

SUDAN

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The mineral sector of Sudan has traditionally made a negligible contribution to the country's economy. However, rising production of gold and crude petroleum in recent years have increased substantially the mineral sector's influence on the national economy. Other mineral commodities produced in Sudan included asbestos, cement, chromite, gravel, gypsum, limestone, marble, mica, refined petroleum products, salt, and construction sand. Sudan was also known to have deposits of barite, copper, iron ore, kyanite, lead, nickel, silver, tungsten, wollastonite, and zinc.

In 2001, Sudan's gross domestic product (GDP) amounted to about \$63.4 billion at purchasing power parity. The GDP at market exchange rates was \$12.5 billion. Sudan's GDP increased by 5.3% in 2001 after rising by 9.7% in 2000, 7.7% in 1999, and 6% in 1998. In 1999, manufacturing and mining accounted for about 10% of the GDP; construction, 4%; and electricity and water, nearly 2% (International Monetary Fund, 2000, p. 4; 2002, p. 164; 2002a§¹, b§, c§).

The United Nations imposed sanctions on Sudan in 1996, and the United States, in November 1997. The sanctions, which were codified in 31 CFR part 538, prohibited investment by U.S. businesses in Sudan. In February 2000, the U.S. economic sanctions against Sudan were extended to the Greater Nile Petroleum Operating Co. (GNPOC) and to Sudapet Ltd. of Sudan, but not to the international corporate owners of GNPOC (U.S. Department of the Treasury, 2000).

In 2001, the U.S. House of Representatives passed the Sudan Peace Act, which would prohibit oil and gas companies operating in Sudan from raising capital in, or selling their shares within, the United States. The version of the Sudan Peace Act passed by the Senate did not include these new sanctions; at the end of 2001, differences between the House and Senate bills had not been resolved (Indian Ocean Newsletter, 2001). The Sudan Peace Act resulted from the possible role of oil revenues in financing the civil war between the Government of Sudan and the Sudan People's Liberation Army (SPLA) as well as the allegations of atrocities and slavery associated with the war (Mobbs, 2002).

In 2000, Ariab Mining Company Ltd. (AMC) produced 5,770 kilograms (kg) of gold, which was an increase from 5,565 kg in 1999. Production in 2001 was estimated to be about 5,800 kg. The company mined gold at the Baderuk, the Hadal Auatib, and the Oderuk deposits. AMC's plant had the capacity to process 600,000 metric tons per year (t/yr) of ore. Gold was also produced by artisanal miners (Resource Information Unit, 2001).

Gold exports fell to 6,833 kg in 2001 from 8,452 kg in 2000 and 10,594 kg in 1999. Gold accounted for 7% of the value of

Sudan's total exports in 1999 and less than 3% in 2001 (Bank of Sudan, undated b§, c§).

Sudan Master Technology (SMT) started operations at its steel plant in Giad Industrial City in July 1999. The plant had a meltshop with a capacity of 60,000 t/yr that produced billet for the 150,000-t/yr bar mill. From 1995 to 2000, Sudan's apparent consumption of finished steel rose to 111,000 metric tons (t) from 42,000 t (International Iron and Steel Institute, 2001, p. 91; Sudan Master Technology, undated§).

The production of cement declined by 47% from 1997 to 2000 owing to a lack of spare parts; the combined output of the Atbara and Rabak cement plants in 2000 was less than one-half the production capacity of the Atbara plant. Production at the Atbara plant fell to 105,500 t in 2000 from 224,600 t in 1997; and at Rabak, to 40,300 t from 51,000 t (Bank of Sudan, undated a§). Cement production was estimated to be 146,000 t in 2001.

Ingessana Hills Mines Corp., which was a state-owned company, operated Sudan's only chromite mine. Production fell to an estimated 20,500 t in 2001 from 28,500 t in 2000 and 48,000 t in 1999. It is likely that the decrease in production was at least partially attributable to the decline in the global stainless steel market.

GNPOC [a joint venture of China National Petroleum Corp. (CNPC), Petronas Carigali Overseas Shd. Bhd. of Malaysia, and Talisman Energy Inc. of Canada] produced most of Sudan's crude petroleum from the el-Toor, the Grand Heglig, the Tooma South, and the Unity oilfields. In 2001, GNPOC started production at the Bamboo, the Garaad, and the Khairat oilfields. Sudan's proved recoverable reserves of crude petroleum were estimated to be 563 million barrels; reserves of natural gas amounted to 85 billion cubic meters (Arab Petroleum Research Center, 2001; Radler, 2001; Oil & Gas Journal, 2002).

In May 2001, the Government signed an exploration and production-sharing agreement with a consortium of companies to develop block 5B. Petronas Carigali Overseas of Malaysia held a 41% stake in the consortium; Lundin Petroleum AB, 24.5%; OMV Aktiengesellschaft of Austria, 24.5%; and National Petroleum Company of Sudan, 10%. Test drilling was expected to commence in 2002 (Middle East Economic Digest, 2001).

