



# 2006 Minerals Yearbook

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JORDAN

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# THE MINERAL INDUSTRY OF JORDAN

By Thomas R. Yager

In 2006, Jordan played a significant role in the world's production of bromine, phosphate rock, and potash. The country's share of the world's bromine production amounted to 8%; and of phosphate rock and potash, 4% each. Other domestically significant mineral processing operations included cement and petroleum products (Jasinski, 2007; Kostick, 2007; Lyday, 2007). Jordan was not a globally significant consumer of minerals.

## Minerals in the National Economy

In 2005 (the latest year for which data were available), the output of the manufacturing sector amounted to 20.6% of the gross domestic product (GDP). In 2006, mineral extraction industries accounted for 3.9% of the GDP, and mineral manufacturing industries, 3.5%. Mineral extraction industries accounted for 14.4% of Jordan's exports in 2006, and mineral manufacturing industries, 8.4% (Central Bank of Jordan, 2007, p. 83; Natural Resources Authority, 2007).

## Production

In 2006, the production of gravel and crushed rock declined by 15%; phosphate rock, 9%; potash; 7%; phosphoric acid, 6%; dimension stone, 6%; petroleum products, 5%; and cement, 2%. The production of phosphatic fertilizers increased by 10%; bromine, 5%; and sulfuric acid, 4% (Natural Resources Authority, 2007).

## Structure of the Mineral Industry

Many of Jordan's significant mining and mineral processing operations (bromine, cement, phosphate rock, phosphatic fertilizers, phosphoric and sulfuric acid, and potash) were owned by a mixture of Government and private interests. In 2006, Brunei Investment Agency purchased a 37% share in Jordan Phosphate Mines Company (JPMC).

## Commodity Review

### Metals

**Iron and Steel.**—Jordan Steel Company was the leading domestic producer of steel. The company's production of semimanufactured steel increased to 181,000 metric tons (t) in 2006 from 167,000 t in 2005; national steel consumption increased to 600,000 t from 500,000 t. Jordan Steel and Consolidated Jordanian Iron and Steel Industry Ltd. planned to complete a new plant to remelt scrap steel with a capacity of 250,000 metric tons per year (t/yr) in May 2007 (Arab Steel, 2007).

### Industrial Minerals

**Cement.**—National cement production declined to about 3.97 million metric tons (Mt) in 2006 from 4.05 Mt in 2005. From 2002 to 2006, cement exports declined to 20,661 t from 867,491 t as domestic consumption increased to 4.07 Mt from 2.66 Mt (Natural Resources Authority, 2007).

Jordan Cement Factories Company Ltd. (JCFC) had two plants with a combined capacity of 4.6 million metric tons per year (Mt/yr). In 2008, JCFC planned to increase its capacity to 5.5 Mt/yr. The Kuwaiti-Jordanian Finance Company announced plans to build a new cement plant in southeastern Jordan. The plant was expected to have a capacity of 1.5 Mt/yr and to be completed in 2008 at a cost of \$230 million. Al-Hasa Company for Cement and Building Materials Industries Ltd. planned to complete a new cement plant near Al-Hasa. The plant was expected to have a capacity of 1.5 Mt/yr and to be completed in early 2007 at a cost of \$240 million. Arabian Cement Company Ltd. of Saudi Arabia planned to start construction of a new cement plant near Al-Qatrana with a capacity of about 1.8 Mt/yr in mid-2007. The plant was expected to be completed in 2009 at a cost of \$220 million (Allaf, 2006; Middle East Economic Digest, 2006a).

**Phosphate Rock.**—JPMC produced phosphate rock at the Al-Abiad, the Al-Hassa, and the Eshidiya Mines. In 2006, production declined to 5.8 Mt from 6.37 Mt in 2005. JPMC's exports of phosphate rock amounted to about 3.26 Mt in 2005; about 2.33 Mt was consumed domestically in the production of phosphoric acid and phosphatic fertilizers (Natural Resources Authority, 2007).

