

# THE MINERAL INDUSTRY OF CHINA

By Pui-Kwan Tse

In 1995, China's economic reform remained in a crucial transition period from a planned economic system to a market-oriented system. The Government had embarked on a social market economic system in 1993, however, the practice of a planned economic system was continuously adopted in many governmental policies.

The Chinese Government continued to implement its macroeconomic regulations to control the rapidly growing economy and to curb inflation. Since July 1993, the Government imposed tightened credit policies which have adversely affected struggling state-owned enterprises and also exacerbated problems of triangular debt; that is, the ability of state-owned enterprises to pay each other for goods and services. A Chinese economist estimated that the debt value between state-owned enterprises was more than \$84 billion<sup>1</sup> in the first half of 1995. The 2 years of tight credit policies also affected the profit margins and sales of many companies. Profits shrank and stock prices dropped from their peak in January 1994 to historic lows. Companies whose main customers were domestic state-owned enterprises had been affected by the credit squeeze. These outstanding loans and unpaid bills would not be repaid in the near future. Writeoffs for these debts could easily wipe out their 1995 earnings. Retailers and companies having strong export markets were better off in the tight-credit climate. According to an official from the People's Bank of China (PBC), the Government would continue maintaining tight credit and price control policies in 1996. The Government would loosen its tight credit policies for the cash-poor agricultural sector by up to 30% and also allow 1,000 key state-owned enterprises that were unable to borrow fresh money from state banks to meet payroll obligations, to convert debts into equity.

In mid-1995, the State Council announced that, except for major construction projects that had been previously approved by the central Government, no local government could start any large- or medium-size new construction projects. In addition, no small capital projects would be allowed except those related to agriculture, water conservation, environmental protection, or modest residential projects. New technological renovation projects would undergo more scrutiny in order to assure that they must meet the requirements of improving the industrial infrastructure, increasing productivity, and better utilizing mineral resources. Although under significant restrictions on investment in new construction projects, the total fixed-asset

investment was \$229 billion in 1995, 19% more than that of 1994.<sup>2</sup>

Preliminary statistics indicated that the gross domestic product (GDP) grew 10.2% to \$695.6 billion in 1995. The inflation rate was 14.8% in 1995, nearly 7% lower than that of 1994. In 1995, per capita income was \$469 in urban areas and \$190 in rural areas.

## Government Policies and Programs

The task of reforming state-owned enterprises proved to be more challenging and politically risky than expected, and so the Government decided to postpone the reform in 1995. Instead of allowing a large number of state-owned enterprises to declare bankruptcy for fear of sparking widespread social unrest, the Government stressed management reform and technological renovation. The Government also urged inefficient and money-losing enterprises to merge with profitable enterprises. The Government also tolerated widespread privatization of state-owned enterprises through shareholdings. State-owned enterprises remained under the control of the Government in order to ensure stability and to direct the economy.

The Government also planned to reform its financial system. In 1995, all four major state banks lost money on domestic currency operations. Banks were forced to pay depositors inflation adjusted interest rates; however, they were allowed to charge a relatively low state-set rate on loans to state-owned enterprises. The proposed banking plan included an easing of restrictions on interest rates, permitting banks to adjust loan rates within a prescribed range, and increasing the openness of the state bond market.

The Chinese Government planned to convert all its commodities-future exchanges in the country into nonprofit bodies having a membership system conforming to international practices. China's commodities-future exchanges had been embroiled by malfeasance in the past several years. The Government hoped that these changes would prevent brokers from influencing the exchanges by pursuing their own interests. Also, to avoid disasters resulting from improper operations, no experimentation with derivatives would be allowed without the approval of the securities committee under the State Council.

The Government tightened its control over Sino-foreign joint-venture policies. Under new securities regulations, state-owned enterprises were required to provide details of

company assets to the central Government before forming joint ventures with foreign partners. Foreign partners were required to provide details on the amount of capital investment in a contract. The Government had the right to demand revision of an agreement if any laws or regulations had been overlooked. The new regulations were aimed at preventing mismanagement of state property and eliminating fraudulent enterprises.

The Chinese Government had set a 5-year timetable for the gradual unification of a tax rate for foreign venture in its Special Economic Zones with those of companies in the rest of China. Beginning on January 1, 1996, the Government planned to abolish the duty-free on import of raw materials for export-oriented businesses and to eliminate preferential treatment of imports of capital equipment for companies having foreign partners. Without these benefits, a company involved in foreign partnerships would add as much as 40% to its capitalization. In addition, a sino-foreign joint venture would also lose its exemption from the 17% value-added tax. The hardest hit would be capital-intensive, high-technology ventures that could not secure equipment in China. According to an official from the State Council Development and Research Center, these changes were to unify the tariff rates in accordance with the World Trade Organization practices and to ensure equal competition in a social market economy.<sup>3</sup>

The State Council approved China National Nonferrous Metals Industry Corp. (CNNC) to become a holding company in 1995. CNNC would set up a national association to manage the nonferrous industry and would focus on diversifying its business and tapping overseas resources and capital to secure the supply of raw materials needed for expansion. CNNC would select a few of its subsidiaries to be listed in the domestic stock market.<sup>4</sup>

## Production

China produced 94 million metric tons (Mt) of crude steel in 1995, out of a total capacity of about 100 Mt. China only had an output capacity of about 280 Mt of iron ore from domestic resources, therefore, it required to import 41 Mt of iron ore to meet the gap between demand and domestic supply in 1995. The Government planned to expand total steel output capacity from the 1995 level of 100 Mt to 135 Mt by the year 2000. However, the domestic iron ore reserves contained only about 35% of iron and resources were limited. The potential for increasing its iron ore output capacity was doubtful; therefore, China was expected to become more reliant on imports of iron ore to meet its industrial demands in the next few years.

The demand for steel in China was lower than expected because the Government tightened credit policies. Market prices of most steel products have declined since October 1994. Prices of hot- and cold-rolled thin plate dropped from 3,440 yuan (\$414) and 4,350 yuan (\$524) in May 1994 to 3,350 yuan (\$403) and 4,130 yuan (\$498) in April 1995,

respectively. The demand of premium-quality round bars and hot rolled silicon plate slumped because of lack of credit in the machinery and electrical equipment sectors. Prices of round bars and hot-rolled silicon plate declined more than 7% since yearend 1994. However, galvanized plate and tinplate were in great demand. The wholesale prices of these products were up to the ceiling prices imposed by the Government. Retail prices of galvanized plate and tin plate rose more than 20% since the end of 1994.<sup>5</sup>

China consumed about 700,000 metric tons (t) of stainless steel per year. Because of technological and output capacity problems, China's main stainless steel producers—Chongqing, Daye, Dalian, Fushun, Changcheng, and Shanghai—had a total annual output capacity of only 350,000 t. The price of stainless steel went up by 36% to 32,000 yuan per ton (yuan/t) (\$3,855/t) in the first 6 months of the year. China imports about 400,000 t of stainless steel per year and was expected to continue imports for this level in the next several years because the country's supply of cold-rolled sheet was limited.

In order to stabilize steel market price and to reduce the steel stockpile, the Government asked steel enterprises to limit output and to expand steel exports in 1995. In 1995, 80 Mt of rolled steel were produced, a decrease of 5.1% from that of 1994. Inventory of steel products declined by 10% to 28 Mt in mid-1995. Because of technical difficulties, China continued to be in short supply of high-quality cold-rolled plate, galvanized sheets, tinplate, petroleum conduits, and high-pressure boiler tubes. The Customs General Administration of China reported that China imported 13.97 Mt of rolled steel in 1995, a decrease of 38% from that of 1994 while China exported 5.93 Mt of rolled steel in 1995, an increase of 240% from that of 1994. About one-half of the country's imported steel products were cold-rolled plates that were mainly thin plates with a thickness of 0.5 millimeters (mm). Because of strict Government controls on the scale of capital investment in construction sector, steel products remained in oversupply in China.<sup>6</sup>

Because of the steady rising prices in coal, electricity, petroleum, imported iron ore and steel scrap, the production cost for ferroalloys had increased for the past 2 years. In addition, because the Government tightened credit policies, steel producers were short of funds. Many steel producers were making price concessions for cash and trying methods to recoup money to buy raw materials and fuel. A growing number of enterprises were struggling to make a reasonable profit margin.

The Ministry of Metallurgical Industry (MMI) urged steel producers to concentrate on improving product quality instead of quantity. MMI planned to add more funds for the development of advanced technology on thin-slab casting, smelting reduction, and ultra-high-power electric arc furnace in the next 5 years. The Government hoped to reduce energy consumption from the present 1.55 t of standard coal equivalent (SCE) per ton of steel to 1.45 t SCE by the year 2000.<sup>7</sup>

The Chinese Government long-term plan for development of its nonferrous metals sector emphasized full utilization of its domestic and foreign funds, resources, and markets. In 1995, China produced 4.25 Mt of 10 metals—aluminum, antimony, copper, lead, magnesium, mercury, nickel, tin, titanium, and zinc. CNNC and its subsidiaries accounted for 2.35 Mt of that total. According to an official from CNNC, the corporation would restructure its operation structure in the next 5 years. CNNC planned to form several group companies as a means of streamlining its operations and trimming duplication. It would reduce the number of its subsidiary companies from 139 in 1995 to about 70 at the end of the decade. It would speed up the replacement of inefficient and polluting technology and equipment with advanced ones. The corporation planned to reduce its asset liability ratio to about 60% and to improve its metal products quality by the year 2000. To ensure the smooth operation, the Government set the 1996 output target of the 10 metals at 4.1 Mt, 200,000 t lower than the 1995 output target. The average output growth rate for the 10 metals was set at 4% during the 1996-2000 period, which was lower than the 12% level of 1991-95. More foreign investment would be sought via joint ventures in the next several years. However, the Government would not allow wholly foreign-funded nonferrous metals operations in China.<sup>8</sup>

In China, the production of nonferrous metals was mainly for the domestic market, and this would continue into the next decade. Annual demand of aluminum metal was predicted to rise 60% by the end of this decade, from 1.56 Mt in 1994 to 2.5 Mt by the year 2000. The aluminum metal output capacity was based upon increased demand. China would have an aluminum metal output capacity of 2.19 Mt at yearend of 1996 and a further 1.8 Mt of capacity was planned in the future by the Government. China planned to become self-sufficient in aluminum production and to reduce its net imports of aluminum in 1996. In 1995, China's net imports of aluminum and its alloys was about 419,000 t. Electricity shortages were still the major problem for Chinese aluminum producers. In the summer of 1995, because of power shortages, aluminum smelters in northwest China had to curtail some of their production.

