

THE MINERAL INDUSTRY OF

UKRAINE

By Richard M. Levine¹

Ukraine was a large producer of a number of important mineral products, including coal, iron ore, manganese ore, steel, and ferroalloys. It also was a lesser producer of a number of other mineral products, including ilmenite and rutile-zirconium ores, nickel and mercury ores, uranium ore, titanium, magnesium, mercury and nickel metal, and a large number of industrial minerals, including graphite, potash, salt, dolomite and limestone fluxes, kaolin, quartz, and a variety of building materials.

In 1994, reportedly, Ukraine's gross domestic product (GDP) decreased by 19% compared with 1993 while industrial output decreased by 27.7%. These decreases were sharper than in the previous 2 years when, reportedly, GDP decreased each year by about 15% and industrial output by less than 10%.²

Environmental Issues

Ukraine created by presidential decree a new Ministry for Environmental Protection and Nuclear Safety. The new ministry replaced two former agencies, the Ministry of Environmental Protection and the State Committee for Nuclear and Radiation Safety.³

Production

Ukraine in 1994 experienced a sharp fall in industrial output with production of iron and steel products falling 29% compared with 1993 levels.⁴ Oil output, however, decreased only 1% compared with 1993 to 4.2 million metric tons (Mmt), and natural gas output decreased 5% to 18.3 billion cubic meters (m³).⁵

Much of the country's mining and metallurgical capacity was idle some time in 1994, including capacity at 77 of the country's 122 beneficiation facilities, 25 of 28 sinter plants, 14 of 16 pelletizing plants, 20 of 50 blast furnaces, 40 of 67 open hearth furnaces, 6 of 33 oxygen converter furnaces, and 25 of 67 rolling mills. One of the main reasons cited for the underutilization of capacity was drastic cuts in power supplies to enterprises.⁶

Trade

In 1994, minerals and mineral products accounted for about one-half of Ukraine's exports, with metals forming the largest portion of these exports.⁷ Ukraine was deeply in debt

for natural gas shipments owing, at yearend, Russia about \$2.5 billion and Turkmenistan about \$1.5 billion for gas imports.⁸ Ukraine signed an agreement with Turkmenistan to import 20 billion m³ of gas in 1995. Ukraine will pay for 60% of this gas with goods and the remaining 40% with hard currency.⁹

In 1994, Russia piped 57.5 billion m³ of gas to Ukraine for domestic consumption, and Russia was obligated to pipe 51.9 billion m³ of natural gas to Ukraine in 1995.¹⁰

Ukraine passed a decree intended to stop Ukrainian exporters from selling at low prices resulting in antidumping investigations, suits, and actions. Actions against Ukrainian exports in the United States, Canada, and the European Union (EU) have been directed against items including titanium sponge, uranium, magnesium, ferrochrome, artificial corundum, ferrosilicon, ferrochrome, manganese silicate, and crude and rolled steel. The decree established a commission to study evidence contained in antidumping suits, to coordinate the work of government departments in investigating such suits, and to take action against Ukrainian businesses subject to anti-dumping suits.¹¹

Structure of the Mineral Industry

In 1993, 68% of industrial enterprises were owned by the state, and privatization in all spheres was proceeding at a slow pace. In November 1994, the President of Ukraine signed a decree slating 8,000 big- and midsize enterprises for privatization within a year. Employees would acquire between 70% to 100% of the ownership of the enterprises, with remaining shares offered to Ukrainians to purchase with privatization vouchers, which were to be issued in December. Prior to the announcement of this program, Ukraine had privatized 7,900 small enterprises and another 2,000 midsize and large enterprises.¹²

The country's major iron ore and manganese mining industries, as well as its limestone mining industry for fluxing limestone, were organized into the Ukrudprom Concern. This concern contained 44 enterprises, including transport, explosives, research, and auxiliary enterprises, and employed 140,000 persons.

The coal industry was managed by the Ministry for the Coal Industry while the oil and gas sectors were managed by the Gaskomneftegaz committee. The companies Ukrneft and Ukgazprom, subsidiaries of Gaskomneftegaz, had the actual responsibility for extracting crude oil and natural gas,

respectively.¹³ In January 1995, a State Committee for the Oil, Gas, and Oil Refining Industry of Ukraine was formed to improve the management in these sectors.¹⁴

All of Ukraine's enterprises engaged in the extraction, transport, and processing of oil and gas were slated to be privatized in 1995.¹⁵

Commodity Review

Metals

Aluminum.—Aluminum production in 1994 reportedly decreased by 1.8% compared with 1993. Alumina production had fallen to 1.07 Mmt because of difficulties in selling alumina to Russian smelters.¹⁶

According to a program for the development of the aluminum industry approved in 1993, it was projected that the level of aluminum consumption in Ukraine would increase to 500,000 metric tons per year (mt/a) by the year 2000, and that commissioning new aluminum production capacity was of great importance.

