



# 2015 Minerals Yearbook

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**POLAND [ADVANCE RELEASE]**

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# THE MINERAL INDUSTRY OF POLAND

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In 2015, Poland was estimated to be the world's 3d-ranked producer of rhenium, the 7th-ranked producer of selenium (excluding United States production), the 8th-ranked producer of and silver, and the 10th-ranked producer of cadmium (excluding United States production). Poland also produced significant amounts of copper. For industrial minerals, Poland ranked 12th in the world in the production of feldspar (tied with Russia); other minerals, such as lime, salt, sand and gravel, and sulfur, were also produced in significant quantities. For mineral fuels, in 2014, Poland was estimated to be the world's 4th-ranked producer of lignite and the 10th-ranked producer of hard coal. In Europe, Poland was ranked second in the production of hard coal and third in the production of lignite, but the country was dependent on imports to meet domestic demand for natural gas and crude petroleum (Central Statistical Office of Poland, 2016d, p. 757, 758; KGHM Polska Miedz S.A., 2016, p. 56; Anderson, 2017; Apodaca, 2017; Bennett, 2017; Bolen, 2017; Polyak, 2017; Tanner, 2017; Tolcin, 2017).

## Minerals in the National Economy

In 2015, Poland's real gross domestic product (GDP) increased by 3.7% compared with that of 2014. The nominal GDP was \$474.8 billion in 2015. Mining and quarrying accounted for \$7.5 billion,<sup>1</sup> or 1.6% of the total GDP in 2015, and construction accounted for \$33.2 billion, or 7%. The total sold production of the industrial sector was valued at \$333.4 billion in 2015; of this amount, mining and quarrying accounted for \$13.0 billion (3.9%), the mining of coal and lignite accounted for \$6 billion (1.8%), the manufacture of fabricated metal products (except machinery and equipment) accounted for \$24.1 billion (7.2%), and the production of coke and refined petroleum products accounted \$16.3 billion (4.9%); nonmetallic mineral products, \$12.4 billion (3.7%); and base metals, \$11.8 billion (3.5%). In 2015, the number of people employed in the mining and quarrying industry decreased by more than 7% to 148,000 people from 160,200 in 2014 (Central Statistical Office of Poland, 2016d, p. 242, 507, 508, 700, 701, 733; International Monetary Fund, 2016).

## Government Policies and Programs

The Polish Geological and Mining Law (GML) of June 9, 2011, which included regulations on hydrocarbons, came into force on January 1, 2012. In March 2013, a draft proposal to amend the GML proposed taxes based on the value of the extracted hydrocarbons as well as a limit on the extraction tax not to exceed 40% of the company's gross profit. An act amending the GML came into force on January 1, 2015, with secondary legislation taking effect in May 2015. The amendments introduced obligatory qualification procedures in

<sup>1</sup>Where necessary, values have been converted from Polish zlotys (PLN) to U.S. dollars (US\$) at an annual average exchange rate of PLN3.7662=US\$1.00 for 2015.

terms of state security and relevant experience, increased royalty fees while maintaining the royalty regime for marginal deposits, and allowed for an integrated license that covered exploration, appraisal, and production of hydrocarbons (Library of Congress, 2013; Polskie Gornictwo Naftowe i Gazownictwo S.A., 2016, p. 34–35).

The Act on Tax on Extraction of Certain Minerals of March 2, 2012, entered into force on April 18, 2012, and initially levied taxes on the extraction of copper and silver. The act was amended by the Act on Special Hydrocarbon Tax, which passed on July 25, 2014, but had not yet entered into force by the end of 2015. This amendment introduced a new tax on profits from hydrocarbon production and added crude petroleum and natural gas to the taxable commodities covered by the Tax on Extraction of Certain Minerals (Library of Congress, 2013; Ministry of Finance of the Republic of Poland, 2016; Polskie Gornictwo Naftowe i Gazownictwo S.A., 2016, p. 34–35).

Other relevant laws and policy documents included the Polish Energy Law of April 10, 1997; the Environmental Protection Law of April 27, 2001; the Act on Reserves of Crude Oil, Petroleum Products and Natural Gas of February 16, 2007; and the Energy Policy of Poland until 2030 of November 10, 2009 (Rutkowska-Subocz, 2012; Library of Congress, 2013).

## Production

In 2015, dolomite production increased by 53% to 3.2 million metric tons (Mt); quartz and quartz crystals, by 30% to 14,700 metric tons (t); silica sand, by 29% to 2.7 Mt; ferrosilicon, by 23% to 77,138 t; gross weight of ammonium perrhenate and rhenium content of ammonium perrhenate, by 19% each, to 13,200 kilograms (kg) and 9,170 kg, respectively; aggregates, by 15% to 167.9 Mt; limestone for lime production, by nearly 13% to 18.7 Mt; and crude steel from electric arc furnaces, by 10% to about 4.0 Mt. The production of secondary aluminum decreased by 49% to 7,600 t; primary cadmium metal, by 39% to 383 t; refractory quartzite, by nearly 34% to 54,900 t; crude bentonite, by nearly 31% to 450 t; foundry sand, by about 18% to 1.1 Mt; lead content of lead-zinc ore, by about 17% to 20,000 t; rock salt, by 16% to 650,000 t; refined zinc metal, by 13% to an estimated 134,000 t; silicomanganese, by about 13% to an estimated 90 t; and ferromanganese, by 12% to an estimated 720 t. Data on mineral production are in table 1.

## Structure of the Mineral Industry

Privatization of state-owned companies had been largely completed in Poland, and the majority of companies in the mineral industry were privately owned. The Government intended to maintain a majority share in companies that it had determined to be strategically important, including some in the energy and mining sectors, with a focus on consolidation and improving efficiencies in those companies. At yearend 2015, the Government's most important holdings in the mining

and mineral sector included Polskie Górnictwo Naftowe i Gazownictwo S.A. (PGNiG) (a 70.80% stake), PGE Polish Energy Group plc (58.39%), Jastrzebska Spolka Weglowa S.A. (55%), Grupa LOTOS S.A. (53.20%), ENEA S.A. (51.5%), KGHM Polska Miedz S.A. (31.79%), and PKN Orlen S.A. (27.52%). Table 2 is a list of major mineral industry facilities (Ministry of Treasury of the Republic of Poland, 2015; U.S. Department of State, 2015, p. 6).

## Mineral Trade

In 2015, Poland's total exports were valued at \$200.3 billion and its total imports were valued at \$197.7 billion. The total quantity of exported mineral products increased to 37.1 Mt in 2015, or by 3.1% compared with that of 2014. The total value of exported mineral products decreased to \$13.1 billion, or by 5.6% compared with that of 2014. The most important minerals exported, in terms of value, were petroleum products, which accounted for 27.4% of the total value of mineral exports; raw materials and products of copper metallurgy, 14.9%; bituminous coal and coal derivatives, 14.7%; aluminum, 6.3%; nitrogen and other fertilizers, 5.7%; and iron and ferroalloys and silver, 5.6% each. Poland's most important export trade partners in minerals were Germany, which received 23.7% of Poland's total mineral exports, by value; the Czech Republic, 13.2%; the Netherlands, 7.2%; the United Kingdom, 7.1%; and China, 5.7% (Central Statistical Office of Poland, 2016d, p. 562; Polish Geological Institute, 2016d).

