



2015 Minerals Yearbook

JORDAN [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF JORDAN

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Jordan was an important supplier of bromine, phosphate rock, phosphate fertilizers, and potash to the world in 2015. The country was the world's (excluding the United States) third-ranked producer of bromine after Israel and China and accounted for 25.6% of the world's (excluding the United States) output. Jordan was the world's fifth-ranked producer of phosphate rock after China, Morocco, the United States, and Russia, and accounted for 3.4% of world production. The country was also the world's seventh-ranked producer of potash and accounted for 3.2% of world output. Other mineral commodities produced in Jordan included aluminum fluoride, calcium carbonate, cement, common clay, crude petroleum, gypsum, iron and steel, kaolin, lime, limestone, marble, natural gas, pozzolanic materials, refined petroleum products, salt, silica sand, sulfuric acid, travertine, and zeolites mainly for domestic use (table 1; Jasinski, 2017a, b; Schnebele, 2017).

Minerals in the National Economy

Jordan's gross domestic product (GDP) increased in real terms by 2.4% in 2015 compared with an increase of 3.1% in 2014. In 2015, the mining and quarrying sector's share of GDP was 2.9%; manufacturing, 16.3%; and construction, about 4.4%. The value of the activity in the mining and quarrying sector at constant prices increased by 11.0% in 2015 compared with an increase of 27.6% in 2014 and a decrease of 10.9% in 2013. The manufacturing sector, which included cement, fertilizer, iron and steel production, and other industries, grew by 1.3% at constant prices in 2015 compared with 1.5% in 2014 and 1.9% in 2013. The construction sector decreased at constant prices by 1.3% in 2015 compared with an increase of 6.8% in 2014 and 8.7% in 2013 (Central Bank of Jordan, 2016, p. 8, 9, 75).

Government Policies and Programs

The Government approved the Renewable Energy and Efficient Energy Law No. 13 of 2012. The law established a legal and regulatory framework for investment in renewable energy projects in Jordan and authorized the Ministry of Energy and Mineral Resources to approve proposed renewable energy projects and grant tariff exemptions on imported renewable energy equipment. In 2015, the Government was focused on alternative sources of energy such as oil shale, nuclear, solar, and wind. The national comprehensive energy strategy called for using oil shale as a fuel to generate electricity or to distill it to produce crude petroleum. One of the objectives of Jordan's energy strategy was to increase the share of renewable energy use to meet 7% of the country's primary energy needs by 2015 and 10% by 2020 (Ministry of Energy and Mineral Resources, 2015, p. 38).

In 2015, the Ministry of Energy and Mineral Resources (MEMR) was in charge of Jordan's mineral resources under

the Organization of Natural Resources Affair Law (Law No. 12 of 1968). The law tasked MEMR through the Natural Resources Authority (NRA) with the responsibility of prospecting, carrying out geologic and economic studies needed for the development of the country's natural resources, overseeing mining methods, and producing minerals in the country. The NRA, which was formerly an autonomous Government agency, was dissolved and became part of the MEMR according to the Restructuring of Institutions and Government Departments Law No. 17 of 2014. MEMR assumed the functions of the NRA, including promoting investment in the country's mineral resources. The regulatory responsibilities of the NRA were transferred to the Energy and Minerals Regulatory Commission (EMRC), which was an autonomous agency with oversight of electricity, minerals, and nuclear installations. The MEMR carried out mineral exploration studies for basalt, bentonite, calcium carbonate, copper, diatomite, and dolomite deposits at Al Farsh and Ras Negav; feldspar ore at Ar Rashadiya; kaolin clays at Wadi Al Mizrab; and oil shale at four locations in Ma'an Governorate. MEMR also conducted exploration studies for high-grade limestone at Al Hisa, silica sand at Ras Al Negav, and zircon sands in southern Jordan near the border with Saudi Arabia. The MEMR plan for 2016–18 included continued mineral exploration studies for such metals as copper and such industrial minerals as chalk, dolomite, and phosphate rock. The majority of exploration studies, however, focused on shale oil (Natural Resources Authority, 1968; Ministry of Energy and Mineral Resources, 2015, p. 17, 47–50; 2016, p. 4, 23).

Production

In 2015, Jordan's phosphate rock production increased, by 17% compared with that of 2014, and potash, by 13%. Notable decreases in mineral production in 2015 compared with those of 2014 included phosphoric acid, by 49%; diammonium phosphate, by 42%; crude petroleum, by 38%; clinker and crude steel, each by 25%; jet fuel, by 19%; construction sand, by 17%; and liquefied petroleum gas, by 12% (table 1).

