



2019 Minerals Yearbook

SUDAN [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF SUDAN

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In 2019, Sudan exported mainly gold and modest quantities of chromite, crude petroleum, and petroleum products. Other mineral commodities produced in Sudan included cement, clay, feldspar, gypsum, kaolin, manganese, marble, salt, steel, and talc. According to the Central Bank of Sudan, gold production in Sudan increased steadily between 2007 and 2017 and decreased in 2018 and 2019. Gold production was carried out by artisanal miners and local and international mining companies. Sudan was not a significant global importer of minerals (tables 1, 2).

Sudan went through a major political transition following the overthrow of the President in 2019. A Transitional Military Council governed the country between April 11 and August 21 before a joint civilian-military-executive body known as the Sovereignty Council was created to govern the country for a 3-year period. A democratic election was envisioned to take place at the end of the transitional period in 2022 (Associated Press, 2019; U.S. Department of State, 2021).

Minerals in the National Economy

Sudan's gross domestic product (GDP) decreased in real terms by 1.3% in 2019 from a decrease of 2.3% in 2018. The country's nominal GDP was \$175.2 billion in 2019. At constant 1981–82 prices, the value of the output of the processing industries, handicraft, and mining and quarrying sector, which also included building, electricity, gas and water activities, accounted for 20.9% of the GDP in 2019 compared with 21.0% of the GDP in 2018, and it decreased by 1.6% in 2019 compared with an increase of 2.8% in 2018. Within that sector, the processing industries and handicraft subsector, which accounted for 14.6% of the GDP in 2019, increased by 14.6% in 2019 compared with an increase of 2.7% in 2018. The mining and quarrying subsector, which accounted for 1.4% of the GDP in 2019 compared with 1.5% of the GDP in 2018, decreased by 5.6% in 2019 compared with a decrease of 6.6% in 2018. The electricity, gas, and water subsector, which accounted for 3.1% of the GDP, decreased by 1.4% in 2019 compared with an increase of 2.2% in 2018, and the building and construction subsector, which accounted for 1.9% of the GDP, decreased by 1.4% in 2019 compared with an increase of 2.2% in 2018 (Central Bank of Sudan 2020, p. 119, 122; International Monetary Fund, 2020).

Government Policies and Programs

In 2019, Sudan's Ministry of Minerals was dissolved by the new Transitional Government and the mining authorities were placed under the Ministry of Petroleum, Gas, and Minerals in April. The Ministry of Petroleum, Gas, and Minerals was renamed the Ministry of Energy and Mining (MEM) in September. The Public Authority for Geological Resources (GRAS) and Sudan Mineral Resources Co. Ltd. (SMRC) were the main public authorities under the MEM. The GRAS and the SMRC were responsible for managing the mining sector,

including providing and maintaining geologic information and issuing mining permits, respectively. In 2019, the SMRC implemented a new mining policy for gold mining that applies to all mining companies working in Sudan and eliminates the preferential treatment that was granted to some mining companies by the previous regime. Under the new policy, a corporate tax of 15% is assessed on the profits of mining companies in addition to the royalties on minerals and precious metals, which range between 5% to 7% of the value of the minerals produced. Artisanal gold miners are required to pay a tax of 10% of the value of their gold production (Global Financial Integrity, 2020, p. 78; Sudan Minerals Resources Co. Ltd., 2020a; M.A. Ardol, Deputy Director, Sudan Minerals Resources Ltd., oral commun., February 20, 2019).

The Mineral Wealth Development and Mining Act of 2015 states that the National Government has ownership and absolute rights of exploration for and mining of all mineral commodities in the country. The act 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 (m). Artisanal mining is practiced by more than 1 million people in 14 out of the 18 States that make up Sudan. It also employs more than 1 million people indirectly in associated services, such as ore milling and processing, tailings processing, and transportation (Public Authority for Geological Research, 2016; Elhashmi, 2017, p. 4).