The total quantity of mineral products imported increased to 64 Mt in 2015, or by 2.1% compared with that of 2014. In 2015, the total value of imported mineral products decreased to \$20.4 billion, or by 19.4% compared with that of 2014. The most important mineral products imported, in terms of value, were crude petroleum, which accounted for 47.8% of the total value of mineral imports; petroleum products, 13.2%; aluminum, 7.8%; iron and ferroalloys, 4.8%; and raw materials and products of copper metallurgy, 4.3%. Poland's most important import trade partners in minerals were Russia, which provided 49.6% of Poland's mineral imports, by value; Germany, 9.5%; and Kazakhstan, 4.4% (Polish Geological Institute, 2016d).

Poland's exports to the United States were valued at \$5.64 billion in 2015 compared with \$5.20 billion in 2014. Of this 2015 total, bauxite and aluminum accounted for \$11.6 million; fuel oil, \$11.2 million; copper, \$5.8 million; and stone, sand, and cement, \$4.3 million. Imports from the United States were valued at \$3.72 billion in 2015 compared with \$3.66 billion in 2014. Of this 2015 total, metallurgical grade coal accounted for \$54.2 million; iron and steel mill products, \$13.8 million; aluminum and alumina, \$7.5 million; copper, \$2.1 million; and nonmetallic minerals, \$1.2 million (U.S. Census Bureau, 2016a, b).

## Commodity Review

### Metals

**Copper.**—In 2015, the Polish Geological Institute identified 15 copper deposits in the country with total “anticipated” resources of 1.98 billion metric tons (Gt) containing 35.6 Mt

of copper. Of these, five were exploited deposits located in the Fore-Sudetic Monocline and had total combined “anticipated” resources of 1.39 Gt containing 27.2 Mt of copper (Polish Geological Institute, 2016b).

KGHM Polska Miedz S.A. (KGHM) was Poland's only copper producer and operated five underground mines (the Glogow Gleboki-Przemyslowy Mine, which was in development, and the Lubin, the Polkowice, the Rudna, and the Sieroszowice Mines), and three copper smelters (Glogow I, Glogow II, and Legnica). In 2015, the company produced 31.6 Mt of ore, dry weight (33.2 Mt of ore, wet weight) with an average copper content of 1.52% and containing 479,000 t of copper. The company also produced 1.86 Mt of copper concentrate and 574,310 t of electrolytic copper, including 420,500 t from its own concentrates and 153,800 t from imported concentrates. In 2015, approximately 75.5% of the company's copper production was exported, primarily to Germany, which received about 22% of the company's exported copper; China, 21%; the Czech Republic, 10%; and France and Hungary, 5% each. The Polish market accounted for about 24.5% of total sales of copper products (KGHM Polska Miedz S.A., 2016, p. 14, 22, 34, 74).

**Gold and Silver.**—In 2015, the total “anticipated economic” resources of silver were estimated to be about 107,500 t. Reserves were estimated to be 85,000 t, which were the second largest in the world (tied with Australia and behind Peru). Gold resources were estimated to be about 350 t. KGHM was the country's only producer of gold and silver and, in 2015, it produced 2,703 kg of gold, which was an increase of 5% compared with that of 2014, and 1,283 t of silver, which was an increase of 2.1% compared with that of 2014. Gold and silver were produced only from copper ore deposits located in the region of the Fore-Sudetic Monocline. All the gold and silver was produced as byproducts from the processing of copper ores and was extracted from anode slime produced during the electrolytic refining of copper at the Glogow smelters. Most of the gold produced in 2015 was sourced from imported raw materials; domestic ores accounted for 431 kg. The company's revenue from gold and silver sales in 2015 was \$95.6 million and \$615.4 million, respectively. In 2015, KGHM exported most of its silver; the leading recipients were the United Kingdom, which received 60.9% of the exported silver; the United States, 25.1%; and Australia, 4.8%. The Polish market accounted for about 0.5% of total sales (George, 2016a, b; KGHM Polska Miedz S.A., 2016, p. 10, 22, 35, 62, 143; Polish Geological Institute, 2016b, e).

**Iron and Steel.**—The production of pig iron in Poland increased to 4.8 Mt in 2015 from 4.6 Mt in 2014, or by 4%. Poland had not produced any iron ore since 1990, and the country was entirely dependent on imported iron ore and concentrate for its production of pig iron. In 2015, Poland imported 7.2 Mt of iron ore and concentrate compared with 7.1 Mt in 2014. About 70% of the imports in 2015 came from Ukraine; 13%, from Liberia; and 12%, from Russia. All the imported iron ore and concentrates was used for the production of pig iron at ArcelorMittal Poland S.A.'s steelworks at Dabrowa Gornicza and Krakow (Burkowicz and others, 2014, p. 277–280; Central Statistical Office of Poland, 2015, 2016b).

In 2015, crude steel production in Poland was 9.3 Mt, which was an increase of 6.1% compared with that of 2014. The average production capacity utilization rate in the Polish steel industry was 73% in 2015, which was about 5% higher than in 2014. In 2015, Poland's share in the European Union's (EU) total steel production was 5.5%, which was an increase of 0.4% compared with that of 2014. Poland's apparent consumption of finished steel products was 12.5 Mt in 2015, which was an increase of 2% compared with that of 2014. Flat products accounted for 55% of the total apparent consumption; long products, 37%; and tubes and cold-formed hollow sections, 8%. In 2015, Poland's exports of steel products decreased by 2% to 4.9 Mt. The leading importers of Polish steel were Germany and the Czech Republic, which together accounted for 60% of the steel exports. Poland imported 9 Mt of steel products during the year, of which 75% was from countries of the EU (table 1; Polish Steel Association, 2016, p. 18, 19, 21–23).

ArcelorMittal Poland S.A. was the leading steel producer in Poland and accounted for about 70% of the country's steel production capacity. In 2015, the company produced 5.2 Mt of steel and exported 2.2 Mt. In July, the company announced that it planned to invest more than 130 million euros (\$144 million<sup>2</sup>) in its Krakow plants. More than \$44 million would be invested to reline a blast furnace to extend its operational life and to modernize one of the basic oxygen furnaces. More than \$100 million would also be invested to increase the capacity of the hot-rolling mill by 0.9 million metric tons per year (Mt/yr) and to increase the hot dip galvanizing capacity by about 0.4 Mt/yr. The company employed about 8,850 people in five steel plants located in the southern part of the country (ArcelorMittal Poland S.A., 2015; 2016, p. 6, 26, 66).

Cognor S.A. held a 100% interest in two steel mills in Poland—Ferrostal Labedy Sp. z.o.o. in Gliwice, and Huta Stali Jakosciowych S.A. (HSJ) in Stalowa Wola. Together, the mills had a combined capacity of 636,000 metric tons per year (t/yr). In 2015, the mills produced 583,453 t of crude steel, which was essentially unchanged from production in 2014 and gave the company a 6.3% share in Polish steel production overall. The combined capacity utilization rate was 91.7%. Of this production, about 77% was sent to the company's rolling mills and 23% was sold to external customers. The company produced 198,833 t of high-alloy crude steel for a 22% share of that market segment (Cognor S.A., 2016, p. 11, 15).