Even though the Government restricted use of aluminum by the construction sector, the construction sector was the biggest consumer for aluminum in China. It consumed about 450,000 t aluminum in 1995 and was expected to reach about 1 Mt by the year 2000. In 1995, the automotive sector consumed less than 100,000 t of aluminum metal. However, several automotive plants were under construction. Under the Government's Ninth-Five-Year Plan (1996-2000), the automotive sector would be one of the key development projects in China. China's car output was expected to increase from 1.1 million in 1995 to 2.8 million by the year 2000. Therefore, the demand for aluminum metal was expected to increase to about 200,000 t by the end of the decade.

Compared with other industries, the metal recycling

industry remained small. State-owned metal enterprises focused more on primary metal production. There were some metal recycling plants, but these were small and family run. Scrap metal was mainly imported. The United States was the major aluminum scrap supplier to China. In 1995, China and Hong Kong imported a total of 107,530 t of aluminum scrap from the United States, 30% of the total U.S. exports. Most of Hong Kong's imports eventually was reexported to China. Pure scrap produced within aluminum smelters was remelted in-house with primary metal. Extrusion plants in the coastal provinces of China imported aluminum scrap for remelting because primary aluminum prices were high. Also, it was a major task to ship aluminum metal from the northwest producers to consumers in southeast China.<sup>9</sup>

In 1995, the output of refined copper was 843,000 t, an increase of 22% over the same period of 1994. Domestic mine production could not keep up with the pace of growth, leaving an enormous gap of unmet smelter demand for concentrate. Therefore, in 1995, China imported 480,000 t of copper ore, nearly twice as much as in previous years. In addition, China also imported 537,897 t of copper and its alloy in the same period. The expansion of the automotive, machine building, and electronic sectors increased copper use. China consumed about 1 Mt of copper, and this was expected to increase to at least 1.3 Mt by the year 2000.

China's long-term copper strategy was to secure a stable supply of ore and metal resources to meet the country's demand. The country moved from spot or 1-year contracts to pursuing joint-venture investment in foreign copper projects such as in Chile and Pakistan.

In 1995, weak world market prices for lead and zinc, as well as tight domestic supplies of concentrates, forced many Chinese smelters to close down their operations. The shortage of concentrates was particularly acute in the zinc sector. In 1995, the total supply of domestic zinc concentrates was about 750,000 t and the domestic demand was about 1.05 Mt, a shortage of about 300,000 t. China's two major zinc smelters—Huludao and Zhuzhou—were required to import around 100,000 t of zinc concentrates each. Although domestic zinc prices vary from region to region, the underlying trend of zinc prices had been a downward one since the second half of 1995. In general, zinc market prices were lower by 10% in December 1995 compared with those in June 1995.<sup>10</sup>

China, the largest tungsten producer in the world, cut its output because of the country's reduced reserves and low market prices. The domestic market prices for tungsten ores began to recover from the recession of the previous several years. Rising demand and falling output pushed the price by 150% more than that of 1994. Domestic demand for tungsten ore increased to 45,000 t while the output stayed around 30,000 t. Because of outdated equipment and outmoded technology, it was difficult to increase output capacity in a short time. More seriously, tungsten resources were gradually being depleted. Many local mines ceased operations. Many state-owned mines could only fulfill about

60% of their targeted output.

The Government assigned its tungsten export quotas to the China National Nonferrous Metals Imports and Exports Corp., a subsidiary of CNNC, and China National Metals and Minerals Imports and Exports Co. in 1996. The Government planned to cut the tungsten exports quota by 5%. The country would shift its focus from producing and exporting tungsten concentrates, ammonium paratungstate, and other intermediate chemicals to downstream value-added products.

The Government met with antimony producers in May 1995 to discuss the production and marketing situation in China. At the conclusion of the meeting, the Government imposed a floor price on antimony and issued instruction on specific measurements to restrict antimony production. The Government also approved the formation of the Chinese Antimony Producers Association to oversee the production of antimony. Guangxi, Guizhou, and Hunan continued to be the three major antimony-producing Provinces in China. These three provinces accounted for about 95% of China's total.<sup>11</sup>

Because of weak demand, antimony prices collapsed in 1995. In August 1994, the domestic market price of antimony went up to 36,000 yuan/t (\$4,337/t). But, during the third quarter of 1995, the price of antimony slipped down to 27,000 yuan/t (\$3,253/t). Even though the Government continuously stressed cutting back on production and reducing the export of antimony at low prices to stabilize output. In October 1995, the Board of Directors of the Joint Committee of Antimony Producers ordered all smelters to halt antimony production by the end of the month and ordered mines owned by the smelters to cut ore output by 50%.

In 1995, China planned to produce 19 Mt of phosphate rock. However, lack of rail transport capacity restricted the shipment of phosphate rock out of Guizhou, Yunnan, and other phosphorus-producing Provinces. Even though the Government had put phosphate rock on the priority list for shipment, many fertilizer plants in the north and the east of China remained operating under the level of their output capacity because of shortage of phosphate rock. The total production of phosphorus-based fertilizer only met about 67% of the demand. In 1995, chemical fertilizer prices continuously rose in China. This triggered complaints from farmers and other consumers. The Government decided to the freeze prices of fertilizer in the last quarter of 1995.

## Trade

According to the General Administration of Customs of China, total foreign trade reached \$280.9 billion, accounting for about 46% of China's GDP. The value of imports was \$132.1 billion, an increase of 14.2% over that of 1994. The value of exports was \$148.8 billion, up 22.9% from that of 1994.

The Government announced that, beginning on April 1, 1996, China would lower tariffs on goods imported into

China from an average of 35.9% to 23%. A list of 1,800 items to have lower tariffs was released detailing general items including minerals, metals, and other products. In the past, tariffs had been broken down into preferential tariffs for qualified businesses in the country's Special Economic Zones and nonpreferential tariffs. It is not yet clear whether the policy of allowing different tariffs on products from different companies and countries would continue as an amendment from under the new rules.<sup>12</sup>

The Ministry of Foreign Trade and Economic Corp. published new regulations on barter trade. According to the publication, all goods were open for barter trade except grain, tungsten ore, and crude oil and refinery products, which required approval for export. Import quotas would not be assigned to trading enterprises but import approval procedures and application for import licenses would be continued.

## Commodity Review

### Metals

**Aluminum.**—CNNC negotiated with Alcoa of Australia Ltd. to supply 600,000 t of alumina yearly for 5 years at an agreed c.i.f. price. Neither party commented on the agreed price. Chinese traders believed that the price was 10% to 20% below the spot market price. CNNC believed that the agreement would strengthen the country's imports and exports of nonferrous metals, which caused serious problems in the domestic nonferrous sector.<sup>13</sup>

CNNC and the People's Government of Guangxi Zhuangzu Zizhiqu joint-investment project, Guangxi Pingguo Aluminium Co. at Pingguo Xian, completed its first phase construction in 1995. In 1995, the company produced 37,661 t of alumina. Because of technical problems, the aluminum smelter had been operating at a 50% rate and shipped out 43,433 t of aluminum ingot in 1995. The construction of five bauxite mines was also completed. Initial output capacity would be 1.9 Mt of bauxite. The first phase construction site covered an area of 1,750 square kilometers (km<sup>2</sup>) and contains bauxite reserves of 240 Mt.<sup>14</sup>

Kaiser Aluminum and Chemicals Corp. of the United States announced that the corporation formed an aluminum joint venture with CNNC. Under the agreement, CNNC and Kaiser would invest \$121 million with a 51-49 equity to develop the aluminum industry in China. The joint venture was named as Huang He (Yellow River) Aluminium Co. Ltd. CNNC would contribute assets of two existing smelters—Lanzhou and Lainhai in Lanzhou Shi, Gansu Province—and Kaiser would invest \$60 million and introduce advanced smelting technology and modern management style to the joint venture. Kaiser created a wholly owned subsidiary, Kaiser Yellow River Investment Ltd. to oversee the project. The \$60-million investment from Kaiser would be used to upgrade the facilities at Lanzhou and to increase the output capacity at Lainhai from 30,000 t

to 60,000 t.<sup>15</sup>

Alcan Aluminium Ltd. of Canada announced that the company signed a memorandum of understanding with CNNC to explore the possible construction of an aluminum smelter in Shanxi Province. The proposed smelter was expected to have an annual output capacity of 200,000 t to 240,000 t of primary aluminum metal. Alcan and CNNC planned to work jointly to develop a project prospectus for use in discussion with the Chinese government and with potential partners in the smelters.<sup>16</sup>

Aluminum Co. of America (Alcoa) and Shanghai Aluminium Fabrication Plant finalized an agreement for creating a joint venture, Alcoa Shanghai Aluminium Products Co., in Shanghai to produce up to 9,500 t of aluminum foil for packaging sectors. An existing foil-rolling facility in Shanghai would be operated by a joint venture owned 60% by Alcoa and 40% by Shanghai Aluminium Fabrication Plant. Of the required \$30 million, Alcoa would contribute its share in both cash and technology assistance.<sup>17</sup>

The aluminum foil plant owned by Bohai Aluminum Industries began production in 1995. The plant had been idle for 4 years because of lack of operating software. The plant was designed by Davy McKee of the United Kingdom. The plant had an annual output capacity of 20,000 t.<sup>18</sup>

Qinghai Aluminium Smelter completed its second phase construction at yearend 1994. But, since then, it never reached its annual output capacity of 200,000 t because of inadequate electricity supply and technical problems. The smelter produced about 120,000 t aluminum in 1995 and was expected to reach its full capacity before the end of 1997.

