



2014 Minerals Yearbook

PORTUGAL

THE MINERAL INDUSTRY OF PORTUGAL

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In 2014, the gross domestic product (GDP) of Portugal (measured at market prices and using 2011 as the base year) was \$231.6 billion¹ compared with \$227.4 billion in 2013, for a nominal GDP growth rate of 1.9% and a reported real GDP growth rate of 0.9%. The country also reported an unemployment rate of 13.9% and a total employed workforce of 4.51 million people; the majority of the workforce was employed in the services, commerce, and industrial sectors. In the long term, Portugal's gross value added in the services sector had increased; in 2014, it reached 76.1% of total national production compared with 66.4% in 1995. In contrast, the gross value added of the country's industry, energy, water, and sewage sector decreased to 17.1% in 2014 from 21.6% in 1995, and that of its construction sector decreased to 4.5% in 2014 from 6.5% in 1995. Wages in Portugal in 2014 decreased by 0.2%, and the inflation rate was 0.2% in metropolitan Portugal, which resulted in a decrease of 0.4% in real salaries. The Government deficit in 2014 amounted to 2% of the country's GDP, and its national debt was equivalent to 130.2% of the GDP, making Portugal the third-most indebted country in the European Union (EU) after Greece and Italy.

Portugal ranked 13th in the EU in terms of GDP in 2014. The output value of its industrial sector accounted for 21.6% of the GDP (U.S. Central Intelligence Agency, 2015; Instituto Nacional de Estatística, 2015b, p. 23; 2015c, p. 208, 210, 314, 317, 642; World Bank, The, 2016).

Portugal is endowed with metallic and nonmetallic mineral resources, such as copper, feldspar, iron ore, kaolin, limestone, marble, tin, tungsten, and zinc. In 2014, the principal mineral commodities produced in Portugal for which information was available included gypsum, lithium (Portugal was the sixth-ranked producer in the world), ornamental stone, salt, silver, talc, and tungsten (ninth-ranked producer in the world) (table 1; Jaskula, 2016; Shedd, 2016). One-half of the Iberian Pyrite Belt (IPB) is in Portuguese territory, where volcanogenic massive sulfide deposits, such as the Neves-Corvo deposit, have been exploited. The IPB is considered the primary source of base metals in the EU, and it was under extensive exploration for various metallic minerals (Veiga, 2013).

Minerals in the National Economy

In 2014, the manufacture of fabricated metal products, except machinery and equipment, amounted to 6.5% of Portugal's sales and revenues, and the manufacture of coke and refined petroleum products amounted to 11.1%. The production from mining and quarrying decreased by 6.46% in 2014 compared with that of 2013 and amounted to 2.58% of all industrial production, whereas the production of energy decreased by 1.05% and amounted to 17.8% of all industrial production.

¹Where necessary, values have been converted from euro area euros (EUR) to U.S. dollars (US\$) at an average annual exchange rate of EUR0.7489=\$1.00 for 2014 and EUR0.73=\$1.00 for 2013.

The production of electricity, gas, steam, and air conditioning supply increased by 2.89% in 2014 and amounted to 15.69% of all industrial production. Most of the electricity produced in Portugal in 2014 was thermal electricity (46.8%), followed by hydropower-generated electricity (28.9%) and wind-generated electricity (23.3%). A total of 15,458 licenses were issued in 2014, of which 57.9% were licenses issued for new construction, which was a decrease of 5.5% in the number of new construction licenses issued compared with that of 2013, and a total of 14,846 construction projects were finished in 2014, of which 9,793 were new construction (Instituto Nacional de Estatística, 2015b, p. 35–36; 2015c, p. 467, 479).

Production

In 2014, metal production in Portugal had mixed results. The production of mined zinc increased by 32% compared with that of 2013; secondary lead, by an estimated 25%; and mined silver, by 6%, whereas the production of mined tin decreased by 11%, and copper, by 2%. The production of crude steel remained about the same as in 2013.

The production results in the industrial minerals sector were also mixed. The production of gypsum and anhydrite increased by about 10%, and that of clays (including kaolin) increased by about 7% compared with that of 2013. The production of salt, on the other hand, decreased by 85%, the reported production of lithium decreased by 12%, and the production of feldspar remained about the same as in 2013. The most notable changes in the production of sand and stone were the increases in the production of quartz by an estimated 75%; talc, 32%; basalt, about 24%; and limestone, 8%; and the decreases in the production of greywacke by an estimated 74%; schist and slate, 23% each; and granite, 19% (table 1).

