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The Mineral Industry of Ukraine

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In 2016, Ukraine was among the world's leading producers of several minerals. It was one of the world's top five producers of gallium; the 3d-ranked producer of rutile (11.9% of world output); the 5th-ranked producer of titanium sponge (4.5% of world output) and bromine (1.0% of world output); the 6th-ranked producer of graphite (1.3% of world output); the 7th-ranked producer of iron ore (2.7% of world output); the 8th-ranked producer of manganese ore (2.7% of world output) and pig iron (2.1% of world output); the 9th-ranked producer of kaolin (5.1% of world output) and peat (2.2% of world output); the 10th-ranked producer of ilmenite (3.8% of world output) and raw steel (1.5% of world output); and the 11th-ranked producer of alumina (1.2% of world output) and bentonite (1.1% of world output). The country had significant coal and uranium resources but depended on imported petroleum and natural gas (Apodaca, 2018; Bedinger, 2018a, b; Bray, 2018; Corathers, 2018; Fenton, 2018; Jaskula, 2018; Olson, 2018; Schnebele, 2018; Tuck, 2018; West, 2018).

In 2016, Ukraine continued to have decreases in production throughout the economy following the political developments of 2014. In late February 2014, the President of Russia ordered the invasion of Ukraine's Crimea Peninsula, claiming that the action was needed to protect ethnic Russians living there. Two weeks later, in March, a referendum was held regarding the integration of Crimea into the Russian Federation. The referendum was not recognized by the Governments of Ukraine, the United States, nor the European Union, nor by the United Nations General Assembly. After the referendum, the Ukraine Government asserted that Crimea continued to be a part of Ukraine. In addition, parts of eastern Ukraine did not recognize the new Government of Ukraine and formed their own separatist republics with their own administration. This action resulted in armed conflicts with the Government of Ukraine that continued throughout 2016. In September 2014, the representatives of Ukraine, Russia, and the separatist republics signed a cease-fire agreement, but intermittent fighting continued in 2015 and 2016 (U.S. Central Intelligence Agency, 2017).

Minerals in the National Economy

In 2016, Ukraine's real gross domestic product (GDP) increased by 2.4% compared with a 9.8% (revised) decrease in 2015.[1] The nominal GDP in 2016 amounted to $93.1 billion.[2] Total industrial production in 2016 was 1.77 trillion hryvnias (about $69.0 billion). Mining and quarrying constituted 230.0 billion hryvnias (about $9.0 billion), or 13.0%. Within the mining and quarrying sector, mining of metal ores accounted for 38.8%; extraction of crude petroleum and natural gas, 36.1%; mining of coal and lignite, 18.0%; and quarrying of stone, sand, and clay, 5.7%. The State Statistics Committee of Ukraine reported that, in 2016, the share of manufacturing in industrial production was 64.3%. The share of metallurgical production in industrial production was 17.1%; the share of chemical and chemical products in industrial production was 3.2%; and the share of coke and refined petroleum in industrial production was 3.3%. Among metallurgical products, the manufacture of basic metals was valued at 274.3 billion hryvnias (about $10.7 billion) and the remainder was from fabricated metal products. Among the coke and petroleum products, coke accounted for 51.1% of the total value and petroleum products accounted for the remainder. Production of cement, lime, and plaster accounted for 12.4 billion hryvnias ($484 million), or 0.7% of total industrial production (State Statistics Service of Ukraine, 2017a, p. 259–287; 2017c; 2018, p. 13–22; U.S. Central Intelligence Agency, 2017).

Production

The production of most mineral commodities decreased in 2016. The output of kaolinitic clay decreased by 78%; manganese metal, by 27%; feldspar and nitrogen content of ammonia, by 24% each; salt, by 17%; ferronickel, by 16%; primary magnesium metal and titanium sponge, by 12% each; zirconium mineral concentrates, by 11%; and manganese mine production, by 10%. Production of peat for horticultural use increased by 73%; kaolin, by 29%; ferromanganese, by 19%, silicomanganese, by 17%; ferrosilicon, by 12%; and rutile, by an estimated 11%. These and other production data are in table 1.

Mineral Trade

The total value of Ukraine's exports of goods and services decreased to about $45.1 billion in 2016 from $46.8 billion in 2015; exports of goods decreased to $36.4 billion in 2016 from $38.1 billion in 2015. The value of total exports was equal to about 48% of Ukraine's GDP in 2016. Ukraine's leading export category in terms of value was ferrous metals and, in 2016, exports of nonprecious metals were valued at $8.3 billion and made up 22.8% of the total value of all exports of goods; exports of cinder, ores, and slag were valued at $2.0 billion and made up 5.5% of the total value of exports of goods. Another $447 million (1.2% of the total value of exports of goods) was contributed by exports of mineral fuels and petroleum products. Exports of salt, soil, stones, and sulfur were worth $328 million (0.9% of the total value of exports of goods). The value of exports of mineral products and metals made up about 30.4% of the total value of exports of goods. The main export partners of Ukraine were Russia (which received 9.9% of Ukraine's exported goods), China (6.3%), Egypt (6.2%), Poland (6.1%), Turkey (5.6%), Italy (5.3%), India (5.2%), Germany (3.9%), Hungary (2.9%), and Spain (2.8%) (State Statistics Service of Ukraine, 2017b, p. 6–42).

[1]The data in this report exclude the territory of the Autonomous Republic of Crimea, the city of Sevastopol, and parts of the zone of anti-terrorist operations.

[2]Where necessary, values have been converted from Ukrainian hryvnia (UAH) to U.S. dollars (US$) at an annual average exchange rate of UAH25.630=US$1.00 for 2016 and UAH 21.797=US$1.00 for 2015.