Structure of the Mineral Industry

National Petroleum Co. and Jordan Petroleum Refinery Co. Ltd. were wholly state owned. Arab Company for White Cement Industry, Arab Potash Co. Ltd. (APC), Jordan Abyad Fertilizers and Chemicals Co. P.S.C. (JAFCCO), Jordan India Fertilizer Company L.L.C. (JIFCO), Jordan Lafarge Cement Factories Co. P.S.C. (JCFC), Jordan Phosphate Mines Co. p.l.c. (JPMC), and Nippon Jordan Fertilizer Co. had mixed ownership whereas the remaining companies were privately owned. Jordan Steel Group was a publicly listed company that included Consolidated Jordanian Co. for Steel Industry Ltd., Jordan Steel Group P.L.C., and National Steel Industry Co. (table 2).

Mineral Trade

In 2015, Jordan's total exports decreased to about \$7.9 billion from \$8.4 billion in 2014. The value of phosphate rock exports increased to \$521 million from \$470 million in 2014 and \$377 million in 2013. The quantity of phosphate rock exports increased to 4.8 million metric tons (Mt) in 2015 from 4.6 Mt in 2014 and 3.2 Mt in 2013. The main destinations for phosphate rock exports were India (66.8%), Indonesia (15.5%), Serbia (4.2%), Bangladesh (3.1%), and Australia (1.7%). Phosphate fertilizers exports increased by 45% to \$424 million in 2014 from \$374 million in 2014. Nitrogen fertilizers exports decreased to \$153 million in 2015 from \$297 million in 2014. In terms of quantity, Jordan exported 318,000 metric tons (t) of diammonium phosphate, 138,000 t of compound fertilizer (NPK), 134,000 t of potassium nitrate, 68,000 t of phosphoric acid, and 15,000 t of triple superphosphate. The major phosphate fertilizer export destinations included India, which received 38% of Jordan's fertilizer exports; Turkey, 23%; and Iraq, 13%. In 2015, Jordan's potash exports increased to \$642 million from \$602 million in 2014. Potash was exported to China, which received 30% of Jordan's potash exports; India, 26%; and Malaysia, 8% (Jordan Phosphate Mines Co. p.l.c., 2016, p. 23, 41; United Nations Statistics Division, 2016, p. 216).

In 2015, Jordan's imports decreased by about 11.9% to \$20.0 billion (about \$4.3 billion of which were fuel oil and natural gas imports) from about \$22.7 billion in 2014 (\$7.0 billion fuel oil and natural gas imports). Natural gas imports increased to 2.2 billion cubic meters in 2015 from 1.2 billion cubic meters in 2014. In addition to mineral fuels, Jordan imported such mineral commodities as aluminum, copper, other base metals, precious metals, iron and steel, and liquid ammonia and sulfur for use in fertilizer manufacturing. In 2014, Jordan imported 863,000 t of finished and semifinished steel products, which was 45% less than that of 2009 when the country's steel imports peaked at more than 1.5 Mt (Organization of the Petroleum Exporting Countries, 2016, p. 108; United Nations Statistics Division, 2016, p. 217; World Steel Association, 2016, p. 57).

The value of United States exports to Jordan decreased sharply to \$1.36 billion in 2015 from \$2.05 billion in 2014, and the value of imports from Jordan to the United States increased to about \$1.5 billion in 2015 from \$1.4 billion in 2014. The top U.S. exports relating to the mineral and mineral extraction industries in 2015 were excavating machinery, \$14.5 million; finished metal shapes, \$9.7 million; gold, \$9.1 million; other petroleum products, \$8.9 million; aluminum and alumina, \$3.0 million; copper, \$2.5 million; and drilling and oilfield equipment, \$1.1 million. The main United States mineral commodity import from Jordan was inorganic chemicals (mainly bromine), which increased to \$17.3 million in 2015 compared with \$5.9 million in 2014 and \$3.0 million in 2013 (U.S. Census Bureau, 2016a, b).

