



# 2009 Minerals Yearbook

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UKRAINE [ADVANCE RELEASE]

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# THE MINERAL INDUSTRY OF UKRAINE

By Mark Brininstool

Ukraine was a major world producer of such minerals as bromine, gallium, graphite, iron ore, manganese ore, pig iron, steel, titanium concentrates (ilmenite and rutile), and titanium. The country had large coal reserves but was dependent on imports to satisfy most of its petroleum and natural gas demand. Ukraine was also an important transit country for natural gas and petroleum from Central Asia and Russia to Europe (Apodaca, 2010; Corathers, 2010; Fenton, 2010; Gambogi, 2010; Jaskula, 2010; Jorgenson, 2010; Olson, 2010).

## Minerals in the National Economy

In 2009, Ukraine's real gross domestic product (GDP) decreased by 15.1% compared with that of 2008. The State Statistics Committee of Ukraine reported that, in 2009, mining and quarrying activities accounted for about 3.87% of the GDP, and manufacturing, 15.85%. The value of minerals and metals processing activities as a percentage of the GDP was not reported by the State Statistics Committee, but news reports stated, that in 2007, the mining and metals industry accounted for 27% of the GDP. It was not known if this figure included the value of finished products or other items not included in this report, but the figure acts as a good general indicator of the importance of Ukraine's mineral industry for the country's economy (Chernoalov, 2008; State Statistics Committee of Ukraine, 2010c, f).

The total value of Ukraine's exports was about \$67 billion (44.7% of the GDP) in 2008 and \$40 billion (46.3% of the GDP) in 2009. Ukraine's leading export in terms of value was ferrous metals, and in 2008, exports of ferrous metals were valued at \$26.49 billion (39.6% of the total value of exports), and in 2009, the value of ferrous metals exports had dropped to \$12.20 billion and made up 30.7% of the total value of exports. The value of ferrous metal exports decreased by about 54% compared with that of 2008 because demand for steel in most countries had decreased owing to reduced economic activity as a result of the world financial crisis. The value of exports of mineral products and metals made up about 42% of the value of total exports. The leading import commodities were mineral fuels and refined petroleum products, which made up about 32% of the value of total imports. Natural gas was the leading individual import product in terms of value and accounted for 17.6% of the value of total imports. Ukraine consumed 51.9 billion cubic meters of natural gas in 2009 and 66.3 billion cubic meters in 2008; imports of natural gas from Russia made up about 60% of total natural gas consumed each year (State Statistics Committee of Ukraine, 2009; 2010a-c; JSC Naftogaz of Ukraine, 2010).

The mineral industry was also important in terms of employment. In 2009, it was reported that about 500,000 people were employed by the mining and metals industry in Ukraine. About 350,000 of those people were employed in the coal mining industry (Chernoalov, 2008; Coal Industry Workers' Union of Ukraine, 2011).

## Government Policies and Programs

Government policies aimed at the mining and metallurgy industry in 2009 focused on supporting companies during the economic downturn that began in 2008 and continued into 2009. Government support came mainly from a memorandum of understanding between the Government and the chemical and mining and metallurgy industries based on the Cabinet of Ministers' Decree No. 925 of November 2008. The decree's main benefits to the industry were that it granted mining and metallurgy companies a moratorium on any increase in tariffs for rail transport, imposed restrictions on any increase in natural gas prices, and held the price of electricity at the level of November 1, 2008 (Metall Ukrainy, 2009b, p. 5; 2009d, p. 8-9).

The Government also instituted support for the coal industry, which had traditionally received special attention from the Government because of the large number of people employed in the coal mining industry, coal's position in energy security, and the fact that many coal mining companies were owned by the Government. In March, the Cabinet of Ministers assigned about \$98 million<sup>1</sup> to the establishment of a reserve of coal for energy production in order to boost coal prices by increasing demand. In the beginning of 2009, purchases of coal by the energy sector were down by about 20% because reduced economic activity in Ukraine had decreased the demand for electricity (Metall Ukrainy, 2009c, p. 53).

## Production

In 2009, production of most minerals decreased significantly owing to reduced demand for mineral products during the slowdown in economic activity that began as a result of the world financial crisis. Production of primary aluminum production decreased by 56%; manganese ore, by 36%; total ferroalloys, by an estimated 28%; crude steel, by 20%; and iron ore, by 9%. Cement production was reported to have decreased by 36% in 2009, and production of most other industrial minerals decreased, most likely owing mainly to a decrease in construction activity, presumably as a result of a lack of available financing during the economic crisis and greater caution on the part of potential investors. Completion of residential building projects (measured in thousand cubic meters) decreased by 39% compared with that of 2008 (table 1; State Statistics Committee of Ukraine, 2010e).

