

## POLAND

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Poland's economic development in 2003 was strongly influenced by a number of factors, both favourable and unfavourable. Unemployment continued to increase and reached a record level of 20% (10% in 1998). Capital investment fell for the third consecutive year, but the decrease was not as much (-0.9%) as in previous years (-7.2% in 2002 and -8.8% in 2001). The trade deficit amounted to €12.8 billion, and thus fell compared with the two previous years (€15.0 billion in 2002 and €15.8 billion in 2001). Internal government debt increased to almost €65 billion, and foreign government debt rose to over €30 billion. Total foreign debt – including that of banks and producing companies – also increased and exceeded €80 billion. The Polish Złoty (Zł) exchange rate with regard to the Euro weakened significantly: from 3.84 in 2002 to 4.40 Zł/€ in 2003, on an average annual basis. Sales in the construction sector fell for the third consecutive year - by 5%, though industry sales – after a slight decrease in 2001 – rose by over 2% in 2002 and by almost 8% in 2003.

On the positive side, GDP growth rate improved to 3.7% in 2003, compared with 1.4% in 2002. In 2004, a minimum 5% GDP growth rate is expected. GDP amounted to Zł805 billion (€183 billion) in 2003, but GDP *per capita* remained low, at about €4,800. The second positive feature was a substantial decrease in the rate of inflation, to 0.8%, a 30-year low. Probably the most important fact in 2003, however, was the approval of Poland's entry to the European Union, with full membership from May 1, 2004.

Poland has never been self-sufficient in minerals. It is an important producer of hard and brown coal, coke, steel, copper, zinc, lead and silver, and many industrial minerals, eg salt, sulphur, soda ash, limestone, lime, cement and gypsum. However, it is strongly dependent on imports of, for example, crude oil (over 50% of the total value of mineral commodity imports to Poland), natural gas (15% of mineral commodity imports), aluminium and alumina, iron ore concentrates, phosphate rock and potash salts.

The approximate value of minerals production in Poland in 2002 (the most recent figure available), was Zł31.0 billion (€1 = Zł4.40), with hard coal contributing Zł14.9 billion, brown coal Zł2.6 billion, crude oil and natural gas Zł2.4 billion, copper and silver Zł4.5 billion, other metals Zł1.0 billion, and industrial and construction minerals Zł5.6 billion. Production of some minerals decreased in 2003 as compared with 2002, while for the majority of minerals it remained at the 2002 level or slightly increased. The largest falls were recorded for zinc metal (-3%), hard coal (-1%) and natural gas (-1%). The largest increases were reported for: crude oil (+5%), brown coal (+5%), pig iron (+6%), raw steel (+9%), copper (+3%), silver (+3%), lead concentrates (+2%), cement (+3%) and lime (+5%).

The trade balance for mineral commodities has been consistently negative in Poland since 1995, and the deficit in 2003 was over Zt14 billion. The main reason for the imbalance is the steady increase in the volume and value of crude oil and natural gas imports (the trade imbalance for both being over -Zt13 billion and -Zt4.4 billion, respectively). The values of Poland's mineral exports decreased, especially in the case of hard coal (only Zt2.9 billion in 2003). The export values of copper, silver and zinc – the three other important mineral commodities – depended strongly on their international price fluctuations.

### Coal

Hard coal remains the main mineral commodity produced in Poland. Production which exceeded 103 Mt/y in the years 2000-2002, fell slightly in 2003 to 102.3 Mt. Steam coal accounts for 84% of total production and coking coal the remaining 16%. The share of hard coal in the primary energy supply of Poland is still very high (about 50%), but is declining. Around 20.1 Mt of hard coal was exported in 2003 (including 2.0 Mt of coking coal), while the rest was sold on the domestic market. Imports – limited by import quotas – amounted to 2.6 Mt in 2003.