The value of gold smuggled from Sudan to the United Arab Emirates between 2010 and 2014 was estimated by the United Nations to be more than \$4.5 billion. To curtail gold smuggling from Sudan to neighboring countries, the Government was finalizing a new regulation in 2019 that allows companies to export gold directly to international markets without having to go through the Central Bank of Sudan (CBOS). As of January 1, 2020, private mining companies could export up to 70% of their gold production on the condition that they deposit the proceeds of the foreign sales in local banks. Gold producers are still required to sell the remaining 30% of their gold to the CBOS. Under previous regulations, the CBOS was the only legal authority allowed to buy and export gold through its centers, which were located around the country (Lynch, 2016; Mirghani and Abdelaziz, 2020; Sudan Tribune, 2020).

Production

Most of Sudan's mineral commodity production in 2019 was estimated owing to the unavailability of official production data as the new transitional Government was in the process of reviewing data collection and publications in several sectors of the Government, including the mineral sector. 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), Ingessana Hills Mining Corp., Sudamin Co. Ltd., Sudan Gold Refinery Co. Ltd., and Sudanese Mining Corp. The Government was also a joint-venture partner in gold exploration and production concessions, such as the Alliance For Mining Co. Ltd., with Kush for Exploration and Production Co. Ltd. of Russia; China-Africa Huakan Mining (Sudan), with China Africa Huakan Investment Co.; and Hagagia (Poly Red Sea) Gold Mining Co. Ltd., with China-Africa Development Fund. The country's other mining companies were privately owned by local and foreign companies, including Jin Qualoa Mining Co. of China; Azhab El Amin Gold Co. of Saudi Arabia; Siberian Mining Co. (a subsidiary of Vasilievsky Rudnik Mine Siberian for Mining Co. Ltd.) of Russia; M-Invest OOO of Russia; Miro Gold Co. of Russia; and Tahe International Metal Mining Co. of Turkey. All cement plants, with the exception of the Government-owned Sudanese Cement Factory, were privately owned. Crude petroleum production in Sudan was carried out by joint ventures of state-owned companies and companies from the British Virgin Islands, China, India, Malaysia, and Sudan. The Government also owned three small petroleum refineries, but the country's largest refinery at Al-Jaili was operated by Khartoum Oil Refinery Co. Ltd., which was a 50–50 joint venture of China National Petroleum Corp. (CNPC) and Sudan Petroleum Corp.; this joint venture was renamed Sudapet Co. Ltd. (Sudapet) in 2019 (table 2; Thomson Reuters, 2019; Global Financial Integrity, 2020, p. 68–69).

In 2019, more than 400 mining and mining-related companies were operating in Sudan. They included 76 local companies that were engaged in extracting gold from tailings, 131 companies holding large-scale concessions encompassing more than 300 square kilometers (km²), and 204 companies operating small-scale concessions of from 1 to 5 km² in size. These companies were involved in exploration and production of mineral commodities that included bentonite, chromite, copper, feldspar, fluorite, gold, gypsum, iron ore, kaolin, manganese, marble, mica, quartz, salt, talc, and white sand (Sudan Minerals Resources Co. Ltd., 2020b).

Commodity Review

Metals

Copper and Gold.—No copper was produced in Sudan in 2019, but copper and gold exploration and production projects had been the focus of several companies in Sudan, such as AMC and QMSD Mining Co. According to the Central Bank of Sudan, gold production decreased by 54% to 43,300 kilograms (kg) in 2019 from 93,600 kg in 2018. The sharp decrease was attributed to the negative effects of the civil unrest in the country during 2019 (Central Bank of Sudan, 2020, p. 150).

Except for Manub Ltd., there was no information on gold output by mining companies in 2019. Manub Ltd., which was a joint venture of Managem Group of Morocco (78% interest) and a private operator (22% interest), increased its gold production from its mine at Wadi Gabgaba in Mining Block 15 in

Red Sea State to 1,907 kg in 2019 from 596 kg in 2018. Managem continued its exploration activity for gold at Block 15 and completed the construction of a new carbon-in-leach (CIL) plant on Block 15 that would double the Wadi Gabgaba Mine's gold production capacity. Gold resources at Block 15 were reported to be 90,190 kg (2.90 million troy ounces) of contained gold, of which 49,800 kg (about 1.60 million troy ounces) was proven and probable reserves (Managem S.A., 2019, p. 12; 2020, p. 15).