## Mineral Trade

On January 1, disputes concerning the payment of debts owed by JSC Naftogaz of Ukraine to OAO Gazprom of Russia for the purchase of natural gas and the inability of the two companies

<sup>1</sup>Where necessary, values have been converted from Ukrainian hryvnias (HRV) to U.S. dollars (US\$) at the rate of HRV8.14=US\$1.00.

to reach an agreement on natural gas purchase and transit prices resulted in Gazprom halting deliveries of natural gas intended for Ukrainian consumers. Gazprom had demanded the payment of about \$2 billion owed for natural gas delivered in November and December 2008 and late payment fees, but Naftogaz of Ukraine claimed that it had paid all its debts to Gazprom. A complicated payment system that involved intermediaries made it difficult for outside observers to determine which payments had or had not been made. Before January 1, during price negotiations for natural gas supplies to Ukraine, Naftogaz of Ukraine had rejected a price offer from Gazprom of \$250 per thousand cubic meters of natural gas and Gazprom announced that it could potentially charge Ukraine the European market price of \$418 per thousand cubic meters. By comparison, in 2008, Ukraine paid \$179.50 per thousand cubic meters for natural gas from Russia; in 2007, \$130; and in 2006, \$95. On January 7, Gazprom discontinued the transit through Ukraine of natural gas intended for other European consumers after accusing Ukraine of siphoning off this gas for domestic use; Naftogaz of Ukraine disputed this allegation (Interfax Ltd., 2008, p. 12; JSC Naftogaz of Ukraine, 2009; OAO Gazprom, 2009a, b).

On January 19, the Governments of Russia and Ukraine signed a 10-year agreement on natural gas supplies, and on January 20, Gazprom restarted deliveries of natural gas to Ukraine. According to the terms of the agreement, Ukraine would pay the European market price for natural gas with a 20% discount in 2009 (with the price to be adjusted quarterly), and in 2010, Ukraine would begin paying the full European market price. As a result of the agreement, Ukraine paid an average of \$228 per thousand cubic meters of natural gas in 2009 (OAO Gazprom, 2009c; RBC Ukraine, 2009).

## Structure of the Mineral Industry

As in many of the countries that had made up the Soviet Union, ownership and control of mineral production facilities in Ukraine in 2009 were not always completely transparent, but understanding the ownership issues is important for understanding the actions of industry participants. According to news reports, Ukrainian companies or their owners often established holding companies outside of Ukraine in order to purchase mineral production facilities and control their activities through indirect ownership. Therefore, when discussing a particular company, news reports often referred to companies as being “controlled by” instead of “owned by” another entity to avoid an unnecessarily detailed explanation of the ownership structure. This report and table 2 use this method to show the companies that actually control various facilities without showing specific shareholders.

A good example of this indirect method used to control mineral production facilities was the PrivatBank Group’s control of Ukraine’s manganese production and of virtually all Ukraine’s ferroalloys production. The PrivatBank Group’s control of Ukraine’s two manganese mining companies at Marganets and Ordzhonikidze and three ferroalloys plants at Nikopol, Stakhanov, and Zaporozhye was widely reported, but the exact nature of ownership was difficult to determine. The

shares of most of these facilities were owned by a number of privately held companies based in Cyprus that were widely reported to have been owned by the principle shareholders of PrivatBank, which gave the PrivatBank Group effective control over the facilities without having direct ownership of them (table 2; Ignatenko, 2009).

Another important aspect of the structure of the Ukrainian mineral industry was that major production facilities were usually controlled by Ukrainian conglomerates with financial and industrial assets (known as financial-industrial groups) or by Russian companies. The leading Ukrainian financial-industrial group in terms of production of mineral commodities was System Capital Management, which controlled assets in finance, power generation and distribution, telecommunications, media, and real estate in Ukraine, and, through its holding company, Metinvest B.V. and through Donbass Fuel and Energy Co. held important mining and metals production facilities. In 2009, companies owned by System Capital Management and Metinvest accounted for about 42% of coal production in Ukraine, an estimated 40% of iron ore production, and about 24% of coke and crude steel production. In table 2, JSC Makevskii Iron and Steel Works was removed from the list of crude steel producers as it seemed to have stopped production of crude steel in 2008 but continued to produce rolled metal products. The plant was obtained by Metinvest in 2007 when Smart Holdings of Ukraine sold its mining and metallurgical assets to Metinvest (table 1; Metinvest B.V., 2007; 2010, p. 2, 42; Donbass Fuel and Energy Co., 2010, p. 38; System Capital Management, 2011).

In the beginning of January 2010, the shareholders of the Industrial Union of Donbass Corp. (ISD Corp.) completed the sale of 50% plus 2 shares in the company to a group of three Russian investors. ISD was Ukraine’s second ranked steel producer after Metinvest, and, in addition to its Ukrainian steel plants in Alchevsk and Dniprodzerzhinsk, ISD owned steel plants in Hungary and Poland. One of the Russian investors was identified as the owner of the Carbofer Group, which was based in Switzerland, but the other two investors were not officially named and news reports suggesting their identity could not be confirmed. The Russian state-owned bank Vnesheconombank financed the deal (Asankin, Chernovalov, and Kalnysh, 2010; Neverov, 2010).