Commodity Review

Metals

Iron and Steel.—Jordan had 12 steel plants, of which 4 were melting shops. As of yearend 2015, however, 5 of the 12 plants were closed. The closures were attributed to the high operational cost of electricity, insufficient raw material, and Government restrictions on scrap imports. In 2014, Jordan Steel Group announced the closure of its melting shop in Amman, which had the capacity to produce 250,000 metric tons per year (t/yr) of crude steel. The plant produced 70,000 t of crude steel in 2014 compared with 150,000 t in 2011. Other closures included the Arab Iron and Steel plant, the Ramallah Iron and Steel plant, and the United Iron and Steel Co. plant (Arab Metals, 2015).

Industrial Minerals

Cement.—Output of cement was estimated to have increased by 3% to 4.60 Mt in 2015 from 4.45 Mt in 2014. Clinker production, however, decreased by 25% to 652,500 t in 2015 from 865,100 t in 2014 and by 28% from 906,200 t in 2013 according to statistics provided by the Central Bank of Jordan. Therefore, some companies increased their imports of clinker through their parent companies, which produced clinker in neighboring countries. These companies included Al Rajhi Cement-Jordan and Northern Cement Co., which imported the clinker they needed for cement production in Jordan from other company plants in Saudi Arabia. More than 93% of cement production was consumed by the domestic market and 7% was exported to Iraq and Saudi Arabia. Seven cement plants were operating in Jordan in 2015—the Al Rajhi Cement-Jordan plant at Al Mafraq, the Arab Company for White Cement Industry plant in Amman, the Jordan Lafarge Cement Factories Co. P.S.C. (JCFC) plants at Fuheis and Ar-Rashadiya, the Modern Cement and Mining Co. plant at Al Qatranah, the Northern Cement Co. mill at Al Muwaqar, and the Qatrana Cement Co. plant at Al Qatranah. The high cost of energy prompted cement producers such as JCFC to revert to using coal instead of fuel oil as a source of energy to reduce operating costs. JCFC had two cement plants at Fuheis and Ar-Rashadiya with a combined cement production capacity of 4.8 million metric tons per year (Mt/yr) and 33% of the domestic market share. JCFC also tried using direct burning of oil shale as a source of energy in its cement plants in 2013 but stopped the practice owing to the decline in fuel oil prices in 2014 (table 2; International Cement Review, 2015, p. 38–193; LafargeHolcim Ltd., 2015, p. 38).

Phosphate Rock.—In 2015, JPMC, which was the country's only phosphate rock producer, produced 8.3 Mt of phosphate rock, which was a 17% increase compared with the 7.1 Mt produced in 2014. Sixty-two percent of Jordan's phosphate rock output came from the Eshidiya Mine, 26% from the Wadi Al Abiad Mine, and 12% from the Al Hassa Mine. The Eshidiya Mine contained 1.2 billion metric tons (Gt) of total ore reserves, including proved, probable, and possible reserves.

The Wadi Al Abiad Mine held 11.8 Mt of proved reserves, and the Al Hassa Mine had 24.6 Mt of proved reserves. JPMC also produced 780,000 t of sulfuric acid, 344,000 t of diammonium phosphate fertilizer, and 238,000 t of phosphoric acid at its fertilizer complex in Aqaba. Fifty-eight percent of Jordan's phosphate rock produced in 2015 was exported compared with 65% in 2014. The remainder was locally used by fertilizer manufacturers (Jordan Phosphate Mines Co. p.l.c., 2016, p. 19–20, 23).

In December, commercial production of phosphoric acid by the JIFCO started following the completion of the construction of an \$860 million phosphoric and sulfuric acid complex at Eshidiya in Ma'an Governorate. JIFCO was a joint venture formed by JPMC (48% interest), Indian Farmers Fertilizers Cooperative (IFFCO) of India (27% interest), and Kisan International Trading FZE (KIT) of the United Arab Emirates (25%) to build a phosphoric acid plant, which had the capacity to produce 475,000 t/yr of phosphoric acid and 1.5 Mt/yr of sulfuric acid. JPMC signed a long-term agreement with IFFCO to supply JIFCO with 2 Mt/yr of phosphate rock. KIT exported 70% of the phosphoric acid produced to India. IFFCO used its share as feedstock for IFFCO's Kandla fertilizer plant, which is located in Gujarat State, India (Jordan India Fertilizer Company L.L.C., 2016; Jordan Phosphate Mines Co. p.l.c., 2016, p. 24).

