



2008 Minerals Yearbook

ASIA AND THE PACIFIC

THE MINERAL INDUSTRIES OF ASIA AND THE PACIFIC

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The Asia and the Pacific region, which includes 31 countries and territories, has a total area of about 29.9 million square kilometers, which accounts for about 20.1% of the world total. The total population was about 3.71 billion, which accounted for about 55.5% of the world total in 2008. China and India, which were the world's two most populous countries, accounted for about 66% of the region's total population and about 37% of the world's total population. The economies of Bhutan, China, East Timor, India, Laos, and Mongolia were the fastest growing in the region in 2008 with real gross domestic product (GDP) growth rates of more than 7% (tables 1, 2).

Australia and China were among the world's leading mineral producers. Australia has large resources of bauxite, coal, cobalt, copper, diamond, gold, iron ore, lead, lithium, manganese, mineral sands, tantalum, and uranium. China has large resources of antimony, arsenic, barite, coal, fluorite, gold, graphite, iron ore, magnesium, rare earths, strontium, tin, tungsten, and zinc. India also was one of the world's significant mineral producers and has large resources of barite, bauxite, chromium, iron ore, manganese, rare earths, and salt. Other significant mineral producers in the region were Indonesia, which has large resources of coal, copper, gold, nickel, and tin; Mongolia, which has large resources of copper, fluorspar, and molybdenum; Papua New Guinea, which has large resources of copper and gold; the Philippines, which has large resources of copper, gold, and nickel; and Thailand, which has large resources of feldspar, gypsum, and potash (table 4).

Despite the large amount and wide variety of resources of nonfuel minerals and coal in Australia, China, India, Indonesia, Mongolia, Papua New Guinea, the Philippines, and Thailand, the regional supplies of numerous nonfuel minerals [including aluminum, bauxite, copper, diamond, gold, iron ore, lead, phosphate rock, platinum-group metals (PGM), silver, and zinc] and such major mineral fuels as coal, natural gas, crude petroleum, and refined petroleum products, were insufficient to satisfy the demand in the region in recent years. The shortage was caused largely by a substantial increase in the consumption of nonfuel minerals and mineral fuels by China and India; by continued high levels of consumption by such resource-poor industrialized countries as Japan, the Republic of Korea, Singapore, and Taiwan; and by the growing economies of such middle-income developing countries as Indonesia, Malaysia, and Thailand. In 2008, the region of Africa and the Middle East supplied a large percentage of the Asia and the Pacific region's requirements for natural gas, crude petroleum, and refined petroleum products. Africa, North America, and South America supplied a substantial percentage of the region's raw material requirements for ferrous and nonferrous metals.

China and Japan were the two major regional markets for crude and processed minerals. Japan was the region's leading consumer of imported ferrous and nonferrous metals because of

its large manufacturing sector and poor indigenous resources. China, however, remained the region's leader in terms of growth in consumption, especially for such mineral commodities as aluminum, cement, coal, copper, iron and steel, lead, natural gas, crude petroleum, phosphate rock, rare earths, tin, and zinc. India, Indonesia, Malaysia, the Republic of Korea, Singapore, Taiwan, Thailand, and Vietnam also were important consumers of such mineral commodities as aluminum, cement, copper, gold, iron ore, lead, phosphate rock, silver, steel, and zinc.

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For mineral production statistics—

- Australia—Australian Bureau of Agricultural and Resource Economics (ABARE) and Western Australia Department of Mines and Petroleum [since January 1, 2009];
- Bhutan—Ministry of Trade and Industry, Department of Geology and Mines;
- Brunei—Prime Minister's Department, Petroleum Unit;
- Cambodia—Ministry of Industry, Mines and Energy, Department of Mineral Resources Development;
- India—Indian Bureau of Mines;
- Japan—Ministry of Economy, Trade and Industry, Research and Statistics Department;
- Laos—Ministry of Industry and Handicraft, Department of Geology and Mines;
- Malaysia—Ministry of Natural Resources and Environment, Minerals and Geoscience Department;
- Mongolia—Mineral Resources and Petroleum Authority;
- Nepal—Ministry of Industry, Commerce and Supplies, Department of Mines and Geology;
- Republic of Korea—Korea Institute of Geoscience and Mineral Resources;
- Sri Lanka—Geological Survey and Mines Bureau;
- Thailand—Ministry of Industry, Department of Primary Industries and Mines; and
- Vietnam—Vietnam Institute of Geosciences and Mineral Resources.

For key economic data—

- Asian Development Bank in Manila, Philippines;
- International Monetary Fund in Washington, DC; and
- The World Bank in Washington, DC.

For exploration and other mineral-related information—

- Australian Bureau of Statistics in Canberra, Australia; and
- Metals Economics Group in Halifax, Nova Scotia, Canada.

General Economic Conditions

In 2008, economic growth in the Asia and the Pacific region was significant with an average GDP (based on purchasing power parity) growth of 8.1%. Increased domestic consumption led to strong growth in such countries as East Timor (12.8%), China (9%), Mongolia (8.9%), Bhutan (7.6%), India (7.3%), and Laos (7.2%). Exports remained an important driving force of economic activity in such countries as Australia, China, Japan, the Republic of Korea, Singapore, and Taiwan. In the fall of 2008, foreign investment in the region collapsed. The financial sectors of Asia's developing economies appeared to be weathering the crisis quite well; however, the effects of the crisis were nonetheless being felt in the region and the economic growth was expected to be slower in the next 2 years compared with that of 2008. This slowdown could affect economic growth in such exporting countries as Japan, the Republic of Korea, Singapore, and Taiwan. Domestic consumption in such countries as China, India, and Vietnam was expected to continue to sustain growth as the value of exports continued to decline. Economic growth in the Asia and the Pacific region overall was expected to remain strong because of the improved macroeconomic policies that were put in place during the past several years; this improvement was evidenced by declining debt burdens and increases in the current account balances, fiscal balances, and foreign reserves (World Bank, *The*, 2010, p. 117, 150).

After the first quarter of 2008, economic growth was slow but steady in most of the developed countries in the West. In the Asia and the Pacific region, the manufacturing capacity was being transferred slowly from the developed countries to the developing countries, although the rate of growth in the demand for metals and minerals was expected to be less than that of the past 2 years. Many developing and most developed economies began to implement large-scale fiscal and financial stimulus plans to support domestic demand and counter the decrease in exports. China still led the global recovery by increasing industrial production and exports. The economic growth in China, Indonesia, and Vietnam was expected to be strong at 8.4%, 4.5%, and 5.5%, respectively, in 2009. Output contractions were expected to take place in Cambodia, Malaysia, and Thailand, which were expected to have economic growth of only 2.2%, 2.3%, and 2.7%, respectively (World Bank, *The*, 2010, p. 26-30).

Legislation

Revisions to section 124 of Australia's Land Acquisition Act 1989 that were sent to the Parliament in 2008 would, under Commonwealth mining regulations, allow States and Territories to administer, explore, and mine on Commonwealth land under a consistent regulatory scheme (Parliament of Australia, 2008). Primary Industries and Resources South Australia announced a new schedule of fees under the Mining Act 1971; these fees went into effect on July 1, 2008. The application fee to register a mineral claim increased to \$269 from \$27.50, and the mining lease application fee increased to \$897 from \$73 (Australian Mining, 2008a). The government of Western Australia approved

the Royalties for Regions program, which would reinvest about 25% of the State's annual mining and resources royalty revenues in regional communities starting in 2009 (Australian Mining, 2008b). The Northern Territory government would allocate \$2.15 million during the course of the next 3 years (beginning in 2009) to increase the pace of exploration drilling and geophysics in undeveloped areas of the State by providing funding assistance to successful applicant projects. Seven drilling projects were approved under this program in 2008 (Northern Territory Government, 2009).

In China, the "2008-2015 National Plan for Mineral Resources" was released in late 2008 (Trading Markets, 2008). The plan, formulated by the Ministry of Land and Resources, proposes enhancing regulation on exploration and use of mineral resources, specifies areas to be encouraged or restricted, and discusses the establishment of strategic reserves for selected mineral resources. The Government also passed provisions for licensing of geologists and prospectors in China (Kosich, 2008c).

The Indian Ministry of Mines continued the process of securing support for its revised National Mineral Policy. The revised legislation, which was enacted into law in the 2009 session of the Indian Parliament, is designed to stimulate investment in the Indian mining sector and simplify the regulatory framework. Annually, foreign direct investment in the Indian mining sector for the period 2000-08 averaged \$510 million (Campbell, 2008).

After 3 years of discussion, the Indonesian Government passed a new mining law that gives local governments greater control over exploration and mining activities, limits exploration areas to 100,000 hectares, reduces the length of time that miners have to extract resources from a maximum of 70 years to 20 years, requires separate permits for each phase of mining activity, and requires local processing of mined materials (Karmini, 2008). Indonesia also announced plans to allow exploration and mining companies that previously held exploration permits in forested areas to resume exploration activity after paying specified fees (Reuters, 2008).

The year 2008 marked a period of transition for the fledgling Mongolian mining industry. The World Bank allocated \$9.3 million from International Development Association funds for a mining sector technical assistance project aimed at improving Mongolia's ability to manage and regulate the mining sector effectively (Kosich, 2008d). The Mongolian Parliament included the new position of Minister of Mining and Energy in its new coalition government to oversee energy and mining activities in Mongolia (Kosich, 2008a). The new government has reportedly drafted amendments to its 2006 minerals law that are designed to ease the tax burden of foreign companies and annul the windfall profits tax to bring mining royalties in line with international standards (Kosich, 2008b).

In Vietnam, the Prime Minister approved a master plan for basic geologic investigation of mineral resources to the year 2015, with orientation to the year 2020. The Prime Minister also approved a zoning master plan for the exploration, mining, processing, and use of bauxite in the period 2007-15, with vision to 2025 taken into consideration.

Exploration

Investment in exploration activity in much of the Asia and the Pacific region increased in 2008 from the 2007 levels of investment. Exploration data derived from the Metals Economics Group (MEG) suggest that the 2008 proposed budget allocations for Australian exploration activity increased by 49% to \$1.76 billion from \$1.18 billion in 2007. Similarly, the 2008 budget for the Pacific region (excluding Australia) increased by about 47% to \$630 million from \$430 million in 2007 (Metals Economics Group, 2008).