**Potash.**—Arab Potash Company Ltd. (APC) was one of the world's leading potash producers. In 2006, the company's production declined to 1.7 Mt from 1.83 Mt in 2005 because of inefficiencies in harvesting operations. APC planned to increase its capacity by 450,000 t/yr by the end of 2008. In 2006, India accounted for 29% of APC's 1.64 Mt of potash sales; Malaysia, 13%; and domestic consumers, 11%. Domestic consumers included Kemira Arab Potash Company, which produced potassium nitrate fertilizer (Arab Potash Company Ltd., 2007, p. 9, 16, 26).

### Mineral Fuels

**Petroleum.**—The Jordan Petroleum Refinery Company (JPRC) operated Jordan's only refinery at Zarqa. In 2006, JPRC's production declined by about 5%. JPRC planned to expand the refinery to a capacity of 130,000 barrels per day and reduce the sulfur content of its products. The expansion and upgrades were expected to cost \$700 million and to be completed in 2010 or 2011. Royal Dutch/Shell Group planned to explore for petroleum in the Azraq and the Al-Jafr Blocks in central Jordan, and Sonoran Energy Inc. of the United States, in

the Azraq Block (Middle East Economic Digest, 2006b; Central Bank of Jordan, 2007, p. 88).

## Outlook

The production of cement, potash, refined petroleum products, and steel is likely to increase in the near future because of expansions and the construction of new plants. The outlook for bromine, phosphate rock, phosphatic fertilizers, and phosphoric acid depends heavily on world market conditions.