In November 2001, Lundin Petroleum AB announced plans to invest at least \$31.5 on its two concessions in blocks 5A and 5B in 2002. However, Lundin withdrew its plans to acquire the 25% stake that Talisman held in GNPOC. At the end of 2001, the Government was negotiating production-sharing agreements with Rosneft Oil Company and Slavneft Oil and Gas Joint Stock Company (Africa Energy Intelligence, 2001c, d). Other companies exploring for petroleum in Sudan included al-Thani Petroleum of the United Arab Emirates, Gulf Petroleum Company of Qatar, and OMV Aktiengesellschaft of Austria.

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

In 2001, exports of crude petroleum increased to 56.1 million barrels at a value of \$1.27 billion from 49.5 million barrels at a value of \$1.24 billion in 2000. Crude petroleum accounted for 35% of the value of Sudan's exports in 1999 and nearly 75% in 2001 (Sudan Central Bank, undated c§).

In June 2000, production started at the Khartoum Oil Refinery, which had a production capacity of 50,000 barrels per day (bbl/d). Gasoline from the Khartoum Oil Refinery was sent to Port Sudan for export. The 25,000-bbl/d Port Sudan plant accounted for a majority of Sudan's refinery output until 1999. The topping plants at Abu Jabra, El Obeid, and Sharjirah produced mainly heavy fuel oil. The Abu Jabra plant also produced diesel fuel and naphtha; and the El Obeid plant, kerosene, liquified petroleum gas, and naphtha (Arab Petroleum Research Center, 2001).

In 2001, the value of petroleum products exports amounted to \$107.4 million, which was a decrease from \$108.1 million in 2000. Exports of gasoline were \$88.4 million; liquified petroleum gas, \$18.6 million; and kerosene, \$420,000. Exports of petroleum products amounted to about 6% of Sudan's total exports. In 2001, Ethiopia agreed to buy about one million barrels of gasoline from Sudan (Africa Energy Intelligence, 2001b; Bank of Sudan, undated c§).

From 1995 to 1999, Sudan's consumption of petroleum products increased to about 11.7 million barrels from 10.3 million barrels. The consumption of gasoline increased to 2.1 million barrels from 1.53 million barrels, and diesel, to 6.5 million barrels from 5.7 million barrels. In 1999, about 66% of Sudan's demand for petroleum products was met through imports. The value of imported petroleum products increased to \$163 million in 1999 from \$80 million in 1995; falling volumes of imports were more than offset by rising prices. In 2000, the opening of the Khartoum Oil Refinery made Sudan self-sufficient for petroleum products except for jet fuel. Sudan was a net exporter of petroleum products in 2001 (International Monetary Fund, 2000, p. 11-12; Townsend, 2002; Bank of Sudan, undated d§).

At the end of 2001, Sudan's electrical generating capacity was 2,600 megawatts (MW). The National Electricity Corporation (NEC) planned to increase capacity to 3,500 MW. In 2001, NEC started construction on the \$1 billion Merowe Dam and signed a contract with Ekitsasn, H. Cegielski SA, and Siemens to build a new 257-MW power station in Khartoum. Construction on the Merowe Dam was expected to start in early 2003 and last for 5½ years. The Abu Dhabi Development Fund, the Arab Fund for Economic and Social Development, the Kuwaiti Fund for Arab Economic Development, and the Saudi Industrial Development Fund planned to provide funding for the Merowe project. Other projects planned by NEC include hydroelectric plants at Shireik and Kgarbar, with capacities of 315 MW and 165 MW, respectively (Africa Energy Intelligence, 2002; Middle East Economic Digest, 2002).

In 1999, NEC produced 2,243 gigawatthours (GWh) of electricity, which was an increase from 2,160 GWh in 1998 and 1,864 GWh in 1995. From 1995 to 1999, NEC's consumption of diesel and other fuel oil increased to 315,000 t from 280,000 t. In 1999, industrial consumption of electricity amounted to 303 GWh, or 23% of Sudan's total power consumption (International Monetary Fund, 2000, p. 14).

In an agreement among the Governments of Djibouti, Ethiopia, and Sudan signed in 2001, the Ethiopian Electric Power Corporation pledged to start exporting electricity to Djibouti and Ethiopia by 2006. The cost of building the necessary transmission line was estimated to be \$75 million (Africa Energy Intelligence, 2001a).

The outlook for Sudan's petroleum and gold industries depends heavily upon world market conditions for these commodities; most of the production of these commodities is exported. For Sudan's cement, gypsum, marble, and steel industries, the outlook depends upon the strength of the domestic economy.

