USGS
science for a changing world

2005 Minerals Yearbook

JORDAN

U.S. Department of the Interior
U.S. Geological Survey

August 2007

The Mineral Industry of Jordan

By Thomas R. Yager

In 2005, Jordan was the world's sixth ranked producer of phosphate rock and potash. It also produced such industrial minerals as bromine, feldspar, gypsum, kaolin, salt, and silica sand and such building materials as cement, dimension stone, limestone, and marble. Natural gas and petroleum products were produced for domestic consumption. Deposits of copper, gold, iron ore, sulfur, and titanium were also found in Jordan (Jasinski, 2007; Kostick, 2007).

In 2005, Jordan's nominal gross domestic product (GDP) amounted to about $28 billion based on purchasing power parity. The per capita GDP based on purchasing power parity was about $4,800. Jordan's real GDP grew by 7.2% in 2005 and 7.7% in 2004. In 2004, the output of the manufacturing sector amounted to 20.6% of the GDP; construction, 5.4%; electricity and water, 2.5%; and mining and quarrying, 2.4% (Central Bank of Jordan, undated, p. 83; International Monetary Fund, 2006§[1]).

In 2005, total exports were valued at $3.63 billion, of which $717 million were fertilizers, phosphate rock, phosphoric acid, and potash. Total imports were valued at $10.5 billion, of which imports of crude petroleum amounted to $1.71 billion; refined petroleum products, $449 million; and iron and steel products, $449 million (Central Bank of Jordan, undated, p. 102, 104).

Commodity Review

Metals

Iron and Steel.—Jordan Steel Company was the leading domestic producer of steel. In 2005, the company's production increased to 160,000 metric tons (t) from 121,000 t in 2004 and 97,000 t in 2003 because of higher demand in domestic and foreign markets. Jordan Steel and Consolidated Jordanian Iron and Steel Industry Ltd. started a joint venture to build a new plant to remelt scrap steel. The planned capacity of the plant was 270,000 metric tons per year (t/yr); the project was expected to be completed in the first half of 2007 at a cost of $34 million (Jordan Investment Trust plc, 2006; Arab Steel, 2005§, 2006§).

The completion of the new plant would eliminate Jordan Steel's dependence upon imported billet. In 2005, the value of iron and steel imports rose to $449 million from $356 million in 2004 and $214 million in 2001 (Central Bank of Jordan, undated, p. 104; Arab Steel, 2006§).

Industrial Minerals

Bromine.—Jordan Bromine Company [a joint venture of Arab Potash Company Ltd. (APC) and Albemarle Corp. of the United States] produced bromine, calcium bromide, and sodium bromide at its plant at al-Safi on the Dead Sea. Bromine production was an estimated 50,000 t in 2005 compared with 46,000 t in 2004 (table 1).

Cement.—National cement production rose to nearly 4.05 million metric tons (Mt) in 2005 from 3.91 Mt in 2004. Jordan Cement Factories Company Ltd. (JCFC) had two plants with a combined capacity of 4.2 million metric tons per year (Mt/yr). Growth in the domestic construction sector led to higher consumption of cement in 2005; JCFC reduced its exports and increased its output to meet demand. The company planned to increase its capacity to 5.5 Mt/yr in 2008 by upgrading existing production lines and installing a new production line at the Rashadiah plant (Allaf, 2006).

In early 2005, the Kuwaiti-Jordanian Finance Company announced plans to establish 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. The company planned to sell its cement domestically and to export it to markets in Iraq, the Palestinian Authority, Saudi Arabia, and Syria (Allaf, 2006).

Al-Hasa Company for Cement and Building Materials Industries Ltd. planned to complete a new cement plant near Al-Hassa. 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. was also considering a joint venture with a Jordanian investor for the development of two new plants to produce portland and white cement. The portland cement plant was expected to have a capacity of 2 Mt/yr, and the white cement plant, 200,000 t/yr (Allaf, 2006).

Magnesium Compounds.—In December 2004, Jordan Magnesia Company (a subsidiary of APC) shut down the production of magnesia from the Dead Sea's resources of magnesium chloride. The company planned to carry out scheduled maintenance. By April 2005, production had not resumed because of technical problems with plant equipment; Jordan Magnesia did not announce a date for restarting the plant (O'Driscoll, 2005).

