



2011 Minerals Yearbook

PORTUGAL

THE MINERAL INDUSTRY OF PORTUGAL

By Alfredo C. Gurmendi

In 2011, Portugal produced such mineral commodities as lithium (fifth after Chile, Australia, China, and Argentina), tin [eleventh after China, Indonesia, Peru, Bolivia, Brazil and Congo (Kinshasa), Vietnam, and Australia, Malaysia, and Russia], and tungsten (fourth after China, Russia, and Canada), among others (Carlin, 2012; Jaskula, 2012; Shedd, 2012).

In September 2011, after the Portuguese economy had started to come out of the recession of 2008–09, the euro area again went through an economic crisis that affected Portugal's gross domestic product (GDP), which decreased by 1.6%. The country's GDP, however, was expected to recover gradually during 2013 through 2017, driven primarily by increased exports of goods and services. Portugal's GDP was \$239 billion in 2011 compared with a revised \$229 billion in 2010. The sectors that contributed to the country's GDP were services (74.5%), industry (23.1%), and agriculture (2.4%) (Federation of International Trade Associations, The, 2012; International Monetary Fund, 2012, p. 53, 191; U.S. Central Intelligence Agency, 2012; U.S. Department of State, 2012).

Portugal's foreign direct investment (FDI) inflow was \$27 billion in 2011, which went mainly to commerce (39.3%), manufacturing (24.4%), the financial sector (18.2%), technical activities (8.7%), and others (9.4%). In 2011, unemployment increased to 12.7% from 10.8% in 2010 (International Monetary Fund, 2012, p. 53; U.S. Central Intelligence Agency, 2012; U.S. Department of State, 2012).

Minerals in the National Economy

Portugal continued to be a significant European mineral producer and remained one of the European Union's (EU's) leading producers of, in order of volume, rock salt, gypsum, copper, silver, zinc, and tungsten. A number of gold and base-metal projects are undergoing feasibility studies, with most activity focused on the Portuguese zone of the Iberian Pyrite Belt (IPB). The IPB measures 60 kilometers (km) wide by 250 km long and extends from the southwestern coast of Portugal near Setubal to the Guadalquivir River near Seville, Spain. Portugal's mining and minerals activities are controlled by the Instituto Geologico e Mineiro (IGM) (Direcção Geral de Energia e Geologia, 2012; MBendi Information Services (Pty) Ltd., 2012a, b, d, e).

Portugal's mining and mineral processing industries represented about 1% of the GDP in 2011. The mineral sector employed about 33,260, or 0.6% of the labor force total of 5.587 million. Portugal's most valuable metallic mineral resources were copper, silver, tin, tungsten, and zinc. The most valuable resources of industrial minerals besides marble were lithium, pyrites, and rock salt. The country had limited energy resources and depended upon imports for the bulk of its energy needs (Direcção Geral de Energia e Geologia, 2012; Instituto Nacional de Estatística, 2012; MBendi Information Services

(Pty) Ltd., 2012a, d, e; U.S. Central Intelligence Agency, 2012; U.S. Energy Information Administration, 2012).

Production

Portugal's industrial minerals sector was a producer of a variety of materials; the dimension stone and rock salt sectors continued to be particularly important segments of the mineral industry in terms of value and trade. Portugal was one of the leading producers of mined copper, silver, tin, tungsten, and zinc concentrates in the EU and a significant producer of kaolin, gypsum, and talc (table 1; Direcção Geral de Energia e Geologia, 2012).

Structure of the Mineral Industry

Lundin Mining Corp. of Canada was the owner of the Neves-Corvo copper-zinc underground mine, which is located 100 km north of Faro, Portugal, in the western area of the IPB. The feasibility studies for Lombador's copper/lead/zinc project were completed in September 2011, and Lombador Phase I would be developed as an extension to the Neves-Corvo Mine by 2012. Beralt Tin & Wolfram (Portugal) SARL continued to mine tungsten at its Panasqueira Mine, which is located in Beira Baixa Province in the east-central region of Portugal (Lundin Mining Corp., 2012a, p. 1–2; 2012b; MBendi Information Services (Pty) Ltd., 2012d).

Lusosider Aços Planos S.A. and SN Servicos S.A. were Portugal's leading steel producers. Cimentos de Portugal, SGPS, S.A. (CIMPOR) was a regionally significant producer of cement. With the exception of copper, dimension stone, and tungsten, production of other minerals and related materials had only domestic significance. Some of the leading mineral-related companies were partially owned or controlled by the Government, and some operations were privately owned. In 2011, Portugal had only two metallic mines in operation—the Neves-Corvo copper mine and the Panasqueira tungsten mine (table 2; Cimentos de Portugal, SGPS, S.A., 2012a, p. 2; Lundin Mining Corp., 2012b; MBendi Information Services (Pty) Ltd., 2012a).