In 2019, AMC's gold production at the Hassai Mine decreased to less than the historical average of 2,000 kilograms per year, and it was expected to be less than 1,000 kg in 2020 owing to the lower ore grade mined. The company held two concessions in Sudan—the Duredeb and the Hassai concessions. The Duredeb (Block 18) is located 250 kilometers (km) south of Port Sudan near the city of Duredeb at the border with Eritrea. The Hassai concession (Block B11) is located 350 km southwest of Port Sudan on the Red Sea. The Hassai Mine, which was built on Block B11, had been the leading large-scale open pit gold mine in Sudan; it had produced more than 85,000 kg of gold and 37,000 metric tons of silver since 1991. AMC was the first user of the heap leach method to process gold in Sudan. In 2017, AMC completed a definitive feasibility study at Hassai to build a CIL plant to treat more than 12 million metric tons (Mt) of tailings accumulated over more than 30 years to produce 21,800 kg of gold for 6 years (table 2; Africa Intelligence, 2020; Ariab Mining Co., 2020a–d).

Orca Gold completed its feasibility study for the Block 14 gold project in 2018. The study projected a 14-year mine life at an estimated production rate of about 7,100 kg (228,000 troy ounces) per year for years 1 through 7 and about 5,400 kg (172,000 troy ounces) per year for the remaining life of the mine. The company later revised the feasibility study to include an annual production of about 7,100 kg gold during the first 7 years of the life of the mine and about 5,200 kg (167,000 troy ounces) for the remaining 7 years of the life of the mine. Probable reserves at Block 14 were estimated to be 79.5 Mt at a grade of 1.01 grams per metric ton (g/t) gold for a total of 82,600 kg (2.657 million troy ounces) of gold at the Galat Sufar South deposit and 2.5 Mt at a grade of 2.36 g/t gold for a total of 6,100 kg (197,000 troy ounce) of gold at the Wadi Doum deposit (Orca Gold Inc., 2020, p. 12).

QMSD, which was a wholly owned subsidiary of Qatar Mining Co., was exploring for copper and gold in Red Sea State. The company held mining permits in Blocks 62 and 62b, which covered a combined area of 5,110 km². In 2016, QMSD advanced its exploration activity to prefeasibility study status through core and reverse-circulation drilling programs at the Jebel Oheir site; a stock mineralization zone that contained 0.2% to 0.6% copper was identified at the site, along with an oxide mineralization zone that contained 1.81% copper and 0.62 g/t gold. The total inferred mineral resource estimate at Jebel Oheir at the end of 2017 was 246.3 Mt grading 0.44% copper and 0.08 g/t gold. The company started a 133,000-m drilling program in 2018 and planned to use the results of its drilling program in the prefeasibility study scheduled to commence in late 2020. QMSD was also exploring for copper at the Copper Wadi site (also known as the Hufurat al-Nuhas), the Jebel Ghazal,

the Jebel Sabarah, and the Jebel Vulcan areas, as well as for gold at the Al Bashoom, the Al Dabib, the BM2 Anomaly, the Red and White Wadi, and the Shannon properties (QMSD Mining Co. Ltd., 2017; 2020a, b).

Sudan's sole gold refinery, which is located in Khartoum and was completed in 2012, had the capacity to produce 270 metric tons per year (t/yr) of gold and 145 t/yr of silver. As of yearend 2019, the Sudan Gold Refinery Co. lacked international accreditation (table 2; Abu Fatima, 2017, p. 17).

