



# 2006 Minerals Yearbook

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## CENTRAL EUROPE

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# THE MINERAL INDUSTRIES OF CENTRAL EUROPE

## CZECH REPUBLIC, HUNGARY, POLAND, AND SLOVAKIA

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The Czech Republic, Hungary, Poland, and Slovakia, which are the most economically dynamic countries of the former centrally planned economy areas of Europe and Central Eurasia, joined the European Union (EU) on May 1, 2004. The denationalization of the iron and steel sectors continued in the Central European region. Mining in these countries continued to undergo rationalization to meet market economy norms and had a much-reduced share of industrial production and of the gross domestic product (GDP) than it had during the years of central economic planning when Government policies dictated mineral self-sufficiency at all costs.

### CZECH REPUBLIC

The Czech Republic was an important Central European producer of heavy industrial goods manufactured by the country's chemical, machine building, and toolmaking industries. Steelmaking, the mining and processing of industrial minerals, and the production of construction materials continued to be of domestic and regional importance.

#### Minerals in the National Economy

In 2006, the Czech Republic's real GDP increased by 6.4% compared with that of 2005. The value of industrial production increased by 11.2% compared with that of 2005; the value of mining and quarrying increased by about 2.5%, of which the mining and quarrying of mineral fuels and nonmineral fuels increased by 0.6% and 7.2%, respectively. In 2006, mining and quarrying constituted 1.4% of the Czech economy's net value of output and a 2.5% share in the value of industrial output (GEOFOND, 2007, p. 18, 28; Czech Statistical Office, 2008).

#### Government Policies and Programs

The Government continued programs of economic development that were consonant with the EU's criteria for newly admitted and applicant countries. The country's memberships in the International Monetary Fund, the Organisation for Economic Co-operation and Development (OECD), the World Bank, and the World Trade Organization, as well as participation in the General Agreement on Tariffs and Trade, were largely an outcome of the Czech Republic's full orientation toward Western European political and economic values.

Three constituent Acts compose the country's mining law, which forms the foundation of the Government's mining and other mineral-related policies. These are Act No. 44/1988 Coll., On Protection and Use of Mineral Resources (the Mining Act),

as amended; the Czech National Council Act No. 61/1988 Coll., On Mining Activity, Explosives, and State Mining Administration (Authority/Sedenka), as amended; and the Czech National Council Act No. 62/1988 Coll., On Geological Works, as amended. The Mining Act classifies minerals as either "reserved" or "unreserved." The "reserved" category refers to mineral deposits that, apart from immediate market considerations, are determined to be necessary for the development of the national economy (GEOFOND, 2004, p. 10, 11).

Other provisions in the Mining Act (law) address issues of licensing and Federal and regional compliance with environmental regulations during the exploration and exploitation of mineral deposits and the reclamation of mined-out areas. These regulations compose the environmental law of 1997 (Act No. 125/1997), which became in force on January 1, 1998. The environmental law focuses on reducing the volume of waste, on the collection of waste by category, and on recycling. The law adopts the main provisions of EU and OECD regulations and the Basel Convention. The catalog of wastes is compatible with the European Catalogue of Wastes of the EU.

#### Production

In 2006, the Czech Republic reported production increases for such major metals as iron, steel, and steel semimanufactures. The estimated output of secondary refined metals (with the exception of lead, which reported a production increase) remained at about their same levels of production as in 2005 (table 1). Positive growth in the construction materials sector included the output of common sand and gravel, dimension stone, glass sand, and limestone. Production of gypsum continued to decrease; the production of coal increased, however. Among mineral fuels, production decreases were reported for natural gas and crude petroleum.

#### Structure of the Mineral Industry

Table 2 presents information on the significant mineral production facilities of the Czech Republic.

#### Commodity Review

##### *Metals*

The Czech Republic's metals sector produced a broad range of base metals and semimanufactures from imported ores and secondary materials (scrap). Although interest in gold mining continued in some parts of the Czech Republic, other metals reportedly were depleted. According to official data, with the exception of gold, the country's metallic mineral deposits as of

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December 31, 2006, were not economic (GEOFOND, 2007, p. 309-373).

**Copper.**—The Czech Republic's sources of copper were entirely based on secondary materials and imports. In 2006, the Czech Republic remained a net exporter of copper waste and scrap, which amounted to 49,058 metric tons (t) and was an increase of about 2% compared with net copper scrap exports in 2005 (GEOFOND, 2007, p. 330).

**Gold.**—Gold was the only metal for which resource and reserve estimates were available. According to the Czech Geological Survey, as of December 31, 2006, total resources of gold were estimated to be almost 240 t; reserves were about 84 t (GEOFOND, 2007, p. 369).

**Iron and Steel.**—All the raw materials consumed by the country's steel industry—iron ore and concentrate, and pellets and agglomerate—were imported. The steel industry operated eight steel plants with a collective capacity to produce almost 11 million metric tons per year (Mt/yr) of steel. The main steel producers were, in order of crude steel production capacity, Mittal Steel Ostrava (Nova Hut s.p.) (3,800 Mt), Trinecke Zelezarny (3,000 Mt), Poldi Hutte s.r.o. (a subsidiary of Scholz Edelstahl A.G., 1,700 Mt), and Zelezarne Vitkovice [(ZV), a subsidiary of the Evraz Group of Russia, 900 Mt], and accounted for more than 87% of the country's total crude steel production capacity.

In 2006, the iron and steel industry remained the dominant constituent of the country's metallurgical sector. The output of pig iron increased by more than 12% compared with that of 2005; crude steel production fell by about 12% (table 1). GEOFOND's trade data for 2006 indicate that total imports of iron ore and concentrates amounted to about 8 million metric tons (Mt), or about 17% more than total imports of these commodities in 2005. Ukraine (about 48%) and Russia (about 45%) accounted for the major share of the Czech Republic's imports of iron ore and concentrate. Net imports of pig iron amounted to about 132,000 t, which was an increase of about 81% compared with those of 2003. Net exports of iron and steel scrap amounted to about 936,000 t, which was a decrease of about 31% compared with those of 2005. Germany, which remained the principal importer of iron and steel scrap from the Czech Republic, imported 830,000 t of iron and steel scrap in 2006 (GEOFOND, 2007, p. 314).

**Lead and Zinc.**—Imports constituted the Czech Republic's sources of lead and zinc. In 2006, net imports of unwrought lead and zinc amounted to 57,495 t and 34,434 t, respectively. Germany and Poland, respectively, were the Czech Republic's principal suppliers of lead and zinc (GEOFOND, 2007, p. 337, 344).

### *Industrial Minerals*

The Czech Republic was well endowed with and produced a broad range of industrial minerals that met most domestic construction and chemical industry requirements, as well as those for export. The availability of these mineral resources at the recent (2002 to 2006) average rate of mining ranged from about 46 years for gem-grade pyrope ore to about 1,535 years for gypsum. Such corrective additives as clays, loams, loess,

sands, and shales needed by the country's cement industry to regulate the content of aluminum oxide ( $Al_2O_3$ ), iron oxide ( $Fe_2O_3$ ), and silicon oxide ( $SiO_2$ ) during clinker production were reported to have a combined mine life of about 1,416 years. Limestone, kaolin, and glass sand (in order of deposit sizes) were the industrial minerals that had the largest resources suitable for exploitation (GEOFOND, 2007, p. 167, 168).

Among industrial minerals, dimension stone and sand and gravel output increased by about 2% and 1%, respectively, compared with that of 2005. The output of diatomite rose by 39% compared with that of 2005. Although dolomite production declined by about 2.4% in 2006 compared with that of 2005, net imports during the year amounted to 428,377 t, which was an increase of 22% compared with that of 2005 (table 1).

### *Mineral Fuels and Related Materials*

**Coal.**—Bituminous or hard coal occurs mainly in the Upper Silesian Basin. Of the resources in this region, only about 15% is located in the Czech Republic; the balance of the resources is located in Poland. In addition to bituminous coal, the Czech Republic differentiates two types of lower rank coal—brown coal and lignite. The Czech Republic's brown coal deposits are worked in the northwestern part of the country in the Bohemian brown coal basins. The major brown coal basins are found in the Krusne hory Mountains region and cover an area of 1,900 square kilometers ( $km^2$ ). Coal also is mined in the Cheb, the Sokolov, and the Zitava basins. In 2006, the production of bituminous coal increased by about 1.9% compared with that of 2005, and production of brown coal and lignite increased by almost 1% during this period (table 1). In 2006, imports of bituminous coal amounted to almost 2 Mt; net exports were more than 4.5 Mt, or about 14% more than those in 2005 (GEOFOND, 2007, p. 129-148).

**Natural Gas.**—Natural gas production declined by about 58% compared with that of 2005; this decline tracks a substantial decline in the output of petroleum during the same period and suggests that the decline of natural gas output pertained mainly to the associated gas portion of natural gas production. In 2006, net imports of natural gas amounted to 9,675 million cubic meters, of which about 75% was imported from Russia. Total resources of natural gas as of December 31, 2006, were estimated to be about 48 billion cubic meters; exploitable reserves were put at more than 28 billion cubic meters (GEOFOND, 2007, p. 162).

**Petroleum.**—In 2006, the Czech Republic produced about 15% less petroleum than in 2005 (table 1). Russia remained the country's main supplier of petroleum, having accounted for about 67% of the total petroleum imports in 2005 (about 7.8 Mt) and 2006 (about 7.7 Mt). The Czech Republic's petroleum resources as of December 31, 2004, amounted to about 32.3 Mt, of which about 2.1 Mt was categorized as exploitable reserves (GEOFOND, 2007, p. 154).

**Uranium.**—In 2006, mine output and concentrator production of uranium declined by about 9% and 12%, respectively, compared with their output levels in 2005 (table 1). Domestic sources of uranium were able to meet only 47% (2005 data) of the fuel requirements of the Dukavany and the Temelin nuclear

powerplants; the balance of the uranium required by these plants was imported. All uranium was sent abroad for processing. The TVEL Co. of Russia and the Westinghouse Corp. of the United States were the suppliers of fabricated nuclear fuel for the Dukavany and the Temelin plants, respectively. TVEL was scheduled to replace Westinghouse as the supplier of nuclear fuel to Temelin in 2010 (GEOFOND, 2007, p. 125).

## Outlook

The Czech Republic is expected to continue to rely on imports of natural gas and petroleum, given the country's limited resources of these energy minerals. Import reliance on base and precious metals also will continue, although demand is not expected to increase significantly owing to the fairly high technological level of the Czech Republic's fabrication and service sectors. In these sectors, material input per unit of output is expected to continue to decline from the high level of material input in production during the country's central economic planning period.

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## HUNGARY

Bauxite remained the only major nonfuel mineral produced in Hungary that was significant in terms of European mineral production. In 2006, Hungary maintained production of modest amounts of fossil fuels, industrial minerals, and metals. Despite substantial production of bauxite and alumina, Hungary's production of primary aluminum remained modest owing to limited domestic sources of energy. The production of coal, natural gas, and petroleum was sufficient to satisfy only about one-third of the country's annual energy needs.

