



2006 Minerals Yearbook

CHINA

THE MINERAL INDUSTRY OF CHINA

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Since the beginning of economic reform in 1978, the Chinese economy has grown rapidly. The country has shifted from a centrally planned economy towards a market economy. Although China remains a developing country with a population of more than 1.3 billion, it has become one of the leading economic and trade powers in the world. During the past 3 decades, China's economic growth rate averaged about 9% per year. During the past 5 years, China's economy grew by about 10% per year. The strong economic growth was aided by increased domestic investment and export-oriented industrial production. After joining the World Trade Organization (WTO) in 2001, China continued to open up to the outside world. China became one of the top destinations for foreign direct investment and an export destination of choice, especially for assembly parts. The Millennium Development Goals for China was established to develop a "Xiaokang" (the all-around moderately prosperous society), with emphasis on a "Harmonious Socialist Society." The Government's outline of the Eleventh 5-Year Plan (2006-2010) describes plans for more-balanced economic growth in urban and rural areas and more-equitable income distribution. It introduces two basic policies for saving natural resources and protecting the environment. In the plan, the Government projects that, by 2010, the per capita gross domestic product (GDP) will be double that of 2000 (Zhonghua Renmin Gongheguo Guowuyuan Gongbao, 2006).

Minerals in the National Economy

China is rich in mineral resources and was the leading producer of aluminum, antimony, barite, coal, fluor spar, graphite, iron and steel, lead, rare earths, tin, tungsten, and zinc in the world in 2006. It ranked in the top three in the world in production of many other mineral commodities. China was the premier exporter of antimony, barite, coal, fluor spar, graphite, rare earths, and tungsten in the world. The country's demand for copper, chromium, cobalt, iron ore, manganese, nickel, petroleum, and potash exceeded domestic supply and imports were estimated to account for more than 30% of domestic consumption. Mineral trade accounted for 21.6% of the country's total trade in 2006. China was one of the few countries whose domestic demand and supply of a variety of commodities affected the world mineral market.

China's GDP grew at a rate of 10.7% to \$2.74 trillion in 2006. The mining industry accounted for about 4.8% of the Chinese GDP. The Central Government's investment in major construction projects was \$171 billion, and foreign direct investment was \$69.5 billion. The output of the industrial sector increased by 16.6% compared with that of the previous year. The transportation of coal to coal-fired powerplants improved but remained constrained, which led to an increase of coal imports in the coastal Provinces. By yearend, the country's power generation capacity had increased by 100 million kilowatts. The labor force in the mining sector was 5.0 million,

or 4.6% of the country's total workforce in 2005 (Zhonghua Renmin Gongheguo Guowuyuan Gongbao, 2007b).

Government Policies and Programs

The Government's outline of the Eleventh 5-Year Plan (2006-2010) describes plans for more-balanced growth in urban and rural areas and more-equitable income distribution. It introduces two basic policies for saving natural resources and protecting the environment. The plan also focuses on improving agricultural productivity, infrastructure, and service delivery. Other important objectives noted in the plan include reducing production and transportation costs; upgrading technological processes; improving energy development; and adjusting the raw material supply infrastructure in China. The plan outlines the goal of reducing energy consumption per unit of GDP by 20% and major pollutants discharge by 10% by 2010. The plan also describes the Government's plans to merge and/or take over small coal mines to form big mining companies and to shut down small coal-fired powerplants during the next several years to improve production efficiency and safety. It stresses the importance of upgrading the iron and steel sector through mergers, improving the quality of steel products, and controlling the production capacities of 13 commodities, including aluminum, cement, copper, iron and steel, lead, and zinc. It stresses that the Government will not approve new projects that fail to pass the Government's energy and environmental impact assessment (China Daily, 2007c).

Triggered by acceleration in the growth of the GDP, the Government took several steps to curb credit expansion and to slow investment during 2006. The People's Bank of China (Central Bank) increased the reserve-requirement ratio for commercial banks five times within 1 year to tighten liquidity conditions and contain investment growth, but the impact was limited. Although the tightened liquidity policy could help control investment growth, it was contrary to the Government's regional policy of encouraging more investment in western China and other areas. Thus, the Central Government's effort to reduce excess output capacity was undermined by local governments and state-owned enterprises that were keen to expand and the performances of which were based on how much revenue they could generate. To ease upward pressure on the yuan from the surging trade surplus and strong capital inflow, the Government allowed a slightly faster appreciation of the currency against the U.S. dollar by 3.5% and widened the daily bilateral trading band for renminbi against the dollar (South China Morning Post, 2007).

The Government issued the Eleventh 5-Year energy development plan. Under the plan, primary energy consumption was targeted to be 2.7 billion metric tons (Gt) of standard coal equivalent (one standard coal equivalent equals the thermal equivalent of 7,000 kilocalories per kilogram of fuel) by 2010, which was an increase of 4% per year from the consumption

level in 2005. Coal would account for 66.1% of energy consumption followed by petroleum, 20.5%; hydropower, 6.8%; natural gas, 5.3%; nuclear power, 0.9%; and others, 0.4%. The country's primary energy production by 2010 was targeted to be 2.46 Gt of standard coal equivalent, of which coal would account for 74.7%; petroleum, 11.3%; hydropower, 7.5%; natural gas, 5.0%; nuclear power, 1.0%; and others, 0.5%. The Government planned to expand the railway transportation system in central China so that coal could be transported from coal-producing basins in the Provinces of Shaanxi and Shanxi. Coal-handling capacity at ports in the coastal Provinces would be increased so that coal could be shipped from north to south. Owing to transportation problems, southern Provinces, such as Fujian, Guangdong, Guangxi, and Guizhou, were required to import large amounts of coal from Australia, Indonesia, and Vietnam (National Development and Reform Commission, 2007b).

In November 2006, the National Development and Reform Commission (NDRC) published the Eleventh 5-Year Plan on the utilization of foreign investment policy. Between 2001 and 2005, China had attracted a total of \$383 billion in foreign direct investment. The Chinese Government encouraged companies to use funding from foreign investors to improve the quality of products rather than to increase the quantity of products. The Government encouraged foreign investors to invest in such sectors as technology-intensive manufacturing, energy conservation, and environmentally friendly equipment; to establish research, development, and training centers; and to introduce modern logistic and management services in China. The Government would provide tax incentives to enterprises importing raw materials and equipment for such sectors as chemicals, coal, energy, and iron and steel, which could not be produced in China (China Economic News, 2006a, 2007a).

The fifth session of the National People's Congress (NPC) approved a unified corporate income tax rate for domestic and foreign companies. Before the unified income tax was approved, domestic companies were taxed 33%, whereas foreign companies were paid an average after-tax incentive of 15%. New foreign investors were exempted from the income tax for 2 years and received a 50% tax reduction for the following 3 years. At yearend 2006, the Chinese Government approved 594,000 foreign-invested enterprises. Domestic enterprises complained about the unfair treatment, and some domestic enterprises exploited loopholes in the dual taxation system by transferring funds to overseas companies and then re-investing the funds in China so as to enjoy the preferential tax treatment. The unified corporate income tax was in conformity with WTO standards. Starting on January 1, 2008, the unified corporate income tax was to be 25% and preferential tax policies would be shifted to investment in projects that concern environmental protection, high-technology, production safety, and water conservation development. The Ministry of Finance (MOF) would set up guidelines to allow foreign companies to have a transitional period. China was one of the top destinations for foreign direct investment and the Government believed that transparent taxation, a stable political situation, and a sound economic development plan were major factors for attracting foreign investment (Batson, 2007; China Economic News, 2007e).

The Government identified five mineral commodities—cadmium, cobalt, copper, manganese, and petroleum—as strategic reserve minerals for the country. The Government planned to stockpile about 20 million metric tons (Mt) of petroleum, 500,000 metric tons (t) each of cadmium and manganese, 200,000 t of copper, and 300 t of cobalt, which represented about 90 to 180 days of net imports of these commodities. The estimated cost was about \$2.7 billion (China Economic News, 2007d).

The Ministry of Land and Resources (MLR) suspended issuance of any coal prospecting licenses from February 2, 2007, to December 31, 2008. The new policy also applied to coal licenses transferred through auction, bidding, listing, or other means. The decision to suspend the issuance of prospecting licenses was made to prevent excess capacity that could result from over investment in the coal sector. Since 2002, prices of coal had increased sharply and attracted large investment in the coal sector. The Government estimated that the country had coal output capacity of 2.8 Gt in 2006 and that the demand for coal was expected to be 2.6 Gt in 2010. Only coal survey projects that were approved and funded by the Central Government were allowed to proceed. Projects that were funded by Provincial governments would be suspended. The Government had forbidden Provincial and local governments from issuing any coal production licenses of under 300,000 metric tons per year (t/yr) and planned to halt all coal shafts that had output capacities of less than 30,000 t/yr by 2007. The State of Taxation announced that the per-tonnage coking coal resource tax would increase to 8 yuan (\$1.05) from 2.5 yuan to 4.0 yuan (\$0.33 to \$0.53). The State Council approved the plan submitted by the MLR and other agencies on the integration of mineral resource exploitation. The Government would consolidate all small mining sites and allow large mining companies to take over the small ones. Strategic minerals, such as antimony, bauxite, coal, copper, gold, lead, manganese, potash, rare earths, tin, and tungsten, which affected the country's economic development, were on the priority list for consolidation (China Economic News, 2007c; Zhonghua Renmin Gongheguo Guowuyuan Gongbao, 2007a).

During the past several years, coastal port construction activities had intensified. In 2005, the unloading of imported iron ore was done mainly in the Ports of Ningbo and Shanghai, and ships took a week or longer to unload the iron ore. In 2006, the expansion of the cargo handling capacity at the Beijing, the Bohai Rim, the Chang Jiang (Yangtze), the Delta, the Pearl River Delta, and the Tianjin Ports were completed and all major ports competed for business. Port authorities reduced unloading and highway fees to attract customers. The port development projects were under the supervision of local governments and, as a result, many construction projects were redundant and resulted in the waste of billions of dollars. The Ministry of Communication (MOC) issued a national coastal port distribution plan, which included provisions for the transportation of coal, iron ore, and petroleum. NDRC was assigned to be the leading approval agency for construction of ports that handled coal, iron ore, and petroleum; MOC was the approving agency for construction at ports that handled other cargo. These agencies would approve all port construction

projects that were in the national development plan (China Economic News, 2006b).

In 2006, China's energy consumption per unit of the GDP was reduced by 1.2%, which fell short of the Government's 4% target. Emissions of sulfur dioxide and chemical oxygen demand (a measure of water pollution) increased by 1.8% and 1.2%, respectively, which missed the target for reduction by 2%. China was the world's leading scrap metal importer, and scrap metal consumption was expected to increase for the foreseeable future. Using scrap metal to produce metal ingots and products was one of many options to reduce energy consumption. The Ministry of Commerce, the MOF, the NDRC, the State Environmental Protection Agency (EPA), and the State of Taxation issued guidelines to encourage the recycling of natural resources and the development of new recycling technologies. China has difficulty enforcing national environmental standards because the country operates in a decentralized manner that allows municipal and Provincial officials to interpret the Central Government's directives in their own way. The EPA urged NPC to establish new rules that would permit the Central Government to punish officials who fail to enforce national standards (National Development and Reform Commission, 2006d; Ministry of Commerce, 2007a).

Production

China was one of the world's leading countries in the production of aluminum, antimony, bismuth, cement, coal, copper, fluorspar, gold, graphite, iron and steel, lead, lime, magnesium, manganese, molybdenum, phosphate rock, rare earths, silver, talc, tin, tungsten, and zinc. The output quantity of these commodities could have significant effects on the world markets. In 2006, production of such commodities as aluminum, ammonium, antimony, cement, copper, iron and steel, lead, magnesium, manganese, natural gas, salt, silicon, soda ash, titanium, and zinc increased by more than 10% compared with that of 2005 (table 1). China's reform priorities were to improve the efficiency of resource allocation and boost economic growth. The Government understood that the unbalanced growth of consumption, investment, and net exports could not continue forever. In 2006, the Government reduced the export tax rebates on ferrous and nonferrous products, increased export duties on energy-intensive metals, and encouraged producers to produce high-valued-added products. Owing to increasing domestic and overseas demand, China's growth of minerals and metals output was expected to continue in the future.