Structure of the Mineral Industry

Companies that produce and process mineral commodities in Portugal were privately owned. The principal companies that produced metallic mineral commodities in 2014 were Sociedade Mineira de Neves-Corvo S.A. (Somincor) (owned by Lundin Mining Corp. of Canada), which produced copper and zinc concentrates; Pegmatítica-Sociedade Mineira de Pegmatites Lda. (with its main operation in Mangualde), which produced lithium minerals and pegmatite; and Sojitz Beralt Tin & Wolfram (Portugal) S.A. (owned by Sojitz Corp. of Japan), which produced tin and tungsten concentrates. Table 2 is a list of major mineral industry facilities, their locations, and their production capacities.

Mineral Trade

In 2014, Portugal's exports amounted to \$64 billion, and its imports amounted to \$78.8 billion. Portugal's exports

to countries that were members of the EU amounted to \$45.5 billion, and its imports from EU members were valued at \$58.9 billion. The leading export partners, in terms of value, were Spain, which received 23.5% of Portugal's exports, Germany and France (11.7% each), Angola (6.6%), the United Kingdom (6.1%), and the United States (4.4%). Portugal's leading import partners were Spain, which supplied 32.6% of Portugal's imports; Germany (12.3%); France (7.1%); Italy (5.2%); the Netherlands (5.1%); the United Kingdom (3.1%); Angola, Belgium, and China (2.7% each); and the United States (1.6%) (Instituto Nacional de Estatística, 2015b, p. 30–31).

In 2014, the value of imported energy-producing mining and quarrying products was \$10.3 billion, and the value of imported non-energy-producing mining and quarrying products amounted to \$156 million and made up only 1.5% of the mining and quarrying imports. The value of exported energy-producing mining and quarrying products was \$9.1 million, and that of non-energy-producing mining and quarrying products was \$746 million. The value of imported mining and quarrying products made up 13.3% of the total value of all imported goods, and the value of exported mining and quarrying products made up 1.2% of all exports in 2014 (Instituto Nacional de Estatística, 2014c, p. 249, 401).

Commodity Review

Metals

Copper and Zinc.—Somincor is located 100 kilometers (km) north of Faro, in the western area of the IPB. The company held a mining concession covering an area of 13.5 square kilometers in the parishes of Santa Barbara de Padroes and Senhora da Graça de Padroes. The copper resources of the Neves-Corvo Mine were 14.2 million metric tons (Mt) of measured resources, 55.1 Mt of indicated resources, and 13.4 Mt of inferred resources at grades of 4.3%, 2.3%, and 1.7%, respectively. The proven reserves at Neves-Corvo were estimated to be about 6.3 Mt grading 3.9% copper, 1.1% zinc, 0.2% lead, and 39 grams per metric ton (g/t) silver, and the probable reserves were estimated to be 19.7 Mt grading 2.4% copper, 0.7% zinc, 0.2% lead, and 36 g/t silver (Lundin Mining Corp., 2015a, b).

The capacity of the Neves-Corvo's copper plant was about 2.6 million metric tons per year (Mt/yr) of ore extraction and 300,000 metric tons per year (t/yr) of concentrate production. Its zinc plant had the capacity to process about 1.0 Mt/yr of ore to produce 100,000 t/yr of concentrate. In 2014, Neves-Corvo reported that production from its Neves-Corvo copper mine was 51,369 metric tons (t) of copper content and 67,378 t of zinc content (Government estimates vary and were likely to be revised later). The decrease in copper production in 2014 was owing to an unexpected decrease in copper content in the copper ores mined in the first half of 2014. The increase in zinc production likely resulted from an increased proportion of zinc ore being derived from the higher grade Lombador Mine. The company reported that more than 50% of the zinc ore at the mine was being sourced from this area (Lundin Mining Corp., 2015a, b).

