



2016 Minerals Yearbook

KAZAKHSTAN

THE MINERAL INDUSTRY OF KAZAKHSTAN

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Kazakhstan produced a diverse range of mineral commodities and was the world's leading producer of uranium (39% of world output); the 2d-ranked producer of chromite (18%); the 4th-ranked producer of asbestos (15%), barite (6.6%), boron (5.1%), and titanium sponge (5.3%); the 5th-ranked producer of cadmium (6.3%) and rhenium (1.9%); the 7th-ranked producer of fluor spar (1.9%); the 8th-ranked producer of bauxite (1.8%) and zinc (2.7%); the 9th-ranked producer of silver (4.6%); the 10th-ranked producer of manganese (1.4%) and sulfur (3.8%); and the 13th-ranked producer of alumina (1.2%) and gold (2.2%). The country also was a significant producer of antimony, bismuth, iron ore, magnesium metal, and phosphate rock. The mineral industry accounted for a significant share of the country's gross domestic product (GDP) and export revenue; petroleum and natural gas were the leading mineral commodities in terms of production value. Kazakhstan's Government promoted the development of the mineral industry and owned interests in a number of significant mineral-commodity-producing companies (U.S. Energy Information Administration, 2017; Apodaca 2018; Bedinger, 2018; Bennett, 2018; Bray, 2018a, b; Corathers, 2018; Crangle, 2018; Flanagan, 2018; George, 2018; Jasinski, 2018; Klochko, 2018a, b; McRae, 2018; Polyak, 2018; Singerling, 2018a, b; Thomas, 2018; Tolcin, 2018; Tuck, 2018; World Nuclear Association, 2018).

Minerals in the National Economy

In 2016, Kazakhstan's real GDP increased by 1.0% compared with that of 2015, and the nominal 2016 GDP was valued at 47.0 trillion tenge (\$137.4 billion).¹ Total nominal industrial production was valued at 19.0 trillion tenge (\$55.7 billion) and real industrial production decreased by 1.1% from 2015. Mineral extraction played a significant role in industrial production—9.4 trillion tenge (\$27.5 billion), or 49.4% of the value of industrial production was from this sector. Mineral extraction output value included 7.3 trillion tenge (\$21.3 billion) from the extraction of crude petroleum, 794 billion tenge (\$2.3 billion) from the mining of nonferrous metal ores, 232 billion tenge (\$679 million) from the extraction of coal and lignite, 195 billion tenge (\$571 million) from the mining of iron ore, and 117 billion tenge (\$342 million) from the extraction of natural gas. In comparison with 2015, real output of mined nonferrous metals increased by 7.8%, and natural gas, by 4.8%. On the other hand, real output of iron ore decreased by 12.5%; coal, by 4.6%; and petroleum, by 1.8%. In 2016, metallurgy contributed 3.4 trillion tenge (\$9.9 billion) to industrial output, of which nonferrous metallurgy and production of precious metals contributed \$6.6 billion and petroleum refining and coke production accounted for \$1.9 billion. Compared with that of

2015, real output of nonferrous and precious metals increased by 8.5%; real output of ferrous metals increased by 3.6% and that of petroleum refining and coke increased by 0.4% (Agency of Statistics of the Republic of Kazakhstan, 2017a, p. 1-324).

Government Policies and Programs

In 2016, the Ministry of Investment and Development continued preparation of a new Mining Code of the Republic of Kazakhstan. The new code was expected to introduce several innovations that would likely attract new investment and venture capital to Kazakhstan's mining industry. The new code would significantly simplify the procedures required to obtain exploration and mining licenses, would reduce the time required to obtain relevant permits, and would create an interactive system to share the Government's geologic information with exploration and mining companies. The new code was expected to be adopted by the end of 2017 (Kursiv.kz, 2016).

Production

The output of several mineral commodities continued to decrease following the decrease of world oil prices and a decrease in world prices for several key metals in 2014 and 2015, although production of other commodities started to rebound. Production of electrowon copper increased by 128%; mined lead, by 73%; gypsum, by 67%; phosphate rock, by 42%; ferrosilicochromium, by 27%; titanium mine concentrates, by an estimated 25%; titanium sponge, by an estimated 24%; magnesium metal, by an estimated 23%; refined gold, by 22%; other ferroalloys and salt, by 20% each; rolled steel, by 19%; mined gold, by 17%; silicon metal, by 15%; nitrogen (content of ammonia), by 13%; refined lead, by 12%; and pig iron, by 11%. Production of niobium metal decreased by 52%; ferrosilicon, by 21%; manganese concentrate and silicomanganese, by 17% each; iron content of iron ore and tantalum metal, by 13% each; and arc-furnace-produced steel and sulfuric acid, by 12% each. These and other production data are in table 1.

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Mineral Trade

In 2016, the value of Kazakhstan's exports amounted to \$36.7 billion, which was a 20% decrease compared with the value of exports in 2015. In 2016, Kazakhstan's imports decreased by 17% to \$25.4 billion. The reduction in export revenues in 2016 compared with those in 2015 took place primarily because of the reduction in exports of raw materials (by 25.2%) and, to a lesser extent, of manufactured goods (by 8.2%). The revenues from exports of crude petroleum decreased by 27.6%, from \$26.8 billion to \$19.4 billion, predominantly

¹Where necessary, values have been converted from Kazakhstani tenge (KZT) to U.S. dollars (US\$) at an annual average exchange rate of KZT341.82=US\$1.00 for 2016; KZT221.73=US\$1.00 for 2015; and KZT179.19=US\$1.00 for 2014.

because of the decrease in oil prices, from an average price of \$57.40 per barrel in 2015 to \$42.40 per barrel in 2016 (Agency of Statistics of the Republic of Kazakhstan, 2017b, p. 1–72; Kazakh Invest, 2017).

