



# 2011 Minerals Yearbook

---

## GREECE

---

# THE MINERAL INDUSTRY OF GREECE

By Harold R. Newman

Mining has been a part of Greek civilization since before 1,000 B.C when Greeks first began extracting industrial minerals and metals for use. In 2011, the mineral industry was composed of the sectors that mine and process metallic and nonmetallic minerals and mineral fuels. Many mining companies were well organized and well developed and had a strong export orientation.

In 2011, the mining industry was regulated by the Mining Code, Legislative Decree 210/1973, as amended by a number of laws and ordinances on technical and procedural issues, such as law No. 669/1977 on the exploitation of ornamental rocks and industrial minerals; law No. 428/84, as amended by law No. 2115/93 on the exploitation of aggregates; and the Regulation on Mining and Quarrying Activities, which includes the Health and Safety Regulation on Mining and Quarrying. Greek's mineral industry was also subject to the European Union (EU) Environmental Impact Assessment Directives and the EU Mining Waste Directive 2006/21/EC (United Nations, 2011).

Geologic studies in Greece were done primarily by the Institute of Geology and Mining Exploration (IGME). The IGME studies provided general information on deposit size and location and the quality of various minerals. Most exploration activity was focused on northern Greece, which was thought to contain a significant amount of exploitable minerals (Institute of Geology and Mineral Exploration, 2011).

It was reported that the continuing financial crisis in Greece in 2011 was the result of many years of public finance mismanagement, excessive borrowing, and incorrect reporting of the inflation and the gross domestic product (GDP) data. The Government's public debt increased to 160% of the GDP in 2011 from 115% of the GDP in 2009, which resulted in higher borrowing costs and loss of market access (U.S. Department of State, 2011).

## Minerals in the National Economy

The mineral industry produced and (or) processed metals, industrial minerals, and mineral fuels. Although mineral industry activity had traditionally been an important segment of Greek industry, during the past 20 years, the significance of the mineral industry to the Greek economy had gradually decreased, and, by 2011, its financial effect on the economy was small.

Most of the Greek companies that dealt in metal fabrication, mining of minerals, and refined metal production or processing were well established and had a strong export orientation.

Trade was important in the export and import of mineral fuels and mining products. In 2010 (the latest year for which data were available), Greek merchandise exports totaled \$21.4 billion, of which fuels and mining accounted for \$26.9 million. Imports totaled \$63.2 billion, of which fuels and mining output accounted for \$20.7 million (World Trade Organization, 2011).

## Production

Greece was a global supplier of several industrial minerals, and production of these mineral commodities was closely tied to the export market (table 1). In 2011, Greece was the world's second ranked producer of perlite (26%) after the United States and the world's sixth ranked producer of pumice (8%). It also was estimated to have produced about 8% of the world's bentonite and 1% of the world's bauxite. Greece was the only country that produced huntite, which is a carbonate mineral used as a fire retardant for polymers. Bauxite, which is the raw material needed for aluminum production, and lignite, which was used as a fuel in powerplants, were the country's two most abundant minerals. In terms of the value of production, bauxite was the most important of Greece's mineral commodities (Bolen, 2012; Bray, 2012; Crangle, 2012; Virta, 2012).

## Structure of the Mineral Industry

The major mineral commodities and the companies that produced them in 2011 are listed in table 2. Nearly all companies were privately owned; Government ownership was limited to the mineral fuels sector.

## Commodity Review

### Metals

**Bauxite and Alumina and Aluminum.**—In 2011 Greece continued to be a significant supplier of bauxite to world markets and maintained its position as one of the world's few sources of bauxite for nonmetallurgical markets. The three bauxite producers in Greece were Delphi-Distomon S.A., Hellenic Mining Enterprises S.A., and S&B Industrial Minerals S.A. S&B Industrial Minerals was the country's leading bauxite producer and had an output capacity of 2 million metric tons year (Mt/yr) exclusively from underground sites located in the areas of Amfissa and Distomon. Delphi-Distomon and Hellenic Mining Enterprises supplied the nonmetallurgical markets (Industrial Minerals, 2011a).

