Production.—The Americas accounted for 33% of world natural gas production compared with 35% in 2000 (table 5). In 2001, the United States accounted for 67% of the Americas' natural gas output; Canada, 20%; Argentina and Mexico, 4% each; and Venezuela, 3% (tables 5, 30). In the Americas, production of natural gas increased by 1.9% in 2001 compared with that of 2000 (British Petroleum plc, 2002§).

Consumption.—In 2001, the Americas consumed about 34% of the world's natural gas consumption. The United States accounted for more than 75% of the Americas' natural gas consumption; Canada, 9%; Mexico, 4%; and others, 12%. The Americas' consumption decreased to 819.5 billion cubic meters in 2001 from 852.4 billion cubic meters in 2000. This decline in gas consumption was not in parallel with changes in the supply. Consumption was affected by economic recession and the terrorist attack of September 11. Encouraged by high prices, production of natural gas increased by almost 2% in 2001 (British Petroleum plc, 2002§).

Petroleum.—Production.—The Americas' share of world crude petroleum production amounted to 27%. In 2001, the United States accounted for 32% of the Americas' crude oil output; Mexico, 20%; Venezuela, 17%; Canada, 12%; and Brazil, 7% (table 5). Production of petroleum increased by 1.2% in 2001 compared with that of 2000 (British Petroleum plc, 2002§).

Consumption.—In 2001, the Americas' consumption of petroleum products amounted to 37% of the world's consumption. The United States accounted for almost 70% of the Americas' petroleum products consumption; Brazil and Canada, 7% each; Mexico, 6.5%; and others, 4%. Consumption decreased slightly to 10,249 Mbbl in 2001 from 10,295 Mbbl in 2000 (British Petroleum plc, 2002§).

Outlook.—The Americas' crude oil consumption grew slightly during 2000 and 2001. The principal reason for demand weakness in 2001 was the U.S. recession and negative economic effects of September 11. In 2002, the Americas' production of petroleum was expected to increase slightly before increasing by 4.2% in 2003 and by 4.3% per year from 2003 to 2007. The U.S. output was likely to increase to 8.7 million barrels per day (Mbbl/d) in 2005 from 5.8 Mbbl/d in 2001. Canadian production was expected to increase to 3.1 Mbbl/d in 2005 from 2.0 Mbbl/d in 2001 and 2.7 Mbbl/d in 2000. Production was also expected to increase substantially in Latin America to 8.1 Mbbl/d in 2005 from 6.3 Mbbl/d in 2001 (U.S. Energy Information Administration, 2003§).

Uranium.—Production.—The Western Hemisphere's share of world uranium production amounted to 35%. In 2001, Canada accounted for 90% of the Americas' uranium output; the United States, almost 10%; and Brazil, less than 1% (table 32). In the Americas, production of uranium increased by 1.2% in 2001 compared with that of 2000 (U.S. Energy Information Administration, 2003§). In 2001, Canadian uranium production

amounted to a record total of 11,000 t, which was an increase of 17% compared with that of 2000 because of increased production from the McArthur River and the McClean Lake Mines in Saskatchewan (table 3; Vance, 2002).

Consumption.—In 2001, the Americas' consumption of uranium as yellow cake amounted to 57% of the world's consumption. The United States accounted for almost 90% of the Americas' uranium consumption; Argentina's and Brazil's use were very inconsequential. The Western Hemisphere's uranium deliveries (consumption) increased to 54,396 t in 2001 from 49,481 t in 2000; the increase was dependent on imports from, in order of importance, Australia and Africa (U.S. Energy Information Administration, 2002, p. 23).

Outlook.—The Western Hemisphere uranium consumption has experienced almost 10% growth during 2000-01. The principal reason of stronger demand in 2001 was due to the aftermath of September 11. In 2002, the Americas' production of uranium was expected to increase slightly or remain about the same level between 2002 and 2007. Canadian production was expected to increase to 12,000 t in 2005 from 11,000 in 2001 and 9,400 t in 2000. Production in Brazil was expected to remain flat between 2000 and 2007 (table 32; U.S. Energy Information Administration, 2002, p. 7).

Trade Review and Outlook

Brazil was the largest market and the economic center of Mercosur. In 2001, the member and associated countries of Mercosur had about 247 million people, 29% of the Americas' population, and a combined purchasing power parity of \$2 trillion, which represented about 75% of South America's total purchasing power parity (Cowley, 2001, p. 2; U.S. Central Intelligence Agency, 2002a§). Brazil accounted for about 71% of Mercosur's population and almost 62% of its purchasing power parity. Most multinational companies considered this growing trade bloc to be extremely important because of its size and the amount of trade taking place in the region. NAFTA has had its impact on Latin America and the Caribbean Basin trade, which increased to about \$109 billion, or about 58% higher than that of 1991 (\$63 billion). When Mercosur is fully integrated, unrestricted movement of goods, labor, and services is expected to take place among the four principal members and the two associate members. Mercosur has had its impact on Latin intraregional trade, which increased to about \$30 billion in 2001 from \$7 billion in 1983. Intra-Mercosur trade amounted to \$20 billion, and mineral trade amounted to \$6.5 billion (Departamento Nacional de Produção Mineral, 2002a, p. 16-17).

In 2001, Brazil sold 17% of its exports to the other Mercosur members and 26% to the other countries in Latin America. Total minerals trade between the major players of Mercosur, Brazil (\$1.7 billion) and Argentina (\$800 million), amounted to \$2.5 billion. Brazilian mineral imports were valued at \$13.0 billion, or 36.8% higher than those of 2000 (\$9.5 billion), and its total mineral exports were \$11.5 billion, or about 20% higher than those of 2000 (\$9.2 billion). The values of the principal exports were iron ore, \$2.9 billion; steel products, \$2.8 billion; and aluminum, \$1.5 billion. In addition to petroleum and derivatives (\$4.3 billion), other major mineral imports (\$1.9 billion) were, in order of importance, copper, phosphate rock,

potash, sulfur, and zinc (Departamento Nacional de Produção Mineral, 2002b, p. 16; Ferraz, 2002, p. 6).

During the past decade, Brazil-U.S. trade relations grew at an unprecedented rate. The U.S. imports were primarily manufactured and semimanufactured Brazilian goods of high aggregate value, such as steel and chemical products, as well as other commodity exports. Brazilian exports to Europe and Japan consisted mostly of raw materials that were, in order of importance, iron ore, manganese, marble, and granite, and agricultural commodities.