JPMC was committed to supplying 800,000 t/yr of phosphate rock for PT Petro-Jordan Abadi Co.'s 200,000-t/yr-phosphoric-acid plant in Indonesia. The plant was a 50–50 joint venture of JPMC and PT Petrokimia Gresik of Indonesia, and was commissioned in 2014 (Jordan Phosphate Mines Co. p.l.c., 2016, p. 24, 79; PT Petrokimia Gresik, 2016).

Potash.—In 2015, APC produced about 2.4 Mt of potash compared with 2.1 Mt in 2014. Classified according to the Australian Quarantine and Inspection Service, one-half (50%) of the potash produced was standard grade; 43%, fine grade; 6%, granular grade; and 1%, industrial grade. APC employed 2,039 people in 2015 and had several subsidiaries—chief among them were Arab Fertilizers and Chemicals Industries Ltd. (Kemapco), which produced 133,200 t of potassium nitrate and employed 237 people in 2015, and Numiera Mixed Salts and Mud Co., which extracted Dead Sea mud for use as cosmetics and employed 77 workers. APC was also affiliated with Jordan Bromine Co. Ltd. (JBC), which produced bromine from the Dead Sea and manufactured potassium hydroxide and other chemicals; Jordan Industrial Ports Co.; Jordan Safi Salt Co., which was under liquidation since 2009; and Nippon Jordan Fertilizer Co., which produced compound fertilizer (NPK) and ammonium phosphate and was a joint venture of JPMC (70% interest), APC (20% interest), and Mitsubishi Corp. of Japan (10% interest) (Arab Potash Co. Ltd., 2016, p. 10, 18, 30; Jordan Bromine Co. Ltd., 2016).

Mineral Fuels and Related Materials

Natural Gas.—In July, the Government completed the installation of Jordan's first liquefied natural gas (LNG) receiving terminal at Aqaba Port, which began supplying natural gas to the country's electricity-generating powerplants. The terminal had the capacity to pump 3.6 billion cubic meters per year of LNG. The MEMR planned to increase natural

gas production at the Risha gasfield by more than fourfold to 517 million cubic meters by 2018 from 124 million cubic meters in 2015 in partnership with IPG Oil and Gas Ltd., which is registered in the British Virgin Islands, and National Petroleum Co. (Jordan Times, 2015; Ministry of Energy and Mineral Resources, 2016, p. 21, 45).

Oil Shale.—The Government has been actively promoting foreign investment in the country's large oil shale resources. The geologic estimates of oil shale reserves from five main deposits in Jordan (Attarat Um Ghudran, El-Lajjun, Jurf Ed Darawish, Sultani, and Wadi Maghar) were estimated to be 66.4 billion barrels (Gtbl), including measured and indicated reserves of 50.7 Gtbl of crude petroleum. Oil shale, also known as black shale, is a solid hydrocarbons rock whereas shale oil or tight oil is a light crude petroleum confined to such sedimentary formations as limestone, sandstone, or shale (Alali and others, 2015, p. 15).

As of yearend 2015, the MEMR offered concessions for oil shale exploration and production, through commercial agreements, to Al Karak International Oil Co. (KIO); Jordan Oil Shale Energy Co. (JOSE), a subsidiary of Enefit, which is the international name for Eesti Energia of Estonia; Jordan Oil Shale Co. (JOSCO), a subsidiary of Royal Dutch Shell p.l.c. of the United Kingdom; and Saudi Arabian Corporation for Oil Shale (SACOS). The concession held by JOSCO comprised several locations and covered 22,270 square kilometers (km²). The company developed a subsurface model for production from oil shale using an in situ conversion process, which would eliminate the need to transport oil shale to processing plants. JOSE's concession, which is located at the Attarat Um Ghudran property, covers 42 km² in central Jordan and holds 2 Gt of oil shale reserves. The concession area could be increased in the future to include an additional 4 Gt of oil shale reserves. The company was expected to build the first oil-shale-fired powerplant in the region. The plant would have 554 megawatts (MW) of capacity. The project was expected to begin production in 2017 (Roscoe, 2013; Jordan Oil Shale Co., 2016).

As of yearend 2015, the Government signed six memoranda of understanding with local and international companies to develop oil shale production projects in Jordan. The companies included Al Qamar for Energy and Infrastructure Ltd. of India; Aqaba Petroleum for Oil Shale Co., which was owned by the Jordanian Armed Forces and Marvol Holdings of Germany; Fushun Mining Group of China; Global Oil Shale Holdings of Canada; and Whitehorn Resources Inc. of Canada (Ministry of Energy and Mineral Resources, 2015, p. 36–38).