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

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006
Bromine	--	--	34,000 <sup>r, e</sup>	66,000 <sup>r, e</sup>	69,000 <sup>e</sup>
Cement, hydraulic thousand metric tons	3,558	3,515	3,908	4,046	3,967
Clay:					
Common clay	484,951 <sup>r</sup>	492,583	608,390	618,127 <sup>r</sup>	642,617
Kaolin	162,786 <sup>r</sup>	217,248 <sup>r</sup>	216,566	168,264 <sup>r</sup>	112,787
Feldspar	530	13,057	13,063 <sup>r</sup>	1,000 <sup>r</sup>	11,054
Gypsum	11,252	63,895	135,331	344,991 <sup>r</sup>	333,710
Lime	10,753 <sup>r</sup>	10,108	7,154	14,505 <sup>r</sup>	11,591
Magnesia	--	--	24,000 <sup>r</sup>	--	--
Natural gas, dry million cubic meters	255	288	294	241 <sup>r</sup>	251
Petroleum:					
Crude 42-gallon barrels	11,000	9,839	10,372 <sup>r</sup>	8,540 <sup>r</sup>	10,047
Refinery products:					
Liquefied petroleum gas thousand 42-gallon barrels	1,577	1,485	1,299	1,400 <sup>e</sup>	1,300 <sup>e</sup>
Gasoline do.	5,383	5,084	4,938	5,300 <sup>e</sup>	5,100 <sup>e</sup>
Jet fuel do.	1,650	2,109	1,578	1,700 <sup>e</sup>	1,600 <sup>e</sup>
Kerosene do.	1,608	1,484	1,252	1,300 <sup>e</sup>	1,200 <sup>e</sup>
Distillate fuel oil do.	8,139	8,579	9,116	9,700 <sup>e</sup>	9,200 <sup>e</sup>
Residual fuel oil do.	7,911	7,759	10,097	11,000 <sup>e</sup>	10,500 <sup>e</sup>
Asphalt do.	1,066	1,200	1,300 <sup>e</sup>	1,400 <sup>e</sup>	1,300 <sup>e</sup>
Total do.	27,334	27,700	29,600 <sup>e</sup>	31,800 <sup>e</sup>	30,200 <sup>e</sup>
Phosphate:					
Phosphate rock, mine output:					
Gross weight thousand metric tons	7,134 <sup>r</sup>	6,650 <sup>r</sup>	6,188 <sup>r</sup>	6,375	5,805 <sup>2</sup>
P <sub>2</sub> O <sub>5</sub> content do.	2,280 <sup>r</sup>	2,130 <sup>r</sup>	1,980 <sup>r</sup>	2,040 <sup>r</sup>	1,860
Diammonium phosphate, P <sub>2</sub> O <sub>5</sub> content	NA <sup>r</sup>	NA <sup>r</sup>	NA <sup>r</sup>	NA <sup>r</sup>	NA
Phosphatic fertilizers	694,655	637,586	887,442	800,057	881,890
Phosphoric acid	681,611 <sup>r</sup>	628,280 <sup>r</sup>	606,273 <sup>r</sup>	587,400 <sup>r</sup>	554,456
Potash:					
Crude salts thousand metric tons	1,959 <sup>r</sup>	1,961	1,941 <sup>r</sup>	1,829 <sup>r</sup>	1,699
K <sub>2</sub> O equivalent do.	1,191	1,190	1,182 <sup>r</sup>	1,115	1,040 <sup>e</sup>
Salt	406,652	11,976	28,750 <sup>r</sup>	29,500 <sup>r</sup>	28,800
Sand: <sup>3</sup>					
Silica	13,340 <sup>r</sup>	33,210 <sup>r</sup>	46,900 <sup>r</sup>	147,000 <sup>r</sup>	415,800
Other thousand metric tons	7,467 <sup>r</sup>	8,359 <sup>r</sup>	17,360 <sup>r</sup>	14,980 <sup>r</sup>	2,659
Steel: <sup>e</sup>					
Crude	134,000 <sup>2</sup>	135,000 <sup>2</sup>	140,000	140,000	140,000
Semimanufactured	290,000	290,000	310,000	350,000	360,000
Stone:					
Basalt <sup>4</sup> cubic meters	1,818	--	6,976	--	8,529
Dimension, worked thousand meters	16,902 <sup>r</sup>	13,578	6,560	6,071 <sup>r</sup>	5,688
Gravel and crushed rock:					
Basalt thousand cubic meters	--	--	--	901	--
Marble do.	21	--	50	27	33
Other do.	10,605	14,266	14,932	15,805	14,150
Granite cubic meters	13,483	1,423	--	3,558	3,536
Marble <sup>4</sup> do.	59,084 <sup>r</sup>	20,685	27,650	43,956 <sup>r</sup>	37,911
Pozzolanic material	90,540	378,513	454,693	424,447	552,349
Travertine	6,000	7,632	4,141	10,780	9,048
Zeolite tuff	4,520 <sup>r</sup>	1,490 <sup>r</sup>	1,533 <sup>r</sup>	2,282 <sup>r</sup>	1,000
Sulfuric acid:					
Gross weight thousand metric tons	1,055 <sup>r</sup>	961 <sup>r</sup>	1,103 <sup>r</sup>	1,047 <sup>r</sup>	1,092
S content do.	345 <sup>r</sup>	314 <sup>r</sup>	361 <sup>r</sup>	342 <sup>r</sup>	357

<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. -- Zero. NA Not available.

<sup>1</sup>Table includes data available through October 31, 2007.

<sup>2</sup>Reported figure.

<sup>3</sup>Reported as cubic meters and converted to metric tons.

<sup>4</sup>Other than gravel and crushed rock.

TABLE 2  
JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2006

(Thousand metric tons unless otherwise specified)