Australia's total nonfuel mineral exploration spending, excluding coal, petroleum, and uranium, was reported to be \$1.7 billion for fiscal year 2007-08, which was an overall increase of about 42% from the \$1.2 billion reported for fiscal year 2006-07 (Australian Bureau of Statistics, 2009). Although the estimated expenditures for gold exploration accounted for 30% of the total Australian expenditure for nonfuel metals and minerals, gold exploration, in nominal terms, increased by about 31% in fiscal year 2007-08 to \$510 million from \$390 million in fiscal year 2006-07. In contrast, the estimated expenditure for copper exploration increased by 25% to \$250 million in fiscal year 2007-08; the exploration expenditures for iron ore increased by 58% to \$380 million, and those for silver, lead, and zinc increased by 34% to \$160 million. Western Australia's share of the Australian mineral exploration expenditure accounted for 51%; that of Queensland accounted for about 16%; South Australia, about 14%; New South Wales, 8%; Northern Territory, 6%; Victoria, 4%; and Tasmania, 1% (Australian Bureau of Statistics, 2009).

Over the past 30 years, gold projects accounted for 60% to 80% of mineral exploration spending in Australia and an average of 65% in Western Australia. By fiscal year 2007-08, however, gold project expenditures accounted for about 30% of all metals-related mineral exploration activity in Australia and 28% in Western Australia. The allocation for iron ore, on the other hand, increased from about 7% in fiscal year 2000-01 to about 23% in fiscal year 2007-08 in Australia and 33% in Western Australia. In fiscal year 2007-08, nickel and copper exploration each accounted for about 15% of Australian exploration, and exploration for silver, lead, and zinc accounted for about 9% (Australian Bureau of Agricultural and Resource Economics, 2008a).

Of the 183 nonfuel mineral exploration projects considered by ABARE between April 2008 and October 2008, 140 projects (77%) were listed as being in the preconstruction stage of development. Of these projects, 34 projects were for gold and iron ore; 20 were for nickel; 13 each were for copper and other commodities; 12 were for lead-zinc-silver; and 8 were for mineral sands. About 51% of these projects were located in Western Australia; 16%, in Queensland; 12%, in New South Wales; 11%, in South Australia; 5%, in Northern Territory; 4%, in Victoria; and 1%, in Tasmania. Australian States and Territories that experienced the highest levels of exploration activity in 2008 were, in descending order based on the number of sites compiled for this annual review, Western Australia (55%), Queensland (12%), South Australia (9%), New South Wales (8%), Northern Territory (9%), Tasmania (5%), and Victoria (2%) (Australian Bureau of Agricultural and Resource Economics, 2008b).

Mineral exploration in China had increased since the country opened its mining sector to foreign investment during the 1990s and was driven by the rapid growth of Chinese minerals consumption. China maintained its spending of 3% of the world's total exploration budget in 2008 (Metals Economics Group, 2008). More than 100 foreign companies had invested in mineral exploration in China and launched more than 400 projects (People's Daily Online, 2007). China was reported to have invested up to \$8.9 billion in geologic exploration in 2007, which was a 25% increase compared with exploration investment in 2006 (Interfax News Service Ltd., 2008). These investment figures are believed to include spending in exploration activities for minerals, crude oil, and natural gas.

Indonesia, Papua New Guinea, and the Philippines each reported an exploration budget of more than \$100 million (Metals Economics Group, 2008). The increase in exploration in the Pacific region can be attributed to continued interest by Chinese companies to expand sources of mineral supply for gold and base metals and by Japanese companies to develop regional copper and nickel deposits to supply Japan's smelting industry (Takemoto, 2008). In 2008, interest in exploring in Southeast Asia increased. Gold exploration accounted for approximately 52% of all reported exploration activity in the Pacific region in 2008; copper, 22%; and nickel, 17%.

Commodity Overview

Estimates for the production of major mineral commodities for 2011 and beyond have been based upon supply-side assumptions, such as announced plans for increased production/new capacity construction and bankable feasibility studies. The outlook tables in this summary chapter show historic and projected production trends; therefore, no indication is made about whether the data are estimated or reported, and revisions are not identified. Data on individual mineral commodities in tables in the individual country chapters are labeled to indicate estimates and revisions. The outlook segments of the mineral commodity tables are based on projected trends that could affect current (first quarter of 2009) producing facilities and on planned new facilities that operating companies, consortia, or Governments have projected to come online within indicated timeframes. Forward-looking information, which includes the cost of capital projects, estimates of future production, exploration and mine development, and timing of the start of operations, are subject to a variety of risks and uncertainties that could cause actual events or results to differ significantly from expected outcomes. Projects listed in the following section are presented as an indication of industry plans and are not a USGS prediction of what will take place.

Metals

Aluminum and Bauxite and Alumina.—The region's production of bauxite accounted for about 57% of the world total in 2008. Australia, which was the world's leading producer of bauxite, accounted for about 30% of the world total; it was followed by China, 16%, and India, 10%. Production of aluminum accounted for about 44% of the world total in 2008. China, which was the world's leading producer of aluminum,

accounted for about 33.5% of the world total; it was followed by Australia, 4.4%; India, 2.8%; and Japan, 2.4% (table 4).

Regional production of bauxite and aluminum was expected to continue to increase at an average annual rate of about 4.1% and 3.8%, respectively, between 2008 and 2015 (tables 5, 6). This prediction was based on reported capacity expansions and new projects in Australia, China, India, and Vietnam.

In Australia, Alcan Inc. of Canada expanded its Gove alumina refinery in Northern Territory to 3.8 million metric tons per year (Mt/yr) from 2.0 Mt/yr, and the refinery was expected to be fully operational by the end of 2008. Rio Tinto Alcan's Weipa Mine in Queensland planned to expand its capacity to 21.0 Mt/yr in 2013 from 18.2 Mt/yr in 2008. Aluminum Corporation of China Ltd. (Chalco) planned to develop the Aurukun bauxite deposit at Aurukun in Queensland and to mine bauxite in 2011 with a production capacity of between 2 and 3 Mt/yr. In India, Dubai Aluminium Co. and Larsen and Toubro Ltd. of India planned to build a bauxite mine in Orissa in 2009. The initial design was to mine 10 Mt/yr of bauxite ore and to produce 6.5 Mt/yr of beneficiated ore. The project was contingent upon building an alumina refinery. The Utkal alumina project included the development of a new bauxite mine to feed the 1.5-Mt/yr refinery in Orissa. Nalco was expected to increase its bauxite output to 6.3 Mt/yr from 4.8 Mt/yr in 2009. In Indonesia, P.T. Antam Tbk planned to increase bauxite production by 850,000 metric tons per year (t/yr) to feed the new alumina refinery at Tayan in 2010. In Vietnam, Vietnam Mineral Corp. (a joint venture between Vietnam National Coal-Mineral Industries Group and Chalco) planned to construct a \$1.6 billion bauxite mine and an alumina refinery in Central Highlands, Lam Dong Province.

China became a net importer of bauxite (mainly from Indonesia) and alumina (from Australia) for the first time in 2008. The country's alumina output capacity reached 26 Mt/yr. Alumina refineries in Shandong Province relied on imported bauxite to meet their demand. By 2010, China was expected to become the leading bauxite importer in the world, and its alumina output was expected to be sufficient to meet domestic demand for aluminum production. The country had 11 aluminum smelters under construction with a combined capacity of 1.12 Mt/yr and 10 aluminum projects in feasibility study with a total capacity of 1.4 Mt/yr. In India, Vedanta Resources plc planned to build a 500,000-t/yr aluminum smelter in Orissa in 2010 and to expand it to 2.6 Mt/yr in 2012. JSW Group planned to build a 250,000-t/yr aluminum smelter at Visakhapatnam in the State of Andhra Pradesh. Hindalco Industries and National Aluminium expanded their smelting capacities by 140,000 t/yr and 110,000 t/yr, respectively. Owing to the economic downturn, some of the new or expansion projects might not be on track. In Malaysia, Rio Tinto Alcan and CMS's Sarawak AC Co. planned to start construction of their 1.5-Mt/yr smelter in 2011. Production of aluminum was expected after 2015.

In 2008, refined aluminum consumption in the Asia and the Pacific region accounted for about 52% of the world total compared with 50% of the total in 2007. The increase in aluminum consumption in the region was mainly owing to increased consumption by China [15.3 million metric tons (Mt)] and India (1.3 Mt). In the near future, strong growth in

Chinese and Indian consumption is expected to be offset by falling consumption in Japan (from the current 4.1 Mt) and the Republic of Korea [from 964,000 metric tons (t)]. In 2010, China is expected to account for more than one-third of the world's aluminum consumption, India will likely increase its level of consumption to about 7% of the world total (from about 3.5% in 2008), and Japan will likely continue to account for about 6%. China, India, and Japan are projected to account for more than 45% of the world's total aluminum consumption during the next 5 years.

Copper.—The region's production of mined copper accounted for about 19% of the world total in 2008. China was the leading regional producer followed by Australia and Indonesia. Production of primary refined copper accounted for about 40% of the world's total output in 2008. Among the region's refined copper producers, China was the world's second ranked producer of primary and secondary refined copper behind Chile, and Japan was ranked third. Australia, India, and the Republic of Korea were also important producers of refined copper in the region (table 4).

Between 2008 and 2015, regional production of mined copper and refined copper was expected to continue to increase at an average annual rate of about 5.3% and 1.8%, respectively. This prediction was based on reported capacity expansions of mined copper in Australia, China, India, Indonesia, Laos, and Mongolia, and on reported capacity expansions of refined copper in Australia and China (tables 7, 8).

In Australia, BHP Billiton was considering an expansion of its Olympic Dam Mine to 500,000 t/yr from 235,000 t/yr, and OZ Mineral's Prominent Hill copper and gold project was expected to begin production in 2009 with 85,000 t/yr of contained copper. Small copper projects from 15,000 t/yr to 25,000 t/yr in New South Wales, Queensland, and South Australia were expected to be brought onstream during the next 3 years. In China, the Yulong copper mine in Xizang Autonomous Region was expected to be brought onstream in 2009 with production of 10,000 t/yr of copper. The Pulang copper mine in Yunnan Province was under development in 2008 and would begin production in the next 2 to 3 years. In India, Pebble Creek Resources Ltd. planned to build a 210,000-t/yr (ore) underground copper mine at Pithoragarh, State of Uttaranchal. Hindustan Copper Ltd. planned to expand the output capacities of its active mines to a total of 7.9 Mt/yr in 2013 and to reopen the Surda Mine, which would have an output capacity of 4,500 t/yr of copper concentrate. In Indonesia, gradual capacity expansion was to be undertaken by P.T. Newmont Nusa Tenggara at Batu Hijau on Sunbawa Island, Province of West Nusa Tenggara. P.T. Freeport Indonesia Co. at Grasberg, Province of Papua, deferred mining high-grade ore to later years owing to low copper prices. In Laos, the first-phase development of the Phu Kham copper-gold project was scheduled to be completed in 2008 with production of 60,000 t/yr of copper. In Mongolia, the Oyu Tolgoi project was expected to start production of 450,000 t/yr of copper in concentrate by 2013. In Papua New Guinea, the Ok Tedi Mine's expected life was projected to 2013 because of declining production. New copper projects by Marengo Mining Ltd. and Nautilus Minerals Inc. were expected to be commissioned in 2014 or later.