Ukraine had the capacity to produce 1,245,000 mt/a of alumina, 110,000 mt/a of primary aluminum, and 165,000 mt/a of secondary aluminum. Secondary aluminum was produced at a number of secondary aluminum plants that were part of the joint ventures Intersplav, Ukrgermetand, and Obimet. Output of secondary aluminum had fallen sharply.¹⁷

Despite its production of primary and secondary aluminum, Ukraine experienced shortages of alloys and semifinished aluminum products that it previously received from Russia. Ukraine planned to increase production capacity for both primary aluminum and semifinished aluminum products.¹⁸ As part of this development, Ukraine planned to introduce improved environmental controls in aluminum production.

Also, it was considered to be of great importance for Ukraine to participate in the development of the Dian Dian bauxite deposit in Guinea, owing to Ukraine's need to import raw materials for aluminum production.¹⁹ The Zaporozhye aluminum plant, Ukraine's only aluminum producer, began purchasing equipment to modernize production from Italy's Fata SpA Association, including equipment for a planned facility to produce aluminum foil and packaging material.²⁰

Copper.—The Government of Ukraine announced a program to develop the country's copper resources and construct metallurgical facilities to supply its industry with copper products. Ukraine had no copper mine output in 1994. The program entailed conducting geological feasibility studies of reserves at the Prutov copper-nickel mixed sulfide deposit in Zhitomir region and of the Tyurilsko-Lukivskoye copper deposit in the Volhynia region. Plans for the development of the copper industry called for processing as much as 35,000 mt/a of copper cathode at the Nikitovsky copper plant in Gorlovka in the Donetsk region and 20,000 mt/a of copper cathode at the Ukraine plant in Konstantinovka in the Donetsk region.²¹

Ferroalloys.—Ukraine was a major producer of ferroalloys, with more than 40% of the former U.S.S.R.'s electric furnace capacity. A large portion of Ukraine's ferroalloy production was based on domestically produced manganese, but Ukraine still had to import chrome and a large number of other alloying elements from other former republics. Ukraine produced more than 1.5 million metric tons per year (Mmt/a) of manganese ferroalloys, which exceeded internal consumption and allowed for exports.

More than 80% of the former Soviet Union's (FSU) manganese-containing ferroalloys was produced in Ukraine. Large exports of silicomanganese from Ukraine caused concerns in Western markets and led the EU to consider antidumping action. Much of the silicomanganese was produced at the Nikopol ferroalloys plant that announced its shut down operations during the winter of 1993-94 because of energy shortages.²²

In the beginning of 1994, the U.S. International Trade Commission commenced an antidumping investigation of silicomanganese imports from Ukraine. On December 6, 1994, it was reported in the U.S. Federal Register that the International Trade Administration of the U.S. Department of Commerce stated in a final determination that silicomanganese from Ukraine is being or is likely to be sold in the United States at less than fair value. Also, the U.S. International Trade Commission (ITC) determined that these imports of silicomanganese from Ukraine have materially injured or threaten material injury to the U.S. industry. However, this affirmative determination of the ITC did not result in the imposition of an antidumping order because the Government of Ukraine and the Department of Commerce concluded a suspension agreement on October 31, 1994, whereby Ukraine agreed to restrict the volume of direct or indirect exports of silicomanganese to the United States.²³

Iron and Steel.—In 1994, output of crude steel and steel products again fell sharply. In summer 1994, the Prime Minister announced a halt to all exports of ferrous scrap in order to try to stem the closure of steelmaking operations, which were severely short of scrap.²⁴

Ukraine's steel industry needed modernization because 55% of steel still was produced in open-hearth furnaces; oxygen converters accounted for almost all the rest. Only about 8% of steel was continuously cast.

Ukraine planned to modernize its steel industry, and a significant component of this modernization was to introduce better pollution control measures. The modernization program also called for closing inefficient steel mills and cutting the size of the work force. By the year, 2000 it was planned to reduce the work force by 140,000 persons, and to reduce it by another 50,000 persons by 2010.²⁵

Ukraine's steel industry sought alternative markets for its steel products as demand for steel fell sharply in the FSU countries. Ukraine sought markets in Africa, Europe, and the Far East while North Africa became a strong market for Ukrainian iron and steel products. Ukraine entered some foreign markets with low-priced steel, such as Lebanon,

where imports were used in reconstruction.²⁶ Ukraine's iron and steel products were shipped to world markets from Black Sea ports and also from Baltic ports.²⁷