Country and commodity	Major operating companies	Location of main facilities	Annual capacity <sup>1</sup>	
Bromine	Jordan Bromine Company [Arab Potash Company Ltd. (APC), 50%, and Albemarle Corp., 50%]	al-Safi	100. <sup>c</sup>	
Cement	Jordan Cement Factories Company Ltd. (JCFC) (LaFarge Group, 50%)	Fuheis and Rashadia	4,600.	
Do.	Arab Company for White Cement Industry	Amman	130.	
Feldspar	General Mining Company Ltd.	Al-Jaishiah	14. <sup>c</sup>	
Gypsum	Al-Nisr/Ali Manaseer	Mujib	89. <sup>c</sup>	
Do.	Jordan Cement Factories Company Ltd. (JCFC)	River Zarqa	73. <sup>c</sup>	
Do.	Public Mining Company Ltd.	Mujib	68. <sup>c</sup>	
Do.	Al-Nasr Mining Establishment	do.	31. <sup>c</sup>	
Do.	Falahat Mining Establishment	do.	25. <sup>c</sup>	
Do.	Shaker Al-Talib Establishment	Subeihi	15. <sup>c</sup>	
Do.	Al-Noor Mining Company	Mujib	11. <sup>c</sup>	
Kaolin	Jordanian Company for Mining and Processing of Kaolin and Feldspar	Qanasieh	150. <sup>c</sup>	
Do.	Al-Faori Enterprise for Mining	Al-Adasieh	110. <sup>c</sup>	
Do.	Public Mining Company Ltd.	Fuahais	38. <sup>c</sup>	
Do.	do.	Batn el-Ghoul	31. <sup>c</sup>	
Magnesia <sup>2</sup>	Jordan Magnesia Company (Arab Potash Company Ltd., 55.3%)	al-Safi	60.	
Natural gas	million cubic meters	National Petroleum Company (Government, 100%)	Risha	460.
Petroleum:				
Crude	thousand 42-gallon barrels	National Petroleum Company	Hamza	NA.
Refined	do.	Jordan Petroleum Refinery Company (JPRC)	Zarqa	36,500.
Phosphate:				
Phosphate rock	Jordan Phosphate Mines Company (Brunei Investment Agency, 37%, and Government of Jordan, 26.9%)	Al-Abiad, Al-Hassa, and Eshidiya Mines	7,000.	
Phosphatic fertilizers	Jordan Phosphate Mines Company	Aqaba	800 diammonium phosphate.	
Do.	Nippon Jordan Fertilizer Company (Asahi Industries Company, Ltd., Mitsubishi Corp., Mitsubishi Kasei Corp., and Zen-Noh, 60%; Arab Potash Company Ltd., 20%, and Jordan Phosphate Mines Company, 20%)	Eshidiya	100 diammonium phosphate; 200 other.	
Phosphoric acid <sup>3</sup>	Jordan Phosphate Mines Company	Aqaba	413.	
Do. <sup>3</sup>	Indo-Jordan Chemicals Company (Southern Petrochemical Industries Corp. Ltd., 52.2%; Jordan Phosphate Mines Company 34.8%)	Eshidiya	225.	
Potash	Arab Potash Company Ltd. (Potash Corp. of Saskatchewan, 28%; Government of Jordan, 26.9%; Arab Mining Co., 20.1%)	al-Safi	1,950.	
Potassium nitrate	Kemira Arab Potash Company (Arab Potash Company Ltd., 50%, and Kemira Danmark A/S, 50%)	Aqaba	150.	
Pozzolanic material	Jordan Cement Factories Company Ltd.	Tel Remah	340. <sup>c</sup>	
Do.	do.	Rashahdieh	130. <sup>c</sup>	
Sand, silica	Middle East Regional Development Enterprises	Ras al-Naqab	530.	
Do.	Mahmoud Hababbeh and Sons Quarry	do.	28. <sup>c</sup>	
Do.	Al-Rehab for Industrial Services and Trading	do.	27. <sup>c</sup>	
Do.	Al-Fares for Silica Sand Mining	do.	17. <sup>c</sup>	
Steel:				
Crude	Jordan Steel Company	Amman	300.	
Semimanufactured	do.	do.	300.	
Do.	National Steel Industry Co.	Awajan	100.	
Do.	Other steel producers	NA	506.	
Sulfuric acid	Jordan Phosphate Mines Company	Aqaba	1,450.	
Do.	Indo-Jordan Chemicals Company	Eshidiya	660.	

<sup>c</sup>Estimated. NA Not available.

<sup>1</sup>Estimates for feldspar, gypsum, kaolin, pozzolanic material, and silica sand producers are based on maximum production for 1 year between 2000 and 2005.

<sup>2</sup>Shut down in 2004.

<sup>3</sup>Expressed in phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>) equivalent.