



# 2008 Minerals Yearbook

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## CYPRUS

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# THE MINERAL INDUSTRY OF CYPRUS

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Mining in Cyprus had a long history and there was a strong culture of mining in the country;<sup>1</sup> however, mining made only a small contribution to the economy in 2008. The mineral resources of the island included asbestos, chromium, copper, gypsum, and pyrite. Cyprus' mining law provides security of tenure and right of access to private land for exploration purposes. The output of the mining and quarrying sector increased by 5.5% at 2008 market prices compared with that of the previous year. It was estimated that the value added of the sector increased to 59.7 million euros (€) (\$87.1 million)<sup>2</sup> in 2008 from €52.2 million (\$76.1 million) in 2007 (Statistical Service of the Republic of Cyprus, 2009).

Cyprus' accession as a full member of the European Union (EU) on May 1, 2004, and its membership in the European Exchange Rate Mechanism (Eurozone), which became effective on January 1, 2008, were important milestones in the country's economic development. On January 1, 2008, the Government replaced the Cyprus pound (C£) with the euro, which resulted in such benefits as a higher degree of price stability, lower interest rates, reduction of currency conversion costs, and increased competition through greater price transparency. After February 1, 2008, the Cyprus pound could be exchanged only at the country's banks (U.S. Department of State, 2009).

In 2008, the Central Bank of Cyprus announced that it had rejected a Government request to sell part of its gold reserves to reduce the public debt. The Central Bank stated that it could not afford to sell any of the 14 metric tons (t) of gold that it held in reserve because it would then be unable to respond to a financial crisis or help the European Central Bank cover possible losses (Associated Press, 2008)

International trade was important to the economy of Cyprus. The country's lack of energy resources, heavy industry facilities, and raw materials required for the production of capital goods necessitated the importation of such items. Because of the small size of the domestic market, exports were vital to supplement domestic demand for Cypriot agricultural production, manufactured products, and mineral commodities. The EU and the neighboring Middle Eastern countries received the majority of Cyprus' exports. Most of the country's requirements for capital equipment, consumer goods, and raw materials came mainly from the EU, and petroleum was imported from neighboring Middle East countries (PriceWaterhouseCoopers, 2008).

U.S. exports to Cyprus included gem diamond, iron and steel products, nonmetallic minerals, petroleum products, and precious metals. U.S. imports from Cyprus included cement, lime, nonmetallic minerals, petroleum products, and sulfur (U.S. Census Bureau, 2008).

<sup>1</sup>Unless specifically stated, all data in this chapter are for the Republic of Cyprus in southern Cyprus because data related to areas of northern Cyprus administered by Turkish Cypriots are sparse or unavailable. The two areas have been separated since 1974.

<sup>2</sup>Where necessary, values have been converted from European Union euros (€) to U.S. dollars (US\$) at a rate of €1.00=US\$1.46.

## Production

Data on mineral production are in table 1. Bentonite, cement, sand and gravel, and stone were the major mineral commodities produced by the mineral industry of Cyprus. Other mineral commodities produced included common clay for brick and cement manufacture, gypsum, ocher, and umber.

## Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities. All facilities were privately owned.

## Commodity Review

### Metals

**Copper.**—The joint venture of EMED Mining Public Ltd. (EMED Mining) of Cyprus (95%) and Hellenic Copper Mines Ltd. of Cyprus (5%) conducted exploration in Cyprus that was centered largely within the Upper Pillow lavas of the Troodos ophiolite complex. The mineralization areas were volcanic-hosted massive sulfide copper deposits under shallow cover material (similar to past copper mines in the complex); three of these deposits exceeded an estimated 10 million metric tons (Mt) of ore at grades of between 1% and 4.5% copper (EMED Mining Public Ltd., 2008a).

EMED Mining announced that an independent review of the Klirou copper-zinc project, which is located about 20 kilometers southwest of Nicosia, had been completed. The review highlighted key areas for further work in a full feasibility study. The work would include diamond core drilling to verify and upgrade categorization of known resources; sample collection for further metallurgical test work, further assessment of the refurbishment of the Mitsero processing plant, preparation of a metallurgical flow sheet for the resources, development of a processing strategy; and collation of firm cost estimates. The Klirou project had estimated inferred resources of about 6 Mt of copper ore grading 0.41% and 33,400 t of zinc grading 0.74%. The Klirou resource extends from the surface to about 200 m below surface and was considered to be minable by open pit methods; development was not likely, however, until further resources could be delineated (EMED Mining Public Ltd., 2008b).

### Industrial Minerals

**Cement.**—Cement production increased by 5.1% to 1.16 Mt in the first 7 months of 2008 from 1.1 Mt in the first 7 months of 2007. This growth was slightly higher than in 2007. Production of cement was totally absorbed by domestic sales, as there were no exports of cement or clinker in the first 7 months of 2008. In 2007, Cyprus exported 62,969 t of cement (International Cement Review, 2008).

**Gypsum.**—Abundant reserves of gypsum are found in Cyprus and occur in the geologic formation of Kalavsos. The gypsum occurs in two well-defined groups. The first is in a narrow arcuate zone that runs parallel to the trend of the Kyrenia range in the north of the island and includes the Lapatza gypsum outcrop; the second occurs on the periphery of the Troodos igneous massif. Both of these deposits are of upper Miocene age. The gypsum is laminated in thin alternating layers that vary from 1 to 5 millimeters. Its color also varies from light to dark. In 2008, a few small quarries operated in Aradippou, Eledhio, and Tochni. Information on the specific locations and ownership was not available (Ministry of Agriculture, Natural Resources, and Environment, 2008).

