



2007 Minerals Yearbook

POLAND

THE MINERAL INDUSTRY OF POLAND

By Mark Brininstool

Poland has significant mineral reserves of several mineral products and also has important mineral processing facilities. In 2007, Poland had about 6% of world reserves of copper content in ore, about 19% of world reserves of silver content in ore, and significant coal reserves. In terms of world rankings, Poland was the 6th ranked mine producer of silver, the 10th ranked mine producer of copper, and an important producer of feldspar, gypsum, lead, lime, nitrogen, salt, sand and gravel, and sulfur (Brooks, 2008; Dolley, 2008; Edelstein, 2008; Kostick, 2008; Kramer, 2008; Miller, 2008; Ober, 2008; Olson, 2008; Potter, 2008; Smith, 2008).

Minerals in the National Economy

In 2007, Poland's real gross domestic product (GDP) increased by 6.6% compared with that of 2006, and inflation increased by 2.5% (International Monetary Fund, 2008, p. 70). Industrial production contributed about 20% of the total GDP; mining and quarrying made up about 10% of the value of industrial output and 2% of the GDP (Dmochowska, 2008a, p. 462).

Mineral Trade

According to the Central Statistical Office's Yearbook of Foreign Trade Statistics 2008, Poland's total imports in 2007 were valued at 456,828 million Polish zlotys (Zl) (\$165,117 million¹), of which the two categories base metals and articles thereof and mineral products accounted for Zl107,553 million (\$38,874 million), or 24%. Exports in 2007 were valued at Zl386,556 million (\$139,717 million), of which base metals and articles thereof and mineral products accounted for Zl67,202 million (\$24,290 million), or 17% (Dmochowska, 2008b, p. 81-93). In terms of value, crude oil and natural gas were Poland's leading mineral imports, and coal, copper, iron and steel, and silver were its leading mineral exports. Although Poland was a significant producer of mineral products, it was dependent on imports of aluminum, iron ores and concentrates, and mineral fuels, which resulted in a negative trade balance for mineral products (Ney and Smakowski, 2008, p. xix-xx).

Government Policies and Programs

Mining activities in Poland are regulated by the Act of 4 February, 1994 on the Geological and Mining Law (the Act). Enforcement of the regulations in the Act is generally carried out by the Department of Geology and Geological Concessions within the Ministry of Environment (Department of Geology and Geological Concessions, 2009). The trade, distribution, and storage of gaseous fuels are additionally regulated by the Act on Reserves of Crude Oil, Petroleum Products and Natural Gas dated February 16, 2007, and the Polish Energy Law of

¹Where necessary, values have been converted from Polish zlotys (Zl) to U.S. dollars (US\$) at the rate of Zl2.76671= US\$1.00.

April 10, 1997 (Polskie Gornictwo Naftowe i Gazownictwo Warszawa, 2008, p. 30).

Production

In 2007, Poland was a significant world producer of coal, copper content in ore, feldspar, gypsum, lead content in ore, lime, nitrogen, salt, sand and gravel, silver content in ore, and sulfur (Brooks, 2008; Dolley, 2008; Edelstein, 2008; Kostick, 2008; Kramer, 2008; Miller, 2008; Ober, 2008; Olson, 2008; Potter, 2008; Smith, 2008). Of these minerals, copper ore and refined copper were the most significant mineral products for Poland in terms of production and export revenue; copper and articles thereof earned Zl9,330 million (\$3,372 million) worth of export revenues in 2007, which was second only to iron and steel export revenue of Zl17,364 million (\$6,276 million) within the category of base metals (Dmochowska, 2008b, p. 93). Poland was also the sixth ranked producer of silver content in ore in the world and had maintained average production levels of between 1,200 and 1,400 metric tons (t) for the past 5 years (Brooks, 2008). Production of major industrial minerals, including feldspar, gypsum, lime, sand and gravel, and sulfur increased, whereas output of nitrogen and salt decreased.

Structure of the Mineral Industry

The vast majority of companies in the Polish mineral industry were privately owned, and foreign companies were allowed to operate and have full ownership of companies registered as joint-stock or limited-liability companies (Ney and Smakowski, 2007, p. ix). In 2007, 2,424 entities that were classified as mining and quarrying companies were operating. Of these 2,424 companies, only 4 were listed as state-owned enterprises, which was down from 12 in 2006, and 228 entities had foreign capital participation (Dmochowska, 2008a, p. 483). Table 2 is a list of the major mineral industry facilities in Poland, and table 3 provides information on the major mineral resources in Poland.

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—Poland has no bauxite deposits and all alumina for aluminum production is imported into the country. In 2006 (the latest year for which trade data were available), Poland imported 65,100 t of bauxite and 155,700 t of alumina. Bauxite imports were used in the cement, chemical, and steel industries. No imported bauxite was used to produce alumina. Bosnia and Herzegovina (47,700 t), Ireland (40,300 t), and Germany (31,700 t) were the main sources of Polish alumina imports. The Konin-Impexmetal aluminum smelter at Konin used about 66% of the alumina imports in the production of primary aluminum; the remaining

34% of imports was used to produce aluminous cement, chemicals, electroceramics, glass, and high-alumina refractory materials (Ney and Smakowski, 2008, p. 46-49).

Aluminum production increased only slightly from 2006 to 2007 (by 2.9%), whereas imports of aluminum increased by 34% (Ney and Smakowski, 2008, p. 21). Imports of the more-inclusive category of aluminum and articles thereof increased by about 25% from 2005 to 2006 (the latest year for which data were available), and exports increased by about 17% (tables 4 and 5).

