



2012 Minerals Yearbook

RUSSIA

THE MINERAL INDUSTRY OF RUSSIA

By Elena Safirova

In 2012, Russia was ranked among the world's leading producers or was a leading regional producer of such mineral commodities as aluminum, antimony, arsenic, asbestos, barite, bauxite, boron, cadmium, cement, coal, cobalt, copper, diamond, diatomite, fluor spar, gallium, germanium, gold, graphite, gypsum, indium, iodine, iron ore, lead, lime, magnesium compounds and metals, mica (flake, scrap, and sheet), molybdenum, natural gas, nickel, nitrogen, palladium, peat, petroleum, phosphate rock, pig iron, platinum, potash, rhenium, selenium, silicon, silver, steel, sulfur, tellurium, titanium sponge, tungsten, uranium, vanadium, and vermiculite (Apodaca, 2013a–c; Bedinger, 2013; BP p.l.c., 2013; Bray, 2013a, b; Carlin, 2013; Corathers, 2013; Crangle, 2013a–c; Edelstein, 2013a, b; Fenton, 2013; George, 2013a–d; Guberman, 2013a, b; Jasinski, 2013a, b; Jaskula, 2013; Kramer, 2013a, b; Kuck, 2013; Loferski, 2013; Miller, 2013a–c; Olson, 2013a–c; Polyak, 2013a–d; Shedd, 2013a, b; Tanner, 2013; Tolcin, 2013a, b; Tuck, 2013; van Oss, 2013; Virta, 2013; Willett, 2013).

Minerals in the National Economy

In 2012, the growth rate of the real gross domestic product (GDP) of Russia was 3.4%, which was a decrease compared with the 4.3% GDP growth rate in 2011; in 2012, the nominal GDP increased to 62,599 billion rubles (\$1,931 billion¹). Industrial production contributed 36.0% to the total GDP, and the industrial sector accounted for 27.4% of the country's overall employment. Mining and quarrying contributed 5.8 billion rubles (\$179 million), or 10.9%, to the total value added in the economy in 2012, and the total value of output from mining and quarrying in current prices was 8.81 billion rubles (\$272 million), or 14.1% of the GDP (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2013; U.S. Central Intelligence Agency, 2013).

During 2012, the value of mining and quarrying production increased by 1.1%. Mining and quarrying of fuel and energy products increased at a faster rate (by 1.2%) than did the mining and quarrying of nonenergy minerals, which increased at a rate of 0.9%. Among the nonmining industrial sectors, the value of metallurgy and the production of finished metal products increased by 4.5%; the value of the production of coke and petroleum products increased by 2.2%; that of chemicals, by 1.3%; and that of other nonmetal mineral products, 5.6%. In 2012, 14.3% of all investment in the economy was directed to the mining and quarrying industry, of which 89.5% was invested in the mining and quarrying of fuel and energy products (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2013).

Government Policies and Programs

In 2012, the Government of Russia used legislative and other methods to stimulate sectors of the economy that were considered particularly important for the Russian economy. In November, the State Duma (Parliament) had adopted a law that reduced export tariff rates by 10% for the companies that produce hard-to-recover petroleum. The reduced rates would apply to ultra-heavy oil and bituminous oil as well as to petroleum produced from deposits that are either completely or partially located within the borders of Sakha Republic (Yakutiya), Irkutskaya Oblast', Krasnoyarskiy Kray, and the Nenetskiy Avtonomnyy Okrug; on the Yamal Peninsula; on the Russian sector of Caspian Sea; within the borders of an internal sea; or on the continental shelf of the Russian Federation. The law went into effect on January 1, 2013. By March 1, 2013, the Government was expected to issue specific regulations and rules related to new tariff rates. In particular, the Government was expected to establish monitoring of the average petroleum prices on the world markets. The Ministry of Economic Development estimated that the reduced tariff regime for the hard-to-recover crude oil would increase petroleum production in Russia by between 40 and 100 million metric tons per year (Mt/yr) (Mineral.ru, 2012f).

In August, the Government changed the criteria that determine whether a particular natural resource is considered strategic; this change in policy has implications for foreign companies, which face restrictions with respect to investment in Russian strategic resources. In the case of gold mining, a deposit was previously considered strategic if its resources exceeded 50 metric tons (t). According to the new definition, a gold deposit is considered strategic if its resources exceed 250 t. The analysts expected this change to attract new foreign companies to Russia. The new rules are also likely to be of benefit to Russian companies with foreign investors, such as OAO Polymetal and OAO Polyus Zoloto. Similar rules for other strategic resources were also relaxed. Those new rules allow the share of foreign capital in Russian enterprises to reach 25% instead of the previous 10% (Mineral.ru, 2012i; MinerJob.ru, 2012v).

In July, the President of Russia brought a new bill to the State Duma for ratification. The bill states that for all resources of Federal importance, development and mining licenses can be issued only through an auction. In the previous version of the Mining Code, licenses for such resources could be issued as a result of an auction or a tender. The auctions, however, have at least two advantages compared with tenders. First, they are more transparent and are less likely to be disputed, and, second, they are likely to increase the Government revenue obtained for the license. At the same time, compared with auctions, tenders may better meet the multifaceted objectives that a Government agency might have when issuing a mining license. For example, in addition to the bidding price, projects may differ according to the particular features of the proposed

¹Where necessary, values have been converted from Russian rubles (RUB) to U.S. dollars (US\$) at an annual average exchange rate of RUB32.41=US\$1.00 for 2012 and RUB30.63=US\$1.00 for 2011. All values are nominal, at current prices, unless otherwise stated.

mine construction, the company's contribution to environmental goals or community development, and so forth. The introduction of the new bill appears to have been at least partially a reaction by the Government to the outcomes of two high-profile tenders for nickel-containing resources, both of which resulted in legal disputes brought about by the party that lost the tender. At yearend, it was not clear if the auction amendment would be ratified (Mineral.ru, 2012w).

Production

In 2012, Russia's production of mineral commodities was largely stable and demonstrated modest growth compared with that of 2011. Production of diatomite increased by 112%; that of titanium sponge, by 71%; tin ore, by an estimated 33%; boron, by an estimated 25%; vanadium metal, by 15.5%; ferronickel (high nickel), by 15.3%; antimony, by 15%; anthracite coal, by 14%; phosphate rock, by an estimated 13.6%; ferromanganese, by 13%; bituminous coal, by 11%; and platinum, by 10.6%. At the same time, production of fluorspar decreased by 61%; that of bismuth, by 20%; and potash, by 14.4%. Production data for these and other mineral commodities are in table 1.

Structure of the Mineral Industry

At the end of 2012, Russia had 17,300 enterprises engaged in mining and quarrying, which was a 0.58% increase compared with the number of enterprises active in mining and quarrying in 2011. Of these enterprises, 7,100 were engaged in extracting fuel minerals and the other 10,200 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. Data on the capacity and ownership of selected mineral operations are in table 2 (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2013).

Mineral Trade

In 2012, the total value of Russian exports was \$529.1 billion, which was a 2.7% increase compared with the revised value of exports in 2011. The value of Russian imports also increased in 2012, to \$335.8 billion, or by 5.4%. In 2012, Russia had a positive trade balance of \$193.3 billion (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2013).

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 71.4% of the total value of Russian exports, and crude oil alone contributed 34.4% to the total value of exports. Petroleum refinery products accounted for another 19.7%; natural gas, 11.8%; and ferrous metals, 4.3%. Among ferrous metals and products made out of them, the leading categories were semifinished products made from carbon steel (34.8%) and flat-rolled iron and steel (25.9%). Other mineral products that contributed significant amounts to Russia's export revenue were bituminous coal (2.5%), aluminum (1.2%), complex mineral fertilizers (0.76%), nickel (0.71%), nitrogen fertilizers (0.69%), and ferrous ores and concentrates (0.47%).

The major export partners of Russia in 2012 were the Netherlands (which received 14.6% of Russia's exports), China and Germany (6.8% each), Italy (6.2%), Ukraine (5.2%), Turkey (5.2%), Belarus (4.7%), Poland (3.8%), and the United States (2.5%) (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2013).

In 2011, Russia imported \$7,629 million worth of products made of ferrous metals (which constituted 2.3% of total imports) and \$6,403 million worth of ferrous metals (1.9%). The major import partners of Russia were China (which supplied 16.5% of Russia's imports), Germany (12.2%), Ukraine (5.7%), Japan (5.0%), the United States (4.9%), France (4.1%), Italy (4.0%), Belarus (3.9%), and the Republic of Korea (3.3%) (Federal'naya Sluzhba Gosudarstvennoy Statistiki, 2013).

