The Mineral Industries of The Commonwealth of Independent States

Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan

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The Commonwealth of Independent States (CIS) was created in December 1991 by republics of the former Soviet Union (FSU). The Declaration adopted by the participants of the Commonwealth explained that the interaction of the member states would be based on the principle of the sovereign equality of all its members and that the member states were independent and equal subjects under international law. The CIS is not itself a state and does not have supranational powers. In 2003, the member states of the CIS were Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. In September 1993, the member states signed an agreement on the creation of an economic union—"to form common economic space grounded on free movement of goods, services, labor force, capital; to elaborate coordinated monetary, tax, price, customs, external economic policy; to bring together methods of regulating economic activity and create favorable conditions for the development of direct production relation" (Interstate Statistical Committee of the Commonwealth of Independent States, undated§[1]).

In 2003, the economies of the countries of the CIS continued to stabilize, which was reflected in the growth of basic economic indicators that included the gross domestic product (GDP), industrial output, and investment in capital stock. The mining and metallurgical sector composed a large segment of the region's industry with more than 1,500 mining, processing, and metallurgical complexes that employed more than 2 million people. Many CIS countries were expecting significant growth in their mineral sector in the near future. This chapter focuses on recent and projected output for major mineral products in the CIS countries. For a more-detailed description of mineral production in the CIS countries, refer to the 2001 U.S. Geological Survey Minerals Yearbook, volume III, Area Reports—International—Europe and Central Eurasia, and for mineral trade data, refer to the 2002 U.S. Geological Survey Minerals Yearbook, volume III, Area Reports—International—Europe and Central Eurasia.

A number of the CIS countries had created development strategies for their mineral sector. In 2002, the Russian Government initiated the program "A Complex of Measures for the Development of the Metallurgical Industry of the Russian Federation for the Period up to 2010" and the Ukrainian Government developed the "National Program for the Development and Reforming of Ukraine's Mining-Metallurgical Complex until 2010." In Azerbaijan, the Government created a program for the development of ferrous metallurgy that would run until 2006. Development of the metals sectors has been accompanied by strict regulations in Belarus, Kazakhstan, Russia, and Ukraine to curtail exports of ferrous and nonferrous scrap; as a result, exports of scrap metals from the CIS have fallen sharply (Kozyrev, 2004).

In 2003, production of steel increased mainly owing to production increases in Russia and Ukraine and, to a lesser extent, in Belarus and Kazakhstan. Steel output in Moldova and Uzbekistan did not increase significantly. Iron ore production increased significantly mainly owing to increased output from Russia and to smaller increases in output from Azerbaijan, Kazakhstan, and Ukraine. Iron ore exports from the CIS exceeded 40 million metric tons per year (Mt/yr) in 2002 and 2003. Ferroalloy production in the CIS totaled 4.1 million metric tons (Mt), and yearly increases in production in individual countries ranged from 13% to 20% (Kozyrev, 2004).

Steel production in the CIS increased by about 6% in 2003 compared with that of 2002. CIS steel industries were engaged in renovating or expanding their production capacities either to increase steel output or to remain competitive in the market. In Georgia, Ares International of Italy was involved in rehabilitating the Rustavi steel mill. In Belarus, the installation of new equipment would increase steel production by about 18%. Kazakhstan was introducing new steelmaking capacity. Moldova was changing the ownership structure of the industry to improve financing and marketing of output. Russia was installing new equipment and renovating facilities at the Novolipetsk, the Severstal', and the Zapadno-Sibirskiy steel mills. Turkmenistan planned to construct the country's first minimill to satisfy local demand. Ukraine had renovated the Donetsk steel mill in 2002 and was introducing new production capacity at the Yenakievskiy steel mill in 2003. Uzbekistan planned to renovate the Uzbek metallurgical complex. Modernization of steel mills in the CIS would result in increased output and production of higher quality products (Kozyrev, 2004).

Aluminum production increased by more than 4%, and nickel production, by more than 9%, mainly owing to increased output from Russia. Increases in aluminum output were small in

[1]References that include a section mark (§) are found in the Internet Reference(s) Cited sections.

Azerbaijan and Tajikistan. A small amount of nickel was mined in the Urals in Kazakhstan, but reported data were lacking. Owing to shortages of ore and secondary metals, production of refined copper in the CIS fell by more than 3% compared with that of 2002; lead fell by more than 4%, and tin, by about 18%. Kazakhstan and Russia were the main producers of copper and lead, and Russia, of tin. In 2003 compared with 2002, production of copper decreased in Kazakhstan and Russia; lead, in Kazakhstan; and tin, in Russia. Gold production increased in Kazakhstan, Kyrgyzstan, Russia, and Uzbekistan. Growth in nonferrous metals production was planned in a number of CIS countries (Kozyrev, 2004).

Following a year of stagnation in growth of domestic metal demand, Russia increased its consumption of rolled steel by 14.3% in 2003 compared with that of 2002; copper, by 28%; steel pipes, by 24%; and nickel, by 14.3%. Ukraine experienced similar trends regarding the rate of increase in metal consumption as steel pipe consumption increased by 38%; rolled steel, by 30%, and ferroalloys, by 15%. Growth in the demand for nonferrous metals in Ukraine was reflected in a 20% increase in imports of nonferrous metals. Despite increased domestic consumption, that of minerals in the CIS was far below that of the level during the Soviet period and far below the level of consumption in advanced industrial countries (Kozyrev, 2004).

The mineral sectors in the CIS remained dependent on exports for their financial stability. CIS countries were major exporters to world markets of practically the whole range of fuels, industrial minerals, and metals. A large percentage of almost all the mineral products produced in CIS countries was exported. For example, more than 90% of rolled steel output was exported in Kazakhstan and Moldova; 80% to 85%, in Belarus; 55% to 75%, each, in Russia and Ukraine depending on the product; and 30%, in Uzbekistan. For nonferrous metals, the percentage of output exported ranged from 70% to 80% to as much as 100% (Kozyrev, 2004). For precious metals and stones, which included gold, diamond, and platinum-group metals (PGM), almost all output was exported outside the CIS except that portion kept by the Governments as reserves.

In 2003, CIS countries were able to increase exports because increased demand in Western countries and in China was accompanied by significant increases in metal prices. In 2003, the CIS countries increased metal imports and exports by almost 40% and almost 20%, in terms of value, respectively, compared with those of 2002. Metallic raw materials as well as metals were a major part of CIS exports. Metallic raw materials exports included commercial iron ore, concentrates, and pellets; chromite and manganese ores; alumina, coke, copper, lead, and zinc concentrates; and titanium raw materials. About one-half of CIS exports of mineral raw materials went to other CIS member countries (Kozyrev, 2004).

Russia was the dominant producer in the CIS of coal, natural gas, and oil. Other CIS countries, which included Azerbaijan, Kazakhstan, Turkmenistan, and Ukraine, were also significant fuel producers. Major development of oil and gas reserves was taking place in the CIS countries that border the Caspian Sea, in large part from offshore reserves. Oil and gas exports were the chief source of foreign trade revenues for CIS countries, which included Azerbaijan, Kazakhstan, Russia, and Turkmenistan. Oil exports from the CIS in the near future could match or exceed those of Saudia Arabia (Ebel, 2004).

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ARMENIA

Armenia was one of the world's leading producers of molybdenum. During the Soviet period, Armenia was the leading producer of perlite in the Soviet Union and produced more than 50,000 metric tons per year (t/yr) of copper, but output of these two products has decreased significantly since the dissolution of the Soviet Union. The Zangezur copper-molybdenum complex has about 8% of the world's molybdenum reserves, which are concentrated in the Kadzharan deposit. Government plans called for further development of this deposit. Production has been increasing for the past decade after almost a shutdown of production for several years following the dissolution of the Soviet Union. In 1994, production resumed and has been increasing at a rate of between 10% and 12% each year. In 2003, Zangezur was working at its full capacity of processing about 8.5 Mt/yr of ore. Also, in 2002 after a 7-year shutdown, mining started at the Agarak copper-molybenum complex; output was raised to about 2 Mt/yr of ore, which was about 70% of its design capacity (Akopyan, 2003). About 80% of the country's molybdenum reserves and 60% of its copper reserves are in the Kadzharan deposit. Although no reserve or resource figures were provided, the projected period for mining these reserves reportedly was 100 years (Aloyan, 2003).

Armenian Copper Programme cjsc (ACP) was a private company that has been registered and operating in Armenia since 1997; prior to changing its name on January 1, 2002, the company had been known as Manes yev Vallex CJSC. As the owner of the only copper smelting facility in the region, the company was well-positioned to process and export all copper contained in raw materials in Armenia and neighboring countries. Armenia's copper production peaked during the 1980s when nearly 55,000 t/yr of refined copper was being produced. ACP facilities were designed to produce up to 10,000 t/yr of copper blister produced from copper concentrate and about triple that amount of smelted secondary copper. The company also possessed a 3,000-t/yr-capacity copper powder shop and a 30,000-t/yr-capacity copper vitriol shop. The major supplier of the copper concentrate for the company was Zangezur Copper Molybdenum Combine Closed Joint Stock Company (Zangezour CMC CJSC), which was the leading

producer of copper concentrate in the region (Armenian Copper Programme cjsc, 2004§).

ACP possessed a much larger capacity for smelting copper scrap than the amount that was being purchased domestically, but administrative barriers in neighboring countries were impeding the company's ability to purchase and import copper scrap from those countries. No secondary blister copper has been produced since the beginning of 2003 because the decline in the availability of copper scrap in the domestic market has forced the company to suspend the operations of the scrap smelting furnace and to use the relatively small volumes of scrap available for converter smelting (Armenian Copper Programme cjsc, 2004§)

ACP had several investment projects that had varying investment needs and were at varying stages of preparation. As part of its strategic decision to move towards upstream integration, the company acquired licenses to mine two major Armenian deposits and to conduct exploration works at six other locations. The company possessed mining rights for the Alaverdy copper and the Teghout copper-molybdenum deposits for a period of 25 years. The company was doing extensive exploration work at other deposits, such as the Hankadzor (copper), the Margahovit (gold), and the Tandzout (copper-gold-sulfur); financing would have to be obtained to develop these deposits (Armenian Copper Programme cjsc, 2004§).

ACP was committed to implementing the Armenian Copper Programme, which was aimed at the efficient processing of copper and other nonferrous ores. ACP contracted with Outokumpu Lurgi (then Lurgi Metallurgie GmbH) to conduct a prefeasibility study for reconstruction of its metallurgical facilities. The findings of the study indicated the potential for quadrupling smelting capacity and for complete utilization of resulting sulfide gases for production of sulfuric acid. In order to acquire this capability, the company would need to invest about €44 million. In May 2004, the new reverberatory furnace constructed at the Alaverdy Copper Smelter (parallel to the operation of the existing furnace) started production of blister copper. The new furnace was expected to increase the company's production capacity by about 50%. A couple of days before the launch of the new furnace, operation of the old furnace ceased (Armenian Copper Programme cjsc, 2004§).

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AZERBAIJAN

Azerbaijan produced a range of metals that included alumina, aluminum, lead, steel, and zinc and a more-limited range of mineral products. Its major importance as a world mineral producer, however, was based on its oil-extracting industry. The country had been a significant oil producer for more than a century, but the recent focus was on developing offshore resources in the Caspian Sea.

In 2003, Azerbaijan recorded only a slight increase in oil production. Despite development of its offshore resources, significant increases in oil production would not occur until probably late 2005 (Ebel, 2004). A range of estimates placed Azerbaijan's proven crude oil reserves at between 7 billion and 13 billion barrels (Gbbl). The State Oil Company of the Azerbaijan Republic (SOCAR) estimated proven reserves to be 17.5 Gbbl, but this estimate probably included reserves that were either not fully proven or not economically viable. Hydrocarbon deposits offshore in the Caspian Sea accounted for most of the country's oil production. The majority of Azerbaijan's oil output in 2003 came from SOCAR, which employed about 70,000 people, not including its subsidiaries. SOCAR's Soviet-era fields were in decline, but foreign investment had revitalized the country's oil sector through the development of large-scale new projects. By 2004, Azerbaijan had signed more than 20 major agreements with approximately 30 companies from 15 countries (U.S. Energy Information Administration, 2004§).

Since 1997, the country's increase in oil production has come mainly from the international consortium known as the Azerbaijan International Operating Company (AIOC). AIOC partners were BP p.l.c., Delta/Hess, Devon Energy, Exxon Mobil Corp., Inpex, Itochu Corp., SOCAR, Statoil ASA, Turkiye Petrolleri A.O. (TPAO), and Unocal. AIOC was developing the offshore Azeri, Chirag, and deepwater Gunashli (ACG) megastructure, which was estimated to contain proven crude oil reserves of 5.4 Gbbl, according to the field's operator and largest stakeholder, British Petroleum. Azerbaijan's main increase in production in this decade was projected to come from the three-stage development of the ACG megastructure. Production was planned to reach about 500,000 barrels per day by 2007 with the full implementation of the first stage. Implementation of Stage 2 was expected to increase production to about 1 million barrels per day (Mbbl/d) by 2009. Plans were being formulated for developing Stage 3, which would complete development. If the first two stages were successfully implemented, then the country could export about 1 Mbbl/d by 2010 (U.S. Energy Information Administration, 2004§).

Azerbaijan, which had become a major regional producer of oil, was expected to become a major regional natural gas producer through development of the Shah Deniz offshore natural gas and condensate field, which is located approximately 60 miles southeast of Baku in the Caspian Sea; this field was thought to be one of the world's largest natural gas fields discovered in the past 20 years. According to BP (the project's operator), it contains potential recoverable resources of roughly 400 billion cubic meters (about 14 trillion cubic feet) of natural gas. Shah Deniz was being developed by the Shah Deniz Consortium (BP, LukAgip, National Iranian Oil Company (NICO), SOCAR, Statoil, TPAO, and TotalFinaElf). Once new infrastructure is in place, Shah Deniz will be capable of producing approximately 8.4 billion cubic meters (296 billion

cubic feet) per year, which will make Azerbaijan self-sufficient in natural gas and allow the country to generate significant export revenue (U.S. Energy Information Administration, 2003§).

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BELARUS

In 2003, Belarus was the world's third ranked producer of potash. Mining was conducted by the firm Belarukaliy at the Starobin deposit (Searls, 2004). Other significant mineral-producing enterprises were the Belorussian steel minimill in Zhlobin, the Mazyr and the Naftan petroleum refineries, and the Azot nitrogen plant.

Production Amalgamation Belaruskali, which was located in the Starobin region, was one of the world's leading potash producers and was the leading producer of potash fertilizers in the CIS. Belaruskali mined the Starobin potash deposit, was comprised of four mining and beneficiation complexes, and employed about 20,000 people. Each of the four mining and beneficiation complexes comprised a mine and a processing facility that produced potash fertilizers and potash salts. Belaruskali also produced various forms of edible and technical salt (Production Amalgamation Belaruskali, 2005§).

A development program for Belaruskali for the period from 2002 through 2010 was prepared. In accord with this program, a number of investment projects were underway. The goals of the program were to maintain the raw material base of Belaruskali, improve technologies used for processing potassium ore through technical retrofitting and implantation of new methods of beneficiation, construct Mine No. 5 "Krasnoslobodski," and reduce environmental impacts. Belaruskali has not only maintained its production capacity, but has constantly increased potash fertilizer production, which was possible given its sufficient raw material base (Production Amalgamation Belaruskali, 2005§).

The installation of new equipment at the Belarus steel mill could increase steel production by about 18% compared with output in 2003 (Kozyrev, 2004).

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GEORGIA

During the Soviet period, a range of minerals, which included arsenic, barite, bentonite, coal, copper, diatomite, lead, manganese, zeolite, and zinc, were mined in Georgia. The country had been a major producer of high-grade manganese ore for about a century, although ore reserves were being depleted. Following the dissolution of the Soviet Union, production of minerals declined sharply. By 2003, however, production in the mineral industry was reviving (Kuteliya and others, 2004).

The tempo of production was increasing at the country's manganese mining company Chiaturmarganets. At the end of the 1990s, manganese was being mined only in open pits; by 2003, it also was being mined underground. The increase in manganese production has resulted in an increase in ferroalloy output at the Zestafoni ferroalloy plant in Georgia. Manganese also was being mined in the Chiatura Basin by small mining enterprises not subordinate to Chiaturmarganets. These enterprises were mining reserves that were previously classified as subeconomic (a portion of which are just below the surface), and most had their own small beneficiation plants (Kuteliya and others, 2004).

At the Madneuli mining enterprise, ore extraction was about 1.7 Mt/yr, and production of copper concentrate was 62,000 t/yr. New equipment was acquired to increase production, and exploration work led to a growth in reserves. The processing of gold-bearing wastes that were being stored was organized by using heap leaching. About 2 Mt/yr of gold-bearing quartzites can be processed (Kuteliya and others, 2004).

Work was being completed on the reconstruction of the bentonite open pit at the Aksanskoye deposit; the deposit was mined by the Aksana company, which was owned by Silver and Barite Mining Co. of Greece. High-grade bentonite was produced from the deposit. After reconstruction of the open pit, mining capacity will greatly increase (Kuteliya and others, 2004).

Among the country's mining enterprises that had a realistic chance to increase production was the enterprise that was mining the Kvaisinskoye lead-zinc deposit. Plans called for the enterprise to achieve a design capacity of 100,000 t/yr of ore. Diatomite production was also expected to increase because an American firm was investing in restarting mining at the Kisatibskoye diatomite deposit. Work was underway to construct an open pit to mine the Paravanskoye perlite deposit, which had reported reserves of 13.5 million cubic meters (Kuteliya and others, 2004).

The potential exists for increasing production of nonferrous and rare metals, and geologic work was being conducted in the Kartalinskiy, the Rachinskiy, and the Svanetskiy regions with the participation of foreign investors. Foreign specialists also took an interest in the Tikbuli-Shaorskoye coal deposit from which associated gas could also be produced (Kuteliya, Kikabidze, and Sherkiladze, 2004).

Increases in steel production were projected as a result of the involvement of Ares International in rehabilitating the Rustavi steel mill (Kozyrev, 2004). Mineral development in Georgia would primarily be for producing products for export, although small local producers that were able to process their ores nearby and with access to transportation could supply local markets. Georgia was seeking to develop its mineral industry with the aid of international organizations. Acting on the request of the Government of Georgia, the Japanese Agency for International Cooperation (JICA) completed work on a general plan for the development of Georgia's mining industry, in which it was stated that the mineral industry could reach its former level of output and then surpass it (Kuteliya and others, 2004).

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KAZAKHSTAN

Kazakhstan is the second largest country (in land area) after Russia to form from the republics of the Soviet Union. It is endowed with large reserves of a wide range of metallic ores, industrial minerals, and mineral fuels. Its metallurgical sector produced a large number of metals from domestic and imported raw materials. Its metal mining sector was a major producer of chromite, copper, iron, lead, and zinc ores, and its metallurgical sector was a major producer of such metals as beryllium, bismuth, cadmium, copper, ferroalloys, lead, magnesium, rhenium, steel, titanium, and zinc. For a number of these mineral commodities, Kazakhstan ranked among the world's leading producers. The country also produced significant amounts of other nonferrous and industrial mineral products, such as arsenic, barite, gold, molybdenum, phosphate rock, and tungsten. The country was a major producer of such mineral fuels as coal, natural gas, oil, and uranium.

Plans called for construction of a 240,000-t/yr-capacity aluminum smelter; in the first stage, the smelter will have a capacity of 60,000 t/yr and be slated for startup in 2007. It would be supplied with alumina from the Pavlodar alumina refinery in Kazakhstan. Kazakhstan was engaged in measures to increase production of copper metal somewhat and zinc metal markedly by 2005 to 450,000 t/yr and 410,000 t/yr, respectively, and to increase alumina production at that time to 1.5 Mt/yr. Most investment was being directed to developing the ore base for extracting copper and polymetallic ores (Kozyrev, 2004).

Kazakhstan was the world's second ranked chromite producer after South Africa and third ranked producer of ferrochrome. The country produced 2.93 Mt of chromite in 2003, which was a 23% increase compared with that of 2002. All production was from the Donskoy group of deposits in the Aktyubinsk region, which had reserves estimated to be 320 Mt of ore with an average ore grade of 50% Cr_2O_3. More than 50% of production was exported, and the remainder was used in the domestic ferroalloy industry (MBendi, 2004§).

Kazkhrom controlled the country's chromite mining and ferroalloys production industry. It operated the Donskoy mining complex that mined the Donskoy group of deposits and owned the Ferrokhrom ferroalloy works in Aktyubinsk and the Aksu ferroalloys plant in the Pavlodar region. Although Kazkhrom planned to switch to underground mining entirely in 2007, it was continuing to develop the Poiskovy open pit, which had 5.5 Mt of ore remaining at the end of 2003. When the Poiskovy's open pit is depleted, ore will be mined from two underground mines, the Imeni 10-letiya Nezavisimosti Kazakhstana (formerly the Tsentralnaya) and the Molodezhnaya (MBendi, 2004§). The first stage of the Imeni 10-letiya Nezavisimosti Kazakhstana Mine was already in operation and would reach full capacity of 2 Mt/yr of ore in 2 to 3 years. Total capacity for this mine was projected to be 4 Mt/yr of ore, but this will depend on the success of exploration in a new ore-bearing region in the southwest of Aktyubinsk oblast. The Molodezhnaya Mine was projected to produce 2 Mt/yr of ore. Kazkhrom will need to renovate its beneficiation plants to increase extraction of metal from ore and to increase concentrate production (Edil'baev, 2004).