Overall, revenues from exports of all intermediate goods were reduced by 5.4% and amounted to \$10.9 billion. Revenues from exports of refined copper decreased by 5% to \$1.8 billion; the main recipients of copper exports were China (47%), Turkey (15%), and the United Arab Emirates (14%). Revenues from exports of uranium products decreased by 24.5% to \$1.8 billion; the main recipients were China (47%), Russia (14%), France (12%), and India (11%). Revenues from exports of ferroalloys increased by 3.2% to \$1.4 billion; the main recipients were China (41%), Japan (23%), and the Republic of Korea (8%). The revenues from exports of flat-rolled steel products increased by 8% to \$1.0 billion; the main recipients were Russia (41%) and Iran (36%). The revenues from exports of refined petroleum products decreased by 41.2% to \$812 million; the main recipients were the Netherlands (78%), Ukraine (4%), and Russia (3%). The revenues from exports of refined silver increased by 21% to \$585 million whereas the tonnage of silver exports decreased by 8%; all silver was exported to the United Kingdom. The revenues from zinc exports decreased by 4.2% to \$552 million; the main recipients were China (33%) and Turkey (30%). The revenues from exports of petroleum gases (propane and butane) decreased by 29% to \$452 million; the main recipients were Poland and Turkey (22% each) and Tajikistan (16%). The revenues from exports of aluminum decreased by 8.6% to \$345 million; the main recipients were Russia (25%), Greece (24%), and Italy (15%) (Kazakh Invest, 2017).

Kazakhstan's main export partner was Italy, which received 20.4%, by value, of the country's exports. It was followed by China (11.5%), Russia (9.4%), the Netherlands (8.9%), Switzerland (6.6%), France (4.9%), Spain (2.7%), Ukraine and Uzbekistan (2.5% each), Greece and the United Kingdom (2.4% each), and Romania and Turkey (2.3% each) (Agency of Statistics of the Republic of Kazakhstan, 2017b, p. 1–78.)

The major commodities imported were foodstuffs, machinery and equipment, and metal products. Kazakhstan's main import partner was Russia, which shipped to Kazakhstan 36.6% of its imports, by value. It was followed by China (14.5%), Germany (5.7%), the United States (5.0%), Italy (3.3%), France (2.6%), Turkey (2.4%), Uzbekistan (2.3%), and Japan (2.2%) (Agency of Statistics of the Republic of Kazakhstan, 2017b, p. 1–78).

Commodity Review

Metals

Bauxite, Alumina, and Aluminum.—The only producer of alumina in Kazakhstan was AO Aluminum of Kazakhstan (Aluminum Kazakhstan). Aluminum Kazakhstan was a production complex that included several production units—the Pavlodar Aluminum plant [also known as AO Kazakhstan Electrolysis Plant (KEZ)], a powerplant, the Krasnooktyabrskoye and the Torgayskoye bauxite mines, and the Keregetas limestone mine. Aluminum Kazakhstan was a part of the mining and metallurgy conglomerate Eurasian Resources Group LLP (ERG). KEZ was a division of ERG

that was involved in the production of aluminum and was the only primary aluminum producer in the country. In 2016, KEZ produced about 235,600 metric tons (t) of primary aluminum, which was a 6.1% increase from that of 2015. The designed plant capacity was 251,600 metric tons per year (t/yr) of primary aluminum, but during the past several years, it produced less aluminum owing to historically low world prices for aluminum. The plant was built in 2007 and reached full capacity in 2010. In 2016, KEZ employed about 2,600 people (Inform.kz, 2016a; Eurasian Group LLP, 2017a, b).

In recent years, Kazakhstan's industrial plants were working on replacing imported materials and equipment with those produced domestically. In 2014, KEZ started a new electrode production line that replaced imports of electrodes used in aluminum production. Also, ERG was working on turning Kazakhstan's bauxite-alumina-aluminum producers into an aluminum cluster capable of producing aluminum products from domestic raw materials. To accomplish this goal, in 2016, ERG invested 8.3 billion tenge (about \$24.3 million) for the construction of four new bauxite mines in Kostanay Province. When the four new mines start production, ERG would be able to produce an additional 20 million metric tons (Mt) of bauxite between 2015 and 2017. Also, a new aluminum alloys plant was under construction in the city of Pavlodar; the plant was expected to be commissioned in 2017 (Abishev and Yakubov, 2016; AMM Congress, 2016).

Chromium and Ferroalloys.—In 2016, AO TNK Kazkhrom, which was a division of the ERG conglomerate, was the major producer of chromite and ferroalloys in Kazakhstan. In 2016, Kazkhrom mined 5.543 Mt of chromite and produced 1.525 Mt of ferrochromium. Kazkhrom had four major production units—the Aksu ferroalloy plant, which was located in Pavlodar Province; the Aktobe ferroalloy plant, which was located in Aktobe Province; the Kazmarganets Mine, which was located in Karagandy Province and was involved in manganese mining; and the Donskoy GOK [mining and beneficiation complex], which was located in the city of Chromtau in Aktobe Province and was involved in chromite mining and processing (Abetv.kz, 2016, 2018).

In November, the Donskoy GOK announced that it had installed new equipment to improve the chromite grinding and beneficiation process. The new equipment would allow the production of additional chromium concentrate in the range of between 0 and 3 millimeters and reduce the losses of chromium oxide in tailings (Avestnik.kz, 2016).

Another producer of chromite in Kazakhstan was the Yildirim Group of Turkey. In 2013, the Yildirim Group acquired the Voskhod GOK, which consisted of two units—Voskhod Oriel and Voskhod Chrom—from the Mechel Group of Russia. The resources of the Voskhod chromite deposit in Aktobe Province were estimated to be more than 19 Mt of mineralized material with average chromium oxide content of 48.5%. As of 2016, the Voskhod GOK's chromite production unit provided jobs for about 800 people. In 2015, the Voskhod GOK units produced more than 900,000 t of chromite and about 500,000 t of concentrate. In 2016, however, production was much lower; during the first 4 months of 2016, the Yildirim Group produced only 88,000 t of ore and 32,000 t of concentrate. The major

consumer of Yildirim 's chromium concentrate of Yildirim was the Tikhvinskiy ferroalloy plant in Russia, which was idle for a large part of 2015 and 2016 (Nur.kz, 2016).

Gold.—According to the Ministry for Investment and Development of Kazakhstan, the overall gold resources of the country were estimated to be 9,500 t, of which about 7,700 t was in gold deposits, and the remainder, in polymetallic deposits. About 53% of the total probable resources are located in existing gold-producing regions and constitute either an expansion of reserves at the deep horizons of existing mines or are new deposits located in close proximity to those already developed (Mineral.ru, 2015).