Commodity Review

Metals

Antimony.—In 2012, Russia produced an estimated 7,300 t of antimony in concentrate, which was a 15% increase compared with the production level in 2011. Most antimony in the country was mined by GeoProMining, Ltd. (GPM). GPM was a private mining company and operated mines in Russia and Armenia. In Russia, GPM was mining and processing gold and antimony at its two gold-antimony mines (Sarylakh and Sentachan) and was processing the ore at the Sarylakh processing plant located in the Yakutsk region. The operations were located in Oimyakon Ulus—the coldest place in Russia—and GPM was running seasonal production because of the lack of reliable infrastructure. The mine was in operation from November through April when the winter road was established and maintained along the frozen rivers. During spring and summer, the Sentachan Mine was accessible only by helicopter. GPM held two exploration licenses in Yakutiya and was planning to restructure its production to eventually move away from the seasonal scheme of production (MinerJob.ru, 2012b, c).

Another antimony producer in Russia, the Zabaykal'skiy mining and beneficiation complex (GOK) (ZabGOK) was located in Zabaykal'skiy Kray. In the beginning of 2012, the company announced that the beneficiation plant was expected to restart operations sometime during the year. The plant's capacity was estimated to be 360,000 metric tons per year (t/yr) of antimony ore. ZabGOK had a stockpile of 60,000 t of antimony ore and was expecting to receive more ore from the mine at the Bulykta-Solntsevskoye deposit, which was located in Sakhalinskaya Oblast'. OOO NefteChimMash, which was majority owner of ZabGOK, was intending to create the largest antimony enterprise in Russia by 2015; the enterprise would have the capacity to produce 15,000 t/yr of flotation antimony concentrate and 5,000 t/yr of antimony metal. Until the metal plant is built, the antimony concentrate would continue to be shipped to the Kadamjay Antimony Complex in Kyrgyzstan. In addition to antimony, ZabGOK was planning to produce beryllium, lithium, niobium, rare-earth metals (REMs), and tantalum (Mineral.ru, 2012j).

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).² Globally, RUSAL operated 11 alumina refineries, 8 bauxite mines, 4 plants for producing aluminum foil, 3 plants for producing aluminum powder, and 2 plants for producing secondary aluminum. In 2012, RUSAL produced 4.17 Mt of aluminum, 7.48 Mt of alumina, and 12.37 Mt of bauxite at its facilities worldwide (MinerJob.ru, 2012m; United Company RUSAL, 2013a–c).

In Russia, RUSAL had 12 aluminum plants in operation. The leading 6 of the 12 were Krasnoyarskiy AZ, which produced 1.00 Mt of primary aluminum; Bratskiy AZ (995,000 t); Sayanogorskiy AZ (541,000 t); Irkutskiy AZ (413,000 t); Khakasskiy AZ (295,000 t); and Novokuznetskiy AZ (291,000 t). In addition, RUSAL was planning to open two more aluminum plants—Boguchanskiy AZ in Krasnoyarskiy Krai, which would have an annual capacity of 600,000 t/yr of aluminum, and Tayshetskiy AZ in Irkutskaya Oblast', which would have an annual capacity of 750,000 t/yr. Boguchanskiy AZ was expected to be commissioned in 2013 and to reach full production capacity in 2014. The opening of the Tayshetskiy AZ plant was delayed from the initial target of 2013 to sometime between 2014 and 2015 because of the low price of aluminum on the world market. By the time of completion, the total investment in Tayshetskiy AZ was expected to reach about \$1.77 billion (Mineral.ru, 2012o, r).

Because of the low aluminum prices in 2012, RUSAL devoted much effort to cutting costs and reducing production. The general plan adopted by RUSAL was to move aluminum production, which requires large amounts of electricity, to the company's Eastern Division, where hydropower plants produce cheap energy, from the Western Division, where energy is more expensive. In August, the company decided to reduce primary aluminum production at Bogoslovskiy AZ, Nadvoitskiy AZ, Novokuznetskiy AZ, and Volkhovskiy AZ by a combined 275,000 t/yr before 2018. The first 150,000-t/yr reduction in output was expected to be achieved in 2012, mostly by decreasing production at Bogoslovskiy AZ, where high electricity prices made that plant's electrolysis-based production inefficient. Bogoslovskiy AZ was expected to continue to produce alumina for use in the Siberian plants, however. The Government of Sverdlovskaya Oblast' and RUSAL agreed that RUSAL would continue to invest in energy-efficient technologies and would not fire workers; however, workers at the Bogoslovskiy AZ who did not think that the plant had a future started quitting their jobs in October and began looking for other opportunities (Mineral.ru, 2012d, v; MinerJob.ru, 2012p).

Another strategy implemented by RUSAL was to increase the production of aluminum ferroalloys and flat ingots, instead of aluminum metal, at the Eastern Division plants. Flat ingots were in high demand by the packaging materials industry and the automobile industry. In 2012, RUSAL invested a total of \$5 million into technological changes related to increasing its production of ferroalloys (Mineral.ru, 2012h).

²As of 2012, United Company RUSAL was engaged in a dispute with the Government of Ukraine about the ownership of the Zaporozhye plant.

Cobalt.—In 2012, Russia mined 6,300 t of cobalt, which was a 3.3% increase compared with the output of mined cobalt in 2011. In January, OJSC MMC Norilsk Nickel (Normickel) announced that it was planning to invest about 2 billion rubles (\$61.7 million) into its own production of electrolytic cobalt, which would enable it to export cobalt metal rather than just mined cobalt concentrate. Kolskaya Gorno-Metallurgicheskaya Kompaniya (Kolskaya GMK), which was a part of Normickel, previously had facilities in place to produce cobalt concentrate, but the concentrate requires additional processing to produce cobalt metal. Kolskaya GMK had had in place an experimental-scale production line of processed cobalt since 2007. With the construction of the new production line, Normickel would have the facilities in place to perform the full cycle of mining and processing of cobalt. The new cobalt plant was expected to be constructed at the Monchegorskaya Industrial Area and was to be commissioned in 2014 (MinerJob.ru, 2012h).

Copper.—In 2012, Russia's production of copper in concentrate increased by 3.1% to 883,000 t compared with the 2011 production level, but the output of refined copper decreased by 4.4% to 844,400 t. Russia had three leading vertically integrated copper-producing companies—Normickel, OAO Ural'skaya Gorno-Metallurgicheskaya Kompaniya (UGMK), and ZAO Russkaya Mednaya Kompaniya (RMK). In 2012, UGMK was the leading producer of copper, with output of 389,900 t (a 1.9% increase compared with its production in 2011). UGMK was in the process of reconstructing some of its facilities and was expecting to increase its production to between 450,000 and 500,000 t/yr by 2018. Normickel, on the other hand, decreased its production in 2012 by 4% to 363,800 t (RIA-Analitika, 2013, p. 28–29).

RMK was building two new plants in Chelyabinskaya Oblast' in the South Urals—the Tominskiy GOK and the Mikheevskiy GOK. The Tominskiy GOK had an initial planned capacity of 14 Mt/yr of copper ore, which was expected to increase to 28 Mt/yr by the end of the second stage of mine development. RMK was planning to invest a total of 22.2 billion rubles (about \$685 million) in the new plant and to produce copper concentrate and copper cathodes. The Tominskiy GOK was expected to be commissioned in December 2014. The Mikheevskiy GOK was expected to become the largest newly constructed mining plant in the country in the post-Soviet times. Its projected capacity was 18 Mt/yr of copper ore, and the total budgeted investment was \$787 million. The Mikheevskoye deposit was extensively studied between 1984 and 1987, and its resources were estimated to be 400 Mt of ore; in addition to copper, the deposit contains gold, molybdenum, rhenium, and silver. The Mikheevskiy GOK was expected to be commissioned in late 2013. Together, the Mikheevskiy GOK and the Tominskiy GOK were expected to provide RMK with mined copper for 25 years (MinerJob.ru, 2012g, n, u).

Metalloinvest Holding and the State Corporation Gostekhnologii continued to prepare the Udokan deposit in Zabaykal'skiy Krai for mining. The Udokan deposit is one of the largest copper deposits in the world. According to the Russian-style estimates—which use geologic data, but do not account for the profitability of extraction—the deposit's resources are 1,375 Mt

grading 1.56% copper and 9.6 grams per metric ton (g/t) silver. According to the 2010 Joint Ore Reserves Committee (JORC) Code estimates, the probable resources for open pit mining were evaluated to be 795 Mt of ore with an average grade of 1.24% copper, which corresponds to 9.86 Mt of copper. The sum of the measured, indicated, and inferred resources was estimated to be 2,700 Mt grading 0.95% copper with a total copper content of 25.7 Mt. According to the license rules, in 2012 and 2013, the companies were expected to build the mine and the mine infrastructure and, in 2014, to reach the target of mining 12 Mt/yr of ore. Then, under the license rules, the new GOK must reach its projected mining capacity of 36 Mt/yr of ore, production of 474,000 t/yr of copper cathodes, and production of 277 t/yr of silver by 2016. According to different estimates, the total project cost was between \$5 billion and \$8 billion. The Udokan deposit was thought to be the third largest undeveloped copper deposit in the world after the Oyu Tolgoi deposit in Mongolia and the Pebble deposit in the United States (Baikal Mining Co. LLC, 2011; Mineral.ru, 2012b; MinerJob.ru, 2012k, l).