Due to a deterioration in the industrial economic situation and increasing liabilities, amounting to some Zt19 billion at the end of 2002, the Polish Government approved a consecutive Hard Coal Industry Restructuring Programme, under which a new coal company (Kompania Węglowa SA – KW SA) was established in February 2003. The company incorporated 23 mines from five smaller coal companies: Bytomska, Rudzka, Gliwicka, Rybnicka and Nadwiślańska. Two other hard coal producers, Katowicki Coal Holding (KHW, nine mines) and Jastrzębska Coal Co. (JSW, five mines), as well as two independent mines, Bogdanka and Budryk, remained independent state-owned companies. Moreover, Sobieski-Jaworzno III Ltd was established in 1999 on the basis of the former Jaworzno mine (now a subsidiary of the state-owned Southern Power Concern - PKE), while a new private company – Siltech Ltd – was established in 2002 on the basis of the former Pstrowski mine. According to the restructuring programme, seven mines with combined capacities of 12.7 Mt/y were planned to be closed in 2003, but it didn't happen. In 2003, Kompania Węglowa SA produced 54.7 Mt of hard coal, Katowicki Coal Holding 18.8 Mt, Jastrzębska Coal Co 13.6 Mt and independent mines 15.2 Mt.

In November 2003, a new Hard Coal Mining Restructuring Act was passed by Parliament. It introduced remission of hard coal industry liabilities to the state institutions at the total level of Zt18.1 billion, deferment of other liabilities at around Zt2.6 billion, as well as employment restructuring with involvement of social packages. At the end of 2003, the remaining liabilities of the industry amounted to Zt8.6 billion. On the basis of the Act, a consecutive Hard Coal Industry Restructuring Programme for the years 2004-2006 was approved. It assumes a capacity reduction by 14.0 Mt/y to 88.6 Mt/y by the end of 2006, but an alternative scenario – reduction by only 7.8 Mt/y – is also taken into account (which option will depend on the situation in the international hard coal market). Two mines will be shut down in 2004: Bytom II and Katowice-

Kleofas. Further reductions will be possible by lowering the production capacities in a few mines and their mergers. Employment will be reduced from 136,500 to 111,000 in 2006 (in the years 2000-2003 it fell from 222,000 to 136,500).

Such assumptions are in accordance with forecasts of domestic demand and export opportunities. It is assumed that domestic demand will amount to 80 Mt in 2004 (74 Mt in 2006), including 66.5 Mt of steam coal in 2004 (60.5 Mt in 2006). Export potential is estimated at around 20.0 Mt in 2004 (including 18.0 Mt of steam coal) and 17.5 Mt in 2006. Imports will be limited by import quotas to 2.8 Mt/y of steam coal and 0.3 Mt/y of coking coal.

Privatisation of the Polish hard coal industry is expected to intensify in the near future. The process of privatisation of the independent state-owned Bogdanka mine started a few years ago, but has not been finalised as yet. Budryk, another independent state-owned mine might be included in the new capital group BOT or JSW (see below). The privatisation offer for Katowicki Coal Holding (KHW) is being prepared for the end of 2004, and for Jastrzębska Coal Co (JSW) the end of 2005. The latter is to be integrated with some cokeries into a single coal-coke concern. Privatisation of Kompania Węglowa (KW) is not projected until 2006, but some single mines of KW have been merged into joint companies with Southern Power Concern (PKE): the Janina mine in 2003 (ZGE Janina Co), and the Bolesław Śmiały mine in 2004 (previously Sobieski-Jaworzno III since 1999).

Poland's brown coal production has gradually decreased in recent years, from 62.8 Mt in 1998 to 58.2 Mt in 2002. However, in 2003 it recovered to 60.9 Mt due to completion of modernisation of the Turów power plant. Brown coal is mined by four companies: KWB Bełchatów SA, operating the largest mine, Bełchatów (34-35 Mt/y); KWB Turów SA with its Turów mine (10-12 Mt/y); KWB Konin SA with three open pits (combined output 10-11 Mt/y); and KWB Adamów SA with three open-pits (4-5 Mt/y). They supply brown coal to the neighbouring power plants which are independent firms: Bełchatów, Turów, Pątnów-Adamów-Konin (PAK power complex).