## Commodity Review

### Metals

**Iron and Steel.**—Ukraine’s iron and steel industry is the most significant part of the country’s mining and metals industry in terms of its proportion of the GDP and in terms of the amount of export revenue it generates, but the industry is also remarkable for its inefficiencies and is greatly in need of investments. In 2008, Ukraine produced about 55% of steel in oxygen converter furnaces, 41% in open hearth furnaces, and 4% in electric arc furnaces (EAFs) and in 2009, Ukraine produced 69% of its steel in oxygen converter furnaces, 26% in open hearth furnaces, and 5% in EAFs. Ukrainian steel producers chose open hearth furnace production as the first production method

to idle during the recession, and the decrease in production share did not seem to be the result of new investment in oxygen converter or EAF technology. Production of steel using open hearth furnaces is energy inefficient compared with oxygen converter or EAF production and takes place only in a few other countries, including Russia and India, which only produced 9.8% and 1.7%, respectively, of their steel in open hearth furnaces. In Ukraine, only 47.9% of steel in 2009 and 39.1% in 2008 was produced through continuous casting, which was the lowest percentage of any country in the world (World Steel Association, 2009, p. 10; 2010, p. 10-11).

Despite Ukraine's natural advantages of having large coal and iron ore deposits, inefficiencies in the steel industry have acted as a counterweight to some of those advantages. Since the dissolution of the Soviet Union, Ukraine had failed to undertake widespread modernization of its metals industry, which resulted in greater production costs owing to higher rates of energy use, less efficient use of raw materials, and other factors. As the economic crisis began to reduce demand for steel products, the higher production costs of Ukrainian steel producers meant that they had less flexibility to lower prices to the levels at which other countries were willing to sell steel products, thus increasing the harmful effects of the financial crisis on Ukraine's steel industry (Metall Ukrainy, 2008, p. 6-9).

**Iron Ore.**—In 2009, production of marketable iron ore and concentrate decreased by about 8.5% compared with that of 2008 owing to the world economic crisis that began in late 2008 and the accompanying decrease in demand for iron and steel products. In the first 6 months of the year, production averaged about 4.8 million metric tons per month (Mt/mo), but in the last 6 months of the year, production increased to about 6.3 Mt/mo as economic conditions in the world market improved. Production of iron ore did not decrease as sharply as steel production because Ukraine was able to increase its exports of iron ore products significantly to about 28.6 Mt, which was a 27.1% increase compared with exports in 2008. Although steel production declined in Central and Eastern Europe (the traditional recipients of Ukraine's iron ore exports), Ukraine was able to increase exports primarily owing to demand in China. In the first 6 months of the year, Ukraine exported about 6.5 Mt of iron ore products to China, which was more than twice as much as was exported to China in the same period in 2008. China could remain an important new market for Ukraine, but most likely countries in Central and Eastern Europe will remain Ukraine's most important iron ore importers owing mainly to lower transportation costs (Metall Ukrainy, 2009a, p. 40; 2009f, p. 43; 2010b, p. 39-40; Metinvest B.V., 2010, p. 13; State Statistics Committee of Ukraine, 2010d).

**Manganese.**—The Marganets Mining and Beneficiation Complex (GOK) and Ordzhonikidze GOK together produced about 932,000 Mt of manganese concentrates and marketable ore in 2008. Production of manganese declined significantly owing to a reduced demand for ferromanganese by the steel industry, and the Marganets and the Ordzhonikidze GOK halted production from November 2008 until April 2009 (Metall Ukrainy, 2009e, p. 44).

Manganese occupied an important place in the Ukrainian mining industry, not only for current production but

also for potential future production. The undeveloped Velikotokmakskiye manganese deposit in Zaporizhia Oblast was reported to contain 1.5 billion metric tons of manganese ore containing 25.8% manganese and accounted for about 70% of Ukrainian manganese reserves. The Ministry for Environment and Natural Resources put sections of the Velikotokmakskiye manganese deposit up for auction on December 29, but cancelled the auction owing to a lack of investor interest. In 2008 and 2009, various potential projects by companies controlled by OJSC ArcelorMittal Kryviy Rih, ISD, and the PrivatBank Group to develop the Velikotokmakskiye deposit were reported, but none of these projects had reached the development stage (Kommersant Ukraina, 2009a; Metall Ukrainy, 2010c, p. 41).

In 2008, Steptekhservice CJSC had its license to develop part of the Velikotokmakskiye deposit revoked by the Ministry for Environment and Natural Resources. The Stepnogorskiy GOK was established by the Zaporizhia Oblast Administration to take over the sections of the Velikotokmakskiye deposit that were previously included in Steptekhservice's license (Ukrudprom, 2008).

**Titanium.**—On February 27, the Cabinet of Ministers approved the formation of State Joint Stock Holding Co. (SJSHC) Titan Ukraine, which was a holding company for all the Government-controlled businesses related the titanium industry, to form a vertically integrated company to undertake all aspects of titanium production. The idea of a Government-controlled vertically integrated titanium company had existed since the mid-1990s, but the realization of this plan in 2009 depended on the end of the lease held by Crimea Titan CJSC for the operation of the Government-owned Irshansk GOK and the Volnogorsk State Mining-Metals Complex, which were Ukraine's two main producers of ilmenite and rutile ore and concentrate (Kommersant Ukraina, 2009b).