Gold.—In 2012, gold production in Russia increased by 8.3% to a record of 226,300 kilograms (kg); the gold produced from mine output increased to 217,800 kg, or by about 9.1%, compared with that of 2011. Russia was the fourth-ranked gold producer in the world after China, Australia, and the United States. According to the Union of Gold Producers (a Russian trade group), the country would continue to increase gold production by, on average, between 3% and 5% per year through 2020. As of 2012, Russia had 26 large gold mining companies, which together produced about 80% of all gold; the rest of gold production in Russia was performed by about 400 gold mining companies (Mineral.ru, 2012e; 2013c).

The top 10 gold mining companies in Russia remained the same in 2012 as in 2011. The leading gold producer in Russia, OAO Polyus Gold, produced 48.8 t, which was an increase of 13.9% compared with its output in 2011. Petropavlovsk plc produced 22,100 kg, which was an increase of 13.0% compared with its output in 2011, and Polymetal increased its output by 39.0% to 15,200 kg. ZAO Chukotskaya Mining and Geological Co. (Chukotskaya GGK), which was a part of Kinross Gold Corp. of Canada, decreased its production by 7.8% to 14,500 kg. The decrease was related to reduced gold content in the ores of the Kupol deposit, which the company was mining. It was expected that the Chukotskaya GGK would increase its overall production in the future as new mines at four deposits—the Dvoynoye, the Kekura, the Mayskoye, and the Valunistoye—become operational. Other gold companies in the top 10 included Nordgold N.V. (the gold-mining arm of Severstal of Russia), which produced 10,200 kg of gold; Highland Gold Mining Ltd. (HGM) (6,700 kg); OOO Yuzhuralzoloto (6,500 kg); OOO Vysochayshiy (GV Gold) (5,200 kg); OOO Sovrudnik (3,900 kg); and OAO Susumanzoloto (3,700 kg). The 11th-ranked producer, OAO Seligdar, produced 2,980 kg in 2012 and was planning to become one of the top 10 gold producers in the country by 2015. Seligdar, which operated eight mines and plants in Altayskiy Kray, Buryatiya, and the Sakha Republic (Yakutiya), was opening a new heap-leaching plant at the Podgolechnoye deposit in Sakha Republic (Yakutiya).

Overall, Seligdar had mining licenses for 17 hard-rock deposits and 2 alluvial deposits, of which 7 were mined in 2012 (MinerJob.ru, 2012d).

In 2012, gold was mined in 24 regions of the country, and 14 of these regions produced more than 1 t of gold. The leading producing regions were Krasnoyarskiy Kray (44,000 kg), Amurskaya Oblast' (29,270 kg), Sakha Republic (Yakutiya) (21,220 kg), Magadanskaya Oblast' (19,660 kg), Irkutskaya Oblast' (19,000 kg), Chukotskiy Avtonomnyy Okrug (17,980 kg), and Khabarovskiy Kray (13,000 kg) (RIA-Analitika, 2013, p. 11–15).

By the end of 2013, two new mining and beneficiation complexes (GOKs) in Magadanskaya Oblast' were expected to become operational. The two deposits were located within 12 km of each other and both had large resources. The Natalkinskiy GOK was being built at the Natalka deposit, which was thought to be the third largest gold deposit in the world after the Grasberg deposit in Indonesia and the Muruntau deposit in Uzbekistan (Expert.ru, 2014). Its proven and probable reserves were evaluated to be 1,270 t of gold in a deposit grading 1.13 g/t. Polyus Gold (the leading gold producer in Russia) was building a GOK at which the initial annual ore-processing capacity was projected to be 10 Mt/yr, and the gold production capacity was expected to reach 15 t/yr. By 2020, when the GOK reaches its full projected capacity, the plant would process 40 Mt/yr of ore and produce 50 t/yr of gold. To implement the second stage of the GOK's construction, however, Magadanskaya Oblast' needed to commission a new hydropowerplant, Ust-Srednekanskaya GES, which would be owned and operated by OAO RusHydro. Polyus Gold was working with the Magadanskaya Oblast' administration to speed up the powerplant's construction (MinerJob.ru, 2012z).

Another GOK was being built at the Pavlik deposit. According to the Russian-style resource measurement system, as of January 2010, Pavlik's resources in the C1+C2 categories had a grade of 2.5 g/t gold and contained 100.2 t of gold. According to JORC Code methodology, the deposit's reserves were evaluated to be 150.9 t of contained gold. The initial capacity of the new GOK would be 3 Mt/yr of ore and between 5 and 6 t/yr of gold. It was expected that, at full capacity, the GOK would be producing 40 t/yr of gold. By 2014, the new GOK was projected to employ 600 workers (MinerJob.ru, 2012j).

Nickel.—Russia was the world's second-ranked nickel mining country in 2012 after the Philippines, and it produced 11.5% of the world's mined nickel. Nornickel was the country's leading nickel producer and the world's leading nickel mining company. Other significant nickel producers in Russia included OAO Ufaleynickel and OAO Yuzhuralnickel (Kuck, 2013; OJSC MMC Norilsk Nickel, 2013).

Nornickel's operations in Russia were located on the Kola Peninsula in the northwest of the country and in the Norilsk region on the Taymyr Peninsula in Eastern Siberia. Nornickel also owned assets in Australia, Botswana, Finland, and South Africa. In 2012, Nornickel invested 17.7 billion rubles (\$546 million) in production development and was planning to invest a total of 120 billion rubles (\$3.7 billion) through 2016. In 2012, the company planned to increase the amount of

ore mined in its Zapolyarnyi division to 18 Mt from 16.5 Mt by 2016; however, it was not clear if Nor Nickel would be able to realize those plans. In 2012, because of lower prices on the world market, the company was considering reducing its investments or even halting the processing of ores mined on the Kola Peninsula by 2015 if the nickel prices remain low (Mineral.ru, 2012m; MinerJob.ru, 2012f, y; OJSC MMC Norilsk Nickel, 2013).

Other Russian nickel producers also were affected by financial difficulties because of decreased nickel prices. Yuzhuralnickel (part of OAO Mechel) reduced production investments by 10%, halted production for part of the year, and sent workers on forced leave with partial pay. In December, Yuzhuralnickel made a decision to stop production for an extended period of time to minimize losses. Ufaleynickel, on the other hand, was trying to avoid bankruptcy by promoting efficiency and modernization. The company was able to reduce the cost of coke used in production by 40% and to reduce the per-unit nickel cost by 14%. It was also able to sign a new sales contract for 100 t of granulated nickel with ALPICO S.A. of Switzerland. All those measures saved the company from involuntary delays in production in 2012, but it was not clear whether Ufaleynickel would be able to avoid stopping production in 2013 (MinerJob.ru, 2012q, w, x).

For Nor Nickel (the leading producer in the world), 2012 was a difficult year not only because of low nickel prices, but because it lost two attractive tenders for development of nickel deposits in Russia. The first loss took place in May, when Voronezhskaya Oblast' announced the winner of the tender for two polymetallic deposits—the Elanskoe deposit and the Elkinskoe deposit. The total cost of mining the deposits was estimated to be 50 billion rubles (\$1.7 billion). Although Nor Nickel had already conducted exploration and other preliminary works at the deposits, Voronezhskaya Oblast' announced that the winner of the tender was OOO Mednogorskiy Copper & Sulfur Complex, which was a part of UGMK. Nor Nickel initially attempted to dispute the Voronezh decision in court but eventually accepted the decision (Mineral.ru, 2012k, l).

The other tender was for exploration and mining of the copper and nickel ores in the southern part of the Norilsk-1 deposit. In June, it was announced that the exploration and development license for Norilsk-1 had been won by Russian Platinum Co. (the application was sent in the name of OAO AS Amur, which was a part of Russian Platinum). Complications with respect to the Norilsk-1 deposit included that the Zapolyarnyi division of Nor Nickel already had been mining parts of Norilsk-1 and over the years had developed its own transportation and production infrastructure. Nor Nickel disputed the decision about Norilsk-1 in court. At yearend, a final court decision had not yet been reached and it was not clear if Nor Nickel would have a chance to win the license. In addition to court disputes, the Nor Nickel leadership was proposing changes to the system of distributing exploration and mining licenses in Russia. In particular, Nor Nickel suggested that the Federal Agency for Subsoil Use (Rosnedra) and local government agencies use auctions rather than tenders because auctions will tend to favor the highest bidders and make the process of choosing the winners less subjective (Mineral.ru, 2012t).