In February 1994, the EU approved a resolution imposing a provisional antidumping duty on Ukrainian iron that would take effect when Ukrainian iron was priced at less than 149 European currency units per metric ton on cost, insurance, freight (CIF) terms.²⁸

Iron Ore.—Ukraine in 1994 produced 51.3 Mmt of iron ore including 36.45 Mmt of iron ore concentrate, and 12.39 Mmt of pellets.²⁹

Iron ore production decreased considerably since the late 1980's, and the mines were working at far less than total capacity of 125 Mmt/a of iron ore. The iron content of direct-shipping ore averaged 58%, and the iron content of the concentrate averaged 65%. There were six main open pit mining and beneficiation complexes and four underground mining complexes. Approximately 75% of the output was from open pits and the remaining 25% from underground mines. Ukraine exported about 25% of its output; the majority of exports went to FSU countries and to former Soviet bloc countries of Eastern Europe. Approximately 50% of this trade with former Soviet republics and bloc countries was on a barter basis.

A month-long miners' strike in October in Ukraine's major iron ore mining region, the Krivoy Rog basin, reportedly caused disruptions in iron ore deliveries to consumers in Eastern Europe. In response, these consumers were considering pressing charges for damages and also were refusing to conclude delivery contracts for 1995.³⁰

Plans called for commissioning the Krivoy Rog pelletizing plant in southwest Ukraine in 1995. This plant, the construction of which started as a joint project of the U.S.S.R. and the Eastern European members of the former Council for Mutual Economic Assistance (CMEA), was planned to pelletize hematite ores stored in dumps from the Novokrivorozhskiy and Yuzhniy open pit mining and beneficiation complexes. After the breakup of the U.S.S.R. and the end of the CMEA, Germany backed out of the project, jeopardizing its completion. Apparently the project was expected to proceed without Germany. The plant would produce about 10 Mmt/a of concentrate with a 60% iron content, and 10 Mmt/a of pellets, with the fluxed pellets having a 60% to 62% iron content and the nonfluxed pellets a 65% iron content.³¹

Manganese.—Ukraine in 1994 produced 2,979,900 Metric tons (mt) of marketable manganese ore, considerably down from its former level of about 7.5 Mmt/a in the late 1980's.³² Exports comprised about 10% of output, with the majority of the exports to former Soviet republics and the former Soviet bloc countries of Eastern Europe. Approximately 70% of manganese output was from open pit mines, and the remaining 30% from underground mines. There were two major manganese mining and beneficiation complexes in operation, the Marganets and Ordzhonikidze,

that exploited the Nikopol deposit and the Tavricheskiy experimental industrial complex that had been created to develop the potential for exploiting the Bolshoy Tokmak deposit. Manganese was being produced from 12 mines and open pits, and beneficiated at 5 plants.

More than 2.3 billion mt of manganese reserves reportedly were classified as confirmed under the Soviet reserve classification system. Of these reserves, 15.8% were oxide ores, 7.7% mixed oxide and carbonate ores, and 76.5% carbonate ores. The carbonate ores, which were difficult to process, were predominately in the Bolshoy Tokmak basin.

A problem confronting Ukraine's manganese industry was the relatively low quality of its ore compared with deposits in other countries. Ukraine's oxide ores reportedly have an average 28.6% Mn content, the oxide-carbonate ores an average 25% Mn content, and the carbonate ores an average 20% Mn content. The average Mn content for all confirmed reserves is reportedly 23.9%.

Along with production, reported manganese ore exports from Ukraine fell from almost 1 Mmt in 1988 to under 400,000 mt in 1993, with exports estimated to have fallen even further in 1994. Practically all of Ukraine's exports went to FSU countries or to former Soviet bloc countries of Eastern Europe.

Scandium.—Branches of the Vostochnyy uranium mining complex in the Dnepropetrovsk, Kirovograd, and Nikolayev regions reportedly began mining scandium. The Zheltye Vody uranium processing plant in Ukraine began industrial processing of the scandium ore.³³

Titanium.—The Zaporozhye titanium and magnesium plant, Ukraine's only titanium producer, has a 20,000 mt/a design capacity.³⁴ Although Ukraine produced practically all of the raw material for titanium production in the FSU, titanium sponge production reportedly ceased in 1994 at Ukraine's major titanium sponge producer, the Zaporozhye plant. Zaporozhye had been concentrating on titanium pigment production.³⁵