All Greece's major bauxite deposits are located in central Greece within the Parnassos-Ghiona geotectonic zone and on Evvoia Island. Greece's estimated 600 million metric tons (Mt) of bauxite reserves were of boehmitic and diasporic type (S&B Industrial Minerals S.A., 2011).

Aluminium S.A. produced alumina from bauxite through filtration and separation and aluminum from alumina through electrolysis. The company's industrial plant had the capacity to produce 1.1 Mt/yr of alumina and 180,000 metric tons per year (t/yr) of aluminum. The aluminum was marketed to automobile manufacturers and manufacturers of building materials and packaging (Mytilineos Group, 2011).

**Gold.**—European Goldfields Ltd. of Canada announced that it had received final approval to build two gold mines,

the Olympias Mine and the Stratoni Mine, which are located in northern Greece near Thessaloniki. European Goldfields stated that it would spend about €410 million<sup>1</sup> (\$560 million) to build the mines and a total of about €1.3 billion (\$1.8 billion) throughout the life of the mines. European Goldfields expected the new mines to produce about 9,950 kilograms per year (kg/yr) of gold after the mines start initial production. This output was expected to increase to 14,175 kg/yr of gold, including byproduct metals, such as lead and silver, in 2015 when the mines were scheduled to reach full production (Topf, 2011).

At yearend, Glory Resources Ltd. of Australia announced that it had completed a settlement to acquire 100% of Cape Lambert Resources Ltd. of Australia's Sappes gold project, which is located in northeastern Greece about 30 kilometers (km) northwest of the port city of Alexandroupolis. The Sappes project is located on a 20.1-square-kilometer lease and included the development of the underground Viper deposit and an open pit at the St. Demetrios deposit. The Sappes project is located about 15 km from El Dorado Corp. of Canada's Perama Hill gold project, which was thought to contain an estimated resource of about 54,000 kilograms of gold (Glory Resources Ltd., 2011).

**Lead, Silver, and Zinc.**—The Stratoni Mine was a producing lead-silver-zinc operation. The Stratoni mineralization was classified as lead-silver-zinc carbonate replacement type mineralization, with galena, pyrite, and sphalerite as the main ore minerals. Resources at the Stratoni Mine were contained within the Mavres Petres ore body, which had estimated proven and possible reserves of 2.3 Mt grading 9.9% zinc, 7.7% lead, and 203 grams per metric ton silver. The mine, which had an expected life of 10 years from the commencement of mining in 2005, produced a lead-silver concentrate and a zinc concentrate by a conventional underground drift-and-fill method (European Goldfields Ltd., 2011).

**Nickel.**—Nickel laterite mineral resources were estimated to be about 250 Mt and were spread across three areas: central Euboea, Neo Kokkino, and northern Greece in the area of Kastona. Larco G.M.M. S.A., which was a leading producer of nickel in Europe and the only European user of domestic nickel ores, mined sedimentary-type nickel laterite by open pit and underground methods at its Agios and Evia Mines near Larymna, and smelted the material at its plant in Larymna (Larco G.M.M. S.A., 2011).

### **Industrial Minerals**

**Cement.**—Titan Cement Co. S.A. was a significant cement producer in Greece, and its four plants produced a combined total of about 6 Mt/yr of cement. Titan was engaged in an extensive investment program and had become a diversified and vertically integrated company as a result of adding ready-mix concrete production and cement products, including cement blocks and mortar, to its production capabilities (Titan Cement Company S.A., 2011).

**Magnesium Compounds.**—Grecian Magnesite S.A. (GM) operated three rotary kilns for crushed calcined magnesite (CCM)

or dead-burned magnesite (DBM) with a combined capacity of 420 metric tons per day (t/d); a 50-t/d shaft kiln for CCM and a 100-t/d double-inclined shaft kiln. GN produced more than 50 different grades of CCM, DBM, and basic monolithic refractories for a wide range of applications (Industrial Minerals, 2011b).