The total value of Ukraine's imports of goods and services was about $44.6 billion in 2016 and $43.0 billion in 2015. The total value of Ukraine's imports of goods was $39.2 billion in 2016 and $37.5 billion in 2015. The leading imported commodities were mineral fuels and refined petroleum products, which made up about 20.0% of the total value of imports of goods in 2016. The country's main import partners in 2016 were Russia (which supplied 13.1% of Ukraine's imports); China (11.9%); Germany (11.0%); Belarus (7.1%); Poland (6.9%); the United States (4.3%); and France (3.9%) (State Statistics Service of Ukraine, 2017b, p. 6–42).

Commodity Review

Metals

Aluminum.—In September 2016, the Zaporozhye Aluminum Complex (ZAlK), which was previously owned and operated by United Company RUSAL of Russia, restarted production of aluminum wire rods after 2 years of being idle. The start of production followed about 4 months of preparations. Wire rod was first produced at ZAlK in 1999, and production was stopped and the production line mothballed in June 2014. Reportedly, the production capacity was 18,000 metric tons per year of wire rod, which was produced from aluminum slab; the company did not disclose the source of the slab. As of September, the plant had created 55 jobs and expected to create 35 more (Interfax-Ukraine, 2016; Yarosh, 2016).

In 2015, ZAlK had been nationalized by the Government. In June 2015, the General Prosecutor's office of Ukraine announced the return of the controlling block of shares (68.01%) to the Fund of Government Property of Ukraine. RUSAL continued to hold about a 30% interest in the plant. Earlier, in October 2014, the Supreme Economic Court of Ukraine had decided to return the shares of ZAlK to the Government. Later, in June 2015, RUSAL appealed the decision of the Ukraine Court to the European Court of Human Rights (ECHR), but the appeal was not successful. The Fund of Government Property appointed a new director in 2015, but in November 2016, the Government of Ukraine indicated that it planned to privatize ZAlK again. At yearend, no additional details about potential privatization were available (Mineral.ru, 2015; Liga.net, 2016; Minprom.ua, 2016, 2017).

Ferroalloys.—In 2016, production of ferroalloys in Ukraine increased by 11.0% to 1.1 million metric tons (Mt). In particular, the output of ferromanganese increased by 19.1% to 104,470 metric tons (t); silicomanganese, by 16.8% to 814,970 t; and ferrosilicon, by 12.0% to 101,000 t. The production of ferronickel decreased by 16.1% to 79,900 t. The Zaporozhskiy ferroalloys plant had restarted production of manganese metal in December 2014 and, in 2016, the plant produced 7,420 t, which was a 26.5% decrease compared with production in 2015 (Liga.net, 2017; Ubr.ua, 2016a, b; 2017).

In 2016, Ukraine had three ferroalloy plants—the Nikopol'skiy, the Stakhanovskiy, and the Zaporozhskiy; the Nikopol'skiy plant was the largest of the three. All three plants were controlled by the PrivatBank Group (also known as the Privat Group), and significant shares of the Nikopol'skiy plant were owned by the EastOne Investment Group. The Stakhanovskiy plant stopped production in July 2014 because of the military operations in eastern Ukraine and continued to be idle throughout 2015 and 2016 (Ubr.ua, 2016a, b).

Gold.—In September, Avellana Gold, which was registered in Cyprus, announced that it had obtained exploration and mining licenses for the production of polymetallic ores in the Transcarpathian region in western Ukraine. This would be the first project involving underground mining of metals with the participation of junior mining companies since Ukraine's independence in the early 1990s. The company expressed its willingness to invest in Ukraine despite the country's difficult financial situation. The company had pointed out that regulatory risks and the lack of tax stimuli practically precluded the mass influx of other junior companies to Ukraine. Avellana Gold stated that it had requested from the State Service for Geology and Subsoil (Gosnedra) that the license requirements and the Government's regulations of the mining sector remain largely unchanged during the life of the project. According to published reports, the company intended to develop the Berezhovskoye, the Kvasovskoye, and the Muzhievskoye polymetallic deposits, which contain gold, lead, silver, and zinc (Korrespondent.net, 2016; Lubetskiy, 2016; Trust.ua, 2016; Ukropnews24.com, 2016).

Manganese.—The two leading manganese producers in Ukraine were the PAO Marganetskiy GOK (MGOK) and the Odzhonikidzevskiy GOK (OGOK), both located in the Dnipropetrovs'ka Oblast' and owned by the PrivatBank Group. OGOK was the leading producer of manganese ore in Ukraine and was mining ore using an open pit method. The MGOK mined the eastern part of the Nikopol'skoye deposit; mining included underground (about 80% of output) and open pit methods. MGOK included five underground mines, two open pit mines, two beneficiation plants, a beneficiation and agglomeration plant, and an industrial chemical research facility. Both mining complexes were idle at the beginning of 2016 owing to unfavorable economic conditions on the world manganese markets. However, in 2016, OGOK increased production by 18.5% compared with that of 2015, to 738,000 t of manganese concentrate (Delo.ua, 2016; Interfax-Ukraine, 2017; Ubr.ua, 2017).

Industrial Minerals

Cement.—In 2016, Ukraine's cement production increased by 6.0% compared with the cement output in 2015 to about 9.0 Mt. According to the Ukrcement, the association of cement producers of Ukraine, the sales volume of Ukraine's cement market increased in 2016 by 10% and reached 8.95 Mt. Clinker production in 2016 was 6.4 Mt, which was a 10% increase compared with that of 2015, and was the result of increased production in the construction sector. Production of blocks and bricks made of cement, concrete, and manufactured stone increased by 7.4% to 3.5 Mt; production of ready-to-use liquid concrete increased by 25.6% to 14.07 Mt; and production of dry construction mixes increased by 6.1% to 1.46 Mt. The increase in cement production in 2016 reversed the downward trend that dominated Ukraine's cement sector in the previous 5 years. Overall, between 2011 and 2015, cement production decreased by about 20% (Actin.com, 2017).