In 2002, Sudan's production of crude petroleum was expected to reach 219,000 bbl/d. Plans to increase production to 290,000 bbl/d in 2003 and 450,000 bbl/d in 2005 could be disrupted by the civil war between the Government and the SPLA or by the 40 local tribal subconflicts that plague the country. The world market for gold was expected to show little change in the near future. Modest decreases in mine production by 2003 were likely to be offset by falling demand (SG Securities Ltd., 2001, p. 22; Peel, 2002; Townsend, 2002).

The outlook for unexploited resources of barite, copper, iron ore, kyanite, lead, nickel, silver, tungsten, wollastonite, and zinc was for little change in the near future owing to civil unrest.

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TABLE 1
SUDAN: PRODUCTION OF MINERAL COMMODITIES 1/ 2/ 3/

(Metric tons unless otherwise specified)

Commodity	1997	1998	1999	2000	2001 e/
Cement, hydraulic	275,600 r/	197,800 r/	230,600 r/	145,800 r/	146,000
Chromite, mine output, gross weight e/ 4/	30,500	30,500 r/	48,000 r/	28,500 r/	20,500
Gold, mine output, Au content 5/ kilograms	4,554	5,653	5,565 r/	5,770 r/	5,800
Gypsum e/	4,000	3,000	4,000	4,000	4,000
Petroleum:					
Crude (including lease condensate) thousand 42-gallon barrels	2,000 e/	1,200 e/	17,120 r/	67,152 r/	77,755 6/
Refinery products e/ do.	4,900 r/	6,000	8,000	15,000	18,000
Salt	50,000 e/	72,211 r/	117,148 r/	120,000 r/ e/	120,000

e/ Estimated. r/ Revised.

1/ Includes data available through August 30, 2002.

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 metric ton of clay and/or shale per metric ton of finished cement); limestone for cement manufacture (normally limestone for cement manufacture (normally at least 1.25 metric ton per metric ton of finished cement), agriculture, lime manufacture, and construction aggregate and fill; and other construction materials (clays, sand and gravel, stone, and others for local use and marble for export).

3/ Estimated data are rounded to no more than three significant digits.

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

5/ Does not include artisanal output.

6/ Reported figure.

TABLE 2
SUDAN: STRUCTURE OF THE MINERALS INDUSTRY IN 2001

(Metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity
Cement	Atbara Cement Company Ltd. (La Farge Group of France and Dal Group of Sudan)	Atbara	360,000.
Do.	Nile Cement Company (Government, 100%)	Rabak	150,000.
Chromite	Advanced Mining Works Co. Ltd.	Ingessana Hills	48,000.
Gold kilograms	Compagnie Miniere Or (Government, 60%; Ariab Mining Company, 40%)	Ariab	6,100.
Gypsum	Sudanese Mining Corp. (Government, 100%)	Bir Eit Mine	15,000.
Limestone	Atbara Cement Company Ltd.	Atbara	500,000.
Do.	Nile Cement Company	Rabak	200,000.
Marble	Pentco Engineering & Trading Company	Port Sudan and Gedaref	100,000.
Mica	Sudanese Mining Corp. (Government, 100%)	Sheriek Mines	1,800.
Petroleum:			
Crude thousand barrels	Greater Nile Petroleum Operating Co. [China National Petroleum Corp. (CNPC), 40%; Petronas Carigali Overseas Shd. Bhd., 30%; Talisman Energy Inc., 25%, and National Petroleum Co. of Sudan (Sudapet), 5%]	Block 1 (Unity, El Toor, and Tooma South fields), Block 1a (Munga and Khairat fields), Block 2 [Grand Heglig field (Barki, Hamra, Heglig, Kanga Laloba, Rihan, and Toma fields)], and Block 2a (Bamboo and Garaad fields)	80,300.
Do.	Gulf Petroleum (Sudan) Ltd. (Qatar Petroleum Co., 60%; Concorp International of Sweden, 20%; and Sudapet, 20%)	Block 3 (Adar-Yale field)	1,825.
Do.	CNPC	Block 6 (Abu Gabra, Sharaf, and Tabaldi fields)	730.
Refined	Khartoum Oil Refinery	Jali	1,515 liquified petroleum gas, 7,428 gasoline, 1,569 kerosene, and 7,738 diesel fuel.
Do.	Port Sudan Refining Ltd. (Government, 100%)	Port Sudan	93 liquified petroleum gas, 1,014 gasoline, 898 kerosene, 2,499 diesel fuel, 4,154 residual fuel oil, and 458 naptha.
Do.	Government	El Obeid	3,650.
Do.	Concorp Ltd.	Shajirah	3,650.
Do.	Government	Abu Jabra	730.
Steel:			
Crude	Sudan Master Technology	Giad Industrial City	60,000.
Rebar	do.	do.	150,000.