

THE MINERAL INDUSTRY OF JORDAN

By Bernadette Michalski

Industrial minerals, including construction raw materials were the major mineral commodities mined in Jordan. These include bulk phosphate rock, potash, and limestone. Jordan ranked sixth in global phosphate rock production and seventh in potash. While the bulk of mineral production is exported, lesser quantities of phosphate and potash are consumed in the domestic manufacture of fertilizers. Limestone is consumed by the domestic cement industry and in the production of soda ash in the Dead Sea Chemical Industries' complex.

The Provisional Law of Natural Resources 37 of 1966, as amended, was the basic mining law of Jordan. The law permitted private Jordanian or foreign national ownership of a mine or quarry with the provision that mine management be Jordanian.

The Public Power Law of 1996 transformed the Government-owned Jordan Electricity Authority (JEA) into a public shareholding corporation to be called the National Electricity Public Shareholding Company. The new company will be in charge of transmitting electrical power, building transmission lines, and operating the national grid and power stations formerly owned by JEA. The law also permits large industrial plants to build powerplants for their own use and to share power with industrial counterparts. The law establishes an independent regulatory commission to set power rates. This law is the first step in Jordan's new privatization policy.

Along with phosphate rock, finished fertilizers, and potash, Jordan produced significant amounts of other industrial minerals, such as aggregates, building stone, calcium carbonate, and dolomite. Jordan was also a significant regional cement producer. (See table 1.) Jordan's jewelry fabrication industry was maintained at approximately 10 tons but only a third of this was based on new gold.

Revenues for Jordanian bulk phosphate and fertilizer exports typically account for almost one-third of the nation's total export revenues.¹ The Jordan Cement Factories Co. reported a 16% increase in exports in the first 6 months of 1996 as compared with the same period in 1995. The first 6 months of 1996 also saw exports of 415,000 tons of cement of which 80% was exported to Syria (Middle East Economic Digest, 1996). Jordan imported most of its petroleum requirements from Iraq under a series of agreements which have been renewed annually since 1991 with the approval of the United Nations' Sanctions Committee. During this period, imports of crude oil from Iraq

ranged from 40,000 barrels per day (bbl/d) to 60,000 bbl/d and petroleum products between 17,000 bbl/d and 25,000 bbl/d. All deliveries were made by truck.

The Jordan Natural Resources Authority (NRA) was the Government agency responsible for all activities related to the exploration and development of minerals and mineral fuels. The exploitation of the major mineral commodities of Jordan—cement, kaolin, phosphates, and potash—were all controlled by parastatals. Aggregates, basalt, calcium carbonate, dimensional stone, glass sand, and natural sand were produced by private-sector firms.

Anadarko Jordan Co., a unit of Anadarko Petroleum Corp. of the United States, signed a production-sharing agreement covering the 1.7 million hectare Safawi block in northeast Jordan. Anadarko agreed to spend at least \$5 million during the first 2.5 years of exploration.

The Jordan Phosphate Mines Co., a company wholly owned by the Jordanian Government, has attempted to increase its global market share of phosphate and derivative products through aggressive marketing and third-party trading. The development of the phosphate reserves at the Ash Shidiya Mine, when fully completed, was intended to replace the existing Al-Hasa Mine and the mine at Wadi Al Abyad. This was expected to take place by the year 2000.

The Jordan Phosphate Mines Co. plans to issue a \$100 million Eurobond offering on the international capital markets to finance part of a \$250 million expansion at its Ash Shidiya Mine. A further \$50 million will be raised from local sources (Middle East Economic Digest, 1997). The expansion is intended to more than double phosphate production at Ash Shidiya by 1998 to some 8 million metric tons per year (Mt/y). The uranium potential of the phosphate deposits were also evaluated. Company findings from four phosphate deposits in central and southern Jordan averaged 50 to 140 parts per million uranium content. Based on these results, the byproduct resources of Jordan are estimated to be 100,000 metric tons uranium.

Potash was produced by the Arab Potash Co. (APC) from brines at its Dead Sea facility. Since 1985, APC had sustained production at levels greater than 90% of its 1.8 Mt/yr design capacity.

The NRA estimated Jordanian phosphate rock reserves at 1 billion tons.

