

2016 Minerals Yearbook

SUDAN

THE MINERAL INDUSTRY OF SUDAN

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Sudan, which is the third largest country in Africa in terms of area after Algeria and the Democratic Republic of the Congo [Congo (Kinshasa)], covers 1.86 million square kilometers (km²). In 2016, the country supplied the world with gold and modest quantities of chromite, crude petroleum, and petroleum products. In 2016, Sudan was one of the top three producers of gold in Africa along with Ghana and South Africa. Other mineral commodities produced in Sudan included cement, feldspar, gypsum, iron and steel, kaolin, manganese, marble, salt, and silver (table 1; Orca Gold Inc., 2018, p. 7; U.S. Central Intelligence Agency, 2018).

Sudan's gross domestic product (GDP) increased in real terms by 4.9% in 2016 compared with an increase of 4.3% (revised) in 2015. The industrial sector, which included electricity, mining and quarrying, petroleum, and water resources, accounted for 19.7% of the GDP in 2016 compared with 20.1% in 2015, and grew by 3.3% in 2016 compared with a 3.2% rate of growth in 2015 at constant prices. The value of the manufacturing and mining subsectors, which accounted for 5.25% of the country's GDP in 2016 compared with 5.12% in 2015, decreased by 13.6% in 2016 compared with a decrease of 10.8% in 2015 at constant prices. The construction sector, which contributed 0.62% of the GDP in 2016 and 0.59% in 2015, grew by 5.5% in 2016 compared with an increase of 5.0% in 2015 at constant prices (Central Bank of Sudan, 2017, p. 113, 209).

In 2016, Sudan's exports decreased by 2.4% to \$3,094 million from \$3,169 million in 2015. Mineral exports, which included crude petroleum, gold, other minerals, and refinery products accounted for about 35% of the country's total exports in 2016 compared with 24% in 2015. Gold exports increased in value by 44% to \$1,044 million in 2016 from \$726 million in 2015 and, in terms of tonnage, by 39% to 26,973 kilograms (kg) from 19,389 kg in 2015. Crude petroleum exports decreased in value by 53% to \$271 million from \$574 million in 2015 and in volume by 43% to 6.9 million barrels (Mbbbl) in 2016 from 12.1 Mbbbl in 2015. Exports of refined petroleum products increased in value to \$65 million in 2016 from \$53 million in 2015. Other unspecified mineral exports increased in value by 2.2% to \$27.8 million in 2016 from \$27.2 million in 2015. In 2016, the United Arab Emirates (which received \$1.1 billion worth of exports from Sudan), China (\$459 million), Saudi Arabia (\$506 million), Egypt (\$412 million), India (\$88 million), and Ethiopia (\$72 million) were the main recipients of Sudan's exports, and China (which supplied \$2.2 billion worth of imports to Sudan), India (\$633 million), Egypt (\$591 million), Turkey (\$503 million), and Russia (\$317 million) were the major sources of Sudan's imports (Central Bank of Sudan, 2017, p. 166–167, 173–174, 221–23).

Government Policies and Programs

Presidential Decrees No. 22 of 2010, No. 22 of 2012, and No. 45 of 2013 designated the Ministry of Minerals (MOM) as

the Government agency responsible for mineral exploration and geologic surveys in Sudan. The MOM implements Government policies and programs and promotes investment in the mining sector. The Mineral Wealth and Mining Development Act of 2015 states that the Government has ownership and absolute rights of exploration for and mining of all mineral commodities in the country. The law also defines traditional mining (also known as artisanal mining) as mining activities carried out by groups and individuals without the use of heavy machinery to a maximum depth of 20 meters. There were more than 1 million artisanal gold miners in Sudan in 2016. Artisanal mining is practiced in 14 of the country's 18 States and accounted for about 85% of gold production in 2015 (Ibrahim, 2015, p. 5–6).