Mineral Trade

In 2011, Portugal's exports amounted to \$78.9 billion compared with a revised \$69.7 billion in 2010 and included such products as, in order of value, machinery and tools, crude oil products, base metals, minerals and mineral products, and chemical products. Portugal's leading export partners were Spain (24.8%), Germany (13.5%), France (12%), Angola (5.5%), and the United Kingdom (5.1%), among others. The main export destination was the EU, the 27 members of which received 76.2% of Portugal's exports. Portugal's imports amounted to \$87.6 billion compared with a revised \$78.7 billion in 2010 and included such products as, in order of value,

machinery and tools, crude oil products, oil products, chemical products, base metals, and mineral products. Portugal's leading import partners were Spain (31.6%), Germany (12.3%), France (6.9%), Italy (5.3%), the Netherlands (4.7%), and the United Kingdom (3.3%), among others. The main import origination point was the EU; the EU's 27 members supplied 76% of Portugal's imports (Federation of International Trade Associations, The, 2012; Instituto Nacional de Estatística, 2012; U.S. Central Intelligence Agency, 2012; U.S. Department of State, 2012; World Trade Organization, 2012).

Commodity Review

Metals

Copper, Gold, Lead, and Zinc.—Production from the Neves-Corvo copper mine was 79,686 metric tons (t) of copper concentrate in 2011 compared with 74,426 t in 2010, which was an increase of almost 7.1%. Neves-Corvo's current production capacity was about 2.5 million metric tons per year of ore and 112,000 metric tons per year (t/yr) of copper concentrate. Neves-Corvo produced 4,227 t of zinc compared with 6,421 t of zinc in 2010 (table 1; Lundin Mining Corp., 2012a). According to the mine's owner, as of June 30, 2011, Lundin Mining Neves-Corvo's copper-rich ores amounted to 27.7 million metric tons (Mt) grading 3.0% copper, 0.9% zinc, 0.3% lead, and 44 grams per metric ton (g/t) silver, and the mine's zinc-rich ores amounted to 23.1 Mt grading 7.3% zinc, 1.7% lead, 0.4% copper, and 66 g/t silver (Instituto Nacional de Estatística, 2012; Lundin Mining Corp., 2012a, p. 1; 2012b; MBendi Information Services (Pty) Ltd., 2012a).

EuroZinc Mining Corp. (EuroZinc) of Canada continued to explore for gold and base metals, including at the Aljustrel zinc-lead-silver project, which is located in the IPB in south-central Portugal, which is an area known to host numerous multimillion-ton base-metal deposits. EuroZinc had an option to earn a 75% interest in the Aljustrel complex, which hosts five known volcanogenic massive sulfide (VMS) deposits; these types of deposits are an important source of copper and zinc. Aljustrel's final feasibility study estimated total reserves to be 13.8 Mt at average grades of 5.5% zinc, 1.8% lead, and 63 g/t silver (Direcção Geral de Energia e Geologia, 2012; MBendi Information Services (Pty) Ltd., 2012a, b, d, e).

Tungsten.—Beralt's Panasqueira tungsten mine was one of the EU's leading producers of tungsten concentrates. Production from the Panasqueira Mine was 1,032 t in concentrate (W content) in 2011 compared with 1,007 t in 2010, which was an increase of about 2.5%. The Panasqueira Mine had the capacity to produce 1,400 t/yr of tungsten concentrate. According to Beralt, the mine had proven and probable reserves of 1.4 Mt at a grade of 0.233% WO_3 , additional indicated resources of 3.3 Mt at a grade of 0.263% WO_3 , and inferred resources of 1.6 Mt at a grade of 0.224% WO_3 . The main end-use application for tungsten was in the manufacture of cemented carbides (60%), steel and alloys (20%), electrical and electronics products (12%), and catalysts and pigments (8%). Despite lower tungsten prices on the world market, production was continuing at the mine because it was producing concentrate on a long-term contract basis. The planned

expansion of the facility was postponed because of the decline of the tungsten market price, however (table 1; Direcção Geral de Energia e Geologia, 2012; MBendi Information Services (Pty) Ltd., 2012d).