Kazakhstan was one of the world's leading copper-producing countries. Kazakhmys Plc, which was the country's consolidated copper producer and was headquartered in Dzhezkazgan in central Kazakhstan, produced more than 90% of Kazakhstan's copper and was among the world's top 10 copper-producing companies. Kazakhmys planned to produce 425,000 metric tons (t) of refined copper in 2004 and 2005, which was slightly higher than an earlier target of 418,000 t. The company had reserves to produce from 430,000 to 450,000 t/yr, and possibly even 500,000 t/yr of copper in 5 years (Caspian Information Centre, 2004§).

In 2003, Kazakhmys began production at the Nurkazganskiy Mine with output of 4 Mt/yr of ore, and construction of the analogous Zhaman-Aybatskiy mine continued. Also, Kazakhmys began operating a plant that will produce 100,000 t/yr of zinc (Kozyrev, 2004).

Kazakhstan was the leading producer of lead and zinc in the CIS. Kazakhstan's zinc metal output totaled 294,965 t in 2003. Kazzinc, which was the country's leading zinc producer, was a major fully integrated zinc producer with considerable copper, precious-metal, and lead reserves. All the company's operations were in Kazakhstan. It employed about 21,000 people in mining, beneficiation, smelting and refining, power generation, and auxiliary services. The company was established in 1997 through the merger of Eastern Kazakhstan's three main lead and zinc producers— the Leninogorsk polymetallic complex, the Ust-Kamenogorsk lead and zinc complex, and the Zyryanovsk lead complex. All three producers had been majority owned by the Government of Kazakhstan. The controlling block of shares in Kazzinc was sold by the State to the private sector; Glencore International AG of Switzerland became the company's main investor. In the 7 years since its creation, Kazzinc had significantly increased its production capacity and output and was continuing to develop its production capacity (Kazzinc, 2005a§).

In 2004, Kazzinc launched a new mining subsidiary that will operate the Shubinskoe underground mine. Reserves at the Shubinskoe deposit were estimated to be 1.5 Mt of polymetallic and copper ores. Mining was scheduled to start in the fourth quarter of 2004 (Kazzinc, 2005b§). Kazzinc acquired the Shaimerden deposit in the Kostanai region of Kazakhstan. Production capacity from the Shaimerden Mine would be 60,000 t/yr of zinc metal. To facilitate commissioning of the mine, large-scale construction was planned for the site and at the metallurgical facilities. Kazzinc planned to begin production of zinc from Shaimerden in summer 2006 (Kazzinc, 2005c§).

In 2004, Kazzinc was awarded the tender for exploration and development of the Dolinnoe and the Obruchevskoe deposits near the town of Ridder in eastern Kazakhstan. The company's Ridder mining subdivision will perform detailed geologic exploration of the two deposits during the next 6 years. During this period, the company planned to put a detailed development plan in place. Mining was expected to begin in 2011. Ore from both mines will be treated at the existing Ridder concentrator. The two deposits are adjacent to each other and, therefore, would be developed as one mine. Plans called for mining 600,000 t/yr of ore from both deposits, which would yield a projected 25,600 t/yr of zinc and 51,000 troy ounces per year (about 1.6 t/yr) of gold (Kazzinc, 2005d§).

Kazakhmys, which produced zinc along with copper, commissioned the 100,000-t/yr Balkhash zinc smelter in 2003. The company planned to produce 70,000 t of refined zinc in 2004 and 90,000 t in 2005. In Kazakhstan, the Yuzhpolimetal firm was completing construction of a new 15,000-t/yr lead refinery on the base of the old Chimkent lead plant (Caspian Information Centre, 2004§).

Oriel Resources plc of the United Kingdom and Bateman Metals Ltd. and Mintek of South Africa were involved in creating a demonstration-scale project for smelting nickel ores from the Shevchenko laterite nickel deposit in the Zhetigara region of Kustanai oblast in northern Kazakhstan. The deposit contains resources of 46 Mt of ore at an average grade of 1.01% nickel. This project was part of an ongoing definitive feasibility study to be completed in the third quarter of 2005 for the Shevchenko nickel project. A prefeasibility study was based on a project that could produce 140,000 t of ferronickel at a grade of more than 22% nickel within 5 years of startup. Startup could be as soon as 2007 (Mintek, 2004§; Minerals Engineering International, 2005§).

Plans called for the development of tin mining at the Syrymbet deposit to produce tin for domestic use and for the development of a titanium sands deposit that will enable the country to provide its own titanium raw materials to supply the Ust-Kamenogorsk titanium-magnesium plant (Kozyrev, 2004).

Kazakhstan had significant production of mineral fuels, which included coal, natural gas, petroleum, and uranium. According to Kazakhstan's classification system for mineral reserves, total geologic coal resources were assessed to be between 150 and 160 Gt, of which 62% was brown coal, and the remainder, bituminous coal. Kazakhstan planned to increase annual coal production to more than 85 Mt by 2005.

Much of Kazakhstan's natural gas production increases were expected to come primarily from associated gas at Kazakhstan's three largest fields—Karachaganak, Kashagan, and Tengiz (U.S. Energy Information Administration, 2003§). The Government of Kazakhstan planned to increase natural gas production fivefold by 2010 to 60 billion cubic meters per year according to a program to develop its natural gas industry during the period 2004-2010 (Interfax Petroleum Report, 2004).

Kazakhstan produced about 45 Mt of oil in 2003 and exported about 90% of its output. The country was planning to produce almost 150 Mt of oil in 2015 owing in large measure to the development of the Kashagan offshore field in the Caspian Sea. Kashagan, which had been scheduled to begin production in 2007 or 2008, has been described as the largest oil discovery in the world in the past 25 years (Ebel, 2004). Plans to develop Kashagan were postponed, with first output of 21 Mt/yr slated for 2010. Production from Kashsagan was projected to reach 42 Mt/yr in 2013 and to achieve its capacity of 56 Mt/yr in 2016.

Kazakhstan's national nuclear company, Kazatomprom, was the country's sole producer, exporter, and importer of uranium. Plans called for Kazakhstan to more than quadruple uranium output to 12,000 t/yr by 2015. Kazatomprom intended to increase production by increasing output at existing mining operations and by developing new mining operations. Plans called for the development of mines at the Central Moinkum, the Eastern Mynkuduk, the Inkai, and the Kharasan deposits; joint-venture development of the Irkol, the Moinkum, the Tortkuduk, the Zarechnoye, and the Zhalpak deposits; and construction of enrichment plants at the Shestoye, the Stepnoye, and the Tsentralnoye Mines. Additional plans called for constructing a conversion plant to produce 3,000 t/yr of natural uranium hexafluoride for sale on world markets and for processing uranium scrap into uranium dioxide and fuel pellets.

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KYRGYZSTAN

During the Soviet period, Kyrgyzstan was the main producer of mined mercury and the only producer of mercury and antimony metal. Following the dissolution of the Soviet Union, however, the country's leading mineral sector became the gold mining sector, which accounted for about 20% of the country's GDP and was the only major mineral industry sector in which development was significant (Ivanov, 2002§).

The Kumtor area has a history of intermittent exploration dating back to the late 1920s, but the actual discovery of the deposit was made in summer 1978. Between 1979 and 1989, intensive exploration, adit sampling, drilling, and geologic work resulted in an initial reserve statement issued by the USSR State Committee on Reserves in March 1990. In 1992, The Cameco Corp. of Canada and the Government of Kyrgyzstan entered into an agreement to evaluate and develop the Kumtor gold deposit. Cameco acquired a one-third interest in Kumtor Gold Company (KGC) from the Government of Kyrgyzstan, and Kyrgyzaltyn (a joint-stock company wholly owned by the Kyrgyz Government) held the remaining two-thirds interest. Kumtor Operating Company (KOC) [a wholly owned subsidiary of Cameco Gold International (CGI)] acted as operator of the mine for which it received a management fee (Centerra Gold, 2004§). At the beginning of 2004, Cameco announced that it and the Kyrgyz Government agreed to transfer all interest in KGC to a new jointly owned Canadian company, Centerra Gold Inc., in which Cameco continued to own approximately the same share as before (CCN Matthews, 2005§).

Commercial production at Kumtor began in the second quarter of 1997, and about 503,000 troy ounces (15.6 t) was produced that year. From 1997 to the end of 2003, a total of 37 Mt of ore was milled with an average gold content of 4.6 grams per metric ton (g/t). Total gold production was 136.5 t (4.4 million ounces). In 1997, KGC recovered 15.6 t (503,000 troy ounces) of gold; in 1998, 20.1 t (646,000 troy ounces); in 1999, 19 t (610,000 troy ounces); in 2000, 20.8 t (670,000 troy ounces); in 2001, 23.4 t (753,000 troy ounces); in 2002, 16.5 t (529,000 troy ounces); and in 2003, 21.1 t (678,000 troy ounces) (Centerra Gold, 2004§).

As of December 31, 2003, proven reserves at Kumtor were reportedly 72.5 t (2,330 troy ounces) of contained gold; probable reserves, 28.7 t (924,000 troy ounces); and total reserves, 101.2 t (3,254,000 troy ounces) with all categories of reserves assessed at 3.3 g/t gold. In addition, Kumtor reportedly had total measured and indicated resources of 57.9 t (1,862 troy ounces) of gold and inferred resources of 21.2 t (679,000 troy ounces). Centerra defined the resource categories it was reporting as follows: Mineral resources are not mineral reserves, and do not have demonstrated economic viability, but do have reasonable prospects for economic extraction. Measured and indicated resources are sufficiently well defined to allow geological[sic] and grade continuity to be reasonably assumed and permit the application of technical and economic parameters in assessing the economic viability of the resource. Inferred resources are estimated on limited information not sufficient to verify geological[sic] and grade continuity or to allow technical and economic parameters to be applied. Inferred resources are reported to be too speculative geologically to have economic considerations applied to them to enable them to be categorized as mineral reserves as there is no certainty that inferred mineral resources can be upgraded to mineral reserves through continued exploration (CCN Matthews, 2005§).

In 2004, a reevaluation of Kumtor's reserves was prepared that used a cutoff grade of 1.3 g/t gold. Proven and probable reserves, which included stockpiles, were estimated to be 2.97 million troy ounces (92 t) of contained gold. In 2004, the 801,000 troy ounces of contained gold that was fed to the mill was subtracted from reserves, and 512,000 troy ounces of contained gold was added to the reserves. About 45% of the additional reserves was the result of using the higher gold price of $375 per ounce as opposed to the $325 per ounce gold price used for the previous reserve estimate. The remainder was owing to changes in pit design and a reevaluation of the relationship between the modeled reserve and mill feed (CCN Matthews, 2004§).

For the southwestern zone at Kumtor, which is a satellite deposit located about 3 kilometers southwest of the Kumtor Mill, a reserve estimate was prepared that used a 1.3-g/t gold cutoff grade. The probable reserves were estimated to be 283,000 troy ounces (9 t) of contained gold. The indicated resources were estimated to contain 149,000 troy ounces (almost 5 t) with the same cutoff grade as the reserve estimate. A feasibility study for the southwestern zone was recently completed. Development and mining of an open pit was planned to begin during 2005. New reserve estimates, the Kumtor pit expansion, and development of mining in the southwestern zone will extend Kumtor's mine life by about 1 year (CCN Matthews, 2005§).

Gold mining also was being developed at the Dzeruy deposit, which had reported reserves of more than 100 t (about 3.2 million troy ounces) of gold in ore that graded between 5 and 9 g/t gold. Production was slated to begin in 2005 with output of up to 7 t/yr of gold (Kozyrev, 2004).

Tin development was underway in Kyrgyzstan with the assistance of Russia's Novosibirsk tin mining and processing complex.

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MOLDOVA

Moldova was not a significant producer of mineral products. Its largest mineral products producer was the steel minimill in the city of Bendery in the separatist region of Transnistira. In 2003, Moldova had about a 70% increase in crude steel output; production increased to an estimated 875,000 t in 2003 from 514,000 t in 2002 and rolled steel output increased by 83% to 695,200 t from 379,800 t.

RUSSIA

Russia is one of the world's leading mineral-producing countries and accounted for a large percentage of the FSU's production of a range of minerals, which included aluminum, bauxite, cobalt, coal, diamond, mica, natural gas, nickel, oil, PGM, and tin. The mineral industry was of great importance to the Russian economy. Enterprises considered to be part of the mineral/raw material complex contributed more than 70% of the budget revenues derived from exports; oil and gas were the chief export earners.

The average annual growth rate in the output of products of ferrous and nonferrous metallurgy was projected by the Ministry of Industrial Sciences to be in the range of from 3.4% to 3.6% until 2006. Performance, however, varied among the various mineral industries. For example, enterprises that mined rare metals and tin were having difficulty competing in a market economy, but producers of aluminum, copper, and zinc were successfully competing (Kozyrev, 2004).

Commodity Review

Metals

Aluminum and Bauxite and Alumina.—In 2003, Russia was the world's second ranked producer of aluminum. Its aluminum industry, which had been expanding for the past decade, continued to expand its production of bauxite, alumina, and aluminum. The country's leading aluminum producer was RUSAL, which was the second ranked primary-aluminum-producing company in the world. It was formed in March 2000 from the merger of a number of aluminum producers in the CIS. The company accounted for 75% of Russia's primary aluminum output and 10% of global primary aluminum output. A fully vertically integrated company, RUSAL had a complete production cycle with bauxite mining, alumina refining, and production of primary metal, semiproducts, and aluminum-based end products (RUSAL, 2005§).

In 2003, RUSAL's primary aluminum production rose by 4.3% to 2.59 Mt compared with that of 2002. The company was developing its raw materials base and planned to explore for and develop bauxite reserves at three deposits that belonged to the Severnaya Onega bauxite group; the reserves totaled more than 800 Mt. RUSAL won the license to develop these deposits in an auction in December 2004. Growth continued to be RUSAL's main strategic focus as the company continued to seek merger and acquisition opportunities in the alumina and aluminum sectors. It was planning to concentrate on the following projects in Russia: preparatory work for construction of a new 600,000-t/yr aluminum smelter in Irkutsk, which was scheduled to start in 2006; preparatory work for building the 350,000-t/yr Khakassk aluminum smelter; start of a feasibility study to construct a new alumina refinery at the Severnaya Onega bauxite deposit; and expansion of the Achinsk alumina refinery to 1.2 Mt/yr (RUSAL, 2005§).

The remainder of the country's aluminum and alumina not produced by RUSAL was produced by SUAL, which was Russia's major producer of bauxite. According to SUAL's development strategy for the period from 2005 to 2010, SUAL was to create the vertically integrated aluminum complex Komi Aluminum, which would be located near the city of Ukhta, Komi Republic, that would include bauxite mining and alumina and aluminum production. SUAL was developing the Sredne Timan bauxite mine in the Komi Republic; the mine has extensive reserves and was a key element of SUAL's alumina and aluminum production strategy. This complex will have the potential to produce up to 6 Mt/yr of bauxite, 1.4 Mt/yr of alumina, and from 300,000 to 500,000 t/yr of primary aluminum. The development of this complex would decrease the Russian aluminum industry's dependence on imported aluminum raw materials from about 60% to about 20% to 30% and would result in a 50% increase in Russian alumina production to 4.5 Mt/yr. SUAL planned to invest more than $500 million in its Irkutsk aluminum smelter in East Siberia, thus increasing output capacity at Irkutsk to about 486,000 t/yr (SUAL Group, 2005§).

Gold.—In 2003, Russia ranked third in the world in gold reserves and fourth in gold production (Amey, 2004). The Russian gold industry consisted of 603 gold mining companies, of which only 16 were state owned. Most of the gold mining companies were small and produced less than 100 kilograms per year (kg/yr) of gold. Only 24 of them produced more than 1 t/yr. The large companies accounted for all the incremental increase in gold production in 2003. Two of these large companies, Omolonskaya Gold-Mining Company and Polus Gold Ore Company, ranked among the 20 leading world gold producers. Only a small amount of gold exploration was being financed from the Federal budget and some exploration also was being financed from regional budgets. A significant share of the exploration that resulted in an increase in gold reserves was financed by major mining companies with their own exploration departments. Since 1994, the incremental increase in reserves has not fully compensated for the amount of gold mined. As of

January 1, 2003, Russian gold reserves had decreased by 7% compared with those of 1991 (Kochetkov, 2004).

Although a number of foreign companies were operating in Russia, foreign firms in general were not particularly interested in investing in the Russian gold mining sector. With the rise in gold prices in 2004, however, intensive efforts were underway by foreign firms to purchase Russian gold mining enterprises or shares of these enterprises. For example, Trans-Siberian Gold plc (TSG) of the United Kingdom bought a 100% stake in Angarsk Industrial Company Ltd., which had a license to explore and mine the Bogunai gold-bearing deposit in the Krasnoyarsk region. TSG also purchased licenses to explore the Asachinskoye, the Kamchatka, the Rodinkovskoye, and the Veduga deposits in the Krasnoyarsk areas. Gold Fields, Ltd., which was a South African gold mining major, was in the process of exchanging gold assets with MMC Norilsk Nickel, which owned the large Polus gold mining company and other gold mines. Ireland Miners was active in the gold mining industry in Buryatiya in eastern Russia (Kochetkov, 2004).

In 2003, out of 35 gold-rich regions in the Russian Federation, only 27 actually produced gold, and only 6 produced more than 10 t/yr of gold. Unlike many other gold-producing countries, Russia still had significant undeveloped gold deposits (Kochetkov, 2004). Plans called for increasing Russia's gold output in the next decade by about 50%, which would require an investment of about $1 billion (Sokolov, 2004).

Iron and Steel.—In 2003, Russia was the world's fourth ranked steel producer (Fenton, 2005§). Production of crude steel had increased by 43% from 1998 to 2003 and was accompanied by a significant growth in exports. This trend had slowed significantly from 2001 to 2003. Increased investment for renovations, particularly at the Magnitogorsk, the Nizhniy Tagil, the Novolipetsk, the Severstal, and the Vyksa plants, was planned (Yuzov and Sedykh, 2004).

The per capita GDP was about $2,500 per year (not adjusted for purchasing power parity), and the consumption of steel per person, about 150 kg/yr. If Russia's GDP grows as predicted and Russia is more in accord with other countries of the world regarding steel consumption, then its steel consumption per person by 2010 was expected to be in the range of 300 to 400 kg/yr. Growth in Russian steel output, however, was projected to decrease to between 4% and 5% per year in the future from its rate in 2003 of between 6% and 7% per year owing to the difficulty of obtaining investment funds for the steel sector. Thus, the country could become increasingly dependent on imported steel. Russia has little extra capacity to use to expand output, and growth in steel production will not be significant (Lisin, 2004).

Iron Ore.—As of January 1, 2002, Russia had 172 iron ore deposits. The reserve base totaled 56.6 billion metric tons (Gt) with an average iron content of 35.87%, and the reserves totaled about 25 Gt. Open pit production accounted for more than 90% of ore production. Despite recent increases in iron ore production, significant investment will be required to sustain such increases as mining conditions for iron ore in Russia become increasingly difficult owing to the increasing depths of the open pits. Nevertheless, plans called for iron ore production to increase by 10.8% by 2005 compared with that of 2000 and by 12.4% by 2010 compared with that of 2000 but then to slow to an 11.6% increase by 2015 compared with that of 2000. Expansion of iron ore mining was planned in the Kursk Magnetic Anomaly (KMA) even though it requires large investment because the ore lies under a thick layer of sedimentary rock inundated with water. In the KMA, development was planned for the Chernayaskoye and the Prioskol'skoye deposits, each of which contained about 1.5 Gt of ore—the Chernayaskoye deposit had 170 Mt of rich ore, and the Prioskol'skoye, 38 Mt.

Nickel and Platinum-Group Metals.—MMC Norilsk Nickel was one of the leading enterprises of the Russian economy. It accounted for 4.3% of Russian export earnings and 1.9% of Russia's GDP. MMC Norilsk Nickel produced a large number of mineral commodities from mixed sulfide ore deposits and other deposits that included cobalt, copper, hard coal, nickel, PGM and other precious metals (gold and silver), selenium, sulfur, and tellurium. MMC Norilsk Nickel was the world's leading producer of nickel and palladium and one of the leading producers of platinum. MMC Norilsk Nickel produced about 95% of Russia's cobalt, nickel, and PGM output and 55% of its copper output. In 2003, MMC Norilsk Nickel increased nickel metal production by 9.6% to 239,000 t compared with that of 2002, copper metal production by 0.2% to 451,000 t, and PGM production by 3% (MMC Norilsk Nickel, 2004§).

On March 18, 2003, the Board of Directors of MMC Norilsk Nickel approved the Production Plan to 2015 for the company's operations on the Kola and the Taymyr Peninsulas. The Production Plan was based on four principles—adjusting metal production in accord with expected market demand, increasing efficiency of production, addressing environmental effects of the company's operations, and ensuring the sustainability and cost-efficiency of the company's operations. The Production Plan called for MMC Norilsk Nickel to mine approximately 14 Mt/yr of ore on the Taymyr Peninsula during this period but to adjust metal production in accordance with expected market demand and to focus on mining ores richer in metals that demonstrate strong market fundamentals (Capital Link, 2003§).