Mineral Fuels

Ukraine annually requires 118 billion m³ of natural gas and almost 60 Mmt of oil, but Ukraine only has the capacity to produce about 25 billion m³ of gas and 5 Mmt of oil annually.³⁶ According to Ukraine's Ministry of Economics, the fuel industry was the number one priority sector in need of foreign investment. A list of priority projects for foreign investment was drawn up. These included renovation of the Shebelinsk gas processing plant; construction of a gas processing plant at the Poltava field; reconstruction of the gas transport system to improve pipeline transport; development of the Odessa gasfield in the northwestern Black Sea; construction of a complex to produce high-octane unleaded gasoline at the Drogobych oil refinery; and construction of an offshore oil refinery near Odessa.³⁷

Ukraine planned to increase its role as a transshipper of

energy products to Europe. The Nation reached an agreement with Turkey to merge its pipeline network with one being built in Turkey for transporting Mideast petroleum to Europe, using the Odessa transshipment terminal and Ukraine's pipeline network to Europe. It was planned that Ukrainian experts would participate in the construction of the Turkish pipeline.³⁸

Coal.—In 1994, coal production reportedly fell 19.4% compared with 1993 to 95.3 Mmt. Output was about 25% below its target. Ukrainian coal production continued to decline, from 192 Mmt in 1988, to 164.8 Mmt in 1990, to 115.7 Mmt in 1993.

According to the Ukrainian Academy of Sciences, Ukraine required 170 million mt of coal annually for the full-scale operation of its thermal powerplants. Ukraine was exploring the possibility of replacing nuclear plants with powerplants using clean-burning coal technology.³⁹

The coal mines lacked money to provide needed investment and were behind in wage payments to workers. Lack of investment in the coal mining sector has prevented mine renovation; four of every five pits had operated for more than 25 years without renovation. Much of the industry was very old; 98 of Ukraine's 275 coal mines were started before World War II and 50 were started before the 1917 revolution.⁴⁰

There were approximately 50 open pits that were beyond salvaging and would have to be shut down. As part of Ukraine's program to close unprofitable coal mines, 12 coal mines were slated for closure in 1995 having a combined capacity of 3.4 Mmt/a of coal and employing 17,000 persons.⁴¹

According to Ukraine's Ministry of the Coal Industry, the coal mining industry could remain state-owned and in need of subsidies. The coal industry worked with a below-strength labor force and had experienced an 80% increase in mining accidents, which the Minister attributed to negligence rather than lack of poor equipment.⁴²

Nevertheless, Ukraine has explored reserves totaling 57.7 billion mt of coal, including 19.1 billion mt of coking coal. According to Ukrainian assessments, the country's reserves were 23.6 billion mt and existing mines had reserves of 10.8 billion mt. However, some of these reserves are at great depths with thin seams and difficult mining conditions.⁴³ Plans called for raising output to between 150 Mmt/a to 158 Mmt/a by 2005.⁴⁴

To stabilize and increase coal output, investment was needed in mine renovation. The reserves in Ukraine are considered among the deepest and hardest to develop in the world.⁴⁵ The dips were steep, and there was a propensity for methane explosions. Mechanization was not very advanced, and there was a great need for investment in this area.

Nuclear Power.—Ukraine's five nuclear powerplants have a total capacity of 12.8 million kilowatts. In 1994, nuclear powerplants reportedly produced 68,847,600 kilowatt hours

of energy totaling 34% of Ukraine's energy output.

Practically all of Ukraine's nuclear powerplants experienced a shortage of nuclear fuel. Ukraine mined uranium, but it had to be sent to Russia, which had facilities to process and enrich the fuel.

In April 1994, it was announced that Ukraine's Government apparently decided to shut down the remaining nuclear reactors at the Chernobyl powerplant, although, according to a Ukrainian official, it could require a number of years to actually close the plant.⁴⁶ Subsequently, in December 1994 it was reported that the Chernobyl plant was being upgraded, and the country would begin a program of intensive development of its nuclear power sector to relieve the severe energy crisis. A final decision regarding the status of Chernobyl apparently had not been reached.

In 1994, Ukraine reported 20% fewer violations in the nuclear power generation sector than in 1993, according to Ukraine's State Committee for the Use of Nuclear Power. There were 133 violations at nuclear powerplants, of which 21 were ranked at level 1 on the international scale, with the rest rated at zero.⁴⁷

Petroleum.—Ukraine's crude oil production reportedly was about 4.2 Mmt in 1994,⁴⁸ and Ukraine imported large quantities of oil for its petroleum refining industry. In 1994, Ukraine's oil refineries reportedly operated at only one-third capacity because of a lack of money to purchase oil. Ukraine's six refineries processed about 20 Mmt of crude oil, but have a maximum capacity to process 62 Mmt/a.