### Minerals in the National Economy

In 2006, mining and quarrying and the production of basic metals, industrial mineral products, and coke and refinery products accounted for 17% of the value of industrial production. The total value of industrial production, which increased by 5.9% compared with that of 2005, constituted 25.4% of Hungary's gross domestic product (GDP). The GDP increased by almost 4% compared with that of 2005. Investment in mining and quarrying in 2006, however, declined by about 14% (Hungarian Central Statistical Office, 2007a, p. 18, 22, 24).

### Government Policies and Programs

The Government based its regulatory policies for mining and geologic survey work on provisions in the Mining Law of 1993 (Act No. XLVIII). Section 50 of the Mining Law was the basis

for Governmental Decree No. 132/1993, which constitutes the legislative underpinning for the Hungarian Geological Survey. The Mining Law and related decrees and codes established the legislative bases for estimating reserves, determining environmental risks associated with mining, and providing the geologic and technical information needed to outline tender conditions.

Government agencies that are responsible for enforcing existing environmental protection laws and regulations include the Ministry of the Environment and Regional Planning (KTM) and the Hungarian Mining Office (MBH). The KTM is authorized to help only in the enforcement of existing environmental legislation prescribed by other ministries of the Government. With respect to mining and minerals, Hungary's Ministry of Industry and Commerce has the primary responsibility for establishing environmental regulatory standards. The chief responsibility of the MBH is that of a certifying agency, which can review only technical developmental and operational plans. These plans are required to include provisions that pertain to environmental protection and land restoration by responsible entities.

## Production

In 2006, the output levels of metal ores and metals did not significantly vary from the output levels of 2005. Minor increases in production were reported for bauxite, pig iron, and crude steel (table 3). The production results for industrial minerals in 2006 were mixed. Production decreases were reported for bentonite, gypsum, and common and foundry sands compared with their respective output levels in 2005; increases were reported for the output of dolomite, gravel, limestone, and silica (glass) sand. With the exception of crude petroleum, Hungary reported modest output increases of fossil fuels (table 3).

## Structure of the Mineral Industry

Table 4 presents information about the major mineral facilities in Hungary.

## Commodity Review

### Metals

To meet its economic requirements, Hungary continued to depend on imports of most metals (ores and concentrates and billets). In 2006, the value of Hungary's imports of nonferrous metals exceeded exports by about 48%. Similarly, iron and steel imports exceeded exports by about 97%. Bauxite mining and refining to alumina and manganese mining (manganese carbonate and oxide ores mined at Urkut) remained the only major metal mining and processing operations in Hungary. Gallium was produced as a byproduct of alumina refining.

**Bauxite and Alumina and Aluminum.**—Bakoni Bauxitbanya Kft. [Bakony Bauxite Mines Ltd., a subsidiary of Magyar Aluminium Ltd. (MAL)] mined bauxite in the Bakony District. Hungary's total resources of bauxite as of December 31, 2003, were estimated to be about 39 million

metric tons (Mt) with a range of 47% to 52%  $\text{Al}_2\text{O}_3$ , 20% to 25%  $\text{Fe}_2\text{O}_3$ , and 6% to 8%  $\text{SiO}_2$ . About one-third of the bauxite was mined by the open pit method; the balance was mined underground at the Fenyófo and the Halimba Mines. In 2006, bauxite production rose slightly by about 1% compared with that of 2005; the production of primary aluminum increased by almost 11% (table 3). In early 2006, owing to high energy costs, MAL closed down the Inota aluminum smelter and brought into production two secondary aluminum furnaces (Magyar Aluminium Ltd., 2007).

**Gold.**—Carpathian Gold Corp. of Canada continued to explore for gold in northern Hungary. Carpathian's four exploration licenses covered an area of about 134 square kilometers ( $\text{km}^2$ ). In 2006, exploration work proceeded in the Tokaj Mountains on the Mad-Kiralhegy and the Sarospatak-Kiralhegy license areas and on the Fuzerradvány concession in the Matra Mountains. The company's Kanasvár license (located near the old Lahoca gold deposit) encompassed an area of about 2.45  $\text{km}^2$  (Carpathian Gold Corp., 2007, p. 4, 7, 25).

**Iron and Steel.**—In 2006, Hungary's production of pig iron showed slight gains (0.045%) compared with that of 2005; the output of crude steel increased by about 3.4% during the same period (table 3). Major activities at Dunaferri Dunai Vasmu Rt.'s (Dunaferri Co. Ltd.'s) integrated steel mill included the upgrading of the No. 1 blast furnace and the No. 3 coke battery, which would maintain production at 2006 levels (Dunaferri Co. Ltd., 2006a, b).

**Manganese.**—In 2006, the output of mainly manganese carbonate ore at the Urkut Mine in the Bakony Mountains amounted to about 50,000 metric tons (t), which was about the output level of 2005. Hungary's manganese ore was used to produce mainly blast furnace ferromanganese (table 3).

### *Industrial Minerals*

Hungary produced a broad range of industrial minerals that included aggregates, bentonite, kaolin, and perlite. Such industrial minerals as construction aggregates and cement continued to play an important role in Hungary's economy, especially in the modernization of the country's infrastructure. Highway construction planned through 2008 would continue to be an important element in the development of the country's infrastructure.

### *Mineral Fuels*

In 2006, Hungary reported a decline of about 7% in crude petroleum production compared with that of 2005. Domestic output of natural gas increased by almost 3% during the same period (table 3). Because of limited domestic resources (about 22 Mt), most petroleum (9 Mt) continued to be imported from Russia via the Friendship pipeline. Similarly, a substantial and increasing amount of natural gas was imported from Russia through Russia's gas-main network. In 2006, Hungary's imports of natural gas and petroleum increased by about 43% and 25%, respectively (Hungarian Central Statistical Office, 2007b, p. 253).

Hungary classifies its coals into three categories—hard coal (bituminous), brown coal, and lignite. Brown coal and lignite

were mined, for the most part, to fuel the country's thermal electric power stations. Lignite was mined by open pit at the Bukkabrány and the Visonta Mines; the output from these mines was used entirely at the Matra electric powerplant. In 2006, the combined output of lignite and brown coal increased by about 3% compared with that of 2005 (table 3).

### **Outlook**

Hungary will continue to rely on imports of natural gas and petroleum and most metals. The need to develop modern infrastructure that conforms to EU standards is expected to stimulate an increase in the consumption of construction-related industrial minerals and base metals.

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### **POLAND**

Poland is endowed with significant mineral resources, which include bituminous coal, copper and lead-zinc ores, salt, silver, and sulfur. In 2006, the country's reserve base of copper amounted to more than 5% of the world total (Edelstein, 2008). Although world reserves of elemental sulfur in 2006 were not available, Poland's production of sulfur represented almost 2% of total world output (Ober, 2008). Resources of coal and salt were considered to be of world significance; Poland's share of global reserves of silver amounted to about 19% (Brooks, 2008). The latest available inventory of the country's mineral resources indicated net gains in geologically documented resources, mainly for bituminous coal, ceramic clays, coal bed methane, and sulfur (table 7).

In 2006, after Russia, Poland remained the leading producer of copper in Europe and Central Eurasia and remained among the top 10 world mine producers of copper (Edelstein, 2008). Poland also continued to be among the leading world producers of nitrogen (in ammonia), salt, silver, and sulfur. In Europe and Central Eurasia, the country was a significant producer of lead and zinc and a leading producer of lime. According to the most recent data available (2004), Poland accounted for about 2% of the total world output of bituminous coal (Główny Urząd Statystyczny, 2007a, p. 567; U.S. Energy Information Administration, 2007; Smith, 2008; Tolcin, 2008).

## Minerals in the National Economy

According to the International Monetary Fund (2007), Poland's real gross domestic product (GDP) registered a growth of 6.1% compared with that of 2005; industrial production in constant prices increased by about 9.2% compared with that of 2005. During the same period, the value of output of the mining and quarrying sector in constant prices declined by about 1.2%. In 2006, the value of the gross output of industry represented about 22% of the GDP; the value of mining and quarrying output was 2.5% of the GDP (Główny Urząd Statystyczny, 2007a, p. 464).

## Government Policies and Programs

The Government of Poland remained fully committed to privatizing the country's industry. The latest available data (2005) report that of the 2,209 mining enterprises, 16 were state-owned, and the balance came under various privatization regimes (Główny Urząd Statystyczny, 2007a, p. 478; Ney and Smakowski, 2007, p. ix). Steel trade issues and efforts to restructure and privatize Poland's steel industry continued to be among the leading mineral industry concerns during the year.

## Production

In 2006, among the major metals, production increases were reported for aluminum, copper (in ore and smelter), pig iron and crude steel, and hot-rolled steel semimanufactures. Output decreased for refined zinc (table 5). Among the major industrial minerals, production increases were reported for, among others, bentonite, cement (hydraulic), gypsum, and salt; production decreases were reported for kaolin and soda ash. Compared with output levels in 2005, production declines in 2006 were reported for natural gas and petroleum (table 5).

Although Poland was a leading European producer and processor of nonfuel minerals and mineral fuels, Poland still depended heavily on imports to meet demand. According to the Mineral and Energy Economy Research Institute of Poland's Academy of Sciences, of the 121 mineral commodities that were reviewed, 56 (40%) were in the category of total import dependence. Additionally, seven mineral commodities, or about 6% of the total, were in the category of import dependence of more than 50% (Ney and Smakowski, 2007, p. xi-xvii).

## Structure of the Mineral Industry

Limited-liability companies, joint-stock companies, and partnerships constituted about 80%, 11%, and 4%, respectively, of the total mining enterprises. Table 6 provides information on the major mineral facilities in Poland.

## Commodity Review

### Metals

**Aluminum and Bauxite and Alumina.**—Poland's primary aluminum, which was produced in Konin by Aluminium

Konin-Impexmetal S.A. (Konin), was based entirely on imported alumina. Alumina imports in 2005 (the latest year for which trade data were available) amounted to about 145,000 metric tons (t) and were chiefly used in primary aluminum production (table 8). A small amount (less than 15%) was used in the nonmetallurgical sphere (cement, chemicals, glass, and refractories).

In 2006, the production of primary aluminum metal increased by about 6% compared with that of 2005. Imports of aluminum and aluminum products increased by about 6% during the same period (table 8). Exports of aluminum and aluminum products during the same period rose by about 16% (table 9). Apparent consumption in 2005 declined by about 16% (Ney and Smakowski, 2007, p. xi-xvii). In 2006, Zakłady Metali Lekkich SA, which produced aluminum semimanufactures, announced plans to allocate about \$65.2 million to purchase aluminum semimanufactures operations in Germany—a major market for aluminum products used in the construction sector (Metals Insider, 2006d, p. 6).

**Cadmium.**—Because of its association with sphalerite (zinc-iron sulfide), cadmium in Poland was produced as a byproduct of lead and zinc mining and processing operations in the Silesia-Krakow region. Cadmium reserves as of December 31, 2005, amounted to 66,450 t (contained cadmium), of which 21,990 t (contained cadmium) was being worked (Ney and Smakowski, 2007, p. 69).