**Rhenium.**—Poland produced 9,170 kg of rhenium in 2015, which was an increase of 18.9% compared with production in 2014. KGHM Polska Miedz S.A., through its subsidiary KGHM Metraco S.A., was the only producer of rhenium in Poland and the only European producer of metallic rhenium and ammonium perrhenate from its own resources. In 2015, KGHM was the third-ranked producer of rhenium in the world, with 18% of the world's production. Rhenium was produced as a byproduct of the copper smelting process, and it was produced at all three of KGHM's smelters. Metallic rhenium was produced at the Legnica smelter and ammonium perrhenate was produced at the Glogow I and Glogow II plants. The rhenium content in Polish

copper concentrates ranged from 5 to 15 parts per million (ppm) (ProMine, 2013, p. 7; Burkowicz and others, 2014, p. 425–426; KGHM Polska Miedz S.A., 2015a; Polyak, 2017).

**Selenium.**—In 2015, Poland was estimated to be the world's seventh-ranked producer of selenium (excluding United States production), and the country produced a reported 87 t of the material, which was a decrease of about 3% from production in 2014. KGHM was the country's only producer of selenium, which was recovered from anode slime and furnace dust as a byproduct of the copper smelting process at the company's Glogow smelter (which comprises the Glogow I and Glogow II plants). The average content of selenium in the anode slimes was 1.0 to 1.7% and, owing to its toxicity, its recovery was required by regulation. Most of the selenium produced in 2013 was exported, primarily to China (which imported 31.1 t), Hong Kong (13.5 t), and the United Kingdom (12.5 t) (Burkowicz and others, 2014, p. 469–471; KGHM Polska Miedz S.A., 2015b; Anderson, 2017).

### *Industrial Minerals*

**Cement.**—The production of cement decreased by nearly 2% to 15.5 Mt in 2015 from 15.8 Mt in 2014. The Polish Cement Association estimated that cement consumption was 15.4 Mt in 2015, and it expected consumption to increase by 4% to 16 Mt in 2016. The anticipated increase was owing to expected construction and modernization of road and railway infrastructure and investments in the power and housing sectors. The Polish cement industry consisted of 8 companies that produced hydraulic cement in 11 plants, and 1 company that produced aluminous cement; the industry employed about 25,000 people in 2014 (table 1; Cembureau, 2016, p. 18; Polish Cement Association, 2016, p. 2; Iglinski and Buczkowski, 2017, p. 710, 718).

### *Mineral Fuels*

**Coal.**—At yearend 2015, Poland's "anticipated economic" resources of hard (bituminous) coal were 56,220 Mt, which was an increase of more than 8% compared with the estimate in 2014. The production of hard coal in 2015 was about 72.7 Mt. The major coal basin in the country was the Upper Silesian coal basin located in southwestern Poland; this basin accounted for 79% of domestic resources. All operating coal mines were located in this basin except for the Bogdanka Mine, which was the only operating mine located in the Lublin coal basin of southeastern Poland. In 2015, the Polish Geological Institute documented a total of 156 hard-coal deposits in the country. Of these, 51 deposits were being mined and contained resources reported as 21,107 Mt, or 37.5% of the total estimated resources. In 2015, five new coal deposits were documented in the Upper Silesian basin, which added about 2,300 Mt of new resources (Central Statistical Office of Poland, 2016c; Polish Geological Institute, 2016f).

"Anticipated economic" resources of brown coal (lignite) at yearend 2015 were reported as 23,516 Mt, which was essentially the same as in 2014. Brown coal deposits are located throughout the western half of the country. In 2015, a total of 91 brown coal deposits were documented in the country by the Polish Geological Institute. "Anticipated economic" resources at the exploited deposits were estimated to be 1,419 Mt, or 6%

<sup>2</sup>Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US\$) at an average annual exchange rate of EUR0.9012=US\$1.00 for 2015.

of the total estimated economic resources. A new deposit was documented in 2015 that added 1,034 Mt of new resources. The production of brown coal in 2015 was about 63.1 Mt, the majority of which was derived from the Belchatow deposit (25.1 Mt, or 40%), the Szczercow deposit (17.0 Mt, or 27%), and the Turow deposit (7.3 Mt, or 12%) (Central Statistical Office of Poland, 2016c; Polish Geological Institute, 2016a).

In 2015, about 51% of Poland's total primary energy supply came from coal, followed by oil (almost 25%) and gas (almost 15%). About 81% of Poland's electricity production in 2015 was generated by coal-fired powerplants, of which hard coal-fired plants accounted for more than 48% and lignite-fired plants accounted for 32%. The country continued investing in the modernization and construction of new coal-fired plants, and at least four were expected to come into operation by 2019. Poland exported 9.0 Mt of hard coal in 2015, most of which went to Austria, the Czech Republic, and Germany. Imports of coal amounted to 8.2 Mt in 2015 and came mostly from Russia (60%). In 2015, Poland employed a total of 99,498 people in the coal industry, of which 89,924 were employed in the production of hard coal and 9,574 were employed in the production of brown coal (Kureth, 2015; European Association for Coal and Lignite, 2017, p. 37, 38).

In October 2015, the energy company ENEA SA (in which the Polish Government had a 51.5% share) acquired a 66% share of Lubelski Wegiel Bogdanka S.A. (LW Bogdanka) for about \$400 million. The remaining 34% of shares was held mainly by financial investors in the form of pension funds. LW Bogdanka operated the Bogdanka hard coal mine in the Lublin basin, which supplied fuel to the Koziencie powerplant, also owned by ENEA. In 2015, six uncompetitive mines that were owned by Kompania Weglowa S.A. (KW) and Katowicki Holding Weglowy SA (KHW) (both state-owned companies) were transferred to Spolka Restrukturyzacji Kopaln S.A., which was a state-owned restructuring body tasked with closing mines. Four of the transferred mines were closed and two were offered to energy companies (ENEA SA, 2015; Shveda, 2015; Lubelski Wegiel Bogdanka S.A., 2016, p. 64).

**Natural Gas and Petroleum.**—In 2015, total exploitable “anticipated economic” resources of crude petroleum and condensate were reported as 22,824,280 t (about 167 million barrels [Mbb]). The most economically important regions were the Polish lowlands and the Baltic Sea, which accounted for 74% and 20%, respectively, of total exploitable crude petroleum resources in the country. The largest oil and gas deposit in Poland was the Barnowko–Mostno–Buszewo field, which was located in the lowlands. “Anticipated economic” resources at the field were 6,801,450 t (50 Mbb); production in 2015 was 317,350 t (2.3 Mbb) which constituted 46% of the production from the lowlands. Other large fields in this region were the Cychry, the Grotow, and the Lubiadow oilfields. In 2015, crude petroleum production in Poland was 0.93 Mt (6.8 Mbb), and consumption was 26.1 Mt (191 Mbb), indicating an import dependency of 97%. Imports of crude petroleum during the year were 26.2 Mt (192 Mbb), of which 83% came from Russia, and exports were about 254,000 t (1.9 Mbb) (Central Statistical Office of Poland, 2016a, p. 24; 2016b; 2016d, p. 511; Polish Geological Institute, 2016c).