The construction of the new Szczerców mine near Bełchatów started in 2002. It will supply brown coal to the new Bełchatów II power plant, as well as the modernised Bełchatów power plant. Its projected full capacity will be 28 Mt/y, and coal extraction will start in 2007. After 2015, the development of the very large Legnica mine is very probable as, by that time, reserves at the Konin and Adamów mines will be exhausted. All the brown coal mines are state-controlled but they operate independently, as do the adjacent power plants. In 2004, a new capital group BOT is to be established. It will consist of the Bełchatów mine and power plant, Turów mine and power plant, and the Opole power plant (fuelled by hard coal), which will probably be joined by the Budryk hard coal mine.

## **Oil and gas**

Total production of natural gas in Poland was 5.2 billion m<sup>3</sup> in 2003 and is expected to rise by another 2 billion m<sup>3</sup>/y in the coming years as a result of further development of deposits, mainly in northwestern Poland. However, the output meets only about 25% of domestic demand (at 100% methane basis). Domestic production of crude oil amounted to 754,000 t in 2003. This level of production meets only 4% of domestic demand and this share – due to further production development to 1.2-1.3 Mt in 2007 – can rise only to 6%. Last year, imports of natural gas amounted to 8.6 billion m<sup>3</sup> (valued at US\$1.1 billion), with over 85% coming from Russia and supplementary supplies from Norway and Germany. Imports of crude oil amounted to some 17.4 Mt (valued at US\$3.4 billion) and came primarily from Russia (97%).

Oil and gas in Poland are produced mainly from onshore operations of the Oil Mining Unit of the Polish Oil and Gas Co (POGC). Offshore, the B3 oil and gas deposit is worked by Petrobaltic Petroleum & Gas Exploration and Mining Enterprise. POGC manages – among others – two production divisions: Sanok (operates mines in southeast Poland) and Zielona Góra (northwest Poland). It also manages the 'Krio' de-nitrification plant. In 2003, POGC produced 5.2 billion m<sup>3</sup> of natural gas (1.7 billion m<sup>3</sup> of high-methane gas from Sanok division and 3.5 billion m<sup>3</sup> of nitrified gas – 2.3 billion m<sup>3</sup> at 100% methane basis – from Zielona Góra division), 497,000 t of crude oil (over 90% from Zielona Góra division), around 2.4 million m<sup>3</sup> of helium, 12.5 million m<sup>3</sup> of LPG, over 5,000 t of liquid nitrogen and 22,000 t of sulphur. Minor quantities of natural gas are also recovered from hard coal deposits (coalbed methane). Petrobaltic is the second most important crude oil producer in Poland. In 2003, it produced 257,000 t of crude oil from the B3 offshore deposit. Moreover, this year it started to deliver some 40 million m<sup>3</sup>/y natural gas to the Władysławowo central heating plant, which commenced in late 2003.

POGC and Petrobaltic are still state-owned, but will be privatised in the near future. In the case of POGC, a significant portion of shares will probably go to the Warsaw Stock Exchange at the beginning of 2005. Petrobaltic will be incorporated in 2004 into the Grupa Lotos SA company consisting of the Gdańsk refinery and a few smaller refineries in southern Poland.

## **Copper and silver**

KGHM Polska Miedź SA remains Poland's only domestic electrolytic copper producer and is the largest producer of copper in Europe. It currently ranks as the sixth-largest world producer, and also the world's second-largest producer of silver. KGHM operates three underground mines, Lubin, Polkowice-Sieroszowice and Rudna, with associated processing plants; three copper smelters - Legnica, Głogów I and Głogów II; a Precious Metals Plant at Głogów; and the Cedynia Copper Rolling Mill. In 2003, copper ore production rose by 1.0% to 28.5 Mt, with a slight decrease in average Cu content to 1.99%. Copper concentrate production declined by 0.8% to 1.88 Mt, the copper content in the concentrates remained almost constant, amounting to 503,213 t. Electrolytic copper production rose by 4.1% to 529,616 t. Production of refined silver amounted to 1,223 t (+2.6%), while silver in the form of dor metal was also sold outside Poland in 2003 (135 t). Production of

other associated metals in 2003 were: 356 kg of gold (+20%), 35 kg of Pt-Pd slime, 78 t of selenium (+15%) and 20,134 t of pig lead (+15%).