Annual cement production per capita in Ukraine was about 210 kilograms per capita, which was lower than in Russia (374 kilograms per capita) and in the neighboring EU countries (between 600 and 800 kilograms per capita). In 2016, the list of leading producers of cement remained unchanged from that of 2015 and included PAO Podolsk Cement (CRH plc), PAO Nikolaevtsement (CRH plc), OOO Cement (CRH plc), PAO Ivano-Frankovsktsement, PAO Dyckerhoff Cement Ukraine, PAO HeidelbergCement Ukraine, and PAO Eurocement Ukraine (Ukrcement.com, 2017).

In 2016, cement exports from Ukraine decreased by 40.1% to 239,600 t. Cement was exported to Moldova, which received 34.9% of all exports, Romania (26.6%), Belarus (23.0%), Hungary (14.8%), and Poland (0.7%). Cement imports increased in 2016 by 40.9% to 40,980 t. Imports of cement to Ukraine were provided by Turkey (which shipped 73.9% of all cement imports), Belarus (16.9%), Slovakia (3.1%), Poland (2.3%), Germany (1.3%), France (0.9%), and Moldova (0.8%). The increase in imports was owing to the overall stabilization of economic conditions in the country, the removal of the supplemental import tariff from January 2016, and the reduction of import tariffs on cement imported from the European Union (Ukrcement.com, 2017).

Mineral Fuels and Related Materials

Petroleum and Natural Gas.—In 2016, Ukraine had seven refineries, but only two—the Kremenchug oil refinery (Ukrtatnafta) and the Shebelinskiy gas refinery (Ukrgazdobycha, Government)—were operational. Ukrtatnafta was managed by the PrivatBank Group and its original design capacity, measured in throughput, was 18.6 million metric tons per year (Mt/yr) (about 146 million barrels per year (Mbbl/yr), although in the past decade, the capacity had been downgraded to 7 Mt/yr (about 55 Mbbl/yr). The PrivatBank Group owned a network of about 1,600 gas stations in Ukraine, which constituted about 25% of the retail gasoline market. It was expected that, in 2017, the Kremenchug refinery would increase production after it signed contracts for a total shipment of 1.3 Mt of crude petroleum from Azerbaijan and Iran. The Shebelinskiy gas refinery had a throughput capacity of 1 Mt/yr (about 7.9 Mbbl/yr) and was processing gas condensate and light petroleum. In 2016, the Shebelinskiy refinery switched to the production of refinery products by Euro-4 and Euro-5 standards. As of 2016, Ukraine was 80% dependent on imports for refinery products, more than two-thirds of which were imported from Belarus (Belchemoil.by, 2016; Hvylya.net, 2017).

The other five oil refineries—the Drogobychskiy, the Khersonskiy, the Lisichanskiy, the Nadvoryanskiy, and the Odessa—were not in operation in 2016. Three of these refineries—the Drogobychskiy, the Khersonskiy, and the Nadvoryanskiy—stopped production between 2005 and 2007 because of outdated equipment and unprofitable production. As of 2016, it was unlikely that any of these refineries could restart production without a complete modernization that would require about a $1 billion investment for each of them. The Odessa refinery had stopped production in 2014 and planned to reopen in the near future. The Odessa refinery had a relatively low design capacity of 2.5 Mt/yr (about 19.5 Mbbl/yr) and, when in operation, the share of light refinery products, such as gasolines, was only 50%, which was much lower than the 75% average that was common for modern refineries. The Lisichanskiy refinery, on the other hand, had an original design capacity of 24 Mt/yr (about 188 Mbbl/yr), but by the end of the 1990s when TNK of Russia acquired the plant, the actual capacity was only 8 Mt/yr (about 63 Mbbl/yr). The Lisichanskiy refinery stopped operations in 2012 because of inefficiency and lack of investment. In 2014, Rosneft of Russia acquired TNK and its assets and intended to reopen the refinery. Later in 2014, however, the refinery was partially damaged because of the military operations in eastern Ukraine and it was not clear whether the Lisichanskiy refinery could be restored and reopened (Belchemoil.by, 2016; Kuyun, 2016, 2017; Ukrenergy, 2017).

Outlook

Ukraine's mining, metallurgy, and other mineral sectors had significant setbacks during the past few years. Primary aluminum production was halted and it was not clear whether another owner could make production profitable, ferroalloy plants require inexpensive electricity, coal mines and petroleum refineries were outdated and required significant investments, and iron ore mines and steel plants were struggling to break even.

Ukraine is likely to remain one of the world's leading producers of manganese ore, titanium ore, and titanium sponge. Remaining competitive in metallurgy may prove to be difficult owing to high energy requirements, the need for new investments, and the conflicting interests of plant owners and the Government. It remains to be seen if the Government and the owners of privately owned industrial facilities will be able to reach compromises and if the country will be able to attract new investments to move the mineral and metallurgical industries forward.

References Cited

Actin.com, 2017, Rynok tsementa 2016 [Cement market 2016]: Actin.com, May 17. (Accessed February 1, 2018, at https://actin.com.ua/a297606-rynok-tsementa-2016.html.)

Apodaca, L.E., 2018, Peat: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 118–119.

Bedinger, G.M., 2018a, Titanium and titanium dioxide: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 174–175.

Bedinger, G.M., 2018b, Titanium mineral concentrates: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 176–177.

Belchemoil.by, 2016, Novyi etap Ukrainskoy neftepererabotki [A new stage for Ukrainian oil refining]: Belchenoil.by, December. (Accessed February 1, 2018, at http://belchemoil.by/stati/tema-nomera/novyj-etap-ukrainskoj-neftepererabotki/.)

Bray, E.L., 2018, Bauxite and alumina: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 30–31.

Corathers, L.A., 2018, Manganese: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 104–105.

Delo.ua, 2016, Margantsevyye kombinaty Privata prostaivayut s nachala goda [Manganese complexes owned by Privat are idle since the beginning of the year]: Delo.ua, February 19. (Accessed February 1, 2018, at https://delo.ua/business/margancevye-kombinaty-privata-prostaivajut-s-nachala-goda-312370/.)

Fenton, M.D., 2018, Iron and steel: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 82–83.

