



2008 Minerals Yearbook

SUDAN

THE MINERAL INDUSTRY OF SUDAN

By Thomas R. Yager

In Sudan, increased production of crude petroleum in recent years has substantially strengthened the mineral sector's influence on the national economy. Sudan was not a globally significant producer or consumer of mineral commodities in 2008. Investment in Sudan's petroleum and petrochemical industries by U.S. individuals and organizations was banned by Executive Order 13412, which was issued by the President of the United States in October 2006. The alleged use of revenues from petroleum sales to finance military operations in the Darfur conflict constituted one of the reasons for the Executive Order (Reuters Ltd., 2006).

Minerals in the National Economy

In 2007 (the latest year for which data were available), the petroleum sector accounted for 18.6% of the gross domestic product; manufacturing, 6.3%; and mining and quarrying, 0.6%. The value of output in the petroleum sector grew by 36% compared with that of 2006, and mining and quarrying remained unchanged. In the first half of 2008, crude petroleum exports amounted to \$6.63 billion, or 94% of total exports; and petroleum products, 2% (Bank of Sudan, 2008a, p. 7; 2008b, p. 80).

Production

Gold production decreased by 16% in 2008. From 2004 to 2008, gold production decreased by an estimated 54% and crude petroleum production increased by 52%. In 2007, kaolin production increased by 139%; salt, 97%; cement, 61%; and gypsum, 14%. Chromite output decreased by 46% in 2007 (table 1).

Structure of the Mineral Industry

Sudan's crude petroleum was produced by joint ventures of state-owned companies from China, India, Malaysia, and Sudan. The petroleum refineries were also state-owned; the Khartoum Refinery Co., Ltd. was a joint venture between state-owned companies from China and Sudan. China National Petroleum Corp. (CNPC) operated the Khartoum refinery, which accounted for most of the country's refining capacity. The Government held a 56% share in the Hassai gold mine. The cement plants were privately owned.

Commodity Review

Metals

Gold.—In 2008, La Mancha Resources Inc. of Canada produced 2,276 kilograms (kg) of gold at the Hassai Mine compared with 2,703 kg in 2007. Production declined in 2008 because of delays in commissioning the quartz ore milling circuit and water shortages that led to a decrease in

gold recovery rates. In 2009, La Mancha planned to spend \$1.9 million on exploration; the company hoped to complete an update of its resources in tailings and a feasibility study on a new processing plant (La Mancha Resources Inc., 2009a, b).

In September 