### **Mineral Fuels**

**Natural Gas and Petroleum.**—Cyprus produced no natural gas or petroleum in 2008. Exploration was continuing offshore in the Mediterranean Sea inside the 70,000-square-kilometer exclusive economic zone. Cyprus began exploration off southern Cyprus several years ago and had signed exploration agreements with the Governments of Egypt and Lebanon to mark the undersea boundaries for petroleum exploration after initial seismic findings indicated possible hydrocarbon occurrences in the economic zone. The signing of these agreements has caused tensions between Cyprus and Turkey, which claimed that its territorial rights had been violated. Both countries have lodged protests with international bodies over the dispute (OilVoice, 2008).

### **Outlook**

In 2008, domestic industrial infrastructure construction is expected to continue to be the main source of the domestic demand for cement, gypsum, sand and gravel, and stone.

International demand is expected to continue to support Cypriot exports of bentonite, gypsum, perlite, and umber. The construction industry is expected to continue to be significant to the economy. Natural gas and petroleum exploration is expected to continue.

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

(Thousand metric tons unless otherwise specified)

Commodity <sup>2</sup>	2004	2005	2006	2007	2008 <sup>e</sup>
Cement, hydraulic	1,689	1,805	1,786	1,873	1,914 <sup>3</sup>
Clays:					
Bentonite metric tons	155,717	172,366	150,620	154,655	155,125 <sup>3</sup>
Other:					
For brick and tile manufacture	425	443	400 <sup>e</sup>	476	490 <sup>3</sup>
For cement manufacture	565	600	540	620	635 <sup>3</sup>
Total	990	1,043	940 <sup>e</sup>	1,096	1,125 <sup>3</sup>
Copper, refined metric tons	1,240	--	880	1,012	2,986 <sup>3</sup>
Gypsum, crude <sup>4</sup> do.	255,000	210,000	264,000	324,000 <sup>r,3</sup>	405,500 <sup>3</sup>
Lime, hydrated do.	13,990	16,589	12,715	13,497	14,285 <sup>3</sup>
Petroleum refinery products: <sup>5</sup>					
Liquefied petroleum gases thousand 42-gallon barrels	102	--	--	--	--
Gasoline, unleaded do.	336	--	--	--	--
Kerosene and jet fuel do.	80	--	--	--	--
Distillate fuel oil do.	657	--	--	--	--
Residual fuel oil do.	774	--	--	--	--
Asphalt and bitumen do.	42	--	--	--	--
Other do.	--	--	--	--	--
Total do.	1,991	--	--	--	--
Sand and stone:					
Limestone, crushed (Havara)	1,200	1,000	700	875 <sup>r,3</sup>	766 <sup>3</sup>
Marble	1	2	1	1	1
Marl, for cement production	2,290	2,450	2,210	2,540	2,595 <sup>3</sup>
Sand and gravel <sup>6</sup>	11,600	12,064	12,199	13,129	14,174 <sup>3</sup>
Building stone <sup>7</sup>	105	51	57	60	60
Sulfur <sup>e</sup> metric tons	300	--	--	--	--
Umber do.	5,205	5,088	5,757	4,363	4,471 <sup>3</sup>

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through July 31, 2009.

<sup>2</sup>In addition to the commodities listed, small quantities of the mineral pigments ocher and terra verte are mined intermittently. Mineral production data are from areas of northern Cyprus that are administered by Turkish Cypriots and production of fertilizers, perlite, and secondary metals from scrap are not included in this table because available information is inadequate to make reliable estimates of output.

<sup>3</sup>Reported sources of data include company annual reports, the Mines Service, and the Statistical Service of Cyprus.

<sup>4</sup>About 4,000 metric tons per year of gypsum was calcined.

<sup>5</sup>Refinery closed in April 2004. Petroleum refinery products are rounded to the nearest thousand barrels; may not add to totals shown.

<sup>6</sup>Includes crushed aggregate.

<sup>7</sup>Includes crude, semifinished, and worked stone.

TABLE 2  
CYPRUS: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity	Major operating companies and and major equity owners	Location of main facilities	Annual capacity	
Aluminum:				
Secondary	A & E Aluminium Recycling Ltd.	Nicosia	NA	
Semimanufactures	Muskita Aluminum Industries Ltd.	Extrusion presses, Limassol	18,000	
Cement	Vassiliko Cement Works Ltd.	Vassiliko	1,260,000	
Do.	Cyprus Cement Co. Ltd.	Moni	400,000	
Do.	Bogaz Endustri ve Madencilik	Near Famagusta, northern Cyprus	150,000	
Clay, bentonite	Peletico Penta Ltd.	Mines at Pentakomo and Troulli	NA	
Do.	Hellenic Mining Co.	Nicosia	NA	
Do.	Drapia Mining Co. Ltd.	Drapia, Monagroulli, and Parsata	(1)	
Do.	Oryktako Ltd.	Mine at Kato Moni and processing plant at Malounda	10,000	
Do.	C & A Quarries Ltd.	NA	NA	
Copper, cathode	Hellenic Copper Mines Ltd.	Skouriotissa	(1)	
Gypsum	Peletico Ltd.	Quarry and processing plant at Aradipou, near Larnaca	NA	
Do.	Zeiplast Chemical Industries Ltd.	Near Moni	NA	
Do.	Various	Eledhio and Tichni	NA	
Perlite	Peletico Ltd.	Expanded perlite facility at Larnaka	NA	
Do.	Zeiplast Chemical Industries Ltd.	Expanded perlite facility at Moni	NA	
Refined petroleum products	thousand 42-gallon barrels	Cyprus Oil Terminal Ltd.	Larnaca storage facility	150
Steel, semimanufactures	B.M.S. Metal Pipes Industries Ltd.	Tube and pipe mill, Paphos	15,000	

Do. Ditto. NA Not available.

<sup>1</sup>Inactive in 2008.