Production of refined copper in Australia was expected to remain at about 480,000 t/yr during 2011-15, even though a 20,000-t/yr expansion project by the Townsville copper refinery and the 15,000-t/yr Lady Annie greenfield project were underway. In China, Jiangxi Copper Co. Ltd. planned to increase its refining capacity of copper to 900,000 t/yr in 2010 from 700,000 t/yr in 2008 at Guixi, Province of Jiangxi, and to build a 200,000-t/yr secondary refined copper plant in Guangdong Province in 2008. Yunnan Copper Group Co. Ltd. planned to increase its refinery capacity to 600,000 t/yr in 2010 from 300,000 t/yr in 2008 at Kunming, Province of Yunnan. Tongling Nonferrous Metal Group planned to expand its total refined copper output capacity by 20% to 800,000 t/yr in 2010. In Indonesia, P.T. Smelting planned to increase production of refined copper to 300,000 t/yr in 2009 from 210,000 t/yr in 2008, and P.T. Indosmelt planned to build a 100,000-t/yr-capacity smelter in 2013. In the Philippines, Philippine Association Smelting and Refining Corp. was expected to expand its refining capacity to 215,000 t/yr from 172,000 t/yr in the near future.

In 2008, unwrought refined copper consumption in the Asia and the Pacific region accounted for 51.7% of the world total compared with 50.3% of the total in 2007. The increase in copper consumption in the region was the result of increased copper consumption in China (5.5 Mt) and India (528,000 t). Japan and the Republic of Korea consumed 1.2 Mt and 804,000 t of unwrought copper, respectively. In the future, the power sector, which accounted for about 50% of China's copper consumption in 2008, was expected to increase its consumption by 5% per year to reach a total of about 3 Mt in 2013. In 2010, the region could account for more than 50% of the world's total copper consumption, and China, for about 30%; Japan, about 7%; the Republic of Korea, 5%; and India, about 3%. Except for Australia, Japan, New Zealand, the Republic of Korea, Singapore, and Taiwan, countries of the Asia and the Pacific region were well below the per capita copper consumption of developed countries. Copper consumption in the Asia and the Pacific region, especially in China and India, was expected to increase significantly in the next 5 years owing to gradual economic growth in these countries.

Gold.—The region's production of mined gold accounted for about 22% of the world total in 2008 (table 4). China was the leading gold producing country in the region followed by Australia, Indonesia, and Papua New Guinea (table 9). China was ranked first (overtaking South Africa) in the world production of gold.

Regional production of mined gold was expected to continue to increase at an average annual rate of 3.9% between 2008 and 2015. This prediction was based on gradual capacity expansions mainly at the major copper and gold mines in Australia, China, Indonesia, Mongolia, and Papua New Guinea (table 9).

Australian gold production was expected to increase steadily in the next few years. The Bendigo Mine in Victoria, the Fortnum Mine in Western Australia, the Gully and the Union Reef Mines in Northern Territory, and the Warrior Mine in Queensland were all expected to be brought onstream during the next 2 years. Monarch Resources' Davyhurst gold project, which would have a production capacity of 3 t/yr, and

Mercator's Meekatharra gold operation, which would have a capacity of 3.7 t/yr, were expected to come onstream in 2009. In China, the CSH Mine in the Nei Mongol Autonomous Region and the Lannigou Mine in Guizhou Province were expected to start production at the end of 2008. Jinshan Mines' Dadiangou Mine in Gansu Province was expected to be put into operation by 2010. Gold production in Indonesia was expected to increase because of access to exceptionally high-grade ore from Freeport Indonesia's Grasberg Mine, and output was expected to remain steady during the next several years. The increase of gold production in Mongolia depends upon when the Oyu Tolgoi copper-gold mine would be put into operation, most likely in 2013. Laos increased its mined gold production at the Sepon gold mine (operated by OZ Minerals Ltd.) and at the Phu Bia heap-leach gold mine (operated by Pan Australian Resources Ltd.). In Papua New Guinea, Lihir Gold Ltd. was expected to produce 26,500 kilograms (kg) of gold in 2009 and planned to expand gradually to 31,100 kg of gold in later years.

During the past decade, foreign investors introduced modern technology to China that accelerated gold exploration and mine production, and the Chinese Government provided incentives for foreign companies to invest in China's western region. Gold production in China increased at both large- and small-scale mines throughout the country in 2008. Gold production in South Africa continued to decrease during the past 4 years, and China was expected to replace South Africa as the leading gold producing country in the world in the next 2 years.

The region was the world's major market for gold and accounted for about 45% of the world's total gold consumption in 2008. India was the world's leading consumer of gold, accounting for about 27% of the world total. Owing to continuing strong economic growth and rising urban incomes (which lead to higher demand for gold jewelry), China replaced the United States as the second ranked gold consumer in the world. Jewelry accounted for about 90% of the world's gold consumption and about 92% of Chinese consumption. In the next 2 to 3 years, China could overtake India in gold consumption. The Chinese Government indicated that the country had increased its gold holdings. Gold demand in other countries in the region was expected to remain steady.

Iron and Steel.—The region's production of iron ore was estimated to account for, in terms of gross weight, about 63% of the world total in 2008. China ranked second in the world in the production of iron ore (in terms of iron content) after Brazil; it was followed by Australia and India. The region's production of crude steel was estimated to account for about 58% of the world total. China, which was by far the world's leading producer of crude steel, accounted for about 37.6% of the world total, and Japan, India, and the Republic of Korea ranked second, fifth, and sixth, respectively, in the world (table 4).

East Asian countries, such as China, Japan, and the Republic of Korea, were the world's leading consumers and importers of iron ore. Australia was the region's and the world's leading exporter of iron ore. India's iron ore output increased sharply to meet domestic and regional demand. India, which was China's third ranked iron ore supplier after Australia and Brazil, was expected to remain in that position for the next several years. Brazil and South Africa also would continue to be major iron

ore suppliers to the region. Imports of iron ore by East Asian countries were expected to continue to increase, especially imports by China to meet its steel industry's demand.

Regional production of iron ore was expected to increase at an average annual rate of about 4.3% between 2008 and 2015. This prediction was based on gradual capacity expansions in Australia, China, and India. In Australia, capacity expansion to 52 Mt/yr was completed at Rio Tinto plc's Yandicoogina Mine in 2008. Rio Tinto also planned to develop a 22-Mt/yr iron ore mine at Hope Downs in Western Australia by 2008. The Board of Rio Tinto approved a company investment of \$2.4 billion in two new iron ore mines—the Bobe Valley/Brockman 4 and the Mess/Warramboe—in Pilbara, Western Australia. The two mines were scheduled to begin operation in 2011 and 2012, respectively, with a total combined output capacity of 47 Mt/yr. BHP Billiton planned to expand capacity at its Newman Mine to 63 Mt/yr in 2010. In China, several iron mines were under construction or were in the planning stage, including the Cangshaw Mine (2 Mt/yr) in Shandong Province, the Longtongyan Mines (1.3 Mt/yr) in Anhui Province, and the Takong Mine (1.2 Mt/yr) in Jilin Province. In North Korea, China Minmetal Corp. and Tonghua Iron and Steel Corp. planned to redevelop the Musan Mine to increase its iron ore production capacity to 10 Mt/yr in 2010 (table 10).

Regional production of crude steel was expected to increase at an average annual rate of about 4.3% between 2008 and 2015. China was expected to lead in crude steel expansion in the region. Shoudu Iron and Steel Group Co. and Tangshan Iron and Steel Group planned to build a 10-Mt/yr greenfield steel plant in Hebei Province in 2012. Anben Iron and Steel Group planned to expand its steel capacity in Liaoning Province to 30 Mt/yr from 22 Mt/yr by 2010. Tonghua Iron and Steel Group Co. Ltd. planned to expand capacity in Jilin Province to 10 Mt/yr during the next 3 years. The Chinese Government approved the applications of Baoshan Iron and Steel Group and Wuhan Iron and Steel Group to build two 10-Mt/yr greenfield steel plants in the Provinces of Guangdong and Guangxi, respectively; the plants were scheduled for production in 2013.

India also was expected to expand its crude steel capacity significantly. The expansion would include the construction of a 13-Mt/yr steel plant at Paradip, State of Orissa, as proposed by the government of Orissa and Pohang Iron and Steel Co. Ltd. of the Republic of Korea; the plant was expected to start producing steel in 2009. India's capacity expansion would also include two projects by JSW Steel Co. Ltd. at Vijayanagar, State of Karnataka, which were expected to increase the company's production capacity to 7 Mt/yr in 2008 and to 10 Mt/yr in 2011. JSW also planned to build a 10-Mt/yr steel plant at Saraikela Kharswan in Jharkhand in 2012, and the startup of its 10-Mt/yr steel plant in West Bengal was scheduled for 2009. Tata Steel planned to expand its Jamshedpur steel plant's capacity to 31 Mt/yr. ArcelorMittal and the State of Jharkhand planned to build a 13-Mt/yr steel plant in the State. In Vietnam, Thai Nguyen Iron and Steel Co. planned to increase its steel capacity to 1.3 Mt/yr by 2010 (table 11).

The volume of iron ore imports by China was expected to continue to increase. The country's iron ore imports could account for about 60% of its consumption by 2011. Imports

of iron ore by Japan, the Republic of Korea, and Taiwan were expected to increase slightly during the next several years. Australia will continue to be a leading iron ore supplying country in the region. Owing to increased domestic demand, iron ore exports from India were expected to remain at the current level for the near future.

In 2008, the region consumed 693.8 Mt of finished steel products, or 57.9% of the world total. China was the world's leading consumer at 425.7 Mt. Japan was the world's leading exporter and the region's major supplier of steel products to China and to such major consumers in the region as the Republic of Korea (which consumed 58.6 Mt), Taiwan (16.7 Mt), Singapore, and Thailand. Japan itself consumed 76.4 Mt in manufacturing production. Steel consumption in India was 52.6 Mt and was expected to increase more significantly than in other countries in Asia, besides China, because of strong growth in industrial production and increased investment in the country's infrastructure. Owing to the low steel consumption in the region (54.5 Mt), the Association of Southeast Asian Nations (ASEAN) countries continued to remain small steel producers. Australia and New Zealand consumed small amounts of steel products for a total of 9.2 Mt.