On October 31, 2016, the U.S. Government extended sanctions against Sudan for another year, citing actions and policies of the Government of Sudan thought to continue to present a threat to United States foreign policy and national security. The United States sanctions were initiated in 1997 and included Executive Order 13067, which imposed a trade embargo on Sudan and blocked selected assets of the Government of Sudan. In 2006, Executive Order 13412 banned most of the transactions related but not limited to Sudan's petroleum and petrochemical industries by United States individuals and organizations, including, but not limited to, oilfield services and petroleum and gas pipelines (U.S. Department of the Treasury, Office of Foreign Assets Control, 2013; White House, The, 2016).

Production

Notable increases in Sudan's mineral production in 2016 compared with that of 2015 included the increase in salt production, by 219%; gypsum, by 94%; jet fuel, by 42%; talc, by 40%; gasoline, by 27%; and gold (mine output, Au content), by 13%. Notable decreases in Sudan's mineral commodity output in 2016 compared with that of 2015 included the decrease in chromite production, by 74%; kaolin, by 55%; kerosene, by 37%; and distillate fuel oil, by 11%. Data on mineral production are in table 1.

Structure of the Mineral Industry

The Government owned several mining companies in Sudan, including Ariab Mining Co. (AMC), which operated the Hassai gold mine in northeastern Sudan; Sudan Gold Refinery Co. Ltd., which was the country sole refinery located in Khartoum; Sudanese Mining Corp., which produced chromite and manganese through its subsidiary Ingessana Hills Mining Corp. and mica through Sheriek Mica Mines Co.; and Sudamin Co. Ltd., which was responsible for providing mining equipment, material, and services to miners. Sudamin has an exclusive authority to import mercury (which is used in gold processing) and distribute it to retailers who, in turn, sell it to artisanal

miners and gold-mining companies. Except for the Sudanese Cement Factory, which was owned by the Government, all the cement plants in Sudan were privately owned. Crude petroleum production in Sudan was carried out by joint ventures of state-owned and foreign companies from the British Virgin Islands, China, India, and Malaysia. The Government also owned three petroleum refineries, but the country's largest refinery at Jali, which was operated by Khartoum Refinery Co. Ltd., was a joint venture of China National Petroleum Corp. (CNPC) and Sudan National Petroleum Corp. (Sudapet). Table 2 is a list of major mineral production facilities.

In 2016, 154 companies held mining licenses to produce metals and industrial mineral commodities in Sudan. The recent gold rush created opportunities for several startup companies that provided various services and supplies related to artisanal gold production. Fifty-five local companies, which were mostly located in River Nile State, were engaged in extracting gold from tailings. The Government established a 7% royalty on gold production and a 15% corporate tax rate on mining companies operating in Sudan (Ministry of Minerals, 2017, p. 56–58; Orca Gold Inc., 2017, p. 10).

Commodity Review

Metals

Copper, Gold, Silver, and Zinc.—Sudan's gold mine production increased to 93,400 kg of gold in 2016 from 82,400 kg in 2015 and 73,300 kg in 2014. Most of the production was carried out by artisanal miners. Artisanal gold mining increased to 78,200 kg in 2016 from 67,500 kg in 2015 and 63,700 kg in 2014. Nine mining companies held gold concessions in Sudan and produced 5,800 kg in 2016. The concession companies included Alliance for Mining Co. Ltd., AMC, China-Africa HuaKan Mining (Sudan), Delgo Mining Co. Ltd. of Turkey, Hagagia (Poly Red Sea) Gold Mining Co. Ltd., Managem Group of Morocco, Omdurman Mining Co., and Sahari Company for Gold Mining. The remaining gold output (9,400 kg) was produced by tailings-processing companies, including Alitimad Mining Co., Rida Mining Co., and Sudamin Co. Ltd. (table 2; Central Bank of Sudan, 2017, p. 142; Ministry of Minerals, 2017, p. 51–55).