In 2016, Kazakhstan mined about 74,700 kilograms (kg) of gold and produced about 37,900 kg of refined metal, which was a 17.5% and 21.9% increase compared with that of 2015, respectively. During the past several years, Kazakhstan had been steadily increasing gold mining. Following the lowest production point in 1997 (only 6,000 kg), the country produced about 36,800 kg in 2011 and about 42,600 kg in 2013. Originally, the Government had expected to increase gold production to 60,000 kg in 2016 and to reach 75,000 kg by 2019; however, Kazakhstan reached the 75,000 kg in 2016 (table 1; Forbes.kz, 2016; Kapital.kz, 2016b).

The leading producers of mined gold in Kazakhstan were TOO Altyntau Kokshetau, which was owned by TOO Kazzinc, and GMK Kazakhaltyn, both of which had operations in Akmola Province. Polymetal International plc (Polymetal), which was one of leading producers of precious metals in Russia, had recently entered Kazakhstan's market and operated mostly in Kostanay Province; AO AK Altynalmas operated in Karagandy Province and Zhambyl Province (Forbes.kz, 2016).

In April 2016, Polymetal, which was registered in Cyprus, announced that it was acquiring the Komarovskoye gold deposit. As of yearend 2015, Joint Ore Reserves Committee (JORC)-compliant reserves at the deposit were estimated to be 1.4 million troy ounces (about 43,500 kg) of gold equivalent. The previous owner of the license for the deposit was TOO Orion Minerals, which was a division of Kazzinc. Polymetal agreed to pay \$100 million plus future royalties not to exceed \$80 million for the Komarovskoye license. Earlier, in 2009, Polymetal acquired a mining license for the Varvarinskoye deposit in northwestern Kazakhstan in Kostanay Province. The Varvarinskoye complex included a beneficiation plant and a gold-extraction plant with the capacity to process 4.2 million metric tons per year (Mt/yr) of ore. It was expected that the Komarovskoye and the Varvarinskoye deposits, which are located close to each other, would complement each other because the beneficiation complex at Varvarinskoye could also process ores from the Komarovskoye deposit (Grinstein, 2016; Terentyeva, 2016; Polymetal International plc, 2017).

Zinc.—In December 2016, AO ShalkiyaZinc Ltd. announced that it was going to build a mining and beneficiation complex (GOK) at its Shalkiya lead and zinc deposit, which was located in Kyzylorda Province. According to the company, the deposit is 1 of the 10 largest zinc deposits in the world. The company expected to begin production in 2018 and to mine 500,000 t/yr of ore. By 2020, the amount of ore mined would quadruple, and full capacity was projected to be reached by 2021. The company

would be able to mine 4 Mt/yr of ore. At full capacity, the GOK would produce 120,000 t/yr of zinc and 25,000 t/yr of lead. It was projected that the zinc content of ore at Shalkiya would be between 3.85% and 4.0%, and the lead content, 1.2%. It was expected that the European Bank for Reconstruction and Development (EBRD) would finance part of the project (Irgaliyev, 2016).

Industrial Minerals

Cement.—In 2016, Kazakhstan produced a total of 9.2 Mt of cement, which was a 5.4% increase compared with that of 2015. About 600,000 t of cement was imported. In 2016, domestic cement consumption in Kazakhstan amounted to 9.3 Mt, which was a 5.4% decrease compared with that of 2015. Exports of cement in 2016 totaled about 451,000 t, which was a 467% increase compared with that of 2015 (Total.kz, 2017).

The leading cement producers in Kazakhstan were TOO Standard Cement, which was located in South Kazakhstan Province and had the capacity to produce 2.0 Mt/yr of cement; Bukhtarma Cement Co. in eastern Kazakhstan, 1.6 Mt/yr; AO ShymkentCement in South Kazakhstan Province, 1.6 Mt/yr; AO Karcement in Karaganda Province, 1.2 Mt/yr; TOO Jamlyl Cement Production Co. in Jambyl Province, 1.2 Mt/yr; TOO Kazakhcement in East Kazakhstan Province, 1.0 Mt/yr; and Kaspiy Cement in Mangystau Province, 0.8 Mt/yr (Atameken.kz, 2016; Kapital.kz, 2016a).

In July 2016, AO ShymkentCement became a part of the HeidelbergCement Group of Germany as a result of HeidelbergCement's acquisition of Italcementi of Italy. Following the acquisition, HeidelbergCement became the owner of three cement plants in Kazakhstan—the Bukhtarma Cement Co., Kaspiy Cement, and ShymkentCement. Globally, HeidelbergCement operated 156 cement plants in 60 countries (Atameken.kz, 2016; Total.kz, 2017).

Kokshe Cement in Akmola Province had been under construction since 2007. Its design capacity was 2.0 Mt/yr of cement and 1.7 Mt/yr of clinker. The total cost of the project was 61.3 billion tenge (about \$300 million) and, when in operation, the plant would employ 630 workers. The commissioning of the plant was scheduled for January 2017 (Atameken.kz, 2016; Inform.kz, 2016b).

Mineral Fuels and Related Materials

Petroleum.—In 2016, Kazakhstan produced about 567 million barrels of crude petroleum (including condensate), which was a 1.5% decrease compared with that of 2015. The reduction was owing to macroeconomic conditions and to depreciation of the equipment; more than 50% of the wells in western Kazakhstan had been exploited for more than 20 years and required modernization. According to the Oil and Gas Journal, as of January 2017, Kazakhstan had crude petroleum reserves of 30 billion barrels, which was the 12th-largest endowment in the world. The three largest oilfields in Kazakhstan were Karachaganak, Kashagan, and Tengiz. In 2016, the Kashagan field resumed production after years of laying idle. Kashagan was expected to produce 370,000 barrels

per day (bbl/d) of petroleum and other liquids at full capacity. Also, in July 2016, the Tengizchevroilconsortium decided to proceed with plans to expand the plant that would increase production at the Tengiz project by about 260,000 bbl/d starting in 2022 (Isayev, 2016; Neftegaz.ru, 2017).