Hvylya.net, 2017, Iz-za bezalabernosti Ukraina poteryala za 7 let $50 mlrd, no eto ne konets [Because of fecklessness, Ukraine lost $50 billion in 7 years, but this is not the end yet]: Hvylya.netMarch 5. (Accessed February 1, 2018, at http://hvylya.net/analytics/economics/iz-za-bezalabernosti-ukraina-poteryala-za-7-let-50-mlrd-no-eto-ne-konets.html.)

Interfax-Ukraine, 2016, ZAlK vozobnovil proizvodstvo alyuminievoy katanki posle dvuhletnego prostoya [ZAlK restarted production of wire rods after a 2-year long stoppage]: Interfax-Ukraine, September 1. (Accessed February 1, 2018, at http://interfax.com.ua/news/economic/367288.html.)

Interfax-Ukraine, 2017, OGOK v 2017 g investiruyet v razvitiye predpriyatiya 350 mln grn [OGOK will invest 350 million hryvniya in development in 2017]: Interfax-Ukraine, March 2. (Accessed February 1, 2018, at http://interfax.com.ua/news/economic/400968.html.)

Jaskula, B.W., 2018, Gallium: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 62–63.

Korrespondent.net, 2016, Kompaniya s Kipra budet dobyvat' zoloto na Ukraine [A Cyprus company will mine gold in Ukraine]: Korrespondent.net, September 2. (Accessed February 1, 2018, at https://korrespondent.net/business/economics/3739672-kompanyia-s-kypra-budet-dobyvat-zoloto-v-ukrayne.)

Kuyun, Sergei, 2016, Patsient skoree mertv: u Ukrainskih NPZ perspektiv net [The patient is more likely dead—Ukraine's refineries have no future]: Forbes-Ukraine, January 28. (Accessed February 1, 2018, at http://forbes.net.ua/opinions/1409918-pacient-skoree-mertv-u-ukrainskih-npz-perspektiv-net.)

Kuyun, Sergei, 2017, Vosstaniye pererabotki. NPZ Ukrainy uvelichili ob'em pererabotki nefti [Refining rising. Ukraine's refineries increased volume of oil refining]: Energy Reform, August 2. (Accessed February 1, 2018, at http://reform.energy/analitics/vosstanie-pererabotki-npz-ukrainy-uvelichili-obem-pererabotki-nefti-2115.)

Liga.net, 2016, Rusal budet trebovat' ot Ukrainy vozmesheniya usherba ot sanktsiy [RUSAL will demand compensation from Ukraine for its losses caused by the sanctions]: Liga.net, October 18. (Accessed February 1, 2018, at http://biz.liga.net/all/industriya/novosti/3512369-rusal-budet-trebovat-ot-ukrainy-vozmeshcheniya-ushcherba-ot-sanktsiy.htm.)

Liga.net, 2017, V Ukraine sushestvenno vyroslo proizvodstvo ferrosplavov [Production of ferroalloys in Ukraine increased significantly]: Liga.net, January 16. (Accessed February 1, 2018, at http://biz.liga.net/ekonomika/industriya/novosti/3585191-v-ukraine-sushchestvenno-vyroslo-proizvodstvo-ferrosplavov.htm.)

Lubetskiy, Dmitriy, 2016, Avellana Gold razreshili dobyvat' v Ukraine polimetally [Avellana Gold obtained a permission to mine polymetallic deposits in Ukraine]: Hubs.ua, September 2. (Accessed February 1, 2018, at http://hubs.ua/authority/avellana-gold-razreshili-doby-vat-v-ukraine-polimetally-86580.html.)

Mineral.ru, 2015, "Rusal" osporit v ESPCh natsionalizatsiyu Zaporozhskogo alyuminievogo kombinata [RUSAL will dispute the nationalization of the Zaporozhskiy Aluminum Complex in the European Court on Human Rights]: Mineral.ru, June 25. (Accessed February 1, 2018, at http://mineral.ru/News/74565.html.)

Minprom.ua, 2016, Groysman reshil snova prodat' ZAlK [Groysman decided to sell ZAlK again]: Minprom.ua, December 30. (Accessed February 1, 2018, at https://minprom.ua/news/223326.html.)

Minprom.ua, 2017, ZAlK sokratil chistyi ubytok po itogam 2016 gods [ZAlK reduced net loss by the end of 2016]: Minprom.ua, March 16. (Accessed February 1, 2018, at https://www.minprom.ua/news/226919.html.)

Olson, D.W., 2018, Graphite (natural): U.S. Geological Survey Mineral Commodity Summaries 2018, p. 72–73.

Schnebele, E.K., 2018, Bromine: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 38–39.

State Statistics Service of Ukraine, 2017a, Statistical yearbook of Ukraine for 2016: Kyiv, Ukraine, State Statistics Service of Ukraine, 611 p. (Accessed February 4, 2018, at http://www.ukrstat.gov.ua/druk/publicat/kat_u/2017/zb/08/Ukr_fig_2016_e.zip /.)

State Statistics Service of Ukraine, 2017b, Ukraine's foreign trade, 2016: Kyiv, Ukraine, State Statistics Service of Ukraine, 86 p. (Accessed February 4, 2018, at http://www.ukrstat.gov.ua/druk/publicat/kat_u/2017/zb/06/zb_ZTU_2016.zip /.)

State Statistics Service of Ukraine, 2017c, Volume of industrial products sold, by types of activity in 2016: Kyiv, Ukraine, State Statistics Service of Ukraine. (Accessed February 4, 2018, via http://www.ukrstat.gov.ua/.)

State Statistics Service of Ukraine, 2018, National accounts of Ukraine for 2016: Kyiv, Ukraine, State Statistics Service of Ukraine, 195 p. (Accessed February 4, 2018, at http://www.ukrstat.gov.ua/druk/publicat/kat_u/2018/zb/02/zb_nru2016pdf.zip.)

