



2011 Minerals Yearbook

RUSSIA

THE MINERAL INDUSTRY OF RUSSIA

By Elena Safirova

In 2011, Russia was ranked among the world's leading producers or was a leading regional producer of such mineral commodities as aluminum, arsenic, asbestos, bauxite, boron, cadmium, cement, coal, cobalt, copper, diamond, fluorspar, gold, iron ore, lime, magnesium compounds and metals, mica (flake, scrap, and sheet), natural gas, nickel, nitrogen, oil shale, palladium, peat, petroleum, phosphate, pig iron, platinum, potash, rhenium, silicon, steel, sulfur, titanium sponge, tungsten, and vanadium (Angulo, 2012; Apodaca, 2012a–c; BP p.l.c., 2012; Bray, 2012a, b; Brooks, 2012; Corathers, 2012; Edelstein, 2012; Fenton, 2012; Gambogi, 2012; George, 2012; Jasinski, 2012a, b; Jorgenson, 2012; Kramer, 2012a, b; Kuck, 2012; Loferski, 2012; Miller, 2012a, b; Olson, 2012; Polyak, 2012a, b; Shedd, 2012a, b; Tolcin, 2012; van Oss, 2012; Virta, 2012; Willett, 2012).

Minerals in the National Economy

In 2011, the growth rate of the real gross domestic product (GDP) of Russia was 4.3%, which was the same as in 2010; the nominal GDP increased to 54,586 billion rubles (\$1,858 billion¹). Industrial production contributed 36.9% to the total GDP, and the industrial sector accounted for 27.5% of the country's overall employment. Mining and quarrying employed 1.063 million people, or 1.6% of the total number employed in the country, and provided 992,000 jobs in full-time equivalent. Mining and quarrying contributed 4.95 billion rubles (\$168.5 million), or 10.7%, to the total value added in the economy in 2011, and the total value of output from mining and quarrying in current prices was 8,031 billion rubles (\$273.3 million), or 14.7% of the GDP (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2012; U.S. Central Intelligence Agency, 2013).

During 2011, the value of mining and quarrying production increased by 1.9%. Mining and quarrying of fuel and energy products increased at a slower rate (by 1.3%) than did the mining and quarrying of nonenergy minerals, which increased at a rate of 4.8%. Among the nonmining industrial sectors, production of chemicals increased by 5.2%; metallurgy and production of finished metal products, 2.9%; production of other nonmetal mineral products, 9.3%; and that of coke and petroleum products, 2.9%. In 2011, 14.6% of all investment in the economy was directed to the mining and quarrying industry, of which 91% was invested in mining and quarrying of fuel and energy products (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2012).

Government Policies and Programs

In February 2011, Russia adopted a new program for development of the coal industry through 2030. According to forecasts by the Ministry of Energy, annual coal production could increase to about 450 million metric tons (Mt) by 2030 from 321.6 Mt in 2010. The share of Eastern Siberia in coal production would likely increase to 32% in 2030 from 26% in 2011. Production of coking coal would likely double in the next 20 years, and exports of coking coal could increase by 150%. Production of energy coal, on the other hand, was expected to increase by only 14%, and its export, by 29%. The Government's program for the development of the coal industry had three stages: the first stage was to run through 2015; the second, through 2020; and the third, through 2030 (Mineral.ru, 2011c; 2012c).

During the past two decades, domestic coal consumption was reduced by 50%, and coal producers targeted primarily the export market. One of the main reasons for this reduction in domestic consumption of coal was the coal industry's weak position with respect to the natural gas industry; the domestic prices of gas were regulated (and kept artificially low) by the Government, and at those prices, coal producers were unable to compete with natural gas producers. By 2030, when natural gas prices were planned to no longer be regulated, domestic consumption of coal was projected to increase by 100% to 220 Mt. The Ministry of Energy projected that Russia would construct more than 100 new coal enterprises within the next 20 years. Because most of the new coal mines would be located in Siberia and the Far East, the Government saw its role as assisting coal producers by providing better and less expensive infrastructure facilities, such as ports and railroads. As of 2011, transportation costs accounted for about 40% of the delivered cost of coal (Mineral.ru, 2011h).

The coal development program included a series of actions that the Government planned to undertake in the next 20 years to facilitate growth in the coal industry. One such action would be to create a legal basis for mine liquidation funds similar to those used for the uranium industry. The liquidation funds would be financed by coal companies to help close depleted coal mines and relocate workers laid off from the closed mines to new jobs. In 2011, the Government set aside 2 billion rubles (\$68.1 million) to help with the relocation of coal miners at closed facilities and was planning to set aside 3.3 billion rubles (\$112.3 million) in 2012. According to the Ministry of Energy's projections, in the next 20 years, the coal industry would likely add 505 Mt of annual production capacity in coal mining; at the same time, mines with a total capacity of 380 million metric tons per year (Mt/yr) were likely to stop producing because of resource depletion. The number of coal pits would likely decrease to 82 from 121, and the number of mines could decrease to 64 from 85. The Government estimated that the total cost of the coal program through 2030 would be

¹Where necessary, values have been converted from Russian rubles (RUB) to U.S. dollars (US\$) at an annual average exchange rate of RUB29.38=US\$1.00 for 2011 and RUB30.38=US\$1.00 for 2010. All values are nominal, at current prices, unless otherwise stated.

about 3.7 trillion rubles (\$126 billion); only 250 billion rubles (\$8.5 billion) was expected to be provided by the Government (Mineral.ru, 2011z; MinerJob.ru, 2012a).

Another action intended to increase reported mineral production was the adoption of a new law that allows individuals to mine alluvial gold and other precious metals. Individual mining usually happens on depleted mines and in alluvial and small deposits where large-scale production is not profitable. Several regions—for example, Magadanskaya Oblast', Buryatiya Republic, Sakha Republic (Yakutiya), and Zabaykal'skiy Kray—host many deposits that were not considered profitable for industrial-scale production. Under the new law, individuals are permitted to obtain mining licenses for up to 5 years without an auction or a tender. The law also includes simplified tax regulations for individual prospectors and simplified rules for turning precious metals in for refining. According to the Government's estimates, before the adoption of the law, illegal prospecting for gold in Russia exceeded 10 metric tons per year (t/yr) (Mineral.ru, 2011f; MinerJob.ru, 2011m).

In July 2011, the President signed a decree to create a state holding company, Rosgeologiya. The main goal of forming the holding company was to create a Government entity that would compete with private companies in the activity of geologic prospecting and to encourage competition among private exploration companies. The Government was to finance the early stages of exploration and would then let private enterprises develop and mine the deposits. Overall, the Federal Agency on Mineral Resources (Rosnedra) estimated that to maintain a healthy cycle of exploration, prospecting, development, and production of mineral resources, Russia would need to spend about 300 billion rubles (\$10.2 billion) per year on exploration. The Government was planning to contribute 40 billion rubles (about \$1.4 billion), and the rest of the cost would be borne by private investors. In addition to creating a large state-owned exploration company, the Government was planning to eliminate administrative barriers to entry for the prospecting market to encourage small- and medium-scale enterprises to develop small mineral deposits that do not appear to be profitable for large prospecting companies (MinerJob.ru, 2011f, i).

In July 2011, the State Duma (Russian Parliament) adopted a new law that reduces the tax rate on mining certain minerals. In particular, tin ores mined in the territory of the Far East Federal District are to be assessed at a zero tax rate. The tin deposits in that district are located in remote places with undeveloped infrastructure. The zero mining tax rate would be effective from January 1, 2013, to December 31, 2017. The Government estimated that this measure would help attract investment into the tin industry and lead to an increase in domestic tin production to satisfy domestic tin demand. The Government also estimated that the measure would create 1,000 jobs in tin mining and production and about 1,500 jobs in auxiliary industries. The tax rate reduction was expected to cost the Government 75 million rubles (\$2.55 million) for the entire 5-year period, but it was also expected that, in 2018, the taxes collected from tin producers would increase by 50% compared with those collected in 2012 (that is, before the scheduled reduction takes effect) (Mineral.ru, 2011v).

Another class of mining and mineral production activities on which the mining tax rate was reduced is production of oil and gas in certain locations. In particular, a mining tax rate of zero applies to new mineral production from the shelf of the Black Sea and the Okhotsk Sea; the zero tax rate also applies to the first 20 Mt and 30 Mt, respectively, extracted from each sector of a deposit. For the zero rate to take effect, the time elapsed from the start of production should not exceed 10 years and 15 years, respectively. A zero tax rate also applies for petroleum produced in the Yamalo-Nenetskiy Avtonomnyy Okrug (YNAO) in locations north of 65°N. latitude. The zero tax rate applies to the first 25 Mt, under the condition that the total time elapsed from the start of production does not exceed 10 years. A zero tax rate also applies for natural gas produced on the Yamal Peninsula if the produced natural gas was used exclusively for conversion into condensed gas, until the total production reaches 250 billion cubic meters, and if the total time elapsed from the start of production does not exceed 12 years. Finally, a reduced tax rate applies for small petroleum deposits when an initial estimate of the deposit's resource does not exceed 5 Mt (Mineral.ru, 2011v).

Production

In 2011, Russia's production of mineral commodities was largely stable and demonstrated modest growth compared with that of 2010. Production of manganese ore increased by 167%; that of primary tin metal, by 100%; tin ore, by 87.5%; titanium sponge, by 34.3%; indium and tungsten, by 25% each; ferrochromium, by 21.1%; anthracite coal, by 14.9%; kaolin, by 14.3%; gem diamond, by 13.2%; ferrosilicon, by 12.5%; and cement, by 11.5%. At the same time, production of secondary gold decreased by 25.9%; that of bauxite ore, by 17.9%; laterite (nickel) ore, by 17.4%; and uranium, by 15.0%. Production data for these and other mineral commodities are in table 1.

Structure of the Mineral Industry

At the end of 2011, Russia had 17,200 enterprises engaged in mining and quarrying, which was a 0.58% decrease compared with the number of enterprises active in mining and quarrying in 2010. Of these enterprises, 7,100 were engaged in extracting fuel minerals and the other 10,100 were engaged in mining nonfuel minerals. Out of all mining and quarrying enterprises, only about 200 were owned by the central and municipal governments, 15,300 were owned by Russian citizens, and about 400 were either owned by foreign companies or were jointly owned by domestic and foreign entities (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2012).

Mineral Trade

In 2011, the total value of Russian exports was \$522.0 billion, which was a 30.4% increase compared with the value of exports in 2010. The value of Russian imports also increased in 2011, to \$323.8 billion, or by 30.2%. In 2011, Russia had a positive trade balance of \$198.2 billion (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2012).