Tungsten.—On August 1, Colt Resources Inc. of Canada reported that it had obtained positive results from intercepts at two of the first three holes recently drilled in the gap zone at its Tabuaco tungsten project, which was part of the company's resource expansion drilling program that started on June 18. The company reported that, with respect to rock mechanics, the condition of the entire sequence intersected by these holes, both the mineralized zones and the hanging wall rocks, was very good and appeared to be superior to those encountered elsewhere on the project. The company hypothesized that the new deposit could extend further along the strike to the northwest as well as down dip to the southwest beneath the granite body. The company reported that the drilling program would continue and that a series of followup drill holes were being drilled nearby to develop a better understanding of the three-dimensional geometry of this new zone (Colt Resources Inc., 2014, p. 1–2).

Sojitz Beralt Tin & Wolfram (Portugal) operated the Panasqueira tungsten mine located in Barroca, Castelo Branco District, in east-central Portugal. The mine was one of the EU's leading producers of tungsten concentrate, with a production capacity of 1,300 t/yr of tungsten trioxide concentrate (WO₃). In 2014, the tungsten content in concentrate was 671 t compared with 692 t in 2013 (tables 1, 2).

Industrial Minerals

Cement.—Cimentos de Portugal, SGPS, S.A., which was owned by Grupo Camargo Correa, continued to be Portugal's leading cement producer. The company had a worldwide cement production capacity of 46.9 Mt/yr, of which 9.1 Mt/yr was in Portugal. The company reported that it had sold 4.371 Mt of cement and clinker in Portugal in 2014 and 30.36 Mt worldwide, making its Portuguese sales about 14.4% of its total sales in 2014. The company employed 863 people in Portugal in 2014. The company reported that the construction sector in Portugal was sensitive to the cutback in private investment and budgetary constraints by the Government, which affected cement consumption in the country. The company reported that positive signals in the market were observed in 2014, although the evolution of the construction market was still unfavorable (Cimentos de Portugal, SGPS, S.A., 2015, p. 21, 29).

Mineral Fuels and Other Sources of Energy

Renewable Energy.—In 2014, 61.4% of the energy produced in Portugal was from renewable sources; this was an increase of 3.7% compared with that in 2013 and was equivalent to 2.787 Mt of oil equivalent. This increase was mainly owing to the increase in use of hydropower for the production of electricity. In 2014, hydropower represented 50.6% of all electricity produced by renewable sources, followed by wind power, 37.4%, and thermal power, 9.4%; the remainder was produced by other sources, such as solar and geothermal (Instituto Nacional de Estatística, 2015a, p. 129).

Outlook

Portugal's current economic conditions are not conducive for a rapid expansion of its minerals sector. The country's economy is recovering slowly, however, and this recovery could lead to investment opportunities for its construction industry.

Production of metal ores and concentrates in Portugal is expected to increase, and projects such as the Neves-Corvo Mine and the Tabuaco tungsten project will likely increase the interest of investors in the country. Continued investments in alternative energy sources, particularly hydroelectric and offshore wind farms, could further decrease the country's dependence on imported energy; however, the lack of other sizable energy resources will continue to make Portugal dependent on imported energy sources for the foreseeable future.

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TABLE 1
PORTUGAL: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2010	2011	2012	2013	2014
METALS					
Copper, mine output, Cu content	74,426	79,686	74,043	77,236	75,433
Lead, refined, secondary	9,000	6,000	5,000	4,000	5,000 ^e
Silver, mine output, Ag content kilograms	23,710	28,380	27,244	37,025	39,350
Steel, crude thousand metric tons	1,543	1,942	1,960	2,050	2,070
Tin, mine output, Sn content	22	39	42	84	75
Tungsten, mine output, W content	799	819	763	692	671
Zinc, mine output, Zn content	6,421	4,227	30,008	51,026	67,384
INDUSTRIAL MINERALS					
Barite	15	--	--	--	--
Cement, hydraulic thousand metric tons	7,200 ³	7,200 ³	7,200	7,500 ^e	7,500 ^e
Clay, kaolin, washed and unwashed	273,890	322,091	321,039	248,008 ^r	264,872
Feldspar	121,827	114,600	109,273	70,057	70,865
Gypsum and anhydrite	336,755	337,272	321,988	299,038	328,730
Lithium minerals, pegmatite (1.5% Li)	40,109	37,534	20,698	19,940	17,459
Salt, rock	618,961	631,295	520,284	473,095	69,702
Sand thousand metric tons	7,933	7,209	7,248	6,110	6,490 ^e
Stone:					
Basalt	240,150	361,414	325,388	242,821 ^r	300,000 ⁴
Calcareous:					
Dolomite thousand metric tons	257	195	--	--	--
Limestone, marl, calcite do.	33,756	30,477	25,260	21,275 ^r	23,000 ^e
Marble do.	94	125	292	418	NA
Gabbro do.	693	94	467	296 ^r	NA
Granite, ornamental do.	21,436	21,758	19,099	13,630 ^r	11,000 ⁴
Graywacke do.	NA	526	104	74	19 ⁴
Quartz do.	31	29	38	4 ^r	7
Quartzite do.	45	53	42	30 ^r	NA
Schist do.	83	70	925	147 ^r	113
Slate do.	NA	NA	13	13	10
Talc	11,981	15,462	15,131	11,349	14,942
MINERAL FUELS AND RELATED MATERIALS					
Petroleum refinery products ^e thousand 42-gallon barrels	92,000 ^r	83,000 ^r	87,600 ^r	104,000 ^r	105,000 ^e