In addition to extracting crude petroleum from oil shale deposits, the Government also pursued projects that involved direct burning of oil shale deposits that contain a high concentration of crude petroleum to produce electricity. The Attarat Power Co., which was owned by companies from Estonia, Jordan, and Malaysia, was building a 470-MW powerplant at Attarat that would sell generated electricity to the National Electric Power Co. by yearend 2019. El-Lajjun Company for Investment in Oil Shale and Mineral Resources also signed a memorandum of understanding with the Government to produce 30,000 barrels per day of shale oil for use by direct burning in the Attarat and El-Lajjun regions (Ministry of Energy and Mineral Resources, 2015, p. 39).

Nuclear Energy and Uranium.—The development phase of the nuclear powerplant to be built by Rosatom Group of Russia at Az-Zarqa, in the central region of Jordan, continued in 2015. The tasks included environmental assessments, site characterization and supervision, and water optimization. In 2014, the Governments of Jordan and Russia signed an agreement that would grant the Government a slight majority ownership of 50.1% and Rosatom 49.9% in the nuclear powerplant that would have two third-generation nuclear reactors that would have the capacity to produce 1 gigawatt each. The \$10 billion powerplant was expected to begin production from its first reactor in 2020 (Ministry of Energy and Mineral Resources, 2015, p. 44; World Nuclear News, 2015).

Jordanian Uranium Mining Co. conducted exploration works to identify deep and surface uranium mineralization in areas that had been studied by Areva Group of France between 2009 and 2012. Jordanian Uranium estimated the country's Australian Joint Ore Reserves Committee (JORC) Code-compliant mineral resources as of December 2015 to be 39,300 t of uranium oxide, including 8,100 t of indicated resources. The estimate was based on the results of assays that covered 40% of the study area in central Jordan (Toukan, 2016, p. 10).

Renewable Energy.—Installed wind power capacity in Jordan was expected to be more than 1,300 MW by 2025. Main wind energy projects included a \$180 million wind farm at Al Fujeij, which was being built by Korea Electric Power Co. (KEPCO). The Al Fujeij wind farm, which would be located 150 kilometers (km) south of Amman, would have 89 MW of power generation capacity and would commence production by yearend 2018. KEPCO was expected to build and operate the Al Fujeij windfarm and sell power to the Government for 20 years under a power purchase agreement. The Ma'an wind farm project, which was being constructed by Gamesa Corporación Tecnológica de Spain, would have 80 MW of electricity-generating capacity in two phases. The first phase of the project, which would have a 60-MW capacity, was expected to be completed in 2016, and the second phase, which would have a 20-MW capacity, would be commissioned in 2017. Jordan Wind Project Co. (JWPC) was a joint venture of E.P. Global Energy of Cyprus (51% interest) and InfraMed Infrastructure Fund of France (49% interest) formed to develop a wind farm at Tafila, which is located 180 km south of Amman. The Tafila wind farm has a 117-MW capacity and was completed in the second half of 2015. The project was operated as an independent power producer that sold all its generated electricity to Jordan's electricity network (National Electric Power Co.) (Ministry of Energy and Mineral Resources, 2016, p. 13–14, 40–41).

Outlook

The Government planned to increase the contribution of the mineral industry in the country's economy. Output of fertilizer, phosphate rock, and potash is likely to increase in the next 5 years, but the rate of the increase will largely depend on global demand for these commodities in general, and on the demand from Asian markets in particular. The Government planned to increase the share of renewable energy in the total energy mix to 10% by 2020 from 2% in 2015. Several alternative and renewable energy projects under construction in Jordan

are likely to begin operations within the next 5 years and are expected to decrease the country's dependence on energy imports, which made up 97% of total energy consumption in 2015. An example of such projects is Jordan's first 470-MW oil-shale-fired powerplant, which was being built by Enefit and is expected to commence operations in the second half of 2019 (Ministry of Energy and Mineral Resources, 2016, p. 21, 39).