Until 2015, MMC Norilsk Nickel will mine approximately 6 Mt/yr of ore on the Kola Peninsula compared with the current 6.4-Mt/yr level. On the Taymyr Peninsula, the company will continue to mine about 7.6 Mt/yr of rich ores and will increase its volumes of cuprous ores from 2.5 Mt/yr in 2002 to an average of 5 Mt/yr by 2015. Owing to enrichment capacity constraints, MMC Norilsk Nickel will reduce the volume of the disseminated ores it mines to maintain the total amount of ore mined on the Taymyr Peninsula as close to the current level of 14 Mt/yr as possible (Capital Link, 2003§). Copper production on the Taymyr Peninsula was expected to average approximately 400,000 t/yr; nickel production, approximately 200,000 t/yr; and PGM production, approximately the current level. Production on the Kola Peninsula from locally mined ores was expected to average approximately 40,000 t/yr of nickel and approximately 20,000 t/yr of copper (Capital Link, 2003§).

On the basis of market conditions, MMC Norilsk Nickel may increase its base metals and PGM production by increasing the volume of ore mined, raising production on the Taymyr Peninsula to up to 20 Mt/yr, and accelerating the processing of stored pyrrhotite and other concentrates (Capital Link, 2003§).

Along with developments at MMC Norilsk Nickel, Russia also could significantly increase copper output by developing of the Udokan copper deposit in the Trans-Baikal region. New copper mining capacity was being constructed in the Urals region; some of the mines being developed were the Severo-Podol'skiy, the Sibayskiy, the Uchalinskiy, the Uzel'ginskiy, and the Vostochno-Semenovskiy Mines.

Silver.—Although Russia had been producing most of its silver as a byproduct of nonferrous metals mining, new capacity was being added to the Dukat silver mine in Magadan oblast in the Russian Far East. The expansion of Dukat could increase Russia's silver output by 50% by 2009 (Bryako and Ivanov, 2003).

Tin.—Despite a large drop in Russian tin production since the dissolution of the Soviet Union, Russia was still ranked among the world's top 10 tin producers in 2003. The Novosibirsk tin mining and metallurgical complex, which was the monopoly tin producer, controlled Russia's only major tin smelter and a large share of the country's tin mining enterprises. Mine output of tin in 2009 was anticipated to increase mainly owing to Novosibirsk's plans to more than double mine output of tin. Novosibirsk also planned to increase tin metal output to more than 8,000 t/yr. Novosibirsk, which had been producing a significant percentage of its tin metal from imported raw materials, planned to almost double levels of investment in tin mining at its Dalolovo, Deputatskolovo, Khinganolovo, and Vostokolovo tin mining enterprises. Also, tin mine production was projected to increase because of plans to increase output at the existing Molodezhnoye and Perevalnoye deposits and to bring production to commercial levels at the Pravouimiiskoye deposit for which the infrastructure was under construction.

Titanium and Zirconium and Hafnium.—Plans called for development of the Lukoyanovskoye titanium-zirconium deposit in the Nizhniy Novgorod region. The ore sands at the deposit contain an ilmenite-chromite-hematite product, rutile, and zirconium; the sands were assessed to have a high zirconium content. In the first phase of development of the mine, which was scheduled to be built in 2006, 480,000 t/yr of sand will be mined to produce 30,000 t/yr of concentrate. Sand mining was projected to increase to 2 Mt/yr upon completion of the mining complex.

The United Kingdom's Aricom plc was planning to construct a mine at the Kuranakh ilmenite-magnetite-apatite deposit in the Amur region. Ore reserves within the licensed area of the Kuranakh deposit have been assessed to have 35.4 Mt of titanium ore that contains 3.33 Mt of titanium dioxide. The deposit development program called for construction of the first stage of a mine and beneficiation plant with an output of 240,000 t/yr of ilmenite concentrate with a titanium dioxide content of 48% to 49%; operations during the first stage were planned to begin by 2007. The second stage called for construction of a titanium dioxide plant in Tynda; production of from 70,000 to 80,000 t/yr of titanium dioxide was slated to begin in 2008 (Russian Mining, 2004).

Tungsten.—Russia was the CIS's major tungsten mining country. The tungsten trioxide content of Russian reserves at its major tungsten mining enterprises, however, was on average more than two times lower than in deposits under development in other countries. Since 1990, Russian tungsten production has fallen sharply, and tungsten reserves have also decreased. Although the Tyrny Auz tungsten-molybdenum mining and beneficiation complex in the North Caucasus had been Russia's major tungsten-producing enterprise, only two tungsten mining and beneficiation complexes in the Russian Far East—the Lermontovskiy and the Primorskiy—have a high enough tungsten content in their ores to be considered competitive in terms of quality. Russian production could be maintained by expanding capacity for mining tungsten ore at existing mining enterprises and by developing reserves at new deposits, which included a number of small deposits with rich ore. A feasibility study was being conducted at the Tyrny Auz Mine, which has proven reserves of more than 250,000 t of tungsten, thus making it one of the world's largest deposits. The study focused on exploration of a part of the ore body that contains 20 Mt of ore with a tungsten trioxide content of 0.35%. The project envisions mining and processing between 1 and 1.3 Mt/yr of ore with the concentrates to be converted into APT and YTO at the Nal'chik hydrometallurgical plant.

Industrial Minerals

Diamond.—The Kimberley Process is a joint governmental/international diamond industry/societal initiative to stem the flow of conflict diamond, which is rough diamond that is used to fund rebel movements and terrorist and criminal activity. Russia will assume rotating chairmanship of the process on January 1, 2005. In accordance with Russia's participation in the Kimberley Process, Russia released its diamond production and trade figures, which had been held as a state secret in the Soviet Union and Russia for decades. The data in table 1 for 2003, which was recorded before the release of data from the Kimberly Process, does not reflect reported 2003 production, which was 33,019,000 carats. Reported data for the first half of 2004 shows diamond production increasing to 17,763,000 carats owing to the start of production in the second half of 2003 at Alrosa Co. Ltd.'s Nyurba enterprise in western Yakutia. Plans for 2005 called for diamond production in Yakutia to be sustained at the 2004 level (Interfax Mining and Metals Report, 2004a). For 2005, Alrosa was targeting total diamond sales at $2,791.6 million and polished diamond sales at $142.6 million (Fibre2fashion, 2005§).

In 2003, Russia was the world leader in rough diamond production in terms of physical volume and second after Botswana in terms of the value of diamond mined. The situation remained the same in 2004 according to the Ministry's press release. In 2003, Russia was the second ranked exporter of rough diamond after the European Union and the leader among producing countries in terms of volume. The average price of rough diamond produced in Russia was $51 per carat, which was close to the average world price of $58 per carat. Russia produced a wider assortment of rough diamond than most other diamond-extracting countries (Interfax Mining and Metals Report, 2004a).

The sharp rise in diamond production in the second half of 2003 was attributed mainly to extraction beginning by OAO Alrosa-Nyurba in western Yakutia (Interfax Mining and

Metals Report, 2004a). The Nyurba mining and beneficiation enterprise, which was made up of the Botuobinskiy and the Nyurbinskiy Mines, was projected to produce 25% of Alrosa's output by 2010 (U.S. Geological Survey, unpub. data).

The Russian diamond industry was controlled by the diamond-producing monopoly Alamzy Rossii Sakha (Alrosa), which was based in the Sakha Yakutiya republic. Alrosa planned to expand its underground mining operations and exploration activities. According to the company's President, the 2005 program, which was based upon Alrosa's 10-year development guidelines, called for the expansion of underground mine production as its first priority. Alrosa was developing underground mining operations at the Aikhal, the Mirny, and the Udachnyy enterprises in Sakha Yakutiya and at the Lomonosov project in the Arkhangel'skaya oblast (U.S. Geological Survey, unpub. data). By switching to underground mining, Alrosa estimated that it had enough reserves to last for an additional 40 years (Interfax Mining and Metals Report, 2002).

In mid-2005, Severalmaz JSC (a subsidiary of Alrosa) planned to begin production at the Lomonosov diamond field in the Arkhangel'skaya oblast. Severalmaz would start the first stage of a mine and mill with the capacity to produce and process 1 Mt/yr of ore in 2005 and by 2009 would have the second stage in operation with the capacity to mine and mill 5.6 Mt/yr of ore to produce between $200 and $250 million per year of diamond. The Lomonosov field was estimated to contain $12 billion in diamond, one-half of which could be gem quality (ALROSA, undated§).

Phosphate Rock.—Almost all phosphate raw material production was from apatite ore mined by the OAO Apatit company on the Kola Peninsula. During the past 25 years, the P_2O_5 content of apatite ore decreased to 13.5% from 17.4%, which required Apatit to mine more ore to maintain its production of apatite concentrate with a P_2O_5 content of 39%. Also, development of significant underground mining was necessary. In 2001, the percentage of ore mined underground was 38%, but by 2015, this percentage would need to increase to 75%. Plans called for maintaining apatite concentrate production at about 8.5 Mt/yr to 2020 and beyond, which will require an investment of about $1 billion. The total investment needed for the next 20 years just to develop the ore base could be about $465 million. Investment also will be needed to renovate the beneficiation complex and, in the process, reduce energy expenditures and emissions harmful to the environment and acquire new equipment to improve labor productivity (Fedorov, 2004).

Mineral Fuels

Russia was one of the world's leading producers of liquid hydrocarbons and a significant producer of other mineral fuels. The country was the world's second ranked oil producer and oil exporting country and the world's leading source of increased oil production. In 2003, Russian oil production increased by about 9% compared with that of 2002. Domestic oil consumption rose only marginally, and most of the increased production was exported.

Coal.—Coal production increased in 2003, which was in keeping with the country's long-term energy strategy until 2020. The incentive for the increase in production, however, was mainly increased exports and not increased domestic demand; the exception was the increased domestic demand for coking coal. As fuel, coal is less competitive in domestic markets than gas in many regions of the country. The leading area for the development of coal mining is the Kuznetsk Basin (Kuzbas), which was a large supplier of coking coal to domestic markets. Growth in coal production in other regions of the country will depend almost entirely on growth in demand by electric power stations (Romanov, 2004).

In the Donetsk Basin (Donbas), which is the country's main anthracite-producing basin, production fell owing to increasingly difficult mining conditions as coal was being extracted at greater depths; the cost of production was increasing, which caused the chief consumer of Dontesk coal, the Novocherkasskaya electric powerplant, to switch to greater use of natural gas (Romanov, 2004).

In the near future, any increase in domestic demand for coal for electrical generation or for heating may not be significant. Growth in demand in the short term, if it takes place, will be in the domestic metallurgical sector, although in the short term, increases in output could be spurred by increased exports of coke (Romanov, 2004).

To satisfy Russia's increasing demand for energy, extraction of coal would need to be increased slightly to 280 Mt/yr in 2005 and to 340 Mt/yr in 2010 and 450 Mt/yr in 2020. During the first stage for expanding Russian coal output (up to 2010), plans called for mobilizing all resources in the coal industry to maximize use of existing production capacities. During the second stage (from 2010 to 2020), coal production in the Kansk Achinsk and the Kuzbas Basin, which are the two largest coal resources in the country, and in other basins of the Russian Far East and East Siberia would be increased. Achieving the goals of the second stage, however, will require the creation of a new technological base for extracting and using coal that would involve the use of large-scale coal beneficiation facilities in the area of its extraction, the improvement of methods and means for transporting coal, and the large-scale introduction of environmentally sound technologies for converting coal into electricity. Developing these technological innovations will require significant capital investment (Artem'yev, 2004).

Natural Gas.—Russia was the world's leading natural gas producer and had the world's largest natural gas reserves. The country, however, was having difficulty maintaining its level of gas production. In the energy strategy program, gas production projections were revised downwards in the modest case projection, with gas production in the neighborhood of 620 billion cubic meters by 2010 and 650 billion cubic meters by 2010, and in the optimistic case projection to about 650 billion cubic meters by 2010 and 700 billion cubic meters by 2020. The older modest-case projection called for gas production to increase to about 630 billion cubic meters by 2010 and to about 660 billion cubic meters by 2020. Again, East Siberia and the Russian Far East would be the sources of increased production as output was projected to decline in the country's major producing region of West Siberia and to increase only slightly in

the much smaller gas-producing regions of the European part of Russia (International Energy Agency, 2003§).

Proven gas reserves were adequate to provide for projected production increases in East Siberia and the Russian Far East. Plans were formulated to develop the Kovyatka gasfield and to construct a pipeline to deliver this gas to China and the Republic of Korea, bypassing North Korea and Japan (Ebel, 2004).

Russia did not produce enough uranium to meet its consumption requirements and had to consume stockpiled material. It was planning to make up for shortfalls by participating in uranium development projects at home and abroad. The country planned to increase the capacity of its nuclear reactors by 50% by 2010 and by more than 450% by 2050. The Ministry of Natural Resources drafted "Uranium of Russia" that called for exploring for new uranium deposits to help meet Russia's expected uranium requirements of 17,000 t/yr in the next decade (Interfax Mining and Metals Report, 2004b).

Petroleum.—"Energy Strategy of Russia for the Period up to 2020," which was approved in May 2003, revised previously projected oil production upwards and gas production downwards. The previous strategy called for oil production to rise to about 330 Mt in 2010 and to about 350 Mt by 2020. The new strategy, however, called for oil production to rise to about 440 Mt in 2010 and then to fall slightly to about 420 Mt by 2020. Optimistically, oil production could rise to almost 500 Mt by 2010 and could continue to rise to about 530 Mt by 2020. New production in East Siberia and the Russian Far East would account for a large part of the increase as production was projected to remain stable or decrease in the current major oil-producing regions (international Energy Agency, 2003§).

Oil reserves in East Siberia and the Russian Far East as of 2003, however, would not support large increased production. A successful exploration program would have to be conducted in the region to achieve projected production goals. After 2010, all growth in oil production would have to come from undiscovered fields in the region. Also, current levels of oil reserves in this eastern region would not justify construction of a pipeline to the Pacific Coast (Ebel, 2004).

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TAJIKISTAN

During the Soviet period, Tajikistan had been mining or producing aluminum, antimony, arsenic, boron, celestite, cement, coal, construction materials, fluorspar, gold, lead and zinc, mercury, molybdenum, natural gas, petroleum, salt, semiprecious and decorative stones, silver, strontium, tin, tungsten, and uranium. During the Soviet period, underground mines, open pits, and mining and beneficiation complexes and processing plants were established for the production of chemical raw materials, fuels, nonferrous metals, and nonmetallic mineral products. In its reserves of antimony, boron, lead, silver, and zinc, Tajikistan had occupied a leading place among the republics of the Soviet Union. The country

has what are termed, according to the reserve classification system that was used in the Soviet Union, "industrial reserves" of metals, which include bismuth, cadmium, copper, gallium, germanium, indium, tellurium, thallium, and selenium.

Tajikistan's major mineral-producing enterprise, the Tajik Aluminum smelter (TadAz) in Tursunzade (formerly Regar), which had a design capacity of 517,000 t/yr of aluminum, was established during the Soviet period and, following independence, was the country's main export earner by providing more than 50% of export earnings. It processed imported aluminum raw materials. RUSAL was engaged in plans to increase aluminum production in Tajikistan. In October 2004, the company signed an agreement with the Government of Tajikistan that included construction of a new aluminum smelter with 200,000 t/yr of capacity and the installation of two new potlines, each with 100,000 t/yr of capacity, at the Tajik Aluminum Smelter (RUSAL, 2005§).

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TURKMENISTAN

Turkmenistan has a variety of industrial mineral deposits that are unevenly distributed. More than 80% of the country's territory is composed of the Kara-Kum Desert, mountainous regions in the west and south (Kopet-Dag Range), and the foothills of the Tyan-Shan' and the Zeravshan ranges in the east. The country's major mineral resources are its oil and gas reserves; Turkmenistan was one of the leading countries in the world in the quantity of its natural gas reserves.

Following independence, Turkmenistan's gas production declined dramatically and then partially recovered as, after 1991, natural gas exports from Turkmenistan started to compete with Russia's gas for export markets. All gas pipelines that connected Turkmenistan to world markets were owned by Gazprom of Russia and routed through Russia. Turkmenistan was denied access through this pipeline network to world markets, and thus, Turkmenistan's incentive to produce natural gas was greatly reduced. The country's output decreased throughout the 1990s, falling to about 13 billion cubic meters in 1998 from about 57 billion cubic meters in 1992. In 1999, however, a Turkmenistan-Russian agreement took effect that enabled Turkmenistan to increase its gas exports. The country increased production to 47 billion cubic meters in 2000, and then to about 50 billion cubic meters in 2003. In 2003, Turkmenistan signed a new agreement with Russia and Uzbekistan to increase exports to both countries substantially during the next 25 years. An agreement signed with Russia in January 2005 guaranteed that Turkmenistan would export about 6 billion cubic meters of natural gas to Russia in 2005, increase to about 68 billion cubic meters per year in 2007, and remain at 68 billion cubic meters per year from 2009 to 2028. Turkmenistan also agreed to supply Ukraine with up to 34 billion cubic meters per year until 2006 and planned to extend this agreement through 2016 (U.S. Energy Information Administration, 2004§). The amount of gas that Turkmenistan has committed to deliver to Russia and Ukraine far exceeds its production and could result in a shortfall of gas deliveries to one of the parties (Kupchinsky, 2005§).

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UKRAINE

Since the breakup of the Soviet Union, production in Ukraine's mineral sector has fallen precipitously. Still, in 2003, Ukraine continued to be a major world producer of coal, ferroalloys, ilmenite, iron ore, manganese ore, and steel. The country's steel exports were of major importance in world markets. Other major mineral commodity exports were ferroalloys and iron ore.

Ukraine was a lesser producer of a number of other metallic mineral products, which included alumina, aluminum, cadmium, germanium, secondary lead, magnesium, mercury, nickel, rutile, uranium ore, secondary zinc, zircon, and zirconium, and a large number of industrial minerals, which included dolomite, graphite, kaolin, limestone fluxes, potash, quartz, salt, soda ash, and a variety of building materials. Because of the large reduction in demand that followed the breakup of the Soviet Union, Ukraine sharply reduced or ceased producing a number of these commodities. On the basis of the former economic importance of Ukraine's mineral industry, its large amounts of capital stock and infrastructure, and its employment of a significant segment of the work force, the mineral industry's successful functioning was considered to be critical for the country's economic renewal.

In 2003, iron ore mining enterprises operations were stable and even exceeded forecasted output levels. Production of iron ore increased by about 8% compared with that of 2002. The domestic market, however, suffered from an iron ore deficit. Beginning in 2003, increases in demand in world markets drove up ore prices and led mining enterprises to export a greater percentage of their output. The average export price for a metric ton of iron ore exceeded that on the local market by 7%. Also, the highest grade of iron ore was exported, which widened the domestic deficit (ISI Emerging Markets, 2004§). Ukraine's iron ore reserve base was considered to be adequate for another 50 to 80 years and would play a key part in sustaining development of the ferrous metals sector (Krivchenko and others, 2004).

Ukraine was one of the 10 major steel-producing countries and one of the 3 leading steel-exporting countries in the world. Steel products were Ukraine's single largest category of exports and accounted for about 30% of the country's merchandise exports in 2002 (Mykhnenko, 2004b§). More than 96% of Ukraine's steel production came from the 12 largest (in terms of production) steel mills; these enterprises had a complete metallurgical cycle and some also were engaged in coke

production. Ukraine's steel mills were ranked among the largest in the world; five Ukrainian enterprises were on the list of the world's 80 largest steel mills—Kryvorizhstal (28th), Mariupol Illicha Steel Works (31st), Azovstal (40th), Zaporizhstal (55th), and Alchevsk Metal Works (67th). These mills accounted for more than 70% of Ukraine's steel production. Ukraine's steel production was centered in four regions of the country—the Donetsk, with about 40%; the Dnipropetrovsk, with about 30%; and the Luhansk and the Zaproizhzhya, with about 10% each (Krivchenko and others, 2004).

In 2003, output growth in the ferrous metals sector was driven by exports. In comparison with that of 2002, rolled steel production increased by 10%; crude steel, by about 7%; and pig iron, by about 7%. About 80% of all output of ferrous metals was exported (Krivchenko and others, 2004; Vergueles, 2005§).

Ukraine's steel production of about 37 Mt/yr far exceeded its annual steel consumption of only about 5 Mt/yr (Makrell, 2004). Ukraine's per capita steel consumption in 2002 of less than 100 kilograms was far below that of Japan (almost 600 kilograms), Germany (about 450 kilograms), or the United States (about 400 kilograms) (Mykhnenko, 2004a§).

Since the breakup of the Soviet Union, Ukraine's steel industry has faced major long-term challenges, which have included the collapse of the domestic steel market; the dependence of Ukrainian iron and steel producers upon overseas markets despite anti-dumping sanctions, import tariffs, quantitative restrictions, and other protectionist measures that have been imposed against Ukraine's exports; obsolete production equipment and technology; and a limited assortment of steel products. Short-term problems have included a protracted privatization and ownership transformation process and a growing shortage of raw materials in the ferrous metals sector (Mykhnenko, 2004b§).