Trust.ua, 2016, Zoloto Zakarpat'ya budet dobyvat' Avellana Gold [Avellana Gold will mine gold in Transcarpathia]: Trust.ua, September 2. (Accessed February 1, 2018, at http://www.trust.ua/news/130592-zoloto-zakarpata-budet-dobyvat-avellana-gold.html.)

Tuck, C.A., 2018, Iron ore: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 88–89.

Ubr.ua, 2016a, Ukraina uvelichila proizvodstvo ferrosplavov na 3,2% [Ukraine increased production of ferroalloys by 3.2%]: Ubr.ua, June 14. (Accessed February 1, 2018, at http://ubr.ua/market/industrial/ukraina-uvelichila-proizvodstvo-ferrosplavov-na-32-409664.)

Ubr.ua, 2016b, V Ukraine vyros ob'em vypuska ferrosplavov [Production of ferroalloys increased in Ukraine]: Ubr.ua, September 12. (Accessed February 1, 2018, at https://ubr.ua/market/industrial/v-ukraine-vyros-obem-vypuska-ferrosplavov-432619.)

Ubr.ua, 2017, V Dneprovskoy oblasti stavyat rekordy po proizvodstvu margantsa [Dnipropetrovs'ka Oblast' has record production of manganese]: Ubr.ua, April 11. (Accessed February 1, 2018, at https://ubr.ua/market/industrial/v-dneprovskoj-oblasti-stavjat-rekordy-po-proizvodstvu-marhantsa-3839651.)

Ukrcement.com, 2017, Proizvodstvo tsementa v Ukraine v 2016 g uvelichilos' na 7,1% [Cement production in Ukraine increased by 7.1% in 2016]: Ukrcement.com, March 10. (Accessed February 1, 2018, at http://www.ukrcement.com.ua/novini/228-proyzvodstvo-tsementa-v-ukrayne-v-2016h-uvelychylos-na-7-1protsent-ukrtsement.html.)

Ukrenergy, 2017, Ukraina: neftepererabotka—persperkivy otrasli [Ukraine: Oil refining—Sector outlook]: Ukrenergy, August 3. (Accessed February 1, 2018, at https://ukrenergy.dp.ua/2017/08/03/ukraina-neftepererabotka-perspektivy-otrasli.html.)

Ukropnews24.com, 2016, Cyprus company Avellana Gold will be engaged in mining of polymetals [sic] in the Transcarpathian region: Ukropnews24.com, September 2. (Accessed February 1, 2018, at https://ukropnews24.com/cyprus-company-avellana-gold-will-be-engaged-in-mining-of-polymetals-in-the-transcarpathian-region/.)

U.S. Central Intelligence Agency, 2017, Ukraine, *in* The world factbook: U.S. Central Intelligence Agency, June 20. (Accessed February 4, 2018, at https://www.cia.gov/library/publications/the-world-factbook/geos/up.html.)

West, D.N., 2018, Clays: U.S. Geological Survey Mineral Commodity Summaries 2018, p. 48–49.

Yarosh, Yaroslav, 2016, ZAlK poshel po nakatannoy [ZAlK went down the wire]: Minprom.ua, September 12. (Accessed February 1, 2018, at https://www.minprom.ua/articles/217670.html.)

TABLE 1
UKRAINE: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2012	2013	2014	2015	2016
METALS						
Aluminum:						
Alumina		1,429,000	1,493,500	1,457,000	1,481,000	1,510,000
Aluminum metal, primary		--	-- [r]	--	--	1,834
Copper, refinery production, secondary		20,000 [r, e]	20,000 [r, e]	20,000 [r, e]	20,000 [r, e]	21,973
Ferroalloys:						
Ferromanganese		163,921	88,626	102,934	87,740 [r]	104,470
Ferronickel:						
Gross weight, electric furnace		119,652	121,586	98,700	95,209	79,900
Ni content		20,600 [r, e]	21,200 [r, e]	18,600 [e]	21,600 [r, e]	18,100
Ferrosilicon, electric furnace[e]		150,000	191,000	142,000	90,200	101,000
Silicomanganese		823,000 [e]	725,000 [r, e]	840,000 [r, e]	698,000 [e]	814,970
Other, unspecified		22,115	15,908	15,326 [r]	19,360 [r]	--
Gallium[e]		11	13	13	9 [r]	9
Germanium, Ge content[e]	kilograms	700	700	600 [r]	500 [r]	500
Iron and steel:						
Pig iron	thousand metric tons	28,484	29,089	24,801	21,878 [r]	23,560
Raw steel	do.	33,511	33,199	27,373	22,935	24,197
Products:						
Pipe		2,014,000	1,812,980	1,407,000 [r]	852,400 [r]	849,000
Rolled		18,457,300	17,782,764	23,830,000 [r]	20,016,000 [r]	21,400,000
Iron ore, mine production:						
Crude ore		176,000,000	185,000,000	184,000,000	175,000,000	167,815,000
Usable ore, concentrate		67,100,000 [r]	70,400,000 [r]	68,300,000 [r]	66,900,000 [r]	62,876,000
Fe content		41,900,000 [r]	44,000,000 [r]	42,700,000 [r]	41,800,000 [r]	39,300,000
Lead, refinery production, secondary		20,000 [r, e]	30,000 [r, e]	30,000 [r, e]	30,000 [e]	28,465
Magnesium metal, primary[e]		9,000 [r]	10,300 [r]	7,200	7,700	6,770
Manganese:						
Mine production, marketable:						
Gross weight		1,234,007	1,524,696	1,526,218	1,477,200	1,328,271
Mn content[e]		396,000	515,000	519,000	502,000	451,000
Metal		14,575	7,200	1,300	10,100	7,420
Titanium mineral concentrates:						
Ilmenite and leucoxene:						
Gross weight		246,800	670,000 [e]	450,000 [e]	350,000 [e]	350,000 [e]
TiO_2 content		145,640	295,000 [e]	200,000 [e]	155,000 [e]	155,000 [e]
Rutile, 95% TiO_2[e]		58,000	162,000	110,000 [r]	90,000	100,000
Sponge		10,300	9,400	7,200	7,700	6,770
Zirconium mineral concentrates[e]		20,000	41,000	27,000	25,000 [r]	22,200
INDUSTRIAL MINERALS						
Bromine[e]		4,100	4,100	3,200 [r]	3,500	3,500
Cement, hydraulic		9,843,000	9,857,000	8,636,000 [r]	8,511,000	9,023,000
Clay and shale:						
Bentonite		219,000	220,000 [e]	210,000 [e]	210,000 [e]	210,000 [e]
Kaolin	thousand metric tons	1,218	1,179	1,426	1,815	2,335
Kaolinitic clays	do.	580	855	2,250	2,510	560
Feldspar, mine production		146,000	134,000	94,506 [r]	44,460 [r]	33,627
Graphite[e]		5,800	5,500	5,000	5,000	5,000
Gypsum, including anhydrite		2,186,000	2,175,000	1,525,000	1,255,000	1,303,000
Lime	thousand metric tons	4,415	3,892	3,134	2,717	2,542
Nitrogen, ammonia, N content	do.	3,440 [r, e]	2,890 [r, e]	2,010 [r, e]	1,800 [r, e]	1,376
Salt, all types		6,189,446	5,796,000	2,498,000 [r]	2,140,000 [r, e]	1,784,000
Soda ash, synthetic		720,000	720,000 [e]	600,000 [e]	600,000 [e]	600,000 [e]
Stone, crushed, limestone	thousand metric tons	20,582	18,652	11,564	7,620	7,675
Sulfur compounds, sulfuric acid	do.	948	906	554	526	523
Sulfur, native, S content[e]		124,000 [r]	120,000	100,000	120,000 [r]	120,000