Structure of the Mineral Industry

China's mining industry is highly fragmented and had poor safety records. Several companies often mined in a single mining area. As a result, miners searched for resources and ignored laws and regulations regarding safety and the environment. In 2006, China reported more than 4,800 mine accidents that claimed more than 7,000 lives. In 2006, the State Council approved a mining consolidation plan that had been proposed jointly by the MLR, the NDRC, and other agencies. Fifteen mineral commodities—antimony, bauxite, coal, copper,

gold, iron ore, lead, manganese, molybdenum, phosphorus, potassium, rare earths, tin, tungsten, and zinc were on the consolidation plan. The Central Government worked with local governments to implement the plan. Small mine operators were targeted to be integrated into large operators through such means as acquisition or joint-management agreements. The State Assets Administration would transfer state-owned assets of these small operators to the large operators. The Government would not allow any expansion of mining boundaries during the consolidation period, which was planned to be completed by yearend 2008. The Government would not issue mining operation permits to uncooperative mining operators. Local governments were required to submit their consolidation plan to the MLR for recording (China Metals, 2007e).

Mineral Trade

According to the customs statistics, China's total trade was valued at \$1.42 trillion in 2006; this was an increase of 23.2% compared with that of 2005. Exports posted an increase of 28.4% to \$762.0 billion, and imports were up by 28.4% to \$660.1 billion. The United States remained the leading destination for China's exports followed by the European Union (EU), Hong Kong, and Japan. Japan was China's leading source of imports followed by the Republic of Korea and the EU. Imports of raw materials, such as bauxite, chromium ore, iron ore, manganese ore, potassium fertilizer, and oil, increased sharply. In 2006, the total trade of minerals and metals increased to \$383.9 billion (General Administration of Customs of the People's Republic of China, 2006, p. 2-63).

The MOC issued circular No. 82, which included a list of mineral commodities that were banned for processing trade. Mineral commodities that were on the Government's monitor list were ammonium paratungstate; bauxite and refractory clay; coal; coke; concentrates of antimony, cobalt, gold, silver, tin, tungsten, and zinc; fluorspar; oxides of antimony, magnesium, and tungsten; platinum; rare earths; silicon carbide; silver; talc; and unwrought and alloys of antimony, copper, nickel, tin, and zinc. All antimony products would be required to be registered and exported through the Ports of Beihai in Guangxi Zhuangzu Autonomous Region, Huangpo in Guangdong Province, and Tianjin City. The Port of Dalian in Liaoning Province was designated as the port to issue export licenses for magnesia, which could be exported through the Ports of Changchun in Jilin Province; Dalian and Manshouli in Heilongjiang Province; and Qingdao in Shandong Province. The Government adjusted the 2007 export quota for coal to 80 Mt; coke to 14 Mt; oil products, 9 Mt; magnesia, 1.327 Mt; crude oil, 1 Mt; fluorspar, 685,000 t; talc, 620,000 t; zinc and zinc products (metal content), 520,000 t; silicon carbide, 218,000 t; antimony and antimony products (metal content), 61,800 t; tin and tin products (metal content), 37,000 t; rare earths (rare-earth oxide equivalent), 45,000 t; tungsten and tungsten products (metal content), 15,400 t; and silver, 4,500 t. The MOC also issued guidelines for enterprises that had the right to supply and export antimony, coke, indium, molybdenum, rare earths, silver, and tungsten. The import quota for ammonium phosphoric acid was set at 6.90 Mt; complex fertilizer, 3.45 Mt, and urea, 3.30 Mt.

Of the total imported volume, 4.49 Mt of ammonium phosphoric acid, 2.24 Mt of complex fertilizer, and 2.97 Mt of urea were assigned to state-owned enterprises (Ministry of Commerce, 2006a-c; 2007b).

With the approval of the State Council, the MOF revoked the value-added-tax (VAT) export rebate on trade code category 25, which included nonferrous and nonmetallic minerals, with the exception of cement and salt. The VAT export rebate on cement was reduced to 11%. The VAT export rebate on heavy machinery, biopharmaceutical products, and information technology products was increased to 17% from 13%. Beginning on November 1, 2006, the export tax on unwrought aluminum, refined copper, unwrought manganese, and refined nickel increased to 15% from 2% to 5%, and the tax on ores and concentrates of metal and rare earth and ferroalloys increased to 10%. Also, the export duty for coal, coke, and petroleum was levied at 5%. Starting on June 1, 2007, the Government imposed a 10% export tariff on natural graphite, nonferrous scrap, oxides of dysprosium and terbium, rare-earth metals, and refined lead. Excluding some stainless products, the VAT export rebate on steel products was reduced to 8% from 11% on September 15, 2006, and then to 0% on April 15, 2007. The affected items accounted for 37% of all export products. The Government aimed to control soaring exports, reduce the trade surplus, and conserve strategic resources. In recent years, the huge trade surplus has aggravated such problems as trade conflicts with other countries, pressures on China to revalue the renminbi, and excessive liquidity in China. The Government believed that the reduction in the VAT export rebate and an increase in the export duty would help slow down investment and reduce excess production capacity in such sectors as aluminum, cement, copper, and iron and steel (Ministry of Finance, 2006; 2007; China Daily, 2007d).

Commodity Review

Metals

Aluminum.—Despite the Government's macroeconomic policy to control the production of "overheated" commodities, the output of aluminum metal continued to increase rapidly. To support the aluminum sector, China imported large quantities of alumina to meet the demand. In 2003, the country imported 5.6 Mt of alumina, which accounted for about 50% of total demand. Since then, the volume of imported alumina has increased to 6.9 Mt in 2006, but the imported alumina accounted for only about 34% the country's demand in 2006. To meet demand, the construction of aluminum refineries began in 2003 and, by 2006, about 23 alumina projects were either completed or under construction and more than 10 alumina projects were in the feasibility stage. By yearend 2007, China's alumina output capacity could reach 26 Mt/yr. The rapid expansion of alumina output capacity could create fierce competition for bauxite resources. The Provinces of Guangxi, Guizhou, Henan, Shandong, and Shanxi accounted for about 90% of the country's bauxite resources. After years of exploitation, bauxite resources in Shandong Province were nearly depleted. Aluminum refineries in Shandong Province relied on imported

bauxite to meet their demand. In 2006, China imported 9.68 Mt of bauxite, mainly from Indonesia. Bauxite from Indonesia had lower aluminum oxide content than that from Australia, China, and Jamaica; between 2.6 t and 3.0 t of Indonesian bauxite is needed to produce 1 t of alumina. China's aluminum producers were exploring bauxite resources in such countries as Australia, Jamaica, and Vietnam (China Nonferrous Metals, 2006a, 2007b; China Nonferrous Metals Monthly, 2006; Metal Bulletin, 2007b).

At the beginning of this century, the Government set as a priority the development of alumina refineries and the fabrication of products for the aerospace, construction, packaging, power, and transportation sectors. In 2006, several aluminum refineries, such as (in order of location) Chongqing Bosai Minerals Group Co. Ltd. in Chongqing City; Guangxiangjia Aluminum Co. Ltd. in Hebei Province; East Hope (Sanmenxia) Aluminum Co. Ltd. and Yangquan Coalmine Aluminum (Sanmenxia) Co. Ltd. in Henan Province; Bingzhou Weiqiao Aluminum Co., Chiping Xinfu Huayu Aluminum and Electricity Group, and Shandong Nanshan Group in Shandong Province; and Luneng Jinbei Aluminum Co. Ltd. in Shanxi Province, were put into operation. As a result, China's alumina production increased by 60% in 2006 compared with that of the previous year. Refineries under construction included such companies as (in order of location) China Aluminum Co. Ltd. (Chalco) Nanchuan Aluminum Co. in Chongqing City; Chalco Zunyi Aluminum Co. in Guizhou Province; Guixi Huayin Aluminum Co. Ltd. in Guangxi Province; Henan Zhongmei Aluminum Co. Ltd., Huiyuan Chemical Engineering Co. Ltd., and Xinyuangfeng Industry Co. in Henan Province; Shanxi Wusheng Aluminum Co. Ltd. in Shanxi Province; and Yunnan Aluminum Co. Ltd.'s Wenshan plant in Yunnan Province. By 2010, China's alumina output was expected to meet domestic demand (China Nonferrous Metals, 2006b, 2007c).

Owing to the increase in demand for alumina, the domestic price of alumina reached 6,400 yuan (\$842) per metric ton at the beginning of 2006. At the same time, the Government decided to implement a policy to link power price rate increases with increases in the price of coal, and the Government increased the power price rate by 0.0252 yuan per kilowatthour on May 1. Aluminum production is an energy-intensive sector and the Government reduced the VAT export rebate on aluminum to zero and imposed a 15% export duty on unwrought aluminum. Aluminum producers reduced output and the result was a surplus of alumina on the world markets, which led to a price drop on the domestic market. Chalco reduced its alumina spot price several times during the year. By yearend, Chalco's alumina spot price was 2,400 yuan (\$316) per metric ton. Before 2005, Chalco was a sole metallurgical-grade alumina producer and had long-term contracts with its associated aluminum smelters. Several non-state-owned aluminum refineries were put into operation in the Provinces of Henan and Shandong in 2005 and 2006. During the second half of 2006, alumina producers other than Chalco jointly reduced output to maintain the alumina price on the domestic market because the price of alumina was close to their production costs. Non-Chalco alumina producers also agreed to meet regularly, to share information, and to set the ex-factory alumina price by jointly reducing alumina

production. China's alumina production and imports were expected to be about 20 Mt and about 5 Mt, respectively, in 2007 (Alumina and Aluminum Monthly, 2007a)

Since 2003, the Government had placed the aluminum sector under its macrocontrol policy to cool down investments and to control output capacity. During the past several years, the Government gradually reduced the VAT export rebate to zero and increased the export duty on unwrought aluminum 2 times within a single year. The Government ordered local governments not to provide incentives, such as tax shelters and low power rates, nor to allocate land or provide loans to aluminum smelter developers. All aluminum projects must be approved by the Government. During the past several years, about two-thirds of alumina and aluminum projects had not been approved by the Government and did not pass the environmental impact study, even though they were endorsed by the local government. Several Provincial governments, such as those of Guangxi, Guizhou, and Henan, adopted investment in the aluminum sector as one of the pillar industries in their economic development plans. When the price of alumina declined during the second half of 2006, many aluminum producers restarted their idled potlines because the price of aluminum remained high in the domestic and international markets. By yearend, China's aluminum output capacity had increased to about 12 Mt. Owing to the expansion in the construction, power, and transportation sectors, domestic consumption of aluminum has increased in the past several years. In 2006, apparent domestic aluminum consumption increased to about 8.8 Mt compared with 7.1 Mt in 2005 (China Metal Bulletin, 2006a).

The Government planned to shut down aluminum smelters in the eastern part of the country and to increase aluminum output capacity in the west, where coal resources and hydropower were in abundant supply. The eastern part of country would become a secondary aluminum producing and downstream aluminum products center. The Government encouraged aluminum producers to merge together to form integrated aluminum enterprises, to develop value-added downstream aluminum products, and to reduce their dependence on imports (National Development and Reform Commission, 2006f).

With Government support, Chalco continued its efforts to acquire other domestic aluminum producers in 2006. Chalco acquired major shares of Baotou Aluminum Plant in Nei Mongol Autonomous Region; Fushun Aluminum Plant in Liaoning Province; Guangyuan Qimingxing Aluminum Co. Ltd. in Sichuan Province; Shanxi Guanlu Co. Ltd.'s Huasheng Aluminum Plant in Shanxi Province; Jiaozuo Wanfang Aluminum Co. Ltd. and Henan Zhongmai Aluminum Co. Ltd. in Henan Province; Baiyin Honglu Aluminum Co., Lanzhou Aluminum Plant, and Liancheng Aluminum Plant in Gansu Province; and Zunyi Aluminum Co. in Guizhou Province. Chalco was also interested in purchasing shares of Baihe Aluminum Co. and Qinghai West Mining Co. Ltd. in Qinghai Province, Huamao Aluminum Plant and Qin'ao Aluminum Co. in Henan Province, and Shandong Huashen Jiangquan Aluminum Co. Ltd. in Shandong Province. Chalco proposed issuing up to 5 billion yuan (\$625 million) of short-term corporate bonds in 2006 to finance its aluminum projects in the Provinces of Guizhou, Henan, and Shanxi. Chalco's 1.65-Mt/yr

bauxite mine and 800,000-t/yr aluminum refinery project were under construction at Nanchuan, Chongqing City, at yearend 2006.