Phosphate Rock.—The Jordan Phosphate Mines Company (JPMC) produced phosphate rock at al-Abiad, al-Hassa, and the Eshidiya Mines. In 2005, phosphate rock production rose to nearly 6.38 Mt in 2005 from 6.22 Mt in 2004. National exports of phosphate rock amounted to $168 million in 2005 compared with $166 million in 2004 and $128 million in 2001 (Central Bank of Jordan, undated, p. 102).

Phosphoric acid was produced by the Indo-Jordan Chemicals Company (IJC) and JPMC. IJC consumed about 850,000 t/yr of phosphate rock from the Eshidiya Mine and exported its output to India. About 80% of JPMC's phosphoric acid was consumed in the production of diammonium phosphate (DAP) fertilizer. From 2001 to 2005, exports of phosphoric acid rose to $98.3 million from $52.2 million (Arab Petroleum Research Center, 2004; Central Bank of Jordan, undated, p. 102).

JPMC had a DAP plant with a capacity of 750,000 t/yr. Nippon Jordan Fertilizer Company (NJFC) also produced DAP

[1]References that include a section mark (§) are found in the Internet References Cited section.

and other fertilizers at Aqaba and exported its output to Japan. In 2005, Jordan's exports of fertilizers were valued at $173 million compared with $175 million in 2004 and $86.3 million in 2001 (Central Bank of Jordan, undated, p. 102).

Potash.—APC was one of the world's leading potash producers. In 2005, the company's production declined to 1.83 Mt from 1.93 Mt because of maintenance and rehabilitation, problems with salt mushrooms, and harvesting operation difficulties. APC planned to increase capacity to 2.45 Mt/yr from about 1.95 Mt/yr by mid-2008 (Arab Potash Company Ltd., 2006, p. 8, 26).

Most of APC's potash production was exported; about 10% of sales was to domestic customers. Exports of potash were $277 million in 2005 compared with $231 million in 2004 and $195 million in 2001. India accounted for 33% of APC's total potash sales; China, 12%; Malaysia, 7%; and Indonesia, 3% (Arab Potash Company Ltd., 2006, p. 22; Central Bank of Jordan, undated, p. 102).

Kemira Arab Potash Company (a joint venture of APC and Kemira) produced potassium nitrate fertilizer and dicalcium phosphate animal feed supplement. Production was below capacity in 2005; the company also had difficulty meeting required specifications for its products. In 2005, consumption of potash from APC increased to 88,000 t from 50,000 t in 2004 (Arab Potash Company Ltd., 2006, p. 23, 28).

Mineral Fuels

Natural Gas.—The Jordanian National Petroleum Company produced natural gas at the Risha gasfield; the majority of the country's natural gas was imported from Syria. In September 2005, Petrel Resources plc of Ireland signed a production-sharing agreement with the Government for the East Sawafi Block in eastern Jordan, which was prospective for natural gas and petroleum (Petrel Resources plc, 2005).

Petroleum.—Although minimal production at the Hamza oilfield on the Azraq Block continued in 2005, Jordan depended upon imports for most of its petroleum requirements. Imports of crude petroleum increased to $1.71 billion in 2005 from $1.08 billion in 2004 and $545 million in 2001. In 2005, Sonoran Energy Inc. of the United States signed a production-sharing agreement with the Government for the Azraq Block (Pepper, 2005; Central Bank of Jordan, undated, p. 104).

The Jordan Petroleum Refinery Company (JPRC) operated Jordan's only refinery at Zarqa. The company produced at nearly 114% of its rated capacity in 2005. JPRC planned to expand the refinery to a capacity of 140,000 barrels per day (bbl/d) from 100,000 bbl/d and to reduce the sulfur content of its products. The expansion and upgrades were expected to be completed by 2010 at a cost of between $750 million and $800 million. In 2005, imports of petroleum products increased to $449 million from $292 million in 2004 and $113 million in 2001 (Ghawi, 2005; Central Bank of Jordan, undated, p. 104).

Infrastructure

Jordan produced 9,654 gigawatt-hours (GWh) of electricity in 2005 compared with 8,967 GWh in 2004; imports rose to 982 GWh from 826 GWh. About 7% of domestic electricity was generated from the gas-fired plant at Risha. Installed generating capacity was 2,019 megawatts (MW) in 2005. National consumption of electricity was 8,712 GWh in 2005. Producers of cement consumed 409 GWh; potash, 278 GWh; fertilizers, phosphoric acid, and sulfuric acid, 203 GWh; phosphate rock, 115 GWh; refined petroleum products, 105 GWh; and bromine, 60 GWh. Peak demand was 1,751 MW of capacity in 2005 and was expected to rise to 2,339 MW in 2010, 2,856 MW in 2015, and 3,289 MW in 2020 (National Electric Power Company, undated, p. 24, 28, 35).