AMC operated the Hassai Mine in northeastern Sudan, which was the leading large-scale open pit gold mine in Sudan; the mine had the capacity to produce 2,000 kilograms per year (kg/yr) of gold. The Hassai Mine was built on Block 11, which is located 350 kilometers southwest of Port Sudan on the Red Sea. AMC, which was the first user of the heap-leach method to process gold in Sudan, completed a definitive feasibility study to build a carbon-in-leach plant to treat tailings accumulated during more than 30 years of gold mining; it also completed a prefeasibility study to build a flotation plant to treat the ore from the volcanogenic massive sulfide (VMS) deposits underlying the current open pits. The VMS project was expected to develop the mineral resources at the Hadal Awatib East, the Hadayamet, and the Hassai South properties, which were estimated to total 1.3 million metric tons (Mt) of copper, 700,000 metric tons (t) of zinc, 3,000 t of silver, and 230 t of gold (Abdalla, 2015, p. 17; Ariab Mining Co., 2017a, b).

Managem Group of Morocco, through its subsidiary MCM Sudan, slightly increased its gold production in Sudan to 512 kg in 2016 from 503 kg in 2015 from its pilot project at Wadi Gabgaba in Mining Block 15. Block 15 is in River Nile State in northeastern Sudan. The company continued its exploration activity for gold at Blocks 9, 15, and 24; it planned to construct a gold mine at Block 15 after completing its feasibility study (Managem S.A., 2017, p. 47).

Alliance was created in 2014 between Kush for Exploration and Production Co. Ltd. (Kush E&P) of Russia and the Government to develop gold resources in Block 30 in Red Sea State. In 2015, Alliance completed the construction of a new gold-processing plant, which had the capacity to process 150,000 metric tons per year (t/yr) of ore. The plant's capacity increased to 200,000 t/yr in 2016. Alliance's plant used cyanide-leaching technology to achieve 90% gold recovery. In 2015, Alliance produced nearly 700 kg of gold and increased its production to more than 1,700 kg in 2016 (Alliance for Mining Co. Ltd., 2017).

Orca Gold Inc. of Canada announced the results of its second drilling program at the Galat Sufar South (GSS) and the Wadi Doum (WD) prospects in Block 14 in northeastern Sudan. As of February 2017, measured and indicated mineral resources in both the GSS and WD deposits at a cutoff rate of 1.0 gram per metric ton (g/t) gold were estimated to be 30.6 Mt grading 1.82 g/t gold and 9.7 Mt grading 1.7 g/t gold, respectively. The company planned to develop a gold mine on Block 14 that would have the capacity to produce 2,350 kg/yr of gold for 16 years. Orca Gold planned to start a feasibility study for the project in 2017, to construct a 3.4-million-metric-ton-per-year (Mt/yr) throughput plant in 2018, and to start production in 2020 (Orca Gold Inc., 2017, p. 12, 20, 29).

QMSD Mining Co. Ltd., which was a wholly owned subsidiary of Qatar Mining Co., was exploring for copper and gold in Red Sea State in northeastern Sudan. The company held two mining permits in Blocks 62 and 62b, which cover 5,110 km². QMSD confirmed the presence of copper-gold mineralization at Jebel Ohier and was advancing exploration activity to full feasibility status through core and reverse-circulation drilling programs in 2016 (QMSD Mining Co. Ltd., 2018).

Sudamin produced more than 185 kg of gold in 2016 from processing 500,000 t of gold mine tailings at its two plants at the town of Abu Hamad in River Nile State; this State was home to 70% of gold production in Sudan. Sudamin planned to increase its gold production to 500 kg in 2017 (Mr. Mugaheid Bilal Taha, General Manager, Sudamin, personal commun., March 27, 2018).

Industrial Minerals

Cement.—Sudan's output of cement increased by 8% to 4.0 Mt in 2016 from about 3.7 Mt in 2015. Sudan had eight main cement plants in operation with a total capacity of 10.4 Mt/yr. The MOM listed four additional plants in River Nile State, including Bee Cement Factory, Heleith Cement Factory, MAM Cement Factory, and Raira Cement Factory, but information on the major operating companies and their locations and capacities was not available. In 2016, Atbara Cement Company Ltd., which

was a subsidiary of Al-Rajhi Group of Saudi Arabia, produced 1.31 Mt of cement; Al-Shamal Cement Factory, 1.28 Mt; ASEC Cement Co. of Egypt (a subsidiary of Qalaa Holdings S.A.E. of Egypt), 783,400 t; Berber Cement Co. Ltd., 386,800 t; Al-Salam Cement Production Co. Ltd., 123,100 t; Nile Cement Co. Ltd., 87,700 t; and Aslan Cement Co. of Turkey, 35,800 t (Ministry of Minerals, 2017; Central Bank of Sudan, 2017, p. 148–149).