Copper.—Poland had 14 copper deposits located in Lower Silesia; combined, these deposits contained about 1,961 million metric tons (Mt) of copper ore and about 38 Mt of copper (table 3). The copper industry in Poland was dominated by KGHM Polska Miedz S.A. (KGHM), which was the only copper mining and primary copper producing firm in Poland. A few other small firms had the capacity to process copper scrap and copper-containing wastes. In 2007, copper ore production decreased by about 3% compared with production in 2006, and the copper content of concentrate decreased by about 9%. Total primary and secondary smelter copper production decreased by about 5% in 2007 compared with that of 2006. Production of electrolytically refined copper decreased by about 4% (table 1). The decreased production of ore was reportedly a result of KGHM ceasing production on days “legally free from work” in response to a request of the National Labor Inspectorate (KGHM Polska Miedz S.A., 2008a, p. 55). KGHM was enacting changes in its labor system that would allow the mines to increase their operating time without violating National Labor Inspectorate regulations; it was also continuing its efforts to increase exploitation of the Glogow Gleboki-Przemyslowy deposit to increase ore production. KGHM’s copper content of extracted ores decreased to 1.67% in 2007 from 1.79% in 2006 because mining operations were being conducted in areas with lower copper content of ore than had been mined in 2006. These decreases in ore production and in copper content resulted in reduced copper content of ore production. KGHM’s copper content of concentrate decreased to 24.1% in 2007 from 25.6% in 2006 (KGHM Polska Miedz S.A., 2008a, p. 40, 55).

In 2006 (the latest year for which data were available), exports of Polish refined copper and copper alloys decreased by about 1%. Germany, France, China, and Austria (in order of the quantity of imports) remained the leading importers of refined copper from Poland (table 5; Ney and Smakowski, 2008, p. 137).

KGHM operated three mines in Poland (the Lubin, the Polkowice-Sieroszowice, and the Rudna Mines), which, combined, had deposits that covered an area of 467 square kilometers and that contained about 80.5% of the country’s copper reserves. The Rudna Mine, which was the leading producer of ore, produced about 12.4 Mt in 2007. The company also had ore enrichment plants located in Lubin, Polkowice, and Rudna, and smelting and refining facilities located in Glogow and Legnica (KGHM Polska Miedz S.A., 2008b; Ney and Smakowski, 2008, p. 131).

KGHM reported record sales of Zl12.2 billion (\$4.4 billion) and record profits of Zl3.8 billion (\$1.4 billion) in 2007, partly owing to higher copper prices. In a continuing effort to expand its copper resource base, KGHM acquired permission for exploratory drilling in eastern Germany (KGHM Polska Miedz S.A., 2008a, p. 5, 10).

Gold.—Gold production in Poland was entirely a result of gold obtained from the processing of copper ores and was therefore controlled by Poland’s sole copper producer, KGHM. In 2007, gold output was cut in half, returning to the normal production figures the industry had experienced before the exceptional output seen in 2006 (table 1). The more than doubling of gold production in 2006 was owing to the purchase of high-gold-content copper-bearing materials for processing in 2006 (KGHM Polska Miedz S.A., 2008a, p. 56). All gold was produced at KGHM’s Precious Metals Plant at the Glogow smelter and refinery. Copper ores processed there were estimated to contain less than 1 gram per metric ton (g/t) of gold. Polish gold reserves were estimated to total about 50 t (Ney and Smakowski, 2008, p. 205-06).

Iron and Steel.—Despite having no known deposits of iron ore, Poland was a significant producer of pig iron and steel. In 2006 (the latest year for which data were available), the Polish pig iron and steel industries depended on imports of about 8.6 Mt of iron ore from (in order of the quantity of iron ore imported) Russia, Ukraine, Brazil, Bosnia and Herzegovina, and other countries (Ney and Smakowski, 2008, p. 244).

In 2007, output of pig iron for steel production increased by 9% compared with production in 2006; no pig iron was produced for foundry use. Two production facilities operated by ArcelorMittal Poland S.A.—the Katowice and Sendzimir Steelworks—produced virtually all pig iron in Poland; the remaining need was supplied through imports of about 8.7 Mt (Dmochowska, 2008b, p. 177; Ney and Smakowski, 2008, p. 245).

Total crude steel production increased by about 6% compared with that of 2006. ArcelorMittal Poland’s steelworks at Dobrow Gornicza and Krakow accounted for 65% of all crude steel production in Poland in 2006 (the latest year for which data were available), and the remaining 35% came from a number of smaller production facilities (Ney and Smakowski, 2008, p. 248-49).

The previous 3 years had seen a trend of increasing output in hot-rolled semimanufactures, crude steel, and pig iron mainly owing to investments in production facilities made by ArcelorMittal Poland. In 2007, the company made capital expenditures of \$1.7 billion in Poland by building a hot-strip mill with a capacity of 450,000 t of semimanufactures in Krakow and a new continuous caster in Dabrowa Gornicza, and investing in other plants. ArcelorMittal also completed its purchase of ArcelorMittal Poland by acquiring the remaining 25% of its outstanding shares from the Polish Government (ArcelorMittal, 2008, p. 38, 89).

Lead and Zinc.—Lead and zinc mine output in Poland had shown a declining tendency in recent years as deposits were being depleted and the lead content in copper ores decreased. The three lead-zinc mines that had been operating in Poland were expected to close by 2013, but mining was likely to commence at new mines owing to expected new reserve developments (Ney and Smakowski, 2008, p. 268). In 2007, the total mine output of lead and zinc in ore decreased by about 1% and 4%, respectively, whereas the output of lead content of concentrate increased by about 2% and zinc concentrate output decreased by about 2%. Total refined metal production increased by about 42% for lead and 6% for zinc in 2007 compared with production in 2006. The increase in refined lead production came

entirely from secondary production, which increased by 73%; primary production decreased by 13% (table 1). KGHM began lead processing at its Legnica smelter, which produced 15,228 t of refined lead in 2007 (KGHM Polska Miedz S.A., 2008a, p. 56).

Silver.—KGHM was Poland's dominant silver producer and an important producer of silver in the world market. KGHM produced 1,215 t of silver from copper ore in 2007, which was about 6% of total world silver production; this level of production made KGHM the third ranked silver producing company in the world (KGHM Polska Miedz S.A., 2008a, p. 56). Other small producers were estimated to have produced a combined total of 45 t. Silver exports decreased by 1.5% in 2007 compared with those of 2006.