The International Finance Corporation was considering a loan of \$6 million to Modern Aluminum Industries Co. Ltd. of Jordan to build and operate a \$18 million aluminum extrusion plant at Giza. The plant is to produce 6,000 metric tons per year of

¹Where necessary, values have been converted from Jordanian dinars (JD) to U.S. dollars at the rate of JD0.70=US\$1.00.

aluminum extrusions. Three-fourths of the plant's output is expected to be sold in the domestic markets with the remainder for export to neighboring countries.

Jordan's infrastructure was sufficient for current mining operations. Railroads within Jordan consisted of 619 kilometers (km) of 1.05-meter-gauge single track. Crude oil pipelines within the country totaled 209 km. Primary export terminals were at the Port of Aqaba, where potash storage capacity was about 160,000 tons. The Jordanian Government was considering construction of a \$300 million liquefied natural gas (LNG) terminal in Aqaba. The proposed Aqaba terminal is scheduled to receive about 2.5 million metric tons of LNG annually from Enron's planned liquefaction plant in Qatar.

The possible construction of a new oil refinery and fertilizer plant in Aqaba along with a more aggressive petroleum exploration program, indicated the Government's willingness to improve the minerals sector of the economy. The NRA claimed that 63% or 60,000 square kilometers of Jordan had been unexplored for economic minerals or mineral fuels. Jordan's apparent lack of domestic energy sources, mainly hydrocarbons, was expected to continue to stress the nation's

balance of trade owing to fuel importation costs.

References Cited

Middle East Economic Digest, 1996, Jordan: Middle East Economic Digest, v. 40, no. 30, p. 12.
———1997, Jordan: Middle East Economic Digest, v. 41, no. 20, p. 13.

Major Source of Information

Jordan Natural Resources Authority
P.O. Box 220
7 Amman, Jordan
Telephone: 962 (6) 811300
Fax: 962 (6) 811866

Major Publication

Chronique de la Recherche Miniere, Number 524, 1996
Ammam, Jordan

TABLE 1
JORDAN: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Commodity	1992	1993	1994	1995	1996 e/
Cement, hydraulic thousand tons	3,130	6,400	6,400 e/	3,508 r/	3,610
Feldspar e/	2,467 2/	2,500	2,500	2,500	2,500
Gypsum	83,038	194,981	193,000 e/	190,000 e/	190,000
Iron and steel, steel, crude e/	30,000	30,000	30,000	30,000	30,000
Kaolin	34,446	47,174	47,200 e/	47,500 r/ e/	47,500
Lime	7,115	7,267	7,270 e/	7,275 e/	7,275
Petroleum:					
Crude 3/ thousand 42-gallon barrels	16	11	--	--	--
Refinery products:					
Liquefied petroleum gas do.	1,300	1,500	1,500 e/	1,500 e/	1,500
Gasoline do.	3,895	4,100	4,130 e/	4,500 e/	4,500
Jet fuel do.	1,650	1,600	1,650 r/ e/	1,700 e/	1,700
Kerosene do.	2,350	2,300	2,350 e/	2,350 e/	2,350
Distillate fuel oil do.	5,610	5,500	6,050 r/ e/	6,000 e/	6,000
Residual fuel oil do.	5,625	5,240	6,390 r/ e/	6,000 r/ e/	6,000
Other do.	2,400	2,350	2,000 r/ e/	2,200 e/	2,200
Total do.	22,830	22,590	24,070 r/	24,250 r/ e/	24,250
Phosphate:					
Mine output:					
Gross weight thousand tons	4,296	3,565 r/	4,218	4,983	5,355
P2O5 content do.	1,418 e/	1,176 r/	1,399	1,655	1,765
Phosphatic fertilizers	553,600	490,788 r/	749,700	775,000 e/	775,000
Potash:					
Crude salts thousand tons	1,261	1,511	1,550	1,790 r/	1,800
K2O equivalent do.	756	822	930	1,075 r/	1,080
Salt	56,000	26,000	26,000	25,000 e/	25,000
Stone:					
Limestone	115,397	5,336	5,340 e/	5,340 e/	5,340
Marble	200,000	112,250	112,000 e/	112,000 e/	112,000

e/ Estimated. r/ Revised.

1/ Table includes data available through July 1, 1997.

2/ Reported figure.

3/ The Hamza Field was closed in mid-1993.