Industrial Minerals

Cement.—In 2011, Portugal produced about the same amount of cement as in 2010 (7.2 Mt). CIMPOR continued to be Portugal's leading cement producer and the second ranked cement producer on the Iberian Peninsula after Cemex España S.A. In addition to cement, CIMPOR also produced aggregates, dry mortars, and precast concrete products. In line with the world economy, 2011 was a year of transition for Portugal's cement industry, and its domestic cement sales decreased to 3.7 Mt in 2011 from 4.6 Mt in 2010. The development of Portugal's infrastructure was expected to increase the demand for CIMPOR's products in the foreseeable future, however (table 1; Cimentos de Portugal, SGPS, S.A., 2012a, p. 8; 2012b, p. 44; 2012c, p. 100–112).

Salt.—Rock salt was the most valuable of the industrial minerals produced in Portugal. The production of rock salt totaled 631,295 t in 2011 compared with 618,961 t in 2010 (table 1; Direcção Geral de Energia e Geologia, 2012).

Mineral Fuels and Other Sources of Energy

Petroleum, Natural Gas, and Coal.—In 2011, Portugal continued to rely on imported energy resources, such as petroleum (75%), natural gas (10%), and coal (5%), for electricity generation. The country's leading domestic energy resource was hydropower, which is an unreliable source of power because it depends on rainfall. Portugal had two crude oil refineries, which were located in the coastal cities of Porto and Sines. Argus Resources Ltd. of the United Kingdom built the petroleum refinery, which is located 90 km south of Lisbon; the refinery had a production capacity of 250,000 barrels per day (bbl/d) and cost about \$5 billion to build. Government-owned Petróleos de Portugal (Petrogal) operated the Porto and the Sines refineries, which had a combined capacity of 305,000 bbl/d. The Government was planning to invest about \$2 billion to upgrade the country's refining processes during 2012. The political and legal issues surrounding the EU-Russia energy relationship continued to be under review owing to concerns about the reliability of the energy supply from Russia. Production data for mineral fuels and refined products are shown in table 1 (MBendi Information Services (Pty) Ltd., 2012c; U.S. Energy Information Administration, 2012).

Renewable Energy.—Owing to Portugal's high dependence on imported energy sources, the country was emphasizing solar, wave, and wind power investment. Portugal was planning to invest about \$11 billion in renewable energy projects by 2012, of which \$2.5 billion would be for building the infrastructure for wind power. The financial crisis and the economic distress in many EU countries, however, were expected to have a negative effect on the wind power industry, and the increasing scarcity of finance would be a challenge to decreasing Portugal's dependence on mineral fuel imports. In

2011, the wind power production capacity in Portugal increased to 4,083 megawatts (MW) from a revised 3,706 MW in 2010, or by about 10.2%. The European countries with the largest capacity wind power installations were Germany (29,060 MW), Spain (21,674 MW), France (6,800 MW), Italy (6,747 MW), and the United Kingdom (6,540 MW). Other countries had lower capacity than Portugal, such as Denmark (3,871 MW), Sweden (2,907 MW), the Netherlands (2,328 MW), and Ireland (1,631 MW) (Alexander's Gas & Oil Connections, 2012; BP p.l.c., 2012, p. 41; European Wind Energy Association, The, 2012, p. 6–7; U.S. Energy Information Administration, 2012).

Outlook

Portugal continued to be the EU's leading producer of copper, lithium, rock salt, silver, tungsten, and zinc. The structure of the Portuguese mineral industry could change in the near future owing to significant mining exploration by several foreign companies, particularly for copper, gold, kaolin, lead, lithium, pyrites, and tin. Feasibility studies for potential precious and base-metal projects were underway in the Portuguese zone of the IPB, which was the prime area for exploration activity. Owing in part to the financial crisis and the economic distress in many EU countries, Portugal is considering increasing investments in alternative energy sources, such as hydropower, solar, wave, wind, and other renewable energy sources to make the country less dependent on imported energy. The Government is also considering making improvements in the efficiency and performance of alternative energy sources by introducing new technologies. The increasing scarcity of finance, however, presents a tremendous challenge to the goal of decreased dependence on imported fuels, at least in the short term. If the financial situation in the EU improves, then Portugal's dependence on fuel mineral imports could be decreased in the medium term (Alexander's Gas & Oil Connections, 2012; MBendi Information Services (Pty) Ltd., 2012d; European Wind Energy Association The, 2012, p. 4, 11).