### **Mineral Fuels and Other Sources of Energy**

**Coal (Lignite).**—In 2011, the predominant fuel used in electricity generation in Greece was lignite, and Public Power Corp. (PPC) was Greece's major producer of lignite. PPC's leading lignite mines in Megalopolis and Ptolemais provided lignite for power generation. PPC's lignite-powered powerplants represented 42% of the country's total installed capacity and generated about 56% of the country's electrical energy. Greece had an estimated 3,900 Mt of lignite reserves, or 0.47% of the world's total reserves. In terms of EU lignite production, Greece ranked third after Germany and Russia (Perez and others, 2012).

**Natural Gas and Petroleum.**—Energean Oil & Gas S.A. held investments in natural gas and petroleum projects offshore Greece. Energean Oil was the only natural gas and petroleum exploration and production company in Greece. Energean Oil operated three petroleum fields (Epsilon, Primos, and Primos North) in the Prinosis Development Area and one natural gas field in the South Kavala development field. By yearend 2011, no exploration for petroleum had yet been conducted in the southern Aegean Sea and the Cretan Sea (Energean Oil and Gas S.A., 2011).

**Wind Energy.**—Greece's potential for wind power was among the largest in Europe. In 2011, about 1,300 megawatts (MW) was installed and operating. Wind energy was among the top energy priorities of the Government, and it was committed to increased usage of renewable energy in domestic energy production to 20.1% in 2015 from 8.4% in 2002. Installed wind power capacity was planned by the Government to increase to 3,120 MW by yearend 2013 (GlobalTrade.net, 2011).

### **Outlook**

The economic outlook for 2012 is not expected to improve greatly, even though the Government is expected to continue its efforts to reform the economy and address the serious debt issue. Greece is expected to remain a major supplier of perlite and pumice in the international market. The industrial minerals sector will likely continue to be a small but important part of the country's revenue earnings. Development of several mineral resource projects in the northern part of Greece is likely to continue along with mineral fuel exploration efforts offshore Greece. The Government is expected to be involved in planning investment programs to improve the existing installations in the energy sector and to lower operating costs to encourage development in the mineral resource sector.

### **References Cited**

- Bolen, W.P., 2012, Perlite: U. S. Geological Survey Mineral Commodity Summaries 2012, p. 116–117.
- Bray, E.L., 2012, Bauxite and Alumina: U. S. Geological Survey Mineral Commodity Summaries 2012, p. 26–27.
- Crangle, R.D., 2012, Pumice and Pumicite: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 124–125.

<sup>1</sup> Where necessary, values have been converted from the euro area euros (€) to the U.S. dollars (US\$) at an average exchange rate of €0.73=US\$1.00.