Crimea Titan had held the lease for the operation of these two facilities since September 2004, but that lease expired in September 2009. Crimea Titan was owned 50% plus one share by the Government and 50% minus one share by OstChem Holdings, but the Government did not receive a dividend from the company and OstChem Holdings was in control of the company's management. Concentrate produced at Irshansk and Volnogorsk was available to Crimea Titan for the cost of production plus about \$2.6 million per year for the lease of the two facilities and provided the company with a cheap source of raw materials. Crimea Titan used about 80% of the production of the ilmenite concentrates produced at Irshansk to produce titanium dioxide and it exported more than 80% of the rutile concentrates produced at Volnogorsk. In 2009, Ukraine exported 219,068 t of ilmenite and rutile ores and concentrates that was valued at \$55.7 million. Of these exports, 65,615 t went to the Czech Republic; 54,985 t, to the United States; 43,133 t, to Russia; 15,112 t, to Canada; 12,692 t, to Kazakhstan; and 7,827 t, to the Netherlands (Kommersant Ukraina, 2009b; Metall Ukrainy, 2010a, p. 62).

To delay the return of its sources of raw materials to Government management, Crimea Titan's management blocked the taking of an inventory of the two facilities that was necessary to complete the transfer of the properties to

Government control, asked for repayment for investments that Crimea Titan made in the Irshansk and the Volnogorsk facilities, and argued that its lease should be renewed. At the end of the year, Crimea Titan still controlled the Irshansk and the Volnogorsk facilities while the case proceeded through the courts. It was expected that the Government would eventually gain control of the disputed facilities but it was not known how long this would take (Karpenko, 2009).

### *Mineral Fuels and Related Materials*

**Coal.**—According to the World Energy Council (WEC), Ukraine was the world's seventh ranked country in terms of total coal reserves. The WEC reported that Ukraine's total proved recoverable reserves at the end of 2008 were 33,873 Mt, of which 15,351 Mt was bituminous and anthracite, 16,577 Mt was subbituminous, and 1,945 Mt was lignite. Government-owned coal mining companies produced about 53% of all coal produced in Ukraine but production at Government-owned mines was generally inefficient and mines required subsidies from the Government to maintain production, leading to calls for privatization. On April 2, the Cabinet of Ministers of Ukraine passed a resolution that would have allowed 99 Government-owned coal mines to be auctioned off to private investors, but in September, the Constitutional Court of Ukraine found the resolution unconstitutional, and progress on the creation of a basic regulatory structure for the privatization of Government-owned coal mines was suspended (Ukrudprom, 2009; Donbass Fuel and Energy Co., 2010, p. 38-39; World Energy Council, 2010).

**Uranium.**—Ukraine's uranium reserves were estimated to be between 130,000 t and 200,000 t, and the country was the ninth ranked producer of uranium in 2009. Nuclear powerplants (NPPs) in Ukraine accounted for 48% of all the electricity produced in the country in 2009 and domestic uranium production accounted for about 30% of all uranium used in Ukraine's NPPs. All uranium produced in Ukraine was sent to Russia for processing into nuclear fuel for use in Ukraine by JSC TVEL of Russia, and the remaining nuclear fuel required for Ukraine's NPPs was purchased from JSC TVEL (NNEGC Energoatom, 2010; World Nuclear Association, 2010a, b).

The Government of Ukraine had plans to increase uranium production to 1,000 t/yr in 2011, to 1,880 t/yr by 2015, and to about 4,800 t/yr by 2020. It was not entirely clear how all the new capacity would be developed, but in order for these production increases to take place, major investments would be necessary to develop new deposits. The main uranium deposits planned for development were the Novokonstantinovskoye deposit in Kirovohrad Oblast and the Safonovskoye deposit in Mykolaiv Oblast. The Novokonstantinovskoye deposit, which was the largest uranium deposit in Ukraine, had reserves of up to 100,000 t of uranium and its development project had a planned production capacity of up to 2,500 t/yr of uranium (with initial production of 1,500 t/yr of uranium) but would require an investment of about \$900 million and would take about 7 years to develop fully. The development of the Safonovskoye deposit was expected to cost considerably less (\$57 million) and could produce between 100 and 150 t/yr of uranium at full capacity

within a few years. Obtaining financing for uranium deposit development projects had proved difficult in the past, especially because private investment was not possible owing to the designations of the projects as national security concerns, and could delay the development of these projects (Metall Ukrainy, 2009g; Sterkin and others, 2010; World Nuclear Association, 2010a).

### **Outlook**

Production of metals in Ukraine could increase slightly in 2010 as the world economy continues to recover slowly from the effects of the world financial crisis. Investments in the metallurgy sector would be needed to improve the competitiveness of Ukrainian production, but it is difficult to say whether or not this will take place. The increasing price of natural gas imported from Russia will add further pressure to modernize and improve energy efficiency. It will also remain to be seen whether Ukraine will be able to increase its production of coal and uranium to increase security of resources for electricity production, given that past efforts to increase the production of mineral fuels have suffered from a lack of funding or faced other problems that have impeded resource development.