References Cited

- Alexander's Gas & Oil Connections, 2012, Portugal plans EUR 8.1 bn investment in renewable energy by 2012: Alexander's Gas & Oil Connections. (Accessed August 15, 2012, at <http://www.gasandoil.com/news/2007/04/n71728>.)
- BP p.l.c., 2012, BP statistical review of world energy: London, United Kingdom, BP p.l.c., June, 48 p. (Accessed August 15, 2012, at http://www.bp.com/assets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/pdf/statistical_review_of_world_energy_full_report_2012.pdf.)
- Carlin, J.F., Jr., 2012, Tin: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 170–171.
- Cimentos de Portugal, SGPS, S.A., 2012a, CIMPOR—Anúncio dos resultados consolidados 2011: Cimentos de Portugal, SGPS, S.A. (Accessed August 21, 2012, at <http://www.cimpor.pt/cache/bin/CIMPORAnuncioResultados2011Port-13677.pdf>.)
- Cimentos de Portugal, SGPS, S.A., 2012b, CIMPOR—Relatório & contas, 2011: Cimentos de Portugal, SGPS, S.A., 336 p. (Accessed August 21, 2012, at http://www.cimpor.pt/cache/bin/Cimpor_-_Relatorio_e_Contas_2011-14164.pdf.)
- Cimentos de Portugal, SGPS, S.A., 2012c, CIMPOR—Sustainability report 2011: Cimentos de Portugal, SGPS, S.A., 128 p. (Accessed August 21, 2012, at http://www.cimpor.pt/cache/bin/re_l_sust_IN_bx_EN-15804.pdf.)
- Direção Geral de Energia e Geologia, 2012, Divisão para a Pesquisa e Exploração de Petróleo: Direção Geral de Energia e Geologia. (Accessed August 14, 2012, at <http://www.dgge.pt/>.)
- European Wind Energy Association, The, 2012, Annual report 2011, Thirty years growing together: Brussels, Belgium, The European Wind Energy Association, 48 p. (Accessed August 22, 2012, at http://www.ewea.org/fileadmin/ewea_documents/documents/publications/reports/EWEA_Annual_Report_2011.pdf.)
- Federation of International Trade Associations, The, 2012, Portugal information: The Federation of International Trade Associations. (Accessed August 14, 2012, at <http://fita.org/countries/portugal.html>.)
- Instituto Nacional de Estatística, 2012, Statistics Portugal: Instituto Nacional de Estatística. (Accessed August 16, 2012, at http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_cnacionais&xlang=en.)
- International Monetary Fund, 2012, World economic outlook: International Monetary Fund, April, 250 p. (Accessed July 1, 2012, at <http://www.imf.org/external/pubs/ft/weo/2012/01/pdf>.)
- Jaskula, B.W., 2012, Lithium: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 94–95.
- Lundin Mining Corp., 2012a, Neves Corvo Mine—Portugal—Project description and location: Lundin Mining Corp., June, 7 p. (Accessed August 21, 2012, at http://www.lundinmining.com/i/pdf/Summary_Report_Neves-Corvo.pdf.)
- Lundin Mining Corp., 2012b, Neves Corvo, Portugal: Lundin Mining Corp. (Accessed August 21, 2012, at <http://www.lundinmining.com/s/Neves-Corvo.asp>.)
- MBendi Information Services (Pty) Ltd., 2012a, Copper mining in Portugal—Overview: MBendi Information Services (Pty) Ltd. (Accessed August 15, 2012, at <http://www.mbendi.com/indy/ming/cppr/eu/po/p0005.htm>.)
- MBendi Information Services (Pty) Ltd., 2012b, Mining in Portugal—Overview: MBendi Information Services (Pty) Ltd. (Accessed August 15, 2012, at <http://www.mbendi.com/indy/ming/au/po/p0005.htm>.)
- MBendi Information Services (Pty) Ltd., 2012c, Oil and gas in Portugal—Exploration & production: MBendi Information Services (Pty) Ltd. (Accessed August 15, 2012, at <http://www.mbendi.com/indy/oilg/au/po/p0005.htm>.)
- MBendi Information Services (Pty) Ltd., 2012d, Tungsten mining in Portugal: MBendi Information Services (Pty) Ltd. (Accessed August 15, 2012, at <http://www.mbendi.com/indy/ming/tung/au/po/index.htm>.)
- MBendi Information Services (Pty) Ltd., 2012e, Zinc and lead mining in Portugal—Overview: MBendi Information Services (Pty) Ltd. (Accessed August 15, 2012, at <http://www.mbendi.com/indy/ming/ldzc/au/po/p0005.htm>.)
- Shedd, K.B., 2012, Tungsten: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 176–177.
- U.S. Central Intelligence Agency, 2012, Portugal, *in* The world factbook: U.S. Central Intelligence Agency. (Accessed July 1, 2012, at <https://www.cia.gov/library/publications/the-world-factbook/geos/po.html>.)
- U.S. Department of State, 2012, Portugal: U.S. Department of State background note, January 4. (Accessed July 1, 2012, at <http://www.state.gov/r/pa/ei/bgn/3208.htm>.)
- U.S. Energy Information Administration, 2012, Portugal energy profile: U.S. Energy Information Administration. (Accessed July 1, 2012, at <http://www.eia.gov/countries/country-data.cfm?fips=PO>.)
- World Trade Organization, 2012, Trade profiles, Portugal: World Trade Organization, 196 p. (Accessed August 14, 2012, at http://stat.wto.org/CountryProfiles/PF_e.htm.)