Industrial Minerals

In 2007, production of most industrial minerals in Poland increased, with output of barite, bentonite, cement, dolomite, gypsum and anhydrite, and lime each increasing by more than 10%. Production of rock salt decreased by about 48%, and production of marketable quartz and quartz crystal decreased by about 14%. Data on the production of industrial minerals in Poland are in table 1.

Mineral Fuels

Coal.—Production of bituminous coal decreased by about 7% in 2007 compared with production in 2006. This decrease continued a trend of reduced coal production that was mainly a result of mine closures owing to depleted reserves and difficult mining conditions. Further development of reserves was not likely as future development projects would face difficult mining conditions, environmental concerns, and lower-quality coal in undeveloped reserves (Ney and Smakowski, 2008, p. 225-26). Exports of anthracite and bituminous coal decreased from 2005 to 2006 (the latest year for which data were available) by about 14%, whereas imports of coal increased by 56% (tables 4 and 5).

Natural Gas and Petroleum.—In 2007, Poland produced 5,652 million cubic meters of natural gas and 721,000 t (5 million barrels²) of crude oil, but was dependent on imports from Russia for the majority of its supplies. Poland imported 10,354 million cubic meters of natural gas in 2006 (the latest year for which data were available) and 19,813,000 t (147 million barrels) of crude oil. Of these imports, about 94% of crude oil and 66% of natural gas came from Russia.

Oil and gas exploration and production in Poland were dominated by Polskie Gornictwo Naftowe i Gazownictwo S.A. Warszawa (PGNiG), which was 84.75% owned by the State Treasury of Poland. In 2007, PGNiG reported total production of 4.3 billion cubic meters of natural gas and 518,000 t (3,842 thousand barrels) of crude oil with reserves of 98 billion cubic meters of natural gas and 21.2 Mt (157 million barrels) of oil. PGNiG also expanded potential overseas operations by signing a memorandum of understanding with India's Gujarat State Petroleum Co. for exploration and production of

oil and gas in Egypt, India, and Yemen, obtaining the rights for exploration and production work in Libya, and acquiring partial ownership of projects in Denmark and on the Norwegian continental shelf (Polskie Gornictwo Naftowe i Gazownictwo Warszawa, 2008, p. 34-35, 38-40).

FX Energy, Inc. increased its gas reserves in Poland by 87% in 2007 owing to new gas discoveries at its Roszkow-1 and Winna Gora-1 wells. Gross proved reserves at the two locations are 1,036 million cubic meters, and FX Energy was granted 506 million cubic meters of those reserves based on its partnership arrangement with PGNiG (Rigzone.com, 2007).

Outlook

Poland's mineral industry has had new investments, mainly in the copper, iron and steel, and natural gas industries, but continues to face the challenge of depleted ore deposits and lower ore grades. Important industries, such as copper, iron and steel, and natural gas, will likely be able to increase production slightly, whereas lead and zinc and coal production will most likely continue to fall in coming years. Poland's dependence on imports of such minerals as iron ore and concentrate, natural gas, and oil will likely continue into the foreseeable future.

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²Where necessary, values have been converted from metric tons (t) of crude oil to barrels (bbl) of crude oil at the rate of 1 t=7.418 bbl.

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TABLE 1
 POLAND: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2003	2004	2005	2006	2007	
METALS						
Aluminum, metal:						
Primary	metric tons	45,371	45,807	54,508	57,620	58,736
Secondary ^{e, 3}	do.	11,900	13,100 ^r	11,800 ^r	18,900 ^r	20,000
Total ^e	do.	57,300	58,900 ^r	66,300 ^r	76,500 ^r	78,700
Cadmium, metal, primary	do.	375	356	408	373 ^r	421
Copper:						
Ore:						
Gross weight		29,992	31,800	30,434 ^r	31,279 ^r	30,262
Cu content	metric tons	570,000 ^e	590,000	575,203 ^r	559,894 ^r	505,900
Concentrate:						
Gross weight		1,756	2,054	1,977	1,946 ^r	1,876
Cu content	metric tons	505,000 ^r	531,000 ^r	512,000 ^r	497,000 ^r	452,000
Metal:						
Smelter:						
Primary	do.	560,000 ^{r, e}	547,200 ^r	555,700 ^r	555,900 ^r	519,000 ^p
Secondary	do.	24,100 ^{r, e}	33,300 ^r	28,200 ^r	33,500 ^r	40,000 ^p
Total	do.	584,100 ^r	580,500 ^r	583,900 ^r	589,400 ^r	559,000 ^p
Refined, electrolytically, primary and secondary	do.	529,616	550,066	560,256	556,625	532,975
Gold, mine output, Au content	kilograms	356	527	713 ^r	1,700 ^r	883
Iron and steel:						
Pig iron:						
For foundry use		47 ^r	108 ^r	18 ^r	21	--
For steel production		5,585 ^r	6,292 ^r	4,458 ^r	5,311 ^r	5,804
Total		5,632	6,400	4,476 ^r	5,332 ^r	5,804
Ferroalloys:						
Blast furnace, ferromanganese	metric tons	1,000	46,900	7,800 ^r	4,100 ^r	4,000 ^e
Electric furnace:						
Ferrochromium	do.	200	--	--	400 ^r	400 ^e
Ferrosilicomanganese	do.	5,000	29,600	10,242 ^r	3,310 ^r	3,000 ^e
Ferrosilicon	do.	92,700 ^e	83,600 ^r	65,118 ^r	13,034 ^r	58,538
Total ferroalloys	do.	98,900 ^e	160,100 ^r	83,160 ^r	20,844 ^r	65,938
Steel, crude:						
From oxygen converters		6,070	6,865	4,893 ^r	5,766 ^r	6,188
From electric furnaces		3,040	3,713	3,443 ^r	4,225 ^r	4,433
Total		9,110	10,578	8,336	9,991 ^r	10,621
Semimanufactures:						
Hot rolled		6,720	7,605	6,294	7,666	8,011
Cold rolled		1,533	1,600	1,600	1,600	1,482
Pipe		309	310	380	417	401
Lead:						
Mine output:						
Pb content of Pb-Zn ore	metric tons	74,000	72,900 ^r	68,500 ^r	67,100 ^r	66,300 ^e
Pb content of Cu ore	do.	36,000	37,000 ^r	31,200 ^r	30,500 ^r	30,120
Total	do.	110,000	109,900 ^r	99,700 ^r	97,600 ^r	96,420
Concentrate:						
Gross weight	do.	100,200	110,200	115,800 ^r	93,700 ^r	96,400
Pb content	do.	54,700	60,200	75,100 ^r	58,500 ^r	59,900
Metal, refined, primary and secondary:						
Primary	do.	32,100	31,600	29,500	26,200	22,800
Secondary	do.	42,000	42,300	51,500	46,800	81,000
Total	do.	74,100 ^r	73,900 ^r	81,000 ^r	73,000 ^r	103,800

See footnotes at end of table.