Nickel.—The region's production of mined nickel, in terms of metal content, accounted for about 25% of the world total in 2008. Indonesia was the world's third ranked producer of mined nickel after Russia and Canada in 2008. Australia and New Caledonia, which were the region's other major producers of mined nickel, accounted for 7.4% and 4.1% of the world total, respectively (table 4).

Regional production of mined nickel was expected to continue to increase at an average annual rate of more than 5.4% between 2008 and 2015. This prediction was based on reported gradual expansions of capacity and increases in productivity (table 12). In Australia, Allegiance Mining NL's Avebury Mine in Tasmania was scheduled to be put into operation in 2008, and it would have an output capacity of 8,500 t/yr for 10 years. BHP Billiton's Ravensthorpe Mine was scheduled to begin operation in 2009 and to produce up to 50,000 t/yr of nickel. Additional expansion at the Yabulu refinery in Townsville to 180,000 t/yr was scheduled to be completed in 2010. In China, gradual capacity expansions were to be undertaken at mines in the Xinjiang Autonomous Region during the period 2008-13. A nickel mine in Yuanjiang County, Province of Yunnan, was to be developed, and a 10,000-t/yr nickel refinery was to be built near the mine site by 2009. Jilin Jien Nickel Co. planned to expand its mine output capacity to 600 metric tons per day (t/d) from 300 t/d by 2010. In Indonesia, Rio Tinto's new nickel mine on Sulawesi Island was expected to produce 46,000 t/yr of contained nickel by 2015.

In New Caledonia, Société Minière du Sud Pacifique (SMSP) planned to develop a new nickel mine to supply nickel concentrates to the new joint-venture nickel processing plant between SMSP and Pohang Iron and Steel Co. Ltd. in 2008. Vale Inco Ltd. restarted the construction of its Goro nickel mine, which was scheduled to be completed in 2012 and would have the capacity to produce 20,000 t/yr of nickel. The Goro Mine would have the capacity to produce about 60,000 t/yr of nickel and 5,000 t/yr of cobalt in 2014. Xstrata-SMSP's Koniombo

nickel project was expected to start up in 2012 and to produce 60,000 t/yr of nickel in ferronickel in 2013. In Papua New Guinea, Highlands Pacific Ltd.'s Ramu nickel-cobalt project planned to produce 31,150 t/yr of nickel and 3,300 t/yr of cobalt in 2010. In the Philippines, Synutomo Metal Mining would add a second nickel plant to increase its output capacity to 20,000 t/yr from 10,000 t/yr in 2009.

In 2008, the region's consumption of refined nickel accounted for 51.3% of the world total compared with 52% in 2007. Stainless steel production accounted for about 65% of total world nickel consumption, and the demand for nickel was linked to the consumption of stainless steel. China was the leading stainless steel producing and importing country, and Japan, the Republic of Korea, and Taiwan supplied about 90% of China's total imports. Nickel consumption in China was expected to increase substantially accordingly, to about 25% of the world total, and that in such other countries as Japan, the Republic of Korea, and Taiwan was expected to decline in the future and would likely offset the increasing demand in China. Overall, the region would consume less refined nickel in the near future.

Platinum-Group Metals.—The region's production of mined platinum and palladium was insignificant and accounted for only 0.3% and 0.6%, respectively, of the world total in 2008. Between 2008 and 2015, regional production of mined platinum and palladium was expected to increase slightly at an average annual rate of about 2.9% and 2.3%, respectively. Jinchuan Nonferrous Metals of China produced platinum and palladium as byproducts of mined nickel from its nickel mining and refining operations at Jinchuan, Province of Gansu. Australia was not a primary producer of PGM, although small amounts of palladium were produced as a byproduct of nickel operations at Kalgoorlie-Boulder and Kambalda in Western Australia. Regional PGM consumption was expected to increase in the autocatalysts and electronics sectors. The rapid growth in the manufacture of automobiles, light vehicles, computers, and electronic goods in China and India increased the demand for PGM in the region (tables 13, 14).

Tin.—The Asia and the Pacific region was the dominant producer of mined tin and tin metal in the world. Production of mined tin and refined tin accounted for 67% and 79%, respectively, of the world total in 2008. China ranked first in the world in the production of mined tin and refined tin and Indonesia ranked second. The combined output of China and Indonesia accounted for about 64% of the world mined tin output. Other important refined tin producers in the region were Malaysia and Thailand (table 4).

Regional production of mined tin and refined tin was expected to continue to increase at an average annual rate of 5.2% and 2.2%, respectively, between 2008 and 2015. This prediction was based on reported gradual expansions of capacity and increases in productivity (tables 15, 16). In Australia, Metal X Ltd. planned to reopen its Mt. Bischoff and Renison Mines in Tasmania in 2008, and North Queensland Metals Ltd. planned to develop its Baal Gammon polymetallic mine in Queensland in later years. In Indonesia, Yunnan Tin Ltd. of China planned to develop a tin mine and construct a tin smelter on Bangka Island in Bangka-Belitung Province. P.T. Tambang Timah Tbk planned to increase offshore mining of tin as onshore ores were depleted.

Because the Thai Government agreed to lower the tin royalty rate to 6%, Sea Minerals Ltd. of Thailand planned to increase its mined tin output during the next several years.

In 2008, China, which was the world's leading consumer of tin metal, accounted for about 37% of the world total followed by Japan, with 9.4%. The region consumed about 63% of the world's total consumption of tin metal, which was the same as in 2007. China's tin smelting capacity exceeded its mine output capacity; therefore, the country was required to import tin concentrates from such countries as, in order of volume (tonnage) of imports, Indonesia, Burma, Bolivia, Vietnam, and Laos in 2008. China became a net tin importing country in 2007. The Government cancelled the value-added-tax rebate and levied a 10% export duty on refined tin. The export volume of tin from China was expected to decrease in the future, and the Indonesian Government also restricted mined tin production and controlled refined tin output. As a result, the volume of tin supply on the world market also decreased. Indonesia replaced China as the leading tin exporting country in the region.

Zinc.—The region's production of mined zinc accounted for about 47% of the world total in 2008. China ranked as the world's leading producer of mined zinc and accounted for about 28.3% of the world total in 2008; it was followed by Australia, which accounted for about 13%. China was also the world's leading producer of zinc metal, and Australia, India, Japan, and the Republic of Korea were the region's other important producers (table 4).

Regional production of mined zinc was expected to increase slightly at an average annual rate of about 0.4% between 2008 and 2015. This prediction was based on reported gradual capacity expansions in China and India (table 17). Regional production of refined zinc metal was expected to increase at an average annual rate of about 1.5% between 2008 and 2015. This prediction was based on gradual capacity expansions mainly in Australia and China (table 18).

In Australia, gradual capacity expansions were expected to be carried out at the Cannington Mine in Queensland by BHP Minerals Ltd. and at the George Fisher and the Hilton Mines in Queensland by MIM Holdings Ltd. Teck Cominco Corp. of Canada reopened its Lennard Shelf Mine in 2008. Several smaller zinc mines, such as Angas Zinc, Browns Silver, Hellyer Metals, and Jaguar, were planned and could produce 1.9 Mt/yr of zinc concentrate by 2011. In China, reported capacity additions were for Aerhada Mining Co. Ltd. and Bayannur Zijin Nonferrous Metal Co. Ltd. to start construction of a 100,000-t/yr zinc smelter in Dong Ujinqin and Urad Houqi, respectively, in the Nei Mongol Autonomous Region in 2008. In Japan, Toyoha Mining Co. Ltd. closed its lead-zinc-silver mine in Hokkaido Prefecture in 2006 because of depletion of ores, but the closure would not affect the increasing regional production of mined zinc.

In China, Tongquan Chizhou Nonferrous Metals Co. planned to add 100,000 t/yr of output capacity at its zinc metal operation in 2010. China's zinc metal output capacity was expected to increase by 300,000 t/yr in 2008 with expansions by such producers as Baiyin Nonferrous Metals Co. Ltd., Nandan Nanfang Co., and Yuguang Gold-Lead Co. Ltd. Zhuzhou Smelter Co. Ltd. was expected to add 130,000 t/yr of capacity in 2009. China did not produce sufficient lead and zinc

concentrates to meet its projected smelter expansions and would continue to depend on imports to meet its domestic needs. In India, Hindustan Zinc Ltd. planned to increase its zinc smelting capacity to 1 Mt/yr in 2010 from 570,000 t/yr in 2008.

In 2008, refined zinc consumption in the Asia and the Pacific region accounted for about 57% of the world total, which was a 2.2% increase from that of 2007. The region's increase in zinc consumption was attributable mainly to China, which accounted for about 35% of the world total in 2008. The demand for zinc plate by the automobile and electronics sectors in China was expected to increase. Japan's zinc consumption increased to 3.7% of the world total in 2008 from 5.2% in 2007 owing to increased manufacturing production. Zinc consumption in the Republic of Korea, India, and Taiwan accounted for 4%, 3.7%, and 2%, respectively, of the world total in 2008. As a result, the region's zinc consumption was expected to increase at a moderate rate during the next several years.

Industrial Minerals

Diamond.—The Asia and the Pacific region's production of diamond accounted for about 10.3% of the world total in 2008. Australia was the leading diamond producing country in the region. Diamond produced from Australia accounted for about 10.2% of the world total. Regional production of diamond was expected to increase at an average annual rate of about 6.5% between 2008 and 2015 (table 19). The Argyle Mine, which is located in the Ellendale diamond province in Western Australia, was Australia's largest and the world's leading producing diamond mine. Rio Tinto Ltd. invested \$760 million to develop the underground operation at the Argyle Mine for production in 2010, and the open pit operation was shut down in 2008 owing to a wall failure at the end of 2007. Gem Diamonds Ltd. planned to increase the processing of diamondiferous materials at its Ellendale Mine to 8.5 Mt in 2008 and 10.5 Mt in 2009. The quality of diamond from Australia was considered low compared with that from Angola, Central African Republic, Guyana, India, Indonesia, and Sierra Leone. In 2008, the region imported about 43% of the world's total volume (in terms of carats) and exported about 15% of the world total. India was the leading diamond importing country in the region and was ranked second in the world after the European Union. Australia exported most of its diamond output (Kimberley Process Rough Diamond Statistics, 2009).