**Copper.**—All copper ore in Poland was mined by Kombinat Gorniczo Hutniczy Miedzi (KGHM) Polska Miedz S.A. (KGHM, S.A.), which was a major world copper mining, beneficiation, smelting, and refining complex in the Lubin area. KGHM accounted for about 3.4% of world mine copper production in 2006. Using the room and pillar method, the ore was worked at the Lubin, the Polkowice-Sierszowice, and the Rudna Mines at five deposits at depths that ranged from 600 to 1,200 meters (about 1,900 to 3,700 feet). Chalcocite was the principal mineral in the ore; smaller amounts of bornite and chalcopyrite also were present. The mineralization is mainly in a shale horizon, but extends also into overlaying carbonate and underlying sandstone layers. As of December 31, 2005, total copper resources amounted to almost 2.0 billion metric tons (Gt), which contained about 39 million metric tons (Mt) of copper. Resources that were under exploitation amounted to about 1.6 Gt of ore that contained about 34 Mt of copper (table 7).

The Rudna Mine was the leading copper ore producer. The concentrator at Rudna processed Rudna ores, as well as some ores from the Polkowice-Sierszowice Mine. Annual output by the Polkowice-Sierszowice Mine and concentrator amounted to about 9.2 Mt/yr of ore and 450,000 t/yr of concentrate. The Lubin Mine accounted for about 7.5 Mt/yr of ore to produce about 465,000 t/yr of concentrate (Ney and Smakowski, 2007, p. 139).

In 2006, Poland's production of copper (in ore) increased by about 9% compared with that of 2005. The recovery of copper in concentrate increased by about 7% compared with that of 2005. The estimated total output of primary smelter copper registered an increase of about 1% in 2006. The total output of electrolytically refined copper (primary and secondary) decreased by about 1% compared with that of 2005 (table 5).

Trade data for 2005 show that Poland's net exports of unwrought refined copper and copper alloys increased by about 3.2% compared with that of 2004. In 2005 (the latest year for which data were available), Germany, France, China, and Austria (in order of the value of imports) were the principal importers of copper from Poland (table 9; Ney and Smakowski, 2007, p. 139).

In late 2005, KGHM officials indicated that the company must develop new copper deposits given that the current deposits in Poland face depletion in 11 years. To ensure the availability of future supplies of copper ore and concentrate, KGHM reported looking at additional investments in the Democratic Republic of the Congo [Congo (Kinshasa)], Peru (Rio Blanco copper project), and the Philippines (Metals Insider, 2005, 2006a; Mining Journal, 2005). Although in 2006 Poland continued to study investment possibilities in Peru, high global copper prices forced KGHM's retreat from its investment projects in Congo (Kinshasa). According to KGHM officials, the company would turn their efforts to developing more cost-effective domestic deposits (Creamer's Media Mining Weekly, 2006; Metals Insider, 2006c, p. 13; Reuters, 2006). Activities in Poland's copper sector included a contract agreement concluded by KGHM and Netherlands trading house Trafigura Beheer for KGHM's delivery of 3,000 t of copper products valued at about \$39 million. KGHM also signed a contract valued at \$317 million that called for supplying cathodes to German firms MKM Mansfelder Kupfer and Messing GmbH (Metals Insider, 2006a, p. 11; 2006b, p. 10).

**Gold.**—In 2006, Poland's gold production continued to be based almost entirely on the country's copper mining operations. The gold content of the copper concentrates produced by KGHM was reported to be about 1 gram per metric ton (g/t); total reserves were determined to be about 50 t (Ney and Smakowski, 2004, p. 202). In 2006, KGHM's copper refineries continued to increase the output of byproduct gold. The gold was recovered at KGHM's 550-kilogram-per-year precious metals plant (Boliden, Klado method), which was a division within the Glogow smelter and refinery. The amount of gold recovered at Glogow has varied with the proportion of ores produced at the three mines, each of which has a different average gold content. Poland's annual domestic consumption of gold during the 2001 to 2005 period ranged from about 352 kilograms (kg) to 595 kg (table 5; Ney and Smakowski, 2007, p. 210).

**Iron and Steel.**—In 2006, the total output of pig iron and crude steel increased by about 18% and 8%, respectively, compared with that of 2005 (table 5). Poland depended on imported iron ores and concentrates, and on such alloying materials as manganese ore and chromite to produce the ferroalloys that were needed by the steel industry. According to the latest available trade data (2005), imports of iron ore and concentrate declined by almost 38% compared with those of 2004. Imports of such semimanufactures as flat-rolled and stainless steel products, however, increased by more than 25% (table 8).

Facility expansion projects in 2006 included the acquisition of a new wire mill by P.P. Huta "Zawierciu" valued at \$40 million. The installation of the new mill was scheduled for completion in mid-2008 and would comprise a 4-stand reduction mill and a

10-stand wire rod block with a capacity to produce 150 metric tons per hour of product with diameters ranging from 5 to 25 millimeters (PR Newswire, 2006).

**Lead and Zinc.**—Poland worked 3 of the 21 known lead-zinc deposits in the Silesia-Krakow area, which hosted about 41 Mt of ore of the country's total resource of about 180 Mt of lead and zinc ore. Lead and zinc also were recovered from copper ore mined by KGHM in the Lubin region. About 33% of total mined lead came from copper mining and processing. Despite the presence of sphalerite in KGHM's copper deposits, the low zinc content of the ore made metal recovery uneconomical to implement (Ney and Smakowski, 2007, p. 506). In 2006, total mine production of lead in ore declined by about 19% compared with that of 2005; zinc in concentrate increased by 8%. The total output of refined lead (primary and secondary) in 2006 increased by about 8% compared with that of 2005 (table 5). In 2005, the total volume of refined lead imports rose by 3% (table 8). In 2006, total refined zinc output (smelter and electrolytic) declined by about 2% compared with that of 2005.

**Silver.**—In 2006, Poland remained among the major world producers of silver and accounted for more than 6% of world mine production (Brooks, 2008). Copper and, to a lesser extent, lead and zinc mining were Poland's domestic sources of primary silver, which was associated with these ores. The country's copper mining, smelting, and refining complex, which was operated by KGHM in the Lubin area, produced about 98% of the country's byproduct silver. In 2005 (the latest year for which data were available), exports of silver fell sharply by 53%. The top three importers of Polish silver in 2006 were (in descending order of value) the United Kingdom, Germany, and Belgium (Główny Urząd Statystyczny, 2007b, p. 261).

### *Industrial Minerals*

Poland produced a broad range of industrial minerals that included calcareous and silicate rocks and aggregates, clays, feldspar, gypsum, magnesite, salt, and sulfur, which served the needs of the country's chemical and construction industries. Poland remained among the leading world producers of lime, nitrogen (in ammonia), salt, and sulfur (Kostick, 2008; Kramer, 2008; Miller, 2008; Ober, 2008).

### *Mineral Fuels*

**Coal.**—In 2006, bituminous coal production declined by about 2% compared with that of 2005. In 2005, the country's net exports of bituminous coal and anthracite were about 8% less than those in 2004 (Ney and Smakowski, 2007, p. 506). Germany, Austria, the United Kingdom, and France (in order of volume) were the major importers of Polish coal (Ney and Smakowski, 2007, p. 232).

The Upper Silesian, the Lower Silesian, and the Lubin Basins have exploitable resources that amounted to 43,321 Mt of coal in 132 deposits. The Upper Silesian Basin represents the major portion of the country's total reserves, hosting about 79% of the total in 110 deposits (Ney and Smakowski, 2004, p. 224).

**Natural Gas and Petroleum.**—Poland depended on imports to meet its needs for oil and gas. In 2005, Poland's imports

of petroleum increased by almost 2% compared with those of 2004 (table 8). The Russian Federation remained Poland's chief supplier of hydrocarbons which, in 2005 (in terms of volume), supplied about 98% and 64%, respectively, of Poland's imports of petroleum and natural gas (Ney and Smakowski, 2007, p. 191, 339).

## Outlook

Poland is expected to remain an important world supplier of copper, salt, and sulfur and a major supplier of coal, lead, and zinc to the European market. The country, however, will continue to rely on imports of natural gas and petroleum and iron ore and concentrate. As domestic sources of nonferrous metals become exhausted (2015 and beyond), Poland will increasingly depend on imports of commodities.

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## SLOVAKIA

Slovakia was a modest regional producer of a variety of minerals. Aluminum and steel production formed the dominant elements of the country's metals sector. Steel production largely was based on imported raw materials and that of aluminum was based entirely on imported bauxite. Small quantities of copper, gold, lead, and zinc also were produced; the commercial deposits of these minerals have been virtually depleted. Industrial mineral production included that of barite, clays, magnesite, and salt. Slovakia's production of mineral fuels comprised brown coal and lignite and minor quantities of gas and petroleum (table 10).

## Minerals in the National Economy

The economy of Slovakia continued to develop towards a full market system. The need to denationalize the state's commercial assets and to reduce subsidies to the public sector expeditiously was tempered by policies promulgated to maintain social stability that often resulted in increased public sector employment and uneven economic performance. In 2006, Slovakia's real gross domestic product (GDP) increased by 8.5%. The total value of industrial production in 2006 grew at a rate of 9.8% compared with that of 2005; the value of mining and quarrying declined by 9.7% and constituted 0.5% of the GDP in 2006 (Statistical Office of the Slovak Republic, 2007, p. 3, 5, 11).

## Production

In 2006, Hydro Aluminum AS (Hydro) of Norway acquired a controlling 55.3% share of Slovalco A.S., which was Slovakia's sole producer of primary aluminum. In 2006, alumina output declined by about 1.2% compared with that of 2005; the production of primary aluminum during the same period increased by more than 13%. About 16% of total sales of aluminum metal was consumed domestically; the balance was exported. Italy and Poland were the major importers of Slovakia's aluminum. Slovalco reported the completion of modernization in the casthouse (Slovalco A.S., 2006, p. 25). Activities in the aluminum sector in 2006 included plans announced by Alcan Inc. of Canada to invest \$35 million to build a new aluminum extrusion plant in Slovakia that would produce products for the construction sector. Completion of the extrusion plant was projected for the first half of 2007 (Metals Insider, 2006, p. 8).

Major activities in gold exploration continued to center on work undertaken by the Tournigan Gold Corp. of Canada at Kremnica. Tournigan's preliminary assessment of the deposit indicated resources at Kremnica to amount to 23.6 million metric tons of ore at an average grade of 1.37 grams per metric ton (g/t) gold and 11.36 g/t silver. The company indicated that



a decision to commission a full feasibility study would be made before the end of 2008 (Tournigan Gold Corp., 2008, p. 9, 10).

## Outlook

Slovakia is expected to continue to produce modest amounts of industrial minerals and mineral fuels. With the possible exception of gold, metal mining has practically ceased owing to depletion of economic reserves. Aluminum and ferrous metals will continue to be produced from imported ores and concentrates. The country will remain dependent on imports of energy carriers and metals for its industrial needs.