The main export categories for Russia were chemicals, manufactured goods, metals, natural gas, petroleum and

petroleum products, and wood and wood products. Mineral products made up 71.1% of the total value of Russian exports, and crude oil alone contributed 34.8% to the total value of exports. Petroleum products accounted for another 18.3%; natural gas, 12.2%; and ferrous metals, 4.7%. Among ferrous metals, the leading categories were semifinished products made from carbon steel (31.3%) and flat-rolled iron and steel (27.2%). Other mineral products that contributed significant amounts to Russia's export revenue were bituminous coal (2.2%), aluminum (1.3%), nickel (0.9%), complex mineral fertilizers (0.8%), nitrogen fertilizers (0.7%), products made out of ferrous metals (0.63%), and ferrous ores and concentrates (0.62%). The major export partners of Russia in 2011 were the Netherlands (which received 12.1% of Russia's exports), China (6.8%), Germany (6.6%), Italy (6.3%), Ukraine (5.9%), Turkey (4.9%), Belarus (4.8%), Poland (4.1%), and the United States (3.2%) (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2012).

In 2011, Russia imported \$8,423 million worth of products made of ferrous metals (which constituted 2.6% of the total imports), \$7,314 million worth of ferrous metals (2.3%), and \$3,685 million worth of petroleum products (1.1%). The major imports partners of Russia were China (which supplied 15.8% of Russia's imports), Germany (12.3%), Ukraine (6.6%), Japan (4.9%), the United States (4.8%), Belarus (4.7%), Italy (4.4%), France (4.3%), and the Republic of Korea (3.8%) (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2012).

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—All Russian production of alumina, bauxite, and primary aluminum was controlled by United Company RUSAL (RUSAL), which was the world's leading producer of alumina and aluminum. RUSAL operated 15 aluminum smelters, which were located in four countries: Russia (12 plants), Nigeria (1 plant), Sweden (1 plant), and Ukraine (1 plant). It also operated 12 alumina plants, 8 bauxite mines, 3 plants for producing aluminum powder, 3 plants for producing secondary aluminum, and 3 plants for producing aluminum foil. The combined global annual capacity of RUSAL's plants was 11.5 Mt of alumina, 4.7 Mt of aluminum, and 80,000 metric tons (t) of aluminum foil. RUSAL owned 25% of the shares of OJSC MMC Norilsk Nickel (Norilsk Nickel), which was the world's leading producer of nickel and palladium and one of the world's leading producers of copper and platinum (United Company RUSAL, 2012a–c).

In 2011, total global aluminum production by RUSAL enterprises was 4.12 Mt, which was a 1% increase compared with the output in 2010; the increase in production was owing to production increases at certain plants in Siberia and the European part of Russia, as well as at the Kubal plant in Sweden. The volume of alumina production increased by 4% to 8.15 Mt; the growth in production was attributed to an increase in production at the Winalco Ewarton plant in Jamaica and by significant production increases at the Aughinish plant in Ireland, the Bogoslovsky alumina plant in Russia, and the Nikolaevliy alumina plant (NGZ) in Ukraine. The Aughinish plant and NGZ produced record amounts of alumina—1.93 Mt

and 1.6 Mt, respectively. RUSAL's production of bauxite increased by 14% to 13.47 Mt, mainly as a result of increased production at Winalco Ewarton in Jamaica, Bauxite Company of Guyana, Inc. (BCGI) in Guyana, and the North Winds Bauxite Mine (SUBR) plant in Russia. Production of aluminum foil remained unchanged at 81,000 t (Mineral.ru, 2012a).

In 2011, RUSAL was looking for opportunities to expand the international component of its production facilities. In May 2011, the Government of Cameroon invited RUSAL to explore for bauxite resources in the West African country; the results of the exploration program were expected to be available by December 2011. RUSAL representatives also met with the Government of Sierra Leone regarding exploration for bauxite in that country. In September, RUSAL was engaged in talks with the Government of Italy about the possible reopening of the alumina plant located on the island of Sardinia; the 1.1-Mt/yr-capacity plant had previously been managed by Eurallumina S.p.A. of Italy; but production was stopped in 2009, and the plant had been idle since then. Also in September, RUSAL purchased a 35% share in the Alpart alumina-bauxite complex from Norsk Hydro ASA of Norway. The annual production capacity at Alpart, which is located in Jamaica, amounted to 4.9 Mt of bauxite and 1.67 Mt of alumina. Alpart became a part of RUSAL in 2007 through RUSAL's acquisition of the alumina facilities previously owned by Glencore International plc. of Switzerland and, until 2011, RUSAL owned 65% of Alpart. RUSAL acquired the last 35% of Alpart and became the sole owner in 2011 (Mineral.ru, 2011b, k, p, r).

In September 2011, RUSAL announced that it was considering building a bauxite and alumina plant in Iran. The major attraction of this project was its proximity to dynamic Asian markets. At the same time, the cost of construction, as well as the cost of nepheline raw materials, exceeded those available in Russia. Moreover, U.S. sanctions in place against Iran were applicable not only to Iran, but to countries whose companies violate those sanctions. If constructed, the plant would increase RUSAL's aluminum production capacity by 9% (Mineral.ru, 2011q; MinerJob.ru, 2011h).

Beryllium.—Russia did not produce beryllium in 2011. Russia had two main beryllium deposits—the Yermakovskoye and the Zavitinskoye deposits—which were idle, as were several other deposits that also were not producing beryllium. After the breakup of the Soviet Union in 1991, a large beryllium-producing Ulba plant in Ust-Kamenogorsk, which was used to process Russian beryllium, was left in Kazakhstan, and Russia did not have its own beryllium processing facilities. During the past two decades, Russia's beryllium mining was on decline, but in 2011, there were several signs that beryllium production would be revived in the next several years (Metalresearch.ru, 2010b).

In Zabaykal'skiy Kray, Rosnedra announced an auction of a beryllium deposit. The Sherlovogorskiy deposit is located 8 kilometers from a railroad station, and its C1+C2 resources were estimated to be 2.3 t. The deposit produced beryllium between 1994 and 1998, but the mine was later abandoned. The auction was scheduled for April 2012, and the prospective winner was expected to receive an exploration and mining license for a period of 25 years (MinerJob.ru, 2011i).

In January 2011, Russian Corporation on Nanotechnology (Rosnano) (100% Government owned) and Metals of Eastern Siberia Corp. (which was a part of the Metropal Group) signed an agreement to build the Yermakovskiy mining and metallurgical complex (Yermakovskiy GMK) in Buryatiya Republic. The primary objective of the project was to create domestic production capacity for beryllium to serve strategic industries. The main product of the GMK would be beryllium hydroxide; the plant would also produce beryllium alloys, beryllium bronze, construction beryllium, and metallic beryllium. The consumers of these products would include producers of electronics, nuclear reactors, telecommunications and aviation equipment, and space rockets, as well as producers of materials for nanotechnologies in China, the European Union, Japan, Russia, and the United States (MinerJob.ru, 2011a).

The Yermakovskoye deposit was reportedly the most cost-effective beryllium deposit in Russia and one of the most cost-effective beryllium deposits in the world. As of the beginning of the 1990s, its C1+C2 resources of fluor-beryllium ores were estimated to be 1.4 Mt. Beryllium mining at Yermakovskoye stopped in 1989 and was restarted only in 2005 when the Metropal Group obtained a license for the deposit. The Yermakovskiy GMK project would cost 7 billion rubles (\$238 million), and Rosnano was planning to contribute one-half of that amount. The engineering and design works for the project were expected to be completed in 2012; construction was likely to start in 2013, and the GMK would reach full capacity by 2017 (MinerJob.ru, 2011g; Mineral.ru, 2012b).

A beryllium mine located in the settlement of Malyshevo in Sverdlovskaya Oblast' was being prepared to start up production after years of inactivity. The new owner of the mine, Kaliningrad Amber Complex, had conducted a number of activities to prepare the mine and equipment to restart production. The local government spent about 500,000 rubles (\$17,000) to renovate the mine. The deposit contains beryllium and emerald ores; the resource estimates stated that the deposit contains 11.5 Mt of beryllium ores and 6 Mt of ores of dispersed elements (cesium, lithium, and rubidium). During the past decade, the mine's previous operators had concentrated their efforts on mining of emerald and other precious stones and did not mine beryllium (MinerJob.ru, 2012b).

Gold.—In 2011, gold production in Russia increased by 4.7% to a record of 212.1 t; the gold produced from mine output increased by about 6.8% to 188.4 t compared with that of 2010. The increase came mainly from three enterprises—Petropavlovsk plc of the United Kingdom, which increased production by 4,760 kilograms (kg); AO Polyus Zoloto, which increased production by 3,480 kg; and Nord Gold NV (Nordgold) of the Netherlands, which increased production by 1,530 kg. In 2011, the largest gold-mining companies in Russia in terms of production were Polyus Zoloto (42,922 kg), Petropavlovsk (19,598 kg), Kinross Gold Corp. of Canada (18,259 kg), AO Polymetall (10,917 kg), Nordgold (10,700 kg), and Highland Gold Mining Ltd. of the United Kingdom (5,726 kg) (RIA-Analitika, 2012; Zolotonews.ru, 2012).

In 2010, gold was mined in 24 regions of the country, and, in 14 of them, production reached or exceeded 1,000 kg. The highest producing regions were Krasnoyarskiy Kray (39,300 kg),

Amurskiy Kray (28,500 kg), Chukotskiy Avtonomnyy Okrug (19,600 kg), Sakha Republic (Yakutiya) (19,400 kg), Magadanskaya Oblast' (18,200 kg), Irkutskaya Oblast' (17,000 kg), and Khabarovskiy Kray (14,500 kg) (RIA-Analitika, 2012).

Nickel.—Russia was the world's leading nickel mining country in 2011. Norinickel was the country's leading nickel producer and the world's leading nickel mining company; it produced 16.4% of the world's mined nickel. In 2011, all enterprises of Norinickel produced 295,096 t of nickel, which was a 0.75% reduction in output from the 2010 production level (Kuck, 2012; OJSC MMC Norilsk Nickel, 2012).

Norinickel's operations in Russia were located on the Kola Peninsula in the northwest of the country and in the Noril'sk region on the Taymyr Peninsula in Eastern Siberia. Norinickel also owned assets in Australia, Botswana, Finland, and South Africa. Norinickel was planning to invest more than \$35 billion in its Russian assets through 2025 with an emphasis on aggressive technological development. The company planned by 2025 to increase the amount of ore mined in its Zapolyarniy division to 29 Mt, and in the Kola GMK, to 9.5 Mt (OJSC MMC Norilsk Nickel, 2012; Rbc.ru, 2012).