KGHM's exports of copper (with semi-products) decreased in 2003 by 0.7% to 350,616 t, and exports of silver (together with dor metal) rose by 12.9% to 1,233 t. The largest importers of Polish copper cathodes (269,601 t) are Germany and France and, recently, China. Wire bars (7,006 t) are imported by Germany and the Czech Republic, while wire rod (74,048 t) - by the Czech Republic, Germany and Hungary. Belgium, Germany, Thailand and the US are currently the main importers of Polish silver. A large part of KGHM's copper exports are delivered to the London Metal Exchange through London-based KGHM Polish Copper Ltd. However, a significant portion of copper is sold on the basis of long-term contracts, signed with China Minmetals Nonferrous Metals Co (China), Glencore International AG (Switzerland), Pechiney Trading (France), etc.

From 1997, KGHM shares have been traded on the Warsaw and London stock exchanges. The State Treasury is still the owner of 44.3% of the shares. The share value at the end of 2003 amounted to Zt26.2, compared with Zt13.5 in 2002. KGHM's sales rose in 2003 by 5.8% to Zt4,741 million, while net profit was Zt412 million (Zt255 million in 2002). Total production costs rose by 4% to about US\$1,603/t, but fell slightly in Polish zloty terms. Employment decreased by 1.6% to 18,000, including 11,430 miners. Investments increased by 18% to Zt424 million.

In 2004, copper output is expected to be about 545,000 t and silver 1,255 t. Sales revenues are expected to rise to at least Zt5,920 million in the anticipation of high copper prices. Net profits are forecast at around Zt1,340 million. Investments are expected to rise to at least Zt600 million. Total production costs should be slightly higher than in 2003 (in US\$ terms).

Silver (doé metal) is also obtained from the Miasteczko Śląskie smelter in the course of processing Zn and Pb concentrates. In 2003 production amounted to 36 t. It is processed into refined silver by Ag-Tech Ltd in Katowice. Minor quantities of silver from secondary sources are recovered by the State Mint in Warsaw and the Nonferrous Metals Institute in Gliwice.

### **Zinc, lead and cadmium**

The traditional mining of zinc-lead ores in the Upper Silesia-Cracow region is expected to cease by 2008 due to exhaustion of reserves. The ores are mined and processed by two companies. ZGH Bolesław (comprising the Pomorzany mine and Olkusz-Pomorzany processing plant) delivered around 85,000 t of zinc and 25,000 t of lead in concentrates in 2003, and ZG Trzebionka SA (the Trzebionka mine and processing plant) some 55,000 t of zinc and 30,000 t of lead in concentrates. Total mine output has been gradually falling to 170,000 t/y of zinc and 75,000 t/y of lead in ore, with production of metal in concentrates at around 140,000 t Zn and 55,000 t Pb.

Refined zinc is produced in two smelters, Miasteczko Śląskie (79,600 t in 2003) and Bolesław (75,000 t in 2003). Production of electrolytic zinc in the



third smelter, Szopienice, ceased in 2002. As a result, total domestic production of zinc dropped in the years 2002-2003 by 11% to 155,000 t. Pig lead output in 2003 is estimated at 80,000 t. It was produced from lead concentrates by Miasteczko Śląskie smelter (32,200 t), as a by-product of copper smelting by KGHM (20,100 t), and from secondary sources by Orzeł Biały SA in Bytom and Baterpol Ltd in Świętochłowice (jointly below 30,000 t). Refined lead is produced by the Miasteczko Śląskie smelter, Baterpol Ltd and Orzeł Biały SA, and 2003 output is estimated at 68,000 t.