Uranium.—Ukraine, which reportedly has about 8% of the FSU's uranium reserves, planned to resume uranium production, according to a Government resolution "On Measures to Stabilize Energy Supply in the Economy," passed in May 1994. Production would resume at the Vostochnyy uranium mining complex, which reportedly has reserves adequate for more than a century of mining.⁴⁹ The Vostochnyy mining and beneficiation complex in Zheltye Vody reportedly had switched to producing iron ore concentrate, as a result of the collapse of the U.S.S.R. and the conversion of defense industry enterprises. Also, the State Nuclear Power Committee considered proposals to purchase equipment and licenses for technology for nuclear fuel production and the storage of processed fuel.⁵⁰

Ukraine planned to call a closed tender among four foreign companies to construct facilities to produce nuclear fuel. Although Ukraine had some enrichment and processing facilities, it lacked the capability to produce fuel elements which it acquired from Russia.⁵¹

Reserves

Ukraine has reserves of a wide range of metals, industrial minerals, and mineral fuel. Its major reserves are iron ore, manganese ore, sulfur, and coal. It also has significant

reserves of graphite, mercury, nickel, potash, and a number of important industrial minerals. Information at present, however, is not adequate to estimate reserves for a number of these mineral commodities. The reserves estimates that were available were assessed according to the Soviet reserve classification system, which is not comparable to the system used in the United States.

The economic criteria used in this system were designed for a centrally planned economy that did not account for production costs in the same way as a market economy system. Minerals classified in this system as reserves would not necessarily correspond to the Western definition of reserve (i.e., material economically exploitable under present market prices with existing technology).

For a full explanation of the Soviet reserve classification system, refer to the reserve section in the chapter on Russia, Bureau of Minews Minerals Yearbook, Vol. III, Mineral Industries of Europe and Central Eurasia, 1993.

Infrastructure

Ukraine, with an area about the size of Texas and a population of more than 50 million people, is the second largest country to form out of the FSU. Ukraine shares borders to the north with Belarus and Russia, to the east with Russia, to the south with Moldova, and to the west with Hungary, Poland, Romania, and Slovakia. Located on the western border of the FSU, Ukraine has good railroad, highway, and pipeline connections with Eastern Europe, and to the south on the Black Sea, Ukraine has port facilities for trade on world markets. Major ports include Ilichevsk, Izmail, Kerch, Kherson, Mariupol, and Odessa. The Dnieper is the major river flowing through Ukraine to the Black Sea. A major gas pipeline network connects the major gas-producing regions of west Siberia in Russia to Ukraine, from which the gas is exported to European countries.

Outlook

Although it has one of the largest mineral industries in the FSU, Ukraine's mineral industry faces great economic difficulties in making the transition to a market economy. Its coal industry, although it produced about 40% of the coal in the FSU, was in large part uneconomic, even in Soviet terms, because of the depth of the mines and the thinness of the seams. However, Ukraine began looking in 1994 more to its coal resources as a source of future domestic fuel supply as it attempts to find alternatives to nuclear power. Ukraine began seeking ways to increase coal production, while introducing greater efficiency and safety in this sector.

Its iron ore and manganese industries mine primarily low-grade or low-quality ore with which it will be difficult to compete on world markets, and its steel and ferroalloy industries are in need of modernization. If adequate investments are made, it may be possible to efficiently

produce concentrates and products that meet world standards, but the cost of such investments will have to be assessed in terms of the potential profitability of these industries. The same issues apply to modernizing Ukraine's steel and ferroalloys industries. Nevertheless, Ukraine does have markets for its ferrous ore and metal in the FSU countries and the former Soviet bloc countries of Eastern Europe, and these markets, as well as other new markets could enable these industries to survive this transition period.

Ukraine possesses undeveloped or underdeveloped resources of minerals that could offer as good if not better opportunities for future development. These resources include gold, graphite, titanium, and a wide range of industrial minerals.

Given the large size of Ukraine's mineral industry, the near-term economic well-being of the country depended to a significant degree on the result of efforts to either invest in Ukraine's mineral industries, to make them competitive and profitable, or on developing means for downsizing these industries and converting production to other products. Major serious social and economic consequences could result if these mineral industries collapse without effective alternate programs in place to ameliorate the effects of such a transition.

¹Text prepared July 1995.

²Interfax Business Report (Denver, Colorado, Feb. 7, 1995, p. 4.

³Summary of World Broadcasts, SUW/0364, p. WD/3, Dec. 23, 1994
ITAR-TASS news agency in English, Moscow, 1558 gmt, Dec. 16, 1994.

⁴Interfax Mining and Metals Report (Denver, Colorado), Jan. 13-20, 1995, p. 14.

⁵Interfax Business Report (Denver, Colorado, Colorado), Feb. 7, 1995, p. 5.

⁶Interfax Mining and Metals Report, Denver, Colorado, Feb. 24-Mar. 3 1995, p. 12.