In 2011, Norinickel engaged in active diversification of its mining operations. In particular, it intended to start mining a wider set of minerals, such as chromium, coal, iron ore, and molybdenum. The management of Norinickel stated that such diversification would protect the company from excessive volatility of nickel prices. The company planned to invest about \$35 billion by 2025 in non-nickel mineral resource production. The company was planning to start producing about 3 Mt/yr of iron ore concentrate at the Bystrinskiy deposit in Krasnoyarskiy Kray in 2016; the construction of Bystrinskiy mining and beneficiation complex (Bystrinskiy GOK) and transportation infrastructure around it was underway in 2011. In addition to iron ore, the Bystrinskiy GOK would produce 62,000 t/yr of copper concentrate and 6.3 t/yr of gold concentrate. Norinickel also acquired exploration licenses for coal on the Taymyr Peninsula and was in the process of evaluating the coal resources. Overall, the plan of the company was to continue to increase its nickel production but to reduce the share of nickel in the company's investment revenue. For example, in 2011, the share of nickel in the company's revenue was 46%; the company planned to reduce nickel's share to 31% by 2025 and at the same time to increase the share of platinum-group metals (PGMs) to 36% from 18% in 2011. By 2025, new products (including iron ore and coal) were expected to bring about 3% of the company's total annual revenue, which was expected to double by 2025 to \$30 billion from about \$15 billion in 2010. Independent analysts believed that this strategy was unlikely to affect the world mineral commodity markets significantly unless Norinickel were to merge with another large-scale company (Mineral.ru, 2011j; MinerJob.ru, 2011e).

Nickel was also produced in much smaller amounts by three other producers in the Ural Mountains region—OAO Ufaleynikel, OAO Yuzhuralnikel, and ZAO Rezhnikel. In October 2011, Rezhnikel, which was located in Sverdlovskaya Oblast', announced that it would close down and that the company would lay off about 1,000 workers. According to the

plant's administration, the reason for the closure was persistent financial losses; during the 2011 production year, the plant operated at a loss. The main activity of the plant was production of nickel matte in three pit furnaces; the capacity of the plant allowed processing of 700,000 t/yr of nickel ore (MinerJob.ru, 2011d; OJSC MMC Norilsk Nickel, 2012; Rbc.ru, 2012).

Another Russian company, Intergeo MMC, was considering building a mining and beneficiation complex in Krasnoyarskiy Kray. Intergeo was created in 2008 with acquisition of several exploration licenses, and the initial idea of the company's creators was to build a large Russian metallurgical company from scratch. In 2010, Intergeo bought a 100% share of Kingash mining company from Normickel and, as of 2011, owned two deposits of cobalt-copper-nickel ores. The total resources of the two deposits included 2.2 Mt of nickel, 1 Mt of copper, 85,000 t of cobalt, 395 t of silver, 267 t of PGMs, and 37 t of gold. When completed, the mining and beneficiation complex planned to produce copper and nickel concentrate with expected output of about 40,000 t/yr of nickel. A preliminary estimate of the total investment required for the project was \$1.5 billion (Mineral.ru, 2011g; MinerJob.ru, 2011b).

Voronezhskaya Oblast' in the European part of Russia announced a tender for two of its polymetallic deposits—the Elanskoe deposit and the Elkinskoe deposit. The deposits contain copper, nickel, and platinum ores. Although the tender was to take place in 2012, two Russian companies—Normickel and Ural Mining and Metallurgical Company (UGMK)—announced their intent to compete for the right to mine the deposits. The total cost of mining the deposits was estimated to be 50 billion rubles (\$1.7 billion) (Mineral.ru, 2011i; MinerJob.ru, 2011k).

Tin.—In the past two decades, tin production in Russia decreased dramatically, to 160 t in 2010 from 19,804 t in 1990. The major reasons for the decrease were a long-term reduction in world tin prices, increased energy prices, and the location of major tin deposits in Sakha Republic (Yakutiya) and other regions with extreme climates, lack of infrastructure, and poor accessibility to consumers. The Russian tin ores were considered poor; the tin concentration of the ores was about 0.28%. The only tin refining plant that continued production was the Novosibirsk tin complex (NOK) which had been operating since 1942 and which had an annual capacity of 11 t/yr of tin. In 2010, however, NOK filed for bankruptcy, and production at the facility was reduced further (Belov, 2011; Lunyashin, 2011).

As of the end of 2011, the main tin producers in Russia were Pravourmiyskoye and Tin Ore Co., both of which had been formed from the former Solnechnyi GOK and were located in Khabarovskiy Kray. Both enterprises planned to increase tin production in 2012. The Russian Government temporarily reduced the mining tax rate on tin produced in the Far East Federal District to zero; prior to this reduction, the mining tax rate for tin was at 8% (Vladykin, 2011).

In November 2011, the government of Sakha Republic (Yakutiya) considered measures to rejuvenate local tin mining in the next decade. The Yakutian ore province contains 13 lode and 37 alluvial deposits of tin; 30% of all Russian tin resources are located in the Republic. The government's plan proposed to begin tin production at the Tirekhtyakh alluvial deposit starting

in 2013, and later to grow the industry by adding more deposits. Sakha Republic (Yakutiya) had been a major tin producer for several decades; production was centered around the Deputatskiy GOK, which closed in 2009 (Mineral.ru, 2011y).

Titanium.—Russia was a small producer of titanium ores. OOO Lovozerkiy GOK in Murmanskaya Oblast' mined the Karnasurt deposit where, in addition to rare and rare-earth metals, it mined titanium dioxide in loparite ores; it produced about 7,000 t of loparite concentrate. OAO Apatit mined apatite and nepheline ores at the Kykivumchorrskoye and the Yuksporskoe deposits; annual production reached about 80,000 t of titanium dioxide. OAO TGOK Ilmenit mined the Tuganskoye deposit and produced about 300 t/yr of titanium concentrate. OOO Olekminskiy Rudnik started mining the Kuranakhskoye deposit in Amurskaya Oblast' in 2010 and produced about 60,000 t/yr of ilmenite concentrate (Metalresearch, 2010c; Mineral.ru, 2011u).

A new titanium project was underway in Komi Republic. A large-scale integrated project included construction of a mining complex, a mining and beneficiation plant, and a mining and metallurgical complex to mine titanium ores from the Pizhemsckoye deposit. The enterprise was projected to produce 3 Mt/yr of titanium ore, 75,300 t/yr of titanium dioxide pigment, and 10,000 t/yr of titanium sponge. The titanium ores that would be mined by an open pit method were expected to provide raw materials for the complex for the next 150 years (MinerJob.ru, 2011j).

The main producer of titanium sponge in Russia was OAO Corp. VSMPO-Avisma, which produced titanium sponge at its Bereznirovskiy titanium and magnesium complex in Permskiy Kray. The raw material to produce the titanium sponge was ilmenite concentrate, most of which was imported from Ukraine, as well as Australia, Sierra Leone, and Sri Lanka. VSMPO-Avisma was planning to increase its annual production of titanium sponge to 44,000 t/yr by 2014. VSMPO-Avisma supplied stainless titanium sponge for aircraft wings to aircraft-building companies. In 2011, VSMPO-Avisma was planning to invest \$80 million in new production to meet increasing demand from the aircraft-building companies (Metalresearch.ru, 2011; Mineral.ru, 2011w, x; 2012d).

Another Russian producer of titanium sponge, Solikamskiy Magnesium Plant (SMZ), started new production only in 2011. The company was planning to produce 1,800 t of sponge in 2011 (Mineral.ru, 2011t).

Industrial Minerals

Potash.—OAO Uralkali was the world's leading producer of potash. In May 2011, the company merged with another leading Russian producer of potash, OAO Silvinit; the combined company retained the name of Uralkali, and the name Silvinit was given to one of the small company subdivisions to preserve the Silvinit trademark. The combined production of Uralkali and Silvinit in 2011 amounted to 10.83 Mt of potassium chloride (6.49 Mt of K_2O), which was a 6.4% increase from that of 2010 (Uralkali.com, 2012).

In January 2011, after the merger of Uralkali and Silvinit was announced but before the merger was approved, another

Russian fertilizer producer, OAO Akron, filed a complaint with the Russian Federal Antimonopoly Service (FAS) claiming that the new company would illegally monopolize the potash fertilizer market. The FAS, however, approved the merger under the condition that the new Uralkali would maintain competition on the domestic market. In particular, the FAS required Uralkali to develop and establish a marketing policy with respect to potash sales to different categories of Russian consumers with a unified system of price formation for each category. Uralkali also was required to develop and approve corporate rules for implementation of the merger (Mineral.ru, 2011a, s).

After the merger, Uralkali's production capacity reached 12.5 Mt/yr of potassium chloride. The company was planning to increase its capacity by 80% to 19 Mt/yr by 2021. To achieve this expansion, the company was planning to invest \$5.6 billion, both from existing capital and from funds obtained through loans (Uralkali.com, 2012).

Rare Earths.—Rare-earth metals were being produced in Russia in limited amounts in 2011. The majority of ores containing rare-earth elements on Russian territory were mined by OAO Apatit at apatite-nepheline deposits in Khibines in Murmanskaya Oblast'. The rare-earth elements were extracted only from the loparite ores mined by the Lovozerskiy GOK, however. The company produced about 3,600 t/yr of rare-earth oxides, primarily from the cerium group. SMZ processed the loparite concentrate produced by the Lovozerskiy GOK and extracted rare-earth metals. Consumption of rare earths by Russian industry was estimated to be between 2,000 and 3,000 t/yr; between 95% and 100% of domestic demand was satisfied by imported rare-earth concentrates, primarily from China. In 2010, world prices for rare earths increased by 20% to 30%, and many mining companies in the Russian mining sector started developing plans for rare-earth production in Russia (Metalresearch.ru, 2010a).

In January 2011, Rosnedra prepared a detailed report about rare earths and how their production could contribute to modernization of technology and to Russia's national security. The report suggested actions, from legislative to technical, which the Government and enterprises could undertake to promote rare-earth production in Russia. Analysts of the mineral industry estimated that the actions listed in the report would likely lead to achieving production levels of rare-earth nitrates of 38,000 t/yr and concentrates of fluoride and phosphorus rare earths of 60,000 t/yr (Mineral.ru, 2011, o).

In March 2011, Kazakhstan's national uranium company Kazatomprom JSC and the leading Russian uranium mining company, Atomredmetzoloto (ARMZ), signed a memorandum of intent to cooperate in the area of industrial production of rare and rare-earth metals. The parties were planning to mine both Kazakhstan's and Russia's deposits. Although ARMZ historically was involved in the production of rare earths, it was not participating in any rare-earth projects in 2011. Kazatomprom also had contracts with other foreign companies, in particular, Toshiba Corp. and Sumitomo Corp. of Japan, to produce rare-earths in Kazakhstan. Rosatomprom announced that it intended to start producing rare-earth metals with the goal to produce from 10% to 15% of the world market. According to company analysts, the world's production and

consumption volume of rare earths would double in the next decade to 250,000 t of rare-earth metals. One of the largest Russian mineral deposits, the Tomtor deposit in Sakha Republic (Yakutiya), could be the source for the country's future production of rare earths (Mineral.ru, 2011, n, o).

Russian fertilizer producer FosAgro announced that it was considering starting production of rare earths as a byproduct of phosphate processing. FosAgro mined apatite-nepheline ores in Khibines and produced apatite concentrate that was used for producing fertilizers. Production of rare-earth oxides from those ores amounted to several thousand metric tons per year. The company expected to start production by 2017 or 2018 (Mineral.ru, 2011d).