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TABLE 1  
 CZECH REPUBLIC: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003	2004	2005	2006	
<b>METALS</b>						
Aluminum, metal, secondary <sup>c</sup>	20,000	20,000	15,000	15,000	15,000	
Copper, refined, secondary <sup>c</sup>	13,000	12,000	15,000	14,000	14,000	
Gold, metal <sup>c</sup>	kilograms	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--	
Iron and steel, metal:						
Pig iron	thousand metric tons	4,840	5,200	5,385	4,562 <sup>r</sup>	5,131
Ferroalloys, total electric furnace <sup>e</sup>	do.	1	--	--	--	--
Steel, crude	do.	6,512	6,800	7,033	6,189 <sup>r</sup>	6,862
Semimanufactures, hot rolled	do.	5,489 <sup>r</sup>	7,338 <sup>r</sup>	6,947 <sup>r</sup>	5,423 <sup>r</sup>	5,500 <sup>e</sup>
Lead, metal, secondary <sup>c</sup>		25,000	26,000	25,000	25,000	26,100 <sup>3</sup>
Silver <sup>c</sup>		25	25	25	25	25
Uranium:						
Mine output, U content		477	458	435	420 <sup>r</sup>	383
Concentrate production, U content		465	452	412	409	358
Zinc, metal, secondary <sup>c</sup>		250	250	250	250	250
<b>INDUSTRIAL MINERALS</b>						
Cement, hydraulic	thousand metric tons	3,217	3,465	3,709	3,978	3,900 <sup>e</sup>
Clays:						
Bentonite	do.	174	199	201	186 <sup>r</sup>	220
Kaolin	do.	3,650	4,155	3,862	3,882	3,768
Other	do.	564	554	649	671	561
Diamond, synthetic <sup>c</sup>	carats	5,000	5,000	5,000	5,000	5,000
Diatomite		28,000	41,000	33,000	38,000	53,000
Dolomite		314,000	416,000	345,000	419,000	409,000
Feldspar		401,000	421,000	488,000	472,000	487,000
Fertilizer materials:						
Nitrogenous, N content		250,000 <sup>e</sup>	251,000	271,000	270,000	270,000
Phosphatic, P <sub>2</sub> O <sub>5</sub> content <sup>c</sup>		100,000	100,000	100,000	100,000	100,000
Potassic, K <sub>2</sub> O content <sup>c</sup>		20,000	20,000	20,000	20,000	20,000
Mixed		75,000 <sup>e</sup>	36,000	30,000	30,000	30,000
Gemstones, crude, pyrope-bearing rock		52,000	53,000	42,000	43,000	39,000
Graphite		16,000	9,000	5,000	3,000	5,000
Gypsum and anhydrite, crude		108,000	104,000	71,000	25,000 <sup>r</sup>	16,000
Lime, hydrated and quicklime	thousand metric tons	1,120	1,251	1,264	1,223	1,200 <sup>e</sup>
Nitrogen, N content of ammonia <sup>c</sup>		215,000	235,000	250,000	250,000	250,000
Sand and gravel:						
Common sand and gravel	thousand cubic meters	8,268 <sup>r</sup>	9,109 <sup>r</sup>	8,664 <sup>r</sup>	9,080 <sup>r</sup>	9,130
Foundry sand	thousand metric tons	476	714	831	807	773
Glass sand	do.	853	904	829	920	963

See footnotes at end of table.

TABLE 1—Continued  
CZECH REPUBLIC: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003	2004	2005	2006	
INDUSTRIAL MINERALS--Continued						
Stone:						
Basalt, for casting	14,000	13,000	12,000	12,000 <sup>c</sup>	10,000 <sup>c</sup>	
Dimension stone	thousand cubic meters	285,000	244,000	273,000	288,000	293,000
Limestone and other calcareous stones	thousand metric tons	10,186	10,236	10,568	10,190 <sup>r</sup>	10,441
Building stone	thousand cubic meters	10,600	12,459	13,177	14,092 <sup>r</sup>	14,000 <sup>c</sup>
Sulfur, byproduct, all sources <sup>c</sup>		40,000	45,000	45,000	45,000	45,000
Sulfuric acid		240,524	239,000	234,000	230,000	230,000
MINERAL FUELS AND RELATED MATERIALS						
Coal:						
Bituminous	thousand metric tons	14,097	13,382	14,648	12,728	13,017
Brown and lignite	do.	49,335	50,390	48,290	49,125	49,374
Coke	do.	3,536	3,556	3,538	3,500	3,500
Fuel briquets from brown coal	do.	302	314	300	300 <sup>c</sup>	300 <sup>c</sup>
Gas:						
Manufactured, all types <sup>c</sup>	million cubic meters	800	800	800	800	800
Natural, marketed <sup>4</sup>	do.	91	131	175	356	148
Petroleum:						
Crude:						
As reported	thousand metric tons	253	310	299	306	259
Converted	thousand 42-gallon barrels	1,620 <sup>c</sup>	1,984	1,880 <sup>c</sup>	1,920	1,600
Refinery products <sup>c</sup>	do.	35,000	35,000	35,000	35,000	35,000

<sup>c</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through November 2007.

<sup>2</sup>In addition to the commodities listed, arsenic, dolomite, illite, sodium compounds, talc, and zeolite are produced, but available information is inadequate make reliable estimates of output.

<sup>3</sup>Reported figure.

<sup>4</sup>Includes gas produced from coal mines. Gross output of natural gas is not reported but is believed to exceed reported marketed output by an inconsequential amount.

TABLE 2  
CZECH REPUBLIC: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities <sup>1</sup>	Annual capacity
Aluminum, secondary		Alcan Decin Extrusions s.r.o.	Decin, northern Bohemia	40,000
do.		Kovohute Mnisek a.s.	Mnisek	70,000
Bentonite		Keramost a.s.	Most	250
Cement		Ceskomoravsky Cement a.s.	Kraluv dvur	350
Do.		Heidelberger Cement, 82.8%	Mokra	1,400
Do.		do.	Radotin	750
Do.		Cizkoviccka Cementarna a.s. (Lafarge Group, 85%)	Cizkoviccka	980
Do.		Holcim (Cesko) a.s.	Prague	1,000
Do.		Cement Hranice a.s. (Dyckerhoff, 98%)	Hranice	850
Do.		Cemos Ostrava a.s. (Cement Hranice, 95%)	Ostrava	400
Clay		Ceske Lupkove Zavody a.s.	Nove Straseci (refractory clay)	120
Do.		Chlumcanske Keranicke Zavody a.s.	Chlumcany (kaolin)	30
Do.		Kaolin Hlubany a.s. (WBB Minerals, 94%)	Podborany	100
Coal:				
Bituminous		OKD a.s. Ostrava	Ostrava-Karvina, north Moravia	20,000
Brown		Severoceske Doly a.s.	Chomutov	14,000
Do.		Mostecka Uhelna Spolecnost a.s.	Most	17,000
Do.		Sokolovska Uhelna a.s.	Sokolov	30,000
Lignite		Lignit Hodonin s.r.o.	Hodonin, south Moravia	1,000
Gold		Kovohute Pribram Nastupickna a.s.	Pribram	9
Graphite		Grafitove doly Stare Mesto s.r.o.	Stare Mesto	10
Lead, metal, secondary, refined		Kovohute Pribram Nastupickna a.s.	Pribram	29
Natural gas	million cubic meters	Gasfields in Brno and Ostrava regions, of which: Ceska Naftarska Spol s.r.o. Moravske Naftove Doly a.s. OKD Dolni Pruzkum a Bezpecnost a.s. UNIGEO a.s.	Eastern/southeastern Czech Republic Hodonin do. Paskov Ostrava-Hrabova	500 <sup>2</sup>
Petroleum:				
Crude		Oilfields around Hodonin, of which: Moravske Naftove Doly a.s. Ceska Naftarska Spol s.r.o. UNIMASTER s.r.o	Hodonin do. do.	160 <sup>2</sup>
Refinery	thousand 42-gallon barrels per day	Kolin, Kralupy, Pardubice, and Litvinov	Bohemia	200
Steel, crude		Nova Hut s.p. (Mittal Steel Ostrava)	Kunice-Ostrava	3,800
Do.		Zelezarne Vitkovice (ZV) (Evraz Group)	Vitkovice-Ostrava	900
Do.		Trinecke Zelezarny (Trinecke Iron and Steel Works)	Trinec	3,000
Do.		Poldi Hutte s.r.o. (Scholz Edelstahl A.G.)	Kladno-Prague	1,700
Do.		Zelezarny Bila Cerkev	Hradek-Rokycany	300
Do.		Zelezarny Veseli, a.s.	Veseli and Moravou	300
Do.		Zelezarny Chomutov s.p.	Chomutov	350
Do.		Bohumin Iron and Steel Works	Bohumin	400
Titanium dioxide		Precheza A.S	Precheza	25
Uranium		DIAMO s.p.	Straz pod Ralskem	2

<sup>1</sup>Names and locations of mines and crude oil refineries are identical.

<sup>2</sup>Annual capacity listed is total for all deposits, mines, or companies that produce the commodity.

TABLE 3  
HUNGARY: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003 <sup>e</sup>	2004	2005	2006	
<b>METALS</b>						
<b>Aluminum:</b>						
Bauxite, gross weight	thousand metric tons	720	666 <sup>3</sup>	647	535	538
Alumina, gross weight, calcined basis	do.	220 <sup>e</sup>	300	300	270	270
<b>Metal:</b>						
Primary		35,000 <sup>e</sup>	34,000	34,400	31,000	34,400
Secondary <sup>c</sup>		75,000	50,000 <sup>3</sup>	50,000	50,000	50,000
Total		110,000 <sup>e</sup>	84,000	84,400	81,000	84,400
Copper, metal, refined including secondary <sup>c</sup>		10,000	10,000	10,000	10,000	10,000
Gallium		5,400	5,500 <sup>3</sup>	5,500	5,500	5,500 <sup>3</sup>
<b>Iron and steel, metal:</b>						
Pig iron	thousand metric tons	1,334	1,333 <sup>3</sup>	1,350	1,329	1,335
Ferroalloys <sup>e,4</sup>		1,900	8,000	8,000	8,000	8,000
<b>Steel:</b>						
Crude	thousand metric tons	2,141	1,983 <sup>3</sup>	1,957	1,962	2,029
Semimanufactures, rolled only <sup>c</sup>	do.	1,900	1,803 <sup>3</sup>	1,844 <sup>3</sup>	1,850	1,800
<b>Manganese ore:</b>						
<b>Run-of-mine:</b>						
Gross weight		49,000 <sup>e</sup>	48,000 <sup>3</sup>	49,000	50,000	50,000 <sup>3</sup>
Mn content <sup>e</sup>		12,700	12,500	13,200	13,500	13,500
<b>Concentrate:<sup>c</sup></b>						
Gross weight		15,000	15,000	15,000	15,000	15,000
Mn content		5,000	5,000	5,000	5,000	5,000
<b>INDUSTRIAL MINERALS</b>						
Cement, hydraulic	thousand metric tons	3,510	3,573 <sup>3</sup>	3,580	3,349	3,349
<b>Clays:</b>						
<b>Bentonite:</b>						
Raw		3,700	87,029 <sup>3</sup>	9,280	9,000	6,600
Processed <sup>c</sup>		1,400	42,000	3,700 <sup>3</sup>	3,700	2,500
Kaolin, raw and washed		4,300	13,250 <sup>3</sup>	7,530	7,000	7,000
Gypsum and anhydrite <sup>c</sup>		72,200	62,000	55,000 <sup>3</sup>	55,000	30,000 <sup>3</sup>
Lime, calcined <sup>c</sup>	thousand metric tons	500	500	500	500	500
Nitrogen, N content of ammonia <sup>c</sup>	do.	238	232 <sup>3</sup>	274 <sup>3</sup>	275	275
Perlite		140,000	59,530 <sup>3</sup>	65,100	65,000	71,000
<b>Sand and gravel:</b>						
Gravel	thousand metric tons	29,138	35,000	33,544	33,500	34,483
<b>Sand:</b>						
Common <sup>c</sup>	do.	12,000 <sup>r</sup>	12,000 <sup>r</sup>	12,500 <sup>r</sup>	12,800 <sup>r</sup>	11,634 <sup>3</sup>
Foundry		152,000	162,600 <sup>3</sup>	138,200	138,000	120,000
Glass		317,000	225,300 <sup>3</sup>	163,900	164,000	251,000
<b>Stone:</b>						
Dimension, all types <sup>c</sup>	thousand metric tons	5,626 <sup>3</sup>	5,500	5,000	5,000	5,000
Dolomite	do.	4,196	4,398 <sup>3</sup>	7,200	7,200 <sup>c</sup>	7,933
Limestone	do.	7,152	2,459 <sup>3</sup>	3,014	3,014	3,257
Sulfur, byproduct, elemental, all sources <sup>c</sup>		52,000	51,000	50,000	50,000	50,000
Sulfuric acid <sup>c</sup>		80,000	80,000	80,000	80,000	80,000
Talc <sup>c</sup>		500	--	--	80,000 <sup>r</sup>	80,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
<b>Coal:</b>						
Bituminous	thousand metric tons	660	667 <sup>3</sup>	260	--	--
Brown	do.	4,570	4,128 <sup>3</sup>	2,495	1,426	1,431
Lignite	do.	7,574	8,564 <sup>3</sup>	8,470	8,154	8,467
Total	do.	12,804	13,359 <sup>3</sup>	11,225	9,580	9,898
Coke, metallurgical <sup>c</sup>		650	650	650	650	650
Gas, natural, marketed	thousand cubic meters	3,353	3,010 <sup>3</sup>	3,200	3,159	3,246
Peat, agricultural use <sup>c</sup>		150	200 <sup>3</sup>	200	200	200