**Copper.**—Guixi Smelter, operated by Jiangxi Copper Co. in Jiangxi Province received the Government approval for its second-phase expansion. The second-phase construction cost was expected to be 1.9 billion yuan (\$229 million). After completion, annual output capacity of electrolytic copper was expected to increase from the current level of 86,000 metric tons per year (t/yr) to 200,000 t/yr. Most of the key equipment and technology will be obtained from other countries.

Tongling Nonferrous Metals Co. in Anhui Province, China; Sharpline International Ltd. in Hong Kong; and Japan's Sumitomo Metal Mining Co., Itochu Corp., and Sumitomo Corp. formed a joint venture to invest \$200 million for the expansion of the Tongling copper smelter. Tongling and Sharpline, both subsidiaries of CNNC, accounted for a 65% of total investment. The new plant was scheduled to be in operation in 1997 and was expected to increase the company's annual output capacity by 100,000 t of copper.<sup>19</sup> Tongling copper mine would not have the capacity to provide the feed; therefore, some copper concentrates would be imported from Australia and Chile. Most of the production would be consumed in China, but some might be exported to Japan and Southeast Asian countries.

Shenyang Smelter Corp., a subsidiary of CNNC, closed down its aging copper refinery and replaced it with a new refinery that was outside the city in an economic development zone. The new refinery was a joint venture between Shenyang Smelter Corp. and the Hong Kong based Everwin International Group. The 100,000 t output capacity refinery came on-stream in the second half of 1995.<sup>20</sup>

CNNC assigned the Jiangxi Copper Co. in Jiangxi Province to take over the management responsibility for the Shanghai Smelter in Shanghai. In the last several years, Shanghai Smelter was operating under financial loss and a fall in production. In addition, the smelter used outmoded smelting technology and was in the center of Shanghai, causing a lot of environmental problems to the city. The smelter had an annual output capacity of 80,000 t of refined copper. However, because of the shortage of raw materials in China, Shanghai Smelter was required to import about one-third of its raw materials from other countries.<sup>21</sup>

London Metal Exchange (LME) brokers, including Crédit Lyonnais Rouse, Merrill Lynch, Lehman Brothers, and Prubache Securities, claimed that Citic's subsidiary, Citic Shanghai, owed them about \$40 million on copper trade in 1994. The Government arrested four staff employees in Shanghai on corruption charges relating to unauthorized trading. According to Citic, no domestic subsidiary of Citic was permitted to acquire foreign credit from overseas except Citic Industrial Bank. Citic also claimed that, under the laws of China, Citic's Shanghai Branch is an independent legal entity and that the parent company should not be liable to pay the debt. However, the LME brokers insisted Citic Shanghai was a branch and was not a subsidiary of Citic. Negotiations on the settlement was reached in 1995.

Taicang Copper Co., a subsidiary of Shanghai Minmetals, decided to increase its refined copper output from 20,000 t to 40,000 t through the acquisition of two plants in Zhejiang Province. The newly acquired plants had outdated equipment. Taicang Copper Co. planned to replace them with new equipment that had an annual output capacity of 10,000 t of electrolytic copper in each plant. Minmetals imported nearly all raw materials for the refinery. Most of the production were sold in the domestic market.<sup>22</sup>

**Gold.**—According to the Gold Administration Bureau of MMI, China produced 90.2 t and 105 t of gold in 1994 and 1995, respectively. These were well below estimates by Western gold observers. In 1994, only 82 t of gold produced were sold to the PBC, even though PBC had the Government decrees to strictly monopolize the purchase and sales of gold. Shandong Province produced 26.8 t of gold in 1995.<sup>23</sup> In regards to geological prospecting, China had a total proven reserves of 4,500 t of gold.<sup>24</sup>

According to MMI, the western region would become the country's important gold production base in the next decade. The nine Provinces in the western region—Gansu, Guizhou, Ningxia, Shaanxi, Sichuan, Qinghai, Xinjiang, Xizang, and Yunnan—accounted for 22% of the country's total proven

gold reserves. Scrambling to get rich, hundreds or perhaps thousands of gold hunters rushed to the west. Widespread illegal exploration and unregulated gold mining seriously damaged the environment in the region. Government authorities were concerned that the country's already degraded base of natural resources was also being depleted. Most of mined gold was traded illegally.

China had great potential as a gold producer and buyer, but the Government would not open its gold market until the renminbi became strong, confident, and stable. According to the World Gold Council, China was the world's fourth largest gold consumer in 1994 after India, the United States, and Japan. In 1994, the total gold consumption of China, Hong Kong, and Taiwan was 433.8 t, 20% of world demand.

In 1995, the State Planning Commission approved the agreement between Asia Minerals Corp. of Canada and Shandong Zhaoyuan City Gold Corp. of China to invest \$35.2 million in the development of the Yingezhuang Mine in Shandong Province. A feasibility study indicated that the mine had ore reserves of 19.42 Mt at a grade of 2.82 gram of gold per t. According to Asia Minerals, the Yingezhuang Mine, which started up in 1992, had a capacity of 400 metric tons per day. In 1993, the mine produced 340 kilogram of gold from 140,000 t of ore, at a cost of \$6.10 per gram. Gold occurs in a shear zone within an altered granite. The mineralogy was described as "simple" and recovery from flotation and cyanide leaching was 91% in 1993. A feasibility study proposed an increase of daily capacity to 2,000 t. In addition, more work was being required to evaluate its economic potential and define the mining reserves of the deposit. According to the agreement, Asia Minerals must finance \$3.5 million on underground drilling, engineering, and design work to earn a 50% interest of the mine. Asia Minerals had also shown interest in developing the Lannigou Mine in southern Guizhou Province, which contained 45 t of gold.<sup>25</sup>

**Iron and Steel.**—Most of China's iron and steel enterprises experienced a very difficult financial situation. The price of raw materials and energy increased sharply in the past 2 years. The triangular debt situation among steel producers increased. The Government applied a mini-retrenchment plan in July 1993. The iron and steel enterprises owed billions of yuan since that time to coal suppliers and to electric powerplants. In order to continue providing coal and electricity to the steel plants, fuel and energy suppliers insisted that steel plants repaid their debts first. Therefore, some steel plants were forced to shut down their operation. Shoudu Iron and Steel Complex (Shougang) and Anshan Iron and Steel Corp. were partially shut down in 1995.

China planned to build a deepwater port at Majishan in eastern Zhejiang Province to handle 20 Mt of iron ore imports yearly. China was expected to import about 40% of its demand iron ore from Australia, Brazil, and South Africa by the year 2000. First-phase construction of the three berths

would require a total investment of 2.27 billion yuan (\$274 million).

Brazil's Companhia Vale do Rio Doce (CVRD) and MMI agreed to construct a new deepwater port in northern Brazil. Construction of a new port would reduce the cost of transporting ore across the country. MMI's agreement for port construction was one of the remaining obstacles to the proposed joint venture between CVRD and MMI to mine iron ore in Carajas, northern Brazil. The joint-venture project included installation of a new mining unit to expand the output capacity to 8 Mt/yr. CVRD planned to export 15 Mt of iron ore to China in 1996.

The Japanese government agreed to provide \$142 million loan through the Export-Import Bank of China to the Baoshan Iron and Steel Complex (Baogang) for its third-phase expansion funds.<sup>26</sup> The third-phase expansion project was scheduled to be completed in 1998. With an additional 4.3 Mt steelmaking capacity, Baogang will have an annual output capacity of 11.5 Mt of crude steel. The third-phase expansion focused on the production of hot- and cold-rolled steel sheet and strip, including tinsplate, electrical sheet, hot-rolled steel for welded oil pipes, and plate for shipbuilding. Upon completion, Baogang's continuous casting capability was expected to increase from 60% to 90%. The No. 3 blast furnace with a designed capacity of 4,350 cubic meter (m<sup>3</sup>) and an annual production capacity of 3.5 Mt of iron went into operation in September 1994. The total pig iron output capacity increased to 9.75 Mt/yr. The hot rolling mill was being supplied by Mitsubishi Heavy Industries. Clecim of France and Danieli of Italy won the contract to supply a 1.5 Mt/yr direct current electric furnace and a continuous caster to produce 980,000 t/yr of pierced billet. German's SMS Schloemann-Siemag, Mannesmann-Demag, and Siemens, Nippon Steel of Japan, and Littel of the United States would supply a 1,420-mm cold-rolled strip mill and tinning line. Baogang imported about 95% of its iron ore from Australia, Brazil, India, and South Africa.