In 2015, the Polish lowlands and the Carpathian foreland accounted for 68.5% and 26.5%, respectively, of exploitable resources of natural gas. “Anticipated economic and subeconomic” exploitable resources amounted to 125 billion cubic meters of natural gas. Resources of exploited fields were estimated to be 102 billion cubic meters and accounted for 82% of the total exploitable resources. The total resources included those of seven gasfields that were planned to be converted for use as underground storage facilities, and production from these fields had already been stopped (Polish Geological Institute, 2016g).

Grupa LOTOS S.A. was majority owned by the state treasury (which held 53.2% of the shares). Its subsidiary LOTOS Petrobaltic S.A. (LOTOS) was Poland's only producer of hydrocarbons from Poland's Exclusive Economic Zone in the Baltic Sea, and LOTOS held all exploration, appraisal, and production licenses in the zone. At yearend 2015, LOTOS's resources in Poland were reported as 4.815 Mt (about 35 Mbb) of crude petroleum and 509 million cubic meters of natural gas. In 2015, LOTOS continued production from the B3 field and started initial production from the B8 field, both in the Baltic Sea. The company's production from these fields amounted to 162,400 t (1.2 Mbb) of crude petroleum and 18.3 million cubic meters of natural gas. The B8 field's proved and probable reserves were 28 Mbb of crude petroleum; full-scale production of 5,000 to 6,000 barrels per day (bbl/d) was anticipated to begin in the fall of 2017. The B4 and B6 fields in the Polish zone of the Baltic Sea were also under development with partner CalEnergy Resources Poland. Proved reserves of these fields were 4.3 billion cubic meters of natural gas; estimated production was expected to be 350 million cubic meters per year, with production anticipated in 2019 (Grupa LOTOS S.A., 2016, p. 11, 16, 20, 23, 26).

Grupa LOTOS operated the Rafineria Gdanska S.A. (Gdansk refinery) on the coast of the Baltic Sea. The refinery had an annual capacity of 10.5 Mt (about 77 Mbb) and processed 10.2 Mt (about 75 Mbb) of crude petroleum in 2015, for a capacity utilization rate of 97%. In 2015, Grupa LOTOS purchased 10.9 Mt (80 Mbb) of crude petroleum for refinery feedstock, which was an increase of 15% compared with that of 2014. Feedstocks included Russian Export Blend Crude Oil (REBCO), which accounted for 77% of the total crude procurement volume (92.5% in 2014) and was supplied by way of the Druzhba and the Pomorski pipelines. Remaining feedstocks were supplied through the Naftoport oil terminal and by rail and included, among others, Kirkuk and Arab Light crudes. LOTOS Group also processed crudes produced by its subsidiaries in Poland (LOTOS Petrobaltic and B8 sp. z o.o. Baltic s.k.a) and Lithuania (AB LOTOS Geonafta) as well as crudes produced by PGNiG. The EFRA (Efficient Refining) project at the refinery, initiated in 2015 and expected to be completed in 2018, was designed to improve financial efficiency and product margins and reduce sensitivity to price fluctuations of crude petroleum. The project was expected to enable Grupa LOTOS to produce an additional 900,000 t/yr (6.6 Mbb/yr) of fuels, mostly diesel oil and aviation fuel, and 300,000 t/yr of petrochemical coke without increasing the volume of crude input (Grupa LOTOS S.A., 2016, p. 63, 94, 169–171).

PGNiG was Poland's leading hydrocarbon exploration and production company. In 2015, PGNiG's production of crude petroleum, condensate, and natural gas liquids (NGLs) was 765,000 t (about 5.6 Mbbbl), and natural gas production was 4 billion cubic meters. The company's recoverable reserves in 2015 were 78.1 billion cubic meters of natural gas and 17.9 Mt (about 146 Mbbbl) of crude petroleum with condensate; the reserves-to-production ratio was 19.9%. Three new gasfields began production in 2015—the Bialoboki, the Grodzisk-26, and the Zaleze—which together produced about 15 million cubic meters of natural gas (Polish Geological Institute, 2016g; Polskie Górnictwo Naftowe i Gazownictwo S.A., 2016, p. 33, 34, 38).

Polski Koncern Naftowy ORLEN S.A. (PKN ORLEN Group) operated the Jedlicze, the Plock, and the Trzebinia refineries in Poland. In January 2015, the Jedlicze and the Trzebinia refineries were merged under a single company with the name ORLEN Poludnie S.A. The Plock refinery was an integrated facility with an annual capacity of 16.3 Mt/yr (about 119 Mbbbl/yr); in 2015, the plant processed 15.7 Mt (about 115 Mbbbl) for a capacity utilization rate of 96%. Crude petroleum feedstock for the Plock refinery was supplied by way of the Druzhba and the Gdansk-Plock pipelines and came mostly from Russia, but also from Kazakhstan, Norway, Saudi Arabia, and the United Kingdom. The Jedlicze and the Trzebinia refineries, located in southern Poland, were used for the storage and distribution of fuels; the production of base oils, heating oils, and biofuels; and the recycling of spent oils. In December 2015, the PKN ORLEN Group, through its wholly owned subsidiary ORLEN Upstream Sp. z o.o., acquired 100% equity in FX Energy Inc. of the United States, which held production assets in Poland. The acquisition included 8.4 Mbbbl of oil equivalent proven and probable reserves, and PKN ORLEN also acquired 49% interest in seven producing gasfields that had a combined production of 350,000 cubic meters per day; PGNiG held the remaining 51% of the shares. Among the assets transferred was the Tuchola deposit, which was expected to start commercial production in 2018. The total value of the transaction was approximately \$125 million. In 2015, PKN ORLEN's proven and probable reserves of natural gas and oil (not including the assets of FX Energy) stood at 8.2 Mbbbl of oil equivalent (Oil & Gas Journal, 2015; Polski Koncern Naftowy Orlen S.A., 2016, p. 22, 23, 32, 44, 53, 55).

Shale gas exploration in Poland had slowed significantly. Exploration concessions for shale gas had dropped by nearly 50% compared with those of the previous year, and many international oil companies had exited the country, citing low oil prices and geologic and technological issues. Domestic oil and gas producers also had reduced their shale gas programs. In the first 8 months of 2015, two wells were completed in shale compared with eight wells completed in the same period in 2014 (Australian Trade Commission, 2015, p. 3; Neslen, 2015).

## Outlook

The Polish economy was expected to continue its growth into the near term. The country's real GDP was expected to increase by 3.2% in 2016 and 3.4% in 2017 compared with the 3.7% increase in 2015. Growth in Poland's mineral industry will likely depend on demand by its trade partners, especially those

in the EU. Coal, copper, and petroleum products are expected to remain the most important mineral products in terms of value. Poland's crude petroleum and natural gas sector will strengthen as the country develops these domestic resources, but exploration for shale gas is expected to continue its decline as long as current market conditions persist. The country will continue to be dependent on imports of mineral fuels, however, predominantly from Russia, to meet its demand. Coal production will likely remain a significant part of the country's economy in the near to mid-term, but production is expected to decline gradually owing to deteriorating market conditions and tightening environmental regulations. The privatization program in Poland has mostly concluded, and the Government will continue to maintain control in a limited number of key mining and energy companies it deems to be essential to the Polish economy and energy security (International Monetary Fund, 2016).