Mineral Fuels and Related Materials

Uranium.—In 2011, the ARMZ holding company was one of the leading uranium mining companies in the world by production volume and it employed a total of 10,000 workers. In 2011, ARMZ produced 7,091.2 t of uranium in facilities located in Russia and abroad. Three domestic subsidiaries of the holding company together produced 2,993 t of uranium. The leading subsidiary, OAO Priargunskoe Proizvodstvennoe Gorno-Khimicheskoe Ob'edinenie (PPGHO), which was located in the city of Krasnokamensk in Krasnoyarskiy Kray, produced 2,191 t, which was a 25% reduction compared with its volume of production in 2010. The decrease was related to significant depletion of ores with high uranium content. On the other hand, OAO Khiagda, which was located in the Republic of Buryatiya, increased its production to 266.4 t in 2011 from 135.1 t in 2010. Khiagda was planning to continue to increase production by opening a new production line; the new line would be the company's first to use the aperture underground leaching method. For several years, production at Khiagda had been restricted by a lack of production and transportation infrastructure. Recently, however, the company had built a bridge across the Vitim River, reconstructed an automobile road, and built a new depot for railroad cars. Khiagda expected to reach its planned capacity of 1,800 t/yr of uranium by 2019 (ARMZ.ru, 2012; Zauda.ru, 2012).

In 2010, ARMZ acquired 51.4% of the shares of Canadian uranium mining company Uranium One Inc. and, in 2011, ARMZ became the sole owner (100% of the shares) of the Australian company Mantra Resources Ltd. Uranium One had a globally diversified portfolio of projects in Australia, Kazakhstan, and the United States. Mantra Resources' leading project was the Mkuju River project in Tanzania, which had resources of about 45,000 t of uranium. ARMZ was planning to continue an aggressive expansion of the company, including projects outside of Russia. It intended to reach a production level of 12,500 t/yr by 2015 by investing a total of 113 billion rubles (\$3.8 billion); one-half of these funds would be invested in domestic resources. ARMZ was planning to open at least three more uranium enterprises in Russia—ZAO UDK Rudnoe, ZAO Orlovskaya GHK (both located in Zabaykal'skiy Kray), and ZAO Elkonskiy GMK, which was located in Sakha Republic (Yakutiya). Elkonskiy GMK would be based on the Elkon uranium province and had resources of 319,000 t of

uranium (Mineral.ru, 2011m; MinerJob.ru, 2011c; ARMZ.ru, 2013; Rosatom.ru, 2013).

In addition to ARMZ investment activities outside of Russia, another Russian investor, Gazprombank, obtained two licenses for exploration and mining of two lots in Niger—Tuluk–2 and Tuluk–4—in January 2011. These lots are located in the northwestern part of Niger, close to the city of Agades. Gazprombank would likely invest \$5 million in prospecting at each of the lots and the Government of Niger would receive 20% of the shares of the company that was to mine the lots. Gazprombank had no experience in uranium projects, but experts thought that the bank was most likely just engaging in speculative activity. With the increase uranium prices, Gazprombank could invest limited funds in exploration and then sell projects to an experienced mining company (Mineral.ru, 2011e).

Outlook

Russia has large reserves of a variety of mineral commodities and most likely will continue to be one of the world's leading mineral producers. In 2011, the country's mineral sector demonstrated several interesting trends. First, the country's leading mineral producers, such as ARMZ, Nornickel, and RUSAL, were leading an aggressive expansion in production and holdings, both in Russia and abroad, and in 2011, it was especially apparent that such expansions were becoming more and more global. Second, volatility in the world prices of minerals was leading some companies to engage in more concerted efforts to diversify their project holdings; Nornickel's interest in coal and iron ore is a good example of this trend. Finally, Russia, as a country with comprehensive mineral production and vast resources, is starting to use Government regulation more and more often to stimulate production of minerals that are considered strategic yet do not get steadily produced in the market economy, such as beryllium, rare earths, and tin. If these trends continue for the next several years, Russia's mineral sector is likely to become more resilient to volatile prices of minerals, technology changes, and the cyclic nature of the economy.

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

(Metric tons unless otherwise specified)

| Commodity | 2007 | 2008 | 2009 | 2010 | 2011 | |
|------------------------------------------------------------|----------------------|---------------------|---------------------|----------------------|-------------------------|------------------------|
| METALS | | | | | | |
| Aluminum: | | | | | | |
| Ore and concentrate: | | | | | | |
| Alumina | thousand metric tons | 3,333 | 3,112 | 2,794 | 2,857 | 2,868 |
| Bauxite | | 5,775,000 | 5,675,000 | 5,775,000 | 5,475,000 | 4,495,000 |
| Nepheline concentrate, 25% to 30% | | 4,880,000 | 4,760,000 | 4,400,000 | 4,900,000 | 5,000,000 ^e |
| Metal, smelter, primary | | 3,955,417 | 4,190,000 | 3,815,000 | 3,947,000 | 3,911,500 |
| Antimony, mine output, recoverable Sb content ^c | | 3,500 | 3,500 | 3,500 | 6,040 ^r | 6,348 |
| Arsenic, white ^c | | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| Bismuth:^c | | | | | | |
| Mine output, Bi content | | 55 | 70 | 65 | 50 | 50 |
| Metal, refined | | 12 | 13 | 12 | 10 | 10 |
| Cadmium, metal, smelter | | 810 | 800 | 700 | 700 ^r | 700 ^r |
| Chromium, chrome ore, marketable | | 776,681 | 913,000 | 416,194 | 400,000 ^e | 400,000 ^e |
| Cobalt:^c | | | | | | |
| Mine output, recoverable Co content | | 6,300 | 6,200 | 6,100 | 6,200 | 6,080 |
| Metal, refined | | 3,800 | 2,500 | 2,352 ³ | 2,460 | 2,340 |
| Copper: | | | | | | |
| Ore, recoverable Cu content ^c | | 740,000 | 750,000 | 676,000 ^r | 703,000 | 673,474 ³ |
| Metal: | | | | | | |
| Blister, smelter:^c | | | | | | |
| Primary | | 650,000 | 630,000 | 580,000 ^r | 590,000 | 596,490 ³ |
| Secondary | | 290,000 | 235,000 | 220,000 ^r | 240,000 | 242,640 ³ |
| Total | | 940,000 | 865,000 | 800,000 ^r | 830,000 | 839,130 ³ |
| Refined: | | | | | | |
| Primary | | 650,000 | 610,000 | 612,000 ^r | 656,000 | 663,200 |
| Secondary | | 289,000 | 250,000 | 250,000 ^r | 218,000 | 220,400 |
| Total | | 939,000 | 860,000 | 862,000 ^r | 874,000 | 883,600 |
| Gallium ^c | | 11 | 11 | 11 | 11 | 11 |
| Gold: | | | | | | |
| Mine output, Au content | kilograms | 156,975 | 172,031 | 192,832 | 189,000 | 199,650 |
| Secondary recovery | do. | 5,867 | 8,140 | 12,404 | 12,600 | 9,334 |
| Indium ^c | | 10 | 10 | 4 | 4 ^r | 5 |
| Iron and steel: | | | | | | |
| Iron ore: | | | | | | |
| Gross weight | | 105,000,000 | 99,900,000 | 92,000,000 | 95,900,000 ^r | 104,000,000 |
| Fe content, 55% to 63% ^c | | 60,800,000 | 57,800,000 | 53,200,000 | 56,581,000 ^r | 61,360,000 |
| Metal: | | | | | | |
| Pig iron | | 51,523,000 | 48,300,000 | 43,930,000 | 48,200,000 ^e | 48,000,000 |
| Direct-reduced iron ^e | | 3,410,000 | 4,560,000 | 4,670,000 | 4,700,000 | 4,900,000 |
| Ferroalloys:^c | | | | | | |
| Blast furnace: | | | | | | |
| Ferromanganese | | 120,000 | 110,000 | 88,000 ^r | 171,600 ³ | 180,000 |
| Ferrophosphorus | | 3,500 | 3,500 | 3,000 | 3,600 | 3,600 |
| Spiegeleisen | | 7,000 | 7,000 | 6,500 | 5,500 | 6,000 |
| Electric furnace: | | | | | | |
| Ferrochromium | | 570,000 | 490,000 | 378,000 ³ | 414,288 ³ | 501,700 |
| Ferrochromiumsilicon | | 4,000 | 4,000 | 3,500 | 4,200 | 4,200 |
| Ferronickel, gross weight:^{3,4} | | | | | | |
| High-nickel | | 19,031 ^r | 17,971 ^r | 17,489 ^r | 19,763 | 20,200 |
| Other | | 12,840 ^r | 13,440 ^r | 14,040 ^r | 13,165 | 13,800 |
| Ferroniobium (ferrocolumbium) | | 121 | 121 | 120 | 121 | 121 |

See footnotes at end of table.