Lithium.—In 2008, lithium sources in the world came mainly from brine (63%) and lithium mineral concentrate (37%). The region's production of lithium accounted for about 32% of the world total in lithium mineral concentrate in 2008. Chile and Argentina accounted for about 58% of the total in brines. Regional production of lithium was expected to increase slightly at an average annual rate of 0.7% between 2008 and 2015. Australia was the region's leading producer of lithium followed by China. In Australia, Talison Minerals Pty Ltd. produced spodumene concentrate from its Greenbushes Mine in Western Australia, which had a resource of 35.5 Mt at an average grade of 3.31% lithium oxide. The company had a production capacity of 150,000 t/yr of spodumene. Galaxy Resource Ltd.'s Mount Cattlin lithium-tantalum project north of Ravensthorpe in

Western Australia could begin production in late 2009 or early 2010 with 120,000 t/yr of concentrate containing 7,200 t of lithium oxide (table 20).

In China, lithium carbonate was produced from either domestic or imported spodumene. The output capacity was about 20,000 t/yr of lithium carbonate and was expected to increase to 60,000 t/yr in 2010. Zabuye Lithium High-Tech Co. Ltd. had a production capacity of 7,500 t/yr of lithium salt, of which 75% was lithium carbonate, and was expected to increase output by 20,000 t/yr. Its Baiyin Zabuye Lithium Co. Ltd. processed 5,000 t/yr of lithium salt to produce 3,000 t/yr of lithium carbonate and 2,000 t/yr of lithium hydroxide. The processing capacity was expected to increase to 25,000 t/yr.

In recent years, lithium use in batteries has increased significantly owing to rechargeable lithium batteries being used increasingly in portable electronic devices and electric tools. Major automobile companies were developing lithium batteries for hybrid vehicles. The world's demand for lithium carbonate equivalent was about 115,000 t in 2008, which was an increase of 1% compared with that of 2007, and about 23% of which was used in primary and rechargeable batteries. In terms of lithium product, demand for lithium carbonate accounted for 46%; lithium mineral concentrate, 21%; and lithium hydroxide, 13%. In Japan, imports of lithium product came mainly from Chile, which accounted for 70% of Japan's lithium imports. In 2008, Japan exported 13,194 t of lithium carbonate mainly to Chile, and 2,406 t of lithium hydroxide and 134 t of lithium metal mainly to the United States and China. Japan's demand for lithium carbonate, lithium hydroxide, and lithium metal was 14,000 t, 2,700 t, and 412 t, respectively, 40% of which was used in batteries.

Mineral Fuels and Related Materials

Coal.—The region's overall production of coal, which included anthracite, bituminous, and lignite, accounted for about 65% of the world total in 2008. Production of anthracite coal, however, accounted for about 94% of the world total, and production of bituminous coal accounted for about 61%. China, which was by far the world's leading producer of anthracite and bituminous coals, accounted for about 75% and 42%, respectively, of the world total. In the Asia and the Pacific region, North Korea and Vietnam were the other significant producers of anthracite coal; Australia, India, and Indonesia were the other important producers of bituminous coal and lignite (table 4). Japan was one of the world's leading importers and consumers of coal; virtually all coal requirements for its iron and steel and utility industries were imported. Australia ranked as the world's leading coal exporter. The other major regional coal exporters (suppliers) were China and Indonesia.

Overall regional coal production was expected to increase at an average annual rate of about 2.6% between 2008 and 2015 (table 21). This prediction takes into account planned capacity expansions and newly developed mines. In Australia, capacity expansion to 12 Mt/yr from 8 Mt/yr at the Rolleston coal mine in Queensland was expected in later years following completion of the second phase of development. The Wilpinjong coal mine in New South Wales was scheduled to produce 13 Mt/yr in

2011. Capacity expansions of several coal mines in the Bowen Basin in Queensland were expected to be completed in the next 2 to 3 years; the Dawson Mine would have the capacity to produce 12.7 Mt/yr in 2011. In China, the Government approved Shenhua Coal Group's application to develop the Buertai Coal Mine in Nei Mongol Autonomous Region, which would have a design capacity of 20 Mt/yr of coal in 2010. The Shanxi Provincial government projected that 70 Mt/yr of coal output capacity would be added in Shanxi Province; the Province was expected to produce 680 Mt of coal in 2008. In India, Coal India Ltd. expanded its output capacity and planned to increase it to 504 Mt/yr in 2011. In Indonesia, Bumi Resources planned to increase production capacity to 20 Mt/yr in 2010. In Mongolia, companies that held exploitation licenses for such coal mines as Baruun Naran, Ovoot Tolgoi, and Tavan Tolgoi were waiting for the Mongolian Government to finalize the investment agreements before proceeding with the construction of the mines. When the development work was completed, these mines would have the capacity to produce 8 Mt/yr in 2012.

In the region, Japan, the Republic of Korea, and Taiwan virtually depended on imported coal for their iron and steel and utility industries. China was the leading coal consuming country in the world. Owing to strong electricity demand, production constraints, and mine safety issues at domestic mines, the volume of coal exports decreased and coal imports increased sharply during the past 2 years. China's coal-production bases are located in the northern part of the country and the coal-consuming regions are located in the coastal areas. As a result of rail and port bottlenecks and increased domestic transportation costs, imported coal was more competitive in recent years. The Indian Government aimed to provide electricity to all citizens. To achieve this target, the construction of a number of large coal-fired powerplants was planned. Several of those coal-fired plants would be located in coastal areas and would rely on imported coal. India was expected to increase coal imports from about 29 Mt in 2007 to 70 Mt in 2013 if all the planned coal-fired plants commence operations. Because of low production costs and the ability to increase output capacities, coal exports from Indonesia were expected to increase. A large share of Indonesia's coal exports was expected to be destined for China and India.

Uranium.—The region's uranium resources are located mainly in Australia, which was ranked first in identified recoverable resources of uranium in the world and accounted for 24% of the world total. The country ranked second after Canada in the production of mined uranium in terms of uranium oxide (U_3O_8) content. In Australia, three active mines were in operation, namely, the Beverly, the Olympic Dam, and the Ranger Mines, and two more were under development. A number of undeveloped deposits are located in Northern Territory, Queensland, South Australia, and Western Australia. BHP Billiton planned to expand its Olympic Dam Mine's uranium output to 15,000 t/yr from 4,400 t/yr. In China, most mined uranium was enriched and consumed domestically. China planned to add 10 more nuclear powerplants in the coastal areas during the next 10 years to relieve the electricity shortage in the region. China's uranium consumption was expected to increase, and the country was interested in investing in uranium mines

in Australia. Australia exported nearly all its mined uranium in terms of U_3O_8 to China, Japan, and the Republic of Korea within the region and elsewhere to France, Spain, Sweden, the United Kingdom, and the United States. Australia was expected to export about 10,000 t of uranium to China in 2010.

Regional production of mined uranium was expected to increase at an average annual rate of about 4.3% between 2008 and 2015 (table 22). This prediction was based mainly on production capacity expansions in Australia at the Olympic Dam Mine by BHP Billiton and two U_3O_8 in situ leaching operations at the Beverly Mine by Heathgate Resources Pty. Ltd. and at the Honeymoon Mine by Southern Cross Resources Inc. in South Australia. According to the Chinese Government's energy development plan, China's nuclear power generation capacity would increase to between 40,000 and 60,000 megawatts (MW) in 2020 from 8,600 MW in 2007. With an installed nuclear power capacity of 40,000 MW, China would need about 7,000 t of U_3O_8 . The Chinese Government encouraged domestic companies to explore for uranium at home and overseas. China National Nuclear Corp. was the only company allowed to mine uranium in the country. India, Japan, and the Republic of Korea also were expected to expand their nuclear power capacities during the period 2008-13. Regional consumption of uranium was expected to increase and would require imports of uranium from African countries, Australia, Canada, and Kazakhstan.

Trade Review

During the past 3 decades, the main source of economic growth in the Asia and the Pacific region has shifted from the export of manufactured goods toward the export of equipment and machinery. This shift was initially led by Japan, followed by the developed economies of Hong Kong, the Republic of Korea, Singapore, and Taiwan, and more recently by the developing countries of China, India, Indonesia, Malaysia, the Philippines, and Thailand. Consequently, trade of raw materials, including mineral commodities, has been significant in volume and value. Trade liberalization and investment policy reforms in developing countries have reduced barriers to trade and investment. The cross-border transshipment of product components and assembly within the vertically integrated production processes increased during the past several years, and the composition of exports was shifted toward intermediate goods. The share of parts and components in imports for manufacturing also was trending upward in the region. By 2008, the volume of imports of parts and components had more than doubled in China, the Philippines, Thailand, and Vietnam. China had become one of the major export destinations of intermediate goods for all economies in the region. The export value to China from such countries as Malaysia, the Philippines, the Republic of Korea, Singapore, and Thailand increased by almost five times during this period, at the expense of the United States and the European Union.

Within the region, Australia continued to rely heavily on exports of most of its mineral output to Asian countries to sustain its mineral development and production. China's imports of raw materials came mostly from Australia, India, and Indonesia. China imported a large quantity of iron ore

from Australia and India. Most of Indonesia's coal went to China. Japan was China's leading source of imports for finished products, such as iron and steel products. Japan also relied on imported raw materials for its industrial manufacturing and on imported mineral fuels for its energy needs. The Republic of Korea was a net importer of mineral commodities and depended on imported raw materials to manufacture iron and steel and petroleum products for domestic consumption and export. India continued to be largely self-sufficient in mineral commodities, which were used as primary raw materials in various industries. In mineral trade, Indonesia's major export partners were China, India, Japan, and the Republic of Korea, and its major import partners were China and Japan.

During the past several years, nonfuel commodity prices continued to increase; the prices were supported by strong investment and demand in the region. Metal prices rose by more than 10%, led by aluminum, copper, iron ore, lead, nickel, and precious metals. China's consumption of these metals had grown by more than 100% during the past several years. Growth in Chinese metal demand alone more than offset lower consumption in the European countries. Regional economic integration has facilitated rationalization of industry across the region. The ASEAN has facilitated regional economic integration by inviting all major Asian countries, including Australia, China, Japan, New Zealand, and the Republic of Korea, to discuss investment and trade liberalization in the region.