Mineral Fuels

Petroleum.—In 2016, Sudan’s production of crude petroleum (including condensate) decreased by about 5% to 38.0 Mbbl from 39.8 Mbbl in 2015. Production of refined petroleum products also decreased slightly to 34.9 Mbbl in 2016 (table 1). The Greater Nile Petroleum Operating Co. [CNPC (40%), Petronas Carigali Overseas Shd. Bhd. of Malaysia (30%), ONGC Videsh Ltd. of India (25%), and Sudapet (5%)] produced crude petroleum in Blocks 2 and 4 in West Kordofan State in south-central Sudan. Star Oil Operation Co. Ltd. (Ansan Wikfs Investments Ltd. of Yemen, 66%, and Sudapet, 34%) produced crude petroleum at the Al-Barasaya oilfield in Block 17 at the rate of 20,000 42-gallon barrels per day (bbl/d). Petro Energy E&P of the British Virgin Islands produced crude petroleum from Block 6 at a rate of 40,000 bbl/d. The company held 95% interest in a production-sharing agreement with the Government in Block 6; Sudapet held 5% interest (Ministry of Petroleum and Gas, 2017; Petro Energy E&P, 2017).

Outlook

Gold mining is expected to remain the focus of the Government’s policy to offset lost revenue from petroleum production in South Sudan, which became an independent state in 2011. The Government hopes to increase mining sector’s contribution to the GDP to 5.5% by 2017. Sudan’s gold resources have attracted the interest of several mining companies from such countries as Canada, China, Morocco, Qatar, Russia, and Turkey. The Government projected that gold production in Sudan would reach a record high of more than 100,000 kg in 2017.

References Cited

Abdalla, M.A., 2015, The experience of a sustainable local mining industry (Au, Ag, Cu, Zn), in Africa OILGASMINE—Extractive Industries and Sustainable Job Creation, 17th, Khartoum, Sudan, November 23–26, 2015, Presentation: Geneva, Switzerland, United Nations Conference on Trade and Development, 32 p. (Accessed January 29, 2018, at <http://unctad.org/meetings/en/Presentation/17OILGASMINE%20Mohamed%20Abufatima%20Abdalla%20S6.pdf>.)

Alliance for Mining Co. Ltd., 2017, Company profile: Alliance for Mining Co. Ltd. (Accessed January 2018, at <http://alliance-kush.com>.)

Ariab Mining Co., 2017a, Exploration: Ariab Mining Co. (Accessed April 25, 2018, at <http://www.ariabmining.net/index.php/en/pages/details/16>.)

Ariab Mining Co., 2017b, Operations: Ariab Mining Co. (Accessed April 25, 2018, at <http://ariabmining.net/index.php/en/pages/details/8/6>.)

Central Bank of Sudan, 2017, 56th annual report 2016: Khartoum, Sudan, Central Bank of Sudan, 220 p. (Accessed July 26, 2017, at <https://cbos.gov.sd/en/content/annual-report-2016>.)

Ibrahim, M.S., 2015, Artisanal mining in Sudan—Opportunities, challenges and impacts, in Africa OILGASMINE—Extractive Industries and Sustainable Job Creation, 17th, Khartoum, Sudan, November 23–26, 2015, Presentation: Geneva, Switzerland, United Nations Conference on Trade and Development, 35 p. (Accessed January 29, 2018, at <http://unctad.org/meetings/en/Presentation/17OILGASMINE%20Mohamed%20Sulaiman%20Ibrahim%20S4.pdf>.)