After a management reorganization in February 1995, Shougang stopped its program to become a diversified multinational company by the year 2000. The corporation planned to focus its effort on developing its iron and steel business. The corporation abandoned its multibillion dollar plans to buy a privatized industrial group in Italy and an iron ore mine in Malaysia. In Hong Kong, Shougang sold one of its listed subsidiaries, Ho Sing Holdings, an unprofitable construction company. Scandals occurred in early 1995 that tarnished the reputation of the Shougang and sent Shougang shares into a free fall in the stock market in Hong Kong. Shougang's subsidiaries in Hong Kong had difficulties obtaining financing because of publicity. Shougang had to stop 10 ongoing construction projects in order to save funds for its daily operation.

Guangzhou Iron and Steel Co., Boulder Group, and Australian Overseas Resources signed a joint-venture agreement for constructing a stainless steel bar and wire rod plant in Guangzhou, Guangdong Province. The joint-venture

group agreed on an initial target of 55,000 t/yr stainless steel bar. An expansion plan would increase the output capacity to 500,000 t/yr of stainless steel products. The mill would have the capability to produce 55,000 t/yr of stainless bars from 12 mm to 35 mm in diameter and wire rod from 5.5 mm to 8 mm in diameter. The mill would also be technically capable of producing structural shapes with minor equipment modifications. Initial investment was expected to be about \$92 million. A ground-breaking for the new plant was held in December 1995, and it was expected to be commissioned in early 1998.

Posco of South Korea signed a letter of intent with China's National Ferrous Metal Materials Corp. to establish a joint venture to construct and operate a 100,000-t/yr capacity galvanized sheet and coil plant in China. The aim of the joint venture was to help relieve the shortage of hot-dipped galvanized sheets and also to assist Posco in securing its cold-rolled coil market in China.<sup>27</sup>

In a second agreement, Posco and Tongsin Special Steel Co. agreed to build a 50,000-t/yr color-coated steel sheet plant in Jiangsu Province. Seventy percent of the steel sheet would be supplied to the domestic market, and the remainder would be exported to Southeast Asian countries. The plant would begin operation in March 1996.

Zunyi Ferro-Alloy Works formed a joint venture with the Hong Kong-based Glory Profit Co. for the purpose of operating one electric furnace with 50 megavolt ampere (MVA) to produce about 25,000 t/yr of silicomanganese. Zunyi Ferro-Alloy Works purchased three electric furnaces (two 50 MVA and one 31.5 MVA) from Mannesmann Demag of Germany several years ago. Because of a worldwide depression the ferroalloy market, the three electric furnaces remained idle for a long time. Also, when the operation of these three furnaces were to start operation, the company was required to pay back immediately the money that was borrowed from the Government. That would cause a heavy burden for the company; therefore, the company sought foreign investment to introduce funds for a modernization plan. The company was also to secure operating funds from a Japanese trading company to produce ferrosilicon from the other two furnaces.<sup>28</sup>

Kawasaki Steel Corp. of Japan signed an agreement with Fujian Teceka Tinplate Co. in Longhai Shi, Fujian Province, to supply an electroplating line with annual output capacity of 150,000 t. Fujian Teceka Tinplate Co. was a joint venture of Ton Yi Industrial Co. of Taiwan; China National Cereals, Oils, and Foodstuffs Import and Export Corp.; and Japan's Kawasaki Steel Corp., Kawasho Corp., and Tomen Corp. The total investment was to be about \$100 million. Feedstock for the line would be supplied from Ton Yi's rolling mill in Taiwan.<sup>29</sup>

**Lead and Zinc.**—Construction of a 400-t/d lead and zinc ore dressing plant was completed in 1995, as part of the opencast Lanping lead and zinc mine, Yunnan Province. The mine had verified reserves of 14.3 Mt of lead and zinc.

Apart from lead and zinc, the ore also contained cadmium, silver, and thallium.

Zhuzhou Smelter in Hunan Province became a member of the International Lead and Zinc Research Organization (Ilzro), a market research organization, in Research Triangle, North Carolina, in 1995. Zhuzhou considered Ilzro as a critical partner for assistance in its capacity expansion through technological modernization. Zhuzhou produced about 70,000 t of refined lead, 130,000 t of zinc slab, 10,000 t of copper, 4,000 t of cadmium, and 250 t of bismuth per year. The smelter planned to increase its zinc production capacity to 250,000 t of zinc in 1997.<sup>30</sup>

Shaoguan Smelter, a subsidiary of CNNC, in Guangdong Province, completed its 1.1 billion yuan expansion project in 1995. The project included the installation of two generators at the company's existing powerplant in a bid to meet increased power demand. The powerplant would supply 50% of its total electricity needs. The remaining 50% requirement would continue to be dependent on supply from the Province power network. As the result of expansion, Shaoguan increased its annual production capacity to 120,000 t of zinc and 60,000 t of lead.<sup>31</sup>

**Magnesium.**—Liaoning Magnesite and Refractories Corp., the largest magnesite company in China, was undergoing extensive restructuring in 1995. The corporation had four operating units—Liaoning Magnesite Plant, which had an annual output capacity of 50,000 t of high-grade dead-burned magnesia; the Qinhuayu Kilns Mine; Huaeziqu Kilns Mine; and Dashiqiao refractories plant. The four units would probably be managed by four separate entities.

A Japanese consortium, including Ube Industries (38%), Kanematsu Corp. (16%), and Mitsui and Co. (16%), agreed to form a joint venture, Nanjing Ube Magnesium Co., with Nanjing Huahong (30%) in Nanjing Shi, Jiangsu Province. A new 3,300 t/yr capacity plant would be constructed at the existing Nanjing Huahong plant site. A 700-t/yr furnace from Nanjing Huahong would be transferred to the new joint venture, giving a total annual output capacity of 4,000 t. Nanjing Huahong's dolomite mine would supply raw material to the new plant; while Ube would provide Pidgeon process technology, quality control, and management. The new plant was expected to start production in fall 1995. Each investor would take output according to its investment shares.<sup>32</sup>

**Nickel.**—Jinchuan Nonferrous Metals Corp. is the largest nickel and cobalt producer in China. Its annual output accounts for more than 80% of the country's total output. The cost of the second-phase expansion was about \$270 million and was completed at the end of 1994. Technical difficulties slowed the company's plan to increase nickel annual production capacity to 40,000 t.

**Rare Earths.**—China's State Planning Commission planned to increase its annual rare-earth ores production from

its current 40,000 t to 55,000 t in 2000. Rare-earth oxide was to increase from 25,000 t in 1995 to 40,000 t in 2000. Domestic rare-earth consumption accounted for less than one-half of the country's production. The remainder was exported. Of the exports, about one-half was shipped to Japan, 30% to the United States, and 20% to Europe. Domestic rare-earth consumption by share was metallurgical sector, 43%; petrochemical sector, 28%; agriculture, 15%; glass/ceramic sector, 10%; and magnets/phosphors, 4%.

**Tin.**—The Chinese Government decided to control the export of tin ingot by issuing licenses for the export of 15,000 t and the export of tin concentrates was prohibited. Strict measures were taken to control the outward smuggling. However, according to Hong Kong traders, some Chinese companies were still exporting tin concentrates. The Yunnan Tin Corp., the largest tin producer in China, planned to produce 20,000 mt of tin ingots in 1995. Because of uncontrolled tin concentrates exports, the corporation planned to import tin concentrates to make tin ingots.<sup>33</sup>

**Tungsten.**—China Huaxing Tungsten Corp. (also known as CNNC Nanchang Corp.) and China's Hong Kong based Shangxing Minmetals Ltd. agreed to set up a joint venture, Sinotungsten Ltd., to export Chinese tungsten products. The joint venture planned to seek financial assistance to upgrade technology at Chinese tungsten mines and plants.

Domestic tungsten mines were still suffering from increased financial burdens because of new taxes imposed on mining industry. Production costs went up more than 200%, and nonproductive mines were closed during the past several years. All state-owned tungsten mines in Jiangxi, Hunan, and Guangdong were shut down for about 2 months in 1995 to carry out mine repairs and maintenance. Western analysts believed that the 2-month moratorium was principally aimed at improving price.

**Other Metals and Minerals.**—Eastern Asia Metal Investment Co. Ltd., a subsidiary of state-owned China Iron and Steel Industry and Trade Group Corp., Jilin Ferroalloy Works, and Northern Transvaal Development Corp. formed a \$70-million joint venture, Asia South Africa Metals Proprietary Ltd., to run the Dilokong chrome mine in South Africa. The joint venture also planned to build a 100,000-t/yr smelter near the mine.