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TABLE 1
ASIA AND THE PACIFIC: AREA AND POPULATION IN 2008

Country	Area ¹ (square kilometers)	Estimated population ² (thousands)
Afghanistan	647,500	28,396 ¹
Australia	7,687,850	21,374
Bangladesh	144,000	160,000
Bhutan	47,000	687
Brunei	5,770	397
Burma	678,500	49,190
Cambodia	181,040	14,700
China	9,596,960	1,325,640
Fiji	18,270	839
Hong Kong	1,092	6,978
India	3,287,590	1,139,965
Indonesia	1,919,440	228,249
Japan	377,835	127,704
Korea, North	120,540	23,858
Korea, Republic of	98,480	48,607
Laos	236,800	6,205
Malaysia	329,750	26,993
Mongolia	1,564,116	2,632
Nepal	147,181	28,582
New Caledonia	19,060	246
New Zealand	268,680	4,269
Pakistan	803,940	166,037
Papua New Guinea	462,840	6,449
Philippines	300,000	90,348
Singapore	693	4,839
Solomon Islands	28,450	507
Sri Lanka	65,610	20,156
Taiwan	36,190	22,974 ¹
Thailand	514,000	67,386
Timor, East	15,007	1,098
Vietnam	329,560	86,211
Total	29,933,744	3,711,516
World total	148,940,000	6,692,030

¹Source: U.S. Central Intelligence Agency, The World Factbook 2009.

²Source: The World Bank, 2008 World Development Indicators Database.

TABLE 2
ASIA AND THE PACIFIC: GROSS DOMESTIC PRODUCT IN 2008^{1,2}

Country	Gross domestic product based on purchasing power parity		Real gross domestic product growth rate (percentage)		
	Gross value (million dollars)	Per capita (dollars)	2006	2007	2008
	Afghanistan	21,388	760	8.2	12.1
Australia	799,054	36,918	2.8	4.0	2.4
Bangladesh	226,205	1,399	6.5	6.3	6.0
Bhutan	3,490	5,312	6.3	21.4	7.6
Brunei	19,716	50,199	4.4	0.6	-1.5
Burma	67,963	1,156	13.1	11.9	4.0
Cambodia	28,461	2,082	10.8	10.2	6.7
China	7,926,500	5,970	11.6	13.0	9.0
Fiji	3,678	4,196	3.3	-6.6	0.2
Hong Kong	307,318	43,847	7.0	6.4	2.4
India	3,297,840	2,780	9.8	9.4	7.3
Indonesia	909,729	3,980	5.5	6.3	6.1
Japan	4,356,320	34,116	2.0	2.3	-0.7
Korea, North ³	40,000	1,800	NA	NA	NA
Korea, Republic of	1,344,540	27,692	5.2	5.1	2.2
Laos	13,310	2,127	8.4	7.5	7.2
Malaysia	384,388	14,082	5.8	6.2	4.6
Mongolia	9,414	3,547	8.6	10.2	8.9
Nepal	31,634	1,144	3.7	3.2	4.7
New Caledonia ⁴	3,158	15,000	NA	NA	NA
New Zealand	115,809	27,083	2.0	3.2	0.2
Pakistan	422,392	2,624	6.1	5.6	2.0
Papua New Guinea	13,064	2,108	2.6	6.5	7.0
Philippines	317,964	3,515	5.3	7.1	3.8
Singapore	239,146	51,226	8.4	7.8	1.1
Solomon Islands	1,525	2,917	6.9	10.7	6.9
Sri Lanka	92,168	4,589	7.7	6.8	6.0
Taiwan	712,117	30,912	4.8	5.7	0.1
Thailand	547,060	8,239	5.2	4.9	2.6
Timor, East	2,522	2,368	-5.8	8.4	12.8
Vietnam	240,757	2,794	8.2	8.5	6.2
Total	22,498,630	XX	XX	XX	XX
World total	69,489,850	XX	XX	XX	XX

NA Not available. XX Not applicable.

¹Source: International Monetary Fund, World Economic Outlook Database, October 2009.

²Gross domestic product listed may differ from that reported in individual country chapters owing to differences in source or date of reporting.

³Based on a 2008 estimate, U.S. Central Intelligence Agency World Factbook 2009.

⁴Based on 2003 estimate, U.S. Central Intelligence Agency World Factbook 2009.

TABLE 3
ASIA AND THE PACIFIC: SELECTED EXPLORATION SITES IN 2008¹

Country	Type ²	Site	Commodity	Company	Resources ³	Exploration ⁴
Australia	F	Balmoral South	Fe	Australasian Resources Ltd.	234 Mt Fe	Extensive drilling.
Do.	P	Boddington	Au, Cu	Newmont Mining Corp.	5.6 Moz Au, 304,000 t Cu	Do.
Do.	D	Kalgoorlie Nickel	Ni, Co	Vale Inc./Heron Resources Ltd.	2 Mt Ni, 146,000 t Co	Do.
Do.	F	Mt Karara	Fe	Gindalbie Mining Ltd.	500 Mt Fe	Do.
Do.	P	Olympic Dam	Au, U, Ag, Cu	BHP Billiton Ltd.	14.7 Mt Cu, 440,000 t U ₃ O ₈ , 13.7 Moz Au, 92.7 Moz Ag	Extensive work program.
Do.	P	Ravenswood	Au	Resolute Mining Ltd.	745,000 oz Au	Extensive drilling.
Do.	D	Sino Iron/Cape Preston	Fe	CITIC Pacific Mining Corp.	Data not released	Do.
Do.	E	Tropicana	Au	AngloGold Ashanti Ltd.	3.5 Moz Au	Do.
Do.	E	West Pilbara	Fe	Aquila Resources Ltd.	139 Mt Fe	Extensive work program.
Do.	E	Yerilla (Jump Up Dam)	Ni, Co	Heron Resource Ltd.	570,000 t Ni, 36,000 t Co	Extensive drilling.
China	E	Changkeng	Au	Minco Gold Corp.	379,000 oz Au	Do.
Do.	E	Dachang	Au	InterCitic Minerals Inc.	2.6 Moz Au (inferred)	Do.
Do.	D	White Mountain	Au	Sino Gold Mining Ltd.	1.07 Moz Au	Do.
Mongolia	F	Oyu Tolgoi	Au, Cu	Ivanhoe Mines Ltd.	10.5 Moz Au, 13.6 Mt Cu	Do.
Pakistan	F	Reko Diq	Cu, Au	Antofagasta plc./Barrick Gold Corp.	8.3 Mt Cu, 13.6 Moz Au	Do.
Papua New Guinea	E	Frieda	Cu, Au	Xstrata plc	2.2 Mt Cu, 2.9 Moz Au	Do.
Do.	E	Solwara	Cu, Au, Ag, Zn	Nautilus Minerals Inc.	59,000 t Cu, 134,000 oz Au, 640,000 oz Ag, 3,500 t Zn	Extensive work program.
Tonga	E	Tahi Moana	Zn, Cu, Ag, Au	do.	Data not released	Do.

Do., do. Ditto.

¹ Abbreviations used for commodities in this table include the following: Ag, silver; Au, gold; Co, cobalt; Cu, copper; Fe, iron ore; Ni, nickel; U, uranium; U₃O₈, uranium oxide; Zn, zinc. Abbreviations used for units of measure include the following: Moz, million troy ounces; Mt, million metric tons; oz, troy ounces; t, metric tons.

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

³ Resources reported where available based on 2008 data from various sources and reflect unverified public information reported by trade journals. Sites reflect measured + indicated resource unless otherwise noted.

⁴ Sites where extensive (greater than 10,000 meters) drilling or significant (more than \$5 million) expenditures have been reported.

TABLE 4
ASIA AND THE PACIFIC: PRODUCTION OF SELECTED COMMODITIES IN 2008¹

(Thousand metric tons unless otherwise specified)

Country	Metals														
	Aluminum		Copper		Gold, mine output,		Iron and steel		Lead		Iron		Lead		
	Alumina	Bauxite	Metal ²	Mine output, Cu content	Refined, primary	Au content (kilograms)	Ore, gross weight	Pig	Steel, crude	Mine output, Pb content	Refined, primary	Iron	Steel, crude	Mine output, Pb content	Refined, primary
Afghanistan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Australia	19,446	64,038	2,104	885	503	215,000	342,000 ^e	6,409	7,724	645	220	--	--	--	--
Bangladesh	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bhutan	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Brunei ³	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Burma	--	--	--	7	7	100 ^e	--	2 ^e	25 ^e	4 ^e	(4)	--	--	--	--
Cambodia	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
China ^e	22,800	35,000	15,900	940	2,700	285	824,000	470,670 ⁵	500,490 ⁵	1,550	2,350	--	--	--	--
Christmas Island	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fiji	--	--	--	--	--	638	--	--	--	--	--	--	--	--	--
Hong Kong ³	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
India ^e	3,000	21,210 ⁵	1,308 ⁵	31 ⁵	684 ⁵	--	220,000 ⁵	29,000 ⁵	55,200 ⁵	87 ⁵	62 ⁵	--	--	--	--
Indonesia	--	1,152	243	651	181	64,390	--	--	3,915	--	--	--	--	--	--
Japan	320 ^e	--	1,158	--	1,328	6,868	--	86,171	118,739	--	107	--	--	--	--
Korea, North ^e	--	--	--	12	15	2,000	5,316	900	1,279 ⁵	13	9	--	--	--	--
Korea, Republic of	--	--	--	(4)	514	175	366	31,043	53,322	(4)	244	--	--	--	--
Laos ^e	--	--	--	100	64	4,300	--	--	--	--	--	--	--	--	--
Malaysia	--	150 ^e	--	--	--	2,400 ^e	800 ^e	--	6,423	--	--	--	--	--	--
Mongolia	--	--	--	127	3	15,184	1,387	--	81	--	--	--	--	--	--
Nauru	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nepal	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
New Caledonia	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
New Zealand	--	--	338	--	--	16,274	--	600 ^e	853 ^e	--	--	--	--	--	--
Pakistan ^e	--	8	--	19	--	--	250	105,000	1,100	--	--	--	--	--	--
Papua New Guinea	--	--	--	187	--	64,000	--	--	--	--	--	--	--	--	--
Philippines	--	--	--	21	174	35,568	--	--	711 ^e	--	--	--	--	--	--
Singapore	--	--	--	--	--	--	--	--	620 ^e	--	--	--	--	--	--
Solomon Islands	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sri Lanka ^e	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Taiwan	--	--	--	--	--	--	--	9,800	19,222	--	--	--	--	--	--
Thailand	--	--	--	--	--	2,721	1,710	--	5,211	--	--	--	--	--	--
Thailand	--	--	--	--	--	3,000	1,060	800	2,250	19	--	--	--	--	--
Vietnam ^e	--	30	--	11	2	--	--	800	2,250	19	--	--	--	--	--
Total	45,600	122,000	21,100	2,990	6,180	433,000	1,400,000	740,000	777,000	2,320	2,990	--	--	--	--
Share of world total	55%	57%	44%	19%	40%	22%	63%	72%	58%	58%	70%	--	--	--	--
United States	4,300	NA	2,660	1,310	1,220	233,000	53,600	33,700	91,900	410	135	--	--	--	--
World total	82,400	213,000	47,400	15,500	15,600	1,970,000	2,210,000	1,030,000	1,330,000	3,980	4,270	--	--	--	--

See footnotes at end of table.

