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JORDAN

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The Mineral Industry of Jordan

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Jordan was one of the world's top producing countries of bromine, phosphate rock, and potash in 2007. It was the fourth ranked producer of bromine, the seventh ranked producer of phosphate rock, and the ninth ranked producer of potash. Jordan accounted for 17.8% of the bromine produced in the world in 2007 (excluding U.S. output), 3.6% of the phosphate rock produced, and 3.1% of the potash produced. Substantial amounts of cement, clay, dimension stone, fertilizers, pozzolanic material, refined petroleum products, and volcanic tuff were also produced and largely consumed by the local market (National Resources Authority [Jordan], 2008a, p. 9. 11; Apodaca, 2009; Jasinski, 2009a, b).

Minerals in the National Economy

In 2007, mining activity accounted for 2.78% of Jordan's gross domestic product (GDP) at current market prices compared with 2.81% in 2006 and 3.13% in 2005. However, the relative importance of the mining sector to the GDP at constant basic prices in 2007 was 1.8%. This decline was attributable to expansion in the business services, construction, financial, and real estate sectors. The growth rate (at constant basic prices) of the mining sector continued its negative trend, which started in 2003. In 2007, the growth rate was negative 1.4% compared with negative 9.5% in 2006 and negative 5.9% in 2005. Although the growth rate of the manufacturing sector (which included production of basic chemicals, fertilizers, iron and steel, and petroleum) was 4.7% in 2007, it was one-half the growth rate of 9.5% that was achieved in 2006 (Central Bank of Jordan, 2008, p. 11, 79).

According to the Natural Resources Authority of Jordan, cement production was the mining industry's leading contributor to the country's gross national product (GNP) and accounted for 2.5% of GNP; it was followed by potash mining (2.1%), fertilizer manufacturing (1.8%), phosphate rock mining (1.3%), bromine production (0.7%), hydrochloric, phosphoric, and sulfuric acid production (0.5%), and others (0.3%) (Natural Resources Authority [Jordan], 2008b, p. 14).

Government Policies and Programs

The Government introduced a new investment law on July 24, 2006, called the Investment Promotion Law (IPL). The law provided certain tax exemptions to existing and new investors. In 2007, 380 industrial projects, which included mining operations, such as cement production, benefited from the IPL compared with 520 projects in 2006 (Central Bank of Jordan, 2008, p. 12).

Production

In 2007, Jordan increased production of basalt stone by 143% compared with that of 2006, silica sand by 60%, potash by 5.7%, and cement by 4%. There were notable decreases in the production of travertine stone (70%), salt (41%), phosphoric acid, (13%), bromine (10%), crude oil (7%), petroleum (7%), sulfuric acid (6%), refined petroleum products (5%), and phosphate rock (4.4%) in 2007 compared with that of 2006.

Structure of the Mineral Industry

Mineral production in Jordan was dominated by two companies and their subsidiaries—Jordan Phosphate Mines Company p.l.c. (JPMC) and Arab Potash Company Ltd. (APC). Both companies had mixed ownership that included public and private (both domestic and international) investors. JPMC's major shareholders were the private Jordanian company Kamil Holding Ltd. (which held a 37% interest), Jordan Investment Corp. (29%), the Government's Social Security Corp. (14%), and Kuwait Investment Corp. (9%).

In addition to phosphate rock production, JPMC produced phosphoric acid through the Indo-Jordan Chemicals Company Ltd. which was a joint venture of Southern Petrochemical Industries Corporation Ltd. of India (which held a 52.2% interest), JPMC (34.8%), and Arab Investment Co. of Saudi Arabia (13%). Compound fertilizers were produced by Nippon Jordan Fertilizer Company Ltd., which was a joint venture of JPMC (20%), APC (20%), and four Japanese investors, which included the Agricultural Cooperative Associations (Zen-Noh) (30%), and Asahi Industries Company Ltd., Mitsubishi Corp., and Mitsubishi Chemicals Corp. (10% each) (Jordan Phosphate Mines Company p.l.c., 2007).

The major shareholders of APC included Potash Corp. of Saskatchewan of Canada (27.7%), state-owned Jordan Investment Corp., (26.9%), and Arab Mining Co., which was an Arab League economic establishment (19.5%) (Arab Potash Company Ltd., 2007). APC also was the sole owner of Numeira for Mixed Salts and Mud Co., which produced Dead Sea mud and mixed salts for cosmetics (Al-Arabi Investment Group, 2009, p. 14).