TABLE 1
PORTUGAL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^P
METALS					
Aluminum, secondary ^c thousand metric tons	18	18	18	18	18
Arsenic, white ^c	15	15	15	15	15
Beryl, concentrate, gross weight ^c	5	5	5	5	5
Copper, mine output, Cu content	90,247	89,504	86,500	74,426 ²	79,686 ²
Iron and steel:					
Iron ore and concentrate, manganiferous: ^c					
Gross weight	14,000	14,000	14,000	14,000	14,000
Fe content	10,000	10,000	10,000	10,000	10,000
Metal: ^c					
Pig iron thousand metric tons	100	100	100	100	100
Steel:					
Crude do.	1,847 ^{r,3}	1,630 ^{r,3}	1,587 ^{r,3}	1,351 ^{r,3}	1,400
Hot rolled do.	800	800	800	800	800
Lead, refined, secondary ^c	3,000	3,000	3,000	3,000	3,000
Manganese, Mn content of iron ore ^c	300	300	300	300	300
Silver, mine output, Ag content kilograms	24,167	28,800	22,450	23,710	28,380 ²
Tin, mine output, Sn content	41	29	34	22	39 ²
Tungsten mine output, W content	846	982	1,038 ^r	1,007 ^r	1,032 ²
Zinc, mine output, Zn content	24,380	39,224	501	6,421	4,227 ²
INDUSTRIAL MINERALS					
Barite	25	171	1,078	15	--
Calcium carbonate ^c	100,000	100,000	100,000	100,000	100,000
Cement, hydraulic thousand metric tons	12,631	6,650	6,900	7,200 ⁴	7,200 ⁴
Clays:					
Kaolin ⁵	183,598	231,346	274,925	273,890 ^r	322,041 ²
Refractory	320,253	NA	NA	NA	NA
Feldspar	168,606	157,539	157,476 ^r	121,827 ^r	123,600 ²
Gypsum and anhydrite	418,035	372,731	335,189	336,755 ^r	337,272 ²
Lime, hydrated and quicklime ^c	200,000	200,000	200,000	200,000	200,000
Lithium minerals, pegmatite (1.5% Li)	34,755	34,888	37,359	40,109 ^r	37,534 ²
Nitrogen, N content of ammonia ^c	244,000	244,000	244,000	244,000	244,000
Pyrite and pyrrhotite, including cuprous, gross weight ^c	8,000	8,000	8,000	8,000	8,000
Salt, rock	590,588	606,545	594,578	618,961	631,295 ²
Sand thousand metric tons	9,849	NA	9,585	7,933 ^r	NA
Sodium compounds, n.e.s.: ^{c,6}					
Soda ash	150,000	150,000	150,000	150,000	150,000
Sulfate	50,000	50,000	50,000	50,000	50,000
Stone:					
Basalt	398,767	NA	326,730	240,150 ^r	NA
Calcareous:					
Dolomite thousand metric tons	1,035	NA	144	257 ^r	NA
Limestone, marl, calcite do.	48,955	NA	43,277	33,756 ^r	NA
Marble do.	741	578	572	94 ^r	NA
Gabbro do.	100 ^e	100	100	693 ^r	NA
Granite:					
Crushed do.	NA	NA	NA	NA	NA
Ornamental do.	1,020	877	934	21,436 ^r	NA
Graywacke do.	189	NA	NA	NA	NA
Ophite do.	42	NA	NA	NA	NA
Quartz do.	7	9	35	31	29 ²
Quartzite do.	78	NA	NA	45 ^r	NA
Schist do.	820	NA	679	83 ^r	NA
Slate do.	38	38	20	NA	NA
Syenite do.	131	NA	NA	NA	NA

See footnotes at end of table.