See footnotes at end of table.

TABLE 1—Continued
UKRAINE: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons, gross weight, unless otherwise specified)

Commodity[2]		2012	2013	2014	2015	2016
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Anthracite	thousand metric tons	20,763	15,604	8,705	8,325 [r]	8,361
Bituminous	do.	64,690	27,953	51,300	31,420 [r]	32,503
Lignite	do.	5,000	5,782	5,000	5,000 [e]	5,000
Total	do.	90,500	49,300	65,000	44,700 [r, e]	45,900
Coke		18,939,100	17,569,000	13,858,000	11,617,000	12,723,000
Natural gas	thousand cubic meters	20,492,000	21,313,000	20,500,000	19,900,000	20,100,000
Peat:						
Fuel use		446,000	467,000	463,000	491,000	539,100
Horticultural use		210,000	131,000	119,000	79,000	136,400
Total		656,000	598,000	582,000	570,000	676,000
Petroleum:						
Crude, including condensate[3]	thousand 42-gallon barrels	24,300	22,400	19,800	17,800	16,100
Refinery production[4]	do.	33,800	27,300	20,000 [r]	4,000 [r]	4,000
Uranium, mine production, U content		960	922	926	980	1,000

[e]Estimated. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through February 5, 2018. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits.

[2]In addition to the commodities listed, a number of other mineral commodities may have been produced in Ukraine, but available information was inadequate to make reliable estimates of output.

[3]Figures were converted to barrels from metric tons, which were reported as follows: 2012—3,245,000; 2013—3,071,000; 2014—2,739,000; 2015—2,461,700; and 2016—2,236,700.

[4]Figures were converted to barrels from metric tons, which were reported as follows: 2012—4,300,000; 2013—3,477,000; 2014—2,600,000; 2015—500,000; and 2016—500,000.

TABLE 2
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners[1, 2]	Location or deposit names	Annual capacity[e]
Alumina and aluminum:			
Alumina	Nikolaevskiy alumina refinery [United Company RUSAL (RUSAL)]	20 kilometers south of Mykolaiv	1,600,000
Aluminum, primary	Zaporozhye Aluminum Complex (ZAlK) [Government]	do.	114,000
Cement	Facilities:	Locations:	14,600,000 [3]
	PAO Nicokaevtsement (CRH plc)	Mykolayiv	
	PAO Eurocement Ukraine	Balakleya, Kharkivs'ka Oblast'	
	PAO Ivano-Frankovsktsement	Ivano-Frankivsk	
	PAO Podolsk Cement (CRH plc)	Khmel'nyts'ka Oblast'	
	OOO Cement (CRH plc)	Odessa, Odes'ka Oblast'	
	PAO Dyckerhoff Cement Ukraine	Kyiv and Mykolayiv	
	PAO HeidelbergCement Ukraine	Kriviy Rih	
	PAO Kramatorkiy Tsementnyi Zavod PUSHKA	Kramatorsk, Donets'ka Oblast'	
Coal	About 150 active surface and underground mines, including:	About 95% of coal produced in Donets'ka, Dnipropetrovs'ka, and Luhans'ka Oblasts	90,000,000 [3]
	Donbass Fuel and Energy Co. (DTEK) (System Capital Management, 100%):		
	DTEK Pavlogradugol	10 mines in Dnipropetrovs'ka and Donets'ka Oblasts	
	DTEK Komsomolets Donbassa Mine	Kirovskoe, Donets'ka Oblast'	
	DTEK Dobropolyeugol	5 mines near Dobropillya, Donets'ka Oblast'	
	DTEK Sverdlovanthracite	5 coal mines and 3 processing plants in Luhans'ka Oblast'	
	DTEK Rovenkyanthracite	6 mines and 3 processing plants in Luhans'ka Oblast'	
	Krasnoarmeiskaya-Zapadnaya No. 1	1 mine at Krasnoarmeisk, Donets'ka Oblast'	
	JSC Krasnodon Coal Co. (Metinvest B.V.)	7 mines and 2 processing plants in Luhans'ka Oblast'	
	Smaller producers	Donets'ka, Dnipropetrovs'ka, Luhans'ka, Lvivs'ka, and Volyns'ka Oblasts	
Coke	Evraz Group:	Location:	3,000,000 [3]
	OAO Dneprkoks coke plant	Dnipropetrovsk, Dnipropetrovs'ka Oblast'	
	OAO Bagliykoks coke plant	Dniprodzerzhinsk, Dnipropetrovs'ka Oblast'	
	OAO Dneprodzerzhinsk coke plant	do.	
Do.	Metinvest B.V.:	Location:	
	JSC Avdiivka coke plant	Avdeyevka, Donets'ka Oblast'	4,000,000
Do.	JSC Azovstal Iron and Steel Works	Mariupol, Donets'ka Oblast'	3,180,000
Do.	OJSC ArcelorMittal Kryviy Rih	Kryviy Rih, Dnipropetrovs'ka Oblast'	3,300,000
Do.	JSC Donetskkoks (Metinvest B.V., 24.5%, and OJSC Ilyich Iron and Steel Works, 12.96%)	Donetsk, Donets'ka Oblast'	390,000
Do.	Yenakievo coke plant	Yenakievo, Donets'ka Oblast'	NA
Do.	OAO Zaporozhkoks (JSC Zaporizhstal, 42%, and Metinvest B.V., 25%)	Zaporizhia	NA
Do.	Makeevka coke plant	Makeevka, Donets'ka Oblast'	NA
Do.	OAO Yasinovskiy coke plant	do.	NA
Do.	OAO Alchevsk coke plant [Industrial Union of Donbass (ISD Corp.)]	Alchevsk, Luhans'ka Oblast'	3,700,000
Do.	Horlivka coke plant	Horlivka, Donets'ka Oblast'	440,000
Do.	Kharkov coke plant	Kharkiv	225,000