Managem S.A., 2017, Annual report 2016: Managem S.A., 121 p. (Accessed March 20, 2018, at <http://www.managemgroup.com/content/download/1309/8609/file/Managem%20-%20Annual%20Report%202016.pdf>.)

Ministry of Minerals, 2017, Ard Al-Maadan: Ministry of Minerals, 65 p. (Accessed January 23, 2018, at http://www.minerals.gov.sd/files/doc/ard%20_%20may_2017.pdf.)

Ministry of Petroleum and Gas, 2017, Monthly production: Ministry of Petroleum and Gas. (Accessed January 23, 2018, at <http://www.mop.gov.sd/eng/page/map>.)

Orca Gold Inc., 2017, Advancing gold in Africa: Vancouver, British Columbia, Canada, Orca Gold Inc., March, 34 p. (Accessed January 18, 2018, at <http://www.orcagold.com/assets/docs/presentations/presentation-march-2017.pdf>.)

Orca Gold Inc., 2018, Advancing a leading development project in Africa: Vancouver, British Columbia, Canada, Orca Gold Inc., April, 31 p. (Accessed April 26, 2018, at http://www.orcagold.com/assets/docs/presentations/Orca-Gold-Presentation_APR-2018.pdf.)

Petro Energy E&P, 2017, About us: Petro Energy E&P. (Accessed January 23, 2018, at <http://www.petroenergy-ep.com/ABOUT%20US.htm>.)

QMSD Mining Co. Ltd., 2018, Exploring for copper and gold in Sudan: Khartoum, Sudan, QMSD Mining Co. Ltd.

U.S. Central Intelligence Agency, 2018, Sudan, in The world factbook: U.S. Central Intelligence Agency. (Accessed January 23, 2018, at <https://www.cia.gov/library/publications/the-world-factbook/geos/su.html>.)

U.S. Department of the Treasury, Office of Foreign Assets Control, 2013, Sudan sanctions program: U.S. Department of the Treasury, Office of Foreign Assets Control, November 5, 6 p. (Accessed November 21, 2014, at <https://www.treasury.gov/resource-center/sanctions/Programs/Documents/sudan.pdf>.)

White House, The, 2016, Notice—Continuation of the national emergency with respect to Sudan: The White House, October 31. (Accessed January 18, 2018, at <https://obamawhitehouse.archives.gov/the-press-office/2016/10/31/notice-continuation-national-emergency-respect-sudan>.)

TABLE 1
SUDAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2012	2013	2014	2015	2016
METALS					
Chromite, mine production:					
Gross weight	75,000	30,870	60,000 ^r	60,000 ^r	15,448
Cr ₂ O ₃ content, 25% to 58% Cr ₂ O ₃	31,500	12,965	25,760	15,143 ^r	3,862
Gold:					
Mine production, Au content kilograms	46,133	70,000	73,300	82,400	93,400
Refinery production do.	9,000	25,000 ^r	30,000	20,000 ^r	27,000
Iron and steel:					
Iron ore, gross weight	96,400	339,390	500,000 ^r	NA ^r	NA
Metal, 58% Fe	55,900 ^r	196,800 ^r	290,000 ^r	NA ^r	NA
Semimanufactured	450,000 ^r	443,000 ^r	430,000 ^r	624,000 ^r	360,000
Manganese, mine production:					
Gross weight, crude ore	--	3,250	20,000	31,400	33,800
Mn content	--	942	5,800	9,106	9,800
Zinc, mine production	--	--	46	--	--
INDUSTRIAL MINERALS					
Cement, hydraulic thousand metric tons	3,511	3,538	3,478 ^r	3,708	4,013
Clay and shale, kaolin	11,579	26,000	33,770	14,490	6,500
Feldspar, mine production	26,283	31,700	50,680	94,354	92,172
Fluorspar, products, fluorite	10,000	--	--	--	--
Gypsum	117,073	132,000	111,271	180,000 ^r	349,236
Mica	324	500	-- ^r	-- ^r	--
Salt	26,315	20,800	37,295	70,000 ^r	223,397
Stone, sand, and gravel:					
Silica, mine production, quartz	5,292	--	--	--	--
Stone, dimension, marble ³	2,940 ^r	2,560 ^r	2,300 ^r	2,560 ^r	2,500 ^e
Talc	--	--	--	3,000	4,200
MINERAL FUELS AND RELATED MATERIALS					
Petroleum:					
Crude, including condensate thousand 42-gallon barrels	37,737	43,070	43,800	39,785 ^r	37,960
Refinery production:					
Distillate fuel oil do.	12,600	11,894	10,760	11,477	10,168
Gasoline do.	9,381	8,582	12,259	13,077	16,660
Jet fuel do.	935	635	857	876	1,247
Kerosene do.	62	150	131	135	85
Liquefied petroleum gas do.	3,217	3,357	3,729	3,462	3,169
Naphtha do.	75	156	139	147	--
Petroleum coke do.	1,477	1,408	1,299	1,575	1,647
Residual fuel oil do.	663	1,698	1,954	1,954	1,957
Total do.	28,410	27,880	31,128	32,703	34,933