JPMC employed 3,870 people in 2007, which was a decrease of 3.7% from the number employed in 2006 and a decrease of 13.7% from the number employed in 2003. APC employed more than 2,000 people in 2007. Table 2 is a list of major mineral industry facilities in Jordan (Arab Potash Company Ltd., 2008; Jordan Phosphate Mines Company p.l.c., 2008).

Commodity Review

Industrial Minerals

Bromine.—Jordan Bromine Co. (JBC) was a 50-50 joint venture between Albemarle Corp. of the United States and APC. JBC, which began production in 2003, produced 85,105 metric tons (t) of bromine in 2007, which was down from the 94,500 t produced in 2006. Bromine compounds were marketed by

Albemarle Corp. under a long-term marketing agreement with JBC. JBC produced bromine, calcium bromide, caustic potash, chlorine, hydrogen bromide, sodium bromide, and tetra bormo bisphenol-A (National Resources Authority [Jordan], 2008a, p. 9; Al-Arabi Investment Group, 2009, p. 14).

Phosphate Rock.—In 2007, JPMC produced 5.55 million metric tons (Mt) of phosphate rock, which represented a decrease of 4.4% compared with the 2006 production level, which was, in turn, 8.9% lower than the output in 2005. More than one-half of the phosphate rock produced in Jordan (56%) was from the Al-Abiad Mine, the Al-Hassa Mine, and the Eshidiya Mine, which produced about 22% each, whereas the Russeifa Mine produced about 1%. Although no mining activities had been conducted at the mine at Russeifa since 1985 because of the exhaustion of reserves, 50 t of rock phosphate was extracted from existing stockpiles of ore. About 64% of the phosphate rock produced was exported mainly to countries in Asia by way of Aqaba Port. Moreover, JPMC also produced 644,000 t of diammonium phosphates and 330,000 t of phosphoric acid, which were almost entirely (97%) exported (Jordan Phosphate Mines Company p.l.c., 2008, p. 10, 31). JMPC aimed to increase phosphate rock production to 6.2 Mt in 2008. It also planned to expand exploration at the Al-Abiad and the Al-Hassa Mines to extend the life of these mines.

Jordan Indian Fertilizer Co. was created in December 2007 as a joint venture between Indian Farmers Fertilizers Cooperative of India (52%) and JPMC (48%) to build a plant at the Eshidiya Mine, which was expected to produce 475,000 t of phosphoric acid and 1.5 Mt of sulfuric acid annually. The plant was expected to begin production in late 2011 at an estimated cost of $570 million.

In July 2007, JPMC signed an agreement with Arab Fertilizers and Chemicals Company Ltd. of Jordan and Venture Capital Bank of Bahrain to establish a joint-venture company, Jordan Al-Abiad Fertilizers Chemicals Co. The new company was to build a fertilizer plant at the Al-Abiad phosphate rock mine. The production capacity of the plant was expected to be 132,000 metric tons per year (t/yr) of sulfuric acid, 80,000 t/yr of potassium sulfate, 65,000 t/yr of triple superphosphate, 55,000 t/yr of calcium chloride, and 15,000 t/yr of diammonium phosphate.

JPMC and Mitsubishi Corp. signed a memorandum of understanding in October 2007 to produce 1,000 metric tons per day (t/d) of phosphoric acid and 3,000 t/d of sulfuric acid from a new fertilizer complex that would be built at the Eshidiya Mine. The estimated cost of the project was $300 million (Jordan Phosphate Mines Company p.l.c., 2008, p. 7).

Potash.—Jordan's production of potash, which involved the extraction of potash dissolved in the water of the Dead Sea through solar evaporation, was carried out entirely by APC. In 2007, APC's output of potash was 1.8 Mt, which generated sales revenue of $377 million compared with $292 million in 2006, which was an increase of 29.9%. All but 10% of the potash produced was exported. India, China, and Malaysia were the major importing partners and received 26%, 17%, and 13% of the total potash exports, respectively.

APC proceeded with expansion of its potash operations. The expansion included increasing its production capacity by 450,000 t/yr for a total production capacity of 2.4 million metric tons per year of potash. APC also intended to increase its compaction capacity by 250,000 t/yr and its storage capacity at the Safi facility and the Aqaba Port by 115,000 t. The cost of the expansion project was estimated to be $280 million, and it was scheduled to be completed by yearend 2009.

In February 2007, APC became the sole owner of Arab Fertilizers and Chemicals Industries Ltd. (KEMAPCO) after acquiring the 50% interest held by Kemira Growhow of Finland. KEMAPCO had a production capacity of 75,000 t/yr of dicalcium phosphate and 150,000 t/yr of potassium nitrate (Arab Potash Company Ltd., 2008).