- Energean Oil and Gas S.A., 2011, Greece: Energean Oil and Gas S.A. (Accessed July 20, 2012, at <http://www.energean.com/Operations-Area-License-Fields-Greece?la=en>.)
- European Goldfields Ltd., 2011, Stratoni summary: European Goldfields Ltd. (Accessed February 11, 2012, at <http://www.egoldfields.com/egoldfields/uploads/dlibrary/documents/StratoniTechnicalReportSept2110.pdf>.)
- GlobalTrade.net, 2011, Wind energy market—2011: GlobalTrade.net. (Accessed July 20, 2012, at <http://www.globaltrade.net/f/market-research/text/greece/Environmental/-technologies-Climate-Wind-Energy-Market-2011.html>.)
- Glory Resources Ltd., 2011, Glory Resources completes Sapes gold project acquisition and commences trading: American Stock Exchange Ltd. (Accessed <http://www.gloryresources.com.au/asxpdf/20111223/pdf/423h294gz3gtgm.pdf>.)
- Industrial Minerals, 2011a, Elmin bauxite sees the light: Industrial Minerals, no. 522, March, p. 42.
- Industrial Minerals, 2011b, Magnesia's phoenix & flyers: Industrial Minerals, no. 524, May, p. 32.
- Institute of Geology and Mineral Exploration, 2011, Main activities: Institute of Geology and Mineral Exploration. (Accessed July 18, 2012, at <http://old.igme.gr/enactiv.htm>.)
- Larco G.M.M. S.A., 2011, Our products: Larco G.M.M. S.A. (Accessed July 20, 2012, at <http://www.larco.gr/>.)
- Mytilineos Group., 2011, Aluminum—Aluminium S.A.: Mytilineos Group, p. 5. (Accessed July 19, 2012, at [http://www.mytilineos.gr/uploads/ETHSIA DELTIA/Mytilineos\\_Group\\_Annual\\_Report\\_2011\\_eng.pdf](http://www.mytilineos.gr/uploads/ETHSIA DELTIA/Mytilineos_Group_Annual_Report_2011_eng.pdf).)
- Perez, A.A., Brininstool, Mark, Safirova, Elena, Anderson, S.T., Newman, H.R., Wallace, G.J., and Wilburn, D.R., 2012, The mineral industries of Europe and Central Eurasia, in Area reports—International—Europe and Central Eurasia: U.S. Geological Survey Minerals Yearbook 2010, v. III, p. 1.1–1.37.
- S&B Industrial Minerals S.A., 2011, Bauxite: S&B Industrial Minerals S.A. (Accessed July 19, 2012, at <http://www.sandb.com/our-business/solutions-products/mineral-products/>.)
- Titan Cement Company S.A., 2011, Business activities: Titan Group. (Accessed July 20, 2012, at <http://www.titan.gr/en/titan-group/business-activities/>.)
- Topf, Andrew, 2011, FT: Gold miner gets green light to mine in Greece: Financial Times, New York, New York. (Accessed September 13, 2011, at <http://www.mining.com/2011/07/08/ft-gold-miner-gets-green-light-to-mine-in-greece/>.)
- United Nations, 2011, Policy and regulations—Main features of national mining codes or mineral industry code: United Nations, p. 18–19. (Accessed February 9, 2012, at [http://www.un.org/esa/dsd/dsd\\_aofw-ni/ni\\_pdfs?NationalReports/greece/Greece-CSD18-19\\_chapter\\_II-mining.pdf](http://www.un.org/esa/dsd/dsd_aofw-ni/ni_pdfs?NationalReports/greece/Greece-CSD18-19_chapter_II-mining.pdf).)
- U.S. Department of State, 2011, Greece: U.S. Department of State background note. (Accessed November 3, 2012, at <http://www.state.gov/outofdate/bgn/greece/186730.htm>.)
- Virta, R.L., 2012, Clays: U.S. Geological Survey Mineral Commodity Summaries 2012, p. 44–45.
- World Trade Organization, 2011, Greece—Country profile: World Trade Organization. (Accessed February 9, 2012, at <http://www.wto.org/CountryProfiles/WSDBCCountryPFView.aspx?Country=GR&Language=S>.)

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2007	2008	2009	2010	2011 <sup>c</sup>
<b>METALS</b>					
<b>Aluminum:</b>					
Bauxite	2,125,900	2,176,300	1,935,000	1,902,000	1,900,000
Alumina, Al <sub>2</sub> O <sub>3</sub>	761,746	771,769	718,797	725,000	725,000
Metal, primary	166,300	162,339	134,737	137,000	138,000
Chromite, ore, crude:	1,400	1,400	1,400	1,400	1,200
<b>Iron and steel:</b>					
Iron ore and concentrate, nickeliferous, Fe content <sup>c</sup>	575,000	570,000	560,000	560,000	550,000
<b>Metal:</b>					
Steel, crude <sup>3</sup> thousand metric tons	2,554	2,477	2,082	1,839 <sup>3</sup>	1,993 <sup>3</sup>
Ferroalloys, ferronickel, gross weight	93,300	83,200	41,300	42,000	40,000
<b>Lead:<sup>c</sup></b>					
Mine output, Pb content	15,000	23,314	17,027 <sup>3</sup>	12,200	12,000
Metal, secondary thousand metric tons	11	11	10	10	10
<b>Manganese:<sup>c</sup></b>					
<b>Ore, crude:</b>					
Gross weight	100	100	100	100	100
Mn content	15	15	15	15	15
<b>Concentrate:</b>					
Gross weight	20	20	20	20	20
Mn content	15	15	15	15	15
<b>Nickel:</b>					
Ore, Ni content of nickeliferous iron ore	21,200	16,640	10,203	13,837 <sup>3</sup>	14,100
Metal, Ni content of ferronickel	18,700	18,600	8,269	13,960 <sup>r,3</sup>	14,000
Silver, mine output, Ag content kilograms	38,300	35,500	30,177 <sup>r,3</sup>	29,000	30,000
Zinc, mine output, Zn content by analysis	20,700 <sup>r</sup>	20,300 <sup>c</sup>	18,126	19,967 <sup>3</sup>	20,000

See footnotes at end of table.