^eEstimated. ^rRevised. do. Ditto. NA Not available. -- Zero.

¹Table includes data available through January 24, 2018. All data are reported unless otherwise noted. Estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, mined and refined silver may have been produced in Sudan, but available information was inadequate to make reliable estimates of output.

³Converted from cubic meters.

TABLE 2
SUDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Atbara Cement Company Ltd. (Al-Rajhi Group)	Plant at Atbara	1,700,000
Do.		ASEC Cement Co. (Qalaa Holdings S.A.E.)	Plant at Takamol	1,600,000
Do.		Berber Cement Co. Ltd.	Plant at Berber	1,500,000
Do.		Aslan Cement Co.	Plant at Khartoum	1,000,000
Do.		Nile Cement Co. Ltd.	Plant at Rabak	1,000,000
Do.		Al-Shamal Cement Factory (Mass Global Investment Co.)	Plant at Atbara	1,500,000
Do.		Al-Salam Cement Production Co. Ltd.	do.	2,000,000
Do.		Sudanese Cement Factory (Government, 100%)	Plant in Blue Nile State	100,000
Chromite		Ingessana Hills Mining Corp. [Sudanese Mining Corp. (Government, 100%)]	Mine at Ingessana Hills , Blue Nile State	70,000
Gold:				
Mine	kilograms	Alitimad Mining Co.	Tailings treatment plants at Algaab and Farig, Northern State, and at Abu Gbiha, South Kordofan State	1,000 ^e
Do.	do.	Alliance for Mining Co. Ltd.	Mine in Red Sea State	1,700
Do.	do.	Ariab Mining Co. (AMC) (Government, 100%)	Hassai Mine, Red Sea Hills, Red Sea State	2,000
Do.	do.	Artisanal miners	Jebel Amir Mines in North Darfur State	40,000 ^e
Do.	do.	do.	Various locations	30,000 ^e
Do.	do.	China-Africa HuaKan Mining Ltd. (Sudan)	Block 20	NA
Do.	do.	Delgo Mining Co. Ltd.	Mine at Abu Sara	NA
Do.	do.	Hagagia (Poly Red Sea) Gold Mining Co. Ltd.	River Nile State	NA
Do.	do.	Managem Group	Mine at Wadi Gabgaba, River Nile State	525
Do.	do.	Omdurman Mining Co.	Processing plant at Berber	2,000
Do.	do.	Rida Mining Co. (Golden United Group)	Assalam Mine, Abidiya, River Nile State	2,500
Do.	do.	Sahari Company for Gold Mining	Berber, River Nile State	NA
Do.	do.	Sudamin Co. Ltd.	Tailings treatment plant at Abu Hamad, River Nile State	500
Refined	do.	Sudan Gold Refinery Co. Ltd. (Government, 100%)	Refinery at Khartoum	270,000
Feldspar		NA	Bayuda Desert	NA
Gypsum		Sudanese Mining Corp. (Government, 100%)	Bir Eit Mine in Red Sea State	15,000
Do.		Yarmouk Industrial Services Co. Ltd.	Quarry at Bir Eit, Red Sea Stat	220,000
Iron and steel:				
Crude steel		Sudan Master Technology	Plant at Giad Industrial City, Khartoum	60,000
Galvanized		Sudanese Steel Products Ltd.	do.	20,000
Rebar		Al-Assad Steel Bar Factory	Plant at Khartoum	394,000
Do.		Giad Steel Ltd. (Giad Industrial Group, 100%)	Plant at Giad Industrial City, Khartoum	NA
Do.		Sudan Master Technology	Plant at Giad Industrial City Khartoum	150,000
Do.		Sudanese Steel Products Ltd. (Hafez Elsayad Barbary Ltd.)	Plant at Khartoum	150,000
Do.		Sudanese Malaysian Factory	do.	100,000
Iron ore		Yarmouk Industrial Services Co.	Mines at Durdaib and Fodikwan in Red Sea State	720,000
Manganese		Ingessana Hills Mining Corp. [Sudanese Mining Corp. (Government, 100%)]	Mine at Ingessana Hills, Blue Nile State	NA
Do.		Al Wadi Minerals & Commercial Co. Ltd.	Red Sea State	NA
Do.		Yarmouk Industrial Services Co. Ltd.	Tilco, Red Sea State	NA
Mica		Sheriek Mica Mines Co. [Sudanese Mining Corp. (Government, 100%)]	Mines at Sheriek ¹	1,800