Outlook

Interest in Kazakhstan's mineral industry will likely continue to increase along with an increase in the number of projects aimed at exploiting the country's significant mineral resources. Projects involving gold, hydrocarbons, rare metals, rare-earth elements, uranium, and zinc could be of particular interest. The number of exploration projects underway in Kazakhstan indicates the potential for future increases in the production of mineral commodities in the country, but any future development will depend on a variety of factors, including mineral commodity prices and the development of Government policies and programs to encourage the growth of the industry. If the country adopts a new mining code aimed at better protection of investors, Kazakhstan is likely to expand its mineral sector.

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TABLE 1
KAZAKHSTAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2012	2013	2014	2015	2016
METALS					
Aluminum:					
Bauxite	5,170,200	5,192,000	4,515,600	4,682,600	4,801,300
Alumina	1,760,412 ^r	1,590,000	1,419,000	1,448,280	1,510,200
Aluminum metal, primary	250,269	250,159	209,252	221,939	235,556
Antimony, mine production, concentrate, Sb content	865	--	481	500 ^e	500 ^e
Beryllium, products, metallurgical	2,526	1,913	1,776	1,687	1,747
Bismuth, refinery production ^c	150	150	140 ^r	140 ^r	140
Cadmium, refinery production, primary, metal	1,166 ^r	1,319	1,633	1,475	--
Chromite, mine production:					
Concentrate	3,945,600	4,192,700	4,475,700	4,198,400	4,148,900
Crude ore	5,233,100 ^r	5,255,100	5,410,700	5,382,800 ^r	5,542,900
Copper:					
Mine production, concentrate, Cu content	419,200	440,300	458,800	458,100	432,400
Leaching, electrowon	7,600	12,200	12,900	15,500	35,300
Refinery production, primary	367,161 ^r	352,061	294,808	394,641	408,435
Smelter production, primary	302,183 ^r	269,220	214,058	309,355	310,001
Ferroalloys:					
Ferrochromium	1,305,343	1,336,632	1,351,803	1,414,476	1,525,221
Ferrosilicochromium	164,853	165,195	158,826	74,609	94,468
Ferrosilicon	494	472	395	86,984	68,779
Silicomanganese	251,530	203,986	200,379	164,189	135,885
Other, unspecified	1,845	646 ^r	3,735	1,662	1,987
Gallium kilograms	15,711	-- ^r	-- ^r	-- ^r	--
Gold:					
Mine production, Au content do.	39,903	42,552	50,339	63,614 ^r	74,737
Refinery production do.	21,133	23,220	26,884	31,044	37,852
Iron and steel:					
Pig iron	2,707,000	2,634,451	3,184,780	3,233,671	3,595,000
Raw steel	2,610,000	2,738,500	2,908,800 ^r	2,947,800	3,175,300
Products, finished, rolled	2,402,300	2,277,000	2,532,186	2,509,010	2,976,900
Iron ore, mine production:					
Gross weight	52,614,000 ^r	51,689,000 ^r	51,541,000	37,270,000 ^r	35,793,500
Fe content	14,073,500	14,724,400 ^r	14,946,200	11,566,200	10,101,400
Lead:					
Mine production, Pb content	38,100	40,100	37,800	40,700	70,500
Refinery production, primary and secondary	88,099	91,072	127,064	120,108	134,192
Magnesium metal, primary ^c	22,200	13,000	9,500	8,100	10,000
Manganese, mine production:					
Crude ore:					
Gross weight	2,975,000	2,850,500	2,608,800	1,625,700	1,600,700
Mn content ^c	595,000	570,000	522,000	325,000	320,000
Concentrate:					
Gross weight	1,070,500	1,121,000	1,092,300	615,900	509,500
Mn content ^c	390,000	404,000	390,000 ^r	222,000	183,000
Nickel, mine production, laterite ore, Ni content	450 ^e	--	--	--	--
Niobium, metal, Nb content	43	44	72	97	47
Rare earths, mineral concentrate, rare-earth oxide equivalent	--	--	140 ^r	40 ^r	--
Rhenium, Re content ^c kilograms	3,000	2,500	300	1,000	1,000
Selenium	NA	NA	42	28	30 ^e
Silicon, silicon metal	5,000	5,000	998	866	1,000 ^e

See footnotes at end of table.

TABLE 1—Continued
KAZAKHSTAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2012	2013	2014	2015	2016
METALS—Continued					
Silver:					
Mine production, Ag content kilograms	963,182	963,829	989,247	1,308,926	1,186,511
Refinery production, primary do.	958,495	958,258	983,697	1,306,575	1,182,476
Tantalum, metal, Ta content	213	203 ^r	154 ^r	141	122
Titanium:					
Ilmenite and leucoxene ^c	25,000	10,000	10,000	8,000	10,000
Sponge	21,000	12,000	8,700	7,300	9,000 ^c
Zinc:					
Mine production, concentrate, Zn content	369,700	361,500	345,200	342,500	324,800
Smelter production, primary and secondary	319,847 ^r	320,150	324,946	323,848	325,820
INDUSTRIAL MINERALS					
Asbestos, primary, all grades	241,200	243,400	213,100	179,800	192,600
Barite, ore and concentrate	590,100	563,700	655,500	674,500	685,100
Boron ^c thousand metric tons	300	348	507	500	500
Cement, hydraulic	6,411,800 ^r	7,071,500	8,139,700	8,729,000	9,203,600
Fluorspar ^c	100,000	108,000	110,000	110,000	110,000
Gypsum	147,800 ^r	123,700 ^r	113,400 ^r	82,300 ^r	137,400
Lime	908,188	869,167	923,300	870,654	927,900
Nitrogen, ammonia, N content	83,255	95,135	138,700	151,800	172,100
Phosphate rock:					
Gross weight	438,800	410,500	485,400 ^r	548,700 ^r	780,800
P ₂ O ₅ content ^c	110,000	103,000	121,000 ^r	137,000 ^r	195,000
Salt	463,960	531,429	596,508	608,627	730,283
Sulfur compounds, sulfuric acid	1,719,200	2,081,200	2,329,900 ^r	2,518,600 ^r	2,220,800
Sulfur, byproduct, S content:					
Metallurgy	588,200 ^r	604,600 ^r	604,000 ^{r, c}	604,000 ^{r, c}	604,000 ^c
Natural gas and petroleum	2,150,500	2,443,300	2,464,600	2,514,900	2,520,000 ^c
Total	2,740,000 ^r	3,050,000 ^r	3,070,000 ^r	3,120,000 ^r	3,120,000
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous thousand metric tons	107,911 ^r	107,694	102,378	97,072	92,824
Lignite do.	7,748	6,690	6,894	5,526	5,750
Total do.	116,000 ^r	114,000	109,000	103,000	98,600
Coke, metallurgical	2,569,300	2,379,100	2,697,800	2,628,100	2,839,900
Natural gas:					
Associated thousand cubic meters	19,820,100	21,679,100	21,898,300	23,761,800	25,049,100
Nonassociated do.	20,308,800	20,564,900	21,278,500	21,493,700	21,363,700
Total do.	40,100,000	42,200,000	43,200,000	45,300,000	46,400,000
Petroleum:					
Crude, including condensate ³ thousand 42-gallon barrels	576,000 ^r	595,000 ^r	586,000 ^r	576,000 ^r	567,000
Refinery production ⁴ do.	108,000 ^r	110,000 ^r	115,000 ^r	107,000 ^r	102,000
Uranium, mine production, U content	20,900	22,500	22,829	23,800	24,500