⁷Foreign Broadcast Information Service, SOV-95-042-S, Mar. 3, 1995, p. 31, Kiev, Ukrinform in English, 1500 gmt, Feb. 27, 1995.

⁸Izvestiya, Moscow, Jan. 5, 1995, p. 1.

⁹Foreign Broadcast Information Service, SOV-95-015-A, Jan. 24, 1995, p. 1, Ukrinform in English, Kiev, 0815 gmt.

¹⁰_____, SOV-95-010-A, Jan. 24, 1995, Ukrinform in English, Kiev, 1200 gmt, Jan. 13, 1995.

¹¹Interfax Mining and Metals Report (Denver, Colorado). Aug. 26-Sept. 2, 1994, p. 10.

¹²Interfax Business Report, (Denver, Colorado). Nov. 29, 1994, p. 2.

¹³Foreign Broadcast Information Service, U.S. Government. (Washington, DC). SOV-95-010-A, Jan. 24, 1995, Ukrinform in English, Kiev, 1200 gmt, Jan. 13, 1995.

¹⁴Summary of World Broadcasts, British Broadcasting Corp. (Reading, England). SUW/0368, p. WA/3, Jan. 27, 1995, UNIAR news agency, Kiev 1800 gmt, Jan. 21, 1995.

¹⁵Foreign Broadcast Information Service, U.S. Government. (Washington, DC). SOV-95-015-A, Jan. 24, 1995, p. 22, Ukrinform in English, Kiev, 1200 gmt, Jan. 13, 1995.

¹⁶Interfax Mining and Metals Report (Denver, Colorado). Feb. 24-Mar. 3, 1995, p. 12.

¹⁷Summary of World Broadcasts, British Broadcasting Corp. (Reading, England). Feb. 18, 1994, p. WD/1, ITAR-TASS, Feb. 11, 1994.

¹⁸Page 6 of work cited in footnote 16.

¹⁹Interfax Mining and Metals Report (Denver, Colorado.) Jan. 7-14, 1994, p. 5.

²⁰Summary of World Broadcasts, British Broadcasting Corp. (Reading, England). Jan. 7, 1994, p. WC/8, Holos Ukrayiny, Kiev, Dec. 23, 1993, p. 2.

²¹Interfax Business Report (Denver, Colorado). May 19, 1995, p. 3.

²²Interfax Mining and Metals Report (Denver, Colorado). June 2-10, 1994,

- p. 10.
- ²³News, U.S. International Trade Commission, Office of Public Affairs, Washington, DC, Dec. 6, 1994; and Congr. Rec., Nov. 20, 1994, p. 60951.
- ²⁴Page 12 of work cited in footnote 15.
- ²⁵American Metal Market, Aug. 2, 1994, p. 7.
- ²⁶Metal Bulletin (London). July 15, 1993.
- ²⁷American Metal Market (New York, New York). Jan. 14, 1994, p. 7.
- ²⁸Interfax Mining and Metals Report (Denver, Colorado). June 3-10, 1994, p. 21.
- ²⁹Metal Bulletin (London). Aug. 5, 1993, p. 14.
- ³⁰Page 12 of work cited in footnote 15.
- ³¹Summary of World Broadcasts, British Broadcasting Corp., (Reading England) SUW/0361, p. WD/10. Dec. 2, 1994, UNIAN news agency, Kiev, in Ukraine, 1745 gmt, Nov. 22, 1994.
- ³²_____. p. WD/6, Economic News Agency, Moscow, Feb. 24, 1994.
- ³³Information for U.S. Bureau of Mines minerals questionnaire for Ukraine, 1994.
- ³⁴Foreign Broadcast Information Service, U.S. Government. (Washington, DC), Dec. 15, 1994, p. 56.
- ³⁵Interfax Mining and Metals Report (Denver, CO). Sept. 10-17, 1993, p. 5.
- ³⁶American Metal Market (New York, New York). Titanium Supplement, Sept. 30, 1994, p. 13A.
- ³⁷Summary of World Broadcasts, British Broadcasting Corp., (Reading England) Feb. 25, 1994, p. WD/1, Ukrainian Radio, Kiev. Feb. 15, 1994.
- ³⁸Interfax Petroleum Report (Denver, Colorado). Mar. 25-Apr. 1, 1994, p. 14.
- ³⁹Foreign Broadcast Information Service, U.S. Government. (Washington, DC). Mar. 16, 1994, p. 36, Ukrinform in English, 1551 gmt, Mar. 14, 1994.
- ⁴⁰New York Times, (New York, New York). Apr. 10, 1994, p. 12.
- ⁴¹Summary of World Broadcasts, British Broadcasting Corp., SUW/ 0360, p. WD/4, Nov. 25, 1994.
- ⁴²Work cited in footnote 39.
- ⁴³Work cited in footnote 39.
- ⁴⁴Interfax Mining and Metals Report. Dec. 16-30, 1994, p. 19.
- ⁴⁵Interfax Business Report (Denver, Colorado). Feb. 17, 1995, p. 4.
- ⁴⁶Interfax Mining and Metals Report (Denver, Colorado). Apr. 1-8, 1994, p. 9.
- ⁴⁷New York Times, (New York, New York). Apr. 10, 1994, p. 12.
- ⁴⁸Kiyevskiy Vedomosti, Kiev, Dec. 23, 1994, p. 20.
- ⁴⁹Foreign Broadcast Information Service, U.S. Government. publication Washington, DC, Jan. 26, 1995, p. 63, Unina, Kiev, 1030 gmt, Jan. 25, 1995.
- ⁵⁰Summary of World Broadcasts, British Broadcasting Corp., (Reading England). SU W/0369, p. WD/2, Feb. 3, 1995, Interfax news agency, Moscow, in English, 1733 gmt, Jan. 25, 1995.
- ⁵¹Foreign Broadcast Information Service, U.S. Government. (Washington, DC). Dec. 15, 1994, p. 56.
- ⁵²Interfax Mining Report (Denver, Colorado). May 13-20, 1994, p. 3.
- ⁵³Interfax Business Report (Denver, Colorado). Feb. 21, 1995, p. 3.