TABLE 1—Continued
RUSSIA: PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

| Commodity | 2007 | 2008 | 2009 | 2010 | 2011 |
|-----------------------------------------|-------------------------|-------------------------|-------------------------|--------------------------|------------------------|
| METALS—Continued | | | | | |
| Iron and steel—Continued: | | | | | |
| Metal—Continued: | | | | | |
| Ferroalloys—Continued: ^c | | | | | |
| Electric furnace—Continued: | | | | | |
| Ferrosilicon | 896,100 ³ | 850,000 | 745,000 | 916,000 | 1,030,000 |
| Ferrovandium | 12,000 | 12,000 | 8,029 ³ | 13,507 ³ | 13,500 ^e |
| Silicomanganese | 40,000 | 40,000 | 98,700 | 147,900 ³ | 150,000 ^e |
| Silicon metal | 54,000 | 54,000 | 23,900 | 48,700 | 52,000 |
| Other | 22,000 | 22,000 | 20,000 | 18,000 | 18,000 |
| Total, ferroalloys | 1,760,000 | 1,620,000 ^r | 1,410,000 | 1,776,344 ^{r,3} | 1,993,121 ³ |
| Steel: | | | | | |
| Crude | 72,389,000 ^r | 68,700,000 ^r | 59,800,000 ^r | 66,800,000 ^r | 68,100,000 |
| Finished, rolled | 59,660,000 | 56,564,000 | 51,900,000 ^r | 57,700,000 | 59,500,000 |
| Pipe | 8,706,000 | 7,772,000 | 6,655,000 | 9,149,000 | 10,017,000 |
| Lead: ^c | | | | | |
| Mine output, recoverable Pb content | 50,000 | 60,000 | 70,000 | 97,000 | 94,500 |
| Metal, refined, primary and secondary | 94,000 | 80,000 | 73,000 | 89,000 | 86,700 |
| Magnesium: ^c | | | | | |
| Magnesite | 1,200,000 | 1,200,000 | 1,000,000 | 1,200,000 | 1,200,000 |
| Metal, including secondary | 37,000 | 37,000 | 29,000 | 29,000 ^r | 29,000 |
| Manganese ore: ^c | | | | | |
| Gross weight | 44,000 | 45,000 | 45,000 | 45,000 | 120,000 |
| Mn content | 9,000 | 9,200 | 9,200 | 9,200 | 30,000 |
| Mercury ^c | 50 | 50 | 50 | 50 | 50 |
| Molybdenum, in concentrate ^c | 3,300 | 3,600 | 3,800 | 3,800 | 3,900 |
| Nickel: | | | | | |
| Marketable mine production, Ni content: | | | | | |
| Laterite ore | 45,687 ^r | 36,804 ^r | 32,298 ^r | 41,184 | 34,000 |
| Sulfide concentrate | 234,083 | 229,765 ^r | 229,493 | 228,093 | 230,000 |
| Total | 279,770 ^r | 266,569 ^r | 261,791 ^r | 269,277 | 264,000 |
| Matte, for export, primarily to China | 919 ^r | -- ^r | -- ^r | 660 | 700 ^e |
| Nickel products: | | | | | |
| Ferronickel: | | | | | |
| High-nickel | 17,111 | 16,158 | 15,565 | 16,799 | 17,000 |
| Other | 12,840 | 13,440 | 14,040 | 14,600 | 15,200 |
| Metal | 248,363 | 242,409 | 237,270 | 243,676 | 245,869 |
| Oxide sinter | 235 | -- | -- | -- | -- |
| Chemicals | 3,100 | 2,900 | 2,700 | 2,900 | 2,900 |
| Total | 281,649 | 274,907 | 269,575 | 277,975 | 280,969 |
| Niobium (columbium) ^c | 150 ^r | 150 ^r | 150 ^r | 150 ^r | 150 |
| Platinum-group metals: ^c | | | | | |
| Platinum | do. | 27,000 | 25,000 | 24,500 | 25,000 |
| Palladium | do. | 96,800 | 87,700 | 83,200 ³ | 84,700 |
| Other | do. | 14,500 | 12,500 | 11,900 | 12,000 |
| Total | do. | 138,000 | 125,000 | 120,000 | 122,000 |
| Rhenium ^c | do. | 1,500 | 1,500 | 1,500 | 1,500 |
| Selenium ^c | do. | 120,000 | 130,000 | 140,000 | 140,000 |
| Silicon ^c | do. | 635,000 | 640,000 | 640,000 | 650,000 |
| Silver: | | | | | |
| Mine output, Ag content | kilograms | 911,332 | 1,132,166 | 1,312,567 | 1,145,150 ^r |
| Secondary recovery | do. | 265 | 265 | 228 | 408 |

See footnotes at end of table.

TABLE 1—Continued
 RUSSIA: PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

| Commodity | 2007 | 2008 | 2009 | 2010 | 2011 |
|--------------------------------------------------------------------|-------------------------|-------------------------|-------------------------|------------------------|--------------------|
| METALS—Continued | | | | | |
| Tin: ^c | | | | | |
| Mine output, recoverable Sn content | 2,500 | 1,500 | 1,200 | 160 | 300 |
| Metal, smelter: | | | | | |
| Primary | 3,800 | 2,000 | 1,700 ^r | 100 | 200 |
| Secondary | 400 | 300 | 300 | 300 | 300 |
| Total | 4,200 | 2,300 | 2,000 ^r | 400 | 500 |
| Titanium sponge | 34,150 | 34,950 | 26,600 | 18,621 | 25,000 |
| Tungsten, concentrate, W content ^c | 3,400 ^r | 3,000 | 2,300 ^r | 2,800 | 3,500 |
| Vanadium, metal ^c | 14,500 | 14,500 | 14,500 | 15,000 | 15,000 |
| Zinc: ^c | | | | | |
| Mine output, recoverable Zn content | 185,000 | 204,000 | 225,000 | 269,000 | 275,000 |
| Metal, smelter, primary and secondary | 260,000 | 260,000 | 225,000 | 260,000 | 267,280 |
| Zirconium, baddeleyite concentrate, averaging 98% ZrO ₂ | 7,136 | 7,000 | 5,000 | 6,000 ^e | 6,000 ^e |
| INDUSTRIAL MINERALS | | | | | |
| Asbestos, grades I–VI ^c | 1,025,000 ³ | 1,017,000 ³ | 1,000,000 | 1,000,000 | 1,000,000 |
| Barite ^c | 63,000 | 63,000 | 63,000 | 60,000 | 63,000 |
| Boron ^c thousand metric tons | 400 | 400 | 400 | 400 | 400 |
| Cement, hydraulic | 59,939,000 ^r | 53,548,000 ^r | 44,266,000 ^r | 50,400,000 | 56,200,000 |
| Clays: | | | | | |
| Bentonite | 500,000 ^r | 500,000 ^r | 500,000 ^r | 500,000 ^r | 500,000 |
| Kaolin concentrate | 140,000 | 107,500 | 90,300 | 105,000 | 120,000 |
| Diamond: ^c | | | | | |
| Gem carats | 23,300,000 | 21,925,000 ³ | 17,791,400 ³ | 17,800,000 | 20,140,000 |
| Industrial do. | 15,000,000 | 15,000,000 | 15,000,000 | 15,000,000 | 15,000,000 |
| Synthetic do. | 80,000,000 | 80,000,000 | 80,000,000 | 80,000,000 | 80,000,000 |
| Total do. | 118,000,000 | 117,000,000 | 113,000,000 | 113,000,000 | 115,140,000 |
| Diatomite | 30,000 | 28,000 | 30,000 | 32,000 | 33,000 |
| Feldspar ^c | 45,000 | 45,000 | 45,000 | 45,000 | 45,000 |
| Fluorspar, concentrate, 55% to 96.4% CaF ₂ ^c | 180,000 | 269,000 | 240,000 | 250,000 | 250,000 |
| Germanium | 2 | 2 ^e | 2 ^e | 5 ^r | 5 ^e |
| Graphite | 14,000 | 14,000 | 14,000 | 14,000 | 14,000 |
| Gypsum ^c | 3,000,000 | 3,600,000 | 2,900,000 ³ | 2,900,000 | 3,000,000 |
| Iodine ^c | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 |
| Lime, industrial and construction ^c | 11,700,000 ^r | 8,200,000 | 7,000,000 | 9,500,000 ^r | 10,100,000 |
| Limestone | 6,910,000 | 7,420,000 | 7,000,000 ^r | 7,000,000 ^r | 7,000,000 |
| Mica ^c | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| Nitrogen, N content of ammonia | 10,500,000 ^e | 10,425,000 | 10,441,000 | 10,400,000 | 10,400,000 |
| Perlite cubic meters | 200,000 ^r | 200,000 ^r | 200,000 ^r | 200,000 ^r | 200,000 |
| Phosphate rock: ^c | | | | | |
| Gross weight | 11,400,000 | 10,400,000 | 9,500,000 ^r | 11,000,000 | 11,000,000 |
| P ₂ O ₅ content | 4,200,000 ^r | 3,800,000 ^r | 3,500,000 ^r | 4,000,000 | 4,000,000 |
| Potash, marketable, K ₂ O equivalent | 6,429,000 ^r | 5,992,400 ^r | 3,727,000 | 6,283,000 | 6,498,000 |
| Salt, all types | 2,200,000 | 1,800,000 ^r | 1,600,000 ^r | 1,800,000 ^r | 1,800,000 |
| Soda ash ^c | 2,900,000 | 2,800,000 | 2,322,000 ^r | 2,670,000 ^r | 2,822,000 |
| Sulfur: ^c | | | | | |
| Native | 50,000 | 50,000 | 50,000 | 50,000 | 50,000 |
| Pyrites | 200,000 | 200,000 | 200,000 | 200,000 | 200,000 |
| Byproduct: | | | | | |
| Metallurgy | 800,000 | 820,000 | 820,000 | 820,000 | 820,000 |
| Natural gas | 6,000,000 | 6,100,000 | 6,000,000 | 6,000,000 | 6,000,000 |
| Total | 7,050,000 | 7,170,000 | 7,070,000 | 7,070,000 | 7,070,000 |

See footnotes at end of table.

TABLE 1—Continued
 RUSSIA: PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

| Commodity | 2007 | 2008 | 2009 | 2010 | 2011 | |
|------------------------------------------------|----------------------------|------------------------|-------------|-------------|----------------------|------------------------|
| INDUSTRIAL MINERALS—Continued | | | | | | |
| Sulfur, sulfuric acid | 9,689,000 | 9,106,000 | 8,600,000 | 10,200,000 | 10,700,000 | |
| Talc ^c | 170,000 | 160,000 | 160,000 | 160,000 | 160,000 | |
| Vermiculite ^c | 25,000 | 25,000 | 25,000 | 25,000 | 25,000 | |
| MINERAL FUELS AND RELATED MATERIALS | | | | | | |
| Coal: | | | | | | |
| Anthracite | thousand metric tons | 8,662 | 6,383 | 7,100 | 8,700 | 10,000 |
| Bituminous | do. | 209,216 | 216,049 | 200,982 | 236,300 ^r | 248,000 |
| Lignite | do. | 71,143 | 82,485 | 69,011 | 76,600 | 76,800 |
| Total | do. | 289,021 | 304,917 | 277,093 | 321,600 | 334,800 |
| Coke, metallurgical, 6% moisture content | do. | 32,254 | 32,082 | 24,200 | 26,800 | 27,000 |
| Natural gas, marketed | million cubic meters | 653,000 | 663,000 | 583,610 | 651,000 | 671,000 |
| Oil shale ^c | | 1,200,000 | 1,200,000 | 1,200,000 | 1,200,000 | 1,200,000 |
| Peat, horticultural and fuel uses ^c | | 1,700,000 ^r | 1,200,000 | 1,200,000 | 1,300,000 | 1,300,000 |
| Petroleum: | | | | | | |
| Crude: | | | | | | |
| In gravimetric units | | 491,000,000 | 488,105,000 | 479,000,000 | 486,000,000 | 492,000,000 |
| In volumetric units ^c | thousand 42-gallon barrels | 3,570,000 | 3,550,000 | 3,590,000 | 3,530,000 | 3,578,000 ³ |
| Refinery products: | | | | | | |
| In gravimetric units | | 229,000,000 | 237,000,000 | 237,000,000 | 250,000,000 | 258,000,000 |
| In volumetric units ^c | thousand 42-gallon barrels | 1,840,000 | 1,910,000 | 1,910,000 | 2,010,000 | 2,080,600 |
| Uranium: | | | | | | |
| U content | | 3,413 | 3,521 | 3,564 | 3,562 | 2,993 |
| U ₃ O ₈ content | | 3,762 | 4,152 | 4,203 | 4,200 | 3,502 |

^cEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. -- Zero.