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TABLE 1  
UKRAINE: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009
<b>METALS</b>					
Alumina	1,632,020	1,671,620	1,700,000 <sup>e</sup>	1,673,000 <sup>r</sup>	1,524,000
Aluminum:					
Primary	114,224	112,961	113,437	113,000	50,000
Secondary <sup>e</sup>	130,000	130,000	130,000	130,000	130,000
Total <sup>e</sup>	244,000 <sup>r</sup>	243,000 <sup>r</sup>	243,000 <sup>r</sup>	243,000 <sup>r</sup>	180,000
Cadmium, metal <sup>e</sup>	25	25	25	25	25
Copper, metal, secondary <sup>e</sup>	20,000	20,000	20,000	20,000	20,000
Gallium <sup>e</sup>	13	13	13	13	13
Germanium <sup>e</sup> kilograms	1,000 <sup>r</sup>	1,000 <sup>r</sup>	1,000 <sup>r</sup>	1,032 <sup>r,3</sup>	690 <sup>3</sup>
Gold, mine output, Au content <sup>e</sup> do.	180 <sup>r</sup>	120 <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Iron and steel:					
Iron ore, marketable ore and concentrate:					
Gross weight	68,569,600	74,000,000	77,900,000	72,688,000 <sup>r</sup>	66,476,000
Fe content <sup>e</sup>	37,700,000	40,700,000	42,800,000	40,000,000	36,600,000
Metal:					
Pig iron	30,747,000	32,926,000	35,647,000	30,982,000	25,682,900
Ferroalloys:					
Blast furnace <sup>e</sup> :					
Ferromanganese	30,000	26,700	28,400	16,000 <sup>r</sup>	--
Spiegeleisen	5,000	4,450	4,730	2,000 <sup>r</sup>	--
Electric furnace:					
Ferromanganese	359,000	373,000	368,000	362,400	129,400
Ferronickel	61,166 <sup>r</sup>	79,338 <sup>r</sup>	79,530 <sup>r</sup>	89,825 <sup>r</sup>	61,449
Ferrosilicon	228,000	169,000	218,000	152,800	150,300
Silicomanganese	1,046,000	1,168,000	1,281,000	894,900	741,900
Other <sup>e</sup>	25,000	22,200	23,700	23,000	20,000
Total, blast and electric furnaces <sup>e</sup>	1,750,000 <sup>r</sup>	1,840,000 <sup>r</sup>	2,000,000 <sup>r</sup>	1,540,000 <sup>r</sup>	1,100,000
Steel:					
Crude	38,541,000 <sup>r</sup>	40,891,000 <sup>r</sup>	42,830,000	37,279,000 <sup>r</sup>	29,855,000
Finished products:					
Rolled	22,180,000	22,387,000	24,510,000	20,493,000	16,097,600
Pipe	2,293,000	2,759,000	2,811,000	2,542,000	1,742,000
Lead, refined, secondary <sup>e</sup>	7,000 <sup>r</sup>	7,000 <sup>r</sup>	7,000 <sup>r</sup>	7,000 <sup>r</sup>	8,000
Magnesium metal <sup>e,4</sup>	2,000	2,200	2,500	2,000	2,000
Manganese, marketable ore and concentrate:					
Gross weight	2,260,000	1,606,400	1,719,600	1,446,600	932,000
Mn content <sup>e</sup>	770,000	546,000	580,000	492,000	316,000
Nickel:					
Mine output, Ni content of laterite ore <sup>e</sup>	6,000	12,000	12,000	8,000	--
Ni content of ferronickel	12,074 <sup>r</sup>	15,223 <sup>r</sup>	14,211 <sup>r</sup>	16,224 <sup>r</sup>	12,392
Titanium:					
Ilmenite concentrate <sup>e,5</sup> :					
Gross weight	375,000	470,000	500,000	520,000	500,000
TiO <sub>2</sub> content, 59%	222,000	276,000	294,000	306,000	295,000
Rutile concentrate, 95% TiO <sub>2</sub> <sup>e</sup>	60,000	60,000	60,000	60,000	60,000
Metal, sponge	8,397	9,100 <sup>r</sup>	9,742 <sup>r</sup>	9,930	7,000 <sup>e</sup>
Zirconium concentrates <sup>e</sup>	35,000	35,000	35,000	35,000	35,000
<b>INDUSTRIAL MINERALS</b>					
Bromine	6,118 <sup>r</sup>	5,150 <sup>r</sup>	7,824 <sup>r</sup>	4,416 <sup>r</sup>	4,121
Cement	12,183,000	13,732,000	15,000,000	14,918,400 <sup>r</sup>	9,495,700
Clays:					
Ball clay	118,000	294,000	652,000	650,000 <sup>e</sup>	600,000 <sup>e</sup>
Bentonite <sup>e</sup>	300,000	300,000	300,000	200,000	195,000
Kaolin thousand metric tons	1,566 <sup>r</sup>	1,731 <sup>r</sup>	2,172 <sup>r</sup>	1,775 <sup>r</sup>	1,119

See footnotes at end of table.