Outlook

Jordan's economy was expected to grow by 5% in 2006 and 2007. The strength of the domestic economy could lead to higher demand for cement, dimension stone, sand and gravel, and steel. JCFC expected that its domestic cement sales would increase to between 4.3 Mt and 4.5 Mt in 2006 from 3.9 Mt in 2005 (Allaf, 2006). The outlook for bromine, magnesia, phosphate rock, and potash depended heavily upon world market conditions.

References Cited

Allaf, Heba, 2006, Jordan Cement Factories Company: Amman, Jordan, Jordan Export Finance Bank, 11 p.

Arab Petroleum Research Center, 2004, Jordan, *in* Arab oil & gas directory 2004: Paris, France, Arab Petroleum Research Center, p. 194-206.

Arab Potash Company Ltd., 2006, Annual report 2005: Amman, Jordan, Arab Potash Company Ltd., 72 p.

Central Bank of Jordan, [undated], Annual report 2005: Amman, Jordan, Central Bank of Jordan, 134 p.

Ghawi, Samir, 2005, Jordan Petroleum Refinery puts $800 million expansion scheme into gear this month: Jordan Times [Amman, Jordan], October 16, 2 p.

Jasinski, S.M., 2007, Phosphate rock: U.S. Geological Survey Mineral Commodity Summaries 2007, p. 120-121.

Jordan Investment Trust plc, 2006, Jordan Steel: Amman, Jordan, Jordan Investment Trust plc, 12 p.

Kostick, D.S., 2007, Potash: U.S. Geological Survey Mineral Commodity Summaries 2007, p. 124-125.

National Electric Power Company, [undated], Annual report 2005: Amman, Jordan, National Electric Power Company, 64 p.

O'Driscoll, Mike, 2005, Magnesia on the high road again: Industrial Minerals, no. 451, April, p. 37-45.

Pepper, Tom, 2005, Jordan—Moving from MoU to a PSA: Middle East Economic Digest, v. 49, no. 47, November 25-December 1, p. 52-53.

Petrel Resources plc, 2005, Exploration block in Jordan: Dublin, Ireland, Petrel Resources plc press release, September 13, 1 p.

Internet References Cited

Arab Steel, 2005 (April 3), Jordan Steel Company—Sales and exports of 2004 increased, accessed June 2, 2006, at URL http://www.arabsteel.info/total/Long_News_Total_e.asp?ID=118.

Arab Steel, 2006 (April 26), Jordan Steel—Growth in sales and exports, accessed June 2, 2006, at URL http://www.arabsteel.info/total/Long_News_Total_e.asp?ID=228.

International Monetary Fund, 2006 (April), Jordan, World Economic Outlook Database, accessed June 2, 2006, via URL http://www.imf.org/external/pubs/ft/weo/2006/01/data/index.htm.