Mineral Fuels

Petroleum.—According to BP World Energy Statistics 2020 (BP p.l.c., 2020, p. 16), Sudan's production of crude petroleum, including condensate, increased to 37.2 million barrels (Mbbbl) in 2019 from 36.5 Mbbbl in 2018. Petro Energy Operating Co., which was owned by CNPC (95%) and Sudapet (5%), was the country's top producer of crude petroleum in the country in 2019 with a daily production average of 29,000 barrels per day (bbl/d) from Block 6. It was followed by 2B Operating Co. [Sudapet (50%) and Petrolines for Crude Oil (PETCO) (50%)], which produced 21,600 bbl/d from Block 2 B, then the Greater Nile Petroleum Operating Co. (GNPOC) [CNPC (40%), Petronas Carigali Overseas Shd. Bhd. of Malaysia (30%), ONGC Videsh Ltd. of India (25%), and Sudapet Co. Ltd. (5%)], which produced 19,300 bbl/d from Blocks 2A and 4, and Sharif Petroleum Operations Co., which was owned by Sudapet and produced 2,650 bbl/d from Block 17 (table 2; U.S. Energy Information Administration, 2019; BP p.l.c., 2020, p. 16; Ministry of Energy and Mining, 2020).

In 2019, there were three petroleum refineries in operation in Sudan; they were located at El-Obeid, Khartoum, and Port Sudan, respectively. Their combined nameplate capacity was 140,000 bbl/d but they actually produced 78,000 bbl/d. Khartoum Refinery Co. Ltd. was the largest operating refinery in Sudan; it was owned by the MEM (90%) and CNPC (10%) and had the capacity to produce 90,000 bbl/d of crude petroleum (table 2; U.S. Energy Information Administration, 2019; Ministry of Energy and Mining, 2020).

Outlook

The International Monetary Fund projected that Sudan's real GDP would decrease by 8.4% in 2020 owing mainly to the negative effects of the coronavirus disease 2019 (COVID-19) pandemic. Sudan's transitional Government has been closely working with the United States Government to be removed from the State Sponsors of Terrorism list, which is expected to take place in late 2020. The removal is expected to enable Sudan to be part of the international financial system and be eligible to receive loans from international donor organizations to develop the country's infrastructure. In the meantime, foreign mining companies from Canada, China, Morocco, Qatar, Russia, Saudi Arabia, Turkey, and the United Arab Emirates have been engaged in the development of large-scale copper and gold mining operations in the country in cooperation with local private and public companies (Hudson, 2020; International Monetary Fund, 2020).

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TABLE 1
SUDAN: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons, gross weight, unless otherwise specified)

Commodity ²	2015	2016	2017	2018	2019
METALS					
Chromium, mine, chromite:					
Gross weight	60,000	15,000	32,000	27,000	30,000 ^e
Cr ₂ O ₃ content, 25%	15,143	3,862	8,000	6,750	7,500 ^e
Gold:					
Mine, Au content	82,400	93,400	107,300	93,600	43,300 ^e
Refinery ³	20,000	27,000	37,000	20,000	22,000
Iron and steel, products, semimanufactured	624,000	360,000	539,000	997,000	1,000,000 ^e
Manganese, mine:					
Gross weight	31,400	33,800	42,000 ^e	41,000 ^{r,e}	40,000 ^e
Mn content	9,106	9,800	12,000 ^e	12,000 ^{r,e}	10,000 ^e
INDUSTRIAL MINERALS					
Cement, hydraulic	3,708	4,013	4,326	4,053	4,000 ^e
Clay, kaolin	14,490	15,000	6,000	11,000	15,000 ^e
Feldspar, mine	94,354	92,172	29,000	30,000 ^{r,e}	30,000 ^e
Gypsum	180,000	355,000	333,000	226,000	230,000 ^e
Salt, all types	70,000	223,397	235,000	267,000	260,000 ^e
Stone, sand, and gravel, construction:					
Sand and gravel, iron sand	70,000	70,000	NA	NA	NA
Stone, dimension, marble	2,560	2,500 ^e	NA	NA	NA
Talc	3,000	4,200	NA	NA	NA
MINERAL FUELS AND RELATED MATERIALS					
Petroleum:					
Crude, including condensate	39,785	37,960	34,675	36,500	37,230
Refinery:					
Distillate fuel oil	11,477	10,168	11,517	12,810	13,000 ^e
Gasoline	13,077	16,660	9,037	7,865	8,000 ^e
Jet fuel	876	1,247	658	304	300 ^e
Kerosene	135	85	57	78	80 ^e
Liquefied petroleum gas	3,462	3,169	3,224	3,218	3,200 ^e
Naphtha	147	94	33	75	80 ^e
Petroleum coke	1,575	1,647	1,421	1,317	1,320 ^e
Residual fuel oil	1,954	1,957	1,753	1,848	1,800 ^e
Total	32,700	35,000	27,700	27,500	27,800 ^e