TABLE 1—Continued  
UKRAINE: PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	2005	2006	2007	2008	2009
<b>INDUSTRIAL MINERALS—Continued</b>					
Diamond, synthetic <sup>c</sup> carats	8,000,000	8,000,000	8,000,000	8,000,000	8,000,000
Feldspar	63,930	67,313	76,305	83,420	84,757
Graphite <sup>c</sup>	10,400	5,800	5,800	5,800	5,500
Gypsum	380,600	375,900	741,580	1,158,000	711,000
Lime thousand metric tons	5,342	5,450	5,688	5,128	4,101
Limestone do.	25,100	27,800	30,000	26,700	18,000
Nitrogen, N content of ammonia <sup>c</sup> do.	4,300	4,200	4,200	4,000 <sup>r</sup>	2,500
Potash, K <sub>2</sub> O equivalent <sup>c</sup>	13,100	8,100	11,900	12,000	12,000
Salt	4,811,000	5,996,000	5,548,000	4,425,000	5,395,000
Soda ash <sup>c</sup>	900,000 <sup>r</sup>	700,000	700,000	700,000	600,000
Sulfur, native <sup>c</sup>	139,000	133,000	135,000	135,000	120,000
Sulfuric acid thousand metric tons	1,606 <sup>r</sup>	1,493	1,657 <sup>r</sup>	1,479 <sup>r</sup>	890
Vermiculite <sup>c</sup>	64,000	65,000	65,000	65,000	55,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, raw:					
Anthracite <sup>c</sup> thousand metric tons	16,204 <sup>3</sup>	13,444 <sup>3</sup>	13,000	14,000	13,000
Bituminous do.	58,000	66,600	62,255	63,400 <sup>e</sup>	59,000 <sup>e</sup>
Lignite do.	355	231	182	200 <sup>e</sup>	200 <sup>e</sup>
Total do.	74,559	80,275	75,400 <sup>e</sup>	77,600 <sup>e</sup>	72,200 <sup>e</sup>
Marketable do.	60,400	61,439	58,739	59,312 <sup>r</sup>	54,820
Coke	21,999,000	19,200,000	20,143,000	19,543,000 <sup>r</sup>	17,424,000
Natural gas thousand cubic meters	20,788,000	21,094,000	21,104,000	20,713,000 <sup>r</sup>	21,444,000
Peat, horticultural use and fuel use	639,000	462,000	395,000	358,000	449,000
Petroleum: <sup>c</sup>					
Crude and gas condensate <sup>6</sup> 42-gallon barrels	32,100,000	32,800,000	32,400,000	30,300,000 <sup>r</sup>	28,500,000
Refinery products <sup>7</sup> do.	131,000,000 <sup>r</sup>	104,000,000 <sup>r</sup>	103,000,000 <sup>r</sup>	83,700,000 <sup>r</sup>	85,700,000
Uranium: <sup>c</sup>					
U content	800 <sup>r</sup>	800 <sup>r</sup>	800 <sup>r</sup>	830 <sup>r</sup>	830
U <sub>3</sub> O <sub>8</sub> content	940 <sup>r</sup>	940 <sup>r</sup>	940 <sup>r</sup>	980 <sup>r</sup>	980

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through January 18, 2011.

<sup>2</sup>In addition to the commodities listed, other minerals may be produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Reported figure.

<sup>4</sup>Includes secondary

<sup>5</sup>Ilmenite production statistics include information from production at only the Irshansk GOK and Volnogorsk State Mining-Metals Complex. Production data for OOO Valki-Ilmenit were not available, but it may produce an additional 50,000 metric tons per year of ilmenite concentrate.

<sup>6</sup>Figures were converted to barrels from metric tons (t), which were reported as follows: 2005—4,414,000 t; 2006—4,506,000 t; 2007—4,459,000 t; 2008—4,168,300 t; 2009—3,916,600 t.

<sup>7</sup>Figures were converted to barrels from metric tons, which were reported as follows: 2005—17,189,000 t; 2006—13,525,000 t; 2007—13,283,000 t; 2008—10,717,000 t; 2009—10,959,000 t.