In 2001, total trade between Brazil and the United States was \$4.1 billion. Exports increased by 27.5% to \$3.1 billion, and imports decreased by 3.0% to \$1.0 billion. Brazil's mineral trade balance with the United States increased to a surplus of \$2.0 billion from a surplus of \$1.2 billion in 1999 (Departamento Nacional de Produção Mineral, 2002c, p. 16).

The excellent infrastructural networks, which included, in order of importance, 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 EU, 42% within NAFTA, and 25% within Mercosur (Departamento Nacional de Produção Mineral, 2002c, p. 16). 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.

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, and South Africa. Foreign investors and the Brazilian private sector continued to favor 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 6 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 Americas as trade blocs would enhance world trade relations and bring benefits to all parties involved. The FTAA could become not only the largest single economic bloc within the global and internationalized economy, but would create an Americas' market of 911 million consumers, which would almost double the current size of NAFTA, with an economy of about \$15 trillion. The Americas could become an immense open market

offering business opportunities with economic incentives, transparency, and inclusiveness within the global economy.

Environment

Deforestation continued to be an environmental concern in the Americas. Between 1990 and 2000, forest cover decreased at a rate of 0.1% per year in Central America and North America and 0.4% per year in South America compared with the global rate of 0.2% per year. Haiti had the most rapid deforestation, which was 5.7% per year; Uruguay, 5.0%; Saint Lucia, 4.9%; El Salvador, 4.6%; Netherlands Antilles, 3.0%; and Belize, 2.3% (Food and Agricultural Organization of the United Nations, 2001, p. 34).

Most of the environmental laws and regulations for each country are addressed on its following chapter in the *Canada and Latin America Minerals Yearbook for 2001*. Here are included some typical environmental models in the Guyana Shield, the Cordillera, and the Amazon rain forest, which is one of the world's most sensitive ecosystems.

The Brazilian Ministério de Minas e Energia enforces the 1989 decree, which prohibits the use of cyanide and mercury in the mining of gold unless approved by Brazilian local environmental agencies and offers technical assistance to garimpeiros (small-scale independent miners), in particular, on producing gold without affecting the environment. Environmental impacts are expected to be lessened in the future. The Amazon region alone was considered to have possibilities for major undiscovered mineral wealth in addition to the large reserves of, in order of importance, iron ore, manganese, bauxite, gold, and tin. A factor that may have a negative effect on mineral development in the longer term was the concern over biodiversity in the Amazon rain forest. Much will depend on the approaches to be used for economic and social development while protecting the environment in a sustainable way.

In Canada, the Provincial and the Territorial Governments support and promote mineral exploration and deposit appraisals in their respective jurisdictions with initiatives, such as fiscal incentives, resolution of land access issues, and the provision of modern geoscientific data leading to management of ecological landscapes and of conservation of diversity (Natural Resources Canada, 2002b).

The Peruvian Dirección General de Asuntos Ambientales (DGAA) has the responsibility to address environmental problems that result from energy and mining activities. The sustainable development model for the mining and energy sectors began in 1993 with regulations and procedures for gradual reduction of pollution, which include economic development policies and environmental protection. The mining industry must comply by adjusting its ongoing operations to permissible effluent levels and its new operations by using cleaner technologies. The DGAA evaluates and proposes the environmental regulations for the mining and energy sectors, which include the maximum emission levels that are compatible with the internationally accepted limits set by the United Nations and the World Bank. The mining and oil companies are increasing their efforts to protect the environment, and oil companies, in particular, are under pressure because the number of operations in the Amazon rain forest is increasing (Ministerio de Energía y Minas, 2002b).

The Surinamese Government expressed concern about the magnitude of illegal gold mining, especially the impact that it was having on the environment. It noted that the use of mercury by the *garimpeiros* was damaging the environment and that they needed to be encouraged to shift to legal methods of operations where safer methods of mining could be developed. The National Institute for Environment and Development in Suriname and the Health Ministry were studying ways to stop the consequences of mercury pollution. One project called Mercury-Free Gold Mining was being financed by the Small Grants Program and Conservation International and being carried out by the Godo-olo Foundation (De Ware Tijd, 2001§).

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TABLE 1 1/
THE AMERICAS: AREA AND POPULATION

Country	Area (square kilometers)	Population (millions)
North America:		
Canada	9,976,140	32.0
Mexico	1,972,550	103.4
United States 2/	9,629,091	280.6
Total	21,600,000	416.0
Central America and the Caribbean:		
Antigua and Barbuda	440	0.1
Aruba	193	0.1
Bahamas, The	13,940	0.3
Barbados	431	0.3
Belize	22,966	0.3
Bermuda	53	0.1
Costa Rica	51,100	3.8
Cuba	110,860	11.2
Dominica	754	0.1
Dominican Republic	48,730	8.7
El Salvador	21,040	6.4
Grenada	344	0.1
Guadeloupe	1,780	0.4
Guatemala	108,890	13.3
Haiti	27,750	7.1
Honduras	112,090	6.6
Jamaica	10,991	2.7
Martinique	1,100	0.4
Montserrat	102	0.0
Netherlands Antilles	960	0.2
Nicaragua	129,494	5.0
Panama	10,019	4.2
Saint Kitts and Nevis	78,200	2.9
Saint Lucia	261	0.0
Saint Vincent and the Grenadines	616	0.2
Trinidad and Tobago	389	0.1
Other 2/	5,128	11.7
Total	758,000	86.1
South America:		
Argentina	2,766,890	37.8
Bolivia	1,098,580	8.5
Brazil	8,511,965	176.0
Chile	756,950	15.5
Colombia	1,138,910	41.0
Ecuador	283,560	13.4
French Guiana	91,000	0.2
Guyana	214,970	0.7
Paraguay	406,750	5.9
Peru	1,285,220	27.9
Suriname	163,270	0.4
Uruguay	176,220	3.4
Venezuela	912,050	24.3
Total	17,800,000	355.0
Grand total	40,100,000	857.0
World total		6,230.0

1/ Data from U.S. Central Intelligence Agency (2002). Population and totals are rounded to three significant figures.