TABLE 1—Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2003	2004	2005	2006	2007
METALS—Continued					
Platinum-group metals, average content of slimes: ^{e, 3, 4}					
Palladium kilograms	10	10	10	10	10
Platinum do.	20	20	20	20	20
Selenium metric tons	78	83	82 ^f	87 ^f	85 ^e
Silver, mine output, Ag content do.	1,295 ^f	1,419 ^f	1,293 ^f	1,270 ^f	1,250 ^e
Zinc:					
Zn content:					
Mine output do.	174,700	163,200 ^f	156,200 ^f	144,800 ^f	139,000 ^e
Concentrate output do.	153,900	140,300	135,600 ^f	126,600 ^f	124,000 ^e
Metal, refined, including secondary do.	154,200	155,500 ^f	137,300	133,900 ^f	142,000
INDUSTRIAL MINERALS					
Aggregates, natural:					
Mine output metric tons	78,945	81,398	99,966 ^f	115,451 ^f	120,000 ^e
Processed do.	76,515 ^f	79,232 ^f	95,277 ^f	110,580 ^f	115,000 ^e
Barite, beneficiated do.	2,900 ^f	3,183	2,357	2,143	2,500 ^e
Cement:					
Clinker	8,647 ^f	9,621 ^f	9,468 ^f	11,219 ^f	13,168
Hydraulic:					
Portland	10,692 ^f	11,573 ^f	11,584 ^f	13,618 ^f	15,663
Metallurgical cement	808	800	852	1,070	1,300 ^e
Other	153	193	210	--	--
Total	11,653	12,566 ^f	12,646	14,688	16,963
Clays and clay products, crude:					
Bentonite metric tons	31,648	66,143	86,331	93,880	105,943
Fuller's earth do.	4,200	4,700	5,000 ^e	5,000 ^e	5,000 ^e
Fire clay	144	137	156	187	198
Kaolin:					
Crude	170	191	159 ^f	200	210
Beneficiated	136	191	115	110	130 ^e
Diatomite metric tons	700	800 ^f	500 ^f	600 ^f	600 ^e
Feldspar:					
Run of mine do.	289,000	336,900	457,400 ^f	431,300 ^f	440,000 ^e
Processed, including imported material do.	334,000	408,900	490,200 ^f	457,600 ^f	470,000 ^e
Gypsum and anhydrite:					
Natural: ⁵					
Gypsum rock	1,031	971	1,048 ^f	1,172 ^f	1,380 ^e
Anhydrite	197 ^f	196 ^f	195 ^f	181 ^f	200 ^e
Total	1,228 ^f	1,167 ^f	1,243	1,353 ^f	1,581
Synthetic gypsum	1,094	1,250	1,173 ^f	1,217 ^f	1,300 ^e
Grand total	2,322 ^f	2,417 ^f	2,416 ^f	2,570 ^f	2,881
Lime, hydrated and quicklime	1,955	1,950 ^f	1,749 ^f	1,936 ^f	2,143
Magnesite:					
Ore, crude metric tons	30,000	52,000	57,000 ^f	63,000 ^f	65,000
Concentrate do.	27,200	57,900	55,300 ^f	62,500 ^f	65,000
Calcined do.	-- ^f	100	100	-- ^f	--
Nitrogen, N content of ammonia	1,912	1,985	2,079 ^f	2,007 ^f	1,995
Salt:					
Rock	848	1,099	1,123	1,130	591
Other	3,812	4,043	3,762	3,825	3,800
Total	4,660	5,142	4,885	4,955	4,391
Sand, excluding glass sand:					
Foundry sand	666	606	766 ^f	770 ^{f, e}	780 ^e
Filling sand	5,843	5,945	6,047 ^f	6,197 ^f	6,250 ^e
Lime-sand brick production sand thousand cubic meters	483	540	572 ^f	685 ^f	720 ^e
Silica:					
Glass:					
Construction, flat	644	696	650	763 ^f	780 ^e
Technical	53	69	65	70	70 ^e

See footnotes at end of table.