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

¹Table includes data available through February 16, 2016.

²In addition to the commodities listed, aluminum (secondary), ammonia, beryl concentrate, calcium carbonate, granite (crushed), iron ore and concentrate, lime (hydrated lime and quicklime), manganese, manufactured gas, metallurgical coke, pig iron, pyrite and pyrrhotite (including cuprous), refractory clay, sodium compounds, steel (hot-rolled), sulfur, syenite, and white arsenic were thought to be produced, but available information was inadequate to make reliable estimates of output.

³Reported by Cimentos de Portugal, SGPS, S.A.

⁴Estimated by Statistics Portugal.

TABLE 2
PORTUGAL: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(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., 50%, and Omya AG, 50%)	Mine and plant at Fatima	100
Cement		Cimentos de Portugal, SGPS, S.A. (Cimpor) (Grupo Camargo Correa, 94.19%)	Plants (3) at Alhandra, Loule, and Souselas	9,100
Do.		Companhia Geral de Cal e Cimento, S.A. (Secil) [Sociedade de Investimento e Gestão, SGPS, S.A. (Semapa), 100%]	Plants at Setubal, Leiria, and Alcobaca	4,000
Copper, concentrate		Sociedade Mineira de Neves-Corvo (Somincor), S.A. (Lundin Mining Corp., 100%)	Neves-Corvo Mine and processing plant near Castro Verde	300
Do.		do.	Lombador Mine near Castro Verde	20
Do.		Minas do Alentejo, S.A. (Almina)	Alentejo	NA
Diatomite		Sociedade Anglo-Portuguesa de Diatomite Lda.	Mines at Obidos and Rolica	150
Kaolin		Saibraís Arelas e Caulinos S.A. (Denain Anzin Mineraux S.A.)	Mines at Casal dos Bracais and Mosteiros	175
Lithium minerals, pegmatite		Pegmatítica-Sociedade Mineira de Pegmatites Lda	Mangualde	NA
Petroleum, refined	42-gallon barrels per day	Petróleos de Portugal S.A. (Galp Energia, SGPS, S.A., 100%)	Refineries at Porto and Sines	330,000
Pyrite		Minas do Alentejo, S.A. (Almina)	Alentejo	NA
Steel, crude		Siderurgia Nacional S.A. (Metalúrgica Galaica S.A., 100%)	Steelworks at Maia and Seixal	600
Steel, semimanufactured		Lusosider Aços Planos S.A.	Rolling mill at Seixal	550
Stone, natural	thousand square meters	Airemármoreis – Extração de Mármoreis Lda	Serra de Aire, 6 quarries	100
Do.		Granital - Granitos de Portugal, S.A. (EIP Group, 60%)	Quarries at Bardeira, Chacins, Favaco, Maria Ribeira, Pedra da Moura, Pedra do Guarda, Preto F, and Rosa Sta. Eulalia	NA
Tin	metric tons	Sojitz Beralt Tin & Wolfram (Portugal) S.A. (Sojitz Corp., 100%)	Panasqueira Mine and plant at Barroca	42
Tungsten, concentrate	do.	do.	do.	1,300
Zinc, concentrate	do.	Sociedade Mineira de Neves-Corvo (Somincor), S.A. (Lundin Mining Corp., 100%)	Neves-Corvo Mine and processing plant near Castro Verde	100,000

Do., do. Ditto. NA Not available.