Tioxide, a subsidiary of Imperial Chemical Industries of the United Kingdom, signed a memorandum of understanding with Chongqing-Hong Kong Titanium White Ltd. to take a 51% share in a titanium dioxide (TiO<sub>2</sub>) plant in Chongqing, Sichuan Province. The 15,000-t TiO<sub>2</sub> plant used sulfate technology acquired from Poland and began operation in 1995. In the agreement, the production capacity of the Chongqing plant would be expanded to 25,000 t/yr by the end of 1997, and capacity would be doubled by the end of the decade.<sup>34</sup>

Toyo Engineering Corp. and Marubeni Corp. of Japan

were awarded by Technical Progress Corp. the right to construct an 800-t/d diammonium phosphate (DAP) plant at Luzhai, Guangxi Province. The DAP plant was part of the Luzhai Fertilizer project that included a 60,000-t/yr ammonia plant and a 1,200-t/d sulphuric acid plant. The project was partly financed by a loan from the Overseas Economic Cooperative Fund of Japan. The project was scheduled for completion in June 1997 using Espindesa technology.<sup>35</sup>

### **Mineral Fuels**

The development of the power industry in China was impressive in the past several years. However, China's power industry remained under pressure to catch up with the country's double-digit economic growth. The energy supply by share was of coal, 74.4%; crude oil and gas, 19%; hydropower, 4.6%; and nuclear, less than 0.05%. The Chinese power industry was expected to increase its power generating capacity to 300,000 megawatt (MW) by the year 2000. To achieve this goal, the Government was encouraging various forms of cooperation, including export credit granted by foreign governments, issuance of bonds and stocks, and joint-venture investments with foreign investors. An official from the Ministry of Power Industry indicated that energy development priority would go to hydroelectric projects, coal-fired plants, and long-distance power transmission projects.

In recent years, there was a sharp increase of electricity consumption and the electricity shortage intensified especially in the coastal regions. The Government set up a new electricity pricing system to ease the shortage of electricity. In 1995, the North China Power Group that supplies electricity to Beijing, Tianjin, and Hebei Province increased electricity prices and charged different fees for commercial consumers in different time zones in this area.

According to an official of the Ministry of Power Industry, China planned to build more than 10 nuclear powerplants in the next 20 years. By 2020, total nuclear power installed capacity was planned to be 20 gigawatts in China, accounting for 6% of total electricity supply. China had two commercial nuclear powerplants in operation—Qinshan in Zhejiang Province and Daya Wan in Guangdong Province. The Government designated feasibility studies for nuclear powerplants in the Provinces of Fujian, Hainan, Heilongjiang, Jiangsu, Jiangxi, Jilin, Liaoning, Shandong, Sichuan, and Zhejiang.

In October 1995, Atomic Energy of Canada Ltd. and China National Nuclear Corp. signed an agreement that Canada would sell two 700-MW Candu-6 reactors to China. The \$2.6 billion nuclear reactors would be in Qinshan. The Candu-6 reactor uses natural uranium and heavy water for cooling. Technical and commercial negotiations for the project began in late 1995.

With the Government approval, the China National Nuclear Corp. established the Liaoning Nuclear Power Co. Ltd. to negotiate with Russia to build a nuclear powerplant



at Wafangdian in Liaoning Province. The first-phase \$3.2-billion plant would have two Russian WWER-1000 1,000-MW pressurized reactors that would be financed partly through state loans from the Russian Government. Preparatory work was underway at the site.<sup>36</sup>

**Coal.**—Despite a relaxation in the control of coal prices by the Government and a massive rearrangement of industry workers over the past several years, coal enterprises remained over-staffed with an overall low level of efficiency because of nonmechanical operations. China had more than 100 state-owned coal enterprises. Only about 20 were making profit, and others were operating in the red. The Government offered 3 billion yuan (\$361 million) in discount financial loans to assist them to overcome their difficulties. One-third of this amount was to be set aside for settling consequential problems following the closure of obsolete coal mines. Even with Government assistance, coal enterprises still had difficulties in resolving problems that they inherited in the planned system.

The Government implemented a sale contract system between coal producers and consumers in 1995. Both sides settled coal prices through negotiation. All contracts would be properly honored and implemented. Violators would be fined. This move was a countermeasure against the deferral payment used by coal consumers. In 1994, the country's unpaid coal bill was more than \$1.2 billion. However, the Government maintained exclusive rights to buy an unspecified amount of coal to support the power, metallurgical, and fertilizer sectors.

China produced 1,298 Mt of different kinds of coal in 1995. China consumed about 1,300 Mt of coal. Most coal was used by the power, chemical, and metallurgical sectors. The amount used in rail transport and households was continuously decreasing. The stockpile of coal was estimated at about 200 Mt. Consumption was expected to continue to grow faster than output in the next several years. Higher demand and sustained growth in coal exports would reduce the amount on hand and push coal prices higher. The demand for providing high-quality coal would hardly be eased, especially in the coastal Provinces. Guangdong Province proposed banning new coal-fired powerplants in the Zhuhai region because of severe sulfur dioxide pollution. All existing powerplants were required to upgrade antipollution equipment. Coal mines were generally in the interior Provinces, while the big coal consumers were along the coast. Transportation difficulties were often delayed the shipment of coal to where it was needed. Higher costs encouraged coastal Provinces to buy from abroad.

According to the General Administration of Customs of China, China exported 28.6 Mt of coal and 8.86 Mt of coke in 1995. The Government planned to export a total of 40 Mt of coal and coke in 1996. The Chinese Ministry of Foreign Trade and Economic Corp. and the State Administration for the Inspection of Import and Export Commodities jointly promulgated provisional regulations on controlling coke

export that would be put on effect on January 1, 1996, to control the export quality and to ensure that all coke exports under the quota were allotted. The China Chamber of Commerce for Metals, Minerals, and Chemicals Imports and Exports was assigned the task for coordinating and controlling coke export. All trading corporations, industry-trade corporations, and production enterprises engaged in export would have to be under the coordination and management of the Chamber of Commerce.<sup>37</sup>

China planned to adopt new policies to allow direct foreign investment in the coal sector through joint venture and holding companies. Before this, only Government loans and compensation trade were available to foreigners. As part of a new strategy to attract foreign investment in the coal sector in China, the Government planned to offer a variety of inducements, which included speedy approval of foreign-funded projects, permission to create solely foreign-funded companies in all fields except the mining of coking coal, and priority in access to domestic funds.<sup>38</sup>

China was rich in coalbed methane. Based on an estimation by the Government statistical department, China had about 35 trillion m<sup>3</sup> within the depth of 2,000 meters (m). Drainage of coalbed methane might result in mine fires and waste valuable energy resources. Mine explosions, collapses, and other accidents involved more than 10,000 miners across China each year. The Government sought foreign investment and technology to develop and use coalbed methane to cut pollution and mining accidents. China planned to adopt a series of preferential policies toward coal gas exploitation projects, including suspension of coal gas-related energy compensation charges, and reduction and exemption of coal gas sales tax.<sup>39</sup>

**Petroleum.**—China continued to make progress in its efforts to boost oil and gas reserves and increase production. The petroleum sector was struggling to keep up with rocketing domestic oil and gas demand paced by one of the world's fastest growing economies. China's crude oil production increased at a rate of 1% per year in the past several years, while crude oil demand grew more than 5% per year during the same period. China became a net oil importer in 1995. According to the General Administration of Customs of China, China exported 18.8 Mt of crude oil while importing 17.1 Mt, and exported 4.15 Mt of refined petroleum products while the imports of refined petroleum products increased to 14.39 Mt. Petroleum analysts in China predicted that the demand would exceed production by about 10 Mt of crude oil in 1996. This would mean that there would be more oil imports in 1996. In 1995, the output of gasoline reached about 29 Mt and diesel was about 38 Mt. In 1996, gasoline and diesel production would increase to 31 Mt and 40 Mt, respectively. China was expecting a shortfall of about 2 Mt of gasoline and 6 Mt of diesel in 1996. The growth in use of motor vehicles was increasing dramatically and showed little sign of slowing down.

China relied on onshore fields for most of its oil,

accounting for 95% of the country's total output. The biggest producers were in the northeast, and production in this region was dwindling after decades of steady output. The anticipated offshore boom was slower than expected. The first- and second-round oil bidding in the Tarim Basin, Xinjiang Zizhiqu were disappointing especially in the second-round. Domestic and foreign exploration and production companies had high hopes for the Tarim Basin. However, because of two-thirds of the basin was covered by the Taklimakan Desert, costs were estimated in the millions of dollars just to establish sufficient infrastructure to get to and from the sites. In addition, the weather in the region was very harsh and did not support human access.

The Chinese Government announced a third-round bidding in Xinjiang Zhzhiqu in June 1995. The Areas covered 113,000 km<sup>2</sup> in the Tarim and Junggar basins. Eight blocks were in the southern and northwestern parts of the Tarim Basin and the other four blocks were in the Junggar Basin. According to an official from the China National Petroleum Corp. (CNPC), Chinese companies had obtained commercial flows of oil and natural gas from wells in areas surrounding the blocks. Exploration in these areas would be more encouraging than the other two-round bids in previous years.

The Ministry of Finance announced amendments on reducing some of the royalty fees it charged in order to make onshore oil areas more attractive to foreign explorers. If annual output for each field was under 1 Mt of crude oil and 2 billion m<sup>3</sup> of gas, there would be no royalty payments for companies exploiting oil and gas in Qinghai Province, Xinjiang Zizhiqu, Xizang Zizhiqu, and in the shallow waters on the Continental Shelf. Under the original provisions of the rules, explorers were required to pay 6.4% royalty. Fields producing between 1 Mt and 1.5 Mt would pay 4% royalty. Royalties for foreign cooperative oil and gasfields in other provinces and regions also were cut by 6%. The maximum royalty would be 12.5% for an oil field with annual production of more than 4 Mt. The purpose of these substantial cuts in royalties was to encourage the development of small- and medium-sized oilfields and gasfields.<sup>40</sup>

China faced heavy pressure to balance the surplus oil available in the north and the shortage of oil in the south. The Government believed that policies posted in the early 1994 would improve the supply and demand balance of the north-south oil supply gap in China. However, according to an official from Sinochem, the fundamental problem remained unchanged. Southern end-users do not want to be restricted to buying only northern products. Even with the addition of taxes, the cost of imported oil is cheaper in the domestic market.