¹In addition to the commodities listed, Russia produces a number of other mineral commodities, which include lithium, rare-earth metal concentrates, tantalum, tellurium, and titanium ore, but available information is inadequate to make reliable estimates of output.

²Table includes data available through January 15, 2013.

³Reported figure.

⁴Excludes nickel-chromium remelt alloy produced from scrap. The remelt alloy typically has a nickel content of 20% to 50%.

TABLE 2
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|----------------------------|----------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------|
| Alumina | Achinsk (United Company RUSAL) | Achinsk in East Siberia | 900,000 |
| Do. | Bogoslovsk (United Company RUSAL) | Krasnotur'insk | 1,050,000 |
| Do. | Boksitogorsk (United Company RUSAL) | Leningradskaya Oblast' | 200,000 |
| Do. | Pikalyovo (United Company RUSAL) | Pikalyovo | 300,000 |
| Do. | Uralsk (United Company RUSAL) | Kamensk-Uralskiy | 700,000 |
| Aluminum, primary smelters | Bogoslovsk (United Company RUSAL) | Krasnotur'insk | 175,000 |
| Do. | Bratsk (United Company RUSAL) | Bratsk | 950,000 |
| Do. | Irkutsk (United Company RUSAL) | Irkutskaya Oblast' | 300,000 |
| Do. | Kandalaksha (United Company RUSAL) | Kola Peninsula | 75,000 |
| Do. | Khakas (United Company RUSAL) | Khakassiya | 300,000 |
| Do. | Krasnoyarsk (United Company RUSAL) | Krasnoyarskiy Kray | 875,000 |
| Do. | Nadvoitsy (United Company RUSAL) | Nadvoitsy, Kareliya Republic | 75,000 |
| Do. | Novokuznetsk (United Company RUSAL) | Novokuznetsk | 300,000 |
| Do. | Sayansk (United Company RUSAL) | Sayanogorsk | 425,000 |
| Do. | Uralsk (United Company RUSAL) | Kamensk-Uralskiy | 150,000 |
| Do. | Volgograd (United Company RUSAL) | Volgogradskaya Oblast' | 175,000 |
| Do. | Volkhov (United Company RUSAL) | Volkhov, east of St. Petersburg | 20,000 |
| Amber | Kaliningrad Amber enterprise (Kaliningrad regional authorities and Alrosa Co. Ltd.) | Kaliningrad Oblast' | 250 |
| Antimony: | | | |
| Sb content of concentrate | Sarylakh deposit | Ust'-Nera region, Sakha Republic (Yakutiya) | 6,000 ² |
| Do. | Sentachan deposit | Northeastern Sakha Republic (Yakutiya) | NA |
| Compounds and metals | Ryazsvetmet plant | Ryazanskaya Oblast' | NA |
| Apatite, concentrate | Khibiny apatite association (OAO Apatit) | Kola Peninsula | 15,000,000 |
| Do. | Kovdor iron ore mining association | do. | 700,000 |
| Asbestos | Bazenovskoye chrysotile deposit | Sverdlovskaya Oblast' | NA |
| Do. | Molodeznoye deposit | Zabaykal'sk (Chita) Oblast' | NA |
| Do. | "Orenburg Minerals" Co., Kiembraevskoye chrysotile deposit | Orenburgskaya Oblast' | 500,000 |
| Do. | "Tuvaasbest" plant, Ak-Dovurakskoye chrysotile deposit | Tyva Republic | 250,000 |
| Do. | "Uralasbest" mining and clarification plant | Central Ural Mountains | 1,100,000 |
| Barite | Salarinskiy mining and beneficiation complex | Kvartsovaya Sopka deposit | 100,000 |
| Bauxite | OAO Sevuralboksitruda (United Company RUSAL) | Severoural'sk region | NA |
| Do. | South-Urals mining company (United Company RUSAL) | South Ural Mountains | NA |
| Do. | Severnaya Onega Mine (United Company RUSAL) | Northwest region | 800,000 |
| Do. | Komi Aluminum (United Company RUSAL) | Sredne-Timanskiy | 3,000,000 |
| Boron, boric acid | Bor Association | Primorskiy Kray | 140,000 |
| Do. | Amur River complex | Russian 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 | Eastern Siberia | 50,000,000 |
| Do. | thousand metric tons Kuznetsk Basin (Kuzbass) | Western Siberia | 160,000 |
| Do. | Moscow Basin | Moscow region | 15,000,000 |
| Do. | Neryungri Basin | Sakha Republic (Yakutiya) | 15,000,000 |
| Do. | Pechora Basin | Komi Republic | 30,000,000 |
| Do. | South Yakutiya Basin | Sakha Republic (Yakutiya) | 17,000,000 |
| Cobalt | OJSC MMC Norilsk Nickel | Norilsk, Kola Peninsula | 4,000 |
| Do. | Rezh and Yuzhuralnikel enterprises | South Ural Mountains | 2,100 |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|-------------------------------|-----------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------|
| Cobalt—Continued | | Ufaleynikel Co. | Chelyabinskaya Oblast', Ural Mountains | 4,000 |
| Do. | | Khovu-Aksynskoe (nickel-cobalt) deposit | Khovu-Aksy, Tyva Republic | NA |
| Copper: | | | | |
| Cu in concentrate | | OJSC MMC Norilsk Nickel | Norilsk region, Kola Peninsula | 500,000 |
| Do. | | ZAO Russian Copper Co. (RMK) | Urals | 70,000 |
| Do. | | Metalloinvest Holding | Udokan, Zabaykal'skiy Kray | NA |
| Do. | | Ural Mining and Metallurgical Co. (UMMC) | do. | 230,000 |
| Metal, refined | | OJSC MMC Norilsk Nickel | Norilsk region, Kola Peninsula | 450,000 |
| Do. | | ZAO Russian Copper Co. (RMK) | Urals | 170,000 |
| Do. | | Ural Mining and Metallurgical Co. (UMMC) | do. | 360,000 |
| Diamond, gem and industrial | thousand carats | Almaz Rossii-Sakha Joint Stock Co. (Alrosa Co. Ltd.) enterprises: | Sakha Republic (Yakutiya) mines: | |
| | | Udachnyy mining and beneficiation complex | Zarnitsa and Udachnyy | NA |
| Do. | do. | Mirny mining and beneficiation complex | Mir and International | NA |
| Do. | do. | Aikhal mining and beneficiation complex | Aikhal and Komsomol'skiy | NA |
| Do. | do. | Anabaraskiy mining and beneficiation complex | Alluvial mines | NA |
| Do. | do. | Nyurbinskiy mining and beneficiation complex | Nyurbinskiy and Botuobinskiy | NA |
| Do. | do. | Lomonosov | Arkhangel'skaya Oblast' | NA |
| Feldspar | | Kheto-Lanbino and Lupikko deposits | Kareliya Republic | NA |
| Ferroalloys | | ChEMK Industrial Group enterprises: | | |
| Do. | | Chelyabinsk electrometallurgical plant | Chelyabinskaya Oblast' | 450,000 |
| Do. | | Kuznetsk ferroalloys plant | Novokuznetsk | 400,000 |
| Do. | | Chusovoy iron and steel plant | Perm' Kray | NA |
| Do. | | Klyuchevsk ferroalloy plant | Dvurechensk | 160,000 |
| Do. | | Kosaya Gora iron works | Kosaya, Gora | 200,000 |
| Do. | | Lipetsk iron and steel works | Lipetskaya Oblast' | NA |
| Do. | | Serov ferroalloy plant (a subsidiary of Eurasian Natural Resources PLC [ENRC]) | Sverdlovskaya Oblast' | NA |
| Ferronickel | | Ufaleynikel company | Chelyabinskaya Oblast', Urals | 5,000 |
| Ferrovandium | | Vanadii-Tulachermet (Evraz Group) | Tula, North Caucasus | NA |
| Fluorspar | | Abagaytuy deposit | Transbaikal | NA |
| Do. | | Usugli Mine | do. | NA |
| Do. | | Kyakhinsky deposit | do. | NA |
| Do. | | Kalanguy mining complex | Zabaykal'skiy Kray | NA |
| Do. | | Yaroslavsky mining and beneficiation complex | Pogranichnoye and Vosnesenskoye deposits, Russian Far East's Primorskiy Kray | NA |
| Gallium | | Achinsk (United Company RUSAL) | Achinsk in East Siberia | 15 ² |
| Do. | | OOO Galliy | NA | NA |
| Do. | | Novosibirsk tin complex | Novosibirsk | NA |
| Do. | | Pikalevo (United Company RUSAL) | Pikalevo | NA |
| Germanium, metal and products | | Federal State Unitary Enterprise Germanium | Kranoyarsk | 7 |
| Gold | kilograms | Mining companies: | Mining regions: | |
| | | ZAO Amur a/s | Khabarovskiy Kray | 5,500 |
| Do. | do. | OAO Buryatzoloto | Buryatiya Republic | 5,000 |
| Do. | do. | ZAO Chukotskaya GGK | Chukotskiy Avtonomnyy Okrug | 1,700 |
| Do. | do. | OOO GRK Aldanzoloto | Sakha (Yukutiya) Republic | 4,000 |
| Do. | do. | Kinross Gold Corp. | Chukotskiy Avtonomnyy Okrug | NA |
| Do. | do. | LT-Resurs, ZAO | Irkutskaya Oblast' | 2,700 |
| Do. | do. | OOO Neryungri-Metallik | Sakha Republic (Yakutiya) | 1,500 |
| Do. | do. | OOO Nirungan | do. | 1,100 |
| Do. | do. | OAO Omchak | Magadanskaya Oblast' | 3,000 |
| Do. | do. | OAO Omolonskaya ZRK | do. | 5,000 |
| Do. | do. | ZAO Omsukchanskaya GGK | do. | 3,000 |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c | |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------------------------|--------|
| Gold—Continued | Mining companies—Continued: | Mining regions—Continued: | | |
| Do. | kilograms | Oyna, a/s | Tyva Republic | 1,500 |
| Do. | do. | Petropavlovsk plc | Petropavlovsk | NA |
| Do. | do. | OAo Pokrovskiy Mine | Amurskaya Oblast' | 6,000 |
| Do. | do. | OAo Polimetal | Magadanskaya and Sverdlovskaya Oblast's, Khabarovskiy Kray | 7,500 |
| Do. | do. | Polyarnaya, a/s | Chukotskiy Avtonomnyy Okrug | 1,000 |
| Do. | do. | OAo Polyus Zoloto | Krasnoyarskiy Kray | 38,000 |
| Do. | do. | OOO Priisk Drazhnyy, | do. | 1,200 |
| Do. | do. | OAo Priisk Solov'yevskiy | Amurskaya Oblast' | 1,500 |
| Do. | do. | OOO Ros-DV | Khabarovskiy Kray | 1,100 |
| Do. | do. | OOO Russdragmet | Khabarovskiy Kray, Zabaykal'skiy Kray | 6,000 |
| Do. | do. | Seligdar, a/s | Sakha Republic (Yakutiya) | 2,000 |
| Do. | do. | Severstal Nordgold NV | Russia, Kazakhstan, and West Africa | NA |
| Do. | do. | OOO Sovrudnik | Krasnoyarskiy Kray | 2,000 |
| Do. | do. | OAo Susumanzoloto | Magadanskaya Oblast' | 3,000 |
| Do. | do. | Seligdar, a/s | Sakha Republic (Yakutiya) | 2,000 |
| Do. | do. | OAo Susumanzoloto | Magadanskaya Oblast' | 3,000 |
| Do. | do. | OAo Uralelktomed' | Sverdlovskaya Oblast' | 1,400 |
| Do. | do. | Vitim, a/s | Irkutskaya Oblast' | 2,900 |
| Do. | do. | Votok, a/s | Khabarovskiy Kray | 1,100 |
| Do. | do. | Yuzhuralzoloto | Chelyabinskaya Oblast' | 4,200 |
| Do. | do. | Zapadnaya, a/s | Krasnoyarskiy Kray | 1,900 |
| Do. | do. | ZAO Zolotaya, ZDK | Khakasiya Republic | 1,200 |
| Indium: | | | | |
| Primary | Chelyabinsk zinc plant | Chelyabinskaya Oblast' | 6 | |
| Secondary | Elektrotsink plant | Vladikavkaz | 6 | |
| Iron ore | Kursk Magnetic Anomaly (KMA) region, which contains the following enterprises: Lebedi and Stoilo Mikhaylovka | Locations: Gubkin Zheleznogorsk | 50,000,000 ² | |
| Do. | Northwest region, which contains the following enterprises: Kostomuksha Kovdor Olenegorsk | Locations: Kostomuksha Kola Peninsula Olenegorsk | 22,000,000 ² | |
| Do. | Siberia region, which contains the following enterprises: East: Korshunovo Rudnogorsk West: Abakan Sheregesh Tashtagol Teya | Locations: Zheleznogorsk Rudnogorsk Abaza Sheregesh Tashtagol Vershina Tei | 18,000,000 ² | |
| Do. | Ural Mountains region, which contains the following enterprises: Akkermanovka Bakal Goroblagodat Kachkanar Magnitogorsk Peshchanka | Locations: Novotroitsk Bakal Kushva Kachkanar Magnitogorsk Rudnichnyy | 22,000,000 ² | |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|----------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------------|
| Lead, metal | Dalpolymetal lead smelter | Rudnaya in Primorskiy Kray | 20,000 |
| Do. | Elektrozinc lead smelter [Ural Mining and Metallurgical Co. (UMMC)] | Vladikavkaz in North Caucasus | 40,000 |
| Lead-zinc, recoverable content of ore: | | | |
| Lead, recoverable Pb content of ore | Altay mining-beneficiation complex | Altay Kray, Southern Siberia | 2,000 |
| Do. | Dalpolymetal mining-beneficiation complex | Primorskiy Kray | 20,000 |
| Do. | Nerchinsk polymetallic complex | Zabaykal'skiy Kray | 7,000 |
| Do. | Sadon lead-zinc complex | North Ossetia | 5,000 |
| Do. | Salair mining-beneficiation complex | Kemerovskaya Oblast' | 2,000 |
| Zinc, recoverable Zn content of ore | Altay mining-beneficiation complex | Altay Kray, Southern Siberia | 1,000 |
| Do. | Dalpolymetal mining-beneficiation complex | Primorskiy Kray | 25,000 |