Zinc concentrate imports to Poland amounted to 79,000 t Zn in 2003, while exports were 40,000 t Zn. At the same time, lead concentrates and zinc metal exports were 72,000 t Pb and 68,500 t Zn, respectively.

Cadmium production in Poland ceased in the mid-1990s, but the commissioning of a modern zinc rectifier and installation for cadmium refining at the Miasteczko Śląskie smelter in 2000 has enabled production to resume. Cadmium output amounted to 400 t in 2003, a large portion of which was exported.

### **Aluminium**

The only domestic producer of primary aluminium is Huta Aluminium Konin SA. Output has been running at about 51,000-52,000 t/y. Production of aluminium from secondary sources amounts to about 3,000 t/y, but total aluminium recovery exceeds 10,000 t/y, as a majority of scrap is used directly in aluminium products. Aluminium imports to Poland rose to over 80,000 t/y (primarily from Russia), while net imports of aluminium alloys were 40,000 t/y.

### **Iron and steel**

The Polish steel industry relies entirely on imported iron ores and concentrates. In 2002, these imports fell to 7.0 Mt, while in 2003 they rose again to 8.6 Mt, coming primarily from Ukraine (66%), Russia (18%) and Brazil (10%). The recovery of iron and steel scrap was substantial, amounting to some 5.4 Mt in 2003. Over 30% of this was exported, while the rest was consumed by domestic steelworks.

Pig iron is currently produced by three steelworks, and output increased by 6% to 5.63 Mt last year. Almost 99% of pig iron came from two PHS S.A. steelworks (see below). The Łaziska smelter is the sole domestic producer of ferroalloys (ferrosilicon, ferrosilico-manganese). In 2002, output slumped by 28% to less than 50,000 t owing to problems with the supply of cheap energy (which led to some temporary smelter shutdowns), but in 2003 reverted to previous levels. Over 80% of the Łaziska smelter production is exported. Imports of ferroalloys increased to 135,600 t in 2003, primarily from Slovakia (40%), Ukraine (31%) and Norway (6%).

Crude steel output rose in 2003 by 9% to 9.11 Mt after a combined 20% fall in the previous two years. There are 10 producers, but 67% comes from two large steelworks: Sendzimir and Katowice, part of PHS SA. Steel products are manufactured in over 20 steelworks of various sizes, the output of which last year increased by 8% to about 8.8 Mt. Polish steelworks have made

significant technical and environmental improvements in the past decade, spending a total of more than US\$2.5 billion on modernisation. Industry employment has been reduced sharply, from 147,000 to 35,200 but modernisation has been mostly focused on raw steel production rather than on manufacturing.

Since 1998, consecutive versions of the Restructuring Programme of the Iron & Steel Industry have been approved by the Polish Government. In August 2001, the Iron & Steel Industry Restructuring Act was passed by Parliament. In September 2002, the Council of Ministers approved the Strategy of Iron & Steel Industry Restructuring for the years 2002-2006, which was slightly modified in early 2003. This assumes a reduction in production capacities by 0.9 Mt/y, maximum public support to steelworks of Zł3.3 billion in this period, establishment of a new company - Polskie Huty Stali SA (PHS SA, by the consolidation of the Sendzimir, Katowice, Cedler and Florian steelworks) and total investments in PHS SA of some Zł2.4 billion. Until 2003, only one steelworks has been sold to a foreign investor, ie Warsaw steelworks to the Lucchini company. In October 2003, the majority of the shares in PHS SA was sold to LNM Holdings and in early 2004 the company was renamed Ispat Polska Stal SA (IPS). Some other steelworks will also be privatised, while some others are to be closed down.