China and Vietnam agreed to negotiate the dispute on the Spratly Islands in Nan Hai (South China Sea). The two sides considered joint exploration for oil reserves in that region.

The Chinese Government approved the proposed study on importing natural gas from central Asian nations and the eastern part of Siberia in the next 5 years. Natural gas would

be transported and distributed by nationwide pipelines. In 1995, the output of natural gas was 17 billion m<sup>3</sup> in China. China had natural gas resources at about 33 trillion m<sup>3</sup>. Of this, 1.14 trillion m<sup>3</sup> had been confirmed. China would concentrate its effort on gas exploration in high-potential areas—Gansu, Ningxi, Shaanxi, Sichuan, and Xinjiang.

China was moving to liberalize its oil sector. However, full deregulation would take several years to implement. China had a two-tier oil price system where 80% of its crude oil prices was fixed at 700 yuan/t (\$84/t) and 20% at 1,200 yuan/t (\$145/t). According to an official from the Planning Commission, the oil sector would continue its management strategy and policies to ensure deeper reforms and to open wider to world access. But the country would delay domestic oil and product prices to float freely with international market level.<sup>41</sup>

CNPC signed an agreement with Amoco of the United States to explore natural gas in the Qaidam Basin in Qinghai Province. According to the agreement, Amoco would carry out 6 months of exploration and evaluation in an area of 21,000 km<sup>2</sup> in the eastern part of the basin and had rights to develop it. Chinese geologists predicted the area contained up to 1 trillion m<sup>3</sup> of natural gas.<sup>42</sup>

Offshore drilling in China resulted in mixed results for foreign explorers. Arco China Inc., a subsidiary of Atlantic Richfield Co. in the United States, abandoned Yacheng 35-1-2 in Nan Hai, which was proven a dry hole. But the Yacheng 13-1 field, jointly developed by state-owned China National Offshore Oil Corp. (Cnoc), Arco China Inc., and Kuwait Foreign Petroleum Exploration Co., located 90 km off Hainan Province, was expected to supply natural gas through a 775-kilometer-long undersea pipeline to Hong Kong by January 1, 1996. Arco agreed to form a joint venture with Cnoc to develop Dongfang 1-1 gasfield in Nan Hai. XCL, formerly known as the Exploration Co. of Louisiana, worked on the Zhaodong C-1 appraisal well in Bo Hai. Zhaodong C-1 flowed 2,160 barrels of oil in 1995. The well was operated by XCL and Apache Corp. of Houston. The state-owned China National Oil and Gas Exploration and Development Corp. had the right to a 51% share ownership if it proved commercial. XCL and Apache planned to spend at least \$18 million to expand the project.

China's oil refining sector was undergoing a major overhaul. New refineries were being built and existing ones were being upgraded and expanded. Most of the new construction was in the southern and coastal regions of China. The country's crude-distillation capacity would be sufficient, but secondary units remained far short of demand.

Germany-based BASF proposed forming a joint venture with Sinopec Yangzi Petrochemical Corp. to build a \$4-billion petrochemical complex in Nanjing, Jiangsu Province. The project would have a 600,000 t/yr ethylene cracker and facilities for other downstream products. Building the complex would require importing as much as \$2 billion worth of equipment.<sup>43</sup>

<sup>1</sup>Where necessary, values have been converted from renminbi (RMB) to U.S. dollars at the rate of RMB8.30 yuan=US\$1.00 for 1995.

<sup>2</sup>China Economic News, Economic Information and Agency (Hong Kong). Mar. 25, 1996, Supplement No. 3.

<sup>3</sup>Journal of Commerce (New York). Nov. 2, 1995, p. 5A.

<sup>4</sup>China Economic News, Economic Information and Agency (Hong Kong). May 15, 1995, p. 6.

<sup>5</sup>Zhongguo Wujia (Beijing). No. 6 1995, p. 3.

<sup>6</sup>China Economic News, Economic Information and Agency (Hong Kong). Feb. 2, 1996, p. 11.

<sup>7</sup>China Daily (Beijing). Nov. 20, 1995, p. 3.

<sup>8</sup>China, Foreign Broadcast Information Service (Washington, DC). July 5, 1995, p. 52.

<sup>9</sup>American Metal Market (New York). Mar. 15, 1995, p. 7.

<sup>10</sup>China Nonferrous Metals Monthly (Beijing). Feb. 1996.

<sup>11</sup>———. Dec. 1995.

<sup>12</sup>China Daily (Beijing). Jan. 26, 1996, p. 5.

<sup>13</sup>Mining Journal (London). Nov. 3, 1995, p. 326.

<sup>14</sup>China Daily (Beijing). Jan. 12, 1996, p. 5.

<sup>15</sup>Journal of Commerce (New York). July 25, 1995, p. 4B.

<sup>16</sup>Alcan Press Release, Montreal, Canada, 1995.

<sup>17</sup>American Metal Market (New York). May 17, 1995, p. 2.

<sup>18</sup>Platt Metals Week (London). May 22, 1995, p. 6.

<sup>19</sup>American Metal Market (New York). Oct. 10, 1995, p. 5.

<sup>20</sup>Metal Bulletin (London). May 8, 1995, p. 7.

<sup>21</sup>———. Apr. 24, 1995, p. 11.

<sup>22</sup>———. Mar. 6, 1995, p. 7.

<sup>23</sup>South-East Asia Mining Letter (London). Jan. 26, 1996, p. 6.

<sup>24</sup>China Economic News, Economic Information and Agency (Hong Kong). Jan. 22, 1996, p. 15.

<sup>25</sup>The Northern Miner (Toronto). Oct. 30, 1995, p. B6.

<sup>26</sup>China Daily (Beijing). Dec. 13, 1995, p. 5.

<sup>27</sup>Pacific Rim Economic Review, Foreign Broadcast Information Service (Washington, DC). Aug. 9, 1995, p. 35.

<sup>28</sup>The Tex Report (Tokyo). Oct. 6, 1995, p. 5.

<sup>29</sup>Metal Bulletin (London). Sept. 3, 1995, p. 6.

<sup>30</sup>American Metal Market (New York). July 17, 1995, p. 5.

<sup>31</sup>Platt Metals Week (London). Aug. 28, 1995, p. 4.

<sup>32</sup>———. Mar. 27, 1995, p. 4.

<sup>33</sup>Mining Journal (London). Oct. 13, 1995, p. 273.

<sup>34</sup>Chemical Week (London). Jan. 3, 1996, p. 21.

<sup>35</sup>Phosphorus and Potassium (London). Jul. 1995, p. 13.

<sup>36</sup>China, Foreign Broadcast Information Service (Washington, DC). May 8, 1995, p. 55.

<sup>37</sup>China Economic News, Economic Information and Agency (Hong Kong). Nov. 13, 1995, p. 3.

<sup>38</sup>———. Oct. 16, 1995, p. 4.

<sup>39</sup>Journal of Commerce (New York). Oct. 18, 1995, p. 5B.

<sup>40</sup>China Daily (Beijing). Aug. 23, 1995, p. 1.

<sup>41</sup>Journal of Commerce (New York). Oct. 10, 1995, p. 4B.

<sup>42</sup>China, Foreign Broadcast Information Service (Washington, DC). Feb. 1, 1996, p. 52.

<sup>43</sup>Chemical and Engineering News (Washington, DC). Apr. 8, 1996, p. 7.

## Major Sources of Information

China National Nonferrous Metals Industry Corp.

12B Fuxing Lu, Beijing 100814

China National Offshore Oil Corp.

1A Sidaskou Lu, Dazhongshi Nau, Haidianqu, Beijing 100086

China National Petroleum Corp.

Liupukang, Beijing 100724

China National Offshore Oil Corp.

Jingwin Building 2A, Donsanhuan Beilu, Beijing 100027

China Non-metallic Minerals Industry Corp.

Bai Wan Zhuang, Beijing

Ministry of Chemical Industry

Building 16, Hepingli Qiqu, Dongcheng District, Beijing 100013

Ministry of Coal Industry

21 Hepingli Bei Lu, Beijing 100713

Ministry of Foreign Trade and Economic Corp.

2 Dong Chang'anjie, Dongcheng District, Beijing 100731

Ministry of Geology and Mineral Resources

64 Funei Dajie, Beijing 100812

Ministry of Metallurgical Industry

46 Dongsu Xi Dajie, Beijing 100711

Ministry of Power Industry

137 Fuyoujie, Xicheng District, Beijing 100031

National Environmental Protection Agency

115 Xizhimennei Nanxiaojie, Xicheng District, Beijing 100035

People's Bank of China

410 Fuchengmen Dajie, Beijing 100034

## Major Publications

Almanac of China's Economy, annual.

Beijing Review, 24, Baiwanzhuang Road, Beijing 100037, China.

China's Customs Statistics, Economic Information and Agency, Hong Kong, 342, Hennessy Road, 10th floor, Hong Kong.

China Daily, 15, Huixin Dongjie, Chaoyang District, Beijing, China.

Far Eastern Economic Review, 181, Gloucester Road, Hong Kong.

Intertrade, Intertrade Press, 28, Dong Hou Xiang, An Ding Man Wai Street, Beijing 100710, China.

Metallurgical Industry Press, Beijing: The Yearbook of Iron and Steel Industry of China, annual.

Ministry of Coal Industry, Beijing: China Coal Industry Yearbook, annual.