Platinum-Group Metals.—In 2012, Russia produced 82,400 kg of palladium and 30,200 kg of platinum. The country was the world leader in palladium production and was ranked second in the world in platinum mine production. Compared with that of 2011, palladium output decreased by 2%, and platinum production increased by 10.6%. The leading platinum-group metal (PGM) producer in Russia was Nor Nickel, whose Zapolyarnyi division was mining three large PGM deposits in Krasnoyarskiy Kray—Norilsk-1, Oktyabr'skoye, and Talnaskoye. Another division within Nor Nickel, Kolskaya GMK, was mining several deposits in Murmanskaya Oblast'—Kotsel'vaara-Kammikivi, Semiletka, Zapolyarnoye, and Zhdanovskoye. Altogether, Nor Nickel produced practically all the palladium and about three-quarters of the platinum output in Russia (Mineral.ru, 2012s).

Another significant producer of PGMs in Russia was Russian Platinum Co. In the past several years, Russian Platinum acquired mining rights for several prominent PGM deposits. In 2007, Russian Platinum acquired OAO AS Amur, which was mining the Kondyor deposit, which was the largest placer deposit of platinum in Khabarovskiy Kray. In 2011, Russian Platinum acquired Chernogorskaya Gornorudnaya Kompaniya (ChGRK), which had a license for the exploration, development, and mining of the Chernogorskoye deposit of nonferrous and precious metals in Krasnoyarskiy Kray. In the summer, Russian Platinum won the tender for the southern part of the Norilsk-1 deposit, but Nor Nickel (the main competitor) was contesting the tender result in court (MinerJob.ru, 2012i; MinerJob.ru, 2012o).

As of 2012, ChGRK was continuing with the building of a mining and a beneficiation plant at the Chernogorskoye deposit. The company planned to start mining in 2013 and would stockpile the ore until 2015, when construction and commissioning of the beneficiation plant was scheduled to be completed. ChGRK expected to reach its production capacity of between 13,000 and 16,000 t/yr of copper, 500 kilograms per year (kg/yr) of gold, between 7,000 and 9,000 t/yr of nickel, between 12,000 and 13,000 kg/yr of palladium, and 6,000 kg/yr of platinum by 2016. The total cost of the project was estimated to be \$1.2 billion (Mineral.ru, 2012c).

Tungsten.—In 2012, Russia produced 3,025 t of tungsten in concentrate, which was an 8.7% reduction compared with 2011 production. Russia was ranked a distant second after China in tungsten production. Tungsten was mined in five hard-rock deposits and one alluvial deposit. The largest mine in terms of production amount, Vostok-2, which was operated by the OAO Primorskiy GOK, produced about one-half of the total tungsten output. Other significant producers were AS Quartz, which was mining the Bom-Gorkhon deposit in Zabaykal'skiy Kray; KGUP Primteploenergo, which was mining the Lermontovskoye deposit in Primorskiy Kray; ZAO Novoorlovskiy GOK, which was mining the Spokoyinskoye deposit in Zabaykal'skiy Kray; and ZAO Zakamensk, which was mining the Ruchey Inkur alluvial deposit and the Barun-Narynskoye technogenic deposit in Buryatiya Republic. A technogenic deposit refers to the accumulated tailings from a previous mine operation (Ministry of Natural Resources and Ecology of the Russian Federation, 2013).

In April, the government of the Republic of Kabardino-Balkariya announced that a new mining and metallurgical

complex was planned to be built at the Tyrnyauz tungsten and molybdenum deposit in Kabardino-Balkariya. The complex had a planned capacity of 1 Mt/yr of ore and was to be constructed during a 5-year period from 2013 to 2017. The proven resources of the deposit were about 30 Mt, and the new enterprise was expected to create 1,000 jobs in the region. OAO Kabardino-Balkarskaya Tungsten-Molybdenum Co. (which was majority owned by the government of Kabardino-Balkariya) was planning to invest a total of 7 billion rubles (about \$216 million) in this project and was expecting to recover the investment within 8 years of beginning full-scale production. The Tyrnyauz deposit was mined previously, but operations had been stopped in 2001 because of the poor market conditions (MinerJob.ru, 2012e).

Industrial Minerals

Potash.—OAO Uralkali was the world's second-ranked producer of potash. In 2012, Uralkali reduced its production of potash by 14.4% to 5.56 Mt in K₂O equivalent (or 9.12 Mt in potassium chloride equivalent). The Uralkali mines were operating, on average, at 80% of capacity throughout the year, and the company was able to complete the expansion of the Berezniki-4 Mine. After the expansion was complete, the total capacity of Uralkali increased to 13 Mt/yr from 11.5 Mt/yr of potassium chloride (OAO Uralkali, 2014).

Although in 2012 Uralkali was the only company mining potash in Russia, several other projects were underway. OOO Verkhnekamskaya Potash Co., which was a part of OAO Akron, continued preparations for development of potash production at the Talitskiy sector of the Verkhnekamskoye potash deposit. The new mining complex was expected to be commissioned in 2016 and to reach full capacity by 2018. The planned capacity of the new complex was 2 Mt/yr (Mineral.ru, 2012a; MinerJob.ru, 2012a, s).

Another company, OAO MHK EuroChem, and its subsidiary OOO EuroChem VolgaKaliy, were continuing to build a mine at the Gremyachinskoye potash deposit. The companies were using a freezing method for creating the mine shaft and, as of January 2012, the shaft was 400 meters (m) deep; the planned depth was 1,147 m. EuroChem was planning to produce the first 150,000 t of potassium chloride in 2014 (Mineral.ru, 2012g).

Rare Earths.—Rare-earth metals (REMs) were being produced in Russia in limited amounts in 2012. 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 ore was processed at the Karnasurtinskaya beneficiation plant into intermediate loparite concentrate and then into marketable concentrate, which contained 95% loparite. The Solikamskiy Magnesium Plant (SMZ) then processed the loparite concentrate and extracted rare earths. In 2012, SMZ produced about 2,400 t/yr of rare-earth oxides, primarily from the cerium group.

In November, the President of Sakha Republic (Yakutiya) announced an auction for the Tomtor deposit of REMs. The ores of the Burannyi section of the Tomtor deposit contain, on average,

from 9% to 12% REMs; they are, in fact, a natural concentrate. The ores also contain up to 7% niobium, as well as scandium and yttrium. According to estimates made by scientists from the Russian Academy of Sciences, the concentration of REMs and rare metals in Tomtor is so high that the value of 1 kilogram of ore, at current prices, is about \$10. Development of Tomtor would require a large amount of infrastructure to be built from scratch, however (MinerJob.ru, 2012r, t).

In October, the Government of Zabaykal'skiy Kray announced that ZabGOK in Zabaykal'skiy Kray would be reopened for the mining and processing of rare metals and REMs. It was expected that the project would be financed by the Fund for Development of the Far East and the Baykal Region, by OAO Atomredmetzoloto (ARMZ), and possibly by German investors. According to experts, the plant would need an investment of 200 million rubles (\$6.17 million) to restart production. ZabGOK already had a contract in place for antimony processing. The government of Zabaykal'skiy Kray offered ZabGOK 100 million rubles (\$3.08 million) in loan guarantees to restart production (Mineral.ru, 2012j).

Mineral Fuels and Related Materials

Coal.—In 2012, coal production in Russia increased by 8.9% to 366 Mt. According to the BP Statistical Review of World Energy, by the end of 2012, Russia had coal resources of 157,000 Mt, which was second only to those of the United States. Those resources are 430 times the current annual production levels. About 50% of Russia's coal resources were in anthracite and bituminous coal types, and the rest of the resources were in lignite. About 20% of the resources were in coking coal, and the rest were in thermal types of coal. The coal resources are spread across the country unevenly: the majority of resources are located in Eastern Russia, whereas most demand is concentrated in the European part of Russia where coal resources are limited. A large share of the resources is found in parts of the country where the climate is cold and the infrastructure is underdeveloped, which makes coal mining more costly. The largest coalfield in Russia is the Kuznetskiy bituminous field in Kemerovskaya Oblast', which contains about 25% of Russia's coal resources and about 60% of its coking coal resources. The Kansk-Achinskiy lignite field located in Krasnoyarskiy Kray contains about 40% of the country's resources. The coals of the Kansk-Achinskiy field are of high quality (usually do not require beneficiation) and are located in easily accessible strata, which are between 25 and 80 m thick. Other Siberian fields include the Ulughemskiy field in Tyva Republic, the Irkutskiy bituminous field in Irkutskaya Oblast', the Minusinskiy bituminous field in the Republic of Khakasiya, and the Yuzhno-Yakutskiy bituminous field and the Lenskiy field, both in Sakha Republic (Yakutiya). The resources of each of those Siberian fields do not exceed 5% of the total Russian resources. The largest coalfield in the European part of Russia is the Donetsk coalfield located in Rostovskaya Oblast', which contains about 3.6% of all Russian resources; about 75% of those resources are anthracite coal. The Donetsk coalfield is largely depleted, and its resources do not have a significant potential to be increased in the future. Finally, the Pechorskiy bituminous coalfield located in Komi Republic and

in the Nenetskiy Avtonomnyy Okrug contains about 2.8% of the Russia's resources, and about one-half of its resources are coking coal. The resources of the Pechorskiy field are unlikely to be increased in the future (Mineral.ru, 2011, 2012n; BP p.l.c., 2013).