### **Industrial minerals**

The main industrial minerals produced in Poland are: sulphur, salt, limestone, dolomite, silica sand, gypsum, feldspar, quartz and kaolin. Primary sulphur production has fallen significantly during the past decade, owing to competition from by-product sulphur producers (Canada, Saudi Arabia) on international markets, as well as from domestic involuntary producers (total output of 180,000 t in 2003). Three mines – Machów, Grzybów, and Basznia – were closed in the mid-1990s, and the fourth and the largest one – Jeziórko – in August 2001. Osiek is now the only remaining native sulphur mine in Poland. As a result, native sulphur production fell from 1.37 Mt in 2000 to 760,000 t in 2002, but in 2003 it stabilised at a similar level. However, it is probable that in the coming years it will not exceed 600,000 t/y. Unprofitable exports were reduced to under 600,000 t/y and a further reduction, possibly to under 200,000 t/y is expected.

Salt production comes primarily from two rock salt mines; Kłodawa (over 600,000 t/y) and Sieroszowice (a KGHM mine producing in excess of 200,000 t/y). Two solution (borehole) mines are operated by the Solino SA company based in Inowrocław, and one by Investgas Ltd of Warsaw (subsidiary of Polish Oil and Gas Co). These operations had a combined production of over 2.7 Mt salt in brine in 2003. Over 70% of brine is used for the production of soda and other chemical compounds, while under 30% - for evaporated salt production in Janikosoda Co. Moreover, salt from the desalination of underground salty waters in Dębieńsko Desalination Plant amounts to less than 50,000 t/y. In 2003, Poland's total output of salt slightly increased to almost 3.6 Mt, mainly as a result of higher rock salt output. Exports stay at 350,000-400,000 t/y, with the Czech Republic the main customer.

Limestone production depends on the cement and lime industry. In the past three years it decreased by over 20% because of lower cement clinker and lime output. However, some special applications for limestone have been developed, ie ground calcium carbonate (GCC), with various grades manufactured by around a dozen plants. Their combined production level has reached 1.2 Mt/y in recent years. A similar situation characterises the dolomite industry, where traditional uses (flux, refractories) have been restricted. On the contrary, production of ground dolomite, primarily for glassworks, has increased to a current level of 350,000-400,000 t/y. In response to increasing domestic glass production (a recent example being the new Guardian float glassworks in Częstochowa), glass sand production has increased to some 1.6 Mt/y, though glass recycling is also rapidly developing.

Gypsum production has increased threefold since the mid-1990s, with the influx of FGD gypsum from eight power plants. Recently, it stabilized at around 2.2 Mt/y. In parallel, significant investment in new gypsum plasterboard and binder plants was reported.

The growing demand for raw materials for ceramic tiles has resulted in a steady increase in domestic kaolin and feldspar production at existing operations (by 70% and 170%, respectively, in the past five years).

#### Mineral Production ('000 t except where stated) over two pages

Commodity	2001	2002	2003 <sup>p</sup>
Hard coal	103,992	103,705	102,301
Brown coal	59,546	58,237	60,887
Coke	8,875	8,723	10,232
Crude oil	769	728	754
Natural gas (mln m <sup>3</sup> )	5,175	5,263	5,211
Copper in concentrates	474	503	504
Zinc in concentrates	153	152	150
Lead in concentrates	53	57	63
Copper, electrolytic	498	509	530
Zinc, metal	175	159	155
Lead, metal	66	66	68
Aluminium, metal	55	51	51
Silver, refined (t)	1,194	1,229	1,259
Gold, refined (kg)	349	296	356
Cadmium (t)	330	440	400
Selenium (t)	65	68	78
Pig iron	5,440	5,296	5,632
Ferroalloys	69	50	65
Steel	8,809	8,367	9,107
Salt	3,476	3,558	3,590
Sulphur, native	942	760	760
Soda ash, synthetic	1,044	1,047	1,050
Limestone	33,760	31,797	31,400



## Mining Annual Review 2004

Cement clinker	9,335	8,812	8,525
Cement	12,074	11,206	11,312
Lime	2,049	1,960	2,050
Gypsum & anhydrite	2,228	2,187	2,250
Dolomite	1,483	1,423	1,400
Glass sand	1,456	1,579	1,600
Foundry sand	849	628	600
Quartz	66	27	30
Quartzite	114	32	40
Feldspar	221	293	320
Kaolin	101	114	115
Refractory clays	140	128	125