Silica Sand.—Jordan's production of silica sand, which was used in the production of glass, had been increasing in recent years. In 2007, it reached 628 Mt, which was 60% more than the 2006 production level. In September 2007, the Government and Rimal Glass Co. of Qatar signed an agreement to build a new glass plant in Maan Governorate, which is located south of Jordan (Zawya, 2007).

Outlook

Both branches of the mining industry in Jordan—the mineral extraction industry and the mineral processing industry—will likely continue to grow during the next 5 years as a result of major expansion works currently underway by APC and JPMC and the new joint ventures created, especially in fertilizer production. Mineral production from the Dead Sea, including bromine, mixed salts, and mud, which are extracted in relatively small quantities for use by the chemical, food, health, and pharmaceutical industries, is also expected to increase as long as external demand for these products exists.

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TABLE 1
JORDAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2003	2004	2005	2006	2007
Bromine		--	46,339 r	89,785 r	94,500 r	85,105
Calcium carbonate		440,231	476,989	320,345	303,821	327,834
Cement, hydraulic	thousand metric tons	3,500 r	3,908	4,046	3,967	4,138
Clay:						
Common clay		492,583	608,390	618,127	642,617	948,246
Kaolin		217,248	216,566	168,264	112,787	100,584
Feldspar		13,057	13,063	1,000	11,054	9,800
Fluorine, aluminum fluoride		430,808	10,181	8,923	11,500	10,540
Gypsum		63,895	135,331	344,991	333,710	287,789
Lime		10,108	7,154	14,505	11,591	12,266
Magnesia		--	24,000	--	--	--
Natural gas, dry	million cubic meters	288	294	241	251	220 e
Petroleum:						
Crude	42-gallon barrels	9,839	10,372	8,540	10,047	9,300 e
Refinery products:						
Liquefied petroleum gas	thousand 42-gallon barrels	1,485	1,299	1,369 r	1,451 r	1,245
Lubricants	do.	415	310 e	200 e	101	118
Gasoline	do.	5,084	4,938	5,280 r	5,530 r	5,787
Jet fuel	do.	2,109	1,578	2,569 r	2,385 r	2,304
Kerosene	do.	1,484	1,252	1,786 r	1,016 r	1,075
Distillate fuel oil	do.	8,579	9,116	10,407 r	9,878 r	9,047
Residual fuel oil	do.	7,759	10,097	9,764 r	8,781 r	8,024
Asphalt	do.	1,200	1,150 r, e	1,100 r, e	1,014 r	942
Total	do.	28,115 r	29,700 r, e	32,500 r, e	30,156 r	28,542
Phosphate:						
Phosphate rock, mine output:						
Gross weight	thousand metric tons	6,650	6,188	6,375	5,805	5,552
P_2O_5 content	do.	2,130	1,980	2,040	1,860	1,780
Phosphatic fertilizers		637,586	887,442	800,057	881,890	851,134
Phosphoric acid		628,280	606,273	587,400	554,456	480,470
Potash:						
Crude salts	thousand metric tons	1,961	1,941	1,829	1,699	1,796
K_2O equivalent	do.	1,194 r	1,180 r	1,115	1,036 r	1,090
Salt		11,976	28,750	29,500	28,800	17,000
Sand:[2]						
Silica	thousand metric tons	52 r	73 r	229 r	392 r	628
Other	do.	13,045 r	27,088 r	23,375 r	4,150 r	4,370
Steel:[e]						
Crude		135,000 [3]	140,000	150,000 r	150,000 r	150,000
Semimanufactured		290,000	310,000	350,000	360,000	360,000
Stone:						
Basalt	cubic meters	--	6,976	--	8,529	20,700
Dimension, worked	thousand meters	13,578	6,507 r	6,071	5,688	5,657
Gravel and crushed rock:						
Marble	do.	21 r	28 r	44 r	38 r	41
Other	do.	14,266	14,932	15,805	14,150	15,009
Granite	cubic meters	1,423	--	3,558	3,536	3,676
Marble	do.	20,685	27,650	43,956	37,911	40,909
Pozzolanic material		378,513	454,693	424,447	552,349	495,371
Travertine		7,632	4,141	10,780	9,048	2,672
Zeolite tuff		2,710 r	2,795 r	2,282	3,939 r	2,148
Sulfuric acid:						
Gross weight	thousand metric tons	961	1,103	1,047	1,092	1,022
S content	do.	314	361	342	357	334

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. do. Ditto. -- Zero.

[1]Table includes data available through March 31, 2009.

[2]Reported as cubic meters and converted to metric tons.

[3]Reported figure.

