

SUDAN

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Traditionally, mineral production has made a negligible contribution to Sudan's economy.

Initiation of commercial gold production in 1991 and increased production of crude oil in 1999, however, have enhanced the mineral sector's impact on the national economy. After exportation of crude oil began in September 1999, royalties received by the Government from petroleum operations reached nearly \$20 million per month. In 1999, the gross domestic product for this nation of 29 million people was estimated to be \$10.9 billion.¹ Total exports were estimated to be \$780 million in 1999 compared with \$596 million in 1998; petroleum accounted for the increase. In 1998, fuel and energy accounted for \$380 million of Sudan's imports. Fuel imports were expected to be minimal by 2000 (World Bank, August 21, 2000, Sudan at a glance, accessed September 20, 2000, via URL <http://www.worldbank.org/data/countrydata/countrydata.html>).

The new Constitution of the Republic of Sudan, which was approved in 1998, retains Federal Government jurisdiction over mineral operations. Quarries and environmental issues associated with natural resource development also are subject to state controls. Mineral sector investments are subject to the Investment Encouragement Act for 1996. Exploration and production of oil and natural gas also are covered under the Petroleum Wealth Act, 1998. Exploration and production-sharing agreements form the basis for all petroleum and natural gas contracts.

The United States instituted economic sanctions against Sudan with Executive Order 13067 of November 3, 1997 (Clinton, 1997). The sanctions, which are codified in 31 CFR part 538, prohibited investment by U.S. businesses in Sudan. In October 1999, the Canadian Government announced that it was forming a fact-finding mission to investigate allegations that Canadian oil company operations were contributing to the escalation of the 16-year-old civil war and increasing human rights abuse in Sudan. The Sudan People's Liberation Army, which was a rebel group, declared that oil facilities were targets because oil revenues would increase the Government's ability to finance the war (Sunday Monitor, May 17, 1998, Heavy losses as SPLA fail to take oil fields, accessed March 9, 1999, at URL <http://www.africanews.com/monitor/freeissues/17May98/inter.html>; Reuters, May 4, 1999, Focus—Sudan rebels say Talisman oil wells legitimate target, accessed May 5, 1999, at URL <http://biz.yahoo.com/fr/990504/bkk.html>).

Commodity Review

Mineral commodities produced in Sudan included asbestos,

¹The Sudanese dinar (D) replaced the Sudanese pound (£S) on March 1, 1999. Where necessary, values have been converted from Sudanese dinars to U.S. dollars at the rate of D160=US\$1.00 for 1999 and from Sudanese pounds to U.S. dollars at the rate of £S2,000=US\$1.00 for 1998.

cement, chromite, crude construction materials, gold, gypsum, limestone, marble, mica, crude oil, refined petroleum products, and salt. Output of most commodities was small, and the country was relatively unexplored compared with other countries. The civil war adversely affected mineral sector activity in the southern part of the country, but most of the country's solid minerals activities was located northwest of Port Sudan in the Ariab-Abra'at area, in the Red Sea Hills along Sudan's coast, and in the Ingessana Hills along the Ethiopian border. Ariab Mining Co. was exploring for gold near its gold mine at Ariab. Billiton Plc of the United Kingdom was exploring for copper in the Hofrat en-Nahas area. Ingessana Hills Mining Co. operated a chromite mine. Cement plants were operated by Atbara Cement Co. Ltd. at Atbara and by Nile Cement Co. at Rabak. North of Bentiu in the Muglad Basin, Greater Nile Petroleum Operating Co.—a consortium of China National Petroleum Corp. (CNPC) (40%); Petronas Carigali Overseas Shd. Bhd. of Malaysia (30%); State Petroleum Corp., a subsidiary of Talisman Energy Inc. of Canada (25%); and Sudapet Ltd. of Sudan (5%)—continued to drill wells and produce crude petroleum in El Harr, El Nar, El Toor, and the Heglig, the Toma South, and the Unity Fields.

In September 1999, crude oil production from the basin increased to about 136,000 barrels per day (bbl/d) from about 5,000 bbl/d in 1998. The Muglad Basin crude oil was graded within a 33° API to 42° API range with a sulfur content of 0.5%. Also in the Muglad Basin, the Thar Jath Well was successfully drilled by the partnership of IPC Sudan Ltd., which was an affiliate of Lundin Oil AB of Sweden (40.375%); Petronas (28.5%); OMV (Sudan) Exploration GmbH of Austria (26.125%); and Sudapet (5%). Well tests were suspended until 2000 because of the difficulties of operating during the rainy season (June to November).