If agenda-setting reforms are not instituted, then Ukraine's steel industry could find a worsening of its situation with a stagnating domestic market for ferrous metals, continued protectionist measures against Ukraine's exports, a slow pace of technological change, unfinished ownership rights delineation, and increasing shortages of raw materials. The State Industrial Development Program for 2003-2011, which was approved in July 2003, will need to be revised to focus on accelerating growth in Ukraine's steel industry (Mykhnenko, 2004b§). Between 2005 and 2010, the State Scientific Research Institute for Metals projected some growth in rolled steel, sheet steel, and steel pipes and a decrease in finished semifabricated products (Bernadskiy and Makovetskakya, 2004).

The nonferrous metals production sector in Ukraine comprised more than 70 enterprises with varying forms of ownership and employed more than 50,000 people. The sector was composed of subsectors, which included alumina, aluminum, copper, gold mining, hard alloys, lead, magnesium, pigment and sponge, powder metallurgy, secondary metals, rare metals, semiconductors, titanium raw materials, and zinc production. Unlike in its ferrous sector, the nonferrous sectors, which had a full cycle of production from raw material to finished product, were less common (Grishchenko, 2004).

Ukraine was increasing nonferrous metals production, which included alumina, aluminum, semifinished products made from copper, ilmenite concentrate, crystalline silicon, and titanium sponge. To increase investment in the nonferrous metals sector, Ukraine's Government in 2004 adopted a State program for developing and reforming the mining-metallurgical complex for the period until 2011. The program provides support for significant projects, among which are projects to develop production of aluminum rods and coiled rods; to reconstruct the electrolysis shop; to construct facilities for producing aluminum strip at the Zaoporzh'ye aluminum plant; to modernize the Nikolayev alumina plant to increase production capacity to produce 1.6 Mt/yr; to invest in the Artemovskiy nonferrous metals processing plant, which produces copper from scrap; and to invest in producing copper from scrap at the Pankom Yum (Odessa) and the Zaporozh'ye nonferrous alloys plants. Expansion was taking place at the Zaporozh'ye Semi-Conductor Plant, which had the capacity to make a wide range of silicon products, including single crystalline silicon of the "solar grades" (Kozyrev, 2004).

Ukraine, which was the only major producer of titanium raw materials in Central Eurasia, produced both ilmenite and rutile and continued to supply titanium metals-producing plants in the CIS. Ukraine was increasing production of ilmenite and rutile concentrates at existing enterprises. Also, Kiev-based Titanium-Apatite Company (Tako) was planning to conduct a feasibility study for the construction of a mining complex to develop an apatite-ilmenite deposit in Zhitomir oblast in Ukraine. Tako was more than 70% owned by Russia's Renova Company, which was the main shareholder in Russia's second ranked aluminum company, SUAL, and Tyumen Oil Co of Russia. The complex would have the capacity to mine 6 Mt/yr of apatite-ilmenite ore from which it would produce 573,000 t/yr of ilmenite concentrate, 450,000 t/yr of apatite concentrate, and 417,000 t/yr of titanium-magnetite concentrate. In July 2004, the President of Ukraine signed a decree on developing production of titanium dioxide and raising the capacities for the extraction of ilmenite ore, from which titanium dioxide is obtained (Interfax Ukraine Business Panorama, 2004§).

The state-owned Zaporozh'ye titanium and magnesium plant, which was Ukraine's only producer of titanium sponge, had an initial design capacity to produce 20,000 t/yr of titanium, although it operated far below this level. The plant exported most of its output outside the CIS. The Zaporozh'ye titanium-magnesium plant commissioned a new unit for refining titanium sponge. The sponge is used in Ukraine to make titanium ingots by the Titan Scientific and Industrial Center of the E. Paton Institute of Electric Welding and by the Kiev-based Antares company. In Ukraine, efforts were underway to obtain financing for exploration and development of the Volynskiy group of native copper deposits (Kozyrev, 2004).

Ukraine's major source of domestically produced fuel is coal. The country has 34.1 Gt in proven coal reserves. Most of Ukraine's coal is mined in the Donbas in the eastern region of the country. The decline in coal extraction began to reverse in 1997, and since then, coal production has increased. Goals were set to stabilize coal extraction at between 85 and 90 Mt/yr.

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UZBEKISTAN

Although Uzbekistan was a significant regional producer of a number of mineral commodities, which included nonferrous metals and natural gas, it was a major world producer of two mineral commodities, gold and uranium. Gold production was centered at the Muruntau deposit near the town of Zarafshan; some byproduct gold was produced from nonferrous mining at the Almalyk mining and metallurgical complex. The Muruntau Mine was constructed in the late 1960s by the Soviet Union. The open pit, mill, and refinery have been processing ore since that time. The mine was the leading gold producer in the Soviet Union and accounted for approximately 30% of its gold production. In 1990, a geologist from the Newmont Mining Corporation of the United States became one of the first westerners to visit the Muruntau Mine. During the visit, he noticed that at least 2 Gt of low-grade material from the Muruntau operation had been stockpiled, a substantial amount of which could be considered ore grade. After Uzbekistan's independence in February 1992, Newmont signed a 50-50 joint-venture agreement with Uzbekistan governmental entities to mine and process a portion of these low-grade stockpiles; the new enterprise was called the Zarafshan Newmont Joint Venture. A feasibility study was completed in October 1993 and was followed by construction and commissioning of the production facility. The plant was officially opened on May 25, 1995. The joint venture initially contracted to process 220 Mt of ore at an average grade of 1.23 g/t gold and that contained 5.1 million troy ounces of recoverable gold. In 2003, the Zarafshan Newmont Joint Venture employed about 850 people. Ore processing was scheduled to run through mid-2011. The plant employed a four-stage crushing and screening process to produce ore suitable for heap leaching and Merrill-Crowe recovery (Newmont Mining Corporation, 2004§).

Plans called for Uzbekistan to increase gold production from between 5 t/yr and 20 t/yr by 2007 with the development of the Daugyztau and the Kokpatas deposits (Press Service of the President of the Republic of Uzbekistan, undated§).

In Uzbekistan, Metal Tech Ltd. of Israel was preparing a feasibility study on the renovation of the country's tungsten industry based on tungsten reserves in the Uchkuduk area; production was to be processed at the Chirchik heat-resistant and refractory metals plant. The project, as envisaged, would produce about 2,000 t/yr of tungsten products (Visser, 2002).

Uranium production in Uzbekistan took place in three in situ leaching (ISL) operations in central Uzbekistan—Nurabad, Uchkuduk, and Zafarabad. These facilities were subordinate to the Navoi Mining and Metallurgy Combine (NMMC) in the city of Navoi; NMMC was part of the Uzbekistani state holding company Kyzylkumredmetzoloto. Uzbekistan, which was the major source of uranium in the Soviet Union, produced about 7% of the world's uranium output in 2003. Before 1992, all uranium mined and milled in Uzbekistan was shipped to Russia. Since 1992, Uzbekistan's total uranium production has been exported, mainly to the United States through the United States-based intermediary Nukem, Inc. (Nuclear Threat Initiative, 2001§).

It was reported in November 2004 that a $6 million upgrade had enabled the country's main uranium producer, the Navoi mining and metallurgical integrated plant, to increase uranium output by 33%. A partial modernization of the machinery and technology at the uranium complex of the NMMC as well as the stable work environment at the combine's sulfate plant made this increase possible (FBIS, 2004§).

In Uzbekistan, one of the major projects will be to increase production of metallic zinc at the Almalyk mining and metallurgical complex with the intended startup of new production in 2004 (Kozyrev, 2004). Also, production of metallic lead was to be started at Almalyk in 2004 (Kozyrov and Karmanov, 2003).

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TABLE 1

COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
ARMENIA						
Metals:						
Aluminum:						
Rolled		105	294	91	132	140
Foil		4	473	2,699	5,240	5,300
Copper:						
Concentrate, Cu content		9,830	12,234	16,460	16,641	18,000 e
Blister		5,000 e	4,000	4,000	6,700	7,500
Gold	kilograms	400 e	600	1,900	3,200	1,800
Molybdenum, concentrate, Mo content		2,800 e	3,100 e	2,943	2,884 r	2,763
Rhenium[e]	kilograms	700	700	750	800	1,000
Silver[e]	do.	1,200	1,300	3,000	5,500	4,000
Zinc, concentrate, Zn content		879	528	745	782	800
Industrial minerals:						
Caustic soda		5,000	6,200	4,900	3,600	3,600
Cement	thousand tons	287	219	275 r	355 r	384
Clays, bentonite, powder		3,493	2,807	1,000 r, e	258 r	642 e
Diamond, cut	thousand carats	NA	NA	186	370	400
Gypsum		11,700	9,600	12,800	44,900	57,800
Limestone	thousand tons	1,700 e	12,800	11,900	12,500	13,000
Perlite[e]		35,000	35,000	35,000	35,000	35,000
Salt		26,955	30,000	28,800	30,300	31,900
AZERBAIJAN[2]						
Metals:						
Alumina	thousand tons	76	215 r	88 r	91 r	180
Aluminum, primary and secondary		NA	NA	NA	58	18,565
Alunite	thousand tons	--	23	--	--	--
Iron ore, marketable[e]		--	--	4,700	400 r	3,100
Steel:						
Crude		--	--	1,605	524	1,531
Pipes		100	4,000	2,076	2,545	5,400
Ingots and castings		381	846	NA	NA	NA
Industrial minerals:						
Bromine[e]	thousand kilograms	2,000	2,000	2,000 r	2,000 r	2,000
Caustic soda		20,800	30,000 e	30,000 e	30,000	30,000
Cement		171,400 r	250,700 r	522,600 r	847,700 r	1,012,500
Gypsum		2,144 r	2,286 r	1,750	1,039	3,848
Iodine[e]	kilograms	300,000	300,000	300,000	300,000	300,000
Limestone		NA	NA	577,900	631,500	762,000
Mineral fertilizers		40	NA	NA	NA	NA
Salt		2,978	4,033 r	3,734	5,380	7,695
Sulfuric acid		25,500 r	38,000 r	9,500 r	17,000 r	19,000
Mineral fuels and related materials:						
Natural gas	thousand cubic meters	5,996,500 r	5,642,400 r	5,534,600 r	5,143,700	5,127,700
Petroleum:						
Crude		13,807,300 r	14,017,000 r	14,909,100 r	15,333,500	15,381,100
Refinery products		NA	NA	NA	6,051,900	6,156,400
BELARUS						
Metals, steel:						
Crude	thousand tons	1,449	1,623	1,611	1,607	1,694
Rolled	do.	1,300	1,400	1,500	1,500	1,500
Pipes		41,052	37,947	42,400	76,700	95,900
Industrial minerals:						
Cement	thousand tons	2,100	1,847	1,803	2,171	2,472
Diamond, synthetic[e]	thousand carats	25,000	25,000	25,000	25,000	25,000

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
BELARUS--Continued						
Industrial minerals--Continued:						
Nitrogen, N content of ammonia		765,000	730,000	725,000	799,000 r	726,000
Potash, K_2O equivalent	thousand tons	4,553	3,786	3,700	3,800 e	4,230 e
Salt[3]		343,243	309,937	301,000	304,000	300,000 e
Sulfur[e]		20,000	20,000	20,000	25,000 r	30,000
Sulfuric acid		614	584	600 e	600 e	600 e
Mineral fuels and related materials:						
Natural gas	million cubic meters	256	257	255	246	254
Peat:						
Horticultural use		308,000	191,000	200,000 e	200,000	100,000 e
Fuel use		3,090,000 e	3,786,000	1,997,000	2,202,000	1,802,000
Total		3,398,000	3,977,000	2,197,000	2,402,000	1,902,000
Petroleum:						
Crude	thousand tons	1,840	1,851	1,852	1,846	1,820
Refined	do.	11,486	13,528	13,346	15,247	15,774
GEORGIA						
Metals:						
Copper, mine output, Cu content of concentrate[e]		7,000	8,000	8,000	10,000 r	12,000
Gold	kilograms	2,043	2,924	2,000 e	2,000 e	2,000 e
Iron and steel:						
Ferroalloys, electric furnace:						
Ferromanganese		6,500	6,100 r	7,800 r	12,800 r	12,800
Silicomanganese		26,200 r	20,500 r	32,800 r	50,900 r	91,900
Total		32,700 r	26,600 r	40,600 r	63,700 r	104,700
Steel:						
Crude		7,000	100 r	-- r	-- r	--
Finished products, rolled		7,200	1,400 r	-- r	-- r	--
Lead, mine[e]		400 r	200	350 r	400	400
Manganese ore, marketable		54,900 r	63,100 r	98,400 r	103,400 r	--
Silver	kilograms	29,487	33,884	33,000	33,000 e	33,000
Zinc, mine output, Zn content of concentrate[e]		400 r	200	350 r	400 r	400
Industrial minerals:						
Barite[e]		15,000	15,000	15,000	15,000	15,000
Cement		341,400 r	347,700	335,200 r	346,700 r	424,600
Clays, bentonite		9,891	7,084	7,000 e	9,700 r	1,800
Nitrogen, N content of ammonia		104,000	135,000	60,000	90,000	125,000 e
Zeolites		NA	NA	NA	NA	NA
Mineral fuels and related materials:						
Coal, bituminous		12,000 r	7,300 r	5,000 r	8,000 r	8,000
Natural gas	million cubic meters	--	79,500 r	40,200 r	16,700 r	17,800
Petroleum:						
Crude		91,300	109,500	98,800 r	73,900 r	139,700
Refined		59,100 r	31,700 r	11,800 r	16,100 r	18,800
KAZAKHSTAN						
Metals:						
Aluminum:						
Alumina	thousand tons	1,158	1,217	1,231	1,386	1,419
Bauxite		3,606,500	3,729,600	3,685,100	4,376,600	4,737,100
Arsenic trioxide[e]		1,500	1,500	1,500	1,500	1,500
Beryllium, metal[e]		100	100	100	100	100
Bismuth:[e]						
Mine output, Bi content		130	130	252	161	150
Metal, refined		55	55	130	130	130
Cadmium, metal		1,246	1,250 r, e	1,250 r, e	1,300 r	1,351

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
KAZAKHSTAN--Continued						
Metals--Continued:						
Chromite		2,405,600	2,606,600	2,045,700	2,369,400	2,927,500
Cobalt, mine output, Co content[e]		300	300	300	300	300
Copper:						
Mine output, Cu content[e]		374,000	430,000	470,100 [4]	490,000 [r]	485,000
Metal:						
Smelter, undifferentiated		383,457	413,859	433,600	446,200	431,930
Refined, primary		361,889	394,722	425,700	453,000	432,401
Gold:						
Mine output, Au content	kilograms	20,236	28,171	25,010	22,402	30,000 [e]
Metal, refined	do.	9,655	11,529	15,226	10,959	9,939
Iron and steel:						
Iron ore, marketable		9,091,200	16,160,000	14,140,000	15,423,000	17,310,500
Metal:						
Pig iron		3,438,082	4,000,000	3,906,500	4,089,100	4,140,000 [e]
Ferroalloys:						
Ferrochromium		731,563	799,762	761,900	835,800	993,000
Ferrochromiumsilicon		49,282	55,634	79,800	108,028	98,130
Ferromanganese		--	1,075	5,349	2,278	1,931
Ferrosilicon		140,263	133,269	145,800	127,300	127,160
Silicomanganese		78,495	102,719	141,200	164,000	178,920
Other[e]		9,000	9,000	9,000	9,000	9,000
Total		1,008,603	1,101,459	1,143,049	1,246,406	1,408,141
Steel:						
Crude		4,116,000	4,770,000	4,691,000	4,868,000	5,066,600
Finished, rolled		3,186,000	3,700,000	3,700,000	3,800,000	4,100,000
Lead:						
Concentrate, Pb content		34,100 [e]	40,000	37,700	40,000 [r, e]	40,000 [e]
Refined, primary and secondary		160,000 [e]	185,800	158,700 [r]	161,800 [r]	140,700
Magnesium, metal, primary		11,031	10,380	16,000 [e]	18,000 [e]	14,000 [e]
Manganese ore, crude ore, gross weight		980,000	1,136,000	1,386,500	1,792,200	2,361,000
Molybdenum, concentrate, Mo content		155	215	225 [e]	230 [e]	230 [e]
Rhenium[e]	kilograms	2,400 [r]	2,400 [r]	2,500 [r]	2,600 [r]	2,600
Silver	do.	904,644	927,100	981,900	892,600 [r]	804,567
Titanium, sponge		8,767	8,280	14,000	14,000	11,000
Vanadium, ores, concentrates, slag, Va content[e]		1,000	1,000	1,000	1,000	1,000
Zinc:						
Mine output, Zn content		288,300	325,000	344,300	390,000 [r]	395,000
Smelter, primary and secondary		249,327	262,200	277,100	286,300	294,965
Industrial minerals:						
Asbestos, all grades		139,300	233,200	271,300	291,100	353,000
Barite, concentrate		13,300	14,000 [e]	45,000 [r]	46,000 [r]	40,000 [e]
Boron[e]	thousand tons	30	30	30	30	30
Cement		837,800	1,175,000	2,029,200	2,129,400	2,569,700
Clay, kaolin[e]		70,000	70,000	70,000	70,000	70,000
Gypsum		NA	NA	NA	710,700	711,000 [e]
Phosphate rock:						
Gross weight		68,000	33,000	97,000	136,500 [r]	119,500
P_2O_5 content		19,700	9,570	28,000	39,600 [r]	34,700
Sulfur, byproduct:[e]						
Metallurgy		245,000	300,000	310,000 [r]	260,000 [r]	325,000
Natural gas and petroleum		1,070,000	1,200,000	1,400,000	1,600,000 [r]	1,600,000
Total		1,320,000	1,500,000	1,710,000 [r]	1,860,000 [r]	1,930,000

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
KAZAKHSTAN--Continued						
Mineral fuels and related materials:						
Coal		58,377,600	74,872,400	79,000,000	70,600,000	85,717,000
Natural gas	cubic meters	9,945,900	11,541,900	11,600,000	13,100,000	14,700,000
Petroleum:						
Crude in:						
Gravimetric units		30,100,000	35,300,000	39,700,000	42,066,700	45,310,000
Volumetric units[e]	42-gallon barrels	221,000,000	260,000,000	292,000,000	309,000,000	333,000,000
Refinery products		7,205,000	9,198,000	NA	NA	NA
Uranium, concentrate, U content		1,367	1,740	2,050	2,800 r	3,300
KYRGYZSTAN						
Metals:						
Antimony:						
Mine output, Sb content[e]		100	150	150	150	40
Metal and compounds		1,320	1,505	1,050	1,504	1,500
Gold[e]	kilograms	20,000	22,000	24,000	17,000 r	22,476 4
Mercury:						
Mine output, Hg content[e]		300	257	300	425 r	370
Metal		620	550	579	537	500
Molybdenum, mine output, Hg content[e]		250 2	250	250	250	250
Tin, mine output, Sn content[e]		250	300	300	300	350
Industrial minerals:						
Cement		386,300	500,000	468,900	532,800	770,000 e
Fluorspar, concentrate		2,997	3,000 e	1,175	2,750 e	3,973
Kaolin		NA	NA	NA	237,100	381,100
Lime, dead-burned		7,500	8,200	9,400	9,300	NA
Rare earths:						
Concentrate, gross weight		11,878	14,900	7,700	700	NA
Rare earth oxide equivalent:						
Compounds		956	NA	NA	NA	NA
Metals		5,159	7,736	3,800 e	100 e	NA
Salt		NA	NA	NA	770	1,100
Mineral fuels and related materials:						
Coal		417,000	424,900	477,300	497,500	411,300
Natural gas	million cubic meters	25	32	33	29	27
Petroleum, crude	thousand tons	77,000	77,100	75,500	75,500	68,500
MOLDOVA						
Metals, crude steel		796,000	909,000	966,000	514,000 r	875,000 e
Industrial minerals:						
Cement		50,000	222,000	200,000	300,000	300,000 e
Gypsum		18,500	32,100	32,000 e	32,000 e	32,000 e
Lime		5,200	3,100	3,200	3,500	3,500 e
Sand and gravel		317,700	276,400	306,600	300,000	300,000 e
Mineral fuels and related materials, peat[e]		475,000	475,000	475,000	475,000	475,000
RUSSIA						
Metals:						
Aluminum:						
Ore and concentrate:						
Alumina	thousand tons	2,657	2,850 e	3,046	3,131	3,230
Bauxite		4,382,000 r	5,274,000 r	4,955,000 r	4,586,000 r	5,442,000
Nepheline concentrate, 25% to 30%		772,000	814,000	960,000	1,022,000 r	1,014,000
Metal, smelter, primary		3,146,232	3,245,000	3,300,000 e	3,347,413	3,478,057
Antimony, mine output, recoverable Sb content[e]		4,000	4,500	4,500	NA	NA
Arsenic, white[e]		1,500	1,500	1,500	1,500	1,500