TABLE 1
UKRAINE: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1992	1993	1994
METALS			
Alumina	1,200,000	1,200,000	1,000,000 2/ 3/
Aluminum:			
Primary	100,000	100,000	98,000
Secondary	72,000	50,000	40,000
Total	172,000	150,000	167,000
Ferroalloy:			
Blast furnace:			
Ferromanganese	50,000	40,000	30,000
Spiegeleisen	5,000	4,000	3,000
Electric furnace:			
Ferromanganese	100,000	80,000	60,000
Silicomanganese	1,000,000	700,000	600,000
Ferrosilicon	500,000	500,000	400,000
Ferronickel	50,000	50,000	40,000
Other	40,000	40,000	30,000
Total	1,700,000	1,400,000	1,160,000
Iron ore	75,700,000	65,000,000	51,300,000 2/
Magnesium	15,000	13,000	10,000
Manganese:			
Marketable ore	5,820,000 2/ 3/	3,800,000 2/	2,979,900 2/
Mn content	1,850,000 2/	1,350,000 2/	1,050,000 2/
Mercury	100	80	60
Pig iron	35,300,000	30,000,000	20,120,000 2/
Steel:			
Crude	41,800,000 2/ 3/	32,400,000 2/ 3/	23,798,000 2/
Finished	29,500,000 2/	20,000,000	17,000,000 2/
Pipe	5,100,000 2/ 3/	4,500,000	3,200,000
Titanium:			
Ilmenite concentrates	200,000	180,000	150,000
Metal	12,000	10,000	2,000
Zinc, metal	20,000	12,000	10,000
Zirconium concentrates	75,000	70,000	65,000
INDUSTRIAL MINERALS			
Cement	17,000,000	22,000,000	18,000,000
Graphite	50,000	40,000	30,000
Nitrogen : N content of ammonia)	1,300,000	1,200,000	1,000,000
Potash: K ₂ O content	225,000	200,000	175,000 2/
Salt	8,000,000	6,000,000	3,940,000 2/ 3/
Sulfur, native	800,000	600,000	392,000 2/
MINERAL FUELS AND RELATED MATERIALS			
Coal 2/	134,000,000	115,700,000	95,300,000 2/
Of which coking coal	54,900,000	50,000,000	40,000,000
Coke	27,500,000	25,000,000	17,000,000 2/ 3/
Natural gas	20,900,000	19,300,000	18,300,000 2/
thousand cubic meters			
Petroleum, crude	4,480,000 3/	4,250,000	4,200,000 2/

1/ Table based on information and data available through July 21, 1995.

2/ Reported figure.

3/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits.