TABLE 1—Continued
POLAND: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity ²	2003	2004	2005	2006	2007
INDUSTRIAL MINERALS—Continued					
Silica—Continued:					
Glass—Continued:					
Glass tableware	89	98	97 ^r	102 ^r	105 ^e
Packing	968	1,108	1,083 ^r	1,116 ^r	1,150 ^e
Silica ores:					
Glass sand, marketable	1,402	1,479	1,593 ^r	1,525 ^r	1,550 ^e
Quartz and quartz crystal, marketable	metric tons 32,800	37,100	15,800 ^r	13,900 ^r	12,000 ^e
Quartzite, refractory, marketable	do. 115,400	108,000	86,000 ^r	16,900 ^r	15,000 ^e
Quartz schist, marketable	do. 2,600 ^r	9,700 ^r	10,800 ^r	10,800 ^r	10,800 ^e
Sodium compounds, n.e.s.: ⁶					
Carbonate (soda ash), 98%	1,050	1,167	1,189	1,177	1,192
Caustic soda (96% NaOH)	427	452	391	462	487
Stone, mine output:					
Dimension stone	2,052	2,282	3,164 ^r	3,729 ^r	4,000 ^e
Dolomite	1,815	1,986	1,834	2,013	2,232
Limestone:					
For lime production	11,379	11,623 ^r	11,233 ^r	13,645 ^r	13,500 ^e
For non-lime end use	23,747	23,233	24,607	29,299	34,044
Road stone	174 ^r	170 ^r	166 ^r	160 ^r	155 ^e
Sulfur:					
Native, Frasch	762	821	802	800	834
Byproduct:					
From natural gas	22	23	21	20	19 ^e
From oil refineries and coking plants	157	158	164	182	193 ^e
Other	3	1	1	2	2 ^e
Total	182 ^r	182 ^r	187 ^r	203 ^r	214 ^e
From gypsum ^c	10	10	-- ^r	-- ^r	--
Grand total	954 ^r	1,013 ^r	989 ^r	1,003 ^r	1,048
MINERAL FUELS AND RELATED MATERIALS					
Carbon black	18,500	36,400	30,500 ^r	34,100 ^r	34,000 ^e
Coal:					
Bituminous	103,016	101,230	97,903	95,220	88,313
Lignite and brown	60,919	61,197	61,136	60,844	57,538
Total	163,935	162,427	159,039	156,064	145,851
Coke, coke oven	10,111	7,752	8,518	9,735	10,383
Fuel briquets, all grades	4	3	3	3	3 ^e
Gas:					
Natural	million cubic meters 5,315	5,630	5,742	5,650	5,652
Manufactured:					
Town gas	do. 4	5	11	10	10
Coke oven gas	do. 4,245	4,216	3,545	4,101	4,382
Generator gas ^c	do. 300	300	300	300	300
Total	do. 4,549	4,521	3,856	4,411 ^r	4,692
Peat, fuel and agricultural	431	509	639 ^r	577 ^r	641
Petroleum:					
Crude	765	886	849	797	721
Refinery products ^c	16,886 ⁶	17,000	16,000	16,000	16,000

⁶Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^PPreliminary. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through January 31, 2009.

²In addition to the commodities listed, cobalt and nickel, which are associated with copper ores, are produced in quantities that so far have not warranted further recovery.

³Based on official Polish estimates.

⁴Estimates based on reported platinum- and palladium-bearing final (residual) slimes and their average Pt and Pd content from electrolytic copper refining.

⁵Includes building gypsum, as well as an estimate for gypsum used in the production of cement.

⁶Not elsewhere specified.

TABLE 2
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2007¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Aluminum:			
Primary	Aluminium Konin-Impexmetal S.A.	Konin	55.
Secondary	NPA Skawina Ltd.	Skawina	20.
Do.	Grupa KETY S.A.	Kety	NA.
Do.	Zakłady Metalurgiczne "Trzebinia"	Trzebinia	NA.
Barite ²	Przedsiębiorstwo Hondlowo Usługowe R&S Spolka z o.o.	Boguszow, Stanislawow	3.
Cement:			
Do.	Gorazdze Cement S.A. (Zakłady Cementowo-Wapiennicze "Gorazdze")	Gorazdze	1,800 clinker, 2,400 cement.
Do.	Gorazdze Cement S.A. (Cementownia Strzelce Opolskie)	Strzelce Opolskie	1,257 clinker, 1,630 cement.
Do.	Cementownia "Ozarow" S.A.	Ozarow	2,200 clinker, 2,400 cement.
Do.	Cementownia "Chelm" S.A.	Chelm	1,440 clinker, 2,640 cement.
Do.	Kombinat Cementowo-Wapienniczy Warta S.A.	Dzialoszyn	600 clinker, 1,150 cement.
Do.	Cementownia "Malogoszcz" S.A.	Malogoszcz	1,840 clinker, 1,800 cement.
Do.	Zakłady Cementowo-Wapiennicze Nowiny S.A.	Sitkowka	785 clinker, 1,070 cement.
Do.	Kombinat Cementowo-Wapiennicze "Kujawy" S.A.	Bielawy	900 clinker, 1,000 cement.
Do.	Cementownia "Rudniki" S.A.	Rudniki	840 clinker, 1,470 cement.
Do.	Cementownia "Wierzbica" S.A.	Wierzbica	759 clinker, 1,000 cement.
Do.	Cementownia "Nowa Huta" S.A.	Krakow	290 clinker, 1,100 cement.
Do.	Cementownia "Rejowiec" S.A.	Rejowiec	600 clinker, 845 cement.
Do.	Cementownia "Odra" S.A.	Opole	433 clinker, 800 cement.
Do.	Cementownia "Warszawa"	Warszawa (Warsaw)	600 cement.
Do.	Cementownia "Groszowice" Sp. z o.o.	Opole	304 clinker, 425 cement.
Do.	Cementownia "Wiek"	Ogrodzieniec	710 clinker, 240 cement.
Do.	Fabrika Cementu "Wysoka"	Lazy	304 clinker, 425 cement.
Coal:			
Bituminous	Includes: Kompania Weglowa S.A. (KW) Katowicki Holding Weglowy S.A. Jastrzebska Spolka Weglowa S.A. Poludniowy Koncern Weglowy S.A. KWK Budryk S.A. KWK Kazimierz-Juliusz Sp. z o. o. SILTECH Sp. z o. o. KWK "Bogdanka" S.A.	Of which: Upper Silesia (17 mines) do. (6 mines) do. (5 mines) do. (2 mines) do. do. do. Lublin Coal Basin, eastern Poland	140,000. ³
Lignite	Includes: KWK "Belchatow" KWK "Turow" KWK "Konin" KWK "Adamow" KWK "Sieniawa"	Of which: Belchatow Turow Konin Adamow Sieniawa	75,000. ³

See footnotes at end of table.