The coal industry in Russia was mostly privately owned, and joint-stock companies (often consolidated into large holdings) dominated the industry. About 80% of coal was mined by 12 major companies; those companies included both "proper" coal mining corporations and metallurgical holdings companies, which included divisions specializing on coking coal mining. Siberian Coal Energy Co. (SUEK) was the largest, in terms of annual production, coal producer in Russia. In 2012, it produced 97.5 Mt of thermal coal, or about 30% of the entire Russian coal output. OAO UK Kuzbassrazrezugol (part of UGMK), which mined coking coal deposits in Kuznetskiy coalfield, was the second-ranked coal producer; its output accounted for about 15% of Russia's coal production. Other leading producers included OAO KhK SDS-Ugol, which operated mines and pits in the Kuznetskiy field, and OAO Mechel, which mined coking coal in the Kuznetskiy and the Yuzhno-Yakutskiy fields.

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 Mt by 2030. The total cost of the coal program for the Government would be 3.7 billion rubles (about \$115 million) (Mineral.ru, 2012n).

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 no longer to be regulated, annual 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 were to be located in Siberia and the Far East, the Government considered that its main role would be to assist 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, 2011).

Petroleum.—In 2012, Russia produced 497 Mt (3,615 million barrels) of crude oil (which was a 1% increase compared with the production level in 2011), and it was one of the leading petroleum producers in the world. The estimates of various research organizations and agencies, however, disagreed on the ranking. According to the U.S. Energy Information Administration, Russia was the third-ranked producer of liquid fuels after the United States and Saudi Arabia; according to the BP Statistical Review of World Energy, Russia was the second-ranked petroleum producer after Saudi Arabia, and according to the International Energy Agency and the Organization of Petroleum Exporting Countries, Russia was the leading petroleum producer. In addition to the crude oil,

Russia's output of gas condensate was 21 Mt, for a total output of 518 Mt of petroleum and gas condensate. According to the BP Statistical Review of World Energy, at the end of 2012, Russia's proven reserves of petroleum were 11,900 Mt (or 87,200 million barrels), which constituted 5.2% of the world's proven reserves of petroleum. In 2012, Russia exported 239.6 Mt of petroleum (or 48.2% of its total output), which was a 1% reduction compared with its 2011 petroleum exports (BP p.l.c., 2013; Mineral.ru, 2013a, b).

Among Russia's regions, the leader in petroleum production was Khanty-Mansiyskiy Avtonomnyy Okrug (HMAO), which accounted for about 52% of the country's production. Other leading producers were Yamalo-Nenetskiy Avtonomnyy Okrug (YNAO) (7.3%), Tatarstan Republic (6.6%), Orenburgskaya Oblast' (4.6%), and Krasnoyarskiy Kray (3.7%). Production by HMAO was continuing to decrease—in 2012 alone, HMAO reduced petroleum production by 4.2 Mt and, in the past 5 years, production decreased to 258 Mt in 2012 from 275 Mt in 2008 (RIA-Rating, 2013).

The main factor in the increase in overall Russian production in 2012 was an acceleration of production in deposits in Eastern Siberia. In its turn, a significant factor in stimulating production in Eastern Siberia was the opening of the eastern branch of the Eastern Siberia-Pacific Ocean oil pipeline. Another factor was the introduction of new technologies at old fields in Western Siberia and Povolzhye that could help in the extraction of hard-to-recover crude oil deposits (RIA-Rating, 2013).

In 2012, most petroleum production in Russia was carried out by nine vertically-integrated oil and gas (VIOG) companies, which together included about 150 extracting units. The nine companies accounted for about 90% of the country's petroleum production, and about two-thirds of the country's petroleum production was controlled by just four companies (in order of output volume): OAO NK Rosneft', the OAO LUKOIL group, OAO TNK-BP Holding, and OAO Surgutneftegaz. In 2012, Rosneft produced 125.8 Mt (25.3% of total Russian production), LUKOIL produced 84.2 Mt (16.9%), TNK-BP produced 79.2 Mt (14.7%), and Surgutneftegaz produced 61.4 Mt (12.4%). In 2012, Rosneft announced its merger with TNK-BP; if the merger goes through, the joint company would become one of the top five oil companies in the world. The buyout of TNK-BP from its current shareholders (BP p.l.c. of the United Kingdom and a consortium of private Russian shareholders) would cost Rosneft a total of \$55 billion (Mineral.ru, 2012q).

In addition to traditional methods of petroleum extraction, companies operating in Western Siberia adopted hydraulic fracturing techniques to produce hard-to-recover crude oil. TNK-BP developed an advanced technology of multistage hydraulic fracturing to increase effectiveness and reduce costs when developing mature deposits. The key element of the technology is using special equipment to clear the shaft of the drilling hole after each of the six consecutive hydraulic fracturing stages. The company applied the multistage hydraulic fracturing at 25 holes of the Samotlor field in 2012, and was planning to apply the procedure at least 50 more times in 2013. OOO LUKOIL-West Siberia (one of the LUKOIL companies) applied a somewhat different multistage hydraulic fracturing technique in a horizontal shaft of a drilling hole. The procedure

includes a method of hydraulic jet perforation using flexible coil tubing. The procedure eliminates the need to build a hydraulic fracturing column and reduces the preparation time for the drilling hole and potentially increases the well's productivity. At five test holes, the daily output was doubled. LUKOIL announced that it was planning to use this new technique at other company wells (Mineral.ru, 2012x, y).

In 2012, Russia had 28 large crude oil refineries and about 200 refineries of average and small size. The total refining capacity of Russia's refineries was about 290 Mt/yr of petroleum. More than 90% of the total refining capacity in Russia belonged to VIOG companies. In 2012, Russian companies refined 271 Mt of petroleum. Of this amount, Rosneft refined 50.9 Mt of petroleum at its seven refineries; LUKOIL refined 44.4 Mt; Gazprom Neft refined 31.6 Mt; and TNK-BP refined 27.8 Mt. In 2011, 12 petroleum companies signed an agreement with the Federal Antimonopoly Service in which the oil companies agreed to modernize their refineries by 2015 so that they can supply the domestic market with enough gasoline that satisfies Euro-5 standards to meet domestic demand. Beginning in 2013, Russia was planning to ban the sale of automotive gasolines for which the environmental requirements are below the Euro-3 standard. In 2012, several companies were reportedly modernizing their refineries. The Ryazanskiy refinery (owned by TNK-BP) increased the percentage of its production of Euro-5 gasoline to 30% and was planning to increase this percentage to 46% during 2013. Slavneft-YaNOS announced its decision not to produce any gasoline below the Euro-5 standard starting from July 2012. One of the reasons to accelerate the transition to cleaner gasolines was the decision of the Government to restructure the excise taxes on automobile fuels to encourage refineries to make the switch faster than they would do otherwise (Mineral.ru, 2012p, u).

