

GREECE

By Dr C. E. Tsoutrelis and Dr N. Terezopoulos

The year 2002 proved to be a crucial period for the Greek mining and quarrying industry. It demonstrated clearly that the sustainable development of the country's mining industry depends on how well it will respect environmental issues and present its case to the local communities in order to persuade them that they will benefit from the development of mineral resources.

Greece possesses considerable mineral resources that have yet to be exploited but unless priority is given to the proper environmental procedures, and to an understanding with the appropriate people and authorities, the country will witness a continuous decline in the rate of mineral exploration and development to the detriment of the economy. The overall picture for the Greek mining industry in 2002, despite its many domestic and foreign obstacles, can be described as satisfactory; bauxite, nickel, magnesite, lignite and certain industrial minerals all managed to maintain their share of the world markets.

Mineral developments

Bauxite: Production of bauxite by Delphi–Distomon Bauxite Mines (a subsidiary of Aluminium de Grece), and by Silver and Baryte Ores Mining Co. (which acquired the former Bauxite Parnasse Mining Co.) and its affiliate Greek Hellikon Bauxite SA, increased by 21% last year to reach 2.5 Mt. All these companies possess extensive reserves in the Parnasse-Ghiona region. Exports rose considerably, thanks to a recovery in demand from Russia and from other eastern European countries. Hellenic Mining Enterprises SA (ELMIN) is a newcomer in the bauxite sector. It owns all the mineral rights of the former producer, Elefsis Bauxite SA, and during its first year of operation ELMIN produced 137,600 t of run-of-mine ore from the Kokinovrachos and Dio Vouna deposits in the Lamia area.

In its 41st year of operation Aluminium de Grece (part of the Pechiney group of France), posted a hefty decline in its operating profits of almost 60%, from €88.6 million in 2001 to €36 million. Turnover fell to €363 million against €404.6 million in 2001. The results were attributed to a 6% decline in world aluminium prices during 2002, a lower exchange rate for the US dollar against the euro and higher electricity charges by Greece's Public Power Corp (PPC). The company continued to operate smoothly, however, and introduced further measures to reduce production costs. Among them, was a major decision to erect a 215 MW power station at Aspra Spitia, the site of its alumina refinery and aluminium smelter. The power plant will be fuelled by natural gas and will meet all the company's electricity requirements.

Nickel: A 15% increase in the average nickel price during 2002, coupled with a record production of 19,230 t of contained nickel as a result of a US\$25

million investment programme at its mines and metallurgical plant, enabled LARCO SA to counterbalance its losses from the lower dollar-euro exchange rate and the increase in electricity prices paid to the PPC. An extensive exploration programme in its concessions in the Vermion area of northern Greece allowed LARCO to increase its reserves.

Total run-of-mine ore production for 2002 from Larco's mines totalled 2.66 Mt averaging just over 1% Ni. Its open-pit mines on the island of Evia contributed 1.58 Mt, the Kastoria open-pit operations in northern Greece 356,000 t and its surface and underground mines at Agios Giannis, located close to its metallurgical plant and port facilities at Larymna, 724,100 t.

Mixed sulphides: After more than six years of attempts by Canadian-based TVX Gold Inc. to develop the Olympias auriferous mixed sulphide deposit at its Kassandra mines complex on the eastern coast of the Chalkidiki Peninsula, the environmental issues have yet to be resolved and the entire project has been brought to a standstill. Approval of the necessary documentation by the Ministry of Development is a positive step towards the implementation of the project but a judgment on the environmental issues related to the project by the Council of State is still pending. During 2002, therefore, mining activities at the Kassandra mines complex by TVX Hellas SA were mainly focused on the Mavres Petres lead-zinc mine near the town of Stratoni south of Olympias. Total production of run-of-mine ore amounted to 402,156 t and yielded 38,239 t of lead and 63,619 t of zinc concentrates. The total value of exported concentrates including 2.35 Moz of silver amounted to €26.5 million.

Gold: Thracian Gold Mining SA, a joint venture between Newmont Mining Corp. of the US (80%) and Silver and Baryte Ore Mining Co. (20%), has completed its feasibility study for the Perama gold project located between the towns of Komotini and Alexandroupolis in northeastern Greece near the village of Perama. The orebody consists of an oxidised gossan zone extending to a depth of 100 m and containing about 13 Moz (41 t) of gold. An annual production rate of 1.1 Mt of run of mine ore will give an estimated mine life of ten years. All the necessary documents including the environmental impact assessment report for the project have been submitted to the appropriate authorities in Thrace for their consent.