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

¹Table includes data available through September 15, 2020. All data are reported unless otherwise noted. Totals and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²In addition to the commodities listed, common clay, iron ore, lime and other construction materials, refined silver, and zinc may have been produced, but available information was inadequate to make reliable estimates of output.

³Based on exports reported by the Central Bank of Sudan.

TABLE 2
SUDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners		Location of main facilities	Annual capacity
Cement	Al-Salam Cement Production Co. Ltd.		Plant at Atbara	2,000,000
Do.	Al-Shamal Cement Factory (Mass Global Investment Co.)		do.	1,500,000
Do.	Al Takamol Cement Co. (ASEC Cement Co. 100%)		do.	1,600,000
Do.	Aslan Cement Co.		Plant at Wadi Madani	1,000,000
Do.	Atbara Cement Co. Ltd. (Al-Rajhi Group, 100%)		do.	1,700,000
Do.	Berber Cement Co. Ltd.		Plant at Berber	1,500,000
Do.	Nile Cement Co. Ltd.		Plant at Rabak	1,000,000
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
Do.	More than 40 small-scale mining companies		Mines in Blue Nile State	NA
Feldspar	Bahri Ceramics Co.		Mine in River Nile State	NA
Do.	Salomi Ceramics Co.		Plant at Industrial zone, Khartoum	NA
Gold:				
Mine, Au content	kilograms	Alitimad Company for Iron Industry and Mining Ltd.	Tailings-processing plants at Dongola and Wadi Halfa, Northern State, and at Abu Jubeiha, South Kordofan State	1,000 °
Do.	do.	Alliance For Mining Co. Ltd. (Alliance) (Kush for Exploration and Production Co. Ltd., and Government)	Mine on Block 30 at Wadi Ushar, Red Sea State	2,500
Do.	do.	Ariab Mining Co. Ltd. (AMC) (Government, 95%, and Industrial Development Bank, 5%)	Mine at Hassai, 350 kilometers southwest of Port Sudan	2,000
Do.	do.	Artisanal miners	Jebel Amir Mines in North Darfur State	40,000 °
Do.	do.	do.	Various locations	30,000 °
Do.	do.	China-Africa HuaKan Mining (Sudan) Government, 55%, and China Africa Hukan Investment Co., 45%)	Mine on Block 20 in River Nile State	NA
Do.	do.	Delgo Mining Co. Ltd. (Tahe International Mining Group, 100%)	Mine on Block 17 at Abu Sara	NA
Do.	do.	Hagagia (Poly Red Sea) Gold Mining Co. Ltd. (China-Africa Development Fund, 70%, and Government, 30%)	Mine on Block 21 at Bayuda, Red Sea State	NA
Do.	do.	Manub Ltd. (Managem Group, 78%, and private operator, 22%)	Mine on Block 25 at Wadi Gabgaba, River Nile State	800
Do.	do.	Rida Mining Co. (Golden United Group)	Mine on Block 23, Abidiya, River Nile State	2,500
Do.	do.	Sahari Company for Gold Mining	Berber, River Nile State	NA
Do.	do.	Sudamin Co. Ltd. (Government, 100%)	Tailings-processing plant at Abu Hamad, River Nile State	500
Refined	do.	Sudan Gold Refinery Co. (Government, 100%)	Refinery at Khartoum	270,000
Gypsum	Sudanese Mining Corp. (Government, 100%)		Bir Eit Mine, Red Sea State	15,000
Do.	Yarmouk Industrial Services Co. Ltd.		Quarries at Bir Eit, Red Sea State	220,000
Iron ore	Baasher Works for Minig		Mine in Red Sea State	NA
Do.	Nawati International Co.		do.	NA
Do.	Yarmouk Industrial Services Co.		Mines at Durdaib and Fodikwan in Red Sea State	720,000
Iron and steel, steel, products	Al-Assad Steel Bar Factory		Plant at Khartoum	394,000
Do.	Giad Industrial Group		Plant at Giad Industrial Zone, Khartoum	200,000
Do.	Sudanese Malaysian Factory for Steel Industries		do.	100,000
Do.	Sudanese Steel Products Ltd. (Hafez Elsayad Barbary Ltd., 100%)		do.	150,000