Aluminum Corporation of China (Chinalco), which was the parent company of Chalco, diversified its business into other sectors. In 2005, Chinalco formed a joint venture with Luoyang Copper Co. Ltd. and, in 2006, acquired Daye Nonferrous Metals Co. Ltd. from the Hebei Provincial government. Chalco signed an agreement with Vietnam Coal-Mineral Industries Group of Vietnam to jointly develop bauxite resources and to build an integrated power-aluminum project in Dak Nong, Vietnam, and an alumina project in Brazil; to develop a bauxite mine in Aurukun, Queensland, Australia; and to explore bauxite resources in Guinea. Chinalco signed an agreement with the state-owned Assets Supervision and Management Committee of Shanghai to acquire the assets of the Shanghai Nonferrous Group, which was the leading copper semimanufacturing company in Shanghai. Besides producing primary aluminum, Chalco also participated in the development of secondary aluminum production in Qingdao, Shandong Province. By 2010, Chinalco's secondary aluminum output was projected to account for 10% of its total aluminum output (Alumina and Aluminum Monthly, 2007b; China Nonferrous Metals, 2007a).

Shandong Chiping Xinha Aluminum and Electricity Group (Xinha) planned to expand its alumina output capacity by 1.2 Mt to 3.0 Mt/yr, to increase its aluminum output capacity to 560,000 t/yr, and to increase its electricity generating capacity to 3 million kilowatts by yearend 2007. In 2006, the EPA ordered Xinha to submit the environmental impact study and to suspend construction at its aluminum refinery because the project had not received NDRC approval. Xinha used the Bayer process to produce alumina from imported bauxite. Xinha planned to build an integrated aluminum plant at Jingxi, Guangxi Zhuang Autonomous Region. The Group exercised its option to acquire 10% shares (A\$4.625 million or \$3.70 million) in Australian Cape Aluminum Co. from Australian Metallica Minerals. Cape Aluminum was engaged in exploration and exploitation of bauxite resources in Australia. In 2006, Xinha imported 5 Mt of bauxite from overseas and was expected to import more to meet its needs in the future (Alumina and Aluminum Monthly, 2007c; China Metals, 2006c).

Hunan Chuangyuan Aluminum Co. Ltd. invested \$360.7 million to build a 210,000-t/yr aluminum smelter and a 300-megawatt (MW) power station in Taoyuan County, Hunan Province. The smelter would use 240-kiloampere (kA) prebaked cells to produce aluminum and would use local coal for its coal-fired powerplant. The smelter was scheduled to be completed in May 2007. Owing to lack of funds and high alumina prices, Zouping Aluminum Co. Ltd. in Zouping, Shandong Province, completed its expansion smelter project in 2006 after a 2-year delay. The smelter was equipped with 300-kA prebaked cells for its potline. The company's first potline was equipped with 240-kA prebaked cells, which had an output capacity of 70,000 t/yr of aluminum. After completion of the second potline, the company had a total aluminum output capacity of 150,000 t/yr (Alumina and Aluminum Monthly, 2006).

United States-based Century Aluminum Co. signed a memorandum of understanding with Guangxi Investment Group

Co. Ltd. (GIG) to build an integrated aluminum plant at Laibin, Guangxi Zhuang Autonomous Region. GIG was an investment company of the Guangxi government and managed the state-owned assets in such sectors as chemical fertilizers, nonferrous metals, papermaking, powerplants, and securities in Guangxi Zhuang Autonomous Region. Powerplants accounted for 60% of the company's total investment (China Metals, 2007c).

Copper.—Owing to domestic smelter and refinery expansions, China's copper output increased sharply during the past several years. In 2006, China's fixed asset investment in the nonferrous metal smelting industry was \$8.4 billion, of which the copper sector accounted for \$1.5 billion. China's leading copper producers planned to continue their output capacity expansions during the next several years. At yearend 2007, China's copper smelting and refining output capacity was expected to reach to 3.7 Mt. During the past several years, copper consumption in China increased by an average of more than 10% per year. The increase in copper consumption was caused by increased demand from the construction, electrical appliance, and power sectors. The power sector accounted for about 50% of the total copper consumption, and the demand was expected to continue to increase in the next several years as the electricity supply throughout the country is expanded. In 2006, refined copper apparent consumption was estimated to be 3.7 Mt, which was a decrease from the 3.8 Mt consumed in 2005. Owing to the expansion of refining capacity, China's refined copper imports decreased to 827,020 t in 2006 from 1.22 Mt in 2005. Imports of copper concentrates and blister copper also decreased compared with those of 2005. Owing to the expansion of secondary copper production, imports of copper scrap increased slightly to 4.94 Mt in 2006 from 4.82 Mt in 2005. Higher prices of refined copper and the shortage of copper concentrates in the world market constrained China's imports. In 2006, copper analysts estimated that the State Reserve Bureau (SRB) sold as much as 200,000 t of copper in the Shanghai Exchange from its 300,000-t stockpile in 2005 and that copper producers sold about 100,000 t of copper from their warehouse inventories in 2006. The volume of copper in the Shanghai Exchange's warehouse also was reduced by about 27,000 t. Regarding the volume of copper scrap produced in China, domestic analysts estimated that China produced about 250,000 t of copper metal from domestic scrap in 2006. Therefore, China's copper consumption was estimated to be about 4.3 Mt (China Nonferrous Metals, 2007d; China Nonferrous Metals News, 2007c; Interfax Information Services, 2007b).

According to the NDRC's copper report, the country's total copper smelting capacity may reach 5 million metric tons per year (Mt/yr) by 2010 because about 2.5 Mt of smelting output capacity was under construction. The rapid expansion of copper output capacity led the Government to issue guidelines strictly controlling investment in copper smelting and refining capacity. According to the Government regulations, all greenfield or brownfield projects must have a larger than 100,000-t/yr output capacity, and each enterprise is required to supply at least 25% of its total required copper concentrates from its own mines for at least the first 5 years of operation. Domestic economists estimated that investment in the newly increased

copper smelting capacity would cost more than \$14 billion. Therefore, regulations require that each enterprise provide at least 35% of the total investment from its own capital funds. The plant must adopt advanced and energy-saving technology. Coal-fired reverberatory furnaces and blast furnaces for new projects are banned. Existing reverberatory furnaces and electric arc furnaces are to be phased out by 2006 and blast furnaces are to be shut down completely by 2007. All greenfield and brownfield expansion projects are subject to environmental impact assessment and must be equipped with a pollutant discharge system. The NDRC required local governments to report detailed statistical information on copper producers under their supervision to the NDRC by May 15, 2007. NDRC would subsequently provide a list of the copper producers that would be allowed to continue operating in the future (China Metals, 2006b; National Development and Reform Commission, 2006a; 2007a).

In its 2005 bulletin, MLR announced that China had discovered three significant copper deposits. A 5.0-Mt (all in Cu metal content) porphyry copper resource was found at Shangrila County, Yunnan Province, near a previously discovered copper deposit in the Pulang area. In Xizang Autonomous Region, a 1.0-Mt Qulong copper resource was discovered at Mozhugongka County and a 2-Mt Duobuza copper resource was found at Gaize County. The China Geological Survey estimated that the Qulong deposit could be as much as 18 Mt of copper resource and that the Pulang deposit might have a potential copper resource of more than 10 Mt. Additionally, the Yunnan Provincial Government discovered copper resources at Deqin Hongponiuchang and Deqin Yangla (Copper and Nickel Monthly, 2006c; China Metals, 2007d).

Owing to environmental, financial, and technical problems, the construction of the Yulong copper mine in the Yulong area of Dajiang County, Changdu Prefecture, Xizang Autonomous Region, was delayed. The Yulong deposit had proven reserves of 6.5 Mt of copper, and the indicated resources could reach 10 Mt. Yulong Copper Co. Ltd. was established in April 2005 by Qinghai West Mining Co. Ltd (41%), Fujian Zijin Mining Co. Ltd. (Zijin) (39%), Xizang No. 6 Geology and Survey Team (10%), Changdu State-Owned Capital Management and Operation Co. (8%), and Xizang Mining and Development Corp. (2%). The completion of the first-phase construction of a 30,000-t/yr solvent-extraction and electrowinning plant was expected to be delayed until 2009. After completion of the second phase, the total output capacity would be 100,000 t/yr (Copper and Nickel Monthly, 2007a).

Zijin's \$442 million copper smelting project in Shanghang County, Longyan City, Fujian Province, was expected to start operation in 2007. The 200,000-t/yr smelting and refining plant would rely on imported copper concentrates from the Rio Blanco copper mine in Peru. Zijin teamed up with Tongling Nonferrous Metals (Group) Inc. and Xiamen C&D Inc. to acquire London-listed Monterrico Metals plc, which held the mining rights to the Rio Blanco copper and molybdenum deposit in northern Peru. Rio Blanco had proven copper reserves of 4 Mt of copper (China Metals, 2007g, h).

Several mine construction projects were underway in the western part of China. In Qinghai Province, Zijin's Derni Mine

in Guoluo Prefecture was scheduled to start operation in late 2006. The mine was designed to produce 300,000 t/yr of ore, which would convert to 14,000 t/yr of copper-in-concentrate. In Yunnan Province, Yunnan Yuxi Mining Co. planned to build a processing plant to handle 20,000 metric tons per day (t/d) of ore from its Tongchangxian Mine to produce 2,000 t/yr of copper-in-concentrate in Yimen County. In Xinjiang Uygur Autonomous Region, Xinjiang Baiyin Mining Co. started to build its Soerkuduke Mine in Fuyun County, which was designed to produce 400,000 t/yr of ore and was scheduled to be completed in 2007. Xinjiang Nonferrous Geology Engineering Co. Ltd. started to construct a 2,000-t/yr copper-in-concentrate plant at Baicheng County. Zijin decided to expand its Asele Mine ore output capacity to 4,000 t/yr from 1,500 t/yr in Habahe County, Altay Prefecture (Copper and Nickel Monthly, 2006a, b; 2007c, d).

China's third ranked integrated copper producer, Yunnan Copper Group Co. Ltd., planned to produce 446,000 t of copper-in-concentrate, 700,000 t of anode, 800,000 t of refined copper, 100,000 t of refined zinc, 10,000 t of refined nickel, 1,000 t of silver, and 12 t of gold in 2010 from 130,000 t of copper-in-concentrate, 350,000 t of anode, 360,000 t of refined copper, 50,000 t of refined zinc, 350 t of silver, and 10 t of gold in 2006. During the past several years, the company acquired several mining properties in the Provinces of Sichuan and Yunnan. Chifeng Yuntong Nonferrous Metals Co. Ltd., which was a joint venture of the Chifeng government, Chifeng Jinfeng Copper Co., and Yunnan Copper, started to build a 100,000-t/yr copper cathode plant in Chifeng, Nei Mongol Autonomous Region, that was scheduled to be completed in 2007. Yuntong sold nearly all its anode output from its 30,000-t/yr anode plant to Yunnan Copper. Yunnan Copper signed an agreement with China Recycling Development Corp., Qingyuan Jintian Enterprise Co. Ltd., and Yintian Recycled Materials Industry and Trade Co. Ltd. to form a joint-venture company, Guangdong Qingyuan-Yunnan Copper Nonferrous Metals Co. Ltd. The joint-venture company and the local government of Qingcheng District would build a 200,000-t/yr secondary copper plant in Qingyuan, Guangdong Province. Qingyuan was one of the leading metal recycling bases in China. Yunnan Copper had planned to apply to make an initial public offering at the Hong Kong Stock Exchange in 2005; the company, however, did not receive the Government's approval. Its subsidiary Yunnan Copper Co. Ltd. was listed on the Shenzhen Exchange in China, and Yunnan Copper planned to transfer its assets to its listed company gradually during the next several years (China Metals, 2006g; 2007f; Copper and Nickel Monthly, 2007b).

Tongling Nonferrous Metals Co.'s subsidiary Jinlong Co. Ltd. started to build a 100,000-t/yr refining capacity at its facilities to increase its refined copper output capacity to 400,000 t/yr. Another Tongling subsidiary, Zhangjiagang United Copper Co., expanded its refined copper output capacity to 200,000 t/yr in 2006.

Jiangxi Copper Co. Ltd.'s 300,000-t/yr expansion project was scheduled to be completed in 2007, and the company's refined copper output capacity would increase to 700,000 t/yr. Jiangxi Copper's subsidiary Sichuan Kangxi Copper Co. Ltd. began to build its 70,000-t/yr secondary copper smelter in Liangshan,

Sichuan Province. Another Jiangxi Copper subsidiary, Jiangtong Changyin (Qingyuan) Co. Ltd., started a new operation in Qingyang, Guangdong Province. The plant had a designed output capacity of 200,000 t/yr of secondary refined copper and was expected to be fully operational in 2008. Jiangxi Copper would regain its position as China's leading copper producer from Tongling.