^cEstimated. ^rRevised. do. Ditto. NA Not available. -- Zero.

¹Table includes data available through January 30, 2018. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, cesium, cobalt, germanium, indium, molybdenum, scandium, selenium, tellurium, and vanadium may have been produced in Kazakhstan, but available information was inadequate to make reliable estimates of output.

³Figures were converted to barrels from metric tons, which were reported as follows: 2012—79,224,500; 2013—81,786,700; 2014—80,825,600; 2015—79,456,800; and 2016—78,031,800.

⁴Figures were converted to barrels from metric tons, which were reported as follows: 2012—13,668,100; 2013—13,843,600; 2014—14,542,600; 2015—13,534,700; and 2016—12,863,200.

TABLE 2
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Alumina	AO Aluminium of Kazakhstan [Eurasian Resources Group LLP (ERG)]	City of Pavlodar	1,600,000
Aluminum, primary	Kazakhstan Electrolysis Plant (KEZ) (also known as Pavlodar Aluminum Plant) [Eurasian Resources Group LLP (ERG)]	do.	250,000
Barite	TOO Vostochnoye Rudoupravleniye	Chiganak, Zhambyl Province	300,000
Do.	Zhartas LLC	Zhambyl Province	25,000
Do.	Stroyservice LLC	Kentau District, South Kazakhstan Province	30,000
Do.	Zhairemskiy GOK ³ [Eurasian Natural Resources Corp. plc (ENRC)]	Ushkatyn III, Zhairem, and Zhumanai deposits near the city of Zhairem	NA
Do.	JSC Yuzhpolimetall	Kentau District, South Kazakhstan Province	NA
Do.	Barite Oil Kentau LLC	do.	NA
Bauxite	Kazakhstan Aluminium Smelter JSC [Eurasian Natural Resources Corp. plc (ENRC)]	Torgayskoye and Krasnooktyabrskoye mining complexes, Kostanay Province	5,400,000
Beryllium, metal	Ulba Metallurgical Plant (AO NAK Kazatomprom)	Oskemen (also known as Ust-Kamenogorsk)	NA
Bismuth, metal	Ust-Kamenogorsk metallurgical complex [TOO Kazzinc (Glencore plc, 69.61%)]	do.	NA
Do.	Chimkent metallurgical plant (JSC Yuzhpolimetall)	Shymkent	NA
Cadmium	do.	do.	NA
Do.	Ust-Kamenogorsk metallurgical complex [TOO Kazzinc (Glencore plc, 69.61%)]	Oskemen (also known as Ust-Kamenogorsk)	NA
Cement	TOO Standard Cement	South Kazakhstan Province	2,000,000
Do.	Bukhtarma Cement Co. (HeidelbergCement Group)	East Kazakhstan Province	1,600,000
Do.	AO ShymkentCement (HeidelbergCement Group)	South Kazakhstan Province	1,600,000
Do.	AO Karcement	Karaganda Province	1,200,000
Do.	TOO Jambyl Cement Production Co.	Jambyl Province	1,200,000
Do.	TOO Kazakhcement	East Kazakhstan Province	1,000,000
Do.	Kaspiy Cement (HeidelbergCement)	Mangystau Province	800,000
Chromite, marketable ore containing about 50% Cr ₂ O ₃ content	AO TNK Kazkhrom [Eurasian Resources Group LLP (ERG)]	Khromtau, Aktobe Province	3,600,000
Do.	Oriel Resources Ltd. (Yildirim Resources)	Voskhod GOK, ³ Khromtau, Aktobe Province	600,000
Copper:			
Mine production, recoverable, Cu content	Kazakhmys plc: Central Region:		
	Konyrat Mine	Karagandy Province	11,800 ⁴
Do.	Sayak I and III Mines	do.	23,500
Do.	Shatyrkul Mine	Zhambyl Province	12,700
Do.	Abyz Mine	Karagandy Province	5,710
Do.	Nurkazgan Mine	do.	20,000
Do.	Akbastau Mine	East Kazakhstan Province	9,000
Do.	East Region:		
	Artemyevsky Mine	do.	25,000
Do.	Belousovsky Mine	do.	2,700
Do.	Irtysky Mine	do.	5,750
Do.	Nikolayevsky Mine	do.	25,700
Do.	Orlovsky Mine	do.	86,200
Do.	Yubileyno-Snegirikhinsky Mine	do.	14,200

See footnotes at end of table.