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
RUSSIA--Continued						
Metals--Continued:						
Bismuth:[e]						
Mine output, Bi content		50	50	50	50	50
Metal, refined		10	10	10	10	10
Cadmium, metal, smelter[e]		900	925 [2]	950	950	950
Chromium, chrome ore, marketable		115,100	92,000	69,926	74,300 [r]	116,455
Cobalt:[e]						
Mine output, recoverable Co content		3,900	4,000	4,600	4,600	4,800
Metal, refined		4,300	4,400	5,000	5,100	5,500
Copper:						
Ore, recoverable Cu content[e]		530,000	570,000	600,000	695,000	675,000
Metal:						
Blister:[e]						
Primary		580,000	600,000	650,000	660,000	670,000
Secondary		158,000	220,000	245,000	200,000	165,000
Total		738,000	820,000	895,000	860,000	840,000
Refined:						
Primary		600,000	620,000	650,000	670,000 [e]	670,000 [e]
Secondary		160,000	220,000	244,500 [r]	200,000 [e]	165,000 [e]
Total		760,000	840,000 [e]	894,500 [r]	870,000 [e]	840,000 [e]
Gold, mine output, Au content	kilograms	125,870	142,738	152,500	168,411 [r]	170,068
Iron and steel:						
Iron ore, 55% to 63% Fe		81,311,000	86,630,000	82,500,000	84,236,400 [r]	91,759,800
Metal:						
Pig iron		40,854,200	44,618,100	44,980,000	46,060,000	48,368,000
Direct-reduced iron		1,880,000	1,920,000 [r]	2,510,000 [r]	2,910,000 [r]	2,900,000
Ferroalloys:[e]						
Blast furnace:						
Ferromanganese		90,000	70,700	70,000	80,000	85,000
Ferrophosphorus		3,500	3,500	3,500	3,500	3,500
Spiegeleisen		7,000	7,000	7,000	7,000	7,000
Electric furnace:						
Ferrochromium		249,000 [4]	274,000 [4]	210,600 [4]	210,000 [4]	357,000 [4]
Ferrochromiumsilicon		4,500	4,500	4,000	4,000	4,000
Ferronickel		33,000	35,000	30,000	30,000	30,000
Ferrosilicon		601,000 [4]	652,000 [4]	707,100 [4]	701,000	760,000
Ferrovanadium		16,000	20,500	18,800	15,100	8,000
Silicon metal		40,000	45,000 [r]	50,000 [r]	55,000 [r]	60,000
Other		24,000 [r]	19,500 [r]	16,200 [r]	14,900 [r]	22,000
Total		1,070,000	1,130,000	1,120,000 [r]	1,120,000 [r]	1,340,000
Steel:						
Crude		51,524,100	59,097,500	59,029,700 [r]	59,776,600 [r]	62,707,600
Finished, rolled		40,900,000	46,900,000	47,100,000	48,700,000	51,050,000
Pipe		3,004,000	4,385,000	5,409,900	5,115,200	6,102,000
Lead:						
Mine output, recoverable Pb content		13,000	13,300	12,300 [e]	13,500 [e]	14,500 [e]
Metal, refined, primary and secondary[e]		62,000	59,000	67,500	60,350 [4]	60,500
Magnesium:[e]						
Magnesite		900,000	1,000,000	1,000,000	1,000,000	1,200,000
Metal, including secondary		45,000	45,000	48,000	50,000	52,000
Manganese, mine output, Mn content[e]		22,000	23,000	23,000	23,000	23,000
Mercury[e]		50	50	50	50	50
Molybdenum[e]		2,400	2,400	2,600	2,900	2,900

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
RUSSIA--Continued						
Metals--Continued:						
Nickel:[e]						
Mine output, recoverable Ni content		300,000	315,000	325,000	310,000	315,000
Matte		114	517	97	88	80
Nickel products:						
Ferronickel, Ni content		9,000	7,000	8,000	8,000	8,000
Metal		215,000	225,000	230,000	219,000	239,000
Oxide sinter		12,000	14,000	12,000	10,000	10,500
Chemicals		2,000	2,000	2,000	2,000	2,500
Platinum-group metals:[e]						
Platinum	kilograms	32,000	34,000	35,000	35,000 [r]	36,000
Palladium	do.	67,000 [r]	71,000	72,000	73,000 [r]	75,000
Other	do.	13,400 [r]	14,100	14,500	14,500	15,000
Total	do.	112,000 [r]	119,000	122,000	123,000 [r]	126,000
Rhenium[e]	do.	1,100	1,100	1,200	1,400	1,400
Silver[e]	do.	375,000	370,000	380,000	400,000	700,000
Tin:[e]						
Mine output, recoverable Sn content		2,500 [r]	2,500 [r]	2,000 [r]	1,300 [r]	2,000
Metal, smelter:						
Primary		4,500 [r]	4,800 [r]	4,569 [r, 4]	4,615 [r, 4]	5,500
Secondary		500 [r]	500	500	500	500
Total		5,000 [r]	5,300 [r]	5,070 [r]	5,120 [r]	6,000
Titanium sponge[e]		22,000	23,000	23,000	23,000	23,000
Tungsten, concentrate, W content[e]		3,500	3,500	3,500	3,400	3,900
Vanadium, metal[e]		7,000	7,000	8,000	8,000	8,500
Zinc:[e]						
Mine output, recoverable Zn content		132,000 [4]	136,000 [4]	124,000	130,000 [4]	125,000
Metal, smelter, primary and secondary		221,000	230,000	237,000	244,000	258,000
Zirconium, baddeleyite concentrate, averaging 98% ZrO_2[e]		6,800 [4]	6,500	6,500	6,500	6,500
Industrial minerals:						
Asbestos, grades I-VI[e]		675,000	750,000	750,000	775,000 [r]	878,000 [4]
Barite[e]		60,000	60,000	60,000	60,000	60,000
Boron[e]		1,000	1,000	1,000	1,000	1,000
Cement, hydraulic		28,400,000	32,400,000	35,300,000	37,700,000	41,000,000 [e]
Clays, kaolin concentrate		40,600	45,000	45,000 [e]	45,000 [e]	45,000 [e]
Diamond:[e]						
Gem	carats	14,500,000 [r]	14,500,000 [r]	14,500,000 [r]	14,500,000 [r]	16,500,000
Industrial	do.	14,500,000 [r]	14,500,000 [r]	14,500,000 [r]	14,500,000 [r]	16,500,000
Synthetic	do.	80,000,000	80,000,000	80,000,000	80,000,000	80,000,000
Total	do.	109,000,000 [r]	109,000,000 [r]	109,000,000 [r]	109,000,000 [r]	113,000,000
Feldspar[e]		45,000	45,000	45,000	45,000	45,000
Fluorspar, concentrate, 55% to 96.4% CaF_2		153,800	187,600	200,000 [r]	169,000 [r]	170,000
Graphite[e]		6,000	6,000	6,000	-- [r]	--
Gypsum[e]		650,000 [4]	700,000	700,000	700,000	700,000
Iodine[e]		300,000	300,000	300,000	300,000	300,000
Lime, industrial and construction[e]		7,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Lithium minerals, unspecified[e]		2,000	2,000	2,000	2,000	2,000
Mica[e]		100,000	100,000	100,000	100,000	100,000
Nitrogen, N content of ammonia		7,633,100	8,735,000	8,690,000	8,600,000 [e]	9,100,000 [e]

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
RUSSIA--Continued						
Industrial minerals--Continued						
Phosphate rock:[e]						
Gross weight		11,400,000	11,100,000	10,500,000	10,700,000	11,000,000
P_2O_5 content:						
Apatite concentrate, 37% to 39.6%		4,161,000 [4]	4,152,000 [r, 4]	3,936,000 [r, 4]	4,038,000 [r, 4]	4,121,000 [4]
Sedimentary rock, 19% to 30%		300,000	300,000	300,000	300,000	300,000
Total		4,460,000	4,450,000	4,240,000 [r]	4,340,000 [r]	4,420,000
Potash, marketable, K_2O equivalent[e]		4,200,000	3,700,000	4,300,000	4,400,000	4,740,000
Salt, all types		3,200,000	3,200,000 [e]	2,800,000	2,800,000 [e]	2,800,000 [e]
Soda ash		1,918,000	2,199,000	2,370,000 [e]	2,400,000 [e]	2,400,000 [e]
Sulfur:[e]						
Native		50,000	50,000	50,000	50,000	50,000
Pyrites		300,000	350,000	400,000	400,000	450,000
Byproduct, natural gas		4,405,000 [4]	4,900,000	5,300,000	5,400,000	5,600,000
Other		510,000	600,000	500,000	500,000	500,000
Total		5,265,000 [4]	5,900,000	6,250,000	6,350,000	6,600,000
Sulfuric acid		7,100,000	8,300,000	8,500,000 [e]	8,600,000	8,700,000
Talc[e]		90,000	100,000	100,000	100,000	100,000
Vermiculite[e]		25,000	25,000	25,000	25,000	25,000
Mineral fuels and related materials:						
Coal:						
Anthracite		9,900,000	15,318,000	15,885,000	14,700,000 [r]	NA
Bituminous		155,800,000	172,060,000	155,721,000	164,520,000 [r]	NA
Lignite		83,400,000	86,200,000 [r]	83,000,000 [r]	74,200,000 [r]	79,000,000
Total		249,100,000	273,578,000 [r]	254,606,000 [r]	253,420,000	274,700,000
Coke, 6% moisture content		28,100,000	29,000,000 [e]	29,900,000	30,900,000	32,700,000
Natural gas, marketed	million cubic meters	592,000	584,000	581,000	595,000	616,450
Natural gas plant liquids	42-gallon barrels	84,315,000	84,680,000	86,505,000	89,790,000	93,805,500
Oil shale		1,950,000	1,676,000	2,624,000	2,600,000	NA
Peat, fuel use		3,350,000	2,100,000	2,100,000	2,100,000 [e]	2,100,000 [e]
Petroleum:						
Crude in:						
Gravimetric units		305,000,000	324,000,000	348,000,000	379,000,000	412,377,000
Volumetric units[e]	thousand 42-gallon barrels	2,240,000	2,390,000	2,560,000	2,790,000	3,000,000
Refinery products[5]		175,000,000	174,000,000	178,362,300	184,960,000	190,030,000
Uranium, concentrate, U content[e]		2,000	2,000 [r]	2,000 [r]	2,000 [r]	2,000
TAJIKISTAN[6]						
Metals:						
Aluminum, primary		229,100	269,200 [r]	289,000	307,589 [r]	319,360
Antimony, Sb content of concentrate[e]		1,800	2,000	2,500	3,000	1,800
Bismuth, mine[e]		5	5	5	--	--
Gold[e]	kilograms	2,700 [r]	2,700 [r]	2,700 [r]	2,700 [r]	2,700
Lead, Pb content of concentrate[e]		800	800	800	800	800
Mercury, Hg content of concentrate[e]		35	40	40	20	30
Silver, Au content of concentrate	kilograms	5,000	5,000	5,000 [e]	6,000 [r]	6,000 [e]
Industrial minerals:						
Cement		30,000	50,000	70,000	100,000	120,000
Fluorspar[e]		9,000	9,000	9,000	9,000	9,000
Gypsum[e]		35,000	35,000	35,000	35,000	35,000
Nitrogen, N content of ammonia[e]		10,000	15,000	5,000	15,000	20,000
Mineral fuels and related materials:						
Coal		16,600	20,700	20,000	30,000 [r]	36,400
Natural gas	thousand cubic meters	40,000	40,000	50,000	30,000	32,800
Petroleum, crude		20,000 [e]	20,000	20,000	16,000 [r]	17,700

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity	1999	2000	2001	2002	2003
TURKMENISTAN					
Industrial minerals:					
Bentonite[e]	50,000	50,000	50,000	50,000	50,000
Bentonite powder[e]	250	250	250	250	250
Bischofite[e]	100	90	100	100	100
Bromine[e] kilograms	150,000	150,000	150,000	150,000	150,000
Cement[e]	450,000	450,000	450,000	450,000	450,000
Epsomite	NA	NA	NA	NA	NA
Ferrous bromide, 51% Br[e]	85	85	85	85	85
Gypsum[e]	100,000	100,000	100,000	100,000	100,000
Iodine[e]	150,000	200,000	200,000	200,000	300,000
Lime[e]	16,000	16,000	16,000	16,000	16,000
Nitrogen, N content of ammonia[e]	75,000	75,000	75,000	85,000 r	85,000
Salt[e]	215,000	215,000	215,000	215,000	215,000
Sodium sulfate[e]	60,000	60,000	60,000	60,000	60,000
Sulfur[e]	9,000	9,000	9,000	9,000	9,000
Mineral fuels and related materials:					
Natural gas million cubic meters	22,800	47,000	46,300	45,000 r	50,090
Petroleum, crude[e]	7,800,000	7,350,000	7,900,000	9,000,000	10,000,000
UKRAINE					
Metals:					
Alumina	1,230	1,360	1,343	1,351	1,434
Aluminum:					
Primary	115,425	103,600 r	106,000	112,459 r	113,640
Secondary	110,940	128,952	130,000	130,000	130,000
Total	226,365	232,552 r	236,000	242,459 r	243,640
Cadmium, metal[e]	25	25	25	25	25
Germanium[e]	22	NA	NA	NA	NA
Iron and steel:					
Iron ore, marketable	47,769,100	55,883,200	54,650,000	58,900,000	62,497,600
Metal:					
Pig iron	21,937,000	25,700,000	26,400,000	27,560,000	29,570,000
Ferroalloys:					
Blast furnace:[e]					
Ferromanganese	57,800	85,400	85,000	85,000	85,000
Spiegeleisen	2,500	5,400	5,000	5,000	5,000
Electric furnace:					
Ferromanganese	199,539	252,679	231,000 r	250,617 r	250,000
Ferronickel[e]	--	10,800	41,000	41,000	52,000
Ferrosilicon	243,600	323,417	231,000 r	250,617 r	250,000
Silicomanganese	498,905	684,040	702,389 r	732,592 r	740,000
Other[e]	25,000	25,000	25,000	25,000	25,000
Total	1,027,344	1,386,736	1,320,389 r	1,389,826 r	1,407,000
Steel:					
Crude	27,390,000	31,780,000	33,110,000	34,538,000	36,900,000
Finished, rolled	19,300,000	22,500,000	25,300,000	26,400,000	29,160,000
Pipe	1,175,000	1,670,000	1,600,000	1,522,700	2,054,000
Lead, refined, secondary	9,902	15,034	12,000 e	12,000 r, e	12,000
Magnesium, primary[e]	3 [4]	3	3	3	3
Manganese:					
Marketable ore	1,984,800	2,740,600	2,700,100	2,469,900 r	2,534,000
Mn content[e]	675,000	930,000	930,000	840,000 r	860,000
Mercury[e]	NA	NA	--	NA	NA
Nickel, mine output, Ni content of ore	--	--	1,500	2,000 r	2,000
Silicon[e]	1,000	NA	NA	NA	7,800

See footnotes at end of table.

TABLE 1--Continued

COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
UKRAINE--Continued						
Metals--Continued:						
Titanium:						
Ilmenite concentrate, 42% TiO		536,542	576,749	650,000	670,000 e	670,000 e
Rutile concentrate, 95% TiO[e]		49,000	58,600	60,000	70,000	60,000
Metal, sponge[e]		4,000	4,000	6,100	6,200	6,934 [4]
Zirconium concentrates[e]		25,000	30,000 r	33,600 r	34,300	35,000
Industrial minerals:						
Bromine[e]	thousand kilograms	3,000	3,000	3,000	3,000	3,000
Cement		5,828,100	5,311,400	5,800,000	7,142,000	9,000,000 e
Clays:[e]						
Bentonite		300,000	300,000	300,000	300,000	300,000
Kaolin		221,526 [4]	225,000	225,000	225,000	225,000
Diamond, synthetic[e]	carats	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Graphite		7,461	7,431	7,500 e	7,500 e	7,500 e
Nitrogen, N content of ammonia		3,711,000	3,577,000	3,700,000	3,700,000	3,900,000 e
Potash, K_2O equivalent[e]		50,000	85,000	75,000	60,000	60,000
Salt, rock		2,185,300	2,286,500	2,300,000 e	2,300,000 e	2,300,000 e
Soda ash[e]		460,000 [4]	500,000	650,000	678,000	650,000
Sulfur, native[e]		80,000	88,000 r	126,000 r	124,000 r	142,000
Mineral fuels and related materials:						
Coal:						
Anthracite	thousand tons	17,850	17,790	17,700	15,000	NA
Bituminous	do.	63,396	63,050	63,000	66,400	NA
Lignite	do.	1,184	1,067	1,000	1,000	NA
Total[7]	do.	82,430	81,907	81,700	82,400	79,255
Coke		17,309,700	19,362,600	19,500,000	18,596,000	20,600,000
Natural gas	cubic meters	18,092,100	17,847,100	18,200,000	18,400,000	19,460,000
Peat, fuel use[e]		1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Petroleum:						
Crude:						
As reported	gravimetric tons	3,797,900	3,692,900	3,700,000	3,720,000	3,975,000
Converted[e]	42-gallon barrels	27,900,000	27,200,000	27,200,000	27,304,800	29,200,000
Refinery products		13,800,000	10,424,400	NA	20,000,000 r	22,000,000
Uranium, concentrate, U content[e]		500	600 [4]	750	800	900
UZBEKISTAN						
Metals:						
Aluminum, secondary		1,900	1,500	3,000	3,000	3,000
Copper:[e]						
Mine output, Cu content		65,000 r	70,000 r	78,000 r	80,000 r	80,000
Metal:						
Blister:						
Primary		60,000 r	75,000	80,000 r	75,000	75,000
Secondary		10,000 r	10,000 r	10,000 r	-- r	--
Total		70,000 r	85,000 r	90,000 r	75,000 r	75,000
Refined:						
Primary		60,000 r	75,000	80,000 r	75,000	75,000
Secondary		10,000 r	10,000 r	10,000 r	-- r	--
Total		70,000 r	85,000 r	90,000 r	75,000 r	75,000
Gold	kilograms	85,000 r	85,000 r, e	87,000 r, e	90,000 r	95,000
Molybdenum, mine output, Mo content[e]		500	500	500	500	500
Silver, mine output	kilograms	88,700	89,900	80,000 e	80,000 e	80,000 e
Steel:						
Crude		343,000 e	420,000	460,000	450,000 e	472,000 e
Rolled		300,000	400,000	430,000	420,000 e	446,521
Zinc, metal, smelter, primary[e]		27,000	18,000	35,000 r	30,000 r	30,000

See footnotes at end of table.

TABLE 1--Continued
COMMONWEALTH OF INDEPENDENT STATES: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Country and commodity		1999	2000	2001	2002	2003
UZBEKISTAN--Continued						
Industrial minerals:						
Cement		4,471,000	3,521,000	4,000,000 e	4,000,000 e	4,000,000 e
Clays, kaolin[e]		5,500,000	5,333,000 [4]	5,500,000	5,500,000	5,500,000
Feldspar		300	4,300	4,300 e	4,300 e	4,300 e
Graphite[e]		60	60	60	60	60
Iodine[e]	kilograms	2,000	2,000	2,000	2,000	2,000
Mineral fertilizers		900,000	800,000	NA	NA	NA
Nitrogen, N content of ammonia		790,000	810,000	670,000	740,000	815,000 e
Phosphate rock:[e]						
Gross weight		150,000	150,000	200,000	425,000 r	430,000
P_2O_5 content		35,500 r	35,500 r	47,400 r	101,000 r	102,000
Sulfur, byproduct:[e]						
Metallurgy		175,000	160,000	160,000	170,000 r	170,000
Natural gas and petroleum		280,000	285,000	300,000	350,000 r	350,000
Total		455,000	445,000	460,000	520,000 r	520,000
Mineral fuels and related materials:						
Coal		3,033,000	2,556,000	2,800,000	2,735,000	1,909,000
Natural gas	million cubic meters	55,000	55,600	56,350	57,670	57,481
Petroleum and gas condensate		8,100,000	4,650,100	7,176,000	7,198,000	7,134,000
Petroleum refinery products		NA	NA	NA	5,500,000	5,807,000
Uranium, mine output, U content		2,130	2,350	1,962	1,860	1,600

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. NA Not available. -- Zero.

[1]Table includes data available through September 2004.

[2]For some metals, including copper, gold, lead, molybdenum, silver, and zinc, and for a number of industrial minerals that Azerbaijan had produced, there was not sufficient information to derive production estimates or to determine if production had ceased.

[3]Includes byproduct salt from potash production.

[4]Reported figure.

[5]Not distributed by type and therefore not suitable for conversion to volumetric units. Data include all energy and nonenergy products but exclude losses.

[6]Tajikistan produces a number of other mineral commodities not listed in the table for which information is inadequate to derive estimates.

[7]The totals for coal--sum of anthracite, bituminous, lignite--are slightly at variance with other reported total coal production numbers.