Shandong Yanggu Xiangguang Co. Ltd. commenced its 200,000-t/yr greenfield copper refinery, which was scheduled to begin operations in 2007. Jinchuan Nonferrous Metals Group completed its copper expansion project, which increased its refined copper output capacity to 200,000 t/yr. Hengyang Jinhu planned to build a 50,000-t/yr refined copper plant in Hengyang, Hunan Province. Daye Nonferrous Metals Co. Ltd. planned to double its refined copper output capacity to 400,000 t/yr in 2010. Xinjiang Xinwang Mining Co. Ltd. started construction of its 10,000-t/yr blister copper plant in Habahe County, Altay Prefecture, Xinjiang Uygur Autonomous Region. Xinjiang Xiangdong Copper Co. Ltd.'s 36,000-t/yr copper blister was put into operation in Jinghe County, Bortala Prefecture, Xinjiang Uygur Autonomous Region. Chifeng Jinjian Copper Co. Ltd. planned to expand its refined copper output capacity at Chifeng, Nei Mongol Autonomous Region, to 60,000 t/yr in 2007 from 20,000 t/yr in 2006.

Gold.—China was one of the leading producers of gold in the world. The China Gold Association (CGA) reported that the country had produced 240.09 t of gold in 2006 and that gold mine producers produced 179.85 t; the National Statistics Bureau (NSB) indicated that gold output reached 357.80 t in 2006. The CGA might collect production data only on gold producers and large nonferrous metal producers, which could account for the difference between the CGA and the NSB data. Domestic analysts estimated that domestic gold production was about 280 t. During the past decade, gold production in China increased gradually, and the trend toward increased output was expected to continue in the future. Shandong Province remained the leading mined gold producing Province in China followed by the Provinces of Henan, Fujian, Liaoning, Shaanxi, and Hebei. Jiangxi Copper was the leading gold producer in the nonferrous metal sector followed by Yunnan Copper and Tongling Copper. In 2006, China consumed about 350 t of gold, mainly by the jewelry sector. The gold production target for 2007 was 260 t. China National Gold Corp. (China Gold) (a state-owned company that was part of the former State Gold Bureau, which oversaw gold management and production in China) was the leading mined gold producer in China. China Gold's Shandong Zhaojin Group Co. in Shandong Province produced 35.5 t of gold in 2006. China Gold acquired two gold mines through its subsidiaries—Taifu Gold Mine in Pingwu County, Mianyang, Sichuan Province and Xinjiang Jintan Mining Co. in Shanshan County, Xinjiang Uygur Autonomous Region (China Metals, 2006a).

China's gold production was controlled by the Government and, in the past, had to be sold to the Government. Since 2002, gold producers could sell their gold through the Shanghai Gold Exchange (SGE), but exports and imports of gold ingot remained under Government control. In 2005, SGE allowed individuals to participate in gold trading through the Industrial

and Commercial Bank of China; the minimum gold trade, however, was 1 kg and trading activity was not active. In order to stimulate the individual investor, the SGE lowered the minimum gold trade to 100 grams and allowed traders to claim gold at designated warehouses in Beijing, Shanghai, and Shenzhen through SGE financial members or other agents approved by the Central Bank. The Central Bank approved SGE to admit five foreign banks—Bank of Nova Scotia, Hong Kong and Shanghai Bank, Standard Chartered Bank, Société Générale Bank, and UBS Warburg Bank as members and allowed SGE to launch gold and silver futures trading. China's gold transactions remained small compared with those of Europe and the United States and there was no flow between the domestic and international markets. The restraint on development of China's gold market was an imperfect legal system relative to gold and a management system inadequate to prevent market collapse (China Economic News, 2007a).

Iron and Steel.—China was the world's leading producer of pig iron and crude steel. Its crude steel output was more than the combined total production of Japan, the United States, and Russia (which ranked second, third, and fourth, respectively, in the world) and accounted for more than 34% of the total world output. The continuous expansion in the iron and steel sector was generated mainly by strong domestic demand. In 2006, China's total investment in the iron and steel sector was \$90.27 billion, of which ironmaking projects accounted for \$5.37 billion; steelmaking projects, \$30.07 billion; and steel processing projects, the remaining \$54.83 billion. Iron and steel producers contributed 77.4% of the total investment and domestic bank loans accounted for 15.3%. During the past several years, the Government urged iron and steel producers to produce more value-added steel products and the investment pattern reflected this shift. In 2006, China's apparent consumption of crude steel and steel products was 398.32 Mt and 442.35 Mt, respectively. China had become a net exporter of crude steel and steel products; the country, however, remained a net importer of cold-rolled thin plates and galvanized plates (China Steel, 2007a, c).

To curb expansion and investment in the steel sector, the Government abolished the export VAT rebate on pig iron and crude steel in 2005 and reduced the export VAT rebate on steel products to 11% and then to 8% and to 5% in 2006; the Government reduced the VAT rebate to zero on most steel products in April 2007. The Government imposed a 10% export tariff on pig iron, crude steel, and ferroalloys. There were more than 300 integrated iron and steel enterprises and 1,500 steel producers in China and some of their steel products did not meet the current demand. Only a small portion of China's steel products met the international standards. China's exported steel products were low value-added and low technology, such as long products, medium plates, hot-rolled plates, and the country had to import high-end products, such as cold-rolled thin plates and electrical steel products.

With the State Council approval, NDRC and eight other Government agencies published a new policy and guidelines on the development of the steel sector by 2010. The Government urged iron and steel producers to resolve three major problems by eliminating surplus obsolete production capacity, creating

transregional enterprises, and reducing exports of low-end steel products. Statistical data indicated that the steel sector accounted for 15% of the country's total energy consumption, 6.6% of the total sulfur dioxide emissions, and 14% of the total water consumption by the industrial sectors. The Government urged the iron and steel producers to shut down their obsolete production capacity and to replace it with advanced ironmaking and steelmaking equipment that has lower energy consumption, less pollutant emissions, and less water consumption. Hebei Province was the leading steel producing Province in China. In 2006, NDRC ordered the Hebei Provincial government to curtail steel production capacity in the Province because the share of Hebei steel output in the nation had increased to 21.1% in 2005 from 13.0% in 2001. Most steel expansion projects were invested in by private investors who used obsolete equipment and smaller furnaces.

The progress of transregional reorganization was moving very slowly because of the resistance of local governments. Many local governments depended on tax revenue from these producers to support local development. The Government considered an overall plan on how to distribute tax incomes and to coordinate benefits between regions. The Government reduced the VAT export rebate and imposed export tariffs on many low-end products to discourage production of these products. Most of the low-end products were surplus in the domestic markets. The Central Government and 10 major steel-producing Provincial governments signed a "letter of responsibility agreement" to disclose iron and steel producers that did not meet the Government's iron and steel policy and guidelines. Provincial governments were responsible for closing down these producers and preventing them from moving to another location to restart operations (China Daily, 2007b; China Steel, 2007b; National Development and Reform Commission, 2006b; 2007c).

China's steel production increased by more than 10%; domestic iron ore production, however, could not meet domestic demand. China depended on iron ore imports to fill the gap. Imports of iron ore increased to more than 326 Mt in 2006 from 275 Mt in 2005, mainly from, in descending order of amount imported, Australia, India, Brazil, South Africa, and Russia. During the past 5 years, domestic iron ore output increased sharply; owing to low iron content in the ore, however, the iron ore supply by domestic producers decreased to less than 50% of the demand in 2006 from 75% in the 1990s. Owing to China's increasing demand for iron ore, the contract price of iron ore increased in 3 consecutive years, by 71.5% in 2005, 19.0% in 2006, and 9.5% in 2007 compared with each of the previous years. Owing to the rising production costs, the price of domestic iron ore also increased during the past several years. Besides the increase in the price of imported iron ore, transportation fees also increased. In 2006, the average fee per metric ton of freight from Brazil to China was \$27.63 and from Australia to China was \$11.87. Analysts estimated that China's imports of iron ore would increase to 355 Mt in 2007. Major iron and steel producers planned to expand their outputs, and several greenfield integrated plants were under construction. China's steel output capacity was projected to reach more than 500 Mt/yr by 2010 and the country's dependence on imported

iron ore was expected to increase to about 60% during that time (China Metals, 2006d).

China was the leading ferroalloys producing country in the world. At yearend 2005, ferroalloy output capacity was 22.13 Mt from 1,570 ferroalloy producers. About 1.61 Mt of output capacity was under construction in 2006. The Government indicated that the ferroalloys sector was expanding too fast and that many producers used obsolete technology and wasted energy. With approval from the State Council, NDRC and six other Government agencies issued guidelines to tighten investment in the ferroalloys sector and to reduce ferroalloy output capacity by 25% by 2010 from the 2005 production level. The construction of ferromanganese furnaces of less than 300 cubic meters would be banned. Electric arc furnaces that were less than 5,000 kilovolt-amperes and furnaces that were smaller than 100 cubic meters would be phased out. By 2010, ferroalloy output from 25,000 kilovolt-ampere electric arc furnaces would account for 10% of the country's total output. China planned to produce better quality ferroalloys with low amounts of aluminum, nitrogen, phosphorus, and sulfur content. The Government approved 458 ferroalloy producers that met the Government guidelines and allowed them to continue to operate in 2006. The General Administration of Customs set the floor price on ferroalloys to control the export of these high energy consumption products (National Development and Reform Commission, 2006e, g; 2007d).

Because of transportation bottlenecks, raw materials from the northern or western parts of the country could not be shipped to consumers in the southern or eastern part of the country. Construction of railways lagged behind other developments. The Ministry of Railways (MOR) indicated that China would add 17,000 kilometers (km) of new lines to the existing system. The development of the railway network included the development of a passenger rapid transport system and a doubling of the coal and cargo transportation capacity. The expansion of the railway transportation network system would lead to increased demand for steel. Domestic analysts estimated that China would need about 6 Mt of railway steel in 2006. MOR also planned to increase the speed of passenger trains to 300 kilometers per hour (km/hr) and that of cargo trains to 200 km/hr. The length of the railway was 100 km. MOR urged domestic steel producers to supply railway steel for 200 km/hr by the end of 2006 and rails for 250 km/hr and 350 km/hr in 2007. China's four major railway steel producers—Anshan Iron and Steel Group Co. (Angang), Baotou Iron and Steel and Rare Earth Co. (Baogang Group), Panzhihua Iron and Steel Group (Pangang), and Wuhan Iron and Steel Group Co. (Wugang)—produced a total output of 27 Mt/yr. Baogang Group and Pangang had the capability to produce 100-km-long rail and Angang could produce 50-km-long rail. Wugang was able to produce heavy rails; however, the company had an output capacity of only 100,000 t/yr. Demand for steel plates for cargo and passenger trains was expected to increase (China Metals, 2006e).

In the 1990s, with the Government's approval, China's leading iron and steel producer, Baoshan Iron and Steel Group Corp. (Baogang), consolidated the major iron and steel producers in the Shanghai City area. Under the Government's transregional consolidation policy, Baogang signed an acquisition agreement

with Bayi Iron and Steel Co. in Xinjiang Uygur Autonomous Region. Baogang acquired a 69.61% share of Bayi, the government of Xinjiang Autonomous Region had a 15% share, and the remaining shares were distributed to others. Baogang was waiting for NDRC to approve the transaction. With Baogang's financial and technical assistance, Bayi could concentrate its effort on the development of iron ore resources in the Xinjiang area. Baogang and Handan Iron and Steel General Work (Hangang) signed a 50-50 joint-venture agreement to build a 4.6-Mt/yr steel complex in Hebei Province. The agreement could complicate the Hebei Provincial government's plan to consolidate steel producers in the Province. The new steel complex would be located west of the Hangang facilities. According to the development plan, the new complex would have two 3,200-cubic-meter blast furnaces, a coking oven, sintering machines, and two 200-t converters to produce steel products, of which the country was short in supply. The construction of the blast furnaces was scheduled to begin in 2007 and was expected to be completed in 2008. The hot- and cold-rolled mills were expected to start operation in 2010. According to Baogang's 6-year plan, the company's steel output capacity would increase to 50 Mt/yr in 2012 from about 30 Mt/yr in 2006. Baogang reached a strategic alliance with the Baogang Group in Nei Mongol Autonomous Region. Initially, with the Central Government's support, Baogang intended to take control of the Baogang Group; however, the Nei Mongol Autonomous Region government was the controlling shareholder of the Group and planned to list the whole Group in the domestic stock exchange. Baogang Group planned to build a new 5-Mt/yr steel plant and was awaiting Central Government approval for the project (China Metals, 2007a, b; Metal Bulletin, 2007a).