TABLE 2—Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2007¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Coke	Includes: Zakłady Koksownicze im. Powstancow Sl. Zakłady Koksownicze "Przyjazn" Kombinat Koksochemiczny "Zabrze" Huta im. Sendzimira Huta "Czestochowa" Zakłady Koksownicze "Walbrzych"	Of which: Upper Silesia do. do. do. (Krakow) do. (Czestochowa) Lower Silesia	12,000. ³
Copper:			
Ore, gross weight (1.2%-2.2% Cu)	KGHM Polska Miedz S.A. (KGHM)	Lubin Mine, Lubin-Glogow District	8,000.
Do.	do.	Polkowice-Sierszowice Mine, Lubin-Glogow District	11,000.
Do.	do.	Rudna Mine, Lubin-Glogow District	13,000.
Concentrate, gross weight (25.2% -25.9% Cu)	do.	Lubin beneficiation plant, Lubin-Glogow District	500.
Do.	do.	Polkowice beneficiation plant, Lubin-Glogow District	600.
Do.	do.	Rudna beneficiation plant, Lubin-Glogow District	1,050.
Metal, refined	do.	Refineries at Glogow I, Glogow II, and Legnica	650.
Feldspar	Strzeblowskie Kopalnie Surowcow Mineralnych	Mine at Sobotka, Lower Silesia, workings at Pagorki Zachodnie and Pagorki Wschodnie	500.
Ferroalloys:			
Electric furnace (FeSiMn, FeMn, FeCr, FeSi)	Huta "Laziska" S.A.	Upper Silesia at Laziska Gome	170.
Blast furnace (FeMn)	Huta "Pokoj" S.A.	Upper Silesia, Ruda Slaska	90.
Gold kilograms	KGHM Polska Miedz S.A. (KGHM)	Refinery at Glogow "Trzebinia"	1,700.
Gypsum and anhydrite	Includes: Zakłady Przemyslu Gipsowego "Dolina Nidy" Zakład Gipsowy "Stawiany" Kopalnia Anhydrytu "Nowy Lad" KGHM Polska Miedz S.A. (KGHM)	Of which: Southeastern Poland, Gacki Southeastern Poland, Szarbkow Lower Silesia, Niwnice	1,400. ³
Helium million cubic meters	Zakład Odazotowania Gazu	Western Poland, Odolanow	3.
Kaolin	KSM "Surmin-Kaolin" S.A.	Lower Silesia, Nowogrodziec	50.
Lead-zinc:			
Concentrate	Zakłady Gorniczo-Hutnicze (ZGH) "Boleslaw"	Mines and concentrators at Trzebinia, Olkusz and Pomorzany, Bukowno region	60 lead, 160 zinc.
Metal:			
Pb, refined	Huta Cynku "Miasteczko Slaskie"	Refinery at Miasteczko Slaskie	60.
Do.	Huta Metali Niezaleznych "Szopienice"	Katowice	35.
Do.	KGHM Polska Miedz S.A. (KGHM)	Smelter at Legnica	16.
Zn, refined	Huta Cynku "Miasteczko Slaskie"	Imperial Smelter at Miasteczko Slaskie	60.
Do.	Zakłady Metalurgiczny "Silesia" (input from Huta "Miasteczko Slaskie")	Refinery at Katowice	85.
Do.	Zakłady Gorniczo-Hutnicze "Boleslaw"	Refinery at Boleslaw	75.
Do.	Huta Metali Niezaleznych "Szopienice"	Katowice	28.
Lime ⁴	Includes: Zakłady Przemyslu Wapienniczego Trzuskawica Slaskie Zakłady Przemyslu Wapienniczego Opolwap S.A. Zakłady Przemyslu Wapienniczego Bukowa Kombinat Cementowo-Wapienniczy Kujawy S.A.	Of which: Kieleckie County, Swietokrzyskie Mountains Opole County Kieleckie County, Swietokrzyskie Mountains Bydgoskie County	4,500. ³

See footnotes at end of table.

TABLE 2—Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2007¹

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Lime—Continued: ⁴		Includes:	Of which:	
		Zakłady Cementowo-Wapiennicze Nowiny	Kieleckie County	
		Produkcyjno-Handlowo-Uslugowe Wapno-Sabinow	Czestochowa County	
		Wojcieszowskie Zakłady Przemyslu Wapienniczego Sp. z.o.o.	Jeleniogorskie County	
		Zakłady Przemyslu Wapienniczego w Sulejowie	Piotrkowskie County	
		Zakład Wapienniczny w Plazie	Katowickie County	
Natural gas	million cubic meters	Polskie Gornictwo Naftowe i Gazownictwo Warszawa (84.75% of shares owned by State Treasury of Poland)	Gasfields at pre-Carpathian foothills; Carpathian Mountains Lowlands, near Ostrow Wielkopolski, Poznan, and Trzebnica, north of Wroclaw	4,900.
Do.	do.	FX Energy, Inc. (Partnership with Polskie Gornictwo Naftowe i Gazownictwo Warszawa)	Western Poland	70
Nitrogen:				
Ammonia (NH ₃)		Includes:	Of which:	2,400. ³
		Zakłady Azotowe "Pulawy" S.A.	Pulawy in eastern Poland	
		Zakłady Azotowe "Kedzierzyn" S.A.	Kedzierzyn in Upper Silesia	
		Zakłady Azotowe "Wloclawek" S.A.	Wloclawek in central Poland	
		Zakłady Azotowe S.A. w Tarnowie	Tarnow in southern Poland	
		Zakłady Azotowe S.A. w Chorzowie	Chorzow in Upper Silesia	
		Zakłady Chemiczne "Police"	Police in northwestern Poland	
Fertilizer (N)		do.	do.	1,700.
Petroleum:				
Crude		Includes:	Of which:	200. ³
		Polskie Gornictwo Naftowe i Gazownictwo Warszawa (PGNiG)	Oilfields in northern and northwestern lowlands; sub-Carpathian region and Carpathian Mountains	
		Predsiębiorstwo Poszukiwan i	do.	
Do.		Eksploatacji Rpy i Gazu "Petrobaltic"	Baltic Sea Shelf	100.
Refined		Includes:	Of which:	13,500. ³
		Petrochimia-Plock	Plock in central Poland	
		Rafineria "Gdansk"	Gdansk in northern Poland	
		Rafineria "Czechowice"	Czechowice in southern Poland	
		Rafineria "Trzebinia"	Trzebinia in southern Poland	
		Rafineria "Glimar" Gorilice	Gorilice in southern Poland	
		Rafineria "Jedlicze"	Jedlicze in southern Poland	
		Podkarpackie Zakłady Rafyneryjne w Jasle	Jaslo in southern Poland	
Salt, all types		Includes:	Of which:	6,500. ³
		Inowroclawskie Kopalnie Soli S.A.	Gora, Mogilno I, and Mogilno II Mines at Inowroclaw in central Poland	
		Kopalnia Soli "Klodawa"	Klodawa in central Poland	
		Kopalnia Soli "Wieliczka"	Wieliczka in southern Poland, near Krakow, mining deposits at Barycz and Wieliczka	
		Kopalnia Soli "Bochnia"	Southern Poland, mines at the Lezkowice and Siedlec-Moszczenica-Lapczyca deposit. Not known to have operated in 1999	
		KGHM Polska Miedz S.A. (KGHM)	Sieroszowice in southwestern Poland	
		Kopalnia Wegla Kamiennego "Debiensko"	Debiensko, Upper Silesia	
		Janikowskie Zakłady Sodowe "Janikosoda" S.A.	Janikowo in central Poland	
Selenium		KGHM Polska Miedz S.A. (KGHM)	Refinery at Glogow	90.
Silver		KGHM Polska Miedz S.A. (KGHM) and Zakłady Metalurgiczne Trzebinia	Refined from dore produced by the Szopienice Pb-Zn smelter-refinery largely from KGHM-supplied slimes	1.5. ³