2/ Includes the British Virgin Islands, Puerto Rico, Saint Helena, and the U.S. Virgin Islands.

TABLE 2 1/
THE AMERICAS: GROSS DOMESTIC PRODUCT

	Gross domestic product per capita	Gross domestic product 2/ (billions)	Growth rate (percent)
North America:			
Canada	\$29,184	\$933.9	3.9
Mexico	8,652	894.6	2.1
United States	35,234	9,886.5	2.6
Total	XX	11,700.0	XX
Central America and the Caribbean:			
Antigua and Barbuda	10,838	0.8	1.8
Aruba	NA	NA	NA
Bahamas, The	13,615	4.1	1.9
Barbados	13,249	3.7	0.2
Belize	4,981	1.3	4.9
Bermuda	NA	NA	NA
Costa Rica	11,302	31.6	3.3
Cuba	NA	NA	NA
Dominica	5,257	0.4	3.4
Dominican Republic	6,310	54.9	5.2
El Salvador	3,284	21.0	4.2
Grenada	7,326	0.7	6.0
Guadeloupe	NA	NA	NA
Guatemala	4,088	54.4	4.2
Haiti	1,550	11.0	0.6
Honduras	2,414	15.9	5.0
Jamaica	3,734	10.1	5.4
Martinique	NA	NA	NA
Montserrat	NA	NA	NA
Netherlands Antilles	14,804	3.2	1.8
Nicaragua	2,486	12.4	5.4
Panama	8,134	23.6	2.7
St. Kitts and Nevis	11,051	0.4	4.4
St. Lucia	6,219	1.0	2.8
St. Vincent and the Grenadines	5,190	0.6	4.2
Trinidad and Tobago	1,022	12.0	7.0
Total	XX	263.0	XX
South America:			
Argentina	10,140	383.3	(2.1)
Bolivia	3,212	27.1	3.6
Brazil	7,053	1,241.4	3.9
Chile	14,478	224.4	5.2
Colombia	7,368	302.1	3.8
Ecuador	4,858	65.1	8.1
French Guiana	NA	NA	NA
Guyana	4,241	3.0	3.8
Paraguay	3,472	20.4	3.2
Peru	4,658	129.9	2.6
Suriname	4,642	2.0	3.7
Uruguay	9,465	32.1	(0.9)
Venezuela	9,037	219.6	5.2
Total	XX	2,650.0	XX
Grand total	XX	14,600.0	XX

NA Not available. XX Not applicable.

1/ International Monetary Fund, World Economic Outlook Database, September 2003. Data may differ from that in country chapters as a result of differing dates of estimation or differing sources.

2/ Gross domestic product based on purchasing power parity and listed in billion dollars. Totals are rounded to three significant digits.

TABLE 3
SELECTED SIGNIFICANT CANADIAN EXPLORATION SITES IN 2001 1/

Location	Type 2/	Site	Commodity	Company	Resource 3/	Exploration
British Columbia	E	Afton	Cu, Au, Pd, Ag	DRC Resources Corp.	460,000 t Cu, 1 Moz Au	Extensive drilling.
Do.	P	Kemess North	Au, Cu	Northgate Exploration Ltd.	5.7 Moz Au, 1 Mt Cu	Do.
Do.	E	Morrison/Hearne Hill	Cu, Au	Pacific Booker Minerals Inc.	Data not released	Do.
Northwest Territories	E	AK/Kennady Lake	Diamond	Mountain Province Diamonds Inc.	do.	+\$6 million budget.
Do.	E	King	do.	Diamondex Resources Ltd.	do.	Extensive drilling.
Do.	D	Snap Lake	do.	DeBeers Canada Mining Ltd.	86.4 million carats diamond	Extension of resources.
Nunavut	E	Ferguson Lake	PGM, Cu, Ni	Starfield Resources Inc.	2.5 Moz Pd, 366,000 oz Pt	Extensive drilling.
Do.	E	George Lake/Goose Lake	Au, Cu	Kinross Gold Corp.	2.85 Moz Au	Extension of resources.
Do.	E	Hope Bay	do.	Hope Bay Gold Corp.	4.2 Moz Au	Extensive drilling.
Ontario	P	Lac des Iles	PGM, Au	North American Palladium Ltd.	7.3 Moz Pd, 795,000 oz Pt	Do.
Do.	E	Montcalm	Ni, Cu	Falconbridge Ltd.	7 Mt, 1.36% Ni, 0.67% Cu	+\$6 million budget.
Do.	P	Red Lake	Au	Goldcorp Inc.	5 Moz Au	Extension of resources.
Do.	E	River Valley	PGM, Au, Cu, Ni	Pacific North West Capital Corp.	422,000 oz Pd, 142,000 oz Pt	Extensive drilling.
Quebec	P	Joe Mann	Au, Cu	Campbell Resources Inc.	Data not released	+\$3 million budget.
Do.	P	LaRonde	Au, Ag, Cu, Zn	Agnico-Eagle Mines Ltd.	7.8 Moz Au	Deep drilling program.
Do.	P	Sleeping Giant	Au	Cambior Inc.	145,000 oz Au	Extensive drilling.
Saskatchewan	E	Fort a la Corne	Diamond	Kensington Resources Ltd.	Data not released	+\$3 million budget.

1/ Resource data reflect unverified public information reported by trade journals as reported in May 2002 Mining Engineering. The following abbreviations are used for commodities in the table: Ag--silver; Au--gold; Cu--copper; Ni--nickel; Pd--palladium; PGM--platinum-group metals; Pt--platinum; and Zn--zinc. The following abbreviations are used for quantities in the table: Moz--million troy ounces; Mt--million metric tons; oz--troy ounces; and t--metric tons.

2/ D--approved for development. E--active exploration. F--feasibility work ongoing/completed. P--exploration at producing site.