Shagang Group Co. Ltd. (a privately owned steel producer in Jiangsu Province) planned to expand its crude steel output capacity to 25 Mt/yr in 2010 from 15 Mt/yr in 2006. In 2006, Shagang acquired a 64.4% share of Huaiyin Steel Co., which was a state-owned company located in Jiangsu, and planned to build a 5-Mt/yr steel plant in the next 5 years. Under the Government's macrocontrol policy, the greenfield steel project required Government approval. The company also planned to expand its downstream production to produce value-added products, such as automobile sheets and shipbuilding steel plates (China Metals, 2006f).

Lead and Zinc.—According to the NDRC's lead and zinc report, China had a total of 466 lead and zinc producers with total lead and zinc smelting capacities of 2.8 Mt and 3.4 Mt, respectively, at yearend 2005. In 2006, 62 lead and zinc projects were under construction with total lead and zinc smelting output capacities of 1.5 Mt and 1.65 Mt, respectively. Most of China's lead and zinc mines were small in size. Large- and medium-sized lead and zinc smelting enterprises sourced about 50% from their own mines. The rapid expansion of lead and zinc output capacities led the Government to issue guidelines that strictly controlled investment in lead and zinc smelting and refining capacity. According to the Government regulations, all greenfield lead and zinc projects must have output capacities of larger than 50,000 t/yr and 100,000 t/yr, respectively, and they must be equipped with oxygen rich smelting technology,

such as the ISA process by Xstrata Technology of Australia or the top-blown rotary converter (TBRC) process. Greenfield secondary lead or zinc projects must have output capacities of larger than 10,000 t/yr. In 2006, about 30% of the country's lead smelting output capacity was using obsolete technologies. The Government banned obsolete equipment, such as indigenous sintering pans, blast furnaces, and sintering pots for lead smelting and indigenous muffles, horizontal tanks, and small vertical pots for zinc smelting by 2008. The Government would levy power surcharges on those producers that do not meet the environmental guidelines and development policy. The Government planned to have refined lead and refined zinc output capacities at 4 Mt and 5 Mt, respectively, by 2010; the secondary lead output capacity would account for 30% of the total lead output capacity. The Government also encouraged producers to invest in mining and metal production in other countries (National Development and Reform Commission, 2006g).

Manganese.—China was the leading producer of unwrought manganese in the world. During the past 5 years, unwrought manganese production increased to about 730,000 t in 2006 from 566,000 t in 2005, 492,000 t in 2004, 320,000 t in 2003, and 190,000 t in 2002. China exported more than 50% of its total output. China's manganese resources, which are located in the Provinces of Guangxi, Guizhou, and Hunan, accounted for 60% of the total manganese resources in the country. About 80% of manganese ore was produced by locally owned and privately owned mines, and the Government had difficulty accounting for the actual output. By yearend 2006, China's electrolytic manganese output capacity was about 1.15 Mt from 149 manganese producers, of which, in descending order of amount produced, Hunan Province, Chongqing City, and Guizhou and Guangxi Provinces accounted for 89.7% of total output capacity. In 2006, China's exports of unwrought manganese went mainly to, in descending order of amount of exported, the Netherlands, Japan, the Republic of Korea, the United States, and Russia. China's electrolytic manganese was produced mainly from the reduction of low-grade manganese carbonate ore, which contained 18% to 20% manganese. Most manganese plants had output capacities of less than 10,000 t/yr.

Owing to environmental damage and high energy consumption, the Government issued regulations to control the expansion of the electrolytic manganese sector. According to the Government guidelines, any new electrolytic manganese plant must have a total output capacity of more than 30,000 t/yr and each production line must have an output capacity of more than 10,000 t/yr. Existing plants with production lines of less than 3,000 t/yr of output capacity were ordered to shut down. The reduction tank in plants must be larger than 250 cubic meters, and a high-pressure diaphragm filter must be installed in the plants. The tonnage energy consumption was expected to be less than 8,600 kilowatthours for grades A and B manganese ingot. In November 2006, the Government levied a 15% export duty on unwrought manganese to control the expansion of electrolytic manganese output capacity and the volume of exports. The average export price of unwrought manganese increased to \$1,550 per metric ton in December from \$1,050 per metric ton in April. In 2006, the Government

forced 20 electrolytic manganese producers to shut down their operations because they did not meet environmental guidelines. The consumption of unwrought manganese in the stainless steel sector increased sharply because output of stainless steel increased substantially in the past 2 years. In 2006, China produced about 5.6 Mt of stainless and consumed an estimated 300,000 t of electrolytic manganese; the country consumed about 394,000 t of electrolytic manganese. Owing to the expansion of stainless steel production, domestic demand for electrolytic manganese was expected to increase, and imports of manganese ore were also expected to increase in the future (Tang, 2007; Zhang, 2007).

Nickel.—During the past several years, China's consumption of nickel increased substantially. The stainless steel sector was the major consumer of nickel, and accounted for 61% of total nickel consumption followed by electroplating, 19%; batteries, 10%; alloy steel and machinery, 6%; and others, 4%. Stainless steel producers such as Baogang, Jiuquan Iron and Steel Co., Taiyuan Iron and Steel Co., and Zhangjiagang Pohang Steel Co. expanded their stainless steel output capacities. By 2008, China's stainless steel output capacity was expected to be about 13 Mt. Because China's demand for nickel exceeded its output, the country imported a large quantity of nickel to meet its demand. In 2006, China imported 3.78 Mt of nickel ore and concentrates, 96,644 t of refined nickel, 73,470 t of ferronickel, and 64,727 t of nickel matte. Nickel concentrates were mainly from, in descending order of amount received, Australia, Spain, and Canada, and nickel ore, from the Philippines, Indonesia, and New Caledonia. Laterite ores from Indonesia and the Philippines were used to produce nickel pig iron, which contained 2% to 8% nickel. Owing to shortages and higher prices of nickel metal, stainless steel producers used nickel pig iron as a substitute in stainless steel production. In 2006, China produced about 25,000 t of nickel pig iron, and the output of nickel pig iron was expected to increase to 100,000 t in 2007. China consumed about 194,000 t of nickel in 2006, and nickel consumption could increase to 250,000 t in 2007 (Copper and Nickel Monthly, 2007e).

Several nickel projects were underway in China. Jilin Jien Nickel Co. Ltd. conducted a feasibility study to develop a nickel deposit that is located 43 km northwest of Helong City in Jilin Province that would include a 1,500-t/d processing plant. Jilin Jien planned to complete the expansion work at Xiaonanshan Copper-Nickel Mine in Nei Mongol Autonomous Region. The output capacity of the mine increased to 300 t/d from 150 t/d in 2006. Jilin Jien planned to add an Ausmelt Smelting furnace at its Panshi site to increase the nickel matte output to 220,000 t/yr in 2008 from 55,000 t/yr in 2006.

Shanxi-based Yuanxin Nickel Co. Ltd. invested \$101 million to build a 100,000-t/yr nickel matte smelter in Bayannaor, Nei Mongol Autonomous Region. The ore-dressing expansion project at China's leading nickel producer, Jinchuan Group Ltd., was underway at Jinchuan, Gansu Province. After its completion in 2007, the processing plant capacity would increase to 4.62 Mt/yr of ore and production was expected to increase to 580,000 t/yr of nickel concentrates that contained 58,000 t/yr of nickel.

Jinchuan reached an agreement with the government of Hami Prefecture to form a joint-venture company (Jinha Mining Co.

Ltd.) to build a 5,000-t/yr nickel matte plant in Hami, Xinjiang Uygur Autonomous Region. The plant was scheduled to start production in 2007. Xinjiang Fukang Smelter, a subsidiary of Xinjiang Nonferrous Metals Corp., completed the construction of its nickel smelter. After the smelter is fully operational in 2008, nickel metal output capacity would increase to 15,000 t/yr from 5,000 t/yr. Xinjiang Hami Hexin Mining Co. Ltd. (a joint venture between Xinjiang Nonferrous Metals Corp. and West Mining Co. Ltd.,) planned to develop copper and nickel resources in Hami Prefecture. The company planned to invest \$38 million to construct a mine, which would have the capability to produce 600,000 t/yr of ore. Inco (Dalian) Hi-Tech and New-Type Materials Co. Ltd., which was a joint venture of Inco Ltd. of Canada, Korea Nickel Corp. of the Republic of Korea, and Liaoning Wanzhong Co. of China, invested \$69.3 million to build a 32,000-t/yr nickel metal plant in Dalian City, Liaoning Province. Yulin Weinie Science and Technology Mining Co. Ltd. planned to build a 10,000-t/yr smelter to process local laterite ore in Bobai County, Guangxi Zhuang Autonomous Region. Yunjiang Nickel Industry Co. Ltd., a subsidiary of Yunnan Tin Industry Co., planned to build a 5,000-t/yr nickel smelter to smelt laterite ore in Yuxi City, Yunnan Province, in 2007. Guangxi Zhongtian Mining Co. Ltd. completed the construction of its 10,000-t/yr nickel matte plant and was scheduled to start up the operation in 2007 in Tiandeng County, Guangxi Zhuang Autonomous Region. Qinghai Nickel and Chromite Co. Ltd. (a joint venture of Sichuan Jinguang Industrial Group. Co., Guangdong Foshan Chengde Special Steel Co. Ltd., and Qinghai Ganhe Industrial Zone) planned to build a nickel and chromite complex to produce 300,000 t/yr of stainless steel, 100,000 t/yr of nickel matte, and 100,000 t/yr of nickel-chromium alloy in Xining City, Qinghai Province.

Titanium.—During the past 2 years, the production of sponge titanium increased substantially. China transformed from a net importer to net exporter of sponge titanium in 2006. The production of sponge titanium in 2006 was nearly double that of 2005. At yearend 2006, China's sponge titanium output capacity reached 30,000 t and was expected to increase to 50,000 t; production of sponge titanium was expected to reach about 30,000 t by yearend 2007. Owing to surplus sponge titanium in the domestic market, the price per metric ton of sponge titanium decreased to about \$13,500 in December from \$27,000 in January. Four leading sponge titanium producers—Chaoyang Baisheng Zirconium Co. Ltd., Fushun Titanium Co. Ltd., Jinzhou Huashen Titanium Co. Ltd., and Zunyi Titanium Co. Ltd.—met in Zunyi to discuss the titanium market situation in China. The group agreed to set up a joint sponge titanium marketing company to coordinate the sale of sponge titanium and to set a floor price of no. 1 grade sponge titanium at \$15,130 per metric ton and also to reduce sponge titanium output to maintain the domestic market price (China Nonferrous Metals News, 2007a, d).

Titanium tetrachloride is a raw material used to produce sponge titanium. Of all sponge titanium producers, Fushun and Zunyi have titanium tetrachloride production plants; the others obtain titanium tetrachloride from domestic chemical producers. The price of titanium tetrachloride increased to \$2,500 per metric ton in 2006 from \$920 per metric ton at the end of 2004.

In 2006, several chemical producers added titanium tetrachloride production lines in their facilities and the output capacity of titanium tetrachloride was expected to increase to 500,000 t by yearend. Owing to the expansion of output of titanium tetrachloride, the demand for high titanium content slag also increased; as a result, titanium slag production in the Provinces of Hebei and Sichuan and the Nei Mongol Autonomous Region was expected to increase (China Nonferrous Metals News, 2007b).

Mineral Fuels

Coal.—China has undergone significant economic reform and has one of the world's fastest growing economies. Coal consumption has increased to meet the high demand for industrial production and power generation. In 2006, China's coal production increased to more than 2.3 Gt. Owing to an increase in demand and transport capacity constraints, domestic coal prices and coal imports to southern China increased during the past 3 years. As a result of an insufficient supply of coal, electricity from coal-fired powerplants was disrupted in many parts of the country. Powerplants accounted for 50% of the country's coal consumption. To secure an adequate supply of coal, a number of coal and power generation companies formed alliances by investing in each other's publicly listed shares in domestic and international stock exchange markets. The Government remained in control of substantial shares of the coal and power sectors.