TABLE 1
JORDAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2001	2002	2003	2004	2005[e]
Bromine		--	--	--	46,000	50,000
Cement, hydraulic	thousand metric tons	3,173	3,558	3,515	3,908	4,046 [2]
Clay:						
Common clay		300,000 [e]	400,000 [e]	492,583	608,390	610,000
Kaolin		24,124	100,000 [e]	179,153	216,566	220,000
Zeolite tuff		7,500 [e]	5,000 [e]	2,710	2,790	2,800
Feldspar		611	530	13,057	13,060	13,000
Gypsum		86,012	11,252	63,895	135,331	140,000
Lime[e]		6,000	8,000	10,108 [2]	7,154 [2]	7,200
Magnesia		--	--	--	22,000	--
Natural gas, dry	million cubic meters	278	255	288	294	300
Petroleum:						
Crude	42-gallon barrels	11,800	11,000	9,839	8,480	8,000
Refinery products:						
Liquefied petroleum gas	thousand 42-gallon barrels	1,606	1,577	1,485	1,299 [r]	1,400
Gasoline	do.	5,465	5,383	5,084	4,938 [r]	5,300
Jet fuel	do.	1,693	1,650	2,109	1,578 [r]	1,700
Kerosene	do.	1,398	1,608	1,484	1,252 [r]	1,300
Distillate fuel oil	do.	7,456	8,139	8,579	9,116 [r]	9,700
Residual fuel oil	do.	8,564	7,911	7,759	10,097 [r]	11,000
Asphalt	do.	821	1,066	1,200	1,300 [e]	1,400 [e]
Total	do.	27,003	27,334	27,700	29,600 [r, e]	31,800
Phosphate:						
Phosphate rock, mine output:						
Gross weight	thousand metric tons	5,878 [r]	7,107 [r]	6,762	6,223	6,375 [2]
P_2O_5 content	do.	1,940 [r]	2,350 [r]	2,230	2,050	2,100
P_2O_5 equivalent:						
Diammonium phosphate		256,000	267,000	210,000	293,000	300,000
Phosphoric acid		482,000	594,000	563,000	566,000	550,000
Potash:						
Crude salts	thousand metric tons	1,962 [r]	1,956	1,961	1,929	1,830 [2]
K_2O equivalent	do.	1,195 [r]	1,191 [r]	1,190 [r]	1,175 [r]	1,115 [2]
Salt		329,000	406,652	11,976	28,700	29,000
Sand:						
Silica		90,000 [e]	60,000 [e]	33,100	46,000	46,000
Other	thousand metric tons	NA	NA	8,349	17,320	18,000
Steel:[e]						
Crude		30,000	134,000 [2]	135,000 [2]	140,000	140,000
Semimanufactured		290,000	290,000	290,000	310,000	350,000
Stone:						
Dimension, worked	thousand meters	7,000 [e]	10,000 [e]	13,578	6,560	6,600
Gravel and crushed rock	thousand cubic meters	11,000 [e]	13,000 [e]	14,266	14,900	15,000
Limestone[e]	do.	8,400	9,600	9,500	9,500	9,500
Marble	cubic meters	21,000 [e]	21,000 [e]	20,685	27,650	28,000
Sulfuric acid:						
Gross weight	thousand metric tons	1,650	1,800	1,650	1,790	1,700
S content	do.	539	588	539	585	560

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

[1]Table includes data available through November 30, 2006.

[2]Reported figure.

TABLE 2
JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2005

(Thousand metric tons unless otherwise specified)

Country and commodity	Major operating companies	Location of main facilities	Annual capacity
Bromine	Jordan Bromine Company (Arab Potash Company Ltd., 50%, and Albemarle Corp., 50%)	al-Safi	50.
Cement	Jordan Cement Factories Company Ltd. (LaFarge Group, 48.1%)	Fuheis and Rashadia	4,200.
Do.	Arab Company for White Cement Industry	Amman	130.
Magnesia	Jordan Magnesia Company (Arab Potash Company Ltd., 55.8%)	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	Zarqa	36,500.
Phosphate:			
Phosphate rock	Jordan Phosphate Mines Company (Jordan Investment Corp., 41.5%; Social Security Corp., 27.8%; Kuwait Investment Corp., 15.9%)	Al-Abiad, Al-Hassa, and Eshidiya Mines	7,000.
Phosphatic fertilizers	Jordan Phosphates Mines Company	Aqaba	750 DAP.[1]
Do.	Nippon Jordan Fertilizer Company (Asahi Industries Company, Ltd., Mitsubishi Corp., Mitsubishi Kasei Corp., and Zen-Noh, 60%; Arab Potash Company Ltd., 20%; Jordan Phosphate Mines Company, 20%)	Eshidiya	100 DAP; 200 other.
Phosphoric acid[2]	Jordan Phosphates Mines Company	Aqaba	432.
Do.[2]	Indo-Jordan Chemicals Company (Southern Petrochemical Industries Corp. Ltd., 52.2%; Jordan Phosphate Mines Company 34.8%; Arab Investment Co., 13%)	Eshidiya	225.
Potash	Arab Potash Company Ltd. (Potash Corp. of Saskatchewan, 27.7%; Government of Jordan, 26.9%; Arab Mining Co., 19.5%)	al-Safi	1,950.
Potassium nitrate	Kemira Arab Potash Company (Arab Potash Company Ltd., 50%, and Kemira Danmark A/S, 50%)	Aqaba	150.
Salt	al-Azraq	Azraq	NA.
Sand, silica	Middle Eastern Regional Development Enterprises	Ras al-Naqab	530.
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 Phosphates Mines Company	Aqaba	1,785.
Do.	Indo-Jordan Chemicals Company	Eshidiya	660.

NA Not available.

[1]Diammonium phosphate.

[2]Expressed in phosphorus pentoxide (P_2O_5) equivalent.