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 2012, the country's mineral sector demonstrated several interesting trends. First, the country's leading mineral producers, such as Nor Nickel, RUSAL, and Uralkali, encountered serious difficulties related mostly to the reductions in the world prices of their products. Even under such conditions, however, they appeared more financially stable than their smaller counterparts in Russia. It was not yet clear whether those leading companies had adapted to the most recent economic downturn, but 2012 demonstrated that such downturns can lead the Russian mineral and metallurgical industries to improve the efficiency of their operations. Second, Russia, as a country with comprehensive mineral production and vast resources, is starting to use Government regulation more often to stimulate the production of minerals that are considered strategic yet are not steadily produced in the market economy, such as rare earths. Finally, Russian regulators appear to have started taking environmental concerns more seriously than they did in previous years, which is likely to affect the image of the Russian mineral industry, both domestically and abroad. 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 COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012
METALS					
Aluminum:					
Ore and concentrate:					
Alumina	3,112	2,794	2,930 ^r	2,825 ^r	2,719
thousand metric tons					
Bauxite	5,675,000	5,775,000	5,688,000 ^r	5,943,000 ^r	5,700,000
Nepheline concentrate, 25% to 30%	4,760,000	500,000 ^r	1,000,000 ^r	997,000 ^r	1,056,700
Metal, smelter, primary	4,190,000	3,815,000	3,947,000	3,992,000 ^r	3,924,000
Antimony, mine output, recoverable Sb content ^c	3,500	3,500	6,040 ^r	6,348	7,300
Arsenic, white ^e	1,500	1,500	1,500	1,500	1,500
Bismuth:^c					
Mine output, Bi content	70	65	50	50	40
Metal, refined	13	12	10	10	8
Cadmium, metal, smelter	580 ^e	581	733 ^r	800 ^r	850 ^e
Chromium, chrome ore, marketable	747,000 ^r	347,000 ^r	699,000 ^r	662,000 ^r	670,000 ^e
Cobalt:^c					
Mine output, recoverable Co content	6,200	6,100	6,200	6,100 ^r	6,300
Metal, refined	2,500	2,352 ³	2,460	2,337 ^{r,3}	2,186 ³
Copper:					
Ore, recoverable Cu content ^c	750,000	676,000	703,000	856,200 ³	883,000
Metal:					
Blister, smelter:^c					
Primary	630,000	580,000	590,000	596,490 ³	621,200 ³
Secondary	235,000	220,000	240,000	242,640 ³	253,800 ³
Total	865,000	800,000	830,000	839,130 ³	875,000 ³
Refined:					
Primary	610,000	612,000	656,000	663,200	635,000
Secondary	250,000	250,000	218,000	220,400	209,400
Total	860,000	862,000	874,000	883,600	844,400
Gallium ^c	11	11	11	11	10
Gold:					
Mine output, Au content	172,031	192,832	189,000	199,650	217,800
kilograms					
Secondary recovery	8,140	12,404	12,600	9,334	8,500
do.					
Indium ^c	10	4	4	5	5
Iron and steel:					
Iron ore:					
Gross weight	99,900,000	92,000,000	95,900,000	104,000,000	104,000,000
Fe content, 55% to 63% ^e	57,800,000	53,200,000	56,600,000	61,400,000	61,400,000
Metal:					
Pig iron	48,300,000	43,930,000	48,000,000	48,000,000	50,500,000
Direct-reduced iron ^c	4,560,000	4,670,000	4,700,000	4,900,000	5,200,000
Ferrous alloys:^c					
Blast furnace:					
Ferromanganese	110,000	88,000	171,600 ³	146,000	165,000
Ferrophosphorus	3,500	3,000	3,600	3,600	3,600
Spiegeleisen	7,000	6,500	5,500	6,000	6,000

See footnotes at end of table.

TABLE 1—Continued
RUSSIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012
METALS—Continued					
Iron and steel—Continued:					
Metal—Continued:					
Ferroalloys—Continued: ^c					
Electric furnace:					
Ferrochromium	490,000	378,000 ³	414,288 ³	501,700 ³	477,600 ³
Ferrochromiumsilicon	4,000	3,500	4,200	4,200	4,100
Ferronickel, gross weight: ^{3,4}					
High-nickel	17,971	17,489	19,763	20,200	23,300 ^e
Other	13,440	14,040	13,165	13,800 ^r	13,000 ^e
Ferroniobium (ferrocolumbium)	500 ^r	500 ^r	700 ^r	700 ^r	700
Ferrosilicon	850,000	745,000	916,000	1,030,000	1,042,000 ³
Ferrovandium	12,000	8,029 ³	13,507 ³	13,500	12,500
Silicomanganese	40,000	98,700	147,900 ³	150,000	160,000
Silicon metal	54,000	23,900	48,700	52,000	52,000
Ferrotitanium	--	--	4,000	4,000	4,000
Other	22,000	22,000 ^r	18,000	18,000	18,000
Total, ferroalloys	1,620,000 ^r	1,410,000 ^r	1,780,000 ^r	1,960,000 ^r	1,980,000
Steel:					
Crude	68,700,000	59,800,000	66,800,000	68,100,000	70,400,000
Finished, rolled	56,564,000	51,900,000	55,000,000 ^r	56,500,000 ^r	59,000,000
Pipe	7,772,000	6,655,000	9,149,000	10,017,000	9,656,000
Lead: ^c					
Mine output, recoverable Pb content	60,000	70,000	97,000	94,500	92,700
Metal, refined, primary and secondary	80,000	73,000	89,000	86,700	85,100
Magnesium: ^c					
Magnesite	1,200,000	1,000,000	1,200,000	1,200,000	1,300,000
Metal, including secondary	37,000	29,000	29,000	29,000	31,000
Manganese ore, marketable: ^c					
Gross weight	45,000	45,000	45,000	120,000	130,000
Mn content	9,200	9,200	9,200	30,000	32,500
Mercury ^c	50	50	50	50	50
Molybdenum, in concentrate	4,061 ^r	4,562 ^r	4,495 ^r	4,843 ^r	4,800 ^e
Nickel:					
Marketable mine production, Ni content:					
Laterite ore	36,804	32,298	41,184	34,000	32,000
Sulfide concentrate	229,765	229,493	228,093	231,000 ^r	223,000
Total	266,569	261,791	269,277	265,000 ^r	255,000
Matte, for export, primarily to China	--	--	660	700 ^e	700 ^e
Nickel products:					
Metal	258,800 ^r	255,000 ^r	262,400 ^r	264,900 ^r	255,000
Chemicals ^c	2,900	2,700	2,900	2,900	2,900
Total	261,700 ^r	257,700 ^r	265,300 ^r	267,800 ^r	257,900
Niobium (columbium) ^c	150	150	150	150	150
Platinum-group metals:					
Platinum	27,000 ^r	25,900 ^r	25,700 ^r	27,300 ^r	30,200
Palladium	84,000 ^r	83,200 ^r	84,700	84,100 ^r	82,400
Other	12,500	11,900	12,000	12,000	12,000
Total	123,500 ^r	121,000 ^r	122,400 ^r	123,400 ^r	124,600
Rhenium ^c	500 ^r	500 ^r	500 ^r	500 ^r	500
Selenium ^c	130,000	140,000	140,000	140,000	145,000
Silicon ^c	1,000,000 ^r	1,000,000 ^r	1,000,000 ^r	1,031,000 ^{r,3}	1,043,000 ³
Silver:					
Mine output, Ag content	1,400,000 ^r	1,590,000 ^r	1,545,000 ^r	1,543,000 ^r	1,679,000
Secondary recovery	265	228	408	393	400

See footnotes at end of table.

TABLE 1—Continued
RUSSIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012
METALS—Continued					
Tin: ^c					
Mine output, recoverable Sn content	400 ^{r,3}	127 ^{r,3}	144 ^{r,3}	75 ^{r,3}	100
Metal, smelter:					
Primary	1,425 ^{r,3}	1,129 ^{r,3}	1,081 ^{r,3}	526 ^{r,3}	500
Secondary	300	300	300	200 ^r	200
Total	1,700 ^r	1,400 ^r	1,400 ^r	700 ^r	700
Titanium sponge	34,730 ^r	22,600 ^r	26,500 ^r	24,600 ^r	42,000
Tungsten, concentrate, W content	3,163	2,665	2,785	3,314	3,025
Vanadium, metal ^c	14,500	14,500	15,000	12,860 ^{r,3}	14,856 ³
Zinc:					
Mine output, recoverable Zn content	174,000	241,700	186,900	176,300	179,800
Metal, smelter, primary and secondary	262,700	227,000	248,600	255,600	260,000 ^e
Zirconium, baddeleyite concentrate, averaging 98% ZrO ₂	7,094	8,249	9,308	8,914	9,000 ^e
INDUSTRIAL MINERALS					
Asbestos, grades I through VI	1,017,000	1,000,000 ^e	995,174	1,031,880	1,050,000 ^e
Barite ^c	63,000	63,000	60,000	63,000	63,000
Boron ^c thousand metric tons	400	300 ^r	200 ^r	200 ^r	250
Cement, hydraulic	53,548,000	44,266,000	50,400,000	56,200,000	61,700,000
Clays:					
Bentonite	500,000	500,000	500,000	500,000	500,000
Kaolin concentrate	107,500	90,300	105,000	120,000	120,000 ^e
Diamond: ^c					
Gem carats	21,925,000 ³	17,791,400 ³	17,800,000	20,140,000	19,900,000
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.	117,000,000	113,000,000	113,000,000	115,000,000	115,000,000
Diatomite	28,000	30,000	32,000	33,000	70,000
Feldspar ^c	45,000	45,000	45,000	45,000	45,000
Fluorspar, concentrate, 55% to 96.4% CaF ₂	177,000 ^{r,3}	114,000 ^{r,3}	100,000 ^r	258,000 ^{r,3}	100,000 ^e
Germanium ^c	2	2	5 ^{r,3}	5	5
Graphite	14,000	14,000	14,000	14,000	14,000
Gypsum ^c	3,600,000	2,900,000 ³	2,900,000	4,960,000 ^{r,3}	5,000,000
Iodine ^c	300,000	250,000 ^r	230,000 ^r	210,000 ^r	200,000
Lime, industrial and construction ^c	8,200,000	7,000,000	9,500,000	10,100,000	10,800,000
Limestone	7,420,000	7,000,000 ^e	7,000,000 ^e	7,000,000 ^e	7,200,000
Mica ^c	100,000	100,000	100,000	100,000	100,000
Nitrogen, N content of ammonia	10,425,000	10,441,000	10,400,000	10,400,000	10,300,000
Perlite ^c cubic meters	200,000	200,000	200,000	200,000	200,000
Phosphate rock: ^c					
Gross weight	10,400,000	9,500,000	11,000,000	11,000,000	12,500,000
P ₂ O ₅ content	3,800,000	3,500,000	4,000,000	4,000,000	4,500,000
Potash, marketable, K ₂ O equivalent	5,992,400	3,727,000	6,283,000	6,498,000	5,563,000
Rare earths, total rare-earth oxides	3,400	2,600	2,300	2,500	2,400 ^e
Salt, all types	1,800,000	1,600,000	1,800,000	1,800,000	1,850,000
Soda ash	2,800,000 ^e	2,322,000	2,670,000	2,822,000	2,807,000
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	100,000 ^r	100,000 ^r	100,000 ^r	200,000 ^r	300,000
Natural gas	6,100,000 ³	6,000,000	6,000,000	6,000,000	6,000,000
Petroleum	500,000	600,000	600,000	600,000	700,000
Total	6,950,000 ^r	6,950,000 ^r	6,950,000 ^r	7,050,000 ^r	7,250,000