China was not only a large coal producer and consumer but also one of the world's leading coal exporters. Coal exports decreased to 63.3 Mt in 2006 from the peak 94 Mt in 2003, whereas coal imports to China increased by 46.1% compared with the previous year, to 38.3 Mt. Owing to transport constraints and increased domestic demand, however, the Government reduced its coal export quota to 80 Mt in 2004, 2005, and 2006. The Government allocated the majority of coal export licenses to four state-owned companies—China Coal Group Corp., Minmetals Group, Shanxi Import and Export Group Corp., and Shenhua Group Corp. Coal imports to China accounted for less than 2% of China's coal consumption in 2006. Australia, Indonesia, and Mongolia were the leading coal suppliers to China. In 2006, the Government reduced the VAT export rebate on coal and levied a 5% export tariff on coal and coke. The export tariff and an increase in the resource tax could affect coal production and exports in 2007 and later years (China Daily, 2007a; Interfax Information Services, 2007a).

Outlook

China's economy is expected to continue to grow in the near future. The Government believes that the country cannot depend solely on exports to sustain its economic growth and that the country needs to increase domestic consumption and to have a more-transparent financial and legal system. The laws and regulations enacted by the Chinese Government are comparable to some of the best in the world, but the country's enforcement is weak. Officially, state-owned enterprises account for one-third of the economy, compared with 80% 20 years ago; however, these figures are based only on those

companies directly controlled by the Central Government. Many companies have financial ties to local governments. Local governments have strong political incentives to boost local economies by supporting such projects as aluminum, cement, copper, iron and steel; the Central Government, however, considers these commodities to have surplus output capacities and high-energy consumption, and believes that the expansion of these projects should be controlled. The Central Government depends on employees at the local bureaus to enforce the law and regulations, but these people report to Provincial and local governments. Law and regulations enforcement is likely to continue to be a problem in China unless the Government changes its bureaucratic structure.

China has shortages in the supply of most major minerals, such as bauxite, chromium, copper, iron, lead, nickel, manganese, oil, and potash, and relied on imports to meet the demand. This trend is expected to continue; therefore, the Government encourages enterprises to invest in such mineral-rich countries as Australia, Brazil, Burma, Chile, Indonesia, and Mongolia to secure minerals for domestic economic development and growth. China has foreign reserves of more than \$1.3 trillion to support its outgoing investment. China's overseas investment fund is expected to continue to increase substantially from its level of \$1.9 billion in 2005.

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TABLE 1
CHINA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2002	2003	2004	2005	2006	
METALS						
Aluminum:						
Bauxite, gross weight	thousand metric tons	11,000	13,000	17,000 ^r	22,000 ^r	27,000
Alumina	do.	5,450	6,110	6,990	8,540 ^r	13,700
Metal, refined						
Primary	do.	4,510	5,970	6,900	7,800	9,360
Secondary	do.	1,200	1,450	1,660	1,940	2,350
Total	do.	5,710 ^r	7,420 ^r	8,560 ^r	9,740 ^r	11,700
Antimony:						
Mine, Sb content		100,000	100,000	125,000	152,000 ^r	153,000
Metal		124,000	90,000	125,000 ^r	138,000 ^r	140,000
Bismuth:						
Mine output, Bi content		2,000	2,500	3,000	3,000	1,520
Metal		3,500	5,000	11,700	10,600 ^r	11,800
Cadmium, smelter		2,440	2,700	4,530	4,080 ^r	3,790
Chromite, gross weight	thousand metric tons	180	200	200	200	200
Cobalt:						
Mine output, Co content		1,000	700	1,260	2,100 ^r	1,840
Metal		980	990	5,600	7,150 ^r	7,500
Copper:						
Mine output, Cu content		568,000	610,000	742,000	762,000	873,000
Metal:						
Smelter, primary	thousand metric tons	1,180	1,380	1,500	1,750 ^r	1,920
Refined:						
Primary	do.	1,300	1,420	1,580	1,850	2,000
Secondary	do.	350	430	620	750	1,000
Total	do.	1,650	1,850	2,200	2,600	3,000
Gold, mine output, Au content		192	205	215	225	245
Indium		160	180	200	300	350
Iron and steel:						
Iron ore, gross weight	thousand metric tons	231,000	261,000	320,000	420,000	601,000
Pig iron	do.	170,850 ⁴	213,670 ⁴	251,850 ⁴	343,750 ⁴	412,450 ⁴
Ferroalloys	do.	4,840	6,340	8,670	10,700	14,300
Steel, crude	do.	182,370 ⁴	222,340 ⁴	272,800 ⁴	353,240 ⁴	419,150 ⁴
Steel, rolled	do.	192,520 ⁴	241,080 ⁴	297,230 ⁴	377,710 ⁴	468,930 ⁴
Lead:						
Mine output, Pb content		641,000	955,000	998,000	1,140,000 ^r	1,330,000
Metal:						
Smelter, primary		916,000	1,280,000	1,460,000	1,790,000 ^r	2,090,000
Refined						
Primary		1,100,000	1,290,000	1,510,000	1,850,000 ^r	2,130,000
Secondary		230,000	290,000	430,000	537,000 ^r	590,000
Total		1,330,000	1,580,000	1,940,000	2,390,000	2,720,000
Magnesium metal and alloy		230,000	342,000	442,000	470,000	520,000
Manganese:						
Ore, Mn content	thousand metric tons	900	920	1,100	1,500 ^r	1,600
Metal		190,000	320,000	492,000	566,000	730,000
Mercury, mine output, Hg content		495	610	1,140	1,100	760
Molybdenum, mine output, Mo content		29,300	31,000	38,500	40,000	43,900
Nickel:						
Mine output, Ni content		53,700	61,000	75,600	72,700 ^r	82,100
Matte		59,200	69,300	74,000	83,500 ^r	99,800
Smelter		52,400	64,700	75,800	95,100 ^r	102,000
Silicon, metal		580,000	680,000	750,000	840,000	900,000
Silver, mine output, Ag content		2,200	2,400	2,450	2,500	2,600

See footnotes at end of table.

TABLE 1--Continued
CHINA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2002	2003	2004	2005	2006
METALS--Continued					
Tin:					
Mine output, Sn content	62,000	102,000	118,000	126,000 ^r	126,000
Metal	82,000	98,000	115,000	122,000 ^r	132,000
Titanium:					
Ilmenite, TiO ₂ equivalent	375,000	400,000	420,000	450,000	500,000
Sponge	3,650	4,120	4,810	9,160 ^r	18,100
Tungsten, mine output, W content	55,100	55,500	92,200 ^r	78,800 ^r	69,000
Vanadium, in vanadiferrous slag product	33,000	35,000	40,000	42,500	42,500
Zinc:					
Mine output, Zn content	1,550	2,030	2,390	2,550 ^r	2,840
Refined, primary and secondary	2,100	2,320	2,720	2,780 ^r	3,150
INDUSTRIAL MINERALS					
Asbestos	562,000	500,000	400,000	400,000 ^r	350,000
Barite	3,100	3,600	3,900	4,200	4,400
Bentonite	2,500	2,800	3,000	3,100	3,200
Boron, mine, B ₂ O ₃ equivalent	145,000	130,000	135,000	140,000	145,000
Bromine	42,000	42,000	4,300	4,350	4,400
Cement, hydraulic	725,000 ⁴	862,080 ⁴	970,000 ⁴	1,068,850 ⁴	1,236,770 ⁴
Diatomite	370,000	380,000	390,000	410,000	420,000
Dolomite	7,000	7,300	7,500	7,800	8,000
Feldspar	1,650	1,700	1,800	1,900	1,950
Fluorspar	2,450	2,650	2,700	2,700	2,750
Graphite	629,000	710,000	700,000	720,000	720,000
Gypsum	6,850	6,850	7,000	7,300	7,500
Kaolin	3,600	3,700	3,750	3,800	3,800
Lime	120,000	130,000	140,000	150,000	160,000
Lithium minerals, all types	16,000	17,000	18,000	19,000	20,000
Magnesite	4,560	4,900 ^r	6,500 ^r	6,600 ^r	6,700
Nitrogen, N content of ammonia	30,300 ⁴	31,500 ⁴	34,770 ⁴	37,850 ⁴	40,660 ⁴
Phosphate rock, P ₂ O ₅ equivalent	6,900	7,550	7,650	9,130	11,600
Potash, marketable, K ₂ O equivalent	510 ^r	625 ^r	770 ^r	1,500 ^r	1,800
Rare earths, rare-earth oxide equivalent	88,000	92,000	98,000	119,000	133,000
Salt	36,024 ⁴	34,377 ⁴	37,100 ⁴	46,610 ⁴	56,630 ⁴
Sodium compounds:					
Mirabilite	5,000	5,800	6,300	6,300	6,500
Soda ash, natural and synthetic	10,330 ⁴	11,336 ⁴	13,024 ⁴	14,211 ⁴	15,600 ⁴
Strontium carbonate	210,000 ^r	240,000 ^r	270,000 ^r	300,000 ^r	320,000
Sulfur:					
Native	540	700	820	900	950
Content of pyrite	3,240	3,400	3,730	4,010	3,810
Byproduct, all sources	2,200	2,400	2,600	2,800	3,000
Total	5,980	6,500	7,150	7,710	7,760
Talc and related materials	2,500	2,400 ^r	2,200 ^r	2,300 ^r	2,400
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Anthracite	250,000	304,000 ^r	464,000 ^r	487,000 ^r	510,000
Bituminous	1,110,000	1,360,000 ^r	1,450,000 ^r	1,670,000 ^r	1,700,000
Lignite	53,000	63,000 ^r	80,000 ^r	98,000 ^r	110,000
Total	1,410,000	1,730,000 ^r	1,990,000 ^r	2,260,000 ^r	2,320,000
Coke, all types	142,800 ⁴	138,800 ⁴	177,480 ⁴	232,820 ⁴	280,540 ⁴
Gas, natural:					
Gross	33	35	41	50	59
Marketed	26	28	34	42	51

See footnotes at end of table.

TABLE 1--Continued
 CHINA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2002	2003	2004	2005	2006
MINERAL FUELS AND RELATED MATERIALS--Continued					
Petroleum:					
Crude, including crude from oil shale million 42-gallon barrels	1,240	1,260	1,300	1,350	1,400
Refinery products do.	2,400 ^r	2,500 ^r	2,600 ^r	2,800 ^r	3,000

^rRevised.

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

²Table includes data available through August 9, 2007.

³China also produces diamond, gallium, germanium, platinum-group metals, stone, and uranium, but available information is inadequate to make estimates of output.

⁴Reported by China's State Statistical Bureau.