TABLE 2  
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2009<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners <sup>3</sup>	Location or deposit names	Annual capacity <sup>e</sup>
<b>Alumina and aluminum:</b>			
Alumina	Nikolaev alumina refinery (United Company RUSAL)	20 kilometers south of Mykolaiv	1,500,000
Do.	Zaporozhye refinery (United Company RUSAL)	Zaporizhia	260,000
Aluminum, primary	Zaporozhye smelter (United Company RUSAL)	do.	114,000
Coal	About 165 active surface and underground mines, including:  Donbass Fuel and Energy Co. (DTEK) (System Capital Management, 100%): OAO Pavlogradugol  OAO Komsomolets Donbassa Mine State Enterprise Sverdlovskanthracite  State Enterprise Rovenkianthracite  Krasnoarmeiskaya-Zapadnaya No. 1  JSC Krasnodon Coal Company (Metinvest B.V.) Approximately 28 smaller producers	About 95% of coal produced in Donetsk, Dnipropetrovsk, and Luhansk Oblasts  10 mines in Dnipropetrovsk and Donetsk Oblasts Kirovskoe, Donetsk Oblast 5 coal mines and 3 processing plants in Luhansk Oblast 6 mines and 3 processing plants in Luhansk Oblast 1 mine at Krasnoarmeisk, Donetsk Oblast 7 mines and 2 processing plants in Luhansk Oblast Donetsk, Dnipropetrovsk, Luhansk, Lviv, and Volynsk Oblasts	90,300,000 <sup>4</sup>
Coke	Evrast Group: OAO Dneprkoks coke plant OAO Bagleykoks coke plant OAO Dneprodzerzhinsk coke plant	Dnipropetrovsk Oblast: Dnipropetrovsk Dniprodzerzhinsk Dniprodzerzhinsk	3,520,000
Do.	Metinvest B.V.: JSC Avdiivka Coke Plant	Avdeyevka, Donetsk Oblast	4,000,000
Do.	JSC Azovstal Iron and Steel Works	Mariupol, Donetsk Oblast	3,182,000
Do.	OJSC ArcelorMittal Kryviy Rih	Kryviy Rih, Dnipropetrovsk Oblast	3,304,000
Do.	OAO Donetsk coke plant	Donetsk, Donetsk Oblast	492,000
Do.	Yenakievo coke plant	Yenakievo, Donetsk Oblast	NA
Do.	OAO Zaporozhkoks	Zaporizhia	NA
Do.	Makeevka coke plant	Makeevka, Donetsk Oblast	NA
Do.	OAO Yasinovskiy Coke Plant	do.	NA
Do.	OAO Alchevsk Coking Plant [Industrial Union of Donbass (ISD Corp.)]	Alchevsk, Luhansk Oblast	3,600,000
Do.	Horlivka coke plant	Horlivka, Donetsk Oblast	440,000
Do.	Kharkov coke plant	Kharkov	225,000
<b>Ferroalloys:</b>			
Ferromanganese	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	100,000
Do.	Nikopol ferroalloys plant (PrivatBank Group)	Nikopol	300,000
Do.	Stakhanov ferroalloys plant (PrivatBank Group)	Luhansk Oblast	NA
Ferromanganese, blast furnace	Konstantinovka Iron and Steel Works	Konstantynivka, Donetsk Oblast	NA <sup>5</sup>
Do.	Kramatorskiy Metal Plant "Kuibysheva"	Kramatorsk, Donetsk Oblast	NA <sup>6</sup>
Ferronickel	Pobuzhskiy Ferronickel Plant	Pobuzhke, Kirovohrad Oblast	100,000
Ferrosilicon	Stakhanov ferroalloys plant (PrivatBank Group)	Luhansk Oblast	NA
Do.	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	100,000
Silicomanganese	Stakhanov ferroalloys plant (PrivatBank Group)	Luhansk Oblast	NA
Do.	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	250,000
Do.	Nikopol ferroalloys plant (PrivatBank Group)	Nikopol	900,000

See footnotes at end of table.

TABLE 2—Continued  
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2009<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners <sup>3</sup>	Location or deposit names	Annual capacity <sup>c</sup>
Gallium	Nikolaev alumina refinery (United Company RUSAL)	20 kilometers south of Mykolaiv	13
Germanium	Zaporozhye titanium-magnesium plant	Zaporizhia	19,000
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	6,000,000
Do.	Sukha Balka (Evraz Group)	2 mines in Dnipropetrovsk Oblast	3,750,000
Do.	OJSC ArcelorMittal Kryviy Rih	2 mines at Kryviy Rih	1,500,000
Do.	Zaporozhye Iron Ore Complex	Ekspluatatsionnay Mine in Zaporizhia Oblast	4,500,000
Do.	JSC Central Iron Ore Enrichment Works <sup>7</sup> (Metinvest B.V.)	1 mine in Dnipropetrovsk Oblast	2,200,000
Open pit mining	do.	3 mines in Dnipropetrovsk Oblast	12,000,000
Do.	JSC Northern Iron Ore Enrichment Works <sup>8</sup> (Metinvest B.V.)	2 mines in Dnipropetrovsk Oblast	30,000,000
Do.	JSC Ingulets Iron Ore Enrichment Works <sup>9</sup> (Metinvest B.V.)	Ingulets mine south of Kryviy Rih	35,000,000
Do.	Yuzhniy GOK (Evraz Holding, 50%, and Smart Holding, 50%)	Mine at Kryviy Rih	22,000,000
Do.	OJSC ArcelorMittal Kryviy Rih	2 mines at Kryviy Rih	24,200,000
Do.	Poltava GOK (Ferrexpo Plc.)	Gorishne-Plavninskoye and Lavrikovskoye (GPL) Mine, 15 kilometers east of Kremenchug	28,500,000
Lead, secondary	CJSC Svinets	Kostyantynivka	20,000
Magnesium metal	Magnii concern	Kalush	22,000
Manganese:			
Ore, marketable	Ordzhonikidze GOK (PrivatBank Group)	Ordzhonikidze	NA
Do.	Marganets GOK (PrivatBank Group)	Marhanets	NA
Metal	Zaporozhye ferroalloys plant (PrivatBank Group)	Zaporizhia	40,000
Mercury	OOO Nikitryt	Horlivka, Donetsk Oblast	300
Nickel, Ni content in FeNi	Pobuzhskiy GOK, comprising three open pit mines and the Pobuzhskiy Ferronickel Plant	Pobuzhke, Kirovohrad Oblast	20,000
Petroleum, refined	42-gallon barrels	Kherson oil refining plant <sup>10</sup>	NA
Do.	do.	Odessa refinery (OAO Lukoil)	23,000,000
Do.	do.	Lisichansk refinery (TNK-BP)	52,560,000
Do.	do.	Halychyna refinery (Ukraine Oil Co.)	28,600,000
Do.	do.	Kremenchug refinery (CJSC Ukrtatnafta)	131,000,000
Do.	do.	JSC Naftokhimik Prykarpattya	18,400,000
Potash, K <sub>2</sub> O equivalent	Khlorvinil production association, Stebnik plant	Pricarpathian Region	NA
Steel, crude	Industrial Union of Donbass Corp. (ISD Corp.):		
	OJSC Alchevsk Iron and Steel Works	Alchevsk, Lugansk Oblast	NA
Do.	Dneprovskiy Metallurgical Plant "Dzerzhinsky"	Dniprodzerzhinsk	3,850,000
Do.	Metinvest B.V.:		
	JSC Azovstal Iron and Steel Works	Mariupol, Donetsk Oblast	6,200,000
Do.	JSC Yenakievo Iron and Steel Works	Yenakievo, Donetsk Oblast	2,700,000
Do.	OJSC ArcelorMittal Kryviy Rih	Kryviy Rih, Dnipropetrovsk Oblast	7,400,000
Do.	Dnepropetrovsk Metal Plant "Petrovskovo" (DMZP) (Evraz Group S.A., 96%)	Dnipropetrovsk	1,230,000
Do.	OJSC Ilyich Iron and Steel Works of Mariupol	Mariupol	7,300,000
Do.	JSC Zaporizhstal	Zaporizhia	4,350,000
Do.	Kramatorskiy Metal Plant "Kuibiysheva"	Kramatorsk, Donetsk Oblast	NA
Do.	Donetskstal	Donetsk	1,150,000