TABLE 2—Continued
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Copper:—Continued			
Mine production, recoverable, Cu content—Continued	Jezkazgan Region: Annensky Mine	Karagandy Province	25,000
Do.	East Mine	do.	35,000
Do.	North Mine	do.	28,000
Do.	South Mine	do.	30,000
Do.	Stepnoy Mine	do.	30,000
Do.	West Mine	do.	23,300
Do.	Zhomart Mine	do.	60,000
Do.	TOO Kazzinc (Glencore plc, 69.61%): Ridder complex:		
	Ridder-Sokolny Mine	East Kazakhstan Province	NA
Do.	Shubinsky Mine	do.	2,750
Do.	Tishinsky Mine	do.	15,000
Do.	Zyrianovsk complex:		
	Maleevsky Mine	15 kilometers north of Zyryanovsk	40,000
Do.	Grekhovsky Mine	NA	NA
Do.	Aktyubinsk Copper Co. TOO (CJSC Russian Copper Co.)	50th Anniversary of October Mine, at Koktau, Aktobe Province	NA
Do.	KAZ Minerals	Aktogay Mine, Eastern Kazakhstan	NA
Do.	Polymetal International plc	Varvarinskoye deposit, Kostanay Province	NA
Concentrate, Cu content	Kazakhmys plc:		
	Central Region:		
	Balkhash concentrator	Karagandy Province	40,000
Do.	Karagaily concentrators:		28,000
	Abyz	do.	
	Akbastau	do.	
	Kosmurun	do.	
Do.	Nurkazgan concentrator	do.	15,000
Do.	East Region:		
	Orlovsky concentrator	do.	70,000
Do.	Belousovsky concentrator	East Kazakhstan Province	13,000
Do.	Irtysky concentrator	do.	6,000
Do.	Nikolayevsky concentrator	do.	30,000
Do.	Jezkazgan Region:		
	Satpayev concentrator	do.	30,000
Do.	Jezkazgan No. 1 concentrator	do.	88,800
Do.	Jezkazgan No. 2 concentrator	do.	95,000
Do.	TOO Kazzinc (Glencore plc, 69.61%): Ridder complex: Ridder concentrator	Karagandy Province	10,000
Do.	Zyrianovsk complex: Zyrianovsk concentrator	do.	10,000
Do.	Aktyubinsk Copper Co. TOO (CJSC Russian Copper Co.)	50th Anniversary of October Mine, at Koktau, Aktobe Province	55,000
Do.	Polymetal International plc	Varvarinskoye deposit, Kostanay Province	NA
Metal	Kazakhmys plc mines or plants:		
	Central Region:		
	Balkhash smelter	Karagandy Province	250,000
Do.	Balkhash refinery	do.	250,000
Do.	Jezkazgan Region:		
	Jezkazgan smelter	do.	250,000
Do.	Jezkazgan refinery	do.	250,000

See footnotes at end of table.

TABLE 2—Continued
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits		Location or deposit names	Annual capacity ^c
Copper:—Continued				
Metal—Continued	Ust-Kamenogorsk metallurgical complex [TOO Kazzinc (Glencore plc, 69.61%)]		Oskemen (also known as Ust-Kamenogorsk)	70,000
Do.	Central Asia Metals plc		Karagandy Province	10,000
Ferroalloys:				
Ferrochrome:				
High-, medium-, and low-carbon FeCr containing 69% Cr	Aktobe plant {Kazkhrom [Eurasian Resources Group (ERG)]}		Aktobe Province	450,000
High-carbon FeCr containing 69% Cr	Aksu plant {Kazkhrom [Eurasian Resources Group (ERG)]}		Aksu City	850,000
FeCr	AO TNK Kazkhrom plant (Eurasian Resources Group [ERG])		Aktobe City	NA
Ferrosilicon	do.		do.	NA
Ferrosilicochromium	do.		do.	NA
Silicomanganese	do.		do.	NA
Do.	Taraz Metallurgical Plant LLP (SAT & Co.)		Taraz, Zhambyl Province	NA
Do.	Temirtau Electrometallurgical Complex		Temirtau, Karagandy Province	NA
Gallium	AO Aluminium of Kazakhstan [Eurasian Resources Group (ERG)]		Pavlodar	NA
Gold:				
Mine production	TOO Altyntau Kokshetau [TOO Kazzinc (Glencore plc, 69.61%)]		Northern Kazakhstan	NA
Do.	Kazakhmys plc		do.	NA
Do.	Polyus Gold International, Ltd.		do.	NA
Do.	Polymetal International plc		do.	NA
Do.	Nord Gold N.V.		Suzdal Mine	NA
Do.	GMK Kazakhaltyn		Northern Kazakhstan	NA
Do.	AO AK Altyntalmas (Aquila Gold DV)		Eastern Kazakhstan	NA
Do.	TOO Yubileynoye		Aktobe Province	NA
Refined kilograms	TOO Tau-Ken Altyn (Government)		Astana	50,000
Do.	do.	Ust-Kamenogorsk refinery (TOO Kazzinc)	Oskemen	8,000
Do.	do.	TOO Kazakhmys	Central Kazakhstan	10,000
Indium	TOO Kazzinc (Glencore plc, 69.61%)		NA	NA
Iron and steel:				
Pig iron thousand metric tons	ArcelorMittal Temirtau		Temirtau, Karagandy Province	5,700
Steel, crude do	do.	do.	do.	6,000
Iron ore, marketable, gross weight do.	do.	JSC Sokolov-Sarbai Mining Production Association [Eurasian Natural Resources Corp. plc (ENRC)]	4 open pit mines and 1 underground mine in Kostanay Province	20,000
Do.	do.	TOO Orken (ArcelorMittal Temirtau)	Karagandy Province	5,000
Lead:				
Mine production, recoverable Pb content of ore	TOO Kazzinc (Glencore plc, 69.61%): Ridder complex: Shubinsky Mine		15 kilometers east of Ridder	630
Do.	Tishinsky Mine		15 kilometers southwest of Ridder	15,000
Do.	Zyrianovsk complex: Maleevsky Mine		15 kilometers north of Zyryanovsk	26,000
Do.	TOO ShalkiyaZinc Ltd.		Shalkiya Mine, 15 kilometers northeast of Zhanakorgan city	NA
Concentrate, Pb content	TOO Kazzinc (Glencore plc, 69.61%): Ridder concentrator		Ridder, East Kazakhstan Province	NA
Do.	Zyrianovsk concentrator		Zyryanovsk, East Kazakhstan Province	NA
Do.	TOO ShalkiyaZinc Ltd.		Kentau concentrating plant, South Kazakhstan Province	NA
Do.	TOO Nova Zinc (JSC Chelyabinsk Zinc Plant)		Akzhal city	4,000

See footnotes at end of table.