TABLE 2
CHINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies ¹	Location of main facilities	Annual capacity ^e
Aluminum:			
Alumina	Chongqing Dingtai Tuoyuan Alumina Co.	Chongqing	150
Do.	Nanchuan Pioneer Alumina Co.	do.	150
Do.	Pingguo Aluminum Co. (Aluminum Corporation of China)	Guangxi, Pingguo	1,200
Do.	Guizhou Aluminum Plant (Aluminum Corporation of China)	Guizhou, Guiyang	1,200
Do.	Guanxiangxia Aluminum Co. Ltd.	Hebei, Yicheng	200
Do.	Luoyang Wanji Xiangjiang Aluminum Co. Ltd.	Henan, Luoyang	1,200
Do.	Yixiang Aluminum Co. (Henan Yima Coal Group)	Henan, Mainchi	600
Do.	Pingdingshan Huiyuan Chemical Co.	Henan, Pingdingshan	300
Do.	Yangquan Coalmine Aluminum (Sanmenxia) Co. Ltd.	Henan, Sanmenxia	1,200
Do.	East Hope (Sanmenxia) Aluminum Co. Ltd.	do.	1,200
Do.	Zhengzhou Aluminum Plant (Aluminum Corporation of China)	Henan, Zhengzhou	2,600
Do.	Zhongzhou Aluminum Plant (Aluminum Corporation of China)	Hunan, Zhongzhou	3,000
Do.	Bingzhou Weiqiao Aluminum Co.	Shandong, Zouping	1,600
Do.	Shandong Huayu Alumina Co. Ltd. (Shandong Chiping Xinfra Aluminum and Electricity Group)	Shandong, Chiping	1,800
Do.	Shandong Aluminum Plant (Aluminum Corporation of China)	Shandong, Zibo	1,500
Do.	Shanxi Aluminum Plant (Aluminum Corporation of China)	Shanxi, Hejin	2,200
Do.	Shanxi Luneng Jinbei Aluminum Co. Ltd.	Shanxi, Yuanping	1,000
Metal	Baiyin Aluminum Plant	Gansu, Baiyin	150
Do.	East Hope Aluminum Plant	Gansu, Baotou	330
Do.	Lanzhou Aluminum Plant	Gansu, Lanzhou	210
Do.	Liancheng Aluminum Plant	do.	235
Do.	Pingguo Aluminum Co. (Aluminum Corporation of China)	Guangxi, Pingguo	380
Do.	Guizhou Aluminum Plant (Aluminum Corporation of China)	Guizhou, Guiyang	400
Do.	Henan Zong Industry Co. Ltd.	Henan, Gongyi	180
Do.	Jiaozuo Wanfang Aluminum Co. Ltd.	Henan, Jiaozuo	300
Do.	Henan Wanji Aluminum Co. Ltd.	Henan, Luoyang	180
Do.	Henan Huanghe Mianchi Aluminum Plant	Henan, Mianchi	400
Do.	Sanmenxia Tianyuan Aluminum Co. Ltd.	Henan, Sanmenxia	110
Do.	Shangqiu Aluminum Smelter	Henan, Shangqiu	180
Do.	Yichuan Yugang Longquan Aluminum Co.	Henan, Yichuan	600
Do.	Henan Shenhua Aluminum-Electricity Co. Ltd.	Henan, Yongcheng	200
Do.	Zhengzhou Aluminum Plant (Aluminum Corporation of China)	Henan, Zhengzhou	60
Do.	Hanjiang Danjiangkou Aluminum Co. Ltd.	Hubei, Danjiangkou	110
Do.	Hunan Chuanquan Aluminum Co. Ltd.	Hunan, Taoyuan	210
Do.	Fushun Aluminum Plant	Liaoning, Fushun	190
Do.	Baotou Aluminum Plant	Nei Mongol, Baotou	250
Do.	Qingtongxia Aluminum Plant	Ningxia, Qingtongxia	560
Do.	Qiaotou Aluminum Co. Electrolysis Branch	Qinghai, Datong	350
Do.	Qinghai Aluminum Smelter (Aluminum Corporation of China)	Qinghai, Xining	560
Do.	Qinghai West Mining Baihe Aluminum Co. Ltd.	do.	112
Do.	Tongchuan Xingguang Aluminum Co. Ltd.	Shaanxi, Tongchuan	80
Do.	Shandong Chiping Xinfra Aluminum and Power Group	Shandong, Chiping	360
Do.	Taishan Aluminum-Power Co. Ltd.	Shandong, Fecheng	125
Do.	Shandong Nanshan Industry Co. Ltd.	Shandong, Longkou	280
Do.	Shandong Aluminum Plant (Aluminum Corporation of China)	Shandong, Zibo	120
Do.	Bingzhou Weiqiao Aluminum Co.	Shandong, Zouping	250
Do.	Zouping Aluminum Co. Ltd.	do.	150
Do.	Huaze Aluminum and Power Co. Ltd.	Shanxi, Hejin	400
Do.	Taiyuan Oriental Aluminum Co.	Shanxi, Taiyuan	75
Do.	Shanxi Guanlu Aluminum Co. Ltd.	Shanxi, Yuncheng	210
Do.	Yunnan Aluminum Plant	Yunnan, Kunming	500
Antimony	Huaxi (China Tin) Group Industrial Co.	Guangxi, Hechi	25
Do.	Xikuangshan Twinkling Star Co. Ltd.	Hunan, Lengshuijiang	37

See footnotes at end of table.

TABLE 2--Continued
CHINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies ¹	Location of main facilities	Annual capacity ^e
Asbestos		China National Nonmetallic Industry Corp.	Nei Mongol, Baotou; Shanxi, Lai Yuan and Lu Liang	130
Barite		do.	Guizhou, Xiangshou	NA
Bismuth	metric tons	Guangzhou Smelter	Guangdong, Guangzhou	300
Do.	do.	Shizhuyuan Nonferrous Metals Co. Ltd.	Hunan, Shizhuyuan	1,000
Do.	do.	Zhuzhou Smelter (Zhuye Torch Metals Co. Ltd.)	Hunan, Zhuzhou	350
Do.	do.	Yunnan Copper Group Co. Ltd.	Nei Mongol, Chifeng	300
Cadmium		Zhuzhou Smelter (Zhuye Torch Metals Co. Ltd.)	Hunan, Zhuzhou	1
Coal		Hebei Provincial Government	Hebei	70,000
Do.		Heilongjiang Provincial Government	Heilongjiang	100,000
Do.		Henan Provincial Government	Henan	100,000
Do.		Liaoning Provincial Government	Liaoning	70,000
Do.		Nei Mongol Provincial Government	Nei Mongol	90,000
Do.		Shandong Provincial Government	Shandong	60,000
Do.		Shanxi Provincial Government	Shanxi	400,000
Do.		Sichuan Provincial Government	Sichuan	80,000
Do.		Shenhua Coal Corp.	Ningxia, Nei Mongol, and Shaanx	150,000
Cobalt	metric tons	Jinchuan Nonferrous Metals Corp.	Gansu, Jinchang	1,200
Copper, refined		Jinchang Smelter (Tongling Nonferrous Metals Co.)	Anhui, Tongling	170
Do.		Jinlong Smelter (Tongling Nonferrous Metals Co.)	do.	400
Do.		Wuhu Smelter (Hengxin Copper Industry Group Co.)	Anhui, Wuhu	60
Do.		Baiyin Nonferrous Metals Co.	Gansu, Baiyin	50
Do.		Jinchuan Nonferrous Metals Corp.	Gansu, Jinchuan	200
Do.		Luoyang Copper Processing Factory	Henan, Luoyang	50
Do.		Daye Nonferrous Metals Co.	Hubei, Daye	200
Do.		Zhangjiagang United Copper Co. (Tongling Nonferrous Metals Co.)	Jiangsu, Zhangjiagang	200
Do.		Guixi Smelter (Jiangxi Copper Co. Ltd.)	Jiangxi, Guixi	700
Do.		Dongfang Copper Co. (Huludao Nonferrous Metals Group)	Liaoning, Huludao	100
Do.		Chifeng Jingeng Copper Co. Ltd.	Nei Mongol, Chifeng, Harqin Banner	100
Do.		Dongying Fangyuan Nonferrous Metals Co. Ltd.	Shandong, Dongying	100
Do.		Shandong Jinsheng Nonferrous Metals Corp.	Shandong, Linyi	100
Do.		Shandong Yanggu Xiangguang Co. Ltd.	Shandong, Yanggu	200
Do.		Yantai Penghui Copper Industry Co. Ltd.	Shandong, Yantai	60
Do.		Taiyuan Copper Industry Co.	Shanxi, Taiyuan	30
Do.		Zhongtiaoshan Nonferrous Metals Co.	Shanxi, Yuangu	100
Do.		Tianjin Datong Copper Co. Ltd. (former Tianjin Copper Electrolysis Factory)	Tianjin	200
Do.		Yunnan Smelter (Yunnan Copper Group Co. Ltd.)	Yunnan, Kunming	250
Gallium	metric tons	Shandong Aluminum Plant	Shandong, Zibo	10
Gas, natural	billion cubic meters	China National Petroleum Corp.	Sichuan	10
Germanium	metric tons	Yunnan Chihong Zinc and Germanium Co. Ltd.	Yunnan, Qujing	10
Gold, refined	do.	China National Gold Corp.	Henan, Lingbao	10
Do.	do.	Zhongyan Gold Smelter (Zhongjin Gold Co. Ltd.)	Henan, Sanmenxia	30
Do.	do.	Jiangxi Copper Co. Ltd.	Jiangxi, Guixi	12
Do.	do.	Laizhou Gold Co.	Shandong, Laizhou	15
Do.	do.	Shandong Yanggu Xiangguang Co. Ltd.	Shandong, Yanggu	20
Do.	do.	Yantai Penghui Copper Industry Co. Ltd.	Shandong, Yantai	5
Do.	do.	Zhaoyuan Gold Co.	Shandong, Zhaoyuan	15
Do.	do.	Great Wall Gold Silver Refinery	Sichuan, Chengdu	100
Graphite		Jixi Aoyu Graphite Co. Ltd.	Heilongjiang, Jixi and Luo	60
Do.		Nei Mongol Xinghe Jingxin Graphite Co. Ltd.	Nei Mongol, Xinghe	10

See footnotes at end of table.

TABLE 2--Continued
CHINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies ¹	Location of main facilities	Annual capacity ^e
Indium	metric tons	Laibin Smelter [Liuzhou Huaxi (China Tin) Group Co.]	Guangxi, Laibin	80
Do.	do.	Liuzhou Zinc Products Co.	Guangxi, Liuzhou	20
Do.	do.	Zhuzhou Smelter	Hunan, Zhuzhou	60
Do.	do.	Huludao Nonferrous Metals Group Co.	Liaoning, Huludao	30
Iron and steel:				
Iron ore		Ma'anshan Iron and Steel Co.	Anhui, Maanshan	10,000
Do.		Shoudu (Capital) Mining Co.	Beijing	20,000
Do.		Meishan Metallurgical Co.	Shanghai	2,000
Do.		Jiuquan Iron and Steel Co.	Gansu, Jiayuguan	4,000
Do.		Hainan Iron Mine	Hainan, Changjiang	4,600
Do.		Handan Xingtai Metallurgical Bureau	Hebei, Handan	3,800
Do.		Tangshan Iron and Steel Co.	Hebei, Tangshan	3,000
Do.		Wuhan Iron and Steel (Group) Co. (Wugang)	Hubei, Wuhan	5,100
Do.		Banshigou Iron Mine Mining Co.	Jilin, Hunjiang	1,400
Do.		Anshan Mining Co.	Liaoning, Anshan	30,000
Do.		Benxi Iron and Steel Co.	Liaoning, Benxi	13,700
Do.		Baotou Iron and Steel and Rare Earth Co.	Nei Mongol, Baotou	10,000
Do.		Taiyuan Iron and Steel Co.	Shanxi, Taiyuan	4,000
Do.		Dabaoshan Mining Co.	Guangdong, Qujiang	1,670
Do.		Panzhuhua Mining Co.	Sichuan, Panzhuhua	13,000
Do.		Kunming Iron and Steel Co.	Yunnan, Kunming	1,400
Ferroalloys		Shoudu (Capital) Iron and Steel (Group) Co.	Beijing	35
Do.		Northwest Ferroalloy Co.	Gansu, Yongdeng	60
Do.		Zunyi Ferroalloy Co.	Guizhou, Zunhi	100
Do.		Jilin Ferroalloy Co.	Jilin, Jilin	250
Do.		Jinzhou Ferroalloy Co.	Liaoning, Jinzhou	90
Do.		Liaoyang Ferroalloy Co.	Liaoning, Liaoyang	70
Do.		Shanghai Iron and Steel Co. Ltd.	Shanghai	180
Do.		Emei Ferroalloy Co.	Sichuan, Emei	70
Do.		Hengshan Ferroalloy Co.	Zhejiang, Jiande	70
Crude steel		Ma'anshan Iron and Steel Co.	Anhui, Maanshan	10,000
Do.		Shoudu (Capital) Iron and Steel (Group) Co. (Shougang)	Beijing and Hebei, Caofeidian	10,000
Do.		Liuzhou Iron and Steel Group	Guangxi, Liuzhou	6,000
Do.		Handan Iron and Steel General Work (Handan)	Hebei, Handan	10,000
Do.		Tangshan Iron and Steel Co. (Taigang)	Hebei, Tangshan	2,300
Do.		Wuhan Iron and Steel (Group) Co. (Wugang)	Hubei, Wuhan	12,000
Do.		Shagang Group Co. Ltd.	Jiangsu, Zhangjiagang	15,000
Do.		Anshan Iron and Steel (Group) Co. (Angang)	Liaoning, Anshan	16,000
Do.		Benxi Iron and Steel Co. (Bengang)	Liaoning, Benxi	6,000
Do.		Baotou Iron and Steel and Rare Earth Co. (Baogang Group)	Nei Mongol, Baotou	10,000
Do.		Baoshan Iron and Steel (Group) Corp. (Baosteel)	Shanghai	19,000
Do.		Shanghai Iron and Steel Co. Ltd.	do.	6,000
Do.		Shandong Jinan Iron and Steel Group Co.	Shandong, Jinan	10,000
Do.		Shandong Laiwu Iron and Steel Group Co.	Shandong, Laiwu	10,000
Do.		Taiyuan Iron and Steel Co. (Taigang)	Shanxi, Taiyuan	5,000
Do.		Panzhuhua Iron and Steel (Group) Co. (Pangang)	Sichuan, Panzhuhua	6,000

See footnotes at end of table.