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

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>		2011	2012	2,013	2014	2015
METALS						
Aluminum, metal, secondary <sup>e, 3</sup>	metric tons	13,900 <sup>r</sup>	11,090	16,014	14,900 <sup>r</sup>	7,600
Cadmium, metal, primary	do.	526	370	460 <sup>r</sup>	628	383
Copper:						
Ore:						
Gross weight		31,241	31,725	32,215	32,613	33,187
Cu content	metric tons	479,300	479,250	481,770	473,258	478,727
Concentrate:						
Gross weight		1,877	1,862	1,858	1,843	1,860
Cu content	metric tons	426,700	427,064	429,275	421,695	426,196
Metal:						
Smelter:						
Primary	do.	481,900	466,700	458,800 <sup>r</sup>	503,100 <sup>r</sup>	514,800
Secondary	do.	68,200 <sup>r</sup>	82,300 <sup>r</sup>	78,000 <sup>r</sup>	72,600 <sup>r</sup>	67,600
Total	do.	550,100 <sup>r</sup>	549,000 <sup>r</sup>	584,356 <sup>r</sup>	575,700 <sup>r</sup>	582,400
Refined, electrolytically	do.	571,041 <sup>r</sup>	565,834	565,155	576,876	574,310
Gold, metal	kilograms	704	916	1,066	2,575 <sup>r</sup>	2,703
Iron and steel:						
Pig iron		3,975	3,944	4,014 <sup>r</sup>	4,640 <sup>r</sup>	4,826
Ferroalloys:						
Blast furnace, ferromanganese	metric tons	800	800	800 <sup>r</sup>	820 <sup>r, e</sup>	720 <sup>e</sup>
Electric furnace:						
Silicomanganese	do.	400	100 <sup>r</sup>	100 <sup>r</sup>	103 <sup>r, e</sup>	90 <sup>e</sup>
Ferrosilicon	do.	72,668	78,115 <sup>r</sup>	73,589 <sup>r</sup>	62,878 <sup>r</sup>	77,138
Other	do.	300	300	1,100 <sup>r</sup>	1,100 <sup>r, e</sup>	1,100 <sup>e</sup>
Total ferroalloys	do.	74,168	79,270 <sup>r</sup>	85,758 <sup>r</sup>	88,368 <sup>r</sup>	77,598
Steel, crude:						
From oxygen converters		4,424	4,333	4,520 <sup>r</sup>	5,182 <sup>r</sup>	5,359
From electric arc furnaces		4,353	4,209 <sup>r</sup>	3,679 <sup>r</sup>	3,617 <sup>r</sup>	3,978
Total		8,776 <sup>r</sup>	8,543 <sup>r</sup>	8,198 <sup>r</sup>	8,800 <sup>r</sup>	9,337
Finished steel products:						
Hot rolled		7,504	7,882 <sup>r</sup>	7,660 <sup>r</sup>	7,985 <sup>r</sup>	8,326
Cold rolled		807	1,353 <sup>r</sup>	1,460 <sup>r</sup>	1,640 <sup>r</sup>	1,706
Pipe (cold formed and hollow sections)		910	945	860	848	784
Lead:						
Mine output:						
Pb content of Pb-Zn ore	metric tons	28,200	26,600	25,000	24,000 <sup>r</sup>	20,000
Pb content of Cu ore	do.	24,900	62,400 <sup>r</sup>	54,480 <sup>r</sup>	59,150 <sup>r</sup>	59,200 <sup>e</sup>
Total	do.	53,100	89,000 <sup>r</sup>	79,480 <sup>r</sup>	83,150 <sup>r</sup>	79,200
Metal, refined:						
Primary	do.	47,000	47,000	40,000 <sup>r</sup>	36,000	38,000
Secondary	do.	87,000	87,000	103,000	112,000	115,000
Total	do.	134,000	134,000	143,000 <sup>r</sup>	148,000	153,000
Rhenium:						
Ammonium perrhenate:						
Gross weight <sup>e</sup>	kilograms	8,650	11,630	10,800	11,100 <sup>r</sup>	13,200
Re content of ammonium perrhenate	do.	6,000	8,100 <sup>e</sup>	7,530	7,710	9,170
Rhenium metal in pellet form <sup>e</sup>	do.	620	620	620	600	600
Selenium	metric tons	85	90	80	90	87
Silver:						
Mine output, Ag content of Cu concentrate	do.	1,167	1,149	1,393 <sup>r</sup>	1,384	1,407
Metal	do.	1,260	1,274	1,161	1,256 <sup>r</sup>	1,283

See footnotes at end of table.