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

TABLE 4
SELECTED SIGNIFICANT LATIN AMERICAN EXPLORATION SITES IN 2001 1/

Location	Type 2/	Site	Commodity	Company	Resource 3/	Exploration
Argentina	E	Esquel	Au, Ag	Brancote Holdings plc.	2.82 Moz Au	Extensive drilling.
Do.	F	Manantial Espejo	Ag, Au	Silver Standard Resources Inc.	50.4 Moz Ag, 822,000 oz Au	Do.
Do.	D	Veladero	Au, Ag	Argentina Gold Corp.	8.87 Moz Au, 138 Moz Ag	Development drilling.
Brazil	D	Sossego	Cu, Au	Companhia Vale do Rio Doce	4.7 Mt Cu, 8 Moz Au	Do.
Chile	E	El Morro	do.	Metallica Resources Inc.	2.5 Mt Cu, 7.38 Moz Au	Extensive drilling.
Do.	P	Escondida Norte	do.	BHP Billiton	6.5 Mt Cu	Extension of resources.
Do.	E	Esperanza	do.	Antofagasta plc.	1.8 Mt Cu, 2.8 Moz Au	Extensive drilling.
Do.	F	Mansa Mina	Cu	Codelco	Data not released	Do.
Do.	D	Pascua-Lama	Au, Ag	Barrick Gold Corp.	17.5 Moz Au, 594 Moz Ag	Do.
Ecuador	E	Corriente Copper Belt	Cu	Corriente Resources Inc.	Data not released	Do.
Peru	F	Cerro Lindo	Zn, Ag, Cu	Minera Milpo S.A.	1.6 Mt Zn, 36 Moz Ag	Feasibility drilling.
Do.	E	Magistral	Cu, Mo	Inca Pacific Resources Inc.	1.57 Mt Cu, 114,000 t Mo	Extensive drilling.
Do.	F	Minas Conga	Au, Cu	Compañía de Minas Buenaventura	16 Moz Au, 1.9 Mt Cu	Feasibility study.
Do.	F	Tambo Grande	Au, Ag, Cu, Zn	Manhattan Minerals Inc.	4 Moz Au, 133 Moz Ag, 1.7 Mt Cu	Do.
Do.	F	Tantahuay	Cu, Au	Compañía de Minas Buenaventura	2.9 Mt Cu, 3.3 Moz Au	Feasibility drilling.
Do.	P	Yanacocha area	Au, Ag	Newmont Gold Corp.	12 Moz Au	Extensive drilling.
Venezuela	P	Lo Increible/La Victoria	Au	El Callao Mining Corp.	Data not released	Do.

1/ Resource data reflect unverified public information reported by trade journals as reported in May 2002 Mining Engineering. The following abbreviations are used for commodities in the table: Ag--silver; Au--gold; Cu--copper; and Zn--zinc. The following abbreviations are used for quantities in the table: Moz--million troy ounces; Mt--million metric tons; oz--troy ounces; and t--metric tons.

2/ D--approved for development; E--active exploration; F--feasibility work ongoing/completed; P--exploration at producing site.

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

TABLE 5
PRODUCTION OF SELECTED MINERALS IN LATIN AMERICA AND CANADA IN 2001 1/

(Thousand metric tons unless otherwise specified)

	Metals										
	Aluminum, primary metal	Bauxite	Copper, mine output	Gold (metric tons)	Iron ore, gross weight	Lead, mine output	Nickel, mine output	Silver (metric tons)	Steel, crude	Tin, mine output	Zinc, mine output
Argentina	255	--	192	31	--	12	--	153	4,107	--	35
Bolivia	--	--	--	12	--	9	--	408	--	12	141
Brazil	1,131	13,850	32	51	208,700	9	45	41	27,500	14	100
Chile	--	--	4,739	43	8,834	1	--	1,347	1,247	--	33
Colombia	--	--	2	22	637	(2/)	53	7	637	--	--
Costa Rica	--	--	--	(2/)	--	--	--	(2/)	--	--	--
Cuba	--	--	1	1	--	--	73	--	270	--	--
Dominican Republic	--	--	--	--	--	--	31	--	--	--	--
Ecuador	--	--	(2/)	2	--	(2/)	--	2	61	--	(2/)
El Salvador	--	--	--	--	--	--	--	--	41 3/	--	--
Guatemala	--	--	--	5	15	--	--	--	167 3/	--	--
Guyana	--	1,985	--	14	--	--	--	--	--	--	--
Honduras	--	--	--	1	--	4	--	35	--	--	48
Jamaica	--	12,370	--	(2/)	--	--	--	--	--	--	--
Mexico	52	--	367	24	8,783	136	--	2,760	13,292	(2/)	429
Nicaragua	--	--	--	4	--	--	--	2	--	--	--
Panama	--	--	--	2	--	--	--	2	--	--	--
Paraguay	--	--	--	--	--	--	--	--	67	--	--
Peru	--	--	722	138	3,892	290	--	2,674	751 3/	38	1,057
Suriname	--	4,512	--	(2/)	--	--	--	--	--	--	--
Trinidad and Tobago	--	--	--	--	--	--	--	--	668	--	--
Uruguay	--	--	--	2	--	--	--	--	31	--	--
Venezuela	570	4,526	--	9	16,902	--	14	--	3,814	--	--
Other 4/	--	--	--	3	--	--	--	--	--	--	--
Total Latin America	2,008	37,243	6,055	364	248,063	461	216	7,431	52,653	64	1,843
Percentage of world total	8	27	45	14	23	14	16	40	6	29	20
Canada	2,583	--	630	160	29,341	149	193	1,271	16,300	--	1,070
Grand total	4,591	37,243	6,685	524	277,404	610	409	8,702	68,953	64	2,913
Percentage of world total	19	27	50	20	26	19	31	47	8	29	32
United States	2,637	NA	1,340	335	46,192	466	--	1,740	90,084	--	842
Total Western Hemisphere 5/	7,228	37,243	8,025	859	323,596	1,076	409	10,442	159,037	64	3,755
Percentage of world total	30	27	59	33	31	34	31	56	19	29	42
World, grand total	24,400	138,000	13,500	2,590	1,060,000	3,200	1,330	18,700	851,000	224	9,000

See footnotes at end of table.