TABLE 2—Continued
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^c
Lead:—Continued				
Metal		Chimkent metallurgical plant (JSC Yuzhpolimetall)	Shymkent	NA
Do.		Ust-Kamenogorsk metallurgical complex [TOO Kazzinc (Glencore plc, 69.61%)]	Oskemen (also known as Ust-Kamenogorsk)	130,000
Limestone		Keregetas limestone mine	Keregetas, South Kazakhstan Province	NA
Magnesium, metal		Ust-Kamenogorsk titanium-magnesium plant	do.	NA
Manganese, crude ore, Mn content		Facilities: Kazmarganets {Kazchrome JSC [Eurasian Natural Resources Corp. plc (ENRC)]} Zhairesmskiy GOK ³ [Eurasian Natural Resources Corp. plc (ENRC)] Atasurda mining and processing complex (TOO Orken) TOO Arman 100 Temirtau electrometallurgical complex	Locations: Tur and East Kamys Mines, Karagandy Province Perstenevsky, Ushkatyn III, Zhomart and Zapadny Zhomart Mines near Zhairam city Atasu 170 kilometers east of Zhezkazgan, Karagandy Province Temirtau, Karagandy Province	400,000 ⁵
Minor metals (indium, selenium, tellurium, thallium, and so forth)		Belogorskiy rare-metals plant	Asubulak, East Kazakhstan Province	NA ⁶
Do.		Chimkent metallurgical plant (JSC Yuzhpolimetall)	Shymkent	NA ⁶
Do.		Ust-Kamenogorsk metallurgical complex [TOO Kazzinc (Glencore plc, 69.61%)]	Oskemen (also known as Ust-Kamenogorsk)	NA
Natural gas	million cubic meters	Companies: Tengizchevroil (Chevron Corp., 50%; KazMunaiGas JSC, 20%; ExxonMobil Kazakhstan Inc., 25%; LukArco B.V., 5%) Karachaganak Petroleum Operating B.V. (BG Group plc., 29.25%; ENI S.p.A., 29.25%; Chevron Corp., 18%; OAO Lukoil, 13.5%; KazMunaiGas JSC, 10%) Additional production at smaller fields	Locations: Tengiz and Korolev fields Karachaganak field NA	48,000 ⁵
Niobium, metal		Ulba Metallurgical Plant (AO NAK Kazatomprom)	Oskemen (also known as Ust-Kamenogorsk)	NA
Petroleum:				
Crude	thousand 42-gallon barrels	Tengizchevroil (Chevron Corp., 50%; KazMunaiGas JSC, 20%; ExxonMobil Kazakhstan Inc., 25%; LukArco B.V., 5%) Karachaganak Petroleum Operating B.V. (BG Group plc., 29.25%; ENI S.p.A., 29.25%; Chevron Corp., 18%; OAO Lukoil, 13.5%; KazMunaiGas JSC, 10%) CNPC AktobeMunaiGas (China National Petroleum Corp., 85.42%) PetroKazakhstan Inc. (China National Petroleum Corp., 67%, and KazMunaiGas JSC, 33%) Mangistaumunaigaz JSC Ozenmunaigas (KazMunaiGas JSC) Embamunaigas (KazMunaiGas JSC) JV Kazgermunai LLP (KazMunaiGas JSC) JSC Karazhanbasmunai (CITIC Group and KazMunaiGas JSC) North Buzachi oilfield Additional producers	Tengiz and Korolev fields Karachaganak field Aktobe Province South Turgai basin Mangystau Province do. Western Kazakhstan Kyzylorda Province Mangistau Province do. NA	600,000 ⁵

See footnotes at end of table.

TABLE 2—Continued
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity		Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^e
Petroleum:—Continued				
Refined, crude petroleum throughput	42-gallon barrels per day	JSC Pavlodar Oil Chemistry Refinery (KazMunaiGas JSC, 58%)	Pavlodar	120,000
Do.	do.	Atyrau Refinery (KazMunaiGas, 99.49%)	Atyrau	100,000
Do.	do.	PetroKazakhstan Inc. (China National Petroleum Corp., 67%, and KazMunaiGas JSC, 33%)	Shymkent	110,000
Phosphate rock, beneficiated		Chulaktau mining and processing complex (Kazphosphate LLC)	Chulaktau, Zhambyl Province	NA
Do.		Karatau mining and processing complex (Kazphosphate LLC)	Zhanatas, Zhambyl Province	NA
Do.		Temir Service LLP (Sunkar Resources plc)	Chilisai deposit, northwestern Kazakhstan	NA
Rare-earth metals, products		SARECO (AO NAK Kazatomprom, 51%, and Sumitomo Corp., 49%)	Stepnogorsk	1,500
Rhenium:				
Ammonium perrhenate (containing 69.2% Re)		Zhezkazganredmet (RedMet) (Government owned)	Zhezkazgan, Karagandy Province	NA
In tailings from copper ore processing		Balkhash copper mining-metallurgical complex (Kazakhmys plc)	Karagandy Province	NA
Silicon, metal		Silicium Kazakhstan LLP	do.	12,500
Silver, refined		Facilities: Chimkent metallurgical plant (JSC Yuzhpolimetall) Ust-Kamenogorsk metallurgical complex [TOO Kazzinc (Glencore plc, 50.7%)] Balkhash refinery (Kazakhmys plc)	Locations: Shymkent Oskemen (also known as Ust-Kamenogorsk) Karagandy Province	1,000 ⁵
Tantalum, metal		Ulba Metallurgical Plant (AO NAK Kazatomprom)	Oskemen (also known as Ust-Kamenogorsk)	NA
Titanium:				
Ore		Tioline LLP	Obuhovskoye deposit, just north of Kokshetau, Akmola Province	NA
Do.		Satpaevsk Titanium Mines Ltd. (Ust-Kamenogorsk titanium-magnesium plant, 49%)	Bektemir deposit, East Kazakhstan Province	NA
Do.		Shokash deposit	Aktobe Province	NA
Metal (sponge)		AO Ust-Kamenogorsk titanium-magnesium plant (UKTMK)	Oskemen (also known as Ust-Kamenogorsk)	35,000

See footnotes at end of table.