TABLE 2

COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
ARMENIA			
Aluminum, rolled and foil	Kanaker aluminum plant	K'anak'err	25,000
Copper:			
Mine output, Cu content	Facilities:		30,000 [4]
	Agarak copper-molybdenum mining and processing complex	Agarak	
	Kapan mining directorate	Kapan	
	Zangezur copper-molybdenum complex mining Kadzharan deposit	Kadzharan	
	Not in operation:		
	Akht'ala mining directorate	Akht'ala	
	Shamlugh mining directorate	Shamlugh	
Blister	Armenian Copper Programme cjsc (ACP)	Alaverdi	15,000
Diamond, cut stones	Aghavni diamond-cutting works	Nor Geghi	NA
Do.	Amma group diamond-cutting works	Artashat	NA
Do.	Andranik diamond-cutting works	Nor Hachyn	NA
Do.	Diamond Company of Armenia (DCA)	Yerevan	NA
Do.	Lori diamond-cutting works	Nor Hachyn	NA
Do.	Lusampor	Melik'gyugh	NA
Do.	Punji diamond-cutting works	Yerevan	NA
Do.	Sapphire diamond-cutting works	Nor Hachyn	NA
Do. thousand carats	Shoghakan gem-cutting plant	do.	120
Gold kilograms	Zod mining complex (mining ceased in 1997)	Zod	2,000
Do. do.	Ararat gold processing-tailings recovery plant	Ararat	1,000
Do.	Megradzor deposit (mining ceased in 1997)	Megradzor	NA
Do.	Lichkvazkoye, Shaumyanskiy Rayon, Sotkskoye, Terterasarskoye deposits		NA
Iron ore	Hrazdan deposit	Sulagyan Mountains	NA
Molybdenum, mine output, Mo content	Zangezur copper-molybdenum complex, mining Kadzharan deposit	Kadzharan	20,400
Do.	Agarak copper-molybdenum mining and processing complex	Agarak	2,000
Perlite thousand tons	Aragats-Perlite mining and beneficiation complex	Aragats deposit	1,110
Zinc, mine output, Zn content	Kapan mining directorate	Kapan	NA
AZERBAIJAN			
Alumina	Gyandzha refinery	Ganca	100,000
Aluminum thousand tons	Sumgait smelter	Sumqayit	100 to 150
Alunite ore	Zaglik alunite mining directorate	Zaglik	600,000
Arsenic	NA	Dzhul'finskiy Region	NA
Barite	NA	Khanlarskiy Region	NA
Cement	Facilities:		1,000,000 [4]
	Karadagly cement plant	Karadagly	
	Tauz cement plant	Tauz Region	
Clay, bentonite	Dash-Salakhlinskoye deposit	Kazakhskiy Region	1,000,000
Copper	Karadaskiy complex	Shamkhorskiy Region	30,000
Copper, byproduct gold and silver	Kedabekskiy Rayon deposit	NA	NA
Copper, gold, iron, lead, sulfur, zinc	Katekhskoye, Katsdagskoye, Khikhinskoye deposits	Sheki-Belokanskiy zone, southern Caucasus	NA
Dolomite	NA	Nakhichevan Region	NA
Iodine and bromine	Baku, Karadagly, Neftechala plants	Process oil well brines at plants in Baku, Karadagly Neftechala	NA
Iron ore, marketable	Dashkasan mining directorate	Dashkasan Region	1,400,000
Lead-zinc ore	NA	Ordubadskiy and Norashenskiy Regions	NA
Limestone	NA	Dashkasan Region	NA
Molybdenum	NA	Ordubadskiy Region	NA

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
AZERBAIJAN--Continued			
Petroleum and natural gas:[5]			
Crude petroleum and gas condensate	State Oil Company of Azerbaijan (SOCAR) for natural gas production	Production from 37 onshore deposits, which includes deposits on the Ashperon Peninsula and in the Izhnekurin Valley	3,000,000 [4]
Do.	do.	Production from 17 offshore fields with more than 45% of natural gas produced from the Bakharly field and more than 50% of crude petroleum produced from the Guneshli field	12,000,000 [4]
Do.	Azerbaijan International Operating Company (AIOC) for oil production	Azeri, Chirag-1, Guneshli offshore fields	7,000,000 [4]
Do.	Alov, Araz, Khazar, Kyapaz-Serdar, Osman, Sharg offshore fields	Caspian Sea	NA
Natural gas million cubic meters	State Oil Company of Azerbaijan (SOCAR) for natural gas production	Production from 37 onshore deposits, which includes deposits on the Ashperon Peninsula and in the Izhnekurin Valley	6,000 [4]
	do.	Production from 17 offshore fields with more than 45% of natural gas produced from the Bakharly field and more than 50% of crude petroleum produced from the Guneshli field	
Do.	NA	Gunesli, Nakhchyvan, Shah-Deniz offshore fields	NA
Natural gas, processing	Karadagly plant	Near Baku	NA
Petroleum, refined 24-gallon barrels	Azernefteyag (formerly Baku) refinery	Baku	83,950,000 [6]
Do. do.	Azernefteyagandzhah (formerly Novo-Baku) Refinery	do.	77,380,000 [6]
Pyrite polymetallic	NA	Filizchayskiy deposit	NA
Steel:			
Crude	Azerboru production amalgamation	Sumqayit	800,000
Rolled	do.	do.	700,000
Pipe, tubes	do.	do.	540,000
Stones, facing	Buzgovskiy and Shakhtakhtinskiy deposits	NA	NA
Sulfur pyrites	NA	Khanlarskiy Region	NA
Travertine	NA	Nakhichevan Region	NA
BELARUS			
Cement	Krichevskiy and Volkovysk plants	Mahilyowskaya and Wawkavysk Voblasts'	2,200,000
Diamond	Kristall plant	Homyel'skaya Voblasts'	NA
Nitrogen, N content of ammonia	Grodno "Azot" Association	Hrodna Region	1,000,000
Peat, fuel use	Production at 37 enterprises producing mainly briquets	All regions of country	5,000,000 [7]
Petroleum:			
Crude	Belarusneft Association	Southeastern part of country	2,000,000
Refined	Mazyr refinery	Mazyr	16,000,000 [8]
Do.	Naftan refinery	Navapolatsk	8,450,000 [8]
Potash, K_2O equivalent	Belaruskaliy Association	Salihorsk area	5,000,000
Steel:			
Crude	Belarus electric steelworks	Zhlobin	1,400,000
Pipe	Mahilyow metallurgical works	Mahilyowskaya Voblasts'	80,000
GEORGIA			
Arsenic:			
As content of ore	Deposits: Lukhumi deposit Tsana deposit	 Racha Svanetiya	2,000 [4]
Metal and compounds	Racha mining and chemical plant	Racha	NA
Do.	Tsana mining and chemical plant	Ts'ana	NA
Barite	Chordskoye deposit	Onis Raioni (Onskiy Rayon)	70,000
Do.	NA	Madneuli deposit	NA

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
GEORGIA--Continued			
Barite-zinc	NA	Kvaisi deposit	NA
Bentonite	Gumbrskoye and Askanskoye deposits	Gumbra, Askana Regions	200,000 [4]
Cement	Rust'avi cement plant	Rust'avi	1,500,000
Coal	Tkibuli-Shaorskoye, Tkvarchelskoye deposits	Akhalts'ikhis Raioni, Tqibuli, Tqvrach'eli Regions	300,000 [4]
Copper, Cu content of ore	Madneuli complex	Marneulis Raioni	12,000
Diatomite	Kisatibskoye deposit	K'isat'ibi Region	150,000
Ferroalloys:			
Ferromanganese	Zestafoni plant	Zestap'onis Raioni	100,000
Silicomanganese	do.	do.	250,000
Manganese sinter	do.	do.	250,000
Gold	Georgian-Austrian joint venture Quartzite	Madneuli deposit	3
Lead-zinc:			
Pb content of ore	Kvaisi deposit	Kvaisi	1,200
Zn content of ore	do.	do.	3,000
Manganese, marketable ore	Chiaturmarganets complex	Chiat'ura-Sach'kheris Raioni field	200,000
Petroleum:			
Crude	About 60 wells accounting for 98% of output	Mirzaani, Sup'sa, Zemo T'elet'i Regions	200,000 [4]
Refined	Batumi refinery	Bat'umi	NA
Steel, crude	Rust'avi steel mill	Rust'avi	1,400,000
KAZAKHSTAN			
Alumina	Pavlodar aluminum plant	Pavlodar	1,250,000
Arsenic trioxide	Chimkent polymetallic enterprise and other nonferrous metallurgical enterprises	Shymkent	3,500
Asbestos	Facilities:		1,000,000 [4]
	Dzhetygara complex	Qostanay	
	Chilisay complex	Aqtobe phosphorite basin	
Barite	Facilities:		300,000 [4]
	Karagaylinskiy and Zhayrem mining and beneficiation complexes	Karagayly, Zhayrem deposit	
	Tujuk Mine	Almaty	
	Achisay polymetallic complex	Kentau Region	
Bauxite	Turgayskiy and Krasnooktyabrskiy bauxite mining complexes	Central Kazakhstan	5,000,000
Beryllium, metal	Ul'ba metallurgical plant	Oskemen	NA
Bismuth, metal	Facilities:		70 [4]
	Ust-Kamenogorsk lead-zinc metallurgical plant	Oskemen	
	Leninogorsk lead smelter	Leninogorsk	
Do.	Chimkent refinery	Shymkent	20
Cadmium	do.	do.	10
Do.	Leninogorsk mining and beneficiation complex	Leninogorsk	1,200
Chromite, mine output, Cr_2O_3 content (50%)	Donskoy GOK mining and beneficiation complex	Near Khromtau, Kempirsai Region	5,000,000
Coal	Karaganda Basin	Central and north-central parts of the country	50,000,000
Do.	Ekibastuz Basin	do.	85,000,000
Do.	Maykuben Basin	do.	10,000,000
Do.	Turgay Basin	do.	1,000,000
Copper:			
Mining, recoverable, Cu content	Irtysh	Ertis Region	10,000
Do.	Leninogorsk	Leninogorsk Region	15,000
Do.	Zyryanovsk mining and beneficiation complexes	Zyryanovsk Region	5,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
KAZAKHSTAN--Continued			
Copper--Continued:			
Mining, recoverable, Cu content--Continued:			
Do.	Kazakhmys (OJSC):		
	Balkhash mining and metallurgical complex	Zhezkazgan Region	200,000
Do.	East Kazakhstan copper-chemical complex	East Kazakhstan Region	12,000
Do.	Zhezkent mining and metallurgical enterprise	Zhezkent Region	25,000
Do.	Zhezkazgan mining and metallurgical enterprise	Zhezkazgan Region	250,000
Metal:			
Blister	Ust-Kamenogorsk plant	Oskemen	37,100
Do.	Zhezkazgan mining and metallurgical enterprise	Zhezkazgan Region	250,000
Do.	Irtysh smelting and refining complex	Ertis Region	40,000
Do.	Balkhash mining and metallurgical complex	Zhezkazgan Region	110,000
Refined	Zhezkazgan mining and metallurgical enterprise	do.	250,000
Do.	Balkhash mining and metallurgical complex	do.	150,000
Do.	Irtysh smelting and refining complex	Ertis Region	40,000
Do.	Ust-Kamenogorsk plant	Oskemen	6,600
Ferroalloys:			
Ferrochrome:			
High-carbon 60%	Aktybinsk plant	Aqtobe	200,000
Medium-carbon 60%	do.	do.	200,000
Do.	Aksu plant	Aksu	200,000
Ferrosilicon	do.	do.	700,000
Ferrosilicochrome	do.	do.	700,000
Ferrochrome, high-carbon	do.	do.	500,000
Silicomanganese	do.	do.	90,000
Gallium	Pavlodar aluminum plant	Pavlodar	NA
Gold	Byproduct of polymetallic ores and native gold mining	Byproduct gold colocated with nonferrous metals mining	30
Iron and steel:			
Pig iron	Ispat-Karmet Steelworks	Karaganda	5,000,000
Steel, crude	do.	do.	6,300,000
Iron ore, marketable	Lisakovskiy and Sokolovsko-Sarbay mining and metallurgical complexes	Qostanay	25,000,000
Lead:			
Mining, recoverable Pb content of ore	Achisay	Karatau and Kentau Regions	40,000 [4]
Do.	Akchatau	Zhezkazgan Region	10,000
Do.	Irtysh	Oskemen Region	10,000
Do.	Karagayly	Karagayly Region	20,000
Do.	Zhezkent	Semey Region	NA
Do.	Sary-Arkapolimetal	Zhayrang Region	20,000
Do.	East Kazakhstan copper-chemical complex	East Kazakhstan Region	NA
Do.	KazZinc subsidiaries:		
	Leninogorsk mining-metallurgical complex	Leninogorsk Region	60,000
Do.	Tekeli lead-zinc mining complex	Taldyqorghan and Tekeli Regions	15,000 [4]
Do.	Zyryanovsk lead-zinc complex	Zyryanovsk Region	20,000
Refined	Ust-Kamenogorsk metallurgical plant	Oskemen	145,000
Do.	Leninogorsk mining-metallurgical complex	Leninogorsk Region	30,000
Do.	Chimkent refinery	Shymkent	160,000
Magnesium, metal	Ust-Kamenogorsk titanium-magnesium plant	Oskemen	20,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
KAZAKHSTAN--Continued			
Manganese, crude ore	Facilities:		2,550,000 [4]
	Atasurda	Atasu	
	Kazakmarganets	Zhezdy	
	Sary-Arkapolimetal	Zhayrang Region	
Molybdenum:			
Mining, recoverable content of ore	Facilities:		6,000 [4]
	Balkhash complex	Kounrad Mine	
	Karaobinskoye deposit	Karaoba Region	
	Sayak deposit	Sayaq (Sayak) Region	
Metal	Akchatau molybdenum metal plant	Zhezkazgan Region	NA
Natural gas million cubic meters	Facilities:		16,000 [4]
	Aktyubinskmunaigaz	Aqtobe	
	Embamunaigaz	Emba District	
	Huricane Kumkol Munai	Aral Sea Region	
	Karachaganak field	Northwestern Kazakhstan	
	Mangistaumunaigaz	Mangghhyshlaq Peninsula	
	Tengizchevroil joint venture	Tengiz deposit	
	do.	Zhanazhol deposit	
	do.	Urikhtau deposit	
	Agip Kazakhstan North Caspian Operating Company (AGip KCO)	Kashagana offshore field	
	Uzenmunaigaz	Uzen deposit	
Petroleum:	Facilities:		32,000,000 [4]
Crude	Aktyubinskmunaigaz	Aqtobe	
	Embamunaigaz	Emba District	
	Huricane Kumkol Munai	Aral Sea Region	
	Karachaganak Integrated Organization (KIO)	Karachaganak field	
	Mangistaumunaigaz	Mangghhyshlaq Peninsula	
	Uzenmunaigaz	Uzen deposit	
Do.	Alibekmola, Ayrankul, Chinarevskoye, Kozhasay, North Buzachi, Sazankurak, Saztyube, Urikhtau deposits	NA	NA
Do. 42-gallon barrels per day	Tengizchevroil joint venture	Tengiz deposit (peak production by 2010)	750,000
Do. do.	Agip Kazakhstan North Caspian Operating Company (AGip KCO)	Kashagana offshore field	100,000
Refined, crude oil throughput do.	Atyrau Pavlodar, Shymkent refineries	Atyrau, Pavlodar, Shymkent, respectively	427,000 [4]
Phosphate rock	Facilities:		10,000,000 [4]
	Chilisay mining directorate	Aqtobe phosphorite basin	
	Karatau production association	Shymkent and Zhambyl Regions	
Rare metals (columbium, indium, selenium, tellurium)	Aktau complex	Aktau	NA
Do.	Belogorsky rare metals plant	Belogorskiy	NA
Do.	Chimkent polymetallic plant	Shymkent	NA
Do.	Ust-Kamenogorsk lead-zinc plant	Oskemen	NA
Do.	Akchatau mining and beneficiation complex	Zhezkazgan Region	NA
Rhenium	Balkhash copper mining-metallurgical complex	do.	NA
Silver, refined	Facilities:		1,000 [4]
	Chimkent metallurgical plants	Shymkent	
	Leninogorsk	Leninogorsk	
	Ust-Kamenogorsk	Zhezkazgan Region	
Tantalum	Yermak ferroalloy plant	Aksu	NA
Tin	Akchatau mining and beneficiation complex	Akzhaik deposit, Zhezkazgan Region	700
Titanium, metal	Ust-Kamenogorsk titanium-magnesium plant	Oskemen	35,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
KAZAKHSTAN--Continued			
Uranium, U content	Facilities:		3,500 [4]
	Prikaspiskiy ore enrichment center	Aqtau	
	Shevchenko	do.	
	Stepnogorsk	Stepnogorsk	
	Taboshara	Taboshara	
	Tselinny chemical complex	Stepnogorsk	
Zinc:			
Concentrates (Zn content)	Kazakhmys (OJSC) acquisitions:		
	East Kazakhstan copper-chemical complex	East Kazakhstan Region	50,000
Do.	Zhezkent mining and metallurgical enterprise	Zhezkent Region	25,000
Do.	Tishinskiy deposit	NA	NA
Do.	Tekeli lead-zinc mining complex	Taldyqorghan and Tekeli Regions	30,000 [4]
Metal	Leninogorsk mining and metallurgical complex	Leninogorsk	107,000 [9]
Do.	Balkhash	Zhezkazgan Region	90,000
Do.	Ust'-Kamenogorsk metallurgical plant	Oskemen	160,000 [9]
KYRGYZSTAN			
Antimony:			
Sb content of ore	Kadamzhai and Khaidarkan complexes	Kadamzhaiskiy Rayon, Khaidarkan Region	2,400 [4]
Ore	Kadamzhai beneficiation plant	Kadamzhai deposit	200,000
Do.	Terek-Sayskiy beneficiation plant	Terek-Sayskiy deposit	60,000
Metal and compounds	Kadamzhai metallurgical facility	Kadamzhaiskiy Rayon	28,000
Cement	Kantskiy cement plant	Kant	1,500,000
Coal	Seven underground mines, five open pits and deposits: Almalyk, Dzhergalan, Kara-Kiche, Kok-Yangak, Kyzyl-Kiya, Sulyukta, Tashkumyr	Southwestern, central, and northeastern parts of the country	2,200,000 [4]
Fluorspar, concentrate	Khaidarkan mining and metallurgical complex	Khaidarkan deposit	5,000
Gold:			
Au content of ore	Makmalzoloto	Makmal deposit	3
Do.	Kumtor Gold Company	Kumtor deposit	22
Do. kilograms	Solton-Sary Mine	Naryn	500
Do.	Taldybulak Levoberezhny deposit	NA	NA
Au content of ore, open pit	Kyrgyzaltyn-Noroks Mining Company JV	Dzher-Uy deposit	650,000
Au content of ore, underground	do.	do.	350,000
Refined	Kara-Balta refinery	Chuskaya Oblast'	22
Mercury:			
Hg content of ore	Khaidarkan mining and metallurgical complex	Khaidarkan, Chauvi, Chonkoy, Novoye deposits	700 [4]
Metal	do.	do.	1000
Molybdenum, for nonmetallurgical uses	Molibden Joint Stock Company	Chuskaya Oblast'	NA
Do.	Kara Balta mining and metallurgical complex	NA	NA
Natural gas million cubic meters	Kyrgyzazmunayzat	Approximately 300 wells; Changyr-Tash, Chigirchi Pereval, Izbaskentskoye, Kara-Agach, Mayluu-Suu, Susahoye, Togap-Beshkenskoye deposits (major)	100 [4]
Petroleum	do.	do.	150,000
Rare earths:			
Concentrates, gross weight	Aktyuzskiy mining directorate	Kutessai II and Aktyuz-Boordu deposits	14,000
Compounds and metals, rare earth oxide equivalent	Kyrgyz chemical and metallurgical plant	Orlovka	8,000
Silver	Kumyshtag deposit	Talasskaya Oblast'	NA
Do.	Karagoyskoye deposit	Oshskaya Oblast'	NA
Tin	Uchkoshkon deposit	Sary-Dzhas field	NA
Do.	Tyan'Shan'olovo mining-beneficiation complex	do.	NA
Do.	Enil'chek JSC mining enterprise	Atdzhaylau deposit	150
Do.	do.	Trudovoye deposit	350