TABLE 2
UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Metric tons unless otherwise specified)

Commodity	Major operating facility	Location	Annual capacity e/
Alumina	Nikolayev refinery	Nikolayev (Mykolayiv) 1/	1,000,000.
Do.	Zaporozhye (Dneprovsk) refinery	Zaporozhye	245,000.
Aluminum, primary	Zaporozhye (Dneprovsk) smelter	do.	110,000.
Coal:			
Hard	Donets coal basin with about 225 mines produces more than 90% of Ukraine's coal	Donetskaya (Donets'ka) 1/ Dnepropetrovskaya (Dnipropetrovs'ka)1/ Luganskaya (Luhans'ka) 1/ oblasts	130,000,000.
Do.	L'vov-Volynskiy basin produces remainder from 18 mines	Western Ukraine	6,000,000.
Brown	Dneprovskoye Basin	Central Ukraine	7,000,000.
Dolomite	Novotroitskoye, Severskoye mining administrations	Novotroitskoye deposit, Yamskoye deposit	3,000,000 (total).
Do.	Dokuchayevskiy Flux-dolomite complex	Yelenovskoye and Stylskoye deposits	
Graphite	Zavalyevskiy graphite complex	Zavalyevskiy deposit	80,000.
Iron ore			
Do.	Underground mining: Krivbassruda production association with 16 mines	Kryvoy Rog Basin	30,000,000.
Do.	Ekspluatatsionnaya Mine of the Zaporozhskiy iron ore complex	do.	3,500,000.
Do.	Open pit mining: Yuzhniy, Novokrivorozhskiy, Tsentralnyy, Severnyy, Inguletskiy, Poltaviskiy and Kamysh-Burunskiy mining and beneficiation complexes	do.	90,000,000 (total).
Magnesium			
Do.	Zaporozhye plant	Zaporozhye	10,000.
Do.	Khlorvinil concern	Kalush	20,000.
Manganese ore, marketable			
Do.	Ordzhonikidze, Marganets mining and beneficiation complexes	Nikopol Basin	7,000,000. (total).
Do.	Tavrisheskiy mining and beneficiation complex (under development)	Bol'shoy Tomak Basin	
Ferroalloys			
Do.	Nikopol ferroalloys plant	Nikopol	250,000 (ferromanganese).
Do.	do.	do.	1,200,000 (silicomanganese).
Do.	do.	do.	3,000,000 (manganese sinter).
Do.	Stakhanov plant	Lugansk	NA (ferrosilicon).
Do.	Zaporozhye plant	Zaporozhye	300,000 (ferrosilicon) 160,000 (silicomanganese; NA (ferrochrome); NA (ferromanganese); 40,000 (manganese metal)
Mercury	Nikitovskiy mining and metallurgical complex	Donets Basin	120.
Nickel	Pobuzhskiy mining and metallurgical complex, comprising three open pit mines and smelter	Pobuga region	10,000 (ferronickel).
Potash	Khlorvinil production association, Stebnik potash plant	Pricarpathian region	300,000 (K ₂ O).
Steel, crude			
Do.	Azovstal plant	Mariupol	7,000,000.
Do.	Donetsk plant	Donetsk	2,000,000.
Do.	Kommunarsk plant	Kommunarsk (Alchevs'k) 1/	4,500,000.
Do.	Kryvoy Rog plant	Kryvoy Rog	14,000,000.
Do.	Makeyevka plant	Makeyevka	4,000,000.
Do.	Mariupol plant	Mariupol	7,000,000.
Do.	Zaporozhye plant	Zaporizhya	5,000,000.
Sulfur	Sera production association	Rozdol mining complex mines, Rozdol, Soroks, Zhidachev Deposits. Yavorov complex mines. Nemirov and Yazov deposits in L'vovskaya (L'vivs'ka) 1/ and Kiev (Kyyivs'ka) 1/ oblasts	1,500,000 (total).

See footnotes at end of table.

Table 2-Continued
 UKRAINE: STRUCTURE OF THE MINERAL INDUSTRY FOR 1994

(Metric tons unless otherwise specified)

Commodity	Major operating facility	Location	Annual capacity e/
Titanium, ilmenite and zircon-rutile-ilmenite ores	Irshanskiy mining and beneficiation complex Verkhnedneprovskiy mining and metallurgical complex	Irsha River valley Verkhnedneprovsk region	250,000 (total).
Titanium, metal	Zaporozhye plant	Zaporozhye	20,000.
Uranium	Zheltye Vody complex	Northern part of Kryvoy Rog Basin	NA.
Zinc	Ukrzink plant	Konstantinovka (Kostyantynivka) 1/	25,000.

e/ Estimated . NA Not available.

1/ New name or spelling given, if available, in parentheses.

TABLE 3
 UKRAINE: RESERVES OF MINERAL COMMODITIES
 FOR 1994

(Thousand metric tons unless otherwise specified)

Commodity	Reserves
Bentonite	112,400
Clays, refractory	493,000
Coal:	
Hard	49,000,000
Brown	3,650,000
Dolomite	439,000
Graphite	96,500
Gypsum	441,000
Iron ore	26,900,000
Kaolin	294,000
Limestone, for fluxing	2,720,000
Manganese ore	2,210,000
Potash	2,800,000