See footnotes at end of table.

TABLE 2—Continued
SUDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2016

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Petroleum:				
Crude	thousand 42-gallon barrels	China National Petroleum Corp., 95%	Block 6 near Muglad	26,000
Do.	do.	Greater Nile Petroleum Operating Co. [China National Petroleum Corp. (CNPC), 40%; Petronas Carigali Overseas Shd. Bhd., 30%; ONGC Videsh Ltd., 25%; Sudan National Petroleum Corp. (Sudapet), 5%]	Blocks 2, and 4 in West Kordofan State	22,000
Do.	do.	Star Oil Operations Co. [Ansan Wikfs Investments Ltd., 66%, and Sudan National Petroleum Corp. (Sudapet), 34%]	Block 17 in South Kordofan State	7,300
Do.	do.	Petro Energy E&P	8 oilfields in Block 6	14,600
Refined	do.	Khartoum Refinery Co. Ltd. [China National Petroleum Corp. (CNPC), 50%, and Sudan National Petroleum Corp. (Sudapet), 50%]	Refinery at Jali	36,500
Do.	do.	Port Sudan Refining Ltd. (Government, 100%)	Refinery at Port Sudan	7,920
Do.	do.	El-Obeid Refinery Co. (Government, 100%)	Refinery at El-Obeid	3,650
Do.	do.	Concorp Petroleum Ltd.	Refinery at Shajirah	3,650
Do.	do.	Abu Gabra Refinery Co. [Sudan National Petroleum Corp. (Sudapet) (Government, 100%)]	Refinery at Abu Gabra	730
Salt		Bittar Salt Company Ltd. (El-Nilein Holding Co.)	Mine at Port Sudan	100,000
Silver, refined	kilograms	Sudan Gold Refinery Co. Ltd. (Government, 100%)	Refinery at Khartoum	146,000
Stone:				
Limestone		Al-Salam Cement Production Co. Ltd.	Mine in River Nile State	730,000
Do.		Al-Rajhi Group	Mine at Atbara	500,000
Do.		Nile Cement Company Ltd.	Mine at Rabak	200,000
Marble		do.	Atbara in River Nile State	480,000
Talc		Al Wadi Minerals & Commercial Co. Ltd.	Mine in Khartoum State	35,000
Do.		Yarmouk Industrial Services Co. Ltd.	Red Sea Hills in Halayeb Province	100,000

^aEstimated. Do., do. Ditto. NA Not available.

¹Closed in 2013.