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
KYRGYZSTAN--Continued			
Tungsten	Enil'chek JSC mining enterprise	Trudovoye deposit	95,600
Do.	do.	Atdzhaylau deposit	90
Do.	do.	Trudovoye deposit	120
Uranium, processed	Kara-Balta mining and metallurgical complex	Chuskaya Oblast'	1,200
MOLDOVA			
Petroleum and natural gas:			
Oil	Redeco Moldova oil and gas company	Valeni oilfield	100,000
Natural gas thousand cubic meters	do.	Victorovca gasfield	5,000
Steel, crude	Moldova Steel Works minimill	Ribnita, Transnistria Region	1,000,000
RUSSIA			
Alumina	Achinsk	Achinsk in East Siberia	900,000
Do.	Bogoslovsk	Ural'skiye Gory	1,050,000
Do.	Boksitogorsk	European north	200,000
Do.	Nadvoitsy	Nadvoitsy in Karelia	266,000
Do.	Uralsk	Kamensk Region	536,000
Do.	Volkhov	Volkhov, east of St. Petersburg	45,000
Aluminum, primary smelters	Bogoslovsk	Krasnotur'insk	175,000
Do.	Bratsk	Bratsk	950,000
Do.	Irkutsk	Irkutskaya Oblast'	300,000
Do.	Kandalaksha	Kola Pennisula	75,000
Do.	Krasnoyarsk	Krasnoyarskiy Kray	875,000
Do.	Nadvoitsy	Nadvoitsy in Karelia	75,000
Do.	Novokuznetsk	Novokuznetsk	300,000
Do.	Sayansk	Sayanogorsk	425,000
Do.	Uralsk	Kamensk	80,000
Do.	Volgogard	Volgogradskaya Oblast'	175,000
Do.	Volkhov	Volkhov, east of St. Petersburg	20,000
Antimony:			
Sb content of concentrate	Sarylakh deposit	Ust'-Nera Region	6,000 [4]
Do.	Sentachan deposit	Northeastern Sakha (Yakutiya) Republic	NA
Compounds and metals	Ryazsvetmet plant	Ryazanskaya Oblast'	NA
Apatite, concentrate	Khibiny apatite asociation	Kola Peninsula	15,000,000
Do.	Kovdor iron ore mining association	do.	700,000
Asbestos	Kiyembay	Orenburgskaya Oblast'	500,000
Do.	Tuvaasbest	Tuva Autonomous Region	250,000
Do.	Uralaasbest	Central Urals	1,100,000
Bauxite	North-Urals mining company	Severoural'sk Region	NA
Do.	South-Urals mining company	South Urals	NA
Do.	Severnaya Onega Mine	Northwest Region	800,000
Do.	Komi Aluminum	Sredne-Timan	3,000,000
Boron, boric acid	Bor Association	Maritime Territory	140,000
Do.	Amur River complex	Far East	8,000
Do.	Alga River chemical complex	do.	12,000
Chromite	Saranov complex	Saranovskiy	200,000
Coal	Donets (east) Basin	Rostovskaya Oblast'	30,000,000
Do.	Kansk Achinsk Basin	East Siberia	50,000,000
Do. thousand tons	Kuzntesk Basin (Kuzbass)	West Siberia	160,000
Do.	Moscow Basin	Moscow Region	15,000,000
Do.	Neryungri Basin	Sakha (Yakutiya) Republic	15,000,000
Do.	Pechora Basin	Komi Republic	30,000,000
Do.	South Yakutia Basin	Sakha (Yakutiya) Republic	17,000,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
RUSSIA--Continued			
Cobalt:	MMC Noril'sk Nickel	Noril'sk, Kola Peninsula	4,000
Do.	Rezh and Yuzhuralnikel enterprises	South Urals	2,100
Do.	Ufaleynikel company	Chelyabinsk region, Urals	1,900
Do.	Tuva cobalt	Khovu-Aksy, Tuva Autonomous Region	NA
Copper:			
Ore	MMC Noril'sk Nickel	Noril'sk region, Kola Peninsula	14,000,000
Do.	Molodezhnyy, Sibay, Uchali open pits	Urals	NA
Do.	Mednogorsk complex	Aleksandrinskoye deposit	NA
Do.	Gai complex	Letneye deposit	NA
Do.	Rezh nickel plant	Safyanovoskoye deposit	NA
Do.	Udokan deposit	Chita Oblast	10,000,000
Cu content of concentrate	Buribai enterprise	Buribay Region	5,000
Do.	Gai complex	Gai region	40,000
Do.	Kirovgrad complex	Kirovgrad Region	12,000
Do.	Krasnoural'skiy complex	Krasnoural'skiy Region	12,000
Do.	Noril'sk complex	Noril'sk region, Kola Peninsula	400,000
Do.	Sredneuralsk complex	Ekatrinenburg Region	12,000
Do.	Uchali complex	Uchalinskiy Rayon	40,000
Do.	Urap complex	Stavropol'skiy Kray	7,000
Metal	Kirovgrad (smelting)	Kirovgrad	150,000
Do.	Krasnoural'skiy (smelting)	Krasnoural'sk	60,000
Do.	Kyshtym (refining)	Kyshtym	70,000
Do.	Mednogorsk (smelting)	Mednogorsk	40,000
Do.	Noril'sk (smelting and refining)	Nori'lsk region	500,000
Do.	Psysh (refining)	Psysh	350,000
Do.	Severonikel (smelting)	Monchegorsk	20,000
Do.	Sredneuiralsk (smelting)	Revda	140,000
Diamond, gem and industrial:	Almazy Rossii-Sakha Association (ALROSA) enterprises:	Mines:	
Do. thousand carats	Udachnyy mining and beneficiation	Zarnitsa and Udachnyy	NA
Do. do.	Mirny mining and beneficiation	Mir and International	NA
Do. do.	Aikhal mining and beneficiation	Aikhal and Komsomol'skiy	NA
Do. do.	Anabaraskiy mining and beneficiation	Alluvial mines	NA
Do. do.	Nyurbinskiy mining and beneficiation	Nyurbinskiy and Botuobinskiy	NA
Do. do.	Lomonosov	Arkhangel'skaya Oblast'	NA
Feldspar	Kheto-Lanbino and Lupikko deposits	Karelia	NA
Ferroalloys	Kosaya Gora iron works	Kosaya,Gora	200,000
Do.	Kuznetsk ferroalloys plant	Novokuznetsk	400,000
Do.	Lipetsk iron and steel works	Lipetskaya Oblast'	NA
Do.	Serov ferroalloy plant	Serov	NA
Do.	Chelyabinsk electrometallurgical plant	Chelyabinskaya Oblast'	450,000
Do.	Chusovoy iron and steel plant	Chusovoy	NA
Do.	Klyuchevsk ferroalloy plant	Dvurechensk	160,000
Ferronickel	Ufaleynikel company	Chelyabinsk Region, Urals	5,000
Ferrovanadium	Vanadii-Tulachermet	Tula, North Caucasus	NA
Fluorspar	Abagaytuy deposit	Transbaikal	NA
Do.	Usugli mine	do.	NA
Do.	Kyakhtinsky deposit	do.	NA
Do.	Kalanguy mining complex	Chita Region, Transbaikal	NA
Do.	Yaroslavsky mining and beneficiation complex	Pogranichnoye and Vosnesenskoye deposits, Russian Far East's Maritime (Primor'ye) Region	NA

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
RUSSIA--Continued			
Gold kilograms	Mining regions:		200,000 [4]
	Buryat	Buryatiya Republic	
	Irkutsk (Lenzoloto Gold Company)	NA	
	Krasnoyarsk (Polius Gold Company)	Krasnoyarskiy Kray (Olimpiady deposit)	
	Magadan (Omolon Gold Company)	Magadanskaya Oblast'	
	Maritime	Maritime Territory	
	Tuva	Tuva Autonomous Region	
	Yakut-Sakha	Sakha (Yakutiya) Republic	
Iron ore	Kursk Magnetic Anomaly (KMA) containing the following enterprises:		50,000,000 [4]
	Lebedi and Stoilo	Gubkin	
	Mikhailovka	Zheleznogorsk	
Do.	Northwest containing the following enterprises:		22,000,000 [4]
	Kostomuksha	Kostomuksha	
	Kovdor	Kola Peninsula	
	Olenegorsk	Olenegorsk	
Do.	Siberia containing the following enterprises:		18,000,000 [4]
	East:		
	Korshunovo	Zheleznogorsk	
	Rudnogorsk	Rudnogorsk	
	West:		
	Abakan	Abaza	
	Sheregesh	Sheregesh	
	Tashtagol	Tashtagol	
	Teya	Vershina Tei	
Do.	Urals containing the following enterprises:		22,000,000 [4]
	Akkermanovka	Novotroitsk	
	Bakal	Bakal	
	Goroblagodat	Kushva	
	Kachkanar	Kachkanar	
	Magnitogorsk	Magnitogorsk	
	Peshchanka	Rudnichnyy	
Lead-zinc, recoverable content of ore:			
Lead, recoverable Pb content of ore	Altay mining and benefication complex	Altay mountains Region, South Siberia	2,000
Do.	Dalpolymetal mining and benefication complex	Maritime Territory	20,000
Do.	Nerchinsk polymetallic complex	Chitinskaya Oblast'	7,000
Do.	Sadon lead-zinc complex	Severnaya Osetiya-Alaniya Republic	5,000
Do.	Salair mining and benefication complex	Kemerovo Oblast'	2,000
Zinc, recoverable Zn content of ore	Altay mining and benefication complex	Altay mountains Region, South Siberia	1,000
Do.	Dalpolymetal mining and benefication complex	Maritime Territory	25,000
Do.	Nerchinsk polymetallic complex	Chitinskaya Oblast'	12,500
Do.	Sadon lead-zinc complex	Severnaya Osetiya-Alaniya Republic	14,000
Do.	Salair mining and benefication complex	Kemerovo Oblast'	10,500
Lead, metal	Dalpolymetal lead smelter	Rudnaya in the Maritime District	20,000
Do.	Elektrozinc lead smelter	Vladikavkaz in North Caucasus	30,000
Magnesite	Satka deposit	Chelyabinsk Oblast'	3,800,000
Magnesium, metal (for sale)	Avisma plant	Berezniki	35,000
Do.	Solikamsk plant	Solikamsk	30,000
Mica	Aldan	Sakha (Yakutiya) Republic	NA
Do.	Karel	Karelia	NA
Do.	Kovdor	Kola Peninsula	NA
Do.	Mam	Irkutsk complex	NA

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
RUSSIA--Continued			
Molybdenum	Dzhida tungsten-molybdenum mine	West Transbaikal	NA
Do.	Sorsk molybdenum mining enterprise	Sorsk Region	NA
Do.	Tyrnyauz tungsten-molybdenum mine	North Caucasus	NA
Do.	Shakhtaminskoye molybdenum mining enterprise	Chitinskaya Oblast'	NA
Natural gas million cubic meters	Komi Republic	Komi Republic	8,000
Do. do.	Noril'sk area	Noril'sk area	5,500
Do. do.	North Caucasus	North Caucasus	6,000
Do. do.	Sakhalin	Far East	2,000
Do. do.	Tomsk Oblast	West Siberia	500
Do. do.	Tyumen Oblast including:	do.	575,000 [4]
	Medvezhye field	do.	(75,000)
	Urengoi field	do.	(300,000)
	Vyrngapur field	do.	(17,000)
	Yamburg field	do.	(170,000)
Do. do.	Bovanenko field	Yamal Peninsula	NA
Do. do.	Pestsovoyy field	Ob-Taz Gulf area	NA
Do. do.	Zapolyarnyy field	do.	NA
Do. do.	Schtokmanov field	Barents Sea	NA
Do. do.	Urals	Ural'skiye Gory	45,000
Do. do.	Volga	Volga Region	6,000
Do. do.	Yakut-Sakha	Sakha (Yakutiya) Republic	1,500
Nepheline syenite	Apatite complex	Kola Pennisula	1,500,000
Do.	Kiya-Shaltyr Mine	Goryachegorsk Region, east Siberia	NA
Nickel:			
Ni in ore	MMC Noril'sk Nickel	Noril'sk Region, Kola Peninsula	300,000
Do.	Yuzhuralnikel company	South Urals	3,000
Do.	Ufaleynikel company	Chelyabinsk Region, Urals	17,000
Metal:			
Smelting	MMC Noril'sk Nickel	Noril'sk region	160,000
Do.	do.	Pechenga	50,000
Do.	do.	Monchegorsk	50,000
Refining	do.	Noril'sk region	100,000
Do.	do.	Monchegorsk	140,000
Ni products and Ni in FeNi	Rezh, Ufaleynikel, Yuzhuralnikel enterprises	South Urals	65,000
Oil shale	Leningradslanets Association	Slantsy Region	5,000,000
Petroleum	East Siberia, Tomsk Oblast	Tomskaya Oblast'	11,000,000
Do.	European Russia:		
Do.	Astrakhan	North Caspian Sea basin	700,000
Do.	Bashkortostan	Ural'skiye Gory	28,000,000
Do.	Checheno-Ingush Republic	Southern Caucasus	4,500,000
Do.	Dagestan	North Caucasus	700,000
Do.	Kaliningrad Oblast	Baltic coast	1,800,000
Do.	Komi Republic	Northwest	15,000,000
Do.	Krasnodar Kray	North Caucasus	2,000,000
Do.	Orenburg Oblast	Ural'skiye Gory	13,000,000
Do.	Perm Oblast	do.	12,000,000
Do.	Samara	Volga Region	16,000,000
Do.	Saratov Oblast	do.	1,500,000
Do.	Stavropol Kray	North Caucasus	2,000,000
Do.	Tatarstan	Volga Region	40,000,000
Do.	Udmurt Republic	Ural'skiye Gory	9,000,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
RUSSIA--Continued			
Petroleum--Continued thousand tons	Fields:	Tyumenskaya Oblast', West Siberia	300,000 [4]
do.	Kogolym	do.	(34,000)
do.	Krasnoleninskiy	do.	(12,000)
do.	Langepas	do.	(30,000)
do.	Megion	do.	(18,000)
do.	Nizhnevartovsk	do.	(70,000)
do.	Noyabrsk	do.	(37,000)
do.	Purneftegaz	do.	(12,000)
do.	Surgat	do.	(48,000)
do.	Uray	do.	(8,000)
do.	Varegan	do.	(10,000)
Do.	Sakhalin Island	Sakhalin Island	2,500,000
Phosphate rock	Kingisepp complex	Leningradskaya Oblast'	NA
Do.	Lopatino, Yegorevsk deposits	Moscow Oblast'	NA
Do.	Polpinskoye deposit	Bryanskaya Oblast'	NA
Do.	Verkhnekamsk deposit	Ural'skiye Gory	NA
Phosphate rock, apatite concentrate	Khibiny Apatit Association	Kola Peninsula	12,000,000
Do.	Kovdor iron mining complex	do.	700,000
Platinum-group metals:			
Ore, PGM content	MMC Noril'sk Nickel	Noril'sk region	150
Do.	AO Koryakgeoldobycha, Amur Prospectors	Placer deposits (mostly platinum), Urals; Siberia; Russian Far East	10 [4]
Metals	Krasnoyarsk Nonferrous Metals Plant (Krastsvetmet)	Krasnoyarskiy Kray	NA
Do.	Ekaterinburgskiy plant (EZOTsM)	Ekaterinburg	NA
Do.	Priobsk plant	Priobsk	NA
Potash, K_2O equivalent	Uralkaliy	Verkhnekamsk deposit	3,000,000
Do.	Silvinit	Solikamsk-Berezniki regions, Ural'skiye Gory	2,000,000
Silver	Dukat Mine, cobyproduct and byproduct of gold and nonferrous metals mining	Magadanskaya Oblast'	1,000
Soda ash	Achinsk plant	East Siberia	595
Do.	do.	do.	595
Do.	Berezniki plant	Ural'skiye Gory	1,080
Do.	Pikalevo plant	Leningradskaya Oblast'	200
Do.	Sterlitamak plant	Sterlitamak	2,135
Do.	Volkhov plant	Leningradskaya Oblast'	20
Steel, crude	Amurstal	Komsomol'sk-na-Amure	1,600,000
Do.	Asha	Asha	450,000
Do.	Beloretsk	Bashkirskoye	380,000
Do.	Chusovoy	Chusovoy	570,000
Do.	Elektrostal	Moscow	314,000
Do.	Gorky	Nizhniy Novgorod	78,000
Do.	Gur'yevsk	Gur'yevsk	160,000
Do.	Karaganda	Karaganda	6,300,000
Do.	Lipetsk	Lipetskaya Oblast'	9,900,000
Do.	Lys'va	Lys'va	350,000
Do.	Magnitogorsk	Magnitogorsk	16,200,000
Do.	Mechel (Chelyabinsk)	Chelyabinskaya Oblast'	7,000,000
Do.	Nizhniy Tagil	Nizhniy Tagil	8,000,000
Do.	Nizhniy Sergi	Nizhniye Sergi	300,000
Do.	Nosta (Orsk-Kahlilovo)	Novotroitsk in Orenburgskaya Oblast'	4,600,000
Do.	Novosibirsk	Novosibirskaya Oblast'	1,100,000
Do.	Omutninsk	Omutninsk	210,000
Do.	Oskol Electric Steel	Staryy Oskol	2,500,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
RUSSIA--Continued			
Steel, crude--Continued	Petrovsk-Zabaykal'skiy	Petrovsk-Zabaykal'skiy	426,000
Do.	Revda	Revda	281,000
Do.	Salda	Sverdlovskaya Oblast'	1,900
Do.	Serov A.K.	Serov	1,000,000
Do.	Serp i Molot	Moscow	70,000
Do.	Severskiy	Polevskoy in Sverdlovskaya Oblast'	825,000
Do.	Severstal (Cherepovets)	Cherepovets	14,000,000
Do.	Sibelektrostal	Krasnoyarskiy Kray	110,000
Do.	Sulin	Sulin	280,000
Do.	Taganrog	Taganrog	925,000
Do.	Tulachermet Scientific and Industrial Association	Tula	18,400
Do.	Verkh-Isetskiy	Ekatrinenburg	132,000
Do.	Volgograd	Volgogradskaya Oblast'	2,000,000
Do.	Vyksa	Vyksa	540,000
Do.	West Siberian	Novokuznetsk	6,900,000
Do.	Zlatoust	Zlatoust in Chelyabinskaya Oblast'	1,200,000
Do.	Kuznetsk	Novokuznetsk	4,700,000
Talc	Onotsk deposit	Irkutskaya Oblast'	NA
Do.	Kirgiteysk deposit	Krasnoyarskiy Kray	NA
Do.	Miass deposit	Chelyabinskaya Oblast'	NA
Do.	Shabrovsk deposit	Sverdlovskaya Oblast'	NA
Tin:	Novosibirsk mining-beneficiation complexes:		
Ore	Khinganskoye olovo (Jewish Autonomous District)	Khabarovskiy Kray	NA
Do.	Dalolovo	Solnechnyy deposit, Primor'ye	NA
Do.	Deputatskiy olovo	Sakha (Yakutiya) Republic	NA
Do.	Iultin mining and beneficiation complex	Magadanskaya Oblast'	NA
Do.	Khrustalnyy mining and beneficiation complex	Maritime Territory	NA
Do.	Pevek mining and beneficiation complex	Magadanskaya Oblast'	NA
Metal	Novosibirsk smelter	Novosibirskaya Oblast'	NA
Do.	Podol'sk smelter	Podol'sk	NA
Do.	Ryazan smelter	Ryazanskaya Oblast'	NA
Titanium:			
Sponge	Avisma Titanium-Magnesium complex	Berezniki	40,000
Metal	Moscow plant	Moscow	NA
Do.	Podol'sk plant	Podol'sk	NA
Do.	Verknyaya Salda Metallurgical Production Association (VSMPO)	Sverdlovskaya Oblast', Urals	NA
Tungsten:			
W content of concentrates	Antonovogorsk	East Transbaikal	NA
Do.	Balkan	Northeast of Magnitogorsk, Ural'skiye Gory	NA
Do.	Belukha	East Transbaikal	NA
Do.	Bom-Grokhom	West Transbaikal	NA
Do.	Dzhida	do.	NA
Do.	Iultin	Magadanskaya Oblast'	NA
Do.	Lermontov	Russian Far East	NA
Do.	Solnechnyy	Southern Khabarovskiy Kray	NA
Do.	Tyrnyauz tungsten-molybdenum mining and processing complex	Kabardino-Balkariya, North Caucasus	NA
Do.	Primor'ye	Russian Far East	NA
Do.	Aginskoye deposit	Sakha (Yakutiya) Republic	NA
Do.	Kti-Teberdaskoye deposit	North Caucasus	NA
Metal, tungsten anhydride	Gidrometallurg plant	Nal'chik, North Caucasus	NA
Uranium, U content	Priargunskiy mining and chemical enterprise	Krasnokamensk	3,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
RUSSIA--Continued			
Vanadium:			
Ore	Kachkanar iron mining complex	Ural'skiye Gory	NA
Metal	Chusovoy and Nizhniy Tagil plants	do.	17,000
Pentoxide	Vanadii-Tulachermet	Tula, North Caucasus	NA
Zinc:			
Zn content of ore	Bashkir copper-zinc complex	Sibai in southern Urals	5,000
Do.	Buribai copper-zinc mining complex	Buribai in southern Urals	1,500
Do.	Gai copper-zinc mining-beneficiation complex	Gai in southern Urals	25,000
Do.	Kirovgrad copper enterprise	Kirovgrad in central Urals	1,200
Do.	Sredneuralsk copper complex	Revda in central Urals	5,000
Do.	Uchali copper-zinc mining and beneficiation complex	Uchalinskiy Rayon in southern Urals	90,000
Metal	Chelyabinsk electrolytic zinc plant	Chelyabinskaya Oblast'	200,000
Do.	Elektrozink plant	Vladikavkaz in North Caucasus	100,000
TAJIKISTAN			
Aluminum	Tajik aluminum plant (TadAZ)	Tursunzade	517,000
Antimony:			
Ore	Anzob mining and beneficiation complex	Dzhizhikrutskoye Sb-Hg deposit	700,000
Metal	Isfara hydrometallurgical plant	Isfara	500
Arsenic	Mosrif deposit	NA	NA
Bismuth	Leninabad mining and beneficiation complex	Yuzhno-Yangikanskiy deposit	25
Do.	Isfara hydrometallurgical plant	Isfara	500
Bismuth, copper, fluorspar, gold, silver, zinc (ore processing)	Adrasman mining and beneficiation complex	Kanimansurskoye deposit (mining ceased in 1997)	650,000 [4]
Boron	Ak-Arkhar deposit	Badakhshan Region	NA
Coal	Isfara hydrometallurgical plant	Isfara	300,000
Do.	Shurab brown coal deposit	Shurab Region	NA
Do.	Fan-Yagnob hard coal deposits	Pyandzh Region	50,000
Copper-lead-zinc	Leninabad mining and beneficiation complex	Yuzhno-Yangikanskiy deposit	2,500
Dolomite	Yavan electrochemical complex	Pashkharvoskoye deposit	NA
Fluorspar, concentrate	Takob mining and beneficiation complex	Takob and Krasnye Kholmy deposits	60,000 [4]
Gold:			
In ore kilograms	Tajikzoloto mining-beneficiation complex, Pamir Artel	Darvazy, Rankul placer deposits, placers in central and southern parts of country	5,000 [4]
Do. do.	Zerafshan Gold Company	Dzhilau, Taror deposits, Sughd Oblast'	2,500 [4]
Do. do.	Darvaz joint venture	Yak-Suyskoye deposit, Khatlonskaya Oblast'	2,000
Do. do.	Aprelevka joint venture	Aprelevka deposit	200
Ore processing do.	Vostokredmet refinery	Chkalovsk	NA
Do.	Kansayskaya factory	Aprelevka, Burgunda, Kyzyl-Chek, Shkol'noye deposits	165,000 [4]
Lead-zinc	Kansayskoye mining complex	Kara-Mazar Region	NA
Do.	Altyn-Topkan mining directorate	Altyn-Topkan deposit (mining ceased in 1997)	NA
Do.	do.	Pay Bulak deposit (mining ceased in 1997)	NA
Do.	Adrasman mining and beneficiation complex	NA	NA
Do.	Takaeliyskiy metallurgical complex	NA	NA
Limestone	Dushanbe cement complex	Kharangonskoye deposit	NA
Loam	do.	Varzobskoye Ushchel'ye deposit	NA
Marble	Dashtak deposit	Darvaz region	NA
Do.	Jilikul deposit	Pendzhikent region	NA
Do.	Dal'yan Bolo deposit	Shakhristanskiy region	NA
Mercury	Anzob mining and beneficiation complex	Dzhizhikrutskoye deposit	150
Natural gas thousand cubic meters	Sixteen oil-gas deposits under exploration, which includes Ayritanskoye, Madaniyatskoye, and Ravatskoye	Fergana depression	200,000 [4]