See footnotes at end of table.

TABLE 2—Continued  
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY IN 2009<sup>1,2</sup>

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners <sup>3</sup>	Location or deposit names	Annual capacity <sup>c</sup>	
Steel, crude—Continued	Donetsk Electrometallurgical Plant (formerly ISTIL minimill)	do.	1,000,000	
Do.	Dneprospetsstal	Zaporizhia	1,400,000	
Do.	OOO Elektrostal	Kurakhovo, Donetsk Oblast	300,000	
Do.	JSC Energomashspetsstal	Kramatorsk, Donetsk Oblast	NA	
Titanium:				
Concentrate:				
Ilmenite	Irshansk GOK [Leased from the Government by Crime Titan CJSC (Government, 50% plus one share, and OstChem GmbH, 50% minus one share)]	Irshansk, 50 kilometers north of Zhytomr	400	
Do.	OOO Valki-Ilmenit	do.	70	
Do.	Volnogorsk state mining-metals complex [Leased from the Government by Crime Titan CJSC (Government, 50% plus one share, and OstChem GmbH, 50% minus one share)]	Volnogorsk, 70 kilometers west of Dnipropetrovsk	200	
Rutile	do.	do.	65	
Sponge	Zaporozhye titanium-magnesium plant	Zaporizhia	20,000	
Uranium:				
Ore	thousand metric tons	Vostochny GOK (Government)	Ingulskaya Mine at Kirovohrad	450
Do.	do.	do.	Smolinskaya Mine at Smolino	600
Concentrate	do.	do.	Hydrometallurgical concentration plant at Zheltye Vody	1,000
Zinc, secondary	Ukrzinc plant	Kostyantynivka	25,000	
Zirconium:				
Concentrate	Volnogorsk state mining-metals complex [Leased from the Government by Crime Titan CJSC (Government, 50% plus one share, and OstChem GmbH, 50% minus one share)]	Volnogorsk, 70 kilometers west of Dnipropetrovsk	35	
Metal and compounds	State Research and Production Enterprise "Zirconium"	Dniprodzerzhinsk	NA	

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

<sup>1</sup>Table includes data available through January 18, 2011.

<sup>2</sup>Inconsistencies in enterprise and location names may exist because both Ukrainian or 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 wherever possible.

<sup>3</sup>GOK is the abbreviation for gorna-obogotitelny kombinat, which translates as 'mining and beneficiation complex'.

<sup>4</sup>Capacity estimates are totals for all enterprises that produce that commodity.

<sup>5</sup>Konstantinovka Iron and Steel Works stopped production of blast furnace ferromanganese in 2008.

<sup>6</sup>Kramatorskiy Metal Plant "Kuibiysheva" stopped production of blast furnace ferromanganese in 2006.

<sup>7</sup>Identified as the Centralny GOK in USGS Minerals Yearbook 2008.

<sup>8</sup>Identified as the Severny GOK in USGS Minerals Yearbook 2008.

<sup>9</sup>Identified as the Inguletsky GOK in USGS Minerals Yearbook 2008.

<sup>10</sup>Identified as the Alliance Oil Co. in the 2008 Minerals Yearbook. Ownership of the Kherson Oil Refining Plant was not entirely clear, but it was reported that the Alliance Oil Co. sold its shares in the plant in 2007.