See footnotes at end of table.

TABLE 2—Continued
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners[1, 2]	Location or deposit names	Annual capacity[e]
Ferroalloys:			
Ferromanganese	Zaporozhskiy ferroalloys plant (PrivatBank Group)	Zaporizhia	100,000
Do.	Nikopol'skiy ferroalloys plant (PrivatBank Group and EastOne Group)	Nikopol	700,000
Do.	Stakhanovskiy ferroalloys plant (PrivatBank Group)	Luhans'ka Oblast'	NA
Ferromanganese, blast furnace	Konstantinovka Iron and Steel Works	Konstyantynivka, Donets'ka Oblast'	NA [4]
Do.	Kramatorskiy ferroalloys plant	Kramatorsk, Donets'ka Oblast'	NA
Ferronickel	Pobuzhskiy ferronickel plant	Pobuzhye, Kirovohrads'ka Oblast'	100,000
Ferrosilicon	Stakhanovskiy ferroalloys plant (PrivatBank Group)[5]	Luhans'ka Oblast'	120,000
Do.	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	100,000
Silicomanganese	Stakhanovskiy ferroalloys plant (PrivatBank Group)[5]	Luhans'ka Oblast'	50,000
Do.	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	250,000
Do.	Nikopol ferroalloys plant (PrivatBank Group and EastOne Group)	Nikopol	900,000
Gallium	Nikolaev alumina refinery (United Company RUSAL)	20 kilometers south of Mykolaiv	13
Germanium	Zaporozhye titanium-magnesium plant	Zaporizhia	1
Graphite	Zavalyevskiy graphite complex	Zavalyevskiy deposit	NA
Iron ore:			
Underground mining	Krivorozhskiy Iron Ore Complex (Metinvest B.V., 50%, and PrivatBank Group, 50%)	4 mines, in Kryvorizkiy iron ore basin	7,000,000
Do.	Sukha Balka (Evraz Group)	2 mines in Dnipropetrovs'ka Oblast'	3,100,000
Do.	PJSC ArcelorMittal Kryviy Rih	2 mines at Kryviy Rih	1,500,000
Do.	Zaporozhye Iron Ore Complex	Eksplutatsionnay Mine in Zaporiz'ka Oblast'	4,500,000
Do.	JSC Tsentral'nyi Iron Ore Enrichment Works (Metinvest B.V.)	1 mine in Dnipropetrovs'ka Oblast'	2,200,000
Open pit mining	do.	3 mines in Dnipropetrovs'ka Oblast'	12,000,000
Do.	JSC Severnyi Iron Ore Enrichment Works (Metinvest B.V.)	2 mines in Dnipropetrovs'ka Oblast'	30,000,000
Do.	JSC Inguletskiy Iron Ore Enrichment Works (Metinvest B.V.)	Ingulets mine south of Kryviy Rih	35,000,000
Do.	Yuzhnyi GOK (Evraz Holding, 50%, and Smart Holding, 50%)	Mine at Kryviy Rih	22,000,000
Do.	PJSC ArcelorMittal Kryviy Rih	2 mines at Kryviy Rih	26,600,000
Do.	Poltava GOK (Ferrexpo Plc.)	Gorishne-Plavninskoye and Lavrikovskoye (GPL) Mine 15 kilometers east of Kremenchug	30,000,000
Lead, secondary	CJSC Svinets	Kostyantynivka	20,000
Magnesium metal	Magnii concern	Kalush	22,000
Manganese:			
Ore, marketable, Mn content	Ordzhonikidzevskiy GOK (PrivatBank Group)	Ordzhonikidze, Dnieprovskaya Oblast'	700,000
Do.	PAO Marganetskiy GOK (PrivatBank Group)	Marhanets, Dnieprovskaya Oblast', 7 mines	NA
Metal	Zaporozhskiy ferroalloys plant (PrivatBank Group)	Zaporizhia	NA
Natural gas	Yuzovskoye deposit (Royal Dutch Shell plc)	Kharkiv and Donets'ka Oblasts	NA
Do.	Olesskoye deposit (Chevron Corp.)	Lvivs'ka and Ivano-Frankovs'ka Oblasts	NA
Nickel, Ni content in FeNi	Pobuzhskiy GOK (Solway Investment Group)	Pobuzhye, Kirovohrads'ka Oblast	20,000
Petroleum, refined	Kherson oil refining plant	Kherson	NA [6]
Do.	Odessa refinery (OAO Lukoil)	Odessa	NA [6]
Do.	Lisichanskiy refinery (TNK-BP)	Lisichansk	NA [6]
Do.	Halychyna refinery (Ukraine Oil Co.)	Drohobych, Lvivs'ka Oblast'	NA [6]
Do.	Kremenchug refinery (CJSC Ukrtatnafta)	Kremenchug	NA
Do.	JSC Naftokhimik Prykarpattya	Nadvirna, Ivano-Frankivs'ka Oblast'	NA [6]
Do.	Shebelinskiy refinery	Shebelinka, Kharkivs'ka Oblast'	NA

See footnotes at end of table.