| Do. | Nerchinsk polymetallic complex | Zabaykal'skiy Kray | 12,500 |
| Do. | Sadon lead-zinc complex | Severnaya Osetiya | 14,000 |
| Do. | Salair mining-beneficiation complex | Kemerovskaya Oblast' | 10,500 |
| Limestone | Mazulsky Mine (United Company RUSAL) | Goryachegorsk massif, Eastern Siberia | NA |
| Lithium and its compounds | JSC Novosibirsk Chemical Plant (TVEL Corp.) | Novosibirsk | NA |
| Do. | JSC Chemical-Metallurgical Plant (TVEL Corp.) | Kransnoyarsk | NA |
| Magnesite | Karagayskiy open pit (Magnezit Group) and Magnezitovaya underground mine (Magnezit Group) | Sakha group of deposits (Chelyabinskaya Oblast') | 3,800,000 ² |
| Magnesium, metal (for sale) | Avisma plant | Berezniki | 35,000 |
| Do. | Solikamsk plant (Uralkaliy) | Permskiy Kray | 30,000 |
| Mica | Emel'dzhak deposit, Aldan Shield | Sakha Republic (Yakutiya) | NA |
| Do. | Lopatova Guba mica pit, Northern Kareliya | Kareliya Republic | NA |
| Do. | Kovdor phlogopite Mine (Mica Mine; Slyuda Mine; Kovdorslyuda Shaft) | Kola Peninsula, Murmanskaya Oblast' | NA |
| Do. | Irkutsk complex (JSC "Vostoksluda") | Mam deposit, Irkutskaya Oblast' | NA |
| Molybdenum | Dzhida tungsten-molybdenum mine | West Transbaikal | NA |
| Do. | Sorsk molybdenum mining enterprise | Khakasiya Republic | NA |
| Do. | Tyrnyauz tungsten-molybdenum mine | North Caucasus | NA |
| Do. | Shakhtaminskoye molybdenum mining enterprise | Zabaykal'skiy Kray | NA |
| Natural gas | million cubic meters | Komi Republic | 8,000 |
| Do. | do. | Norilsk area | 5,500 |
| Do. | do. | North Caucasus | 6,000 |
| Do. | do. | Sakhalin | 2,000 |
| Do. | do. | Tomsk Oblast | 500 |
| Do. | do. | Tyumen Oblast, including: | 575,000 ² |
| Do. | do. | Medvezhye field | (75,000) |
| Do. | do. | Urengoy field | (300,000) |
| Do. | do. | Vyrngapur field | (17,000) |
| Do. | do. | Yamburg field | (170,000) |
| Do. | do. | Bovanenko field | NA |
| Do. | do. | Pestovoyy field | NA |
| Do. | do. | Zapolyarnyy field | NA |
| Do. | do. | Shtokmanov field | NA |
| Do. | do. | Urals | 45,000 |
| Do. | do. | Volga | 6,000 |
| Do. | do. | Yakut-Sakha | 1,500 |
| Nepheline syenite | Apatite complex | Kola Peninsula | 1,500,000 |
| Do. | Kiya-Shaltyr Mine (United Company RUSAL) | Goryachegorsk massif, Eastern Siberia | NA |
| Nickel: | | | |
| Ni in ore | OJSC MMC Norilsk Nickel | Kola Peninsula and Norilsk region | 300,000 |
| Do. | OAO Ufaleynikel [Koks Company of Industrial Metallurgical Holding] | Chelyabinskaya Oblast', Urals | 17,000 |
| Do. | OAO Yuzhuralnikel [Mechel OAO] | South Urals | 3,000 |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|----------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Nickel—Continued: | | | |
| Metal: | | | |
| Smelting | OJSC MMC Norilsk Nickel | Norilsk region, Kola Peninsula | 160,000 |
| Do. | do. | Pechenga | 50,000 |
| Do. | do. | Monchegorsk | 50,000 |
| Refining | do. | do. | 140,000 |
| Do. | do. | Norilsk region, Kola Peninsula | 100,000 |
| Ni products and Ni in FeNi | Enterprises | Location: | |
| | ZAORezhnickel [Ural Mining and Metallurgical Co. (UMMC)] | South Urals | 65,000 ² |
| | Ufaley-nikel [Koks Industrial Metallurgical Holding Co.] | do. | |
| | Yuzhural-nikel [Mechel OAO] | do. | |
| Niobium (columbium) | Karnarsurt mining enterprise (AO Sevredmet) | Lovozerskoye deposit, Kola Peninsula | 12,000 |
| Oil shale | Leningradslanets Association | Slantsy, Leningradskaya Oblast' | 5,000,000 |
| Petroleum | Bashneft' | Bashkortostan Republic | 12,000,000 |
| Do. | Gazprom Nef't' | Deposits throughout Russia | 50,000,000 |
| Do. | OAO Lukoil | West Siberian deposits: Kechimovskoye Nivagalskoye Urals deposits Volga deposits Timen Pechora deposit: Yuzhnaya Khylichuya Komi Republic deposits: Kyrtayelskoye Pashshorskoye Perevozhnoye | 100,000,000 ² |
| Do. | OAO Novatek | Western Siberia | 5,000,000 |
| Do. | OAO Rosneft' | Deposits throughout Russia | 120,000,000 |
| Do. | Russneft' | Central and Western Siberia, Ural Mountains and Volga regions | 15,000,000 |
| Do. | Slavneft' | Western Siberia and Krasnoyarskiy Krai | 20,000,000 |
| Do. | Surgutneftegas | NA | 60,000,000 |
| Do. | Tatneft' | Deposits Romashkinskoye Novo-Elkhovskoye Bavlinskoye Bondyuzskoye Pervomayskoye Sabandchinskoye | 30,000,000 ² |
| Do. | TNK-BP | Deposits Kamennoye Kovyatka Russkoye Suzunskoye Tagulskoye Uvat Verkhnechonsk | 75,000,000 ² |
| Phosphate rock | Kingisepp complex (OAO Fosforit) | Leningradskaya Oblast' | 3,500,000 |
| Do. | Lopatino and Yegorevsk deposits | Moscow Oblast' | NA |
| Do. | Polpinskoye deposit | Bryanskaya Oblast' | NA |
| Do. | Verkhnekamsk deposit | Ural'skiye Gory | NA |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|-------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------|
| Phosphate rock, apatite concentrate | OAo Apatit (Phosagro) | Kola Peninsula | 12,000,000 |
| Do. | Kovdor iron mining complex | do. | 700,000 |
| Platinum-group metals: | | | |
| Ore, PGM content | OJSC MMC Norilsk Nickel | Norilsk region, Kola Peninsula | 150 |
| Do. | AO Koryakgeoldobycha, Amur Prospectors | Placer deposits (mostly platinum), Urals; Siberia; Russian Far East | 10 |
| Metals | Krasnoyarsk Nonferrous Metals Plant (Krastsvetmet) | Krasnoyarskiy Kray | NA |
| Do. | Ekaterinburgskiy plant (EZOTsM) | Sverdlovskaya Oblast' | NA |
| Do. | Priobsk plant (OJSC Gazprom Neft) | Khanty-Mansiyskiy Avtonomnyy Okrug | NA |
| Potash, K ₂ O equivalent | Uralkali | Verkhnekamsk deposit | 3,000,000 |
| Do. | OAo Silvinit ³ | Solikamsk-Berezniki regions, Ural'skiye Gory | 2,000,000 |
| Do. | OAo Akron | Novgorod | NA |
| Rare earths | OAo Apatit | Lobozerskoe deposit, Kola Peninsula | NA |
| Salt | AO Bassol' | Lake Baskunchak in Astrakhanskaya Oblast' | 2,500,000 |
| Do. | Dus-Dagskoe deposit | Dus-Dag Mountains | 25,000 |
| Silver | Dukat Mine | Magadanskaya Oblast' | 1,000 |
| Do. | Kinross Gold Corp. | Chukotskiy Avtonomnyy Okrug | NA |
| Soda ash | Achinsk plant | East Siberia | 595 |
| Do. | Berezniki plant | Ural'skiye Gory | 1,080 |
| Do. | Pikalevo plant | Leningradskaya Oblast' | 200 |
| Do. | Sterlitamak plant | Bashkortostan Republic | 2,135 |
| Do. | Volkhov plant | Leningradskaya Oblast' | 20 |
| Steel, crude | OAo Amurmetal | Komsomol'sk-na-Amure | 1,600,000 |
| Do. | JSC Asha Metallurgical Plant | Chelyabinskaya Oblast' | 450,000 |
| Do. | Beloretsk Iron and Steel Works | Bashkirkoye | 380,000 |
| Do. | Chusovskoy Iron and Steel Works | Permskiy Kray | 570,000 |
| Do. | JSC Electrostal Metallurgical Plant | Moscow | 314,000 |
| Do. | Gorkovskoy Metallurgichesky Zavod | Nizhegorodskaya Oblast' | 78,000 |
| Do. | Gur'yevsk Steel Works | Kemerovskaya Oblast' | 160,000 |
| Do. | Karaganda | Karagandinskaya Oblast' | 6,300,000 |
| Do. | Kuznetsk Steel Works | Kemerovskaya Oblast' | 4,700,000 |
| Do. | Lys'va Metallurgical Plant | Permskiy Kray | 350,000 |
| Do. | OAo Magnitogorsk mining and metallurgical complex (MMK) | Chelyabinskaya Oblast' | 16,200,000 |
| Do. | OAo Mechel (Mechel) | do. | 7,000,000 |
| Do. | Nizhniy Sergi Steel Works | Sverdlovskaya Oblast' | 300,000 |
| Do. | Nizhniy Tagil mining and metallurgical complex (NTMK) (Evraz Group) | do. | 8,000,000 |
| Do. | Nosta JSC (JSC Orsk-Kahlilovo Iron and Steel Works) | Novotroitsk, Orenburgskaya Oblast' | 4,600,000 |
| Do. | Novolipetskiy mining and metallurgical complex (NLMK) | Lipetskaya Oblast' | 9,900,000 |
| Do. | Novosibirsk Steel Works (Novosibprokat) | Novosibirskaya Oblast' | 1,100,000 |
| Do. | CJSC Omutninsk Metallurgical Plant | Kirovskaya Oblast' | 210,000 |
| Do. | Oskol Electric Steel Works (OEMK) | Staryi Oskol | 2,500,000 |
| Do. | Petrovsk-Zabaykal'skiy Steel Works | Petrovsk-Zabaykal'skiy | 426,000 |
| Do. | Revdinskiy Steel and Wire Production Works | Sverdlovskaya Oblast' | 281,000 |
| Do. | Salda Steel Works | do. | 1,900 |
| Do. | Serov Steel Works | do. | 1,000,000 |
| Do. | Serp i Molot (Moscow Metallurgical Works) | Moskovskaya Oblast' | 70,000 |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|---------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------|
| Steel, crude—Continued: | Severskiy Tube Works | Polevskoy, Sverdlovskaya Oblast' | 825,000 |
| Do. | OAO Severstal | Vologodskaya Oblast' | 14,000,000 |
| Do. | Sibelektrostal Metallurgical Works | Krasnoyarskiy Kray | 110,000 |
| Do. | Sulinskiy Steel Works (Staks) | Rostovskaya Oblast' | 280,000 |
| Do. | Taganrog Iron and Steel Works (Tagmet) | Rostovskaya Oblast' | 925,000 |
| Do. | OAO Tulachermet | Tul'skaya Oblast' | 18,400 |
| Do. | Viz-Stal (Verkh-Isetsk Steel Works) | Sverdlovskaya Oblast' | 132,000 |
| Do. | Volgograd Steel Works (Red October) | Volgogradskaya Oblast' | 2,000,000 |
| Do. | Vykxa Steel Works | Nizhegorodskaya Oblast' | 540,000 |
| Do. | Zapadno-Sibirskiy mining and metallurgical complex (ZSMK) (Evraz Group) | Kemerovskaya Oblast' | 6,900,000 |
| Do. | Zlatoust Iron and Steel Works | Zlatoust, Chelyabinskaya Oblast' | 1,200,000 |
| Talc | Onotsk deposit | Irkutskaya Oblast' | NA |
| Do. | Kirgiteysk deposit | Krasnoyarskiy Kray | NA |
| Do. | Miass deposit | Chelyabinskaya Oblast' | NA |
| Do. | Shabrovsk deposit | Sverdlovskaya Oblast' | NA |
| Tantalum, ore | Facilities: Zabaykalskiy mining and beneficiation complex NA | Deposits: Etykinskoye deposit Lovozerkoye deposit, Kola Peninsula | 10 ² |
| Tellurium | OJSC MMC Norilsk Nickel | NA | 5 |
| Do. | Ural Mining and Metallurgical Co. (UMMC) | Urals | 35 |
| Tin: | Novosibirsk mining and beneficiation complexes: | Locations: | |
| Ore | Khinganskoye olovo (Jewish Autonomous District) | Khabarovskiy Kray | 11 ⁴ |
| Do. | Tin Ore Co. | Solnechniy deposit, Khabarovskiy Kray | NA |
| Do. | Pravourniyskoye | Khabarovskiy Kray | NA |
| Do. | Deputatskiy (Sakhaolovo) | Sakha Republic (Yakutiya) | NA ⁴ |
| Do. | Vostokolovo | Russian Far East | NA ⁴ |
| Do. | Iultin mining and beneficiation complex | Magadanskaya Oblast' | NA ⁴ |
| Do. | Khrustalnyy mining and beneficiation complex | Primorskiy Kray | NA ⁴ |
| Do. | Pevek mining and beneficiation complex | Magadanskaya Oblast' | NA ⁴ |
| Metal | Novosibirsk smelter | Novosibirskaya Oblast' | NA ⁴ |
| Do. | Podolsk smelter | Podolsk | NA ⁴ |
| Do. | Ryazan smelter | Ryazanskaya Oblast' | NA ⁴ |
| Titanium: | | | |
| Ore | OOO Lovozerkiy GOK | Murmanskaya Oblast | NA |
| Do. | OAO Apatit | Kykvumchorrskoye and Yuksporskoye deposits | NA |
| Do. | OAO TGOK Ilmenit | Tyuganskoye deposit | NA |
| Do. | OOO Olekminskiy Rudnik | Kuranakhsokoye deposit | NA |
| Metal | Moscow plant | Moscow | NA |
| Do. | Podol'sk plant | Podol'sk | NA |
| Do. | OAO Corp. VSMPO-Avisma | Bereznikovskiy Complex, Permskiy Kray | NA |
| Sponge | do. | do. | 40,000 |
| Do. | Solikamskiy Magnium Plant (SMZ) | Solikamsk, Permskiy Kray | NA |
| Tungsten: | Deposits: | Locations: | |
| W content of concentrates | Aginskoye deposit | Sakha Republic (Yakutiya) | NA |
| Do. | Antonovogorsk deposit | East Transbaikal, Chita Oblast' | NA |
| Do. | Balkan deposit | Northeast of Magnitogorsk, Ural'skiye Gory | NA |
| Do. | Belukha deposit | East Transbaikal, Zabaykal'skiy Kray | NA |
| Do. | Bom-Grokhom deposit | West Transbaikal | NA |
| Do. | Dzhida deposit | do. | NA |
| Do. | Iultin deposit | Magadanskaya Oblast' | NA |