See footnotes at end of table.

TABLE 3—Continued  
HUNGARY: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003 <sup>e</sup>	2004	2005	2006	
MINERAL FUELS AND RELATED MATERIALS—Continued						
Petroleum:						
Crude:						
As reported	thousand metric tons	1,050	1,133 <sup>3</sup>	1,100	948	886
Converted	thousand 42-gallon barrels	8,011	8,640	8,400 <sup>e</sup>	7,200	6,800
Refinery products <sup>e,5</sup>	do.	40,000	40,000	40,000	40,000	40,000

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>1</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through November 2007.

<sup>2</sup>In addition to the commodities listed, diatomite and a variety of industrial minerals and construction materials, such as common clay, are also produced, but available information is inadequate to make reliable estimates of output.

<sup>3</sup>Reported figure.

<sup>4</sup>Hungary is believed to produce some blast ferromanganese.

<sup>5</sup>Excludes refinery fuel and losses.

TABLE 4  
HUNGARY: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Alumina		Magyar Aluminium Ltd. (MAL)	Ajka Timfoldgyar plant, about 120 kilometers southwest of Budapest, near Lake Balaton	400
Do.		do.	Almasfuzito Timfoldgyar plant near the Czech Republic border, 63 kilometers northwest of Budapest	240
Do.		do.	Moson-Magyarovar plant, in northwestern corner of Hungary, about 12 kilometers from Austrian and Czechoslovak borders	30
Aluminum, primary		do.	Inota plant, near Varpalota, 75 kilometers southwest of Budapest	46
Bauxite		Magyar Aluminium Ltd. (MAL) (owns and operates Bakony Bauxite Mines Ltd.)	Bakony District, extending roughly 100 kilometers northeast along Lake Balaton	1,500
Cement		Belpatfalva Cement es Meszipari Rt [Heidelberger & Schwenk (Germany) and Hungarian Group]	Belapatfalva, near Miskolc, 125 kilometers northeast of Budapest	1,100
Do.		Beremend Cement es Meszipari Rt [Heidelberger & Schwenk (Germany), 100%]	Beremend, 45 kilometers south of Pecs	1,090
Do.		Dunai Cement es Meszmu Kft [Heidelberger & Schwenk (Germany), 100%]	Vac, 50 kilometers north of Budapest	1,200
Do.		Hejocsabai Cement es Meszipari Rt [Holderbank (Germany) and Hungarian Group]	Hejocsaba, 150 kilometers northeast of Budapest	1,450
Do.		Labatlani Cementipari kft [Holderbank (Germany), 100%]	Labatlan, 20 kilometers north of Tatabanya	550
Clays		Agyag-Asvany Kft [Navan Resources PLC (Ireland)]	Felsopeteny, one underground and two open pit mines and a 5,000-metric-ton-per-year processing plant. Products are ball clay, kaolin, and refractory clay	35
<b>Coal:</b>				
Bituminous and lignite		Magyar Szenbanyaszati Troszt (MSZT) (Hungarian Coal Mining Trust)	Tatabanya and Oroszlany coal mining region, 45 kilometers west of Budapest	8,900
Do.		do.	Mecsek coal mining region, near Pecs and Komlo, north of the Yugoslav border	3,100
Do.		do.	Borsod coal mining region, 130 kilometers northeast of Budapest	5,200
Lignite		do.	Thorez opencast mine at Visonta, 80 kilometers northeast of Budapest	7,000
Manganese		Orszagos Erc-es Asvanybanyak (National Ore and Mineral Mines)	Urkut manganese ore mines, 120 kilometers southwest of Budapest	160
Natural gas	million cubic feet	Hungarian Oil and Gas Co. (MOL)	Szeged and Algyo gasfields, southern Hungary	152,000
Do.		do.	Hajduszoboszo gasfields, 180 kilometers east of Budapest	50,000
Do.		do.	Smaller gasfields are Szank, Kardoskut, Bekes, Berefurdo, and others	39,000
Perlite		Perlit 92 Kft [Navan Resources PLC (Ireland) and Hungarian Group]	Palhaza, northeastern Hungary; open pit mine and processing plant	150
<b>Petroleum:</b>				
Crude	million 42-gallon barrels	Hungarian Oil and Gas Co. (MOL)	Szeged-Algyo Field, near Romanian-Yugoslav border; 50% of total capacity	7
Refined		Subsidiaries of Hungarian Oil and Gas Co. (MOL), of which:		
Do.	do.	Danube Petroleum Refining Co.	Szazhalombatta	55
Do.	do.	Tisza Petroleum Refining Co.	Leninaváros	22
Do.	do.	Zala Petroleum Refining Co.	Zalaegerszeg	4
Silica		Uveg-Asvany Kft. [Navan Resources PLC (Ireland) and Hungarian Group]	Mine and plant at Fehevarcsugó	660
Steel		Dunaferr Dunai Vasmu Rt	60 kilometers south of Budapest	1,400
Do.		OAM-Ozdi Acelmuvek Kft	120 kilometers northeast of Budapest	360
Do.		DAM-Diosgyori Acelmuvek es Kereskedelmi Kft	Diosgyoer, 145 kilometers northeast of Budapest	850

TABLE 5  
POLAND: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003	2004	2005	2006
<b>METALS</b>					
<b>Aluminum, metal:</b>					
Primary metric tons	49,125	45,371	45,807	54,508	57,620
Secondary <sup>c</sup> do.	9,700 <sup>3</sup>	11,900	12,000	12,000	12,000
Total <sup>c</sup> do.	58,825 <sup>3</sup>	57,300	57,800	66,500	69,600
Cadmium, metal, primary do.	440	375	356	408	400
<b>Copper:</b>					
<b>Ore:</b>					
Gross weight	29,705	29,992	31,800	32,019	34,821
Cu content metric tons	568,000	570,000 <sup>c</sup>	590,000	614,800	670,000
<b>Concentrate:</b>					
Gross weight	1,935	1,756	2,054	1,977 <sup>r</sup>	2,100
Cu content metric tons	503,000	474,000	554,000	533,000 <sup>r</sup>	570,000
<b>Metal:</b>					
<b>Smelter:</b>					
Primary do.	510,700	515,000 <sup>c</sup>	541,000	552,200	558,200
Secondary <sup>c</sup> do.	29,400	28,500 <sup>c</sup>	30,000	25,000	20,000
Total do.	540,100	543,500	571,000	577,200	578,200
Refined, electrolytically, primary and secondary do.	508,674	529,616	550,066	560,256	556,625
Gold, mine output, Au content kilograms	296	356	527	530	500
<b>Iron and steel:</b>					
<b>Pig iron:</b>					
For foundry use <sup>c</sup>	52 <sup>3</sup>	132	200	200	200
For steel production	5,245	5,500 <sup>c</sup>	6,200	4,477	5,333
Total	5,297	5,632	6,400	4,677	5,533
<b>Ferroalloys:</b>					
Blast furnace, ferromanganese metric tons	600	1,000 <sup>c</sup>	46,900 <sup>r</sup>	45,000 <sup>r,c</sup>	40,000
<b>Electric furnace:</b>					
Ferrochromium do.	100	200	-- <sup>r</sup>	-- <sup>r</sup>	--
Ferrosilicomanganese do.	7,500	5,000 <sup>r</sup>	29,600 <sup>r</sup>	25,000 <sup>r,c</sup>	25,000 <sup>c</sup>
Ferrosilicon do.	41,800	92,700 <sup>r,c</sup>	83,500 <sup>r</sup>	80,000	80,000
Total do.	50,000 <sup>r</sup>	98,900 <sup>r,c</sup>	160,000 <sup>r</sup>	150,000 <sup>r</sup>	145,000
<b>Steel, crude:</b>					
From open hearth furnaces	169	--	--	--	--
From oxygen converters	5,531	6,070	6,865	4,927	5,755
From electric furnaces	2,667	3,040	3,713	3,409	4,237
Total	8,367	9,110	10,578	8,336	9,992
<b>Semimanufactures:</b>					
Hot rolled	6,372 <sup>r</sup>	6,720 <sup>r</sup>	7,605 <sup>r</sup>	6,294 <sup>r</sup>	7,666
Cold rolled	1,349	1,533	1,600	1,600	1,600
Pipe	309	309	310	380	417
<b>Lead:</b>					
<b>Mine output:</b>					
Pb content of Pb-Zn ore do.	73,500	74,000	51,000	78,000	63,300
Pb content of Cu ore do.	46,900	36,000	36,000	37,800	30,700
Total do.	120,400	110,000	87,000	115,800	94,000
<b>Concentrate:</b>					
Gross weight do.	85,000	100,200	110,200	110,000 <sup>c</sup>	110,000 <sup>c</sup>
Pb content do.	56,600	54,700	60,200	60,000 <sup>c</sup>	60,000 <sup>c</sup>
<b>Metal:</b>					
<b>Smelter:<sup>c</sup></b>					
Primary do.	29,400 <sup>3</sup>	25,000	25,000	20,000	20,000
Secondary do.	44,700 <sup>3</sup>	45,000	45,000	45,000	45,000
Total do.	74,100 <sup>3</sup>	70,000	70,000	65,000	65,000
Refined, primary and secondary do.	65,800	55,563	55,932 <sup>r</sup>	62,455 <sup>r</sup>	67,298

See footnotes at end of table.