Northeast of Muglad, CNPC was exploring Block 6, which contained the 2,000-bbl/d Abu Ghabra, the Sharaf, and the Tabaldi Fields. Total Fina S.A. retained the rights to Block B north of Juba in the Muglad Basin. Operations had been suspended in 1985 because of the civil war. Total Fina was studying the feasibility of removing landmines from its concession area.

Northwest of Malakal in the Melut Basin, Gulf Petroleum (Sudan) Ltd., which was a venture of Qatar Petroleum Co. (60%), Concorp International Ltd. of Sudan (20%), and Sudapet (20%), was producing about 5,000 bbl/d during the dry season (December to May) from the three-well Adar-Yale Field. On December 31, 1999, Fosters Resources Ltd. of Canada entered into a joint venture to explore the rest of Gulf Petroleum's concession area in the Melut Basin.

Sudan's petroleum refining operations included a 21,700-bbl/d-capacity facility at Port Sudan, a 10,000-bbl/d-capacity topping plant near El Obeid, and a 2,000-bbl/d-capacity topping plant at Abu Ghabra (Arab Petroleum Research Center, 2000).

Concorp and CNPC were building a 50,000-bbl/d-capacity refinery about 50 kilometers (km) north of Khartoum. It was expected to be on-stream in 2000 (Arab Petroleum Research Center, 2000).

In May 1998, construction began on a 1,500-km, 71-centimeter-diameter, 250,000-bbl/d-capacity pipeline from the Heglig and the Unity Fields to a petroleum loading terminal at Marsa al Bashayir near Port Sudan. By June 1999, crude oil was being diverted into the pipeline from the former transport scheme of truck and railroad transport that had limited production from the Heglig and the Unity Fields primarily in the dry season, and by September 1, 1999, the pipeline was transporting up to 150,000 bbl/d. The pipeline was designed to allow expansion to a capacity of 450,000-bbl/d (U.S. Energy Information Administration, November 1999, Sudan—Country analysis briefs, accessed September 20, 2000, at URL <http://www.eia.doe.gov/emeu/cabs/sudan.html>). The pipeline,

however, was a target for dissidents. On September 20, 1999, it was attacked near Wagoa, which is northeast of Khartoum. The resultant minor bomb damage was repaired by the next day.

The poor condition of other local infrastructure continued to plague mineral operations. Roads were the primary means of transportation and were in need of repair. The 4,800-km railway and rolling stock also were in poor condition. Port Sudan and Suakin were the nation's major ports on the Red Sea.

References Cited

- Arab Petroleum Research Center, 2000, Sudan, *in* Arab oil & gas directory: Paris, Arab Petroleum Research Center, p. 423.
- Clinton, W.J., 1997, Executive Order 13067—Blocking Sudanese Government property and prohibiting transactions with Sudan: Federal Register, v. 62, no. 214, November 5, 1997, p. 59989-59990.

TABLE 1
SUDAN: ESTIMATED PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity	1995	1996	1997	1998	1999
Cement, hydraulic	391,000	380,000	291,000 r/	300,000 r/	350,000
Chromite, mine output, gross weight 3/	44,988 4/	12,000 r/	30,500 r/	20,000 r/	10,000
Gold, mine output, Au content	3,700	4,500	5,000	5,000	6,000
Petroleum:					
Crude (including lease condensate)	thousand 42-gallon barrels	730	1,000	2,000	1,200
Refinery products	do.	6,600	7,000	7,000	7,000
Salt		75,000	50,000	50,000	45,000

r/ Revised.

1/ Includes data available through September 18, 2000.

2/ In addition to the commodities listed, the following are presumably produced although available information is inadequate to estimate output: clay and/or shale for cement manufacture (normally about 0.4 ton of clay and/or shale per ton of finished cement); gypsum for cement manufacture (about 0.04 ton per ton of finished cement) and plaster; limestone for cement manufacture (normally at least 1.25 ton per ton of finished cement), agriculture, lime manufacture, and construction aggregate and fill; and other locally used construction materials (clays, sand and gravel, stone, et al).

3/ Presumed to be ores and concentrates with an estimated average grade of about 48% chromic oxide.

4/ Reported figure.