TABLE 5--Continued
 PRODUCTION OF SELECTED MINERALS IN LATIN AMERICA AND CANADA IN 2001 1/

(Thousand metric tons unless otherwise specified)

	Industrial minerals							Fuels		
	Barite, crude	Cement, hydraulic	Gypsum, crude	Phosphate rock, P ₂ O ₅ 6/ (metric tons)	Salt, all forms	Sulfur, all forms	Coal, all grades	Natural gas, marketed (million cubic meters)	Petroleum (thousand 42-gallon barrels per day)	
								Crude	Products	
Argentina	5	7,000	500	--	1,000	--	360	37,154	778	556
Bolivia	6	1,100	--	--	(2/)	--	--	4,870	35	37
Brazil	56	39,500	1,540	1,700,000	6,000	323	13,800	8,390	1,336	1,786
Chile	1	3,500	517	2,877	5,989	1,160	578	1,900	5	206
Colombia	1	9,800	560	8,100	395	85	43,910	8,495	604	288
Costa Rica	--	1,100	--	--	37	--	--	--	--	15
Cuba	--	1,324	130	--	180	5	--	595	51	164
Dominican Republic	--	2,413	176	--	62	--	--	--	--	31
Ecuador	--	2,850	1	--	90	21	--	115	404	143
El Salvador	--	25	6	--	710	--	--	--	--	17
Guatemala	(2/)	1,600	100	--	15	--	--	--	24	20
Guyana	--	--	--	--	--	--	--	--	--	6
Honduras	--	1,100	59	--	19	--	--	--	--	--
Jamaica	--	521	320	--	15	--	--	--	--	10
Mexico	146	29,966	6,237	236,000	8,501	1,450	12,177	28,984	3,560	1,267
Nicaragua	--	360	28	--	28	--	--	--	--	15
Panama	--	760	--	--	23	--	--	--	--	27
Paraguay	--	750	4	--	--	--	--	--	--	4
Peru	11	3,950	31	--	419	203	60	277	96	160
Suriname	--	60	--	--	--	--	--	--	14	7
Trinidad and Tobago	--	708	--	--	--	15	--	--	113	153
Uruguay	--	700	1,050	--	--	3	--	--	--	30
Venezuela	--	8,800	5	114,000	350	400	7,688	27,500	3,164	1,222
Other 7/	--	770	--	--	1,790	127	--	15	1	506
Total Latin America	303	118,657	11,264	2,060,977	25,623	3,792	78,573	118,295	10,185	6,670
Percentage of world total	5	7	11	5	11	7	2	5	15	8
Canada	70	12,986	8,596	300,000	13,154	8,876	70,361	171,966	2,249	1,679
Grand total	373	131,643	19,860	2,360,977	38,777	12,668	148,934	290,261	12,434	8,349
Percentage of world total	6	8	19	6	17	22	3	12	18	11
United States	400	90,446	16,300	9,233,000	44,845	9,252	1,017,253	584,183	5,801	18,509
Total Western Hemisphere 5/	773	222,089	36,160	11,593,977	83,622	21,940	1,166,187	877,444	18,235	26,858
Percentage of world total	12	13	35	28	37	38	24	33	27	34
World, grand total	6,700	1,700,000	104,000	41,400,000 8/	225,000	57,300	4,770,000	2,660,000	68,100 9/	78,700

NA Not available. -- Zero.

1/ Estimated data, U.S. data, and world totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Less than 1/2 unit.

3/ Data not reported in country chapter. Source: Instituto Latinoamericano del Fierro y del Acero.

4/ French Guiana.

5/ Excludes Greenland.

6/ May appear in country chapter as gross weight instead of P₂O₅ content; not reported in Canada chapter.

7/ Includes Aruba, The Bahamas, Barbados, Belize, French Guiana, Guadeloupe, Haiti, Martinique, the Netherlands Antilles, and Saint Kitts and Nevis.

8/ Other regional summaries report this figure in gross weight. World total production for 2001, in gross weight, was 126 million metric tons.

9/ Other regional summaries report this figure in thousand 42-gallon barrels per year. World total production for 2001 in that unit was 24,900,000.

TABLE 6
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED ALUMINUM PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	166	186	262	255	200	200	200	200
Brazil	931	1,180	1,271	1,131	1,300	1,300	1,300	1,300
Canada	1,567	2,172	2,373	2,583	2,700	2,800	3,000	3,000
Mexico	68	10	65	65	65	65	65	65
Suriname	32	28	--	--	--	--	--	--
Venezuela	590	630	569	570	600	600	600	600
Total	3,350	4,210	4,540	4,600	4,870	4,970	5,170	5,170

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 7
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED BAUXITE PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	9,680	10,214	13,224	13,850	13,200	13,500	13,800	14,000
Guyana	1,424	2,020	2,471	1,985	1,500	1,500	1,500	1,500
Jamaica	10,921	10,857	11,127	12,369	13,000	13,000	13,000	13,000
Suriname	3,280	3,530	3,600	4,512	4,500	4,500	4,500	4,500
Venezuela	771	5,022	4,361	4,400	5,000	5,000	5,000	5,000
Other	85	--	--	--	--	--	--	--
Total	26,200	31,600	34,800	37,100	37,200	37,500	37,800	38,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 8
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	--	--	145	192	190	190	190	190
Brazil	36	49	32	32	35	35	170	175
Canada	794	726	634	634	600	600	600	650
Chile	1,590	2,489	4,602	4,739	4,580	5,200	5,600	6,100
Mexico	294	212	365	367	337	350	400	400
Peru	318	444	554	722	840	875	910	910
Other	--	--	--	3	5	5	5	5
Total	3,030	3,920	6,330	6,690	6,590	7,260	7,880	8,430

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 9
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED REFINED COPPER PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	11	16	16	16	16	16	16	16
Brazil	199	219	233	248	213	250	275	300
Canada	516	573	551	565	494	500	600	650
Chile	1,190	1,492	2,668	2,882	2,850	2,900	3,100	3,400
Mexico	153	212	411	424	390	420	420	420
Peru	318	444	452	472	503	540	570	600
Total	2,390	2,960	4,330	4,610	4,470	4,630	4,980	5,390

e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 10
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in kilograms)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	1,200	837	25,954	30,630	33,000	35,000	45,000	55,000
Bolivia	5,200	14,405	12,001	12,395	12,400	12,400	12,500	12,500
Brazil	102,000	63,300	50,400	50,500	51,000	51,500	52,000	53,000
Canada	169,000	152,000	156,200	160,000	160,000	165,000	170,000	175,000
Chile	27,500	44,585	53,983	42,673	40,000	40,000	41,000	42,000
Colombia	29,400	21,136	37,018	21,813	20,000	21,000	23,000	25,000
Guyana	1,500	9,005	13,510	14,183	13,000	10,000	5,000	5,000
Mexico	9,680	20,292	26,375	23,543	24,000	25,000	26,000	26,000
Peru	10,400	56,000	132,000	135,000	140,000	150,000	160,000	165,000
Venezuela	7,700	7,259	7,332	9,076	10,000	11,000	13,000	15,000
Other	5,000	10,000	14,000	15,000	15,000	15,000	15,000	15,000
Total	369,000	399,000	529,000	515,000	518,000	536,000	563,000	589,000