TABLE 5—Continued  
POLAND: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003	2004	2005	2006
METALS—Continued					
Platinum-group metals, average content of slimes: <sup>e,4,5</sup>					
Palladium kilograms	12	10 <sup>e</sup>	10	10	10
Platinum do.	20	20 <sup>e</sup>	20	20	20
Selenium metric tons	68	78	83	83	83
Silver, mine output, Ag content do.	1,222	1,237	1,344	1,306 <sup>f</sup>	1,300
Zinc:					
Zn content:					
Mine output do.	171,200	174,700	170,000 <sup>r,e</sup>	150,000	160,000
Concentrate output do.	152,200	153,900	140,300 <sup>f</sup>	117,200	126,000
Metal, refined, including secondary do.	158,900	154,200	131,000 <sup>f</sup>	137,300 <sup>f</sup>	134,000
INDUSTRIAL MINERALS					
Barite, beneficiated do.	2,700	3,030	3,183	2,357	2,143
Cement:					
Clinker	8,812	8,525	9,600 <sup>r,e</sup>	9,500 <sup>f</sup>	11,000
Hydraulic	10,948	11,653	12,837	12,646	14,688
Portland	10,000	10,700	11,700 <sup>r,e</sup>	11,400 <sup>f</sup>	13,200 <sup>e</sup>
Clays and clay products, crude:					
Bentonite metric tons	26,200	31,648	66,143	86,331	93,880
Fuller's earth do.	26,200	4,200 <sup>f</sup>	4,700 <sup>f</sup>	5,000 <sup>r,e</sup>	5,000 <sup>e</sup>
Fire clay	128	144	137	156	187
Kaolin:					
Crude	252	170	191	214	200
Beneficiated	114	136	191	115	110
Diatomite metric tons	1,000	700	1,000 <sup>e</sup>	1,000 <sup>e</sup>	1,000 <sup>e</sup>
Feldspar:					
Run of mine do.	219,000 <sup>f</sup>	289,000 <sup>f</sup>	336,900 <sup>f</sup>	350,000 <sup>f</sup>	350,000
Processed, including imported material do.	293,000	334,000 <sup>f</sup>	408,900 <sup>f</sup>	400,000 <sup>f</sup>	400,000
Gypsum and anhydrite:					
Natural: <sup>6</sup>					
Gypsum rock	867	1,031	971 <sup>f</sup>	1,000	1,100
Anhydrite	280	297	301 <sup>f</sup>	243	262
Total	1,147	1,328	1,272 <sup>f</sup>	1,243	1,362
Synthetic gypsum	1,134 <sup>f</sup>	1,094 <sup>f</sup>	1,250 <sup>f</sup>	1,000 <sup>e</sup>	1,000 <sup>e</sup>
Grand total	2,281 <sup>f</sup>	2,422 <sup>f</sup>	2,522 <sup>f</sup>	2,243	2,362
Lime, hydrated and quicklime	1,865	1,955	2,086 <sup>f</sup>	1,688	1,700
Magnesite: <sup>e</sup>					
Ore, crude metric tons	24,000 <sup>3</sup>	30,000 <sup>f</sup>	52,000 <sup>f</sup>	50,000 <sup>f</sup>	50,000
Concentrate do.	22,100 <sup>3</sup>	27,200 <sup>f</sup>	57,900 <sup>f</sup>	50,000 <sup>f</sup>	50,000
Calcined do.	100 <sup>3</sup>	100	100	100	100
Nitrogen, N content of ammonia	1,362	1,912	1,985	1,985	2,100
Salt:					
Rock	839	848	1,099	1,123	1,130
Other	2,719	3,812	4,043	3,762	3,825
Total	3,558	4,660	5,142	4,885	4,955
Sand, excluding glass sand:					
Aggregates:					
Mine output metric tons	66,722	78,945 <sup>f</sup>	81,398 <sup>f</sup>	80,000 <sup>f</sup>	80,000 <sup>e</sup>
Processed do.	62,799	71,376 <sup>f</sup>	73,028 <sup>f</sup>	70,000 <sup>f</sup>	70,000 <sup>e</sup>
Foundry sand	628	666 <sup>f</sup>	606 <sup>f</sup>	650 <sup>e</sup>	650 <sup>e</sup>
Filling sand	6,553 <sup>f</sup>	5,843 <sup>f</sup>	5,945 <sup>f</sup>	6,000 <sup>f</sup>	6,000 <sup>e</sup>
Lime-sand brick production sand thousand cubic meters	411	483 <sup>f</sup>	540 <sup>f</sup>	500 <sup>f</sup>	500 <sup>e</sup>
Silica:					
Glass:					
Construction, flat	550 <sup>f</sup>	644 <sup>f</sup>	696 <sup>f</sup>	650 <sup>f</sup>	650 <sup>e</sup>
Technical	53 <sup>f</sup>	53 <sup>f</sup>	69 <sup>f</sup>	70 <sup>f</sup>	70 <sup>e</sup>

See footnotes at end of table.



TABLE 5—Continued  
POLAND: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2002	2003	2004	2005	2006
<b>INDUSTRIAL MINERALS—Continued</b>					
Silica—Continued:					
Glass—Continued:					
Commercial	83 <sup>r</sup>	89 <sup>r</sup>	98 <sup>r</sup>	100 <sup>r</sup>	100 <sup>e</sup>
Packing	970 <sup>r</sup>	968 <sup>r</sup>	1,108 <sup>r</sup>	1,000 <sup>r</sup>	1,000 <sup>e</sup>
Silica ores:					
Glass sand, marketable	1,235	1,402	1,479 <sup>r</sup>	1,500 <sup>e</sup>	1,500 <sup>e</sup>
Quartz and quartz crystal, marketable	metric tons 27,000	32,800 <sup>r</sup>	37,100 <sup>r</sup>	35,000 <sup>e</sup>	35,000 <sup>e</sup>
Quartzite, refractory, marketable	do. 32,000	115,400	108,000 <sup>r</sup>	100,000 <sup>r</sup>	100,000 <sup>e</sup>
Quartz schist, marketable	do. 3,000	2,800	9,000 <sup>r</sup>	9,000 <sup>r</sup>	9,000 <sup>e</sup>
Sodium compounds, n.e.s.:					
Carbonate (soda ash), 98%	1,054	1,050	1,167	1,189	1,177
Caustic soda (96% NaOH)	395	427	452	391 <sup>r</sup>	462
Stone, mine output:					
Dimension stone	1,074 <sup>r</sup>	2,052 <sup>r</sup>	2,282 <sup>r</sup>	2,300 <sup>r</sup>	2,300 <sup>e</sup>
Dolomite	1,585	1,815	1,986	1,834	2,013
Limestone:					
For lime production	10,306	11,379 <sup>r</sup>	11,000 <sup>r</sup>	10,000 <sup>e</sup>	10,000 <sup>e</sup>
For non-lime end use	23,233	23,747	23,233 <sup>r</sup>	24,607	29,299
Road stone	269	172	155	150	150 <sup>e</sup>
Sulfur:					
Native, Frasch	760	762	821	802	800
Byproduct:					
From metallurgy	275	275 <sup>e</sup>	275 <sup>e</sup>	275 <sup>e</sup>	275 <sup>e</sup>
From petroleum	180	175 <sup>e</sup>	175 <sup>e</sup>	175 <sup>e</sup>	175 <sup>e</sup>
Total	455	450 <sup>e</sup>	450 <sup>e</sup>	450 <sup>e</sup>	450 <sup>e</sup>
From gypsum <sup>e</sup>	10	10	10	10 <sup>e</sup>	10 <sup>e</sup>
Grand total	1,225	1,222	1,281	1,262	1,260
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Carbon black	16,900	18,500 <sup>r</sup>	36,400 <sup>r</sup>	35,000 <sup>r</sup>	35,000 <sup>e</sup>
Coal:					
Bituminous	103,546	103,016	101,230	97,903	95,220
Lignite and brown	58,210	60,919	61,197	61,136	60,844
Total	161,756	163,935	162,427	159,039	156,064
Coke, coke oven	8,787	10,111	7,752	8,518 <sup>r</sup>	9,735
Fuel briquets, all grades	50 <sup>e</sup>	4	3	3	3
Gas:					
Natural	million cubic meters 5,259	5,315	5,630 <sup>r</sup>	5,742	5,650
Manufactured:					
Town gas	do. 6 <sup>e</sup>	4	5	11 <sup>r</sup>	10
Coke oven gas	do. 3,752	4,245	4,216	3,545 <sup>r</sup>	4,101
Generator gas <sup>e</sup>	do. 300	300	300	300	300
Total	do. 4,058	4,549	4,521	3,856 <sup>r</sup>	4,400 <sup>e</sup>
Peat, fuel and agricultural	300 <sup>e</sup>	430	509	500 <sup>e</sup>	500 <sup>e</sup>
Petroleum:					
Crude, as reported	721	765	886	849	797
Refinery products	17,540	16,886	17,000 <sup>e</sup>	16,000	16,000

<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. -- Zero.

<sup>1</sup>Table includes data available through November 2007.

<sup>2</sup>In addition to the commodities listed, antimony and germanium, which are associated with polymetallic deposits, and cobalt and nickel, which are associated with copper ores, are produced in quantities that so far have not warranted further recovery.

<sup>3</sup>Reported figure.

<sup>4</sup>Based on official Polish estimates.

<sup>5</sup>Estimates based on reported platinum- and palladium-bearing final (residual) slimes and their average Pt and Pd content from electrolytic copper refining.

<sup>6</sup>Includes building gypsum, as well as an estimate for gypsum used in the production of cement.

TABLE 6  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2006<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
<b>Aluminum:</b>			
Primary	Aluminium Konin-Impexmetal S.A.	Konin	55.
Secondary	Zakłady Metalurgiczne "Skawina"	Skawina	20.
Do.	Zakłady Metali Lekkich SA "Kety"	Kety	NA.
Do.	Zakłady Metalurgiczne "Trzebinia"	Trzebinia	NA.
Barite <sup>2</sup>	Przedsiębiorstwo Hondlowo Usługowe R&S Spolka Jawna	Boguszow, Stanislawow	3.
<b>Cement:</b>			
Do.	Zakłady Cementowo-Wapiennicze Gorazdze S.A.	Chorula	1,800 clinker, 2,400 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.	Cementownia "Strzelce Opolskie" S.A.	Strzelce Opolskie	1,257 clinker, 1,630 cement.
Do.	Kombinat Cementowo-Wapienniczy "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 "Polcement-Saturn"	Wojkowice	400 cement.
Do.	Cementownia "Wiek"	Ogrodzieniec	710 clinker, 240 cement.
Do.	Fabrika Cementu "Wysoka"	Lazy	304 clinker, 425 cement.
Do.	Cementownia "Wejhorowie"	Wejhorowo	42 clinker, 45 cement.
<b>Coal:</b>			
Anthracite	Zakład Wydobywco Przetworczy Antracytu Walbrzych-Gaj	Lower Silesia	200.
Bituminous	Includes: Bytomska Spolka Weglowa S.A. Rudzka Spolka Weglowa S.A. Gliwicka Spolka Weglowa S.A. Katowicki Holding Weglowy S.A. Nadwislanska Spolka Weglowa S.A. Rybnicka Spolka Weglowa S.A. Jastrzebska Spolka Weglowa S.A. Seven independent mines Walbrzyskie Kopalnie Wegla Kamiennego KWK "Nowa Ruda" KWK "Bogdanka" S.A.	Of which: Upper Silesia (9 mines) do. (6 mines) do. (7 mines) do. (11 mines) do. (8 mines) do. (5 mines) do. (6 mines) do. Lower Silesia do. do.	140,000. <sup>3</sup>

See footnotes at end of table.