See footnotes at end of table.

TABLE 2—Continued
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2007¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Steel:			
Crude and semimanufactures	Includes:	Of which:	14,000 (crude). ³
	ArcelorMittal Poland S.A.	Steelworks at Dobrowa Gornicza (formerly Huta Katowice S.A.), producing pig iron, crude steel, hot-rolled products, and cast steel	
	do.	Steelworks at Krakow (formerly Huta Sendzimir S.A.), producing pig iron, crude steel, hot-rolled products, cold-rolled products, pipes, and cast iron	
	do.	Steelworks in Warsaw (formerly Huta "Lucchini-Warszawa" Sp. z o.o.), producing crude steel, hot-rolled products, and cold-rolled strip	
	do.	Steelworks in Swietochlowice (formerly Huta Floriana S.A.), producing crude steel, hot-rolled products, galvanized sheet, and cold-rolled strip	
	do.	Steelworks in Sosnowiec, producing hot-rolled products, cold-rolled strip, and cast iron	
	CMC Zawiercie S.A.	Steelworks at Zawiercie, producing crude steel, hot-rolled products, cast iron, and cast steel	
	ISD Huta Czestochowa S.A.	Steelworks at Czestochowa, producing pig iron, crude steel, hot-rolled sheets, pipes, and cast iron	
	Celsa "Huta Ostrowiec" S.A.	Steelworks at Ostrowiec-Swietokrzyski, producing crude steel, hot-rolled products	
	P.P. Huta "Labedy"	Steelworks at Gliwice, producing crude steel and hot-rolled products	
	Huta "Stalowa Wola" S.A.	Steelworks at Stalowa Wola, producing crude steel	
	Huta "Jednosc" S.A.	Steelworks at Siemianowice Slaskie, producing crude steel, hot-rolled products, and pipes	
	Huta "Batory" S.A.	Steelworks at Chorzow, producing crude steel, hot-rolled products, and pipes	
	P.P. Huta "Baildon"	Steelworks in Katowice, producing crude steel, hot-rolled products, cold-rolled strip, and cast steel	
	Huta "Malapanew" S.A.	Steelworks at Ozimek, producing crude steel and cast steel	
	Huta "Zabrze" S.A.	Steelworks at Zabrze, producing crude steel, cast iron, and cast steel	
	Huta "Zygmunt" S.A.	Steelworks at Bytom, producing crude steel, cast iron, and crude steel	
Semimanufactures only	Huta Cedler S.A.	Steelworks in Sosnowiec, producing hot-rolled products, cold-rolled strip, and cast iron	
	P.P. Huta "Kosciuszko"	Steelworks at Chorzow, producing hot-rolled products	
	Huta "Pokoj" S.A.	Steelworks at Ruda Slaska, producing hot-rolled products	
	Walcownia Rur "Andrzej" Sp. z o. o.	Steelworks at Zawadskie, producing pipes	
	Huta "Ferrum" S.A.	Steelworks in Katowice, producing pipes	
	P.P. Huta "Bobrek"	Steelworks in Bytom, producing pig iron, hot-rolled products, and cast iron	
	Huta "Buczek" S.A.	Steelworks in Sosnowiec, producing pipes and cast iron	
	P.P. Huta "1 Maja"	Steelworks in Gliwice, producing hot-rolled products	
	Zaklad Wielkopiecowy "Szczecin" Sp. z o.o.	Steelworks at Szczecin, producing pig iron	

See footnotes at end of table.

TABLE 2—Continued
 POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2007¹

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Sulfur	P.P. Kopalnie i Zakłady Chemiczne Siarki "Siarkopol"	Operations at Grzybow, mining the Osiek and Grzybow-Gacki deposits	800.

Do., do. Ditto.

¹The data presented in this table were compiled, in large measure, from information provided in the Minerals Yearbook of Poland (Bilans Gospodarki Surowcami Mineralnymi w Polsce Na Tle Gospodarki Światowej 2002-2006) prepared and published by the Department of Mineral and Energy Policy, Mineral and Energy Economy Research Centre of the Academy of Science of Poland, The Ministry of Environmental Protection, Natural Resources, and Forestry. Additionally, very valuable information and criticism was provided by Mr. Krystof Galos and other members of his academic department.

²The production of barite at the "Boguszow" Barite Mine was stopped in 1997 because of large-scale area flooding; its future status is uncertain.

³Annual capacity listed is total for all deposits, mines, or companies that produce the commodity.

⁴In order of size.