e/ Estimated.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 11
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED IRON ORE MINE PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	990	--	--	--	--	--	--	--
Bolivia	125	--	--	--	--	--	--	--
Brazil	152,000	184,000	212,600	210,000	215,000	217,000	218,000	220,000
Canada	34,900	38,600	35,900	27,800	30,100	32,000	36,000	36,000
Chile	7,900	8,400	8,730	8,800	10,500	10,500	10,500	10,500
Colombia	630	550	660	637	750	750	750	750
Cuba	--	--	--	--	--	(3/)	(3/)	(3/)
Mexico	15,000	9,380	11,330	11,500	12,000	12,000	12,000	12,000
Peru	3,300	6,200	4,231	4,200	3,300	3,500	3,500	3,500
Venezuela	20,100	19,000	17,400	17,500	18,000	18,000	18,000	18,000
Undistributed	--	--	--	--	7,000	7,000	7,000	7,000
Total	235,000	266,000	291,000	280,000	297,000	301,000	306,000	308,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

3/ Less than 1/2 unit. Included in "Undistributed."

TABLE 12
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED IRON ORE MINE PRODUCTION, 1990-2007 1/ 2/

(Iron content in thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	680	--	--	--	--	--	--	--
Bolivia	80	--	--	--	--	--	--	--
Brazil	100,000	112,800	127,600	126,000	129,000	130,000	131,000	132,000
Canada	22,000	24,600	22,700	29,300	30,100	32,000	36,000	36,000
Chile	5,040	5,200	5,455	5,900	7,000	7,000	7,000	7,000
Colombia	283	300	363	363	410	410	410	410
Cuba	--	--	--	--	--	(3/)	(3/)	(3/)
Mexico	7,110	5,625	6,800	6,900	7,200	7,200	7,200	7,200
Peru	2,150	3,950	2,688	2,700	2,112	2,240	2,240	2,240
Venezuela	13,100	12,600	11,100	11,100	11,300	11,300	11,300	11,300
Undistributed	--	--	--	--	4,500	4,500	4,500	4,500
Total	150,000	165,000	177,000	182,000	192,000	195,000	199,000	201,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

3/ Less than 1/2 unit. Included in "Undistributed."

TABLE 13
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED STEEL PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	3,636	3,617	4,474	4,107	800	800	900	900
Brazil	20,567	25,076	27,865	26,718	27,500	27,500	27,500	27,500
Canada	12,281	14,415	16,000	16,500	17,000	17,000	17,000	17,000
Chile	800	1,013	1,300	1,247	1,300	1,300	1,300	1,300
Colombia	703	792	660	637	650	650	650	650
Cuba	270	207	336	282	300	300	300	300
Jamaica	24	25	--	--	--	--	--	--
Mexico	8,705	12,128	15,659	13,292	14,000	14,000	14,000	14,000
Paraguay		96	68	67	70	70	70	70
Peru	284	515	510	750	800	800	800	800
Trinidad and Tobago		738	741	668	700	700	700	700
Venezuela	2,677	3,634	3,835	3,814	4,000	4,000	4,000	4,000
Others	587	90	135	323	300	300	300	300
Total	50,500	62,400	71,600	68,400	67,400	67,400	67,500	67,500

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 14
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED LEAD MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	23,400	10,521	14,115	12,334	13,000	13,000	13,500	13,500
Bolivia	19,900	20,387	9,523	8,857	8,900	8,900	8,950	9,000
Brazil	9,300	11,600	9,000	9,000	9,500	10,000	10,500	11,000
Canada	241,300	211,000	149,000	157,000	162,000	170,000	175,000	180,000
Chile	1,120	944	785	1,193	1,200	1,200	1,250	1,300
Honduras	5,790	2,619	3,768	3,775	3,780	3,800	3,850	3,900
Mexico	187,000	164,348	137,975	136,413	140,000	140,000	143,000	145,000
Peru	188,000	238,000	271,000	290,000	295,000	310,000	315,000	320,000
Other	331	300	300	300	300	300	--	--
Total	676,000	660,000	596,000	619,000	634,000	657,000	671,000	684,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 15
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PRIMARY REFINED LEAD PRODUCTION, 1990-2007 1/ 2/

(Metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	5,500	2,430	8,665	9,473	10,700	11,000	11,500	12,000
Bolivia	117	195	251	106	150	160	165	170
Brazil	30,200	14,000	--	--	--	--	--	--
Canada	87,200	178,000	143,300	149,500	154,000	162,000	167,000	172,000
Mexico	167,000	165,868	143,223	143,523	145,000	150,000	155,000	160,000
Peru	69,300	221,000	252,000	270,000	275,000	289,000	294,000	300,000
Other	--	--	--	--	--	--	--	--
Total	359,000	581,000	547,000	573,000	585,000	612,000	628,000	644,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 16
LATIN AMERICA AND CANADA: HISTORIC & PROJECTED SECONDARY REFINED LEAD PRODUCTION, 1990-2007 1/ 2/

(Metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	14,600	26,298	27,000	25,000	25,000	25,000	25,000	25,000
Brazil	45,300	65,000	50,000	47,000	--	--	--	--
Canada	96,500	103,400	141,000	77,400	77,000	75,000	75,000	75,000
Colombia	3,500	8,000	12,000	10,000	10,000	10,000	10,000	10,000
Mexico	65,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Venezuela	14,000	16,000	30,000	25,000	25,000	25,000	25,000	25,000
Other	--	--	--	--	--	--	--	--
Total	239,000	228,000	270,000	197,000	147,000	145,000	145,000	145,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 17
LATIN AMERICA AND CANADA : HISTORIC AND PROJECTED NICKEL MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	23,500	33,000	45,000	45,000	45,000	25,000	28,000	30,000
Canada	199,400	181,000	190,800	193,400	190,000	190,000	190,000	200,000
Colombia	22,439	24,000	59,000	53,000	55,400	55,000	55,000	55,000
Cuba	40,000	41,000	68,000	71,000	73,000	75,000	75,000	75,000
Dominican Republic	28,700	49,000	40,000	31,000	30,000	35,000	35,000	35,000
Venezuela	--	--	3,200	9,700	13,600	20,600	20,600	20,600
Total	314,000	328,000	406,000	403,000	407,000	401,000	404,000	516,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 18
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PLATINUM MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in kilograms)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	--	--	--	--	--	--	--	1,000
Canada	5,000	7,000	6,302	7,410	7,400	7,400	7,400	7,400
Colombia	1,600	973	339	674	700	700	700	700
Total	6,600	7,970	6,640	8,080	8,100	8,100	8,100	9,100