TABLE 2—Continued
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^e
Uranium, U content	Companies:	Locations:	24,000 ⁵
	Akbastau JV (AO NAK Kazatomprom, 50%, and Uranium One Inc., 50%)	Blocks 1, 3, and 4 of the Budenovskoye deposit, Sozak Region, South Kazakhstan Province	
	Appak LLP (AO NAK Kazatomprom, 65%; Sumitomo Corp., 25%; Kansai Electric Power Co. Inc., 10%)	West Mynkuduk Mine of the Mynkuduk deposit, Sozak Region, South Kazakhstan Province	
	Baiken-U LLP (AO NAK Kazatomprom, 60%, and Japanese consortium, 40%)	Block No. 2 of the Kharassan deposit, Zhanakorgan Region, Kyzylorda Province	
	Betpak Dala JV (Uranium One Inc., 70%, and AO NAK Kazatomprom, 30%)	Akdala Mine and Site No. 4 (South Inkai) Mine of the Inkai deposit, Sozak Region, South Kazakhstan Province	
	Inkai JV (Cameco Corp., 60%, and AO NAK Kazatomprom, 40%)	Blocks 1, 2, and 3 of the Inkai deposit, Sozak Region, South Kazakhstan Province	
	Karatau LLP (AO NAK Kazatomprom, 50%, and UraniumOne Inc., 50%)	Block No. 2 of the Budenovskoye deposit, Sozak Region, South Kazakhstan Province	
	Katco JV (Areva Group, 51%, and AO NAK Kazatomprom, 49%)	Tortkuduk Mine and Block No. 1 of the South Moinkum deposit, Sozak Region, South Kazakhstan Province	
	JSC Ken Dala.kz (AO NAK Kazatomprom, 100%)	Central Mynkuduk deposit, Sozak Region, South Kazakhstan Province	
	Kyzylkum LLP (Japanese consortium, 40%; Uranium One Inc., 30%; AO NAK Kazatomprom, 30%)	Block No. 1 of the Kharassan deposit, Zhanakorgan Region, Kyzylorda Province	
	Mining Company LLP (AO NAK Kazatomprom, 100%); Mining Group No. 6 LLP	North and South Karamurun Mines, Shieli and Zhanakorgan Regions, Kyzylorda Province	
	Stepnoye Mining Group LLP	Uvanas and East Mynkuduk Mines, Sozak Region, South Kazakhstan Province	
	Taukent Mining Chemical Plant LLP	Kanzhugan and South Moinkum Mines, Sozak Region, South Kazakhstan Province	
	Semizbai-U (AO NAK Kazatomprom and its subsidiary, Mining Company LLP, 51%, and China Guangdong Nuclear Power Group, 49%)	Irkol Mine in Kyzylorda Province and Semizbai Mine, on the border of North Kazakhstan and Akmola Province	
	Stepnogorsk Mining-Chemical Complex LLP (AO NAK Kazatomprom, 100%)	Shantobe Mine of the Vostok and Zvezdnoe deposits, 300 kilometers west of Stepnogorsk	
	JV Zarechnoye JSC (AO NAK Kazatomprom, 49.67%, and JSC Atomredmetzoloto, 49.67%)	Zarechnoye and South Zarechnoye deposits, Orlarski Region, South Kazakhstan Province	

See footnotes at end of table.

TABLE 2—Continued
KAZAKHSTAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016^{1,2}

(Metric tons unless otherwise specified)

Commodity	Major operating companies, main facilities, or deposits	Location or deposit names	Annual capacity ^e
Zinc:			
Mine production, Zn content	Kazakhmys plc:		
	East Region complex:		
	Artemyevsky Mine	East Kazakhstan Province	90,000
Do.	Belousovsky Mine	do.	NA
Do.	Irtysky Mine	do.	18,000
Do.	Nikolaevsky Mine	do.	20,000
Do.	Orlovsky Mine	do.	78,200
Do.	Yubileyno-Snegirikhinsky Mine	do.	16,500
Do.	Central Region complex: Abyz Mine	Karagandy Province	13,500
Do.	TOO Kazzinc (Glencore plc, 69.61%):		
	Ridder complex:		
	Ridder-Sokolny Mine	East Kazakhstan Province	NA
Do.	Shubinsky Mine	do.	4,000
Do.	Tishinsky Mine	do.	65,000
Do.	Shaimerden deposit	Kostanay Province	NA
Do.	Zyrianovsk complex: Maleevsky Mine	do.	135,000
Do.	TOO Nova Zinc (JSC Chelyabinsk zinc plant)	Akshatau, Karagandy Province	NA
Do.	TOO ShalkiyaZinc Ltd.	Kyzylorda Province	NA
Concentrate, Zn content	Kazakhmys plc:		
	East Region complex:		
	Artemyevsky concentrator	do.	55,000
Do.	Belousovsky concentrator	do.	5,800
Do.	Irtysky concentrator	do.	11,000
Do.	Nikolaevsky concentrator	do.	36,000
Do.	Orlovsky concentrator	do.	60,000
Do.	Karaganda Region complex: Karagaily concentrator	Karagandy Province	8,000
Do.	TOO Nova Zinc (JSC Chelyabinsk zinc plant)	Akshatau, Karagandy Province	35,000
Do.	AO ShalkiyaZinc Ltd.	Kyzylorda Province	NA
Do.	TOO Kazzinc (Glencore plc, 69.61%):		
	Ridder concentrator	do.	NA
Do.	Zyrianovsk concentrator	Zyryanovsk, East Kazakhstan Province	NA
Metal	TOO Kazzinc (Glencore plc, 69.61%):		
	Ridder zinc refinery	East Kazakhstan Province	110,000
Do.	Ust-Kamenogorsk metallurgical complex	do.	190,000

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

¹Table includes data available through December 21, 2016.

²Many 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.

³GOK is the abbreviation for gorno-obogatitelnyi kombinat, which translates as “mining and beneficiation complex.”

⁴Production at the Konyrat (formerly known as the Kounrad Mine) was stopped in 2005 owing to high production costs; since then, several attempts had been made to restart production.

⁵Capacity estimates are totals for all enterprises that produce that commodity.

⁶It is unknown which, if any, rare metals were still being produced at this facility.