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TABLE 1
 JORDAN: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity	2011	2012	2013	2014	2015 ^e
METALS					
Iron and steel, steel: ^c					
Crude	150	150	100 ^r	100 ^r	75
Semimanufactured	850	850	850	850	650
INDUSTRIAL MINERALS					
Bromine ²	50	60	80	100	100
Calcium carbonate	46 ³	623 ³	620 ^e	620 ^e	620
Cement:					
Clinker	1,206	1,026	906	865	653
Hydraulic	2,816	4,000	4,200	4,450	4,600 ³
Clay: ^e					
Common clay	421 ³	1,097 ³	1,100	1,100	1,100
Dead Sea mud	295 ³	300	300	300	300
Kaolin	90 ³	76 ³	80	100 ^r	100
Fluorine, aluminum fluoride	11	9	8	8	8
Gypsum	255	857	860 ^{r,e}	870 ^{r,e}	880
Lime	18	18	20	20	20
Phosphate:					
Phosphate rock, mine output:					
Gross weight	7,594	6,383	5,399	7,144	8,336 ³
P ₂ O ₅ content	2,430	2,043	1,728	2,286	2,668 ³
Diammonium phosphate	706 ^r	551 ^r	494 ^r	590 ^r	344 ³
Phosphoric acid	504	448	463	463	238 ³
Potash: ⁴					
Crude salts	2,259	1,824	1,744	2,091	2,355 ³
K ₂ O equivalent	1,355	1,094	1,046	1,255	1,413 ³
Potassium nitrate	121	106	107	128	133 ³
Potassium sulfate	--	--	34	116	116 ³
Pozzolanic material	451 ^r	846 ^r	600 ^{r,e}	600 ^{r,e}	600
Salt: ^e					
Brine	32	32 ³	8 ^r	8 ^r	8
Dead Sea ⁵	1,263 ³	1,270 ³	1,250 ³	1,250	1,250
Sand and gravel, sand:					
Construction	2,405	2,500 ^e	2,500 ^e	2,500 ^e	2,500
Industrial	35	69	70 ^{r,e}	70 ^{r,e}	70
Sulfur, sulfuric acid: ⁶					
Gross weight	1,539	1,419	1,488	1,500	1,500
S content	502	460	486	490	490
Stone:					
Limestone, pure	187	1,984	2,000	2,000	2,000
Marble	45,961	240,000 ^e	250,000 ^e	250,000 ^e	250,000
Travertine	5,905	6,000 ^e	6,000 ^e	6,000 ^e	6,000
Zeolies, zeolite tuff	14 ^r	13 ^r	13 ^{r,e}	13 ^{r,e}	13

See footnotes at end of table.

TABLE 1—Continued
 JORDAN: PRODUCTION OF MINERAL COMMODITIES¹

(Thousand metric tons unless otherwise specified)

Commodity		2011	2012	2013	2014	2015 ⁶
MINERAL FUELS AND RELATED MATERIALS						
Natural gas, gross	million cubic meters	226 ^r	205 ^r	187 ^r	162 ^r	152 ³
Petroleum:						
Crude	thousand 42-gallon barrels	7,330 ^r	7,330 ^r	7,330 ^r	5,864 ^r	3,665 ³
Refinery products:						
Asphalt	do.	648	588	612 ^r	970 ^r	1,139 ³
Distillate fuel oil	do.	7,684	8,273	7,448	6,938	7,893 ³
Gasoline	do.	5,788	6,086	5,870	5,408	5,550 ³
Jet fuel	do.	2,632 ^r	2,856 ^r	2,600 ^r	2,544 ^r	2,056 ³
Kerosene	do.	450	744	264	488	705 ³
Liquefied petroleum gas	do.	974	1,183	905 ^r	1,056	928 ³
Residual fuel oil	do.	5,781	6,653	6,649	5,408	5,894 ³
Total	do.	23,957 ^r	26,383 ^r	24,348 ^r	22,812 ^r	24,165 ³

⁶Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through July 29, 2016.

²Revised to report quantities of elemental bromine rather than quantities of bromine salts and other products.

³Reported figure.

⁴Fertilizer output, which was listed in 2011–14, is listed under potash as potassium nitrate and potassium sulfate.

⁵Extracted from the Dead Sea for therapeutic use; contains bromide, calcium, chloride, magnesium, and potassium salts.

⁶From imported sulfur.