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

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2007	2008	2009	2010	2011 <sup>e</sup>
INDUSTRIAL MINERALS					
Cement, hydraulic <sup>3</sup> thousand metric tons	12,035	11,361	11,160 <sup>r</sup>	11,000	11,000
Clays:					
Bentonite, crude, includes attapulgite and sepiolite	1,200,000	1,389,800	926,186	1,000,000	1,000,000
Kaolin, crude	40,000	4,360	--	--	--
Feldspar	95,000 <sup>r</sup>	62,000	55,737 <sup>r,3</sup>	23,050 <sup>r,3</sup>	25,000
Gypsum and anhydrite	836,967	865,000	730,000	700,000 <sup>r</sup>	600,000
Magnesite:					
Crude <sup>3</sup>	351,414 <sup>3</sup>	361,165 <sup>3</sup>	380,834 <sup>3</sup>	396,000 <sup>r,3</sup>	300,000
Dead-burned	56,000	58,000	48,000	50,000	50,000
Caustic-calcined <sup>c</sup>	70,000	70,000	70,000	70,000	70,000
Huntite, crude <sup>c</sup>	18,000	19,600 <sup>3</sup>	10,652 <sup>3</sup>	12,000	12,000
Nitrogen, N content of ammonia	130,000	130,000	130,000	130,000	130,000
Perlite:					
Crude	1,100,000	1,100,000	862,935	760,000 <sup>r,e</sup>	800,000
Screened	550,000	500,000	398,451 <sup>3</sup>	400,000	400,000
Pozzolan, Santorin earth	1,400,000	1,059,000 <sup>3</sup>	830,000 <sup>3</sup>	850,000	800,000
Pumice	900,000	828,000	381,000 <sup>3</sup>	400,000	400,000
Salt, all types	195,000	220,000	189,000 <sup>3</sup>	190,000	200,000
Silica <sup>c</sup>	100,000	64,521 <sup>3</sup>	37,905 <sup>3</sup>	40,000	40,000
Stone: <sup>c</sup>					
Dolomite	60,000	60,000	60,000	60,000	60,000
Marble cubic meters	250,000	347,526 <sup>3</sup>	255,516 <sup>3</sup>	250,000	250,000
Sulfur: <sup>c</sup>					
S content of mixed sulfide ore	250,000	264,299 <sup>3</sup>	225,054 <sup>3</sup>	230,000	230,000
Byproduct, natural gas and petroleum	165,000	120,000	142,000	140,000	140,000
Talc and steatite	200	200	200	200	200
MINERAL FUELS AND RELATED MATERIALS					
Coal:					
Lignite <sup>3</sup> thousand metric tons	73,092	64,521	61,800	53,600 <sup>r,3</sup>	54,000
Lignite briquets <sup>c</sup>	36,000	36,000	36,000	36,000	36,000
Gas, natural <sup>c</sup> do.	15	14	11	11	11
Petroleum:					
Crude do.	660	478	628	600	600
Refinery products: <sup>c</sup>					
Liquefied petroleum gas do.	7,483 <sup>r,3</sup>	7,665 <sup>r,3</sup>	7,519 <sup>r,3</sup>	7,600 <sup>r</sup>	8,000
Gasoline do.	36,464 <sup>r,3</sup>	35,077 <sup>r,3</sup>	34,419 <sup>r,3</sup>	32,000	32,000
Naphtha do.	8,400	8,400	8,400	8,400	8,400
Mineral jelly and wax do.	20	20	20	20	20
Jet fuel <sup>c</sup> do.	13,870 <sup>r,3</sup>	14,600 <sup>r,3</sup>	12,410 <sup>r,3</sup>	13,000 <sup>r</sup>	14,000
Kerosene do.	204 <sup>r,3</sup>	157 <sup>r,3</sup>	438 <sup>r,3</sup>	400	400
Distillate fuel oil do.	49,640 <sup>r,3</sup>	48,910 <sup>r,3</sup>	46,691 <sup>r,3</sup>	47,000	47,000
Refinery gas do.	4,800	4,800	4,800	4,800	4,800
Lubricants do.	1,200	1,200	1,200	1,200	1,200
Residual fuel oil do.	45,990 <sup>r,3</sup>	39,055 <sup>r,3</sup>	38,435 <sup>r,3</sup>	40,000 <sup>r</sup>	42,000
Bitumen do.	4,000	4,000	3,960 <sup>r,3</sup>	4,000	4,000
Petroleum coke do.	1,000	1,000	1,000	1,000	1,000
Other do.	1,800 <sup>r</sup>	1,800	1,876 <sup>r,3</sup>	1,800 <sup>r</sup>	1,800
Refinery fuel and losses do.	7,500	7,500	7,500	7,500	7,500
Total do.	182,000	174,000	169,000	168,000	171,000