TABLE 3
POLAND: RESOURCES OF MAJOR MINERALS IN 2006

(Million metric tons of ore unless otherwise specified)

Commodity	Number of deposits		Geologically documented resources		
	Total	Exploited	Total	Exploited	Annual percentage change of total 2006 to 2007
METALS					
Copper ore	14	6	1,961	1,579	-1.2%
Lead and zinc	21	3	169	30	-1.2%
INDUSTRIAL MINERALS					
Raw materials for chemicals:					
Sulfur, native	18	5	523	34	-0.4
Rock salt	19	5	80,722	11,735	0.7
Barite	5	--	6	--	--
Potassium-magnesium salts	5	1	669	72	--
Raw materials for construction:					
Chalk	196	54	198	20	--
Clay:					
Argillaceous material for construction ceramics	1,207	288	3,976	498	-0.3
Bentonite	8	1	2.7	0.5	--
Ceramic	29	5	142	11	-2
Refractory	17	3	55	5	-1.8
Kaolin	14	2	215	82.2	--
Dolomite	11	4	351	162	-0.6
Feldspar ore	9	2	98	11	4.3
Gypsum and anhydrite	15	5	268	136	1.1
Magnesite	6	1	15	3	15
Sand and gravel:					
Filling sand	33	9	4,516	934	--
Moulding sand	79	11	345	89	40
Quartz sand for brick and concrete	154	44	718	131	-0.1
Gravel aggregates ^c	5,383	2,079	9,246	2,260	0.6
Silica:					
Glass sand	30	8	599	218	--
Quartz, veined	7	3	7	5	--
Quartzite, refractory	19	1	14	7	-3.4
Stone:					
Stone for construction and road use	590	240	8,415	3,964	2.2
Limestone and marl for lime and cement use	178	37	18,238	6,032	0.7
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Bituminous	135	47	41,996	15,350	-3.0
Lignite	76	11	13,661	1,852	-0.5
Gas:					
Natural	billion cubic meters	258	180	143	-6
Coal methane	do.	51	22	95	10.5
Petroleum	do.	82	66	24	5

-- Zero.

Sources: Central Statistical Office of Poland, 2007, Statistical Yearbook of Industry; Polish Academy of Sciences, 2008, Minerals Yearbook of Poland; Concise Statistical Yearbook of Poland.

TABLE 4
POLAND: IMPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006
METALS					
Aluminum	74	88	85	62	83
Aluminum and articles thereof	374	354	520	551	688
Cadmium	metric tons	--	--	1	3
Chromite	9	11	13	9	16
Cobalt, matte, oxide, and scrap	metric tons	71	88	70	159
Iron ore and concentrate	6,957	8,950	10,932	6,789	8,576
Lead:					
Concentrates, Pb content	5	2	--	--	--
Refined	21 ^r	21 ^r	24 ^r	22 ^r	28
Manganese, ore and concentrate	15	10	205	40	7
Steel:					
Flat-rolled, nonalloy semimanufactures	2,357	NA	2,862	3,602	4,555
Stainless and articles thereof	91	NA	144	163	187
Pipes and hollow profiles	344	NA	415	442	516
Zinc, metal refined	8	12	20 ^r	13	29
INDUSTRIAL MINERALS					
Alumina	123	146	151	145	156
Barite	6	8	6	6	9
Bauxite	50	69	82	62	65
Bentonite	68	94	126 ^r	115 ^r	154
Cement:					
Clinker	67	70	13 ^r	34 ^r	46
Cement	654	719	543 ^r	447 ^r	289
Feldspar	168	155	201 ^r	217 ^r	222
Flourspar	6	5	7 ^r	6 ^r	8
Glass	549	534	707	759	746
Graphite, natural and synthetic	61	63	49 ^r	54 ^r	54
Gypsum and ahydrite	46	104	163 ^r	151 ^r	176
Kaolin, washed	70	72	80 ^r	83 ^r	88
Mineral fertilizers	1,609	1,875	1,999	1,648	1,495
MINERAL FUELS AND RELATED MATERIALS					
Coal, including briquets	2,768	2,560	2,335	3,372	5,271
Natural gas	million cubic meters	7,775	8,721	9,445 ^r	9,919 ^r
Petroleum:					
Crude	17,872	17,448	17,309	17,641	19,813
Refined	2,501	2,039	3,155	3,599	3,967

^rRevised. NA Not available. -- Zero.

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2003, 2005, 2006, and 2007; Polish Academy of Sciences, Minerals Yearbook of Poland, 2002-06.

TABLE 5
POLAND: EXPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006	
METALS						
Aluminum and articles thereof	264	319	332	385	451	
Cadmium	metric tons	49	428	284 ^r	180 ^r	1
Cobalt, matte, oxide, and scrap	do.	1	--	22 ^r	18 ^r	4
Copper:						
Refined copper and copper alloys	288	277	276 ^r	291	288	
Copper manufactures	123	121	177	163	161	
Lead:						
Concentrates, Pb content	58	52	54	70 ^r	58	
Metal, refined	21	32	21 ^r	26 ^r	23	
Silver	metric tons	1,135	1,254	1,275 ^r	1,162 ^r	1,145
Steel:						
Pig iron	3	16	58 ^r	5 ^r	19	
Steel, crude	3	3	11 ^r	2 ^r	19	
Flat-rolled, nonalloy semimanufactures	2,151	NA	2,694	2,148	2,445	
Pipes and hollow profiles	35	NA	184	188	275	
Zinc:						
Concentrate, Zn content	34	35	27	39	38	
Metal, refined	79 ^r	66 ^r	73 ^r	71 ^r	63	
INDUSTRIAL MINERALS						
Cement	471 ^r	271 ^r	376 ^r	510 ^r	468	
Glass	662	697	803	872	887	
Salt	343	423	487 ^r	496 ^r	493	
Sulfur	600	534	574 ^r	592 ^r	512	
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Anthracite and bituminous	22,626	20,128	19,700	19,371	16,735	
Lignite	42	37	27 ^r	8 ^r	--	
Coke and semicoke	thousand metric tons	4,226	5,267	5,258	4,624 ^r	6,310
Petroleum, refined	2,446	1,389	NA	NA	2,537	

^rRevised. NA Not available. -- Zero.

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2003, 2005, 2006, and 2007; Polish Academy of Sciences, Minerals Yearbook of Poland, 2002-06.