TABLE 4—Continued
ASIA AND THE PACIFIC: PRODUCTION OF SELECTED COMMODITIES IN 2008¹

(Thousand metric tons unless otherwise specified)

Country	Metals											
	Manganese ore,			Mercury,		Nickel, metal content			Tin, metric tons		Tungsten,	
	mine output, Mn content	mine output, Hg content (metric tons)	Mine output	Refinery products	Mine output, Sn content	Mine output, primary	W content (metric tons)	Mine output, Zn content	Zinc, metric tons	Metal ²		
Afghanistan	--	--	--	--	--	--	--	--	--	--	--	--
Australia	2,310	--	188	103	1,783	--	--	1,519,000	505,000	--	--	--
Bangladesh	--	--	--	--	--	--	--	--	--	--	--	--
Bhutan	--	--	--	--	--	--	--	--	--	--	--	--
Brunei ³	--	--	--	--	--	--	--	--	--	--	--	--
Burma	(4)	--	(4)	--	1	30 ^e	136	20	--	--	--	--
Cambodia	--	--	--	--	--	--	--	--	--	--	--	--
China ^e	2,200	800	72	129	110,000	129,000	43,500	3,200,000	4,000,000	--	--	--
Christmas Island	--	--	--	--	--	--	--	--	--	--	--	--
Fiji	--	--	--	--	--	--	--	--	--	--	--	--
Hong Kong ³	--	--	--	--	--	--	--	--	--	--	--	--
India ^c	960	--	--	--	--	--	--	337,000	568,000	--	--	--
Indonesia	--	--	193	9	53,228	53,471	--	--	--	--	--	--
Japan	--	--	--	156 ^e	--	956	--	--	632,576	--	--	--
Korea, North ^e	--	--	--	--	--	--	350	70,000	75,000	--	--	--
Korea, Republic of	--	--	--	3 ^e	--	--	--	3,672	948,000	--	--	--
Laos ^e	--	--	--	--	700	--	--	1,100	--	--	--	--
Malaysia	--	--	--	--	2,578	31,630	--	71,800	--	--	--	--
Mongolia	--	--	--	--	--	--	142	--	--	--	--	--
Nauru	--	--	--	--	--	--	--	--	--	--	--	--
Nepal	--	--	--	--	--	--	--	--	--	--	--	--
New Caledonia	--	--	103 ^p	38 ^p	--	--	--	--	--	--	--	--
New Zealand	--	--	--	--	--	--	--	--	--	--	--	--
Pakistan ^e	--	--	--	--	--	--	--	--	--	--	--	--
Papua New Guinea	--	--	--	--	--	--	--	--	--	--	--	--
Philippines	--	--	84	--	--	--	--	1,619	--	--	--	--
Singapore	--	--	--	--	--	--	--	--	--	--	--	--
Solomon Islands	--	--	--	--	--	10 ^e	--	--	--	--	--	--
Sri Lanka ^e	--	--	--	--	--	--	--	--	--	--	--	--
Taiwan	--	--	--	11 ^e	--	--	--	--	--	--	--	--
Thailand	53 ^e	--	--	--	169	21,860	778 ^e	17,811	107,753	--	--	--
Vietnam ^e	4	--	--	--	3,500	3,566 ^s	--	45,000	--	--	--	--
Total	5,530	800	639	448	172,000	241,000	44,900	5,270,000	6,840,000	--	--	--
Share of world total	39%	67%	25%	34%	67%	79%	79%	47%	58%	--	--	--
United States	--	NA	--	--	--	--	--	778,000	286,000	--	--	--
World total	14,100	1,190	2,540	1,310	256,000	304,000	56,500	11,300,000	11,800,000	--	--	--

See footnotes at end of table.

TABLE 4—Continued
 ASIA AND THE PACIFIC: PRODUCTION OF SELECTED COMMODITIES IN 2008¹

(Thousand metric tons unless otherwise specified)

Country	Industrial minerals							Mineral fuels				Petroleum, crude (thousand 42-gallon barrels)
	Cement, hydraulic	Fluorspar (metric tons)	Graphite (metric tons)	Magnesite (metric tons)	Mica (metric tons)	Salt	Coal		Natural gas, dry (million cubic meters)	50 ^e		
							Anthracite	Bituminous				
Afghanistan	50 ^e	--	--	--	--	--	--	--	150 ^e	50 ^e	20 ^e	
Australia	9,400 ^e	--	--	126,000	--	11,160	--	--	332,000	38,256	168,123	
Bangladesh	5,000 ^e	--	--	--	--	360 ^e	--	--	--	18,516	1,800 ^e	
Bhutan	180 ^e	--	--	--	--	--	--	--	124	--	--	
Brunei ³	240 ^e	--	--	--	--	--	--	--	--	11,400 ^e	63,000	
Burma	676	--	--	--	--	35 ^e	--	--	--	12,445	7,242	
Cambodia	772	--	--	--	--	78 ^e	--	--	--	--	--	
China ^e	1,388,380 ⁵	3,250,000	800,000	10,000	--	59,520 ⁵	460,000	2,150,000	66,000	66,000	1,380,000	
Christmas Island	--	--	--	--	--	--	--	--	--	--	--	
Fiji	143 ^e	--	--	--	--	--	--	--	--	--	--	
Hong Kong ³	--	--	--	--	--	--	--	--	--	--	--	
India ^e	180,000	7,000	140,000	350	4,000	16,000	--	420,000	27,457 ⁵	253,000		
Indonesia	37,000 ^e	--	--	--	--	700 ^e	54,000 ^e	188,717	78,985	311,000		
Japan	62,810	--	--	--	--	1,200 ^e	--	1,300 ^e	3,900 ^e	6,200		
Korea, North ^e	6,415 ⁵	12,500	30,000	150	--	500	17,781 ⁵	--	--	--	--	
Korea, Republic of	51,653	--	73	--	49,474	384	2,773	--	--	--	--	
Laos ^e	400	--	--	--	--	35	--	--	--	--	--	
Malaysia	19,000 ^e	--	--	--	6,000 ^e	--	--	1,050 ^e	57,648	253,310		
Mongolia	270	335,000	--	--	--	(4)	--	9,692	--	1,174		
Nauru	--	--	--	--	--	--	--	--	--	--	--	
Nepal	295 ^e	--	--	--	--	2 ^e	--	16 ^e	--	--	--	
New Caledonia	NA ^P	--	--	--	--	--	--	--	--	--	--	
New Zealand	1,200 ^e	--	--	--	--	100 ^e	--	4,909	3,994	21,298		
Pakistan ^e	22,000	1,400	--	2	--	1,710 ^e	--	4,200	38,000	26,000		
Papua New Guinea	--	--	--	--	--	--	--	--	135 ^e	12,400		
Philippines	13,369	--	--	--	--	510	--	3,610	--	965		
Singapore	--	--	--	--	--	--	--	--	--	--	--	
Solomon Islands	--	--	--	--	--	--	--	--	--	--	--	
Sri Lanka ^e	1,800	--	10,000	--	3,600	70	--	--	--	310 ^e	101	
Taiwan	17,330	--	--	--	3,179	--	--	--	--	25,400	53,151	
Thailand	35,668	29,529	--	--	--	1,312	--	--	--	7,944 ⁵	109,291 ⁵	
Vietnam ^e	40,047 ⁵	4,000	2,000	--	--	847 ⁵	39,777 ⁵	--	--	--	--	
Total	1,890,000	3,640,000	982,000	137,000	66,300	94,500	574,000	3,120,000	390,000	390,000	2,670,000	
Share of world total	67%	77%	88%	96%	21%	37%	94%	61%	13%	13%	10%	
United States	87,600	--	--	W	84,000	47,300	1,540	993,000	577,000	577,000	1,940,000	
World total	2,840,000	4,720,000	1,110,000	143,000	313,000	256,000	613,000	5,070,000	2,990,000	2,990,000	27,700,000	

See footnotes at end of table.

TABLE 4—Continued
 ASIA AND THE PACIFIC: PRODUCTION OF SELECTED COMMODITIES IN 2008¹

^cEstimated; estimated data, U.S. data, and world totals are rounded to no more than three significant digits. ^pPreliminary. NA Not available. W Withheld to avoid disclosing company proprietary data; not included in world total. -- Zero or zero percent.

¹Totals may not add due to independent rounding. Percentages are calculated on unrounded data. Table includes data available as of June 21, 2010.

²Primary and secondary production.

³Not in Minerals Yearbook, volume III.

⁴Less than 1/2 unit.

⁵Reported figure.

TABLE 5
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED BAUXITE MINE PRODUCTION, 1995-2015¹

(Thousand metric tons, gross weight)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	42,700	53,800	59,960	64,038	67,000	80,000	85,000
China	5,000	9,000	22,000	35,000	43,000	45,000	46,000
India	5,240	7,560	12,385	21,210	23,000	24,000	25,000
Indonesia	899	1,150	1,442	1,152	2,100	2,200	2,300
Malaysia	184	123	5	150	150	150	150
Other	3	9	33	38	47	46	55
Total	54,000	71,600	95,800	122,000	140,000	150,000	160,000

^cEstimated.

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

TABLE 6
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED PRIMARY AND SECONDARY ALUMINUM METAL PRODUCTION, 1995-2015¹

(Thousand metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	1,300	1,770	2,030	2,100	2,000	2,100	2,100
China	1,750	2,800	9,740	15,900	18,000	19,000	20,000
India	537	644	942	1,308	1,700	1,900	2,100
Indonesia	220	160	252	243	260	270	280
Japan	1,280	1,217	1,039	1,100	1,000	1,000	1,000
New Zealand	273	328	373	338	380	380	380
Other	--	--	--	--	800	1,000	1,000
Total	5,360	6,920	14,400	21,000	24,000	26,000	27,000

^cEstimated. -- Negligible or no production.

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

TABLE 7
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED COPPER MINE PRODUCTION, 1995-2015¹

(Metal content in thousand metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	398	829	930	885	970	1,000	1,100
China	445	593	762	940	1,000	1,100	1,200
India	47	32	27	31	37	39	42
Indonesia	444	1,010	1,064	651	1,000	1,300	1,200
Mongolia	122	125	127	127	130	160	200
Papua New Guinea	213	203	193	187	120	130	200
Philippines	108	130	16	21	25	25	25
Other	26	44	95	135	210	220	220
Total	1,800	2,970	3,210	2,980	3,500	4,000	4,200

^cEstimated.