TABLE 2
JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity[1]
Aluminum fluoride	Jordan Phosphate Mines Company p.l.c. (JPMC) (Kamil Holding Ltd., private, 37%; Jordan Investment Corp., 29%; Social Security Corp., 14%; Kuwait Investment Corp., 9%)	Aqaba	14.
Bromine	Jordan Bromine Co. [Arab Potash Company Ltd. (APC), 50%, and Albemarle Corp., 50%]	al-Safi	100.[e]
Cement	Jordan Cement Factories Company Ltd. (LaFarge Group, 50%)	Fuheis and Rashadia	4,600.
Do.	Arab Company for White Cement Industry	Amman	130.
Feldspar	General Mining Company Ltd.	Al-Jaishiah	10.[e]
Gypsum	Al-Nisr/Ali Manaseer	Mujib	89.[e]
Do.	Jordan Cement Factories Company Ltd.	River Zarqa	73.[e]
Do.	Public Mining Company Ltd.	Mujib	68.[e]
Do.	Al-Nasr Mining Establishment	do.	31.[e]
Do.	Falahat Mining Establishment	do.	25.[e]
Do.	Shaker Al-Talib Establishment	Subeihi	15.[e]
Do.	Al-Noor Mining Co.	Mujib	11.[e]
Kaolin	Jordanian Company for Mining and Processing of Kaolin and Feldspar	Qanasieh	216.[e]
Do.	Al-Faori Enterprise for Mining	Al-Adasieh	110.[e]
Do.	Public Mining Company Ltd.	Fuahais	38.[e]
Do.	do.	Batn el-Ghoul	31.[e]
Magnesia[2]	Jordan Magnesia Co. (Arab Potash Company Ltd., 55.3%)	al-Safi	24.
Natural gas million cubic meters	National Petroleum Co. (Government, 100%)	Risha	460.
Petroleum:			
Crude thousand 42-gallon barrels	National Petroleum Co.	Hamza	NA.
Refined do.	Jordan Petroleum Refinery Co.	Zarqa	36,500.
Phosphate:			
Phosphate rock	Jordan Phosphate Mines Company p.l.c. (JPMC) (Kamil Holding Ltd., private, 37%; Jordan Investment Corp., 29%; Social Security Corp., 14%; Kuwait Investment Corp., 9%)	Al-Abiad, Al-Hassa, Eshidiya, and Russeifa Mines	7,000.
Phosphatic fertilizers	Jordan Phosphate Mines Company p.l.c. (JPMC)	Aqaba	650.
Do.	Nippon Jordan Fertilizer Company Ltd. [Zen-Noh, 30%; Arab Potash Company Ltd. (APC), 20%; Jordan Phosphate Mines Company p.l.c. (JPMC), 20%; Asahi Industries Company Ltd., 10%; Mitsubishi Corp., 10%; Mitsubishi Chemicals Corp., 10%]	Eshidiya	300.
Phosphoric acid	Jordan Phosphate Mines Company p.l.c. (JPMC)	Aqaba	350.
Do.	Indo-Jordan Chemicals Company [Southern Petrochemical Industries Corporation Ltd., 52.2%, and Jordan Phosphate Mines Company p.l.c. (JPMC), 34.8%; Arab Investment Co., 13%]	Eshidiya	225.
Potash	Arab Potash Company Ltd. (Potash Corp. of Saskatchewan, 27.7%; Jordan Investment Corp. (Government of Jordan), 26.9%; Arab Mining Co., 19.5%)	al-Safi	1,950.
Potassium nitrate	Arab Fertilizers and Chemicals Industries Ltd. (Arab Potash Company Ltd., 100%)	Aqaba	150.
Pozzolanic material	Jordan Cement Factories Company Ltd.	Tel Remah	350.
Do.	do.	Rashahdieh	150.
Salt	Arab Potash Company Ltd. (APC), 100%	NA	17.
Sand, silica	Middle East Regional Development Enterprises	Ras al-Naqab	530.
Do.	Mahmoud Habahbeh and Sons Quarry	do.	28.[e]
Do.	Al-Rehab for Industrial Services and Trading	do.	27.[e]
Do.	Al-Fares for Silica Sand Mining	do.	17.[e]

See footnotes at end of table.

TABLE 2—Continued
JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity[1]
Steel:			
Crude	Jordan Steel Co.	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 p.l.c. (JPMC)	Aqaba	1,100.
Do.	Indo-Jordan Chemicals Co.	Eshidiya	660.

[e]Estimated. Do., do. Ditto. NA Not available.
[1]Estimates for feldspar, gypsum, kaolin, pozzolanic material, and silica sand producers based on maximium production for 1 year between 2000 and 2007.
[2]Shut down in 2004.