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2011¹

(Metric tons unless otherwise specified)

| Commodity | Major operating companies, main facilities, or deposits | Location or deposit names | Annual capacity ^c |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------|
| Tungsten—Continued: | Deposits: | Locations: | |
| W content of concentrates—Continued | Kti-Teberdaskoye deposit | North Caucasus | NA |
| Do. | Lermontovo W-Au deposit | Russian Far East | NA |
| Do. | Primorsky deposit | do. | NA |
| Do. | Solnechnyy deposit | Southern Khabarovskiy Kray | NA |
| Do. | Tyrnyauz tungsten-molybdenum mining and processing complex | Kabardino-Balkariya Republic, North Caucasus | NA |
| Metal, tungsten anhydride | Gidrometallurg plant | Kabardino-Balkariya Republic, North Caucasus | NA |
| Uranium, U content | Uranium Holding OAO Atomredmetzoloto (ARMZ) ZAO Dalur mining enterprise OAO Khiagda mining enterprise Priargunsky mining and chemical enterprise | Locations: Kurganskaya Oblast' Buryatiya Republic Krasnokamensk, Zabaykal'skiy Kray | 3,500 |
| Vanadium: | | | |
| Ore | Kachkanar iron mining complex | Ural'skiye Gory | NA |
| Metal | Chusovoy and Nizhniy Tagil plants | do. | 17,000 |
| Pentoxide | Vanadii-Tulachermet | Tul'skaya Oblast', North Caucasus | NA |
| Zinc: | | | |
| Zn content of copper-zinc ore | Bashkir copper-zinc complex | Sibai, southern Ural Mountains | 5,000 |
| Do. | Buribai copper-zinc mining complex | Buribai, southern Ural Mountains | 1,500 |
| Do. | Gai copper-zinc mining and beneficiation complex | Gai, southern Ural Mountains | 25,000 |
| Do. | Kirovgrad copper enterprise | Kirovgrad, central Ural Mountains | 1,200 |
| Do. | Sredneuralsk copper complex | Revda, central Ural Mountains | 5,000 |
| Do. | Uchali copper-zinc mining and beneficiation complex | Uchalinskiy Rayon, southern Ural Mountains | 90,000 |
| Metal | Chelyabinsk electrolytic zinc plant | Chelyabinskaya Oblast' | 200,000 |
| Do. | Elektrozink plant [Ural Mining and Metallurgical Co. (UMMC)] | Vladikavkaz, North Caucasus | 90,000 |
| Do. | Uralektromed plant [Ural Mining and Metallurgical Co. (UMMC)] | Verkhnyaya Pyshma | 17,000 |
| Zirconium: | | | |
| Baddaleyite concentrate | Kovdor iron ore mining and beneficiation complex | Kola Peninsula | 3,500 |
| Metal | Chepetsky metallurgical plant (TVEL Corp.) | Glazov, Udmurt Republic | NA |

^cEstimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

¹Many 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.

²Capacity estimates are totals for all enterprises that produce that commodity.

³Merged with Uralkali in February 2011.

⁴Not in operation as of 2011.