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

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2011	2012	2013	2014	2015	
METALS—Continued						
Zinc:						
Mine output, Zn content	metric tons	81,800	75,200	73,400 <sup>r</sup>	70,000 <sup>r</sup>	65,000
Metal, refined, primary and secondary	do.	144,100	138,300	146,300 <sup>r</sup>	154,000 <sup>r,e</sup>	134,000 <sup>e</sup>
INDUSTRIAL MINERALS						
Cement:						
Clinker		13,629 <sup>r</sup>	11,807	10,855	11,865 <sup>r</sup>	11,278
Hydraulic		19,000 <sup>r</sup>	15,900 <sup>r</sup>	14,800 <sup>r</sup>	15,800 <sup>r</sup>	15,500
Clay and clay products:						
Bentonite:						
Crude	metric tons	900	800	1,018 <sup>r</sup>	650 <sup>r</sup>	450
Processed, including imported material	do.	113,800	102,100	101,800 <sup>r</sup>	102,000 <sup>r,e</sup>	102,000 <sup>e</sup>
Fire clay, crude		136	119	118	112 <sup>r</sup>	116
Kaolin:						
Crude		285	249	268 <sup>r</sup>	278 <sup>r</sup>	287
Beneficiated		164	138	166 <sup>r</sup>	164 <sup>e,r</sup>	169 <sup>e</sup>
Diatomite	metric tons	600	600	600	590 <sup>r</sup>	600
Feldspar:						
Run of mine	do.	550,000	376,500	690,600 <sup>r</sup>	691,000 <sup>r,e</sup>	691,000 <sup>e</sup>
Processed, including imported material	do.	538,800	487,200	513,000 <sup>r</sup>	513,000 <sup>r,e</sup>	513,000 <sup>e</sup>
Gypsum and anhydrite						
Natural:						
Gypsum rock		1,067	1,078	952	905	882
Anhydrite		158	150	133	147	136
Total		1,225	1,228	1,085	1,052	1,018
Synthetic gypsum		2,505 <sup>r</sup>	2,572 <sup>r</sup>	2,768 <sup>r</sup>	2,800 <sup>r,e</sup>	2,800 <sup>e</sup>
Grand total		3,730 <sup>r</sup>	3,800 <sup>r</sup>	3,853 <sup>r</sup>	3,850 <sup>r,e</sup>	3,820 <sup>e</sup>
Lime, hydrated and quicklime		2,036	1,799	1,709	1,817 <sup>r</sup>	1,942
Magnesite:						
Crude	metric tons	129,166	129,641	116,274 <sup>r</sup>	116,000	111,077
Concentrate	do.	75,000	84,000	97,000	92,000 <sup>r</sup>	96,000
Nitrogen, N content of ammonia		1,900 <sup>r</sup>	2,100 <sup>r</sup>	2,100 <sup>r</sup>	2,200 <sup>r</sup>	2,200
Quartz, quartzite, and quartz schist, marketable:						
Quartz and quartz crystal	metric tons	6,100	5,400 <sup>r</sup>	5,800 <sup>r</sup>	11,300 <sup>r</sup>	14,700
Quartzite, refractory	do.	46,500	53,200	88,300 <sup>r</sup>	82,900 <sup>r</sup>	54,900
Quartz schist	do.	700	600	500 <sup>r</sup>	500 <sup>r,e</sup>	500 <sup>e</sup>
Salt:						
Rock		1,254 <sup>r</sup>	793	1,321 <sup>r</sup>	775	650
Evaporated salt		415	658	686 <sup>r</sup>	647 <sup>r</sup>	671
Other (brine and desalination of mine waste water)		2,633	2,732	2,735 <sup>r</sup>	2,705 <sup>r</sup>	2,798
Total		4,302 <sup>r</sup>	4,183	4,742 <sup>r</sup>	4,127 <sup>r</sup>	4,119
Sand and gravel:						
Aggregates (construction sand and gravel), natural, mine output		248,690	184,745	173,267	146,527 <sup>r</sup>	167,928
Filling sand	thousand cubic meters	4,405	3,762	3,649	3,811 <sup>r</sup>	3,549
Foundry sand		1,474 <sup>r</sup>	1,206	1,302 <sup>r</sup>	1,353 <sup>r</sup>	1,103
Lime-sand brick production sand	thousand cubic meters	780	731	519	577 <sup>r</sup>	622
Moulding sand		2,096	2,934	3,361 <sup>r</sup>	1,796 <sup>r</sup>	1,633
Silica sand (glass sand), marketable		2,290	2,149	2,114 <sup>r</sup>	2,071 <sup>r</sup>	2,669
Sodium compounds:						
Carbonate (soda ash), 98%		1,061	1,116 <sup>r</sup>	1,052	1,053 <sup>r</sup>	1,074
Caustic soda (96% NaOH)		361	388	396 <sup>r</sup>	379 <sup>r</sup>	397

See footnotes at end of table.

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

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2011	2012	2013	2014	2015	
<b>INDUSTRIAL MINERALS—Continued</b>						
Stone, mine output:						
Dimension stone	6,224	4,118	3,913 <sup>r</sup>	3,900 <sup>r,e</sup>	3,900 <sup>e</sup>	
Dolomite	1,880	1,830	1,915	2,065 <sup>r</sup>	3,164	
Limestone:						
For lime production	21,703	16,728	16,812 <sup>r</sup>	16,561 <sup>r</sup>	18,655	
For nonlime end use	47,929	40,178	35,901 <sup>r</sup>	35,152 <sup>r</sup>	36,522	
Road stone	326	289	300 <sup>e</sup>	300 <sup>e</sup>	300 <sup>e</sup>	
Sulfur:						
Native, Frasch	metric tons	657,400 <sup>r</sup>	676,800	526,300	605,400	627,286
Byproduct:						
From natural gas	do.	23,800	25,300	24,300	24,200 <sup>r</sup>	23,820
From oil refineries and coking plants	do.	234,600	259,700	268,800 <sup>r</sup>	269,000 <sup>r,e</sup>	269,000 <sup>e</sup>
Other	do.	600	400	500	500 <sup>e</sup>	500 <sup>e</sup>
Total	do.	259,000 <sup>r</sup>	285,400 <sup>r</sup>	293,600 <sup>r</sup>	294,000 <sup>r,e</sup>	293,000 <sup>e</sup>
Grand total	do.	916,400 <sup>r</sup>	962,200 <sup>r</sup>	819,900 <sup>r</sup>	899,000 <sup>r,e</sup>	921,000 <sup>e</sup>
<b>MINERAL FUELS AND RELATED MATERIALS</b>						
Carbon black	metric tons	45,000	11,100	32,000 <sup>r</sup>	32,000 <sup>r,e</sup>	32,000 <sup>e</sup>
Coal:						
Bituminous		76,448	79,813	77,056 <sup>r</sup>	73,271 <sup>r</sup>	72,686
Lignite		62,841	64,280	65,849	63,877	63,128
Total		139,289	144,093	142,905 <sup>r</sup>	137,148 <sup>r</sup>	135,814
Coke		9,377	8,891	9,360 <sup>r</sup>	9,568 <sup>r</sup>	9,792
Gas:						
Natural	million cubic meters	5,825	5,871	5,489 <sup>r</sup>	5,764 <sup>r</sup>	5,762
Coke oven gas, manufactured	do.	4,055 <sup>r</sup>	3,873	4,079	4,161 <sup>r</sup>	4,272
Peat, fuel and agricultural		746	762	818 <sup>r</sup>	829 <sup>r</sup>	893
Petroleum:						
Crude <sup>e,4</sup>	thousand 42-gallon barrels	4,600	5,000	7,100	7,100 <sup>r</sup>	6,900
Refinery products <sup>e,5</sup>	do.	160,000	195,000	190,000	182,000 <sup>r</sup>	197,000

<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. do. Ditto.

<sup>1</sup>Table includes data available through February, 10, 2017.

<sup>2</sup>In addition to commodities listed, palladium, platinum, beneficiated barite, cobalt, gold content of copper concentrate, nickel, sulfate, sulfur from metallurgy, and town gas are thought to have been produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Based on official Polish Government estimates.

<sup>4</sup>Figures were converted to barrels from production in metric tons, which was reported as the following: 2011—618,163; 2012—677,664; 2013—960,672; 2014—950,548; and 2015—927,737.

<sup>5</sup>Figures were converted to barrels from production in metric tons, which was reported as the following: 2011—21,770,253; 2012—26,587,000; 2013—25,849,000; 2014—24,821,000; and 2015—26,750,000.