TABLE 2--Continued
CHINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies ¹	Location of main facilities	Annual capacity ^c	
Lead	Baiyin Nonferrous Metals Co. Ltd.	Gansu, Baiyin	80	
Do.	Shaoguan Smelter (Shenzhen Nonfermet Co.)	Guangdong, Shaoguan	100	
Do.	Laibin Smelter [Huaxi (China Tin) Group Co.]	Guangxi, Laibin	100	
Do.	Hechi South Nonferrous Metals Smelting Co. Ltd.	Guangxi, Hechi	60	
Do.	Anyang Smelter (Yubei Metal Co.)	Henan, Anyang	160	
Do.	Jiyuan Wangyang Nonferrous Smelter	Henan, Jiaozuo	100	
Do.	Jiyuan Smelter (Yuguang Gold-Lead Co. Ltd.)	Henan, Jiyuan	300	
Do.	Henan Lingye Co. Ltd.	Henan, Lingbao	100	
Do.	Hanjiang Smelter	Hubei, Luhekou	50	
Do.	Shuikoushan Nonferrous Metals Co. Ltd.	Hunan, Hengyang	100	
Do.	Zhuzhou Smelter (Zhuye Torch Metals Co. Ltd.)	Hunan, Zhuzhou	100	
Do.	Xuzhou Chunxing Alloy Co. Ltd.	Jiangsu, Xuzhou	150	
Do.	Huludao Nonferrous Metals Group Co. Ltd.	Liaoning, Huludao	30	
Do.	Kunming Smelter	Yunnan, Kunming	100	
Lithium, LiCO ₃	Sichuan Shehong Lithium Co. Ltd.	Sichuan, Shehong	2	
Do.	Xinjiang Lithium Co.	Xinjiang, Urumqi	5	
Magnesium	Fushun Aluminum Plant	Liaoning, Fushun	5	
Do.	Ningxia Huayuan Magnesium Group	Ningxia, Yinchuan	15	
Do.	Huayu Interprises (Group) Ltd.	Shanxi, Jishan	35	
Do.	Taiyuan Tongxiang Magnesium Metal Co. Ltd.	Shanxi, Taiyuan	45	
Do.	Taiyuan Yiwei Magnesium Co. Ltd.	do.	21	
Do.	Wenxi Biyun Magnesium Co. Ltd.	Shanxi, Wenxi	30	
Do.	Wenxi Yinguang Magnesium Group	do.	40	
Do.	Minhe Magnesium Plant	Qinghai, Minhe	7	
Manganese, metal	Chongqing Tycoon Manganese Co. Ltd.	Chongqing	23	
Do.	Guangxi Dameng Manganese Industry Co. Ltd.	Guangxi, Nanning	70	
Molybdenum, concentrate	Luoyang Luanchuan Molybdenum Industry Group Co., Ltd.	Henan, Luanchuan	13	
Do.	Jinduichang Mining Corp.	Shaanxi, Huaxian	9	
Nickel, refined	Jinchuan Nonferrous Metals Corp.	Gansu, Jinchuan	100	
Do.	Jilin Jien Nickel Industry Co. Ltd.	Jilin, Panshi	10	
Do.	Chengdu Electro-Metallurgy Factory	Sichuan, Chengdu	5	
Do.	Xinjiang Fukang Smelter	Xinjiang, Fukang	15	
Do.	Yuanjiang Nickel Industry Co. Ltd.	Yunnan, Yuxi	5	
Petroleum, crude	Shengli Bureau	Hebei, Shengli	33,500	
Do.	Daqing Bureau	Heilongjiang, Daqing	55,000	
Do.	Liaohe Bureau	Liaoning, Liaohe	15,000	
Do.	Bohai Offshore Oil Corp.	Bohai	4,000	
Do.	Nanghai East Corp.	Nanghai	5,000	
Potash	Qinghai Yanhu Industry Group Co. Ltd.	Qinghai	40	
Rare earths	Gansu Rare Earths Co.	Gansu, Baiyin	32	
Do.	Jiangxi Rare Earths Co.	Jiangxi, Nanchang	1	
Do.	Zhujiang Smelter	Guangdong, Guangzhou	5	
Do.	Baotou Iron and Steel and Rare Earths Corp. (Baogang Group)	Nei Mongol, Baotou	55	
Do.	Shanghai Yaolong Nonferrous Metals Co.	Shanghai	2	
Salt	Shandong Haihua Group Co. Ltd.	Shandong, Weifang	1,400	
Do.	Zigong Zhangjiaba Salt Chemical Plant	Sichuan, Zigong	250	
Silver	metric tons	Laibin Smelter [Huaxi (China Tin) Group Co.]	Guangxi, Laibin	80
Do.	do.	Daye Nonferrous Metals Co.	Hubei, Daye	100
Do.	do.	Jiangxi Copper Co. Ltd.	Jiangxi, Guixi	400
Do.	do.	Huludao Nonferrous Metals Group Co. Ltd.	Liaoning, Huludao	80
Do.	do.	Yantai Penghui Copper Industry Co. Ltd.	Shandong, Yantai	80
Do.	do.	Great Wall Gold Silver Refinery	Sichuan, Chengdu	300
Do.	do.	Yunnan Smelter (Yunnan Copper Group Co. Ltd.)	Yunnan, Kunming	450

See footnotes at end of table.

TABLE 2--Continued
CHINA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies ¹	Location of main facilities	Annual capacity ^e
Strontium, carbonate	Chongqing Chonglong Strontium Co. Ltd.	Chongqing	20
Do.	Chongqing Tongliang Redbutterfly Strontium Co.	do.	120
Do.	Hebei Xinji Chemical Group	Hebei, Xinji	130
Do.	Nanjing Jinyan Strontium Co. Ltd.	Jiangsu, Lishui	20
Talc	China National Nonmetallic Industry Corp.	Guangxi, Longshen	130
Do.	do.	Liaoning, Haicheng	50
Do.	do.	Shandong, Qixia	5
Tin, smelter	Laibin Smelter [Huaxi (China Tin) Group Co.]	Guangxi, Laibin	25
Do.	Pinggui Mining Bureau	Guangxi, Zhongshan	8
Do.	Yunnan Tin Industry Co.	Yunnan, Gejiu	55
Titanium, sponge	Guizhou Southwest Titanium Co. Ltd.	Guizhou, Guiyang	3
Do.	Zunyi Titanium Co. Ltd.	Guizhou, Zunyi	14
Do.	Chaoyang Baisheng Zirconium Co. Ltd.	Liaoning, Chaoyang	5
Do.	Chaoyang Jintai Titanium Co. Ltd.	do.	3
Do.	Fushun Titanium Co. Ltd.	Liaoning, Fushun	3
Do.	Jinzhou Huashen Nonferrous Metals Plant	Liaoning, Jinzhou	4
Tungsten, concentrate	Shizhuyuan Nonferrous Metals Co.	Hunan, Chenzhou	5
Do.	Yaogangxian Tungsten Mine	Hunan, Yizhang	3
Do.	Nanchang Co.	Jiangxi, Nanchang	15
Zinc	Northwest China Lead-Zinc Smelter (Baiyin Nonferrous Metals Co. Ltd.)	Gansu, Baiyin	150
Do.	Shaoguan Smelter (Shenzhen Nonfemet Co.)	Guangdong, Shaoquan	170
Do.	Liuzhou Zinc Products Factory	Guangxi, Liuzhou	100
Do.	Yugang Gold-Lead Co. Ltd.	Henan, Jiyuan	100
Do.	Shuikoushan Nonferrous Metals Co. Ltd.	Hunan, Hengyan	60
Do.	Zhuzhou Smelter (Zhuye Torch Metals Co. Ltd.)	Hunan, Zhuzhou	300
Do.	Huludao Zinc Smelting Co. (Huludao Nonferrous Metals Group. Co. Ltd.)	Liaoning, Huludao	390
Do.	Dongling Zinc Industry Co. Ltd. (Dongling Group)	Shaanxi, Baoji	100
Do.	Laibin Smelter	Yunnan, Laibin	60
Do.	Yunnan Jinding Zinc Co. Ltd. (Sichuan Hongda Group)	Yunnan, Lanping	100
Do.	Yunnan Chihong Zinc and Germanium Co. Ltd.	Yunnan, Qujing	160

^eEstimated; estimated data are rounded to no more than three significant digits. NA Not available.

¹Companies are owned by either a State government or a Provincial government.

TABLE 3
CHINA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 2006

	Quantity (metric tons)	Value (thousands)
METALS		
Aluminum:		
Alumina	20,000	\$14,232
Metal and alloys:		
Unwrought	1,212,155	2,841,199
Semimanufactures	1,240,157	3,858,798
Antimony metal, unwrought	21,170	88,841
Barium sulfate	3,590,000	137,721
Bismuth, includes powder, unwrought, and waste	7,350	67,502
Copper, metal and alloys:		
Unwrought	246,757	1,498,754
Semimanufactures	559,122	3,692,095
Iron and steel:		
Ferrosilicon	1,330,000	879,791
Pig iron and cast iron	870,000	272,155
Steel:		
Bars and rods	11,070,000	4,756,233
Shapes and sections	2,750,000	1,268,114
Sheets and plates	20,370,000	12,105,933
Tube and pipe	1,140,000	1,699,282
Magnesium metal, unwrought	173,211	306,897
Manganese, unwrought	326,085	405,182
Tin, metal and alloys, unwrought	21,526	185,587
Tungsten, tungstates	7,699	176,412
Zinc:		
Metal and alloys, unwrought	341,465	1,140,457
Oxide and peroxide	65,116	136,019
INDUSTRIAL MINERALS		
Cement	36,130,000	1,180,622
Fluorspar	640,000	109,929
Granite	5,984,301	1,380,804
Graphite, natural	465,608	78,065
Magnesia, fused	2,100,000	288,265
Talc	650,000	89,175
MINERAL FUELS AND RELATED MATERIALS		
Coal	63,230,000	3,672,114
Coke, semicoke	14,500,000	2,007,667
Petroleum:		
Crude oil	6,340,000	2,736,980
Refinery products	12,350,000	7,048,209

Source: General Administration of Customs of the People's Republic of China, 2006, China monthly exports and imports, no. 12.

TABLE 4
CHINA: IMPORTS OF SELECTED MINERAL COMMODITIES IN 2006

(Metric tons unless otherwise specified)

	Quantity	Value (thousands)
METALS		
Aluminum:		
Alumina	6,910,000	\$3,023,528
Metal and alloys, unwrought	511,950	998,960
Semimanufactures	686,124	2,782,184
Scrap	1,765,374	1,910,924
Chromium, chromite	4,320,000	739,174
Cobalt, ore and concentrates	163,759	315,715
Copper:		
Ore and concentrates	3,610,000	6,117,248
Anode	129,244	463,056
Metal and alloys, unwrought	969,349	6,056,037
Semimanufactures	1,092,569	6,360,242
Scrap	4,942,874	4,044,089
Iron and steel:		
Iron ore	326,300,000	20,923,785
Steel:		
Bars and rods	1,120,000	1,091,728
Scrap	5,380,000	1,861,690
Seamless pipe	970,000	2,859,197
Shapes and sections	350,000	237,268
Sheets and plates	15,530,000	14,660,172
Manganese ore	6,210,000	645,772
Nickel:		
Ore and concentrates	3,777,841	439,619
Metal	96,644	2,168,471
Titanium dioxide	256,526	492,678
INDUSTRIAL MINERALS		
Diamond	kilograms 3,229	1,944,430
Fertilizers:		
Compound fertilizers	1,950,000	478,105
Diammonium phosphate	1,440,000	396,930
Potassium chloride	7,050,000	1,455,452
Potassium sulfate	250,000	58,035
Urea	40,000	5,978
Sodium carbonate	142,393	21,181
MINERAL FUELS AND RELATED MATERIALS		
Coal	38,250,000	1,618,809
Petroleum:		
Crude oil	145,180,000	66,411,303
Refinery products	36,380,000	15,551,550

Source: General Administration of Customs of the People's Republic of China, 2006, China monthly exports and imports, no. 12.