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 19
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PALLADIUM MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in kilograms)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	--	--	--	--	--	--	--	1,000
Canada	6,200	8,900	9,949	11,700	11,500	11,500	11,500	11,500
Total	6,200	8,900	9,949	11,700	11,500	11,500	11,500	12,500

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 20
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED SILVER MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in kilograms)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	82,700	47,787	78,271	152,802	115,000	120,000	125,000	130,000
Bolivia	311,000	425,053	433,592	408,000	409,000	409,000	409,500	410,000
Brazil	171,000	49,800	41,000	41,000	41,000	40,000	40,000	40,000
Canada	1,500,000	1,285,000	1,212,000	1,271,000	1,270,000	1,270,000	1,270,000	1,270,000
Chile	665,000	1,041,000	1,239,000	1,349,000	1,300,000	1,300,000	1,300,000	1,350,000
Colombia	6,590	5,886	7,970	7,242	7,200	7,300	7,400	7,500
Ecuador	60	--	2,000	2,000	2,000	2,000	2,100	2,150
Honduras	31,100	34,665	31,958	35,000	35,000	35,000	35,100	35,150
Mexico	2,420,000	2,324,348	2,620,495	2,759,985	2,800,000	2,800,000	2,900,000	3,000,000
Nicaragua	1,100	2,400	1,589	1,590	1,590	1,590	1,600	1,650
Panama	41	175	2,000	2,000	2,000	2,000	2,050	2,100
Peru	1,762,000	1,929,000	2,438,000	2,674,000	2,700,000	2,750,000	2,800,000	3,000,000
Other	--	--	--	--	--	--	--	--
Total	6,950,000	7,150,000	8,110,000	8,700,000	8,680,000	8,740,000	8,890,000	9,250,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 21
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED TIN MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	(3/)	--	--	--	--	--	--	--
Bolivia	17,250	14,000	12,000	13,000	12,500	13,000	13,000	13,000
Brazil	39,000	22,000	14,000	14,000	13,000	14,000	14,000	14,000
Canada	3,000	--	--	--	--	--	--	--
Mexico	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)	(3/)
Peru	5,000	45,800	71,000	69,700	65,000	65,000	65,000	65,000
Total	64,300	81,800	97,000	96,700	90,500	92,000	92,000	92,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

3/ Less than 1/2 unit.

TABLE 22
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED TIN METAL PRODUCTION, 1990-2007 1/ 2/

(Metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	(2/)	100	--	--	--	--	--	--
Bolivia	12,600	17,800	9,400	9,500	9,500	10,000	10,000	10,000
Brazil	39,150	20,500	14,000	14,000	12,000	12,000	12,000	12,000
Canada	3,000	--	--	--	--	--	--	--
Mexico	(2/)	800	1,200	1,200	1,200	1,200	1,200	1,200
Peru	5,000	22,700	37,400	38,200	35,800	35,800	35,800	35,800
Total	59,800	61,900	62,000	62,900	58,500	59,000	59,000	59,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 23
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED ILMENITE MINE PRODUCTION, 1990-2005 1/ 2/

(Gross weight, metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	147,400	97,500	123,000	123,000	112,000	115,000	120,000	120,000
Canada	760,000	815,000	950,000	950,000	950,000	950,000	950,000	950,000
Others	--	--	--	--	--	--	--	--
Total	907,000	913,000	1,070,000	1,070,000	1,060,000	1,060,000	1,070,000	1,070,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 24
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED TUNGSTEN METAL PRODUCTION, 1990-2007 1/ 2/

(Metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	16	--	--	--	--	--	--	--
Bolivia	1,014	655	382	360	500	500	500	500
Brazil	422	200	14	14	15	20	20	20
Canada	--	--	--	--	2,500	2,500	2,500	2,500
Mexico	183	--	--	--	--	--	--	--
Peru	1,536	728	--	--	--	--	--	--
Total	3,160	1,580	400	370	3,020	3,020	3,020	3,020

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 25
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED ZINC MINE PRODUCTION, 1990-2007 1/ 2/

(Metal content in metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	38,700	32,104	34,958	39,703	36,000	35,000	40,000	40,000
Bolivia	104,000	146,131	149,134	141,226	142,000	142,000	142,000	142,000
Brazil	158,000	188,500	100,254	100,300	101,000	200,000	250,000	300,000
Canada	1,203,200	1,121,200	936,000	1,009,000	880,000	1,000,000	1,000,000	1,000,000
Chile	25,100	35,403	31,402	32,762	33,000	33,000	33,100	33,100
Honduras	29,600	27,100	43,064	48,485	45,000	45,000	45,100	45,200
Mexico	307,000	363,658	392,791	427,273	475,000	500,000	520,000	520,000
Peru	598,200	692,300	910,000	1,057,000	1,222,000	1,250,000	1,400,000	1,550,000
Other	400	--	--	--	--	--	--	--
Total	2,460,000	2,610,000	2,660,000	2,920,000	2,930,000	3,240,000	3,430,000	3,630,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 26
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED ZINC METAL PRODUCTION, 1990-2007 1/ 2/

(Metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	31,517	35,767	36,359	39,727	41,000	40,000	40,000	40,000
Bolivia	104,000	146,131	149,134	141,226	141,500	142,000	141,900	142,100
Brazil	149,500	199,000	192,000	192,000	192,500	380,000	475,000	570,000
Canada	592,000	720,300	780,000	655,000	623,000	700,000	700,000	700,000
Mexico	199,000	222,748	235,073	303,810	320,000	320,000	330,000	330,000
Peru	124,000	159,000	200,000	201,500	173,000	220,000	250,000	280,000
Other	--	--	--	--	--	--	--	--
Total	1,200,000	1,480,000	1,590,000	1,530,000	1,490,000	1,800,000	1,940,000	2,060,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 27
LATIN AMERICA AND CANADA: HISTORIC & PROJECTED DIAMOND MINE PRODUCTION, 1990-2007 1/ 2/