TABLE 2  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2015<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum, secondary	Huta Aluminium Konin (Impexmetal S.A., 95.52%)	Konin	NA.
Do.	Boryszew S.A. Branch Modern Products Aluminium Skawina (Boryszew Capital Group, 100%)	Skawina	NA.
Do.	Grupa KETY S.A.	Kety	NA.
Do.	Nicromet	Bestwinka	NA.
Do.	Alumetal S.A.	Kety	NA.
Do.	POLST Sp. z o.o.	Walbrzych	NA.
Bentonite	Zakłady Gornico-Metalowe "Zebiec" S.A.	Starachowice	40. <sup>c</sup>
Cadmium, refined	metric tons Huta Cynku "Miasteczko Slaskie" S.A. (Stalprodukt S.A.)	Miasteczko Slaskie smelter	540.
Cement	Gorzdze Cement S.A. (HeidelbergCement AG, 100%)	Gorzdze	4,000 clinker, 6,000 cement.
Do.	Grupa Ozarow S.A. (CRH plc., 100%)	Plants at Ozarow and Rejowiec	2,800 clinker, <sup>c</sup> 3,250 cement. <sup>c</sup>
Do.	Cemex Polska Sp. Z o.o. (CEMEX S.A.B de C.V., 100%)	Plants at Chelm and Rudniki	2,300 clinker, <sup>c</sup> 3,000 cement. <sup>c</sup>
Do.	Cementownia Warta S.A. (Polen Zement Beteiligungsgesellschaft GmbH)	Dzialoszyn	1,500 clinker, <sup>c</sup> 2,000 cement. <sup>c</sup>
Do.	Lafarge Cement S.A.	Plants at Malogoszcz and Piechcin	3,000 clinker, <sup>c</sup> 5,700 cement.
Do.	Dyckerhoff Polska Sp. z o.o. (Dyckerhoff/Buzzi Unicem SpA)	Nowiny	1,100 clinker, <sup>c</sup> 1,600 cement.
Do.	Cementownia Krakow Nowa Huta Sp. Z.o.o. (Polska Energetyka Holding SA)	Krakow	300 clinker, <sup>c</sup> 500 cement. <sup>c</sup>
Do.	Cementownia "Odra" S.A. (Miebach Projektgesellschaft GmbH)	Opole	400 clinker, <sup>c</sup> 800 cement. <sup>c</sup>
Cement, aluminous	Gorka Cement Sp. z o.o. (Mapei Group)	Trzebinia	70 clinker, <sup>c</sup> 70 cement. <sup>c</sup>
Coal:			
Bituminous	Includes: 100% Government owned: Kompania Weglowa S.A. Katowicki Holding Weglowy S.A. Poludniowy Koncern Weglowy S.A. KWK Kazimierz-Juliusz Sp. z o. o. Jastrzebska Spolka Weglowa S.A. (Government, 55%) Lubelski Wegiel "Bogdanka S.A." (ENE SA, 66%) SILTECH Sp. z o. o.	Of which:  Upper Silesia (14 mines) Upper Silesia (4 mines) Upper Silesia (2 mines) Upper Silesia (1 mine) Upper Silesia (5 mines)  Bogdanka, east of Leczna, eastern Poland (1 mine) Upper Silesia (1 mine)	90,000. <sup>c,2</sup>
Brown coal and lignite	Includes: PGE KWB Belchatow S.A. [PGE Polish Energy Group Plc. (Government, 58.39%)] PGE KWB Turow S.A. [PGE Polish Energy Group Plc. (Government, 58.39%)] Kopalnia Wegla Brunatnego "Konin" w Kleczewie S.A. Kopalnia Wegla Brunatnego "Adamow" S.A. Kopalnia Wegla Brunatnego Sieniawa Sp. z o.o.	Of which:  Belchatow, south of Lodz (2 open pit mines) Bogatynia, at the southwest corner of Poland (1 mine) Kleczew (4 open pit mines) Turek (3 open pit mines) Sieniawa (1 mine)	95,000. <sup>c,2</sup>  15,000. <sup>2</sup> 15,000. <sup>2</sup> 5,000. <sup>2</sup>

See footnotes at end of table.

TABLE 2—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2015<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Coke	Includes: Zakłady Koksownicze Zdzieszowice (ArcelorMittal Poland S.A., 100%) Koksownia Przyjazn S.A. Kombinat Koksochemiczny Zabrze S.A.  ArcelorMittal Poland S.A. ISD Huta Czestochowa Sp. z o.o. Zakłady Koksownicze "Victoria" S.A. CARBO-KOKS Sp. z o.o.	Of which: Upper Silesia (Zdzieszowice)  Upper Silesia (Dabrowa Gornicza) Upper Silesia (Cokeries at Jadwiga, Radlin, and Debiensko) Upper Silesia (Krakow) Upper Silesia (Czestochowa) Upper Silesia (Walbrzychu) Upper Silesia (Bytom)	10,800. <sup>2</sup>
<b>Copper:</b>			
Ore, gross weight (averaged 1.57% Cu)	KGHM Polska Miedz S.A. (Government, 31.79%)	Lubin Mine, Lubin-Glogow District	8,100.
Do.	do.	Polkowice-Siersoszowice Mine, Lubin-Glogow District	12,400.
Do.	do.	Rudna Mine, Lubin-Glogow District	12,700.
Concentrate, gross weight (averaged 23.1% Cu)	do.	Lubin beneficiation plant, Lubin-Glogow District	440. <sup>c</sup>
Do.	do.	Polkowice beneficiation plant, Lubin-Glogow District	520. <sup>c</sup>
Do.	do.	Rudna beneficiation plant, Lubin-Glogow District	940. <sup>c</sup>
Metal, refined	do.	Refineries at Glogow I, Glogow II, and Legnica	540.
Feldspar	Strzeblowskie Kopalnie Surowcow Mineralnych Sp. z o.o.	Sobotka, Lower Silesia, exploiting the Pagorki Zachodnie, Pagorki Wschodnie, and Strzeblow I deposits	652.
Do.	Pol-Skal Sp. z o.o.	Karpniki, southwestern region of Jelenia Gora	100.
<b>Ferrous alloys:</b>			
Electric furnace (FeSiMn, FeMn, and FeSi)	Huta Laziska S.A.	Upper Silesia at Laziska Gorne	120. <sup>c</sup>
Blast furnace (FeMn)	STALMAG Sp. z o.o.	Upper Silesia at Ruda Slaska	50. <sup>c</sup>
Gold, metal	kilograms KGHM Polska Miedz S.A. (Government, 31.79%)	Refinery at Glogow	1,000. <sup>c</sup>
Gypsum and anhydrite	Includes: Zakłady Przemyslu Gipsowego "Dolina Nidy" S.A. Rigips Polska Stawiany Sp. z o.o. (Saint-Gobain) Kopalnia Gipsu i Anhydrytu "Nowy Lad" Sp. z o.o.	Of which: Southeastern Poland, Gacki  Southeastern Poland, Szarbkow Lower Silesia, mines at Niwnice and Iwiny	1,400. <sup>2</sup>
Helium	million cubic meters Polskie Gornictwo Naftowe i Gazownictwo S.A. (PGNiG) (Government, 70.8%)	Western Poland, Odolanow	3.5. <sup>c</sup>
Kaolin, crude and washed	KSM "Surmin-Kaolin" S.A.	Lower Silesia, Nowogrodzic	90. <sup>c</sup>
Do.	Grudzen Las Sp. z o.o.	Grudzen Las, in Lodz Voivodeship	55. <sup>c</sup>
Do.	Tomaszowskie Kopalnie Surowcow Mineralnych "Biala Gora" Sp. z o.o.	Smardzewice, Tomaszowski Voivodeship	30. <sup>c</sup>

See footnotes at end of table.