Research Institute of the Ministry of Chemical Industry of China, Beijing: China Chemical Industry.

State Statistical Bureau, Beijing: Energy Statistical Yearbook of China, annual.

China Statistical Publishing House, Beijing: Statistical Yearbook of China, annual.

TABLE 1  
CHINA: PRODUCTION OF MINERAL COMMODITIES e/ 1/

(Metric tons unless otherwise specified)

Commodity	1991	1992	1993	1994	1995	
<b>METALS</b>						
<b>Aluminum:</b>						
Bauxite, gross weight	thousand tons	2,600	2,700	3,500	3,700	5,000
Alumina, gross weight	do.	1,520	1,580	1,820	1,850 r/	2,200
Metal, refined, primary and secondary	do.	963	1,100	1,260	1,500 r/	1,660
<b>Antimony:</b>						
Mine, Sb content		58,300	59,400	60,000	91,000 r/	75,000
Metal		61,400	68,100	81,300	101,200 r/	91,200
<b>Bismuth:</b>						
Mine output, Bi content		1,040	820	740	610 r/	700
Metal		1,270	1,060	1,050	850 r/	1,100
Cadmium, smelter		1,200	1,150	1,160	1,280 r/	1,200
<b>Cobalt:</b>						
Mine output, Co content		230	260	240	270	300
Metal		300	220	190	200	210
<b>Copper:</b>						
Mine output, Cu content		304,000	334,200	345,000	395,600 r/	400,000
<b>Metal:</b>						
Smelter, primary		385,000	418,000	443,000	482,400 r/	490,000
Refined, primary and secondary		560,000	659,000	733,000 r/	736,100 r/	843,000
Gold, mine output, Au content		120	125 r/	130 r/	132 r/	140
<b>Iron and steel:</b>						
Iron ore, gross weight	thousand tons	176,070	197,600	234,660	240,170	249,350
Pig iron	do.	6,770 r/	7,590 r/	8,740 r/	97,410 r/	101,700
Ferroalloys	do.	2,460	2,650	3,000	3,360 r/	3,150
Steel, crude	do.	70,570	80,940 r/	89,560 r/	92,610 r/	92,970
Steel, rolled	do.	56,380	66,970 r/	77,160 r/	84,280 r/	79,390
<b>Lead:</b>						
Mine output, Pb content		352,000	330,200	338,100	461,900 r/	430,000
<b>Metal:</b>						
Smelter, primary		270,000	295,000	326,000	408,000 r/	365,000
Refined, primary and secondary		330,000	365,000	412,000	467,900 r/	420,000
Magnesium metal, primary		8,600	10,550	11,800	24,000 r/	27,000
Manganese ore, gross weight	thousand tons	5,150	5,300	5,860	3,570 r/	5,000
Mercury, mine output, Hg content		760	580	520	470 r/	540
Molybdenum, mine output, Mo content		13,200	19,200	18,300	21,400 r/	20,000
<b>Nickel:</b>						
Mine output, Ni content		30,400	32,800	30,700	36,900 r/	37,000
Matte		31,900	36,100	34,600	37,200 r/	36,000
Smelter		28,900	30,800	30,500	31,300 r/	38,000
Silver, mine output, Ag content		150	170	200	210	250
<b>Tin:</b>						
Mine output, Sn content		42,100	43,800	49,100	54,100 r/	52,000
Metal, smelter		36,400	39,600	52,100	67,800 r/	60,700
Titanium		1,820	1,710	1,490	850	1,320
Tungsten, mine output, W content		31,800	25,410	21,600	27,000 r/	21,000
<b>Zinc:</b>						
Mine output, Zn content		750,000	758,100	775,000	990,300 r/	950,000
Refined, primary and secondary		612,000	719,000	857,000	1,012,000 r/	1,054,000
<b>INDUSTRIAL MINERALS</b>						
Asbestos		200,000	225,900 r/	242,600 r/	240,000	240,000
Barite	thousand tons	1,600	1,500	1,500	1,500	1,500
Boron, mine, B <sub>2</sub> O <sub>3</sub> equivalent		92,500	126,800	155,400 r/	188,200 r/	180,000
Bromine		12,100	16,650	24,600 r/	31,400 r/	30,000
Cement, hydraulic	thousand tons	252,610	308,220	367,880	421,180 r/	445,610
Fluorspar	do.	1,920	1,890	2,050	900 r/	1,000
Graphite		289,000	300,000	310,000	360,000	350,000
Gypsum	thousand tons	10,500	11,000	10,600	10,500	11,000
Kyanite and related materials		2,500	2,500	2,500	2,500	2,500
Lithium minerals, all types		15,500	15,500	15,500	16,000 r/	16,000
Magnesite	thousand tons	1,650	1,510	1,230	990 r/	1,000
Nitrogen: N content of ammonia	do.	18,100	19,000	18,000	19,000	19,500
Phosphate rock and apatite, P <sub>2</sub> O <sub>5</sub> equivalent	do.	6,500	6,400 r/	6,350 r/	7,400 r/	7,000
Potash, marketable, K <sub>2</sub> O equivalent	do.	32	21	25	26 r/	25
Salt	do.	24,100	28,100	29,530	29,746	24,990
Sodium compounds: Soda ash, natural and synthetic	do.	3,940	4,550 r/	5,350 r/	5,810 r/	5,740

See footnotes at end of table.

TABLE 1--Continued  
CHINA: PRODUCTION OF MINERAL COMMODITIES e/ 1/

(Metric tons unless otherwise specified)

Commodity		1991	1992	1993	1994	1995
<b>INDUSTRIAL MINERALS--Continued</b>						
<b>Sulfur:</b>						
Native	do.	320	320	330	330	330
Content of pyrite	do.	4,940	4,930 r/	5,330 r/	5,870 r/	5,500
Byproduct, all sources	do.	650	650	700	700	700
Total	do.	5,910	5,900 r/	6,360 r/	6,900 r/	6,530
Talc and related materials	do.	2,600	2,500	2,300	2,400	2,400
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
<b>Coal:</b>						
Anthracite	do.	214,370	214,000	220,000	230,000	260,000
Bituminous and lignite	do.	875,630	896,000	920,000	980,000	1,038,000
Total	do.	1,090,000	1,110,000	1,140,000	1,210,000	1,298,000
Coke, all types	do.	73,520	79,840	93,200	114,770 r/	72,700
<b>Gas, natural:</b>						
Gross	billion cubic meters	16	16	17	17	17
Marketed	do.	13	14	15	15	15
<b>Petroleum:</b>						
Crude (including crude from oil shale)	million 42-gallon barrels	1,015	1,050	1,060	1,080	1,100
Refinery products	do.	800	830	860	950	950

e/ Estimated. r/ Revised.

1/ Table includes data available through Apr. 15, 1996.

TABLE 2  
CHINA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1995

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies 1/	Location of main facilities	Annual capacity e/
<b>Aluminum:</b>			
Alumina	Pingguo Aluminum Industry Co.	Guangxi, Pingguo	300
Do.	Guizhou Aluminum Plant	Guizhou, Guiyang	400
Do.	Changcheng (Great Wall) Aluminum Corp.	Henan, Zhongzhou	200
Do.	do.	Hunan, Zhengzhou	640
Do.	Shandong Aluminum Plant	Shandong, Zibo	500
Do.	Shanxi Aluminum Plant	Shanxi, Hejin	1,200
Metal	Hefei Aluminum Plant	Anhui, Hefei	25
Do.	Baiyin Aluminum Plant	Gansu, Baiyin	50
Do.	Huang He Aluminum Corp.	Gansu, Lanzhou	82
Do.	Liancheng Aluminum Plant	do.	85
Do.	Pingguo Aluminum Industry Co.	Guangxi, Pingguo	100
Do.	Guizhou Aluminum Plant	Guizhou, Guiyang	160
Do.	Changcheng (Great Wall) Aluminum Corp.	Hunan, Zhengzhou	32
Do.	Fushun Aluminum Plant	Liaoning, Fushun	100
Do.	Qingtongxia Aluminum Plant	Ningxia, Qingtongxia	82
Do.	Qinghai Aluminum Smelter	Qinghai, Xining	200
Do.	Shandong Aluminum Plant	Shandong, Zibo	35
Do.	Jiaozuo Aluminum Plant	Henan, Jiaozuo	33
Do.	Sanmenxia Aluminum Plant	Henan, Sanmenxia	30
Do.	Yanji Aluminum Plant	Jilin, Yanji	15
Do.	Baotou Aluminum Plant	Nei Mongol, Baotou	70
Do.	Tongchuan Aluminum Plant	Shaanxi, Tongchuan	35
Do.	Taiyuan Aluminum Plant	Shanxi, Taiyuan	15
Do.	Yunnan Aluminum Plant	Yunnan, Kunming	15
Asbestos	China National Nonmetallic Minerals Industry Corp.	Nei Mongol, Baotou; Shanxi, Lai Yuan and Lu Liang	130
Barite	do.	Guizhou, Xiangshou	NA
Coal	Ministry of Coal Industry	Hebei	70,000
Do.	do.	Heilongjiang	100,000
Do.	do.	Henan	100,000
Do.	do.	Liaoning	70,000
Do.	do.	Nei Mongol	90,000
Do.	do.	Shandong	60,000
Do.	do.	Shanxi	400,000
Do.	do.	Sichuan	80,000
Cobalt	tons Jinchuan Nonferrous Metals Corp.	Gansu, Jinchang	400
Copper, refined	Tongling Nonferrous Metals Co.	Anhui, Tongling	30
Do.	Wuhu Smelter	Anhui, Wuhu	45
Do.	Baiyin Nonferrous Metals Co.	Gansu, Baiyin	50

See footnotes at end of table.