TABLE 2
 JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Aluminum fluoride	Jordan Phosphate Mines Co. p.l.c. (JPMC) (Kamil Holding Ltd., 37.000%; Jordan Finance Ministry, 26.261%; Social Security Corp., 16.030%; Kuwait Investment Corp., 9.333%; Passport Global Master Fund Spc Ltd., 2.775%; Jordan Islamic Bank, 1.465%; private investors, 7.136%)	Aqaba	14,000
Bromine	Jordan Bromine Co. Ltd. (JBC) [Arab Potash Co. Ltd. (APC), 50%, and Albemarle Corp., 50%]	Ghur Al Safi	100,000
Cement	Al Rajhi Cement-Jordan (Al Rajhi Cement Holding)	Al Mafraq	2,000,000
Do.	Arab Company for White Cement Industry [Jordanian Syrian Company for Industry, 50%; General Establishment for Cement (Syria), 25%; Jordan Finance Ministry, 15%; Social Security Corp., 10%]	Amman	130,000
Do.	Jordan Lafarge Cement Factories Co. P.S.C. (JCFC) (Lafarge S.A., 50.28%; Social Security Corp., 21.86%; others, 27.87%)	Fuheis and Ar-Rashadiya	4,800,000
Do.	Modern Cement and Mining Co. (Manaseer Group for Industries and Commercial Investments of Jordan, 100%)	Al Qatranah	1,200,000
Do.	Qatrana Cement Co. (Arabian Cement Co., 100%)	do.	1,800,000
Do.	Northern Cement Co.	Mill at Al Muwaqar	1,000,000
Clay, kaolin	Al-Faori Enterprise for Mining	Al-Adasieh	110,000
Do.	Jordanian Company for Mining and Processing of Kaolin and Feldspar	Qanasieh	216,000
Do.	Public Mining Company Ltd.	Fuheis	38,000
Do.	do.	Batn el-Ghoul	31,000
Feldspar	General Mining Co. Ltd.	Al-Jaishiah	10,000
Gypsum	Al-Nasr Mining Establishment	Mujib	31,000
Do.	Al-Nisr/Ali Manaseer	do.	89,000
Do.	Al-Noor Mining Co.	do.	11,000
Do.	Falahat Mining Establishment	do.	25,000

See footnotes at end of table.

TABLE 2—Continued
 JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity	
Gypsum—Continued	Isam Alshoouly & Maksim	Mujib	13,000	
Do.	Jordan Lafarge Cement Factories Co. P.S.C. (JCFC)	Zarqa	73,000	
Do.	Mansour Al Shoaabaki Establishment	Mujib	2,000	
Do.	Public Mining Co. Ltd.	do.	68,000	
Do.	Shaker Al-Talib Establishment	Subeihi	15,000	
Lime	Arab Company for White Cement Industry [Jordanian Syrian Company for Industry, 50%; General Establishment for Cement (Syria), 25%; Jordan Finance Ministry, 15%; Social Security Corp., 10%]	Khalidiah	NA	
Natural gas	million cubic meters	National Petroleum Co. (Government, 100%)	Risha	210
Petroleum:				
Crude	thousand 42-gallon barrels	do.	Hamza	8,000
Refined	do.	Jordan Petroleum Refinery Co. Ltd. (Government, 100%)	Zarqa	90,400
Phosphate:				
Phosphate rock	Jordan Phosphate Mines Co. p.l.c. (JPMC) (Kamil Holding Ltd., 37.000%; Jordan Finance Ministry, 26.261%; Social Security Corp., 16.030%; Kuwait Investment Corp., 9.333%; Passport Global Master Fund Spc Ltd., 2.775%; Jordan Islamic Bank, 1.465%; others, 5.065%)	Wadi Al Abiad, Al Hassa, and Eshidiya Mines	7,000,000	
Phosphatic fertilizers	do.	Aqaba	650,000	
Do.	Jordan Abyad Fertilizers and Chemicals Co. P.S.C. (JAFCCO) (Jaffco Bahrain Co., 42.79%; Jordan Phosphate Mines Co. p.l.c. (JPMC), 25%; Venture Capital Bank, 14.4%; Arab Mining Co., 10%; Sea Field Trading, 5%; Al-Fares Investments, 2.81%)	do.	80,000	
Do.	Nippon Jordan Fertilizer Co. [Jordan Phosphate Mines Co. p.l.c. (JPMC), 70%; Arab Potash Co. Ltd. (APC), 20%; Mitsubishi Corp., 10%]	Eshidiya	300,000	
Phosphoric acid	Jordan Phosphate Mines Co. p.l.c. (JPMC)	Aqaba	350,000	
Do.	Jordan India Fertilizer Company L.L.C. (JIFCO) [Jordan Phosphate Mines Co. p.l.c. (JPMC), 48%; Indian Farmers Fertilizers Cooperative (IFFCO), 27%; Kisan International Trading FZE (KIT), 25%]	Eshidiya	475,000	
Do.	Indo-Jordan Chemicals Co. Ltd. (Jordan Phosphate Mines Co. p.l.c. (JPMC), 87%, and Arab Investment Co., 13%)	do.	224,000	
Potash:				
Crude salts	Arab Potash Co. Ltd. (APC) (Potash Corporation of Saskatchewan, 27.96%; Arab Mining Co., 19.92%; Islamic Development Bank, 5.16%; Social Security Corp., 5.04%; Iraqi Government, 4.71%; Libyan Arab Company for Foreign Investments, 4.06%; Kuwait Investment Authority, 3.95%; other investors, 2.32%)	Ghur Al Safi	2,450,000	
Potassium nitrate	Arab Fertilizers and Chemicals Industries Ltd. (Kempaco) [Arab Potash Co. Ltd. (APC), 100%]	Aqaba	150,000	
Potassium sulfate	Jordan Abyad Fertilizers and Chemicals Co. P.S.C. (JAFCCO) (Venture Capital Bank, 57.2%; Al-Fares Investments, 17.8%; Jordan Phosphate Mines Co. p.l.c. (JPMC), 15%; Arab Mining Co., 10%)	do.	80,000	
Pumice, pozzolanic material	Jordan Lafarge Cement Factories Co. P.S.C. (JCFC)	Tell Remah	350,000	
Do.	do.	Ar-Rashidiya	150,000	
Salt	Arab Potash Co. Ltd. (APC), 100%	Ghur al-Safi	17,000	
Sand, silica	Middle East Regional Development Enterprises	Ras en-Naqab	530,000	
Do.	Al-Hababbeh and Sons Company for Mining	do.	28,000	
Do.	Al-Rehab for Industrial and Trading Establishment	do.	27,000	
Do.	Al-Fares Company for Glass Sand Mining	do.	17,000	
Do.	International Silica Industries	Dabbet Hanot and Ras en Naqab	NA	
Do.	Green Technology Group	Al-Homaimah	NA	