TABLE 1—Continued
 PORTUGAL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity	2007	2008	2009	2010	2011 ^P
INDUSTRIAL MINERALS—Continued					
Sulfur, byproduct, all sources ^c	25,000	25,000	25,000	25,000	25,000
Talc	12,367	11,220	11,567	11,981 ^r	15,462 ²
MINERAL FUELS AND RELATED MATERIALS					
Coke, metallurgical ^c thousand metric tons	300	300	300	300	300
Gas, manufactured ^c thousand cubic meters	125	125	125	125	125
Petroleum production ⁷ thousand 42-gallon barrels	2,321	2,730	1,728	1,723	1,725
Petroleum refinery products: ⁶					
Liquefied petroleum gas do.	4,176 ²	4,444 ²	4,450	4,450	4,450
Gasoline do.	21,683 ²	17,805 ²	18,000	18,000	18,000
Kerosene and jet fuel do.	6,516 ²	6,508 ²	6,500	6,500	6,500
Distillate fuel oil do.	35,396 ²	34,846 ²	35,000	35,000	35,000
Residual fuel oil do.	19,834 ²	19,099 ²	19,000	19,000	19,000
Unspecified do.	15,323 ²	15,709 ²	16,000	16,000	16,000
Refinery fuel and losses do.	3,800	3,800	3,800	3,800	3,800
Total do.	106,728 ²	102,211 ²	103,000	103,000	103,000

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

¹Table includes data available through August 21, 2012.

²Reported figure.

³Reported by Worldsteel Association, 2010 and 2011.

⁴Reported by Cimentos de Portugal, SGPS, S.A. (CIMPOR).

⁵Includes washed and unwashed kaolin.

⁶Not elsewhere specified.

⁷Reported figure. Source: U.S. Energy Information Administration, 2007 through 2011.

Source: USGS Minerals Questionnaires, Portugal, 2007 through 2011.

TABLE 2
PORTUGAL: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Calcium carbonate		Omya Mineral Portuguesa Lda. (Salmon & Cia Lda.)	Mine and plant at Fatima	100
Cement		Cimentos de Portugal, SGPS, S.A. (CIMPOR) (Government, 100%)	Plants (3) at Alhandra, Loule, and Souselas	12,000
Copper, concentrate		Lundin Mining Corp.	Neves-Corvo Mine near Castro Verde	120
Do.		do.	Lombador Mine near Castro Verde	20
Diatomite		Sociedade Anglo-Portuguesa de Diatomite Lda.	Mines at Obidos and Rolica	150
Feldspar		A.J. da Fonseca Lda.	Seixigal Quarry, Chaves	10
Ferroalloys		Electrometalúrgica S.A.R.L.	Plant at Setubal	100
Kaolin		Saibraís Arelas e Caulinos S.A. (Denain Anzin Mineraux S.A.)	Mines at Casal dos Bracais and Mosteiros	175
Petroleum, refined	42-gallon barrels per day	Petróleos de Portugal (Petrogal) (Government, 100%)	Refineries at Porto and Sines	305,000
Do.	do.	Argus Resources Ltd. (private 100%)	Refinery at Sines	250,000
Pyrite		Pirites Alentejanas S.A. (EuroZinc Mining Corp.)	Mine at Aljustrel, plant at Setubal	100
Steel, crude		SN Servicos S.A. (Metalúrgica Galaica S.A., 100%)	Steelworks at Maia and Seixal	600
Do.		Lusosider Aços Planos S.A. (Corus Group, 50%, and Sollac S.A., 50%)	Rolling mill at Seixal	800
Tin		Primary Metals Corp.	Neves-Corvo Mine near Castro Verde	15
Tungsten, concentrate	metric tons	Beralt Tin & Wolfram (Portugal) SARL	Panasqueira Mine and plant at Barroca	1,400
Uranium	do.	Empresa Nacional de Uranio S.A. (Government, 100%)	Mines at Guargia, plant at Urgeirica	150
Zinc, concentrate	do.	Lundin Mining Corp.	Neves-Corvo Mine near Castro Verde	150,000
Do.	do.	do.	Lombador Mine near Castro Verde	NA
Zinc, refined	do.	RMC Quimigal S.A.R.L.	Electrolytic plant at Barreiro	12

Do., do. Ditto. NA Not available.