TABLE 2--Continued  
CHINA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1995

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies 1/	Location of main facilities	Annual capacity e/
Copper, refined--Continued		Jinchuan Nonferrous Metals Corp.	Gansu, Jinchuan	20
Do.		Daye Nonferrous Metals Co.	Hubei, Daye	20
Do.		Zhuzhou Smelter	Hunan, Zhuzhou	10
Do.		Jiangxi Copper Metals Co.	Jiangxi, Guixi	86
Do.		Huludao Zinc Smelting Co.	Liaoning, Huludao	60
Do.		Shenyang Smelter	Liaoning, Shenyang	100
Do.		Shanghai Smelter	Shanghai	80
Do.		Taiyuan Copper Industry Co.	Shanxi, Taiyuan	25
Do.		Tianjin Copper Electrolysis Factory	Tianjin	25
Do.		Yunnan Smelter	Yunnan, Kunming	95
Gas, natural	billion cubic meters	China National Petroleum Corp.	Sichuan	10
Gold, refined	thousand kilograms	China National Gold Corp.	Henan, Lingbu	3
Do.		Laizhou Gold Co.	Shandong, Laizhou	15
Do.		Zhaoyuan Gold Co.	Shandong, Zhaoyuan	6
Graphite		China National Nonmetallic Industry Corp.	Shandong, Laixi and Pingdu	190
Iron and steel:				
Iron ore		Maanshan Iron and Steel Co.	Anhui, Maanshan	10,000
Do.		Shoudu Iron and Steel 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 Co.	Hubei, Wuhan	5,100
Do.		Banshigou Iron Mine Mining Co.	Jilin, Hunjiang	1,400
Do.		Anshan Iron and Steel Co.	Liaoning, Anshan	30,000
Do.		Benxi Iron and Steel Co.	Liaoning, Benxi	13,700
Do.		Baotou Iron and Steel 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.		Kuming Iron and Steel Co.	Yunnan, Kuming	1,400
Ferroalloy		Shoudu Iron and Steel 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 Steel Co.	Shanghai	180
Do.		Emi Ferroalloy Co.	Sichuan, Emei	70
Do.		Hengshan Ferroalloy Co.	Zhejiang, Jiande	70
Crude steel		Maanshan Iron and Steel Co.	Anhui, Maanshan	2,500
Do.		Shoudu Iron and Steel Co.	Beijing	10,000
Do.		Tangshan Iron and Steel Co.	Hebei, Tangshan	2,000
Do.		Wuhan Iron and Steel Co.	Hubei, Wuhan	6,000
Do.		Anshan Iron and Steel Co.	Liaoning, Anshan	10,000
Do.		Benxi Iron and Steel Co.	Liaoning, Benxi	2,700
Do.		Baotou Iron and Steel Co.	Nei Mongol, Baotou	3,500
Do.		Baoshan Iron and Steel Co.	Shanghai	10,000
Do.		Shanghai Steel Co.	do.	6,000
Do.		Taiyuan Iron and Steel Co. No. 2.	Shanxi, Taiyuan	2,500
Do.		Panzhuhua Iron and Steel Co.	Sichuan, Panzhuhua	2,500
Do.		Tianjin Iron and Steel Co.	Tianjin	2,000
Lead		Baiyin Nonferrous Metals Co.	Gansu, Baiyin	50
Do.		Shaoguan Smelter	Guangdong, Shaoguan	30
Do.		Shuikoushan Mining Bureau	Hunan, Hengyang	30
Do.		Zhuzhou Smelter	Hunan, Zhuzhou	80
Do.		Shenyang Smelter	Liaoning, Shenyang	70
Do.		Kunming Smelter	Yunnan, Kunming	20
Nickel, refined		Jinchuan Nonferrous Metals Corp.	Gansu, Jinchuan	40
Do.		Chengdu Electro-Metallurgy Factory	Sichuan, Chengdu	3
Magnesium		Fushun Aluminum Plant	Liaoning, Fushun	5
Do.		Minhe Magnesium Plant	Qinghai, Minhe	4

See footnotes at end of table.

TABLE 2--Continued  
CHINA: STRUCTURE OF THE MINERAL INDUSTRY FOR 1995

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies 1/	Location of main facilities	Annual capacity e/
Petroleum, crude	Shengli Bureau	Hebei, Shengli	33,350
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	Ministry of Chemical Industry	Qinghai	40
Rare earths	Gansu Rare Earths Co.	Gansu, Baiyin	12
Do.	Jiangxi Rare Earths Co.	Jiangxi, Nanchang	1
Do.	Zhujiang Refinery	Guangdong, Guangzhou	5
Do.	Baotou Iron and Steel and Rare Earths Corp.	Nei Mongol, Baotou	12
Salt	Ministry of Chemical Industry	Anhui	200
Do.	do.	Qinghai	320
Talc	China National Nonmetallic Industry Corp.	Guangxi, Longshen	130
Do.	do.	Liaoning, Haicheng	50
Do.	do.	Shandong, Qixia	5
Tin, smelter	Dachang Mining Administration	Guangxi, Dachang	5
Do.	Yunnan Tin Industry Co.	Yunnan, Gejiu	15
Titanium	Zunyi Titanium Plant	Guizhou, Zunyi	5
Do.	Fushun Aluminum Plant	Liaoning, Fushun	1
Tungsten, concentrate	China National Nonferrous Metals Industry Corp.	Guangdong, Guangxi, Hunan, Jiangxi, and Zhejiang	60
Zinc	Baiyin Nonferrous Metals Co.	Gansu, Baiyin	100
Do.	Shaoquan Smelter	Guangdong, Shaoquan	70
Do.	Liuzhou Zinc Products Factory	Guangxi, Liuzhou	22
Do.	Shuikoushan Mining Bureau	Hunan, Hengyan	28
Do.	Zhuzhou Smelter	Hunan, Zhuzhou	140
Do.	Huludao Zinc Smelting Co.	Liaoning, Huludao	180
Do.	Shenyang Smelter	Liaoning, Shenyang	20

e/ Estimated. NA Not available.

1/ Companies are owned either by State Government or Provincial Government

TABLE 3  
CHINA: EXPORTS OF SELECTED MINERAL COMMODITIES IN 1995

(Metric tons)

	Quantity	Value (thousands)
<b>METALS</b>		
Aluminum:		
Bauxite	450,000	\$23,971
Alumina	10,000	3,508
Metal and alloys:		
Unwrought	191,310	327,621
Semimanufactures	65,436	126,028
Antimony metal, unwrought	25,464	73,177
Barium sulfate	1,200,000	35,904
Copper, metal and alloys:		
Unwrought	43,048	114,116
Semimanufactures	87,344	300,233
Iron and steel:		
Ferrosilicon	390,000	211,694
Pig iron and cast iron	5,390,000	805,732
Steel:		
Bars and rods	820,000	268,166
Shapes and sections	460,000	143,451
Sheets and plates	3,790,000	1,355,535
Tube and pipe	270,000	240,551
Magnesium carbonate and oxide	2,310,000	324,623
Manganese, unwrought	50,250	77,176
Tin, metal and alloys, unwrought	43,307	236,247
Tungsten:		
Tungstates	17,731	121,473
Ore	260	929
Zinc:		
Metal and alloys, unwrought	191,535	179,390
Oxide and peroxide	39,824	34,749
<b>INDUSTRIAL MINERALS</b>		
Cement	8,190,000	298,066
Fluorspar	1,230,000	113,776
Graphite, natural	193,647	50,377
Talc	1,590,000	83,206
<b>MINERAL FUELS</b>		
Coal	28,620,000	1,010,684
Coke, semicoke	8,860,000	682,924
Petroleum:		
Crude oil	18,850,000	2,238,801
Refinery products	4,150,000	792,240

Source: China's Customs Statistics (1995.12)



TABLE 4  
CHINA: IMPORTS OF SELECTED MINERAL COMMODITIES IN 1995

(Metric tons)

	Quantity	Value (thousands)
METALS		
Aluminum:		
Alumina	1,190,000	\$258,118
Metal and alloys, unwrought	387,926	513,896
Semimanufactures	287,826	575,238
Scrap	357,198	149,158
Chromium: Chromite	1,380,000	202,317
Copper:		
Ore	480,000	298,944
Metal and alloys, unwrought	187,504	406,441
Semimanufactures	350,393	949,960
Scrap	1,188,926	492,600
Iron and steel:		
Iron ore	41,150,000	1,226,912
Pig iron and cast iron	80,000	11,044
Steel:		
Bars and rods	4,680,000	1,381,694
Seamless pipe	920,000	899,718
Shapes and sections	530,000	257,624
Sheets and plates	7,430,000	3,791,612
Manganese ore	1,290,000	105,085
INDUSTRIAL MINERALS		
Diamond kilograms	662	135,176
Fertilizers:		
Compound fertilizers	7,300,000	1,616,783
Potassium chloride	3,860,000	437,795
Potassium sulfate	440,000	89,872
Sodium carbonate	75,324	12,564
Urea	6,860,000	1,426,975
Titanium dioxide	53,445	47,861
MINERAL FUELS		
Coal	1,610,000	70,531
Petroleum:		
Crude oil	17,090,000	2,356,427
Refinery products	14,390,000	2,065,463

Source: China's Customs Statistics (1995.12)