See footnotes at end of table.

TABLE 2—Continued
 JORDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Steel:			
Crude	Jordan Steel Group P.L.C. (Jordan Steel Group, 100%)	Amman	250,000
Do.	Consolidated Jordanian Co. for Steel Industry Ltd. (Jordan Steel Group, 100%)	Zarqa	75,000
Semimanufactured	do.	do.	300,000
Do.	National Steel Industry Co. (Jordan Steel Group, 100%)	Awajan	100,000
Do.	Jordan Steel Group P.L.C. (Jordan Steel Group, 100%)	Amman	506,000
Stone:			
Basalt	Jordan Rock Wool Industries Co. Ltd.	Qa'a Hanna	5,000
Limestone, pure	Jordan Carbonate Co.	Al Jeeza	NA
Do.	Jordan Magnesia Co.	Al Qatranah	NA
Do.	Sufian Nusair Assoc.	do.	NA
Do.	Arab Company for White Cement Industry [Jordanian Syrian Company for Industry, 50%; General Establishment for Cement (Syria), 25%; Jordan Finance Ministry, 15%; Social Security Corp., 10%]	Khalidiah	NA
Do.	Khaled Shamayleh Co.	Siwaqa	NA
Sulfuric acid	Jordan Abyad Fertilizers and Chemicals Co. P.S.C. (JAFCCO) (Venture Capital Bank, 57.2%; Al-Fares Investments, 17.8%; Jordan Phosphate Mines Co. p.l.c. (JPMC), 15%; Arab Mining Co., 10%)	Aqaba	800,000
Do.	Jordan India Fertilizer Company L.L.C. (JIFCO) [Jordan Phosphate Mines Co. p.l.c. (JPMC), 48%; Indian Farmers Fertilizers Cooperative (IFFCO), 27%; Kisan International Trading FZE (KIT), 25%]	Eshidiya	1,485,000
Do.	Indo-Jordan Chemicals Co. (Jordan Phosphate Mines Co. p.l.c. (JPMC), 87%, and Arab Investment Co., 13%)	do.	66,000
Zeolites	Amana Agricultural & Industrial Co.	Tel Hesban	NA
Do.	Green Technology Group of Jordan for Mining	Al Aritayn and Al-Marfaq	NA
Do.	Jordanian Factory for Soil Development & Moisture Drying Co.	do.	NA

Do., do. Ditto. NA Not available.