Still pending approval by the pertinent authorities is an application by Thrace Minerals SA (a subsidiary of Greenwich Resources plc), to develop two gold deposits located in the Agios Demetrios and Ohia areas near the town of Sappes in Thrace. Total mineable reserves are estimated at 1.5 Mt with an average content of 15.2 g/t Au.

Magnesite: For several years now, following the closure of the Vavdos mine and the unsuccessful attempts to reopen the Mantoudi mine and plant in Evia, Grecian Magnesite SA has been Greece's only producer of raw magnesite and magnesite products. Its facilities are located in the Yerakini area on the Chalkidiki Peninsula in northeastern Greece. Remarkably, the company has continued its operations since 1959 against strong competition, mainly from

China during the past decade. The company has been successful because of its extensive research in developing new high added-value products and its successful exploration to maintain reserves at adequate levels. It has also undergone much internal restructuring, allowing it to improve its productivity and competitiveness. This has proved vital at times, for example during 2002, when world sales of magnesite and its products were under strong pressure both in terms of prices and demand.

Last year, only the ceramic market and that for certain electric applications remained stable. Total company's sales for 2002 reached 208,000 t, an increase of 14% against 2001, of which 110,000 t were caustic magnesia, 46,000 t dead burnt magnesia, 28,000 t graded raw magnesite and 2,400 t refractory grade. Almost 93% of the company's products were exported. Grecian Magnesite also has important magnesite assets in Spain, Turkey and the US.

Industrial minerals

In addition to magnesite, Greece is an important producer of a number of other industrial minerals, and the sector, overall, performed satisfactorily during 2002 despite the unfavourable conditions that prevailed in the world economic environment.

Silver and Baryte Ores Mining Co. continued to play a dominant role in the world markets for perlite and bentonite. The perlite market during 2002 remained largely unchanged from the conditions prevailing in 2001. The company's total sales reached 570,000 t of which 85% was shipped from Milos island to Europe and North America for construction purposes. A new product under the trade name 'Easyflow', which has applications in the food and chemicals industry, was introduced in the Greek market early in 2002. Local sales of the expanded perlite trade products 'Perlomin S' and 'Nolime' increased considerably owing to a boom in the construction industry in the Attica area.

In 2002, Silver and Baryte strengthened further its leading role as the largest bentonite producer in Europe and the world's largest exporter of the mineral. It has operations and reserves on the island of Milos, in Germany (Bavaria), in Hungary and in Georgia, US. Greek sales exceeded 895,000 t of which 98% were exported. The restructuring of the company's bentonite division and its sales units in order to implement the strategy of 'Market-to-Mine', led to significant benefits to customers.

Aegean Perlite is a newly-formed company that started production during 2002 from its concession on the island of Yali in the southeast Aegean Sea. To dry the perlite, the company applies a process that takes full advantage of the island's sunlight and low humidity. Sales during 2002 amounted to 80,000 t, and the prospects for doubling that figure in 2003 are good.

Lava SA, an affiliate of AGET-Hercules Cement Co., produced 810,000 t of pumice from the island of Yali and shipped 883,907 t, of which 60% was exported, an increase of 4% over 2001. The company also produced 500,000

t of pozzolana from its quarry on Milos, and 280,000 t of gypsum from its quarry at Altsi in Crete.

Total gypsum production from quarry sites in Crete, western Greece and from the Ionian islands amounted to 730,000 t. Other industrial minerals that were produced during 2002 included kaolin (41,000 t) from Milos island, quartz (9,000 t), silica sand (150,000 t), feldspars (85,000 t) and zeolites (4,280 t). Total pozzolana production amounted to 1.3 Mt and was absorbed by the domestic cement industry.

Energy minerals

Total lignite production in 2002 reached a new record of 70.7 Mt against 66.6 Mt million in the previous year. With the exception of 362,000 t that were produced by private companies, all lignite was mined by the Public Power Corp. from the extensive deposits at Ptolemais, Amynteon and Megalopolis, and was used to fuel PPC power stations. Over 73% of the country's electrical needs are currently met from lignite power stations.

Mineral Production (t unless stated otherwise)

Bauxite	2,492,000
Nickeliferous laterite ore	2,656,100
Magnesite caustic magnesia	110,000
Dead burnt magnesia	46,000
Graded raw magnesite	28,000
Refractory grade	2,400
Mixed sulphide ore	402,156
Pb-concentrates	38,939
Zn-concentrates	63,619
Ag-content (oz)	2,349,502
Perlite	650,000
Bentonite	825,000
Pumice	810,000
Pozzolana	1,300,000
Gypsum	730,000
Kaolin	150,000
Feldspar	185,000
Zeolite	4,280
Quartz and quartz sand	159,000
Huntite	13,835
Calcium and magnesium carbonate	117,000
Lignite	70,700,000