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

TABLE 8
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED REFINED COPPER METAL PRODUCTION, 1995-2015¹

(Thousand metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	248	488	461	503	470	490	490
China	1,080	1,370	2,600	4,100	4,400	4,400	4,600
India	40	243	497	684	720	740	770
Indonesia	--	158	263	181	280	380	380
Japan	1,190	1,440	1,395	1,540	1,500	1,500	1,500
Korea, Republic of	235	468	519	514	600	600	600
Philippines	158	150	172	174	180	190	190
Other	29	45	98	89	260	270	270
Total	2,980	4,360	6,010	7,790	8,400	8,600	8,800

^cEstimated. -- Negligible or no production.

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

TABLE 9
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED GOLD MINE PRODUCTION, 1995-2015¹

(Metal content in kilograms)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	254,000	269,000	263,000	215,000	230,000	240,000	250,000
China	140,000	180,000	225,000	285,000	330,000	340,000	360,000
Indonesia	64,000	125,000	130,620	64,390	110,000	130,000	120,000
Japan	9,190	8,400	8,300	6,868	7,000	6,700	6,500
Laos	--	--	7,058	4,300	5,000	5,000	5,000
Mongolia	4,500	11,800	24,120	15,184	25,000	25,000	35,000
New Zealand	12,100	9,880	10,583	16,274	17,000	17,000	17,000
Papua New Guinea	51,700	74,500	68,483	64,000	70,000	70,000	80,000
Philippines	27,000	36,500	37,490	35,568	40,000	42,000	42,000
Other	14,404	23,961	19,037	13,734	17,000	17,000	16,000
Total	577,000	739,000	794,000	720,000	850,000	890,000	930,000

^cEstimated. -- Negligible or no production.

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

TABLE 10
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED BENEFICIATED IRON ORE PRODUCTION, 1995-2015¹

(Metal content in thousand metric tons)

Country	Average ore grade (% Fe)	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	62	88,700	107,000	163,000	208,000	290,000	330,000	340,000
China	64	82,300	73,600	134,000	263,000	310,000	320,000	330,000
India	64	41,700	48,600	97,500	141,000	140,000	150,000	150,000
Korea, North	NA	2,000	1,100	1,400	1,488	5,000	5,000	5,000
Other		1,242	1,477	2,195	2,940	2,900	2,800	2,800
Total		216,000	232,000	398,000	616,000	750,000	810,000	830,000

^cEstimated. NA Not available.

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

TABLE 11
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED CRUDE STEEL PRODUCTION, 1995-2015¹

(Thousand metric tons)

Country	1995	2000	2005	2008	2011 ^e	2013 ^e	2015 ^e
Australia	8,450	7,300	7,790	7,724	8,400	8,400	8,400
China	95,400	129,000	353,240	500,490	620,000	640,000	680,000
India	22,800	26,900	45,800	55,200	75,000	90,000	92,000
Japan	102,000	106,400	112,470	118,739	120,000	130,000	140,000
Korea, Republic of	36,800	43,100	47,820	53,322	52,000	52,000	61,000
Malaysia	2,450	2,430	5,296	6,423	6,100	6,500	7,000
Taiwan	11,600	17,300	18,567	19,222	22,000	23,000	23,000
Thailand	2,134	2,100	5,161	5,211	5,300	5,400	5,500
Other	7,221	6,024	7,929	10,214	13,000	15,000	18,000
Total	289,000	341,000	604,000	777,000	930,000	970,000	1,030,000

^eEstimated.

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

TABLE 12
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED NICKEL MINE PRODUCTION, 1995-2015¹

(Metal content in metric tons)

Country	1995	2000	2005	2008	2011 ^e	2013 ^e	2015 ^e
Australia	103,000	167,000	192,000	188,000	190,000	200,000	220,000
Burma	13	10	10	10	22,000	22,000	22,000
China	41,800	50,300	72,700	72,000	84,000	85,000	85,000
Indonesia	88,200	98,200	135,000	192,600	240,000	270,000	300,000
New Caledonia	120,000	126,000	111,939	102,700	110,000	120,000	120,000
Papua New Guinea	--	--	--	--	30,000	32,000	60,000
Philippines	15,100	17,400	26,636	83,895	100,000	100,000	100,000
Total	368,000	459,000	538,000	639,000	780,000	830,000	910,000

^eEstimated. -- Negligible or no production.

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

TABLE 13
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED PLATINUM MINE PRODUCTION, 1995-2015¹

(Metal content in kilograms)

Country	1995	2000	2005	2008	2011 ^e	2013 ^e	2015 ^e
Australia	100	171	111	200	200	200	200
China	300	650	700	800	1,000	1,000	1,000
Total	400	821	811	1,000	1,200	1,200	1,200

^eEstimated.

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

TABLE 14
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED PALLADIUM MINE PRODUCTION, 1995-2015¹

(Metal content in kilograms)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	400	812	550	700	650	650	700
China	170	350	450	500	650	650	700
Total	570	1,160	1,000	1,200	1,300	1,300	1,400

^cEstimated.

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

TABLE 15
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED TIN MINE PRODUCTION, 1995-2015¹

(Metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	8,656	9,146	2,819	1,783	4,000	4,000	4,000
China	61,900	99,400	126,000	110,000	150,000	150,000	150,000
Indonesia	46,058	55,624	78,404	53,228	60,000	70,000	80,000
Malaysia	6,402	6,307	2,857	2,578	2,000	2,000	2,000
Thailand	2,201	1,930	158	169	1,000	2,000	3,000
Vietnam	4,500	1,800	3,500	3,500	3,500	3,500	3,500
Other	981	1,152	1,158	1,441	1,500	1,500	1,500
Total	131,000	175,000	215,000	173,000	220,000	230,000	240,000

^cEstimated.

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

TABLE 16
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED TIN METAL PRODUCTION, 1995-2015¹

(Metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	870	1,033	994	400	500	500	500
China	67,700	112,000	122,000	129,000	140,000	150,000	150,000
Indonesia	38,628	47,129	65,300	53,471	55,000	65,000	75,000
Japan	630	593	754	956	900	900	900
Malaysia	39,433	26,228	36,924	31,630	27,000	30,000	30,000
Thailand	8,243	17,076	31,600	21,860	23,000	23,000	24,000
Other	2,690	1,830	1,796	3,596	3,500	3,500	3,500
Total	159,000	206,000	259,000	241,000	250,000	270,000	280,000

^cEstimated.

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

TABLE 17
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED ZINC MINE PRODUCTION, 1995-2015¹

(Metal content in thousand metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	937	1,420	1,367	1,519	1,500	1,500	1,500
China	1,011	1,780	2,550	3,200	3,200	3,300	3,300
India	155	144	262	337	350	370	400
Korea, North	210	60	67	70	70	70	70
Thailand	29	27	31	18	30	30	33
Vietnam	14	13	48	45	50	50	50
Other	96	65	55	75	74	76	76
Total	2,450	3,510	4,380	5,260	5,300	5,400	5,400

^cEstimated.

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

TABLE 18
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED PRIMARY AND SECONDARY ZINC METAL PRODUCTION, 1995-2015¹

(Thousand metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	325	495	463	505	500	500	500
China	1,077	1,980	2,780	4,000	4,200	4,300	4,400
India	171	201	289	568	800	1,000	1,000
Japan	711	699	675	633	630	620	610
Korea, North	200	65	72	75	100	100	75
Korea, Republic of	279	474	645	948	900	900	900
Thailand	46	78	61	108	110	110	100
Total	2,810	3,990	4,990	6,840	7,200	7,500	7,600

^cEstimated.

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

TABLE 19
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED DIAMOND PRODUCTION, 1995-2015¹

(Thousand carats)

Country (average % gem grade)	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	40,693	26,648	34,307	15,670	23,000	23,000	23,000
China	1,130	1,150	100	100	100	100	100
India	21	16	16	15	14	14	13
Indonesia	29	30	30	35	30	30	30
Total	41,900	27,800	34,500	15,800	23,000	23,000	23,000

^cEstimated.

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

TABLE 20
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED LITHIUM PRODUCTION, 1995-2015¹

(Metal content in metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	9,800	9,800	21,000	29,000	30,000	30,000	30,000
China	1,700	1,700	1,900	2,500	2,600	2,700	2,700
Total	11,500	11,500	22,900	31,500	33,000	33,000	33,000

^cEstimated.

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

TABLE 21
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED SALABLE COAL PRODUCTION, 1995-2015¹

(Thousand metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	244,200	313,000	370,000	403,000	450,000	480,000	480,000
China	1,361,000	999,000	2,260,000	2,720,000	3,100,000	3,200,000	3,300,000
India	290,011	334,800	360,000	446,000	470,000	500,000	520,000
Indonesia	39,936	77,015	142,920	188,717	190,000	200,000	200,000
Japan	6,263	3,126	1,114	1,300	--	--	--
Korea, North	71,000	16,000	23,500	25,060	25,000	25,000	25,000
Korea, Republic of	5,720	4,174	2,832	2,773	2,700	2,600	2,700
Mongolia	5,019	5,185	8,256	9,692	15,000	17,000	18,000
New Zealand	3,445	3,586	5,267	4,909	5,500	6,000	6,000
Pakistan	2,997	3,116	3,367	4,200	4,300	4,400	4,500
Philippines	1,200	1,218	3,165	3,610	3,500	3,500	3,500
Thailand	18,419	17,786	21,429	18,095	20,000	20,000	20,000
Vietnam	8,350	11,609	34,093	39,777	40,000	50,000	60,000
Other	407	837	1,531	2,189	2,200	2,300	2,300
Total	2,060,000	1,790,000	3,240,000	3,870,000	4,300,000	4,500,000	4,600,000

^cEstimated. -- Negligible or no production.

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

TABLE 22
ASIA AND THE PACIFIC: HISTORIC AND PROJECTED URANIUM MINE PRODUCTION, 1995-2015¹

(U₃O₈ content in metric tons)

Country	1995	2000	2005	2008	2011 ^c	2013 ^c	2015 ^c
Australia	3,712	7,588	11,218	9,989	11,000	12,000	13,000
China	500	1,000	1,200	1,300	1,500	2,000	2,000
Total	4,200	8,590	12,400	11,300	13,000	14,000	15,000

^cEstimated.

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