TABLE 2—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2015<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>Lead and zinc:</b>				
Mine output		Zakłady Gorniczo-Hutnicze (ZGH) "Boleslaw" S.A. (Stalprodukt S.A., 86.92 %)	Mine and concentrator at Olkusz and Pomorzany, Bukowno region	30 lead, <sup>c</sup> 110 zinc. <sup>c</sup>
<b>Metal:</b>				
Pb, refined		Huta Cynku Miasteczko Slaskie (HCM) S.A.	Refinery at Miasteczko Slaskie	35.
Do.		"Baterpol" Sp. z o.o. (Impexmetal S.A.)	Refinery at Katowice	20. <sup>c</sup>
Do.		Orzel Biały S.A.	Refinery at Bytom	40. <sup>c</sup>
Do.		KGHM Polska Miedz S.A. (Government, 31.79%)	Smelter at Legnica	50. <sup>c</sup>
Zn, refined		Huta Cynku Miasteczko Slaskie (HCM) S.A. (ZGH, 91%)	Imperial smelter at Miasteczko Slaskie	85.
Do.		Zakłady Metalurgiczny Silesia S.A.	Refinery at Katowice	12.
Do.		Zakłady Gorniczo-Hutnicze (ZGH) "Boleslaw" S.A. (Stalprodukt S.A., 86.92 %)	Refinery at Boleslaw	75.
Lime		Includes: Zakłady Przemysłu Wapienniczego (ZPW) Trzuskawica S.A. (CRH plc, 100%) Lhoist Group: Lhoist Opolwap S.A. Lhoist Bukowa Sp. z o.o. Zakład Wapienniczy Wojcieszow Sp. z o.o. Zakłady Wapiennicze Lhoist Sp. z o.o.	Of which: Plants in Sitkowka-Nowiny and Bielawy  Tarnow Opolski, Opole County Bukowa, 90 kilometers north of Krakow Wojcieszow Gorazdze	2,200. <sup>c,2</sup>
Natural gas	million cubic meters	Polskie Gornictwo Naftowe i Gazownictwo S.A. (PGNiG) (Government, 70.8%)	Gasfields in southeastern Poland in the Carpathian Mountains, the Carpathian Foothills, and the Polish Lowlands	4,600. <sup>c</sup>
Do.	do.	LOTOS Petrobaltic S.A. [Grupa LOTOS S.A. (Government, 53.20%)]	Baltic Sea Shelf	20. <sup>c</sup>
<b>Nitrogen:</b>				
Ammonia (NH <sub>3</sub> )		Includes: Zakłady Azotowe "Pulawy" S.A. Zakłady Azotowe "Kedzierzyn" S.A. Zakłady Azotowe "Anwil Wloclawek" S.A. Zakłady Azotowe S.A. w Tarnowie Azoty-Adipol S.A. (former Chorzow plant) Zakłady Chemiezne "Police"	Of which: Pulawy in eastern Poland Kedzierzyn in Upper Silesia Wloclawek in central Poland Tarnow in southern Poland Chorzow in Upper Silesia Police in northwestern Poland	2,600. <sup>c,2</sup>
<b>Petroleum:</b>				
Crude	thousand 42-gallon barrels	Polskie Gornictwo Naftowe i Gazownictwo S.A. (PGNiG) (Government, 70.8%)	Oilfields in southeastern and western Poland with about 75% of production from the Barnowko-Mostno-Buszewo field near Debno	4,000. <sup>c</sup>
Do.	do.	LOTOS Petrobaltic S.A. [Grupa LOTOS S.A. (Government, 53.20%)]	Baltic Sea Shelf	1,200. <sup>c</sup>
Refined		Petrochimia-Plock [PKN Orlen S.A. (Government, 27.52%)]	Plock in central Poland	119,000.
Do.		Rafineria Gdanska S.A. (Grupa LOTOS S.A.) (Government, 53.20%)	Gdansk in northern Poland	77,000. <sup>c</sup>
Do.		ORLEN Poludnie S.A. [PKN Orlen S.A. (Government, 27.52%)]	Jedlicze and Trzebinia refineries in southern Poland	4,000.
<b>Rhenium:</b>				
Rhenium content of ammonium perrhenate	kilograms	KGHM Metraco S.A. [KGHM Polska Miedz S.A. (Government, 31.79%)]	Lubin	7,500.
Rhenium metal	do.	do.	do.	3,500.

See footnotes at end of table.

TABLE 2—Continued  
POLAND: STRUCTURE OF THE MINERAL INDUSTRY IN 2015<sup>1</sup>

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Salt:		Includes:	Of which:	5,000. <sup>e,2</sup>
Brine		Inowroclawskie Kopalnie Soli Solino S.A.	Mines at Gora and Mogilno in central Poland	
		Polskie Gornictwo Naftowe i Gazownictwo S.A. (PGNiG) (Government, 70.8%)	Mine at Mogilno in central Poland	
		Kopalnia Soli "Wieliczka" S.A.	Wieliczka in southern Poland, near Krakow, mining deposits at Barycz and Wieliczka	
Rock salt		Kopalnia Soli "Klodawa" S.A.	Klodawa in central Poland	
		KGHM Polska Miedz S.A. (Government, 31.79%)	Sierszowice in southwestern Poland	
Selenium	metric tons	KGHM Polska Miedz S.A. (Government, 31.79%)	Refinery at Glogow	90.
Silver, refined	do.	do.	Precious metals plant at the Glogow smelter	1,400.
Do.	do.	Institute of Non-ferrous Metals	Gliwice	30. <sup>c</sup>
Steel, crude		ArcelorMittal S.A., of which: ArcelorMittal Poland S.A.	Steelworks at Dabrowa Gornicza (former Huta Katowice S.A.)	8,000.
		do.	Steelworks at Krakow (former Huta Sendzimir S.A.)	
		ArcelorMittal Warszawa Sp. z o.o.	Steelworks in Warsaw (former Huta "Lucchini-Warszawa" Sp. z o.o.)	
Do.		CMC Zawiercie S.A. (Commercial Metals Co.)	Steelworks at Zawiercie	1,200.
Do.		ISD Huta Czestochowa S.A. (Industrial Union of Donbass Corp.)	Steelworks at Czestochowa	800. <sup>c</sup>
Do.		Celsa Huta Ostrowiec S.A. (Celsa Group)	Steelworks at Ostrowiec-Swietokrzyski	800. <sup>c</sup>
Do.		Ferrostal Labedy Sp. z o.o. (Cognor S.A.)	Steelworks at Gliwice	375.
Do.		Huta Stali Jakosciowych S.A. (Cognor S.A.)	Steelworks at Stalowa Wola	261.
Do.		Huta Batory Sp. z o.o. (Alchemia S.A., 100%)	Steelworks at Chorzow	150. <sup>c</sup>
Sulfur		P.P. Kopalnie i Zaklady Chemiczne Siarki "Siarkopol"	Osiek deposit at Grzybow	800.

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>The data presented in this table were compiled, in large measure, from information provided in the Minerals Yearbook of Poland 2013, which was prepared and published by the Division of Mineral Policy, Mineral and Energy Economy Research Institute of the Polish Academy of Sciences.

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