(Thousand carats)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	1,500	700	1,000	1,000	500	500	500	500
Canada	--	--	2,440	3,690	3,700	4,000	4,200	4,500
Guyana	8	34	82	179	180	180	180	180
Venezuela	85	230	110	53	--	70	70	70
Other	--	--	--	--	--	--	--	--
Total	1,590	960	3,630	4,920	4,950	5,450	5,450	5,450

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 28
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED PHOSPHATE ROCK PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons of P₂O₅ content)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	625	1,360	1,700	1,700	1,700	1,700	1,700	1,700
Canada	NA	NA	NA	300	360	430	430	430
Chile	50	12	14	12	12	12	12	12
Colombia	10	10	8	8	8	8	8	8
El Salvador	10	13	14	14	14	14	14	14
Mexico	620	622	1,050	1,050	1,050	1,050	1,050	1,050
Peru	50	30	10	10	10	10	10	10
Venezuela	170	170	390	390	390	390	390	390
Total	1,540	2,220	3,190	3,480	3,540	3,600	3,600	3,600

e/ Estimated. NA Not available.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 29
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED MARKETABLE COAL PRODUCTION, 1990-2007 1/ 2/

(Thousand metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	280	210	360	190	300	300	300	300
Brazil	4,700	4,700	6,050	6,050	6,050	6,100	6,100	6,100
Canada	68,300	75,000	69,200	70,400	70,500	70,500	70,500	80,000
Chile	2,695	1,500	510	570	600	600	600	600
Colombia	20,400	26,020	38,140	43,500	50,000	50,000	50,000	50,000
Mexico	10,020	11,200	14,300	11,600	12,000	12,000	12,000	12,000
Peru	175	80	60	65	65	100	100	100
Venezuela	2,190	4,700	7,850	7,600	8,000	8,000	8,000	8,000
Other	--	--	--	--	--	--	--	--
Total	109,000	123,000	136,000	140,000	148,000	148,000	148,000	157,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 30
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED DRY NATURAL GAS PRODUCTION, 1990-2007 1/ 2/

(Million cubic meters)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	21,800	27,000	44,900	50,000	103,000	101,000	111,000	122,000
Bolivia	5,300	5,300	15,600	16,000	580	560	3,000	5,500
Brazil	6,300	8,100	13,300	14,100	14,100	14,100	14,100	14,100
Canada	138,400	192,500	195,500	202,400	202,500	205,000	205,000	205,000
Chile	4,200	4,300	2,700	1,250	1,300	1,500	1,200	1,200
Colombia	5,600	7,700	13,200	21,000	21,000	31,000	29,000	29,000
Cuba	--	100	1,500	1,500	1,500	1,500	1,500	1,500
Ecuador	200	200	1,100	1,000	1,000	1,000	1,000	1,000
Guatemala	--	--	1,000	1,000	1,000	1,000	1,000	1,000
Mexico	37,700	38,900	48,400	50,000	50,000	50,000	50,000	50,000
Peru	1,100	1,200	1,000	1,000	1,000	1,000	3,000	3,000
Trinidad and Tobago	7,000	8,000	14,200	14,500	15,000	15,000	15,000	15,000
Venezuela	40,500	45,000	60,000	60,000	60,000	60,000	60,000	60,000
Other	100	100	400	500	500	500	500	500
Total	268,200	338,400	412,800	434,300	486,700	483,200	495,300	508,800

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 31
LATIN AMERICA AND CANADA: HISTORIC & PROJECTED PETROLEUM AND CONDENSATE PRODUCTION, 1990-2007 1/ 2/

(Thousand 42-gallon barrels)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Argentina	176,000	278,130	280,944	284,055	305,000	305,000	305,000	305,000
Bolivia	7,600	12,410	10,150	12,775	16,100	16,100	16,100	16,100
Brazil	231,000	329,595	462,820	486,180	575,000	575,000	575,000	575,000
Canada	381,400	893,520	1,000,830	1,024,920	1,025,000	1,025,000	1,025,000	1,025,000
Chile	7,200	8,760	5,475	5,475	5,500	5,500	5,500	5,500
Colombia	159,500	217,175	257,325	224,840	250,000	250,000	250,000	250,000
Cuba	5,700	10,220	15,330	18,250	20,000	20,000	20,000	20,000
Ecuador	106,000	146,730	145,635	154,020	160,000	160,000	160,000	160,000
Guatemala	1,400	3,650	7,665	7,665	8,000	8,000	8,000	8,000
Mexico	932,000	1,117,630	1,259,250	1,320,570	1,320,570	1,350,000	1,350,000	1,350,000
Peru	47,100	48,545	37,595	35,405	40,000	40,000	40,000	40,000
Suriname	--	2,555	3,650	3,650	4,000	4,000	4,000	4,000
Trinidad and Tobago	56,000	51,830	49,640	46,720	50,000	50,000	50,000	50,000
Venezuela	770,200	1,064,340	1,221,655	1,130,405	1,050,000	1,100,000	1,100,000	1,100,000
Other	500	3,285	3,285	4,025	--	--	--	--
Total	2,881,000	4,190,000	4,760,000	4,760,000	4,830,000	4,910,000	4,910,000	4,910,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.

TABLE 32
LATIN AMERICA AND CANADA: HISTORIC AND PROJECTED URANIUM PRODUCTION, 1990-2007 1/ 2/

(Metal content in metric tons)

Country	1990	1995	2000	2001	2002 e/	2003 e/	2005 e/	2007 e/
Brazil	--	--	20	20	20	20	20	20
Canada	11,000	11,750	9,400	11,000	11,000	11,000	12,000	12,000
Peru	--	--	--	--	--	--	--	--
Total	11,000	11,750	9,420	11,000	11,000	11,000	12,000	12,000

e/ Estimated. -- Negligible or no production.

1/ Estimated data and totals are rounded to no more than three significant digits; may not add to totals shown.

2/ Data for 2000 and 2001 may differ from those in country chapter because of date of preparation.