TABLE 6—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2006<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
<b>Coal—Continued:</b>			
Lignite	Includes: KWK "Belchatow" KWK "Turow" KWK "Konin" KWK "Adamow" KWK "Sieniawa"	Of which: Belchatow Turow Konin Adamow Sieniawa	75,000. <sup>3</sup>
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. <sup>3</sup>
<b>Copper:</b>			
Ore, gross weight (1.2%–2.2% Cu)	Kombinat Gorniczo Hutniczy Miedzi (KGHM) Polska Miedz S.A. (KGHM, S.A.)	Lubin Mine, Lubin-Glogow District	7,000.
Do.	do.	Polkowice-Sierszowice Mine, Lubin-Glogow District	9,200.
Do.	do.	Rudna Mine, Lubin-Glogow District	11,000.
Concentrate, gross weight (25.2%–25.9% Cu)	do.	Lubin beneficiation plant, Lubin-Glogow District	465.
Do.	do.	Polkowice beneficiation plant, Lubin-Glogow District	450.
Do.	do.	Rudna beneficiation plant, Lubin-Glogow District	700.
Metal, refined	do.	Refineries at Glogow I, Glogow II, and Legnica	480.
Feldspar	Strzeblowskie Kopalnie Surowcow Mineralnych	Mine at Sobotka, Lower Silesia, workings at Pagorki Zachodnie and Pagorki Wschodnie	50.
<b>Ferroalloys:</b>			
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.	Refinery at Glogow "Trzebinia"	550.
Gypsum and anhydrite	Includes: Zakłady Przemyslu Gipsowego "Dolina Nidy" Zakład Gipsowy "Stawiany" Kopalnia Anhydrytu "Nowy Lad" KGHM "Polska Miedz" S.A.	Of which: Southeastern Poland, Gacki  Southeastern Poland, Szarbkow Lower Silesia, Niwnice Lower Silesia, Iwiny	1,400. <sup>3</sup>
Helium	million cubic meters Zakład Odazotowania Gazu	Western Poland, Odolanow	3.
Kaolin	KSM "Surmin-Kaolin" S.A.	Lower Silesia, Nowogrodziec	50.
<b>Lead-zinc:</b>			
Concentrate	Zakłady Gorniczo-Hutnicze (ZGH) "Boleslaw"	Mines and concentrators at Olkusz and Pomorzany, Bukowno region	60 lead, 160 zinc.
<b>Metal:</b>			
Pb, refined	Huta Cynku "Miasteczko Slaskie"	Refinery at Miasteczko Slaskie	60.
Do.	Huta Metali Niezależnych "Szopienice"	Katowice	35.
Zn, refined	Huta Cynku "Miasteczko Slaskie"	Imperial Smelter at Miasteczko Slaskie	60.
Do.	Zakłady Metalurgiczny "Silesia" (input from Huta "Miasteczko Slaskie")	Refinery at Katowice	30.
Do.	Zakłady Gorniczo-Hutnicze "Boleslaw"	Refinery at Boleslaw	65.
Do.	Huta Metali Niezależnych "Szopienice"	Katowice	28.

See footnotes at end of table.

TABLE 6—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2006<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity	
Lime <sup>4</sup>	Zakłady Przemysłu Wapienniczego Trzuskawica	Kieleckie County, Swietokrzyskie Mountains	4,500. <sup>3</sup>	
	Slaskie Zakłady Przemysłu Wapienniczego Opolwap S.A.	Opole County		
	Zakłady Przemysłu Wapienniczego Bukowa	Kieleckie County, Swietokrzyskie Mountains		
	Kombinat Cementowo-Wapienniczy Kujawy S.A.	Bydgoskie County		
	Zakłady Cementowo-Wapiennicze Gorazdze S.A.	Opole County		
	Zakłady Cementowo-Wapiennicze Nowiny	Kieleckie County		
	Produkcyjno-Handlowo-Uslugowe Wapmo-Sabinow	Czestochowa County		
	Wojcieszowskie Zakłady Przemysłu Wapienniczego Sp. z.o.o.	Jeleniogorskie County		
	Zakłady Przemysłu Wapienniczego w Sulejowie	Piotrkowskie County		
	Zakład Wapienniczy w Plazie	Katowickie County		
Natural gas	million cubic meters	Ministry of Mining and Energy	Gasfields at pre-Carpathian foothills; Carpathian Mountains Lowlands, near Ostrow Wielkopolski, Poznan, and Trzebnica, north of Wroclaw	4,900.
Nitrogen:				
Ammonia (NH <sub>3</sub> )	Includes:	Of which:	2,400. <sup>3</sup>	
	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 northwest Poland		
Fertilizer (N)	do.	do.	1,700.	
Petroleum:				
Crude	Includes:	Of which:	200. <sup>3</sup>	
	Polskie Gornictwo Naftowe i Gazownictwo Warszawa	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 <sup>3</sup>	
	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. <sup>3</sup>	
	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.	Siersoszowice in southwestern Poland		
	Kopalnia Węgla Kamiennego "Debiensko"	Debiensko, Upper Silesia		
	Janikowskie Zakłady Sodowe "Janikosoda" S.A.	Janikowo in central Poland		

See footnotes at end of table.  
CENTRAL EUROPE—2006

TABLE 6—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2006<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Selenium	Includes: Huta Metali Niezależnych 'Szopienice" KGHM "Polska Miedz" S.A.	Of which: Katowice Refinery at Glogow	80. <sup>3</sup>
Silver	KGHM "Polska Miedz" S.A. and Zakłady Metalurgiczne Trzebinia	Refined from dore produced by the Szopienice Pb-Zn smelter-refinery largely from KGHM-supplied slimes	1. <sup>3</sup>
<b>Steel:</b>			
Crude and semimanufactures	Includes: Huta Katowice S.A.  Huta im. T. Sendzimir S.A.  P.P. Huta "Zawierciu"  Huta Czestochowa S.A.  Huta "Ostrowiec" S.A.  P.P. Huta "Labedy"  Huta "Lucchini-Warszawa" Sp. z o.o.  Huta Florian S.A.  Huta "Stalowa Wola" S.A.  Huta "Jednosc" S.A.  Huta "Batory" S.A.  P.P. Huta "Baildon"  Huta "Malapanew" S.A.  Huta "Zabrze" S.A.  Huta "Zygmunt" S.A.	Of which: Plant at Dobrowa Gornicza, producing pig iron, crude steel, hot-rolled products, and cast steel Steelworks at Krakow, producing pig iron, crude steel, hot-rolled products, cold-rolled products, pipes, and cast iron Steelworks at Zawierciu, producing crude steel, hot-rolled products, cast iron, and cast steel Steelworks at Czestochowa, producing pig iron, crude steel, hot-rolled sheets, pipes, and cast iron Steelworks at Ostrowiec-Swietokrzyski, producing crude steel, and hot-rolled products Steelworks at Gliwice, producing crude steel and hot-rolled products Steelworks in Warsaw, producing crude steel, hot-rolled products, and cold-rolled strip Steelworks in Swietochlowicach, producing crude steel, hot-rolled products, galvanized sheet, and cold-rolled strip Steelworks at Stalowa Wola, producing crude steel Steelworks at Siemianowice Slaskie, producing crude steel, hot-rolled products, and pipes Steelworks at Chorzow, producing crude steel, hot-rolled products, and pipes Steelworks in Katowice, producing crude steel, hot-rolled products, cold-rolled strip, and cast steel Steelworks at Ozimek, producing crude steel and cast steel Steelworks at Zabrze, producing crude steel, cast iron, and cast steel Steelworks at Bytom, producing crude steel, cast iron, and crude steel	14,000 (crude). <sup>3</sup>
Semimanufactures only	Huta Cedler S.A.  P.P. Huta "Kosciuszko"  Huta "Pokoj" S.A.  Huta "Andrzej" S.A. Huta "Ferrum" S.A. P.P. Huta "Bobrek"  Huta "Buczek" S.A.  P.P. Huta "1 Maja"  Zaklad Wielkopiecowy "Szczecin" Sp. z o.o.	Steelworks in Sosnowiec, producing hot-rolled products, cold-rolled strip, and cast iron Steelworks at Chorzow, producing hot-rolled products Steelworks at Ruda Slaska, producing hot-rolled products Steelworks at Zawadskie, producing pipes Steelworks in Katowice, producing pipes Steelworks in Bytom, producing pig iron, hot-rolled products, and cast iron Steelworks in Sosnowiec, producing pipes and cast iron Steelworks in Gliwice, producing hot-rolled products Steelworks at Szczecin, producing pig iron	

See footnotes at end of table.

TABLE 6—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2006<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Sulfur	Includes: P.P.Kopalnie i Zaklady Przetworcze Siarki "Siarkopol" P.P. Kopalnie i Zaklady Chemiczne Siarki "Siarkopol"	Of which: Operations at Tarnobrzeg, mining the Jeziorko- Grebow-Wydza deposit Operations at Grzybow, mining the Osiek and Grzybow-Gacki deposits	5,700. <sup>3</sup>

<sup>1</sup>The 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 Swiatowej 1995-2003) 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.

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

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

<sup>4</sup>In order of size.

TABLE 7  
POLAND: RESOURCES OF MAJOR MINERALS IN 2005

(Million metric tons of ore unless otherwise specified)

Commodity	Geologically documented resources					
	Number of deposits		Total	Exploited	Annual percentage change of total	
	Total	Exploited				
<b>METALS</b>						
Copper	14	6	1,985	1,603	-2.3	
Lead and zinc	21	3	171	32	-1.7	
<b>INDUSTRIAL MINERALS</b>						
Raw materials for chemicals:						
Sulfur, native	18	5	525	38	12	
Rock salt	19	5	80,165	11,178	--	
Barite	5	--	6	--	--	
Potassium-magnesium salts	5	1	669	72	--	
Raw materials for construction:						
Chalk	196	55	198	20	--	
Clay:						
Argillaceous material for construction ceramics	1,209	311	3,987	524	--	
Bentonite	8	1	2.7	0.5	--	
Ceramic	29	6	145	11	2.8	
Refractory	17	3	57	5	-1.8	
Kaolin	14	2	215	82.2	--	
Dolomite	11	4	353	164	1.7	
Feldspar ore	8	2	94	11.2	-1	
Gypsum and anhydrite	15	4	261	115	-1	
Magnesite	6	1	13.3	3	--	
Sand and gravel:						
Filling sand	32	10	4,600	1,173	--	
Moulding sand	78	12	350	116	-1	
Quartz sand for brick and concrete	159	46	719	134	-1	
Gravel aggregates	5,118	1,893	14,637	3,302	1.0	
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	567	236	8,230	3,927	--	
Limestone and marl for lime and cement use	178	38	18,110	6,063	--	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Coal:						
Bituminous	132	46	43,321	15,291	1.8	
Lignite	76	10	13,724	1,878	1.0	
Gas:						
Natural	billion cubic meters	260	180	151	121	-2
Coal methane	do.	48	20	86	22	1.2
Petroleum	do.	86	67	22	19	10

-- Zero.