TABLE 2—Continued
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners[1, 2]	Location or deposit names	Annual capacity[e]
Steel, raw	Industrial Union of Donbass Corp. (ISD Corp.):		
	OJSC Alchevskiy Iron and Steel Works	Alchevsk, Luhans'ka Oblast'	5,200,000
Do.	Dneprovskiy Metallurgical Plant "Dzerzhinsky"	Dniprodzerzhinsk	3,850,000
Do.	OJSC ArcelorMittal Kryviy Rih	Kryviy Rih, Dnipropetrovs'ka Oblast'	7,400,000
Do.	Metinvest B.V.:		
	JSC Azovstal Iron and Steel Works	Mariupol, Donets'ka Oblast'	6,200,000
Do.	JSC Yenakiieve Iron and Steel Works	Yenakievo, Donets'ka Oblast'	2,700,000
Do.	OJSC Ilyich Iron and Steel Works	Mariupol, Donets'ka Oblast'	6,000,000
Do.	Dnepropetrovsk Metals Plant "Petrovskovo" (DMZP) (Evraz Group S.A., 96.77%)	Dnipropetrovsk	1,360,000
Do.	JSC Zaporizhstal (Metinvest B.V., 24.9%) (Mechel OAO)[7]	Zaporizhia	4,350,000
Do.	Kramatorskiy Metal Plant "Kuibiysheva"	Kramatorsk, Donets'ka Oblast'	NA
Do.	Donetskstal	Donetsk	NA
Do.	Donetskiy electrometallurgical plant	do.	1,000,000 [7]
Do.	Dneprospetsstal	Zaporizhia	918,000
Do.	OOO Elektrostal	Kurakhovo, Donets'ka Oblast'	NA
Do.	JSC Energomashspetsstal (OJSC Atomenergomash)	Kramatorsk, Donets'ka Oblast'	NA
Do.	PJSC Azovelectrostal (JSC Azovmash)	Mariupol, Donets'ka Oblast'	500,000
Titanium minerals:			
Concentrate:			
Ilmenite	Irshanskiy GOK [Government]	Irshansk, 50 kilometers north of	NA
Do.	OOO Valki-Ilmenit (OstChem GmbH, 75%)	do.	NA
Do.	Mezhdurechensk GOK (OstChem GmbH, 75%)	Zhytomyrs'ka Oblast'	NA
Do.	Velta LLC[8]	Korobchino, Novomirgorod district, Kirovograds'ka Oblast'	NA
Do.	Volnogorskiy GOK [Government]	Volnogorsk, 70 kilometers west of Dnipropetrovsk	NA
Do.	Demurinskiy GOK (Limpeza Ltd. of Cyprus 25%, and VSMPO-Avisma of Russia, 75%)	Dnipropetrovs'ka Oblast'	NA
Rutile	do.	do.	NA
Sponge	Zaporozhskiy Titanium & Magnesium Complex (ZTMK) (Government, 51%, and Tolexis Trading Ltd., 49%)	Zaporizhia	NA
Ingots	OOO Antares	Kyev	NA
Do.	OOO Fico	do.	NA
Do.	Zaporozhye Titanium & Magnesium Complex (ZTMK) (Government, 51%, and Tolexis Trading Ltd., 49%)	Zaporizhia	NA
Titanium dioxide, pigment	Crimea Titan CJSC	Crimea	NA
Do.	OAO Sumykhimprom	Sumy	NA
Uranium, U content:			
Ore	Vostochnyi GOK (Government)	Ingulskaya Mine at Kirovohrad	450
Do.	do.	Smolinskaya Mine at Smolino	600
Do.	do.	Novokonstantinovskoye deposit in Kirovohrads'ka Oblast'	100
Concentrate	do.	Hydrometallurgical concentration plant at Zheltye Vody	1,000
Zinc, secondary	Ukrzinc plant	Kostyantynivka	25,000
Do.	CJSC Svinets	do.	30,000

See footnotes at end of table.

TABLE 2—Continued
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners[1, 2]	Location or deposit names	Annual capacity[e]
Zirconium minerals:			
Concentrate	Volnogorsk state mining-metals complex [Leased from the Government by Crimea Titan CJSC (Ukraine Government, 50% plus one share, and OstChem Gmbh, 50% minus one share)]	Volnogorsk, 70 kilometers west of Dnipropetrovsk	NA
Metal and compounds	State Research and Production Enterprise "Zirconium"	Dniprodzerzhinsk	NA [9]

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.
[1]Inconsistencies in enterprise and location names may appear in this table because both Ukrainian and Russian spellings were used for transliterations. English versions of company names are used as given by official company sources (web sites, press releases, and so forth). Ukrainian versions of location names are used whenever possible.
[2]GOK is the abbreviation for gorno-obogotitelniy kombinat, which translates as "mining and beneficiation complex."
[3]Capacity estimates are totals for all enterprises that produce that commodity.
[4]Konstantinovka Iron and Steel Works stopped production of blast furnace ferromanganese in 2008.
[5]The Stakhanovskiy Ferroalloys Plant stopped operations in July 2014.
[6]Not in operation as of 2016.
[7]In December 2011, Mechel OAO of Russia purchased 100% of the shares of the Donetsk electrometallurgical plant.
[8]Velta LLC was ordered to stop operations by the Government Service for Geology and Subsoil in November 2015.
[9]Operational status in 2016 is unknown.