See footnotes at end of table.

TABLE 1—Continued
 RUSSIA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2008	2009	2010	2011	2012	
INDUSTRIAL MINERALS—Continued						
Sulfur, sulfuric acid	9,106,000	8,600,000	10,200,000	10,700,000	11,000,000	
Talc ^e	160,000	160,000	160,000	160,000	160,000	
Vermiculite ^e	25,000	25,000	25,000	25,000	25,000	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Anthracite	thousand metric tons	6,383	7,100	8,700	10,000	11,400
Bituminous	do.	216,049	200,982	236,100 ^r	249,100 ^r	276,500
Lignite	do.	82,485	69,011	76,800 ^r	76,900 ^r	78,100
Total	do.	304,917	277,093	321,600 ^r	336,000 ^r	366,000
Coke, metallurgical, 6% moisture content	do.	32,082	24,200	26,800	26,800 ^r	26,900
Natural gas, marketed	million cubic meters	663,000	583,610	651,000	671,000	655,000
Peat, horticultural and fuel uses ^e		1,200,000	1,200,000	1,258,000 ^{r,3}	1,337,000 ^{r,3}	1,400,000
Petroleum:						
Crude:						
In gravimetric units		488,105,000	479,000,000	486,000,000	492,000,000	497,000,000
In volumetric units ^e	thousand 42-gallon barrels	3,550,000	3,590,000	3,530,000	3,578,000 ³	3,615,000 ³
Refinery products:						
In gravimetric units		237,000,000	237,000,000	250,000,000	258,000,000	271,000,000
In volumetric units ^e	thousand 42-gallon barrels	1,910,000	1,910,000	2,010,000	2,080,600 ³	2,185,500 ³
Uranium:						
U content		3,521	3,564	3,562	2,993	2,862
U ₃ O ₈ content		4,152	4,203	4,200	3,502	3,348 ³

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

¹Table includes data available through February 28, 2014.

²In addition to the commodities listed, Russia produces a number of other mineral commodities, which include lithium, oil shale, scandium, tantalum, titanium ore, and vanadium ore, but available information is inadequate to make reliable estimates of output.

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 2012¹

(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	Bogoslovskiy AZ (United Company RUSAL)	Krasnotur'insk	175,000
Do.	Bratskiy AZ (United Company RUSAL)	Bratsk	1,000,000
Do.	Irkutskiy AZ (United Company RUSAL)	Irkutskaya Oblast'	420,000
Do.	Kandalakskiy AZ (United Company RUSAL)	Kola Peninsula	75,000
Do.	Khakasskiy AZ (United Company RUSAL)	Khakasiya	300,000
Do.	Krasnoyarskiy AZ (United Company RUSAL)	Krasnoyarskiy Krai	1,000,000
Do.	Nadvoitskiy AZ (United Company RUSAL)	Nadvoitsy, Kareliya Republic	75,000
Do.	Novokuznetskiy AZ (United Company RUSAL)	Novokuznetsk	300,000
Do.	Sayanogorskiy AZ (United Company RUSAL)	Sayanogorsk	550,000
Do.	Uralskiy AZ (United Company RUSAL)	Kamensk-Uralskiy	150,000
Do.	Volgogradskiy AZ (United Company RUSAL)	Volgogradskaya Oblast'	175,000
Do.	Volkhovskiy AZ (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	GeoProMining, Ltd. (GPM)	Sarylakh deposit, Ust'-Nera region, Sakha Republic (Yakutiya)	8,000 ²
Do.	do.	Sentachan deposit, Northeastern Sakha Republic (Yakutiya)	NA
Do.	Zabaykal'skiy GOK (ZabGOK) (OOO NefteChimMash)	Zabaykal'skiy Krai	360,000
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 Urals	1,100,000
Barite	Salarinskiy mining and beneficiation complex	Kvartsitovaya Sopka deposit	100,000
Bauxite	OAO Sevuralboksitrudra (United Company RUSAL)	Severoural'sk region	NA
Do.	South-Urals mining company (United Company RUSAL)	South Urals	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 Krai	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	Donetskiy (east) basin	Rostovskaya Oblast'	30,000,000
Do.	Irkutskiy basin	Irkutskaya Oblast'	NA
Do.	Kansko-Achinskiy basin	Eastern Siberia	50,000,000
Do.	thousand metric tons Kuznetskiy basin (Kuzbass)	Western Siberia	160,000
Do.	Lenskiy basin	Sakha Republic (Yakutiya)	NA
Do.	Minusinskiy field	Khakasiya Republic	NA
Do.	Moskovskiy basin	Moscow region	15,000,000
Do.	Neryungri basin	Sakha Republic (Yakutiya)	15,000,000
Do.	Pechorskiy basin	Komi Republic	30,000,000

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Coal—Continued		South Yakutiya basin	Sakha Republic (Yakutiya)	17,000,000
Do.		Ulughemskiy basin	Tyva Republic	NA
Do.		Yuzhno-Yakutskiy basin	Sakha Republic (Yakutiya)	NA
Cobalt		OJSC MMC Norilsk Nickel (Normickel)	Norilsk, Kola Peninsula	4,000
Do.		Rezh and Yuzhuralnikel enterprises	South Urals	2,100
Do.		Ufaleynikel Co.	Chelyabinskaya Oblast', Urals	4,000
Do.		Khovu-Aksynskoe (nickel-cobalt) deposit	Khovu-Aksy, Tyva Republic	NA
Copper:				
Cu in concentrate		OJSC MMC Norilsk Nickel (Normickel)	Norilsk region, Kola Peninsula	500,000
Do.		ZAO Russkaya Mednaya Kompaniya (RMK)	Urals	70,000
Do.		Metalloinvest Holding	Udokan, Zabaykal'skiy Kray	NA
Do.		OAo Ural'skaya Gorno-Metallurgicheskaya Kompaniya (UGMK)	do.	230,000
Metal, refined		OJSC MMC Norilsk Nickel (Normickel)	Norilsk region, Kola Peninsula	450,000
Do.		ZAO Russkaya Mednaya Kompaniya (RMK)	Urals	170,000
Do.		OAo Ural'skaya Gorno-Metallurgicheskaya Kompaniya (UGMK)	do.	360,000
Diamond, gem and industrial	thousand carats	Almaz Rossii-Sakha Joint Stock Co. (Alrosa Co. Ltd.) enterprises: Udachnyy mining and beneficiation complex	Sakha Republic (Yakutiya) mines: 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	Permskiy 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 Co.	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.		Kyakhtinsky deposit	do.	NA
Do.		Kalanguy mining complex	Zabaykal'skiy Kray	NA
Do.		Yaroslavskiy mining and beneficiation complex	Pogranichnoye and Vosnesenskoye deposits, Primorskiy Kray	NA
Gallium		Achinsk (United Company RUSAL)	Achinsk in Eastern Siberia	15 ²
Do.		OOO Gallyy	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 Mining and Geological Co. (Chukotskaya GGK)	Chukotskiy Avtonomnyy Okrug	15,000
Do.	do.	OOO Mining and Geological Co. (GRK) Aldanzoloto	Sakha Republic (Yakutiya)	4,000
Do.	do.	Highland Gold Mining Ltd. (HGM)	Khabarovskiy and Zabaykal'skiy Kray	NA