Sources: Central Statistical Office of Poland, 2005, Statistical Yearbook of Industry; Polish Academy of Sciences, 2004, Minerals Yearbook of Poland; Concise Statistical Yearbook of Poland.

TABLE 8  
POLAND: IMPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	2001	2002	2003	2004	2005	
<b>METALS</b>						
Aluminum and articles thereof	310	374	354	520	551	
Chromite	26	9	11	13 <sup>r</sup>	9 <sup>r</sup>	
Cobalt, matte, oxide, and scrap	metric tons	86	71	88	70 <sup>r</sup>	159 <sup>r</sup>
Iron ore and concentrate	7,709	6,957	8,950	10,932	6,789	
<b>Lead:</b>						
Concentrates, Pb content	4	5	2	--	--	
Refined	12	33	32	33	34	
Manganese, ore and concentrate	44	15	10	205 <sup>r</sup>	40 <sup>r</sup>	
<b>Steel:</b>						
Flat-rolled, nonalloy semimanufactures	2,535	2,357	NA	2,862	3,602	
Stainless and articles thereof	84	91	NA	144	163	
Pipes and hollow profiles	289	344	NA	415	442	
Zinc, metal refined	NA	8	12	17	13	
<b>INDUSTRIAL MINERALS</b>						
Alumina	135	123	146	151 <sup>r</sup>	145 <sup>r</sup>	
Barite	7	6	8	6 <sup>r</sup>	6 <sup>r</sup>	
Bauxite	38	50	69	82 <sup>r</sup>	62 <sup>r</sup>	
Bentonite	65	68	94	NA	NA	
<b>Cement:</b>						
Clinker	251	67	70	NA	NA	
Cement	347	654	719	NA	NA	
Feldspar	144	168	155	NA	NA	
Flourspar	5	6	5	NA	NA	
Glass	466	549	534	707	759	
Graphite, natural and synthetic	55	61	63	NA	NA	
Gypsum and anhydrite	23	46	104	NA	NA	
Kaolin, washed	61	70	72	NA	NA	
Mineral fertilizers	1,426	1,609	1,875	1,999	1,648	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Coal, including briquets	1,903	2,768	2,560	2,335	3,372	
Natural gas	million cubic meters	8,325	7,775	8,721	NA	NA
<b>Petroleum:</b>						
Crude	17,513	17,872	17,448	17,309	17,641	
Refined	2,318	2,501	2,039	3,155	3,599	

<sup>r</sup>Revised. NA Not available. -- Zero.

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2003 and 2005; Polish Academy of Sciences, Minerals Yearbook of Poland, 1999-2003.



TABLE 9  
POLAND: EXPORTS OF SELECTED MINERAL COMMODITIES

(Thousand metric tons unless otherwise specified)

Commodity	2001	2002	2003	2004	2005	
<b>METALS</b>						
Aluminum and articles thereof	230	264	319	332	385	
Cadmium	metric tons	198	49	428	NA	NA
Cobalt, matte, oxide, and scrap	do.	14	1	--	NA	NA
Copper:						
Refined copper and copper alloys	233	288	277	282	291 <sup>r</sup>	
Copper manufactures	143	123	121	177	163	
Lead:						
Concentrates, Pb content	56	58	52	54	NA	
Metal, refined	10	21	32	27	28	
Silver and articles thereof	metric tons	1,094	1,135	1,254	683	319
Steel:						
Pig iron	41	3	16	NA	NA	
Steel, crude	2	3	3	NA	NA	
Flat-rolled, nonalloy semimanufactures	2,219	2,151	NA	2,694	2,148	
Pipes and hollow profiles	202	35	NA	184	188	
Zinc:						
Concentrate, Zn content	16	34	35	27 <sup>r</sup>	39 <sup>r</sup>	
Metal and articles thereof	92	89	80	82	82	
<b>INDUSTRIAL MINERALS</b>						
Cement	897	478	264	769	602	
Glass	682	662	697	803	872	
Salt	376	343	423	NA	NA	
Sulfur	774	600	534	NA	NA	
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Coal:						
Anthracite and bituminous	23,032	22,626	20,128	19,700	19,371	
Lignite	15	42	37	NA	NA	
Coke and semicoke	thousand metric tons	3,924	4,226	5,267	5,258	4,524
Petroleum, refined	2,523	2,446	1,389	NA	NA	

<sup>r</sup>Revised. NA Not available. -- Zero.

Sources: Central Statistical Office of Poland, Yearbook of Foreign Trade, 2003 and 2005; Polish Academy of Sciences, Minerals Yearbook of Poland, 1999-2003.

TABLE 10  
SLOVAKIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>		2002	2003	2004	2005	2006
<b>METALS</b>						
<b>Aluminum:</b>						
Alumina		111,618	132,089	156,893	162,483	160,507
Aluminum ingot, primary		146,958	165,290	175,000 <sup>e</sup>	158,400	179,512
<b>Copper:<sup>e</sup></b>						
Mine output, concentrate, Cu content		2 <sup>3</sup>	2	2	2	2
<b>Metal:</b>						
Smelter, primary and secondary	thousand metric tons	5	6	13	16	22 <sup>3</sup>
Refined, primary and secondary		8,100	5,800 <sup>3</sup>	--	--	--
Gallium, metal <sup>e</sup>	kilograms	500	500	500	500	500
Gold, metal	do.	53	50	50 <sup>e</sup>	109 <sup>r</sup>	100
<b>Iron and steel:</b>						
<b>Iron ore:</b>						
Gross weight	thousand metric tons	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Metal content	do.	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Concentrate, gross weight	do.	326	302 <sup>r</sup>	290 <sup>r</sup>	259 <sup>r</sup>	250
<b>Metal:</b>						
Pig iron	do.	3,533	3,892	3,800	3,681	4,145
Ferroalloys, total electric furnace <sup>e,4</sup>	do.	95	95	95	95	95
Ferrochromium		5,695	1,924	2,000	867	900
Ferrosilicon <sup>e</sup>		50,000	50,000	50,000	50,000	50,000
Steel, crude	thousand metric tons	4,275	4,709	4,564	4,242	5,094
Semimanufactures	do.	3,500 <sup>e</sup>	4,115 <sup>r</sup>	3,995 <sup>r</sup>	4,000 <sup>e</sup>	4,000 <sup>e</sup>
<b>INDUSTRIAL MINERALS</b>						
Barite, concentrate		25,820	12,000	27,060	26,000 <sup>r</sup>	25,000
Cement, hydraulic	thousand metric tons	3,141	3,147	3,158	3,499	3,593
<b>Clays:</b>						
Bentonite		66,128	74,938	69,252	75,752	93,373
Kaolin		33,000	31,000 <sup>r</sup>	89,420	85,000	30,000
Refractory		3,000 <sup>e</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--	--
Ceramic		55,000	66,000 <sup>r</sup>	50,000 <sup>e</sup>	50,000 <sup>e</sup>	40,000 <sup>e</sup>
Dolomite	thousand metric tons	1,357	1,250	1,117	1,021	990
Gypsum and anhydrite, crude		121,700	93,800	127,100 <sup>r</sup>	107,000 <sup>r</sup>	110,000
Lime, hydrated and quicklime	thousand metric tons	911	847	961	946	1,104
Magnesite, concentrate		930,000	397,259	404,776	447,700	555,710
Nitrogen, N content of ammonia		410,000	288,000	275,223	295,286	300,000
Perlite		18,630	15,000	23,840	20,000	20,000
Salt		97,400	133,100	121,600	120,000	100,000
Sand and gravel	thousand cubic meters	1,399	1,300	1,300 <sup>e</sup>	1,800	1,800
<b>Stone:</b>						
Limestone and other calcareous stones for cement	thousand metric tons	3,694	3,453	4,501	6,034	6,611
Crushed stone	thousand cubic meters	4,715	5,075	4,472	6,541	8,727
Talc		2,290	4,200	7,100	7,000	7,000 <sup>e</sup>
Zeolites		28,000	28,000 <sup>r</sup>	37,000 <sup>r</sup>	42,000 <sup>r</sup>	40,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Coal, brown and lignite	thousand metric tons	3,401	3,077	2,952	2,511	2,500 <sup>e</sup>
<b>Coke:<sup>e</sup></b>						
Metallurgical	do.	1,500	1,500	1,500	1,500	1,500
Unspecified	do.	200	200	200	200	200
Gas, manufactured, coke oven	million cubic meters	206	210	200	200	200
<b>Petroleum:</b>						
<b>Crude:</b>						
As reported	thousand metric tons	53	48	50	50	50
Converted <sup>e</sup>	thousand 42-gallon barrels	400	350	350	350	350
Refinery products <sup>e</sup>	do.	40,000	40,000	44,500	44,500	44,500

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. -- Zero.

<sup>1</sup>Table includes data available through November 2007.

<sup>2</sup>In addition to the commodities listed, arsenic, diatomite, feldspar, illite, sodium compounds, sulfur, and sulfuric acid are produced, but available information is inadequate to make reliable estimates of output.

<sup>3</sup>Reported figure.

<sup>4</sup>May include some FeCrSi and FeNi, if any was produced.

TABLE 11  
SLOVAKIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies <sup>1</sup>	Location of main facilities <sup>2</sup>	Annual capacity
Aluminum	ZSNP Aluminum Works (Slovalco A.S.)	Ziar and Hronom, central Slovakia	108
Antimony:			
Ore	Liptovska Dubrava	Central Slovakia	50
Do.	Pezinok	Western Slovakia	50
Smelter	Vajskova	Central Slovakia	2
Cement	Lietavska Lucka, Stupava, and Turna	Slovakia	5,400
Coal:			
Brown	Hornonitranske Bane, a.s.	Prievidza, central Slovakia	3,500
Do.	Bana Dolina, a.s.	V'lký Krtis, southern Slovakia	500
Lignite	Bana Zhorie, a.s.	Holic, western Slovakia	400
Copper:			
Ore	Slovinky, Hodrusa-Hamre, and Rudnany	Central Slovakia	500
Refinery	Kropachy	do.	27
Gallium	kilograms ZSNP Aluminum Works (Slovalco A.S.)	Ziar and Hronom, central Slovakia	4,000
Iron:			
Ore	Nizna Slana and Rudnany	Central Slovakia	1,600
Concentrate	do.	do.	1,300
Lead-zinc, ore	Banska Stiavnica	do.	200
Magnesite	SMZ a.s., Jelsava	Eastern Slovakia	350
Do.	Slovmag a.s., Lubenik	Central Slovakia	150
Petroleum, refinery	Bratislava, Dubova	Slovakia	NA
Salt	Solivary a.s., Presov	Eastern Slovakia	150
Steel, crude	U.S. Steel Kosice	Eastern Slovakia, Kosice	4,000
Do.	Zeleziarne Podbrezova a.s.	Slovakia, Podbrezova	600

NA Not available.

<sup>1</sup>All mining companies are Government owned.

<sup>2</sup>Names and locations of mines and crude oil refineries are identical.