See footnotes at end of table.

TABLE 2—Continued
SUDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2019

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Manganese		Al Wadi Minerals & Commercial Co. Ltd.	Ingessana Hills Mine, Red Sea State	NA
Do.		Ingessana Hills Mining Corp. [Sudanese Mining Corp. (Government, 100%)]	do.	NA
Do.		Yarmouk Industrial Services Co. Ltd.	Tilco Mine, Red Sea State	NA
Petroleum:				
Crude	thousand 42-gallon barrels	Greater Nile Petroleum Operating Co.(GNPOC) [China National Petroleum Corp. International Ltd., 40%; Petronas Carigali Overseas Shd. Bhd., 30%; ONGC Videsh Ltd., 25%; Sudapet Co. Ltd., 5%]	Bamboo and Helgig fields in Blocks 2A, and Diffra and Neem oilfields in Block 4, Unity State	16,000
Do.		do. Petro Energy Operating Co. (PEOC) [China National Petroleum Corp. (CNPC), 95%, and Sudapet Co. Ltd., 5%]	Fula and Hadida oilfields in Block 6 near Muglad	17,500
Do.		do. Sudapet Co. Ltd. (Government, 100%)	Rawat Central and Wateesh oilfields in Block 25.	3,650
Do.		do. Sharif Petroleum Operations Co.	Al-Barasaya oilfield in Block 17 in South Kordofan State	3,000
Do.		do. 2B Operating Co. [Petroline for Crude Oil (PETCO), 50%, and Sudapet Co. Ltd., 50%]	oilfields in Block 2 B, South Kordofan State	7,900
Refined		do. El-Obeid Refinery Co. (Government, 100%)	Refinery at El-Obeid	5,475
Do.		do. Khartoum Refinery Co. Ltd. [Sudan Petroleum Corp., 90%, and China National Petroleum Corp. (CNPC), 10%]	Refinery at Al-Jaili	36,500
Do.		do. Port Sudan Refining Ltd. (Government, 100%)	Refinery at Port Sudan	9,125
Salt		Bittar Salt Co. Ltd. (El-Nilein Holding Co., 100%)	Mines at Port Sudan, Red Sea State	100,000
Do.		25 small-scale mining companies	do.	NA
Silver, refined		do. The Sudan Gold Refinery Co. (Government, 100%)	Refinery at Khartoum	145,000
Stone:				
Limestone		Al-Rajhi Group	Mine at Atbara, River Nile State	500,000
Do.		Al-Salam Cement Production Co. Ltd.	Mine in River Nile State	730,000
Do.		Nile Cement Co. Ltd.	Mine at Rabak	200,000
Marble		Yarmouk Industrial Services Co. Ltd.	Mine at Atbara, River Nile State	480,000
Talc		Al Wadi Minerals & Commercial Co. Ltd.	Mine in Red Sea State	35,000
Do.		Yarmouk Industrial Services Co. Ltd.	Red Sea Hills, Halayeb Province	100,000

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