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
TAJIKISTAN--Continued			
Petroleum	Beshtentyakskoye, Kichik-Belskoye, Shaambary, Uzunkhorskoye deposits	Southern Tajik depression	200,000 [4]
Salt	Yavan electrochemical complex	Tut-Bulakskoye deposit	NA
Do.	Voseyskiy plant	Khodzha-Muminskoye deposit	NA
Do.	Ashtskiy plant	Kamyshkurganskoye deposit	NA
Do.	Khoja-Sartez, Samanchi, Tanabchi deposits	NA	NA
Silver	Adrasman mining and beneficiation complex	Bolshoy Kanimansur deposit	15,000
Strontium	Chaltash, Chikultan, Daudyr deposits	Khatlon Region	180,000
Tin-tungsten	Tafkon deposit	NA	NA
Tungsten ore	Maykhura deposit	95 km of Dushanbe, central Tajikistan	150,000
Uranium, U content	Adrasman, Maylisu, Taboshar, Usugai deposits	Kara-Mazar Region, northern Tajikistan	NA
Do.	Vostokredmet plant	Chkalovsk	NA
Vanadium, pentoxide	do.	do.	350,000
TURKMENISTAN			
Ammonia thousand tons	Maryzoat Association	Mary Region	400,000 [9]
Argillite cubic meters	Keramzit plant	Yagmanskoye deposit	200,000 [9]
Barite-witherite	Arpaklenskiy mining enterprise	Arpaklen deposit	10,000 [9]
Do.	Kumytash deposit and other deposits	NA	NA
Bischofite, epsomite, Galauber's salt, sea salt	Karabogazsulfate Association	Kara-Bogaz-Gol Lagoon, off the Caspian Sea	NA
Bromine	Cheleken plant	Cheleken Region	4,740 [9]
Do.	Nebitdag plant	Vyshka, Stantsiya	2,370 [9]
Cement, from:			
Bench gravel and loam	Bezmeinskiy cement plant	Bezmeinskoye deposit	1,400,000
Limestone and clay	Kugitangskoye deposit	NA	NA
Limestone and marl	Gingol'skoye deposit	NA	NA
Clays:			
Bentonite	Oglanly Mine	Oglanly Region	100,000 [9]
Kaolin	Ashkhabad glass plant	Kyzylkainskoye deposit	80,000
Do.	Tuarkyrskoye deposit	250 kilometers southeast of Turkmenbashi	NA
Coal, oxidized	do.	do.	NA
Dolomite	Ashkhabad glass plant	Kelyatinskoye deposit	6,000
Gypsum	IA Turkmenmineral	Mukry, Tagorin deposits	300,000 [9]
Do.	Wastes from Gaurdak sulfur deposit	Gaurdak, Gora	400,000 [9]
Do.	Krasnovodsk Aylagy (anhydride) deposit	9 kilometers east of Turkmenbashi	160,000 [9]
Iodine	Cheleken plant	Cheleken Region	355 [9]
Do.	Nebitdag plant	Vyshka, Stantsiya	255
Limestone	Deposits:		NA
	Gaurdak	4 kilometers northeast of Gaurdak	
	Kara-Dzhumalakskoye	60 kilometers from Gaurdak	
	Charshanginskoye, Gaurdakskoye, Geok-Tepinskoye, Kaylyu, Krasnovodsk Aylagy (tuff and granite), Tyuzmergenskoye deposits	NA	
Do. cubic meters	Tagarinskoye deposit	8 kilometers from Gaurdak	1,000
Limestone, for filing stone do.	Aeroport deposit	21 kilometers northeast of Turkmmenbashi	2,000 [9]
Do. do.	Bekdashskoye deposit	200 kilometers north of Turkmmenbashi	5,000 [9]
Do. do.	Dostluksoye deposit	230 kilometers southeast of Turkmenabat	2,000 [9]
Do. do.	Mukrinskoye deposit	60 kilometers southwest of Gaurdak	25,000 [9]
Natural gas million cubic meters	Achakskoye, Dauletabad, Donmez, Gygyrlinskoye, North and South Naipskiye, West Shatlykskiye, Yashlar deposits	Onshore in eastern and southwestern parts of country and offshore in Caspian Sea; Amu-Dar'ya and Murgab Basins; Dashoguzskiy, Lebapskiy, Maryyskiy deposits	90,000 [4]
Natural pigment	Bakhchesu/Cheshme/Gadyn deposit	28 kilometers southwest of Serdar	NA
Ozokerite	Cheleken mining enterprise	NA	NA

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
TURKMENISTAN--Continued			
Petroleum:			
Crude	Barsa-Gelmesskoye, Burunskoye, Cheleken, Gograndagskoye, Kamyshldzhinskoye, Korturtepinskoye, Kum Dag, Kuydzhikskoye, Okaremskoye deposits	Onshore in southwestern part of country and offshore in the Caspian Sea	5,500,000 [4]
Refined 42-gallon barrels per day	Chardzhouskiy Rayon refinery	Seydi, Chardzhouskiy Rayon	120,500
Do. do.	Turkmenbashi refinery	Turkmenbashi	116,500
Potash (sylvinite, carnallite)	Karlyuk deposit (experimental mine closed 1998)	25 kilometers from Gaurdak	NA
Do.	Karabil'skoye deposit	17 kilometers south of Gaurdak	NA
Quartz sand	Annauskoye, Babadurmazskoye, Bakharden-skoye deposits	NA	NA
Rock salt	Gaurdak deposit	8 kilometers from Gaurdak	15,000
Do.	Khodzhaguymaskoye deposit	4 kilometers west of Gaurdak	NA
Do.	Kugitangskoye deposit	75 kilometers from Gaurdak	2,000
Do.	Uzun-Kudukskoye deposit	20 kilometers from Gaurdak	2,000
Salt	Kuulinskoye deposit	40 kilometers north of Turkmenbashi	650,000
Sand and gravel cubic meters	Dushaksoye deposit	NA	1,150,000 [9]
Do. do.	Kala-I-Morskoye deposit	NA	925,000 [9]
Do. do.	Kernayskoye deposit	NA	36,000 [9]
Do. do.	Kubatayskoye deposit	NA	740,000 [9]
Do. cubic meters	Ufrinskoye deposit	NA	900,000 [9]
Sodium sulfate	Karabogazsulfate Association	Bekdash, Kara-Bogaz Lagoon (off Caspian Sea)	400,000 [9]
Strontium (celesite)	Arikskoye deposit (mining ceased 1992)	Near Gaurdak	NA
Do.	Shakhtaminskoye deposit	do.	NA
Sulfur	IA Turkmenmineral	Gora deposit	340,000 [9]
Do.	Gaurdak plant	Gaurdak deposit (mining ceased 1997)	500,000
Do.	Darvaza, Segli-Kar, Kara-Kum sulfur plants	Kara-kum deposit (mining ceased 1962)	NA
Do.	Kugitangskoye deposit	75 kilometers from Gaurdak	NA
UKRAINE			
Alumina	Mykolayiv refinery	Mykolayivs'ka Oblast'	1,200,000
Do.	Zaporozh'ye (Dneprovsk) refinery	Zaporiz'ka Oblast'	245,000
Aluminum, primary	Zaporozh'ye (Dneprovsk) smelter	do.	120,000
Coal:			
Hard thousand tons	Donets coal basin with about 225 mines produces more than 90% of Ukraine's coal	Dnipropetrovs'ka, Donets'ka, Luhans'ka Oblasts'	130,000 [4]
Do.	Lviv-Volynskiy Basin produces remainder from 18 mines	Western Ukraine	6,000,000 [4]
Brown	Dneprovskoye Basin	Central Ukraine	7,000,000
Ferroalloys:			
Ferrochrome	Zaporozh'ye plant	Zaporiz'ka Oblast'	NA
Ferromanganese	do.	do.	NA
Do.	Nikopol' ferroalloys plant	Nikopol'	250,000
Ferromanganese, blast furnace	Konstantinovskiy metallurgical plant	NA	NA
Do.	Kramatorskiy metallurgical plant (production ended in 1999)	NA	NA
Manganese metal	Zaporozh'ye plant	Zaporiz'ka Oblast'	NA
Ferrosilicon	Nikopol' ferroalloys plant	Nikopol'	200,000
Do.	Stakhanov plant	Luhans'ka Oblast'	NA
Silicomanganese	do.	do.	1,200,000
Do.	Zaporozh'ye plant	Zaporiz'ka Oblast'	160,000
Do.	Nikopol' ferroalloys plant	Nikopol'	NA
Graphite	Zavalyevskiy graphite complex	Zavalyevskiy deposit	40,000

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
UKRAINE--Continued			
Iron ore:			
Underground mining	Krivbassruda production association with 16 mines	Kryvyy Rih Basin	15,000,000 [4]
Do.	Eksplutatsionnaya Mine of the Zaporizhzhskiy iron ore complex	do.	3,500,000
Open pit mining	Inguletskiy, Kamysh-Burunskiy, Novokrivorozhskiy, Poltaviskiy, Severnyy, Tsentralnyy, Yuzhniy mining and beneficiation complexes	do.	90,000,000 [4]
Kaolin	Prosyanovskoye mining and beneficiation complex	Dnipropetrovs'ka Oblast'	NA
Lead, secondary	Ukrtsink plant	Kostyantynivka	70,000
Magnesium	Zaporozh'ye plant	Zaporiz'ka Oblast'	10,000
Do.	Magnii concern	Kalush	18,000
Manganese:			
Ore, marketable	Facilities:		6,000,000 [4]
	Marganets, Ordzhonikdze mining and beneficiation complexes	Nikopol' basin	
	Tavricheskiy complex (under development)	Bol'shoy Tokmak basin	
Metal	Zaporozhye plant	Zaporiz'ka Oblast'	40,000
Sinter	Nikopol' ferroalloys plant	Nikopol	3,000,000
Mercury	Nikitovskiy mining and metallurgical complex	Donets'ka Oblast'	120
Nickel, Ni content in FeNi	Pobuzhhskiy mining and beneficiation complex, comprising three open pit mines and smelter	Pobugskoye Basin	7,000 [4]
Potash, K_2O equivalent	Khlorvinil production association, Stebnik potash plant	Pricarpathian Region	300,000
Steel, crude	Donets'k acquisitions and (co-)owners:		
	Industrial Union of Donbas (IUD):		
Do.	Alchevs'k steel mill	Alchevs'k	4,500,000
Do.	Azovstal' steel mill	Mariupol'	4,000,000
Do.	Donets'k steel mill	Donets'ka Oblast'	1,300,000
Do.	Dnepropetrovsk pipe plant	NA	NA
Do.	Khartsyzsk pipe plant	NA	NA
Do.	Danko: Yenakiyeveskiy steel mill	NA	1,200,000
	Privat Bank:		
Do.	Dnepropetrovsk pipe plant	NA	1,230,000
Do.	Zaporozh'ye rolling mill	Zaporiz'ka Oblast'	2,300,000
Do.	Dneprovskiy steel mill	Dniprodzerzhyns'k	3,850,000
Do.	do.	Dnipropetrovs'ka Oblast'	1,900,000
Do.	Konstantnovskiy steel mill	NA	NA
Do.	Dneprospetssstal	Zaporiz'ka Oblast'	1,400,000
Do.	Il'yich plant	Mariupol'	7,300,000
Do.	Kirov plant	Makeyevka	4,000,000
Do.	Kryvy Rih plant	Kryvyy Rih	10,650,000
	Interpipe group:		
Do.	Nizhnedneprovskiy pipe plant	NA	NA
Do.	Nikopol' pipe plant	NA	NA
Sulfur	Sera production association	Deposits:	1,500,000 [4]
		Rozdol mining complex mines: Rozdol, Soroks, Zdhidalchev deposits	
		Yarvorov complex mines: Nemirov-Yazov deposits in Livivs'ka and Kyyivs'ka Oblasts'	

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
UKRAINE--Continued			
Titanium:			
Ilemenite concentrate	Facilities:		600,000 [4]
	Irshanskiy mining and beneficiation complex	Irsha Valley	
	Vol'nogorsk state mining/metallurgical complex	Dnipropetrovs'k Region	
	Verkhnedneprovskiy mining/metallurgical complex	Verkhnedneprovsk Region	
Rutile	Verkhnedneprovskiy mining/metallurgical complex	Verkhnedneprovsk Region	60,000
Do.	Vol'nogorsk state mining/metallurgical complex	Dnipropetrovs'k Region	NA
Sponge	Zaporozh'ye titanium-magnesium plant	Zaporiz'ka Oblast'	20,000
Uranium	Zheltye Vody complex	Northern part of Kryvyy Rih Basin	NA
Zinc, secondary	Ukrtsink plant	Kostyantynivka	25,000
Zirconium:			
Ore, zircon	Verkhnedneprovskiy mining/metallurgical complex	Verkhnedneprovsk Region	100,000
Do.	Vol'nogorsk state mining and metallurgical complex	Dnipropetrovs'k Region	NA
Metal and compounds	Pridneprovskiy chemical plant	Dnipropetrovs'ka Oblast'	NA
Do.	Kharkiv physical-technical institute	Kharkivs'ka Oblast'	NA
UZBEKISTAN			
Bismuth	Ustarassay deposit (depleted)	Chotqol and Kuraminskiy Khrebet Regions	NA
Cesium, lithium, rubidium	Shava-Say deposit	NA	NA
Clays:			
Bentonite	Arab-Dasht and Khaudag deposits	NA	NA
Kaolin	Angren deposit	Angren Region	8,000,000
Coal	Central Asian Coal Association (mining):		
	Angren brown coal deposit	do.	6,000,000
Do.	Baysunskoye and Shargunskoye deposits	Surkhandarya Region	1,000,000 [4]
Copper:			
Mine output, Cu content	Almalyk mining and metallurgical complex	Dalneye, Kalmakkyrgan, Sary-Cheku deposits	100,000 [4]
Metal	Almalyk refinery	Olmaliq	130,000
Diamond	Karashok and Kok-Say deposits	Nawoiy District	NA
Feldspar	Karichasayskoye and other deposits	Deposits in Samarqand and Toshkent Wiloyati Regions; Karakalpakstan (Kara-Kalpakskaya ASSR)	120,000 [4]
Fertilizers	Ammophos production association	Olmaliq	NA
Do.	Azot production association	Farghona	NA
Do.	Elektrokhimprom production association	Chirchiq	NA
Do.	Kokand superphosphate plant	Qo'qon	NA
Do.	Naviazot production association	Nawoiy Wiloyati	NA
Do.	Samarkand chemicals plant	Samarqand	NA
Fluorspar	Agata-Chibargata, Aurakhmat, Kengutan, Kyzylbaur, Naugarzan, Nugisken deposits	East of Toshkent Wiloyati	150,000
Do.	Syrpatash deposit	Namanganskaya Oblast'	NA
Gold kilograms	Adzhi-Bugutty, Balpantau, Bulutkan, Donguz-Tau, Muruntau, Taurbay deposits	Kyzylkum Region	85,000 [4]
Do.	Nawoiy Integrated Mining and Metals complex	Muruntau deposit	50
Do.	Kochbulak and Kyzyl-Al'ma-Say deposits	Tashkentskaya Oblast'	NA
Do.	Almalyk mining and metallurgical complex	Dalneye, Kalmakkyrgan, Sary-Cheku deposits	NA
Graphite	Tadzhi-Kazgan deposit	Navoiyskaya Oblast'	NA
Iron ore	Syurenata deposit	Tashkentskaya Oblast'	NA
Lead, mine output, Pb content	Almalyk mining and metallurgical complex; Altyn-Topkan and Uchkulach deposits	Uchkulach deposit in Toshkent Wiloyati; Altyn-Topkan deposit in Kurama mountain range in Tajikistan (in March 1999, Altyn-Topkan transferred to control of Tajikistan)	40,000 [4]

See footnotes at end of table.

TABLE 2--Continued
COMMONWEALTH OF INDEPENDENT STATES: STRUCTURE OF THE MINERAL INDUSTRIES IN 2003[1, 2, 3]

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies or deposits	Location or deposit name	Annual capacity[e]
UZBEKISTAN--Continued			
Manganese	Dautashskoye deposit	Kashkadar'inskaya Oblast'	40,000
Molybdenum:			
Mine output, Mo content	Almalyk mining and metallurgical complex; Kalmakyr, Sarycheku deposits	Toshkent Wiloyati	900 [4]
Metal	Uzbek refinery and hard metals plant	Chirchiq	NA
Petroleum and natural gas:	More than 160 oil and gas deposits; 92 deposits under exploration	Bukhoro-Khiwa, Sukhandarya Oblast, southwest Gissarak, and Ustyurtskiy Regions and Farghona Valley	NA
Natural gas million cubic meters	Gazli, Kandym, Khauzak, Kokdumalak, Pamuk, Shurtan-Say deposits (major)	Amu-Dar'ya Basin; Mubarek area	70,000 [4]
Do.	Itera/Lukoil (Russia), Uzbekneftegaz JSC	Kan-Dam field	NA
Natural gas:			
Condensate	Trinity Energy (United Kingdom)	Ustyurt Plato Region	NA
Liquids million cubic meters	Mubarek gas processing plant	Muborak	28,000
Do.	Shurtan gas-chemical complex	Shurtan-Say deposit, Kashkad'ya Region	137,000
Petroleum:			
Crude	Kokdumalak and Mingbulak deposits (major)	NA	9,000,000 [4]
Refinery products	Fergana oil refinery	Farghona Region	8,800,000
Do.	Bukhara oil refinery	Bukhoro	2,500,000
Phosphate	Kyzyl Kum complex	Dzheroy-Sardarin Moroccan type, Karaktay, Severnyy Dzhetymtau deposits	NA
Polyethylene	Shurtan gas-chemical complex	Shurtan-Say deposit, Kashkad'ya Region	125,000
Potash	Tyubegatan deposit	Southern Uzbekistan	NA
Silver	Kosmanachi, Okzhetpes, Vysokovoltnoye deposits	Namanganskaya Oblast'	NA
Steel, crude	Bekabad steel mill	Bekabad	1,100,000
Sulfur	Mubarek gas processing plant complex	Muborak	2,000,000
Tungsten:			
Mine output, W content	Deposits:		1,200 [4]
	Koytash deposit	Northeastern Uzbekistan	
	Ingichka, Lyangar deposits	Zirabulak Mountains	
	Ugat deposit	Northern Uzbekistan	
Mine output, WO_3 content (0.49%)	Sautbay wolframite deposit	Kyzylkum Region	NA
Metal	Uzbek refractory and hard metals plant	Chirchiq	NA
Uranium, U content	Naviazot mining and metallurgical complex	Navoiy Region	3,000
Vermiculite square meters	Tebin-Bulak deposit	NA	25,000

[e]Estimated. NA Not available.
[1]Table includes data and information available through March 2004.
[2]Estimated data are rounded to no more than three significant digits.
[3]Many location names have changed since the breakup of the Soviet Union. Many enterprises, however, are still named or commonly referred to based on the former location name, which accounts for discrepancies in the names of enterprises and that of locations.
[4]Capacity estimates are totals for all enterprises that produce that commodity.
[5]For a listing of production-sharing agreements for oil and gas development, refer to the USACC Investment Guide to Azerbaijan 2001, United States-Azerbaijan Chamber of Commerce (USACC), Washington, DC.
[6]Capacity for crude petroleum distillation.
[7]Total peat for fuel use production.
[8]Crude throughput.
[9]Reported figure.