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(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	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
Do.	do.	Oyna, a/s	Tyva Republic	1,500
Do.	do.	Petropavlovsk plc	Petropavlovsk	23,000
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 Gold	Krasnoyarskiy Kray	50,000
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.	OAO Seligdar	Sakha Republic (Yakutiya)	3,000
Do.	do.	Severstal Nordgold NV	Russia, Kazakhstan, and West Africa	10,200
Do.	do.	OOO Sovrudnik	Krasnoyarskiy Kray	3,900
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.	Vostok, a/s	Khabarovskiy Kray	1,100
Do.	do.	OOO Vysochayshiy (GV Gold)	Irkutskaya Oblast' and Sakha Republic (Yakutiya)	5,500
Do.	do.	OOO Yuzhuralzoloto	Chelyabinskaya Oblast'	6,500
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		Elektrozink plant	Vladikavkaz, North Caucasus	6
Iron ore		Kursk Magnetic Anomaly (KMA) region, which contains the following enterprises:	Locations:	50,000,000 ²
		Lebedi and Stoilo	Gubkin	
		Mikhaylovka	Zheleznogorsk	
Do.		Northwest region, which contains the following enterprises:	Locations:	22,000,000 ²
		Kostomuksha	Kostomuksha	
		Kovdor	Kola Peninsula	
		Olenegorsk	Olenegorsk	
Do.		Siberia region, which contains the following enterprises:	Locations:	18,000,000 ²
		East:		
		Korshunovo	Zheleznogorsk	
		Rudnogorsk	Rudnogorsk	
		West:		
		Abakan	Abaza	
		Sheregesh	Sheregesh	
		Tashtagol	Tashtagol	
		Teya	Vershina Tei	

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Iron ore—Continued	Urals region, which contains the following enterprises: Akkermanovka Bakal Goroblagodat Kachkanar Magnitogorsk Peshchanka	Locations: Novotroitsk Bakal Kushva Kachkanar Magnitogorsk Rudnichnyy	22,000,000 ²
Lead, metal	Dalpolymetal lead smelter	Rudnaya in Primorskiy Kray	20,000
Do.	Elektrozink lead smelter [Ural Mining and Metallurgical Co. (UMMC)]	Vladikavkaz, 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	Mazul'sky 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 [OAO Kabardino-Balkarskaya Tungsten-Molybdenum Co. (Government of Kabardino-Balkarskaya Republic)]	Republic of Kabardino-Balkariya, 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, of which:	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.	Pestovoy field	NA
Do.	do.	Zapolyarnyy field	NA
Do.	do.	Shtokmanov field	NA

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c	
Natural gas— Continued	million cubic meters	Urals	Ural'skiye Gory	45,000
Do.	do.	Volga	Vologodskaya Oblast'	6,000
Do.	do.	Yakut-Sakha	Sakha Republic (Yakutiya)	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 (Nornickel)	Kola Peninsula and Norilsk region	300,000	
Do.	OAO Ufaleynikel [Koks Company of Industrial Metallurgical Holding]	Chelyabinskaya Oblast', Urals	17,000	
Do.	OAO Yuzhuralnikel [OAO Mechel]	South Urals	3,000	
Do.				
Metal:				
Smelting	OJSC MMC Norilsk Nickel (Nornickel)	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:		
	ZAO Rezhnickel [Ural Mining and Metallurgical Co. (UMMC)]	South Urals	65,000 ²	
	OAO Ufaleynikel [Koks Industrial Metallurgical Holding Co.]	do.		
	Yuzhuralnikel [Mechel OAO]	do.		
Niobium (columbium)	Kamarsurt 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 Neft'	Deposits throughout Russia	50,000,000	
Do.	OAO Lukoil	West Siberian deposits: Kechimovskoye Nivagalskoye Urals deposits Volga Region Timen Pechora deposit: Yuzhnaya Khylnaya Komi Republic deposits: Kyrtaelskoye Pashshorskoye Perevoznoye	100,000,000 ²	
Do.	OAO Novatek	Western Siberia	5,000,000	
Do.	OAO NK Rosneft'	Deposits throughout Russia	120,000,000	
Do.	Russneft'	Central and Western Siberia, Urals and Volga regions	15,000,000	
Do.	Slavneft'	Western Siberia and Krasnoyarskiy Kray	20,000,000	
Do.	OAO Surgutneftegas	Khanty-Mansiyskiy Avtonomnyiy Okrug (HMAO)	60,000,000	
Do.	Tatneft'	Deposits: Romashkinskoye Novo-Elkhovskoye Bavlinskoye Bondyuzskoye Pervomayskoye Sabandchinskoye	30,000,000 ²	

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Petroleum—Continued	OAO TNK–BP Holding	Deposits: Kamennoye Kovyatka Russkoye Suzunskoye Tagulskoye Uvat Verkhnechonsk	80,000,000 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	Urals	NA
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
Do.	Lopatino and Yegorevsk deposits	Moscow Oblast'	NA
Do.	Polpinskoye deposit	Bryanskaya Oblast'	NA
Do.	Verkhnekamsk deposit	Ural'skiye Gory	NA
Do.	OAO AS Amur (Russian Platinum Co.)	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 Avtonomnyi Okrug (HMAO)	NA
Potash, K ₂ O equivalent	OAO Uralkali	Verkhnekamskoye deposit	8,000,000
Do.	OAO Silvinit ³	Solikamsk-Berezniki regions, Urals	NA
Do.	OAO Akron	Novgorod	NA
Rare earths	OAO Apatit	Lovozerskoe 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	Eastern 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	Bashkirskoye	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

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Steel, crude—Continued	OAO Mechel (Mechel)	Chelyabinskaya Oblast'	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-Zabayka'skiy Steel Works	Petrovsk-Zabayka'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
Do.	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)	do.	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.	Shabrovska 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.	Pravourmiyskoye	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.	Khrustalnyi mining and beneficiation complex	Primorskiy Kray	NA ⁴
Do.	Pevek mining and beneficiation complex	Magadanskaya Oblast'	NA ⁴
Metal	Novosibirsk Processing Plant Ltd.	Novosibirskaya Oblast'	NA ⁴
Titanium:			
Ore	OOO Lovozerkiy GOK	Murmanskaya Oblast	NA
Do.	OAO Apatit	Kyiskumchorrskoye and Yuksporskoye deposits	NA
Do.	OAO TGOK Ilmenit	Tyuganskoye deposit	NA
Do.	OOO Olekminskiy Rudnik	Kuranakhskoye deposit	NA

See footnotes at end of table.

TABLE 2—Continued
RUSSIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012¹

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^e
Titanium—Continued:			
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:			
Concentrates, W content	AS Quartz	Bom-Gorkhom deposit, West Transbaikal, Zabaykal'skiy Kray	NA
Do.	ZAO Novoorlovskiy GOK	Spokoyninskoye deposit, Zabaykal'skiy Kray	NA
Do.	KGUP Primateploenergo	Lermontovskoye deposit, Primorskiy Kray	NA
Do.	OAO Primorsky GOK	Vostok-2 deposit	NA
Do.	ZAO Zakamensk	Ruchey Inkur deposit, Barun-Narynskoye deposit	NA
Do.	Tyrnyauz tungsten-molybdenum mine [OAO Kabardino-Balkarskaya Tungsten-Molybdenum Co. (Government of Kabardino-Balkarskaya Republic)]	Republic of Kabardino-Balkariya, North Caucasus	NA
Metal	Gidrometallurg plant	do.	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 Urals	5,000
Do.	Buribai copper-zinc mining complex	Buribai, Southern Urals	1,500
Do.	Gai copper-zinc mining and beneficiation complex	Gai, Southern Urals	25,000
Do.	Kirovgrad copper enterprise	Kirovgrad, Central Urals	1,200
Do.	Sredneuralsk copper complex	Revda, Central Urals	5,000
Do.	Uchali copper-zinc mining and beneficiation complex	Uchalinskiy Rayon, Southern Urals	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.	Uralkalmet plant [Ural Mining and Metallurgical Co. (UMMC)]	Verkhnyaya Pyshma	17,000
Zirconium:			
Baddeleyite concentrate	Kovdor iron ore mining and beneficiation complex	Kola Peninsula	3,500
Metal	Chepetsky metallurgical plant (TVEL Corp.)	Glazov, Udmurtiya Republic	NA

^eEstimated; 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 2012.