<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. -- Zero.

<sup>1</sup>Table includes data available through June 30, 2012.

<sup>2</sup>In addition to the commodities listed, other crude construction materials are produced, but available information is inadequate to make a reliable estimate of output.

<sup>3</sup>Reported figure.

TABLE 2  
GREECE: 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
Alumina, Al <sub>2</sub> O <sub>3</sub>		Aluminium S.A (Mytilineos Holdings S.A., 53%)	Agios Nikolaos, Boeotia area	1,100
Aluminum		do.	do.	180
Barite, BaSO <sub>4</sub>		S&B Industrial Minerals, S.A. (Eliopoulos-Kyriakopoulos Group)	Milos Island (closed)	1
Bauxite		do.	Mines at Amfissa and Distomon, plants at Phocis and Itea	2,000
Do.		Delphi-Distomon S.A. (Mytilineos Holdings S.A.)	Mines at Amfissa and Distomon	800
Do.		Hellenic Mining Enterprises S.A.	Mines at Aga Marina, Lamia	500
Bentonite:				
Crude		Mediterranean Bentonite Co. S.A. (Industria Chemica Mineraria S.p.A.)	Surface mines on Milos Island	20
Do.		Mykobar Mining Co. S.A. (Silver & Baryte Ores Mining Co. S.A.)	Mines at Adamas, Milos Island	300
Do.		do.	Plants at Adamas, Milos Island	200
Do.		S&B Industrial Minerals, S.A. (Eliopoulos-Kyriakopoulos Group)	Mines at Adamas, Milos Island	600
Processed		do.	Plant at Voudia Bay, Milos Island	400
Cement		Halkis Cement Co. S.A. (Lafarge Group)	Micro-Vathi plant, west-central Euboea Island	3,000
Do.		Halyps Cement S.A. (Ciments Français Group)	Paralia Aspropyrgos plant, Athens	800
Do.		Heracles General Cement S.A. (Lafarge Group)	Plants at Halkis Evia, Milaki Evia, and Volos	9,600
Do.		Titan Cement Co. S.A.	Elefsis plant, Athens area	400
Do.		do.	Kamari plant, Boeotia	2,600
Do.		do.	Patras plant, northern Peloponnesus	1,900
Do.		do.	Salonica plant, Salonica	1,650
Chromite		Financial-Mining-Industrial and Shipping Corp. (FIMISCO)	Tsingeli Mine, Volos	25
Coal (lignite)		Public Power Corp. (PPC) (Government)	Aliveri Mine, Euboea Island	420
Do.		do.	Megalopolis Mine, central Peloponnesus	7,000
Do.		do.	Ptolemais Mine, near Kozani	28,000
Ferroalloys, ferronickel, Ni content		Larco G.M.M. S.A.	Larymna metallurgical plant	25
Gold, Au in concentrate	kilograms	European Goldfields Ltd.	Kassandra Mines [Olympias (closed) and Stratoni, northeastern Chalkidike]	5,000
Gypsum		Lava Mining and Quarrying Co. S.A.	Altsi, Crete Island	500
Do.		Titan Cement Co. S.A.	do.	280
Hunite/hydromagnesite		Microfine S.A.	Mines in Kozani Basin	100
Lead, mine, Pb in concentrate		Hellas Gold S.A. (European Goldfields Ltd.)	Kassandra Mines [Olympias (closed) and Stratoni, northeastern Chalkidike]	30
Magnesite, concentrate		Grecian Magnesite S.A. (GM)	Mine and plant at Gerakini and Kalives, Chalkidiki, northern Greece	200
Manganese, battery-grade MnO <sub>2</sub>		Eleusis Bauxite Mines Mining, Industrial and Shipping S.A. [National Bank of Greece (OAE)]	Nevrokopi, Drama	10
Marble, slab and tile	cubic meters	Aghia Marina Marble Ltd.	Various areas of northern Greece	NA
Do.	do.	Michelakis Marble S.A.	Kavala	NA
Do.	do.	Gourlis Group	Quarries at Levadia, Neurokopi, and Tiseo	NA
Natural gas	million cubic meters per day	Public Petroleum Corp. (PPC) (Government)	Prinos offshore gasfield and oilfield, east of Thasos Island	125
Do.	do.	Energean Oil and Gas S.A.	South Kavala gasfield, east of Thasos Island	NA

See footnotes at end of table.

TABLE 2—Continued  
GREECE: 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
Nickel, ore		Larco G.M.M. S.A.	Agios Ioannis Mine, near Larymna	700
Do.		do.	Evia Mine, near Larymna	1,500
Nitrogen, N content of ammonia		Phosphoric Fertilizers S.A.	Nea Karvall	150
Perlite		S&B Industrial Minerals, S.A. (Eliopoulos-Kyriakopoulos Group)	Mines on Kos and Milos Islands; plant at Pireaus	650
Do.		Otavi Minen Hellas S.A. (Otavi Minen AG)	Milos Island	150
Do.		Bouras Co.	Kos Island	50
Petroleum, crude	42-gallon barrels per day	Energean Oil and Gas S.A.	Prinos offshore oilfield, east of Thassos Island	NA
Petroleum, refined	do.	Hellenic Aspropyrgos Refinery S.A.	Aspropyrgos	95,000
Do.	do.	Motor Oil (Hellas) Corinth Refineries S.A.	Aghii Theodori, Corinth	170,000
Do.	do.	Petrola Hellas S.A.	Eleusis	100,000
Do.	do.	Thessaloniki Refining Co. A.E.	Thessaloniki	76,000
Pozzolan (Santorin earth)		Lava Mining and Quarrying Co. (Heracles General Cement Co.)	Xylokeratia, Milos Island	600
Do.		Titan Cement Co. S.A.	do.	300
Pumice		Lava Mining and Quarrying Co. (Heracles General Cement Co.)	Yali Island	1,000
Quartz (microcrystalline)		do.	Adamas, Milos Island	150
Silver		Hellas Gold S.A. (European Goldfields Ltd.)	Kassandra Mines [Olympias (closed) and Stratoni, northeastern Chalkidike]	30
Steel, crude		Halyvourgia Thessalias S.A. (Manassis Bros. and Voyatzis S.A., 65%, and National Investment Bank for Industrial Development, 35%)	Steelworks at Volos	1,500
Do.		Sidenor Steel Products Manufacturing S.A.	Steelworks at Thessaaloniki and Almyros	2,800
Do.		Halyvourgiki, Inc.	Steelworks at Eleusis	1,200
Do.		Hellenic Steel Co.	Steelworks at Thessaloniki	1,000
Do.		Corinth Pipeworks S.A (CPW)	Steelworks at Thisvi	700
Zinc, mine, Zn in concentrate		Hellas Gold S.A. (European Goldfields Ltd.)	Kassandra Mines [Olympias (closed) and Stratoni, northeastern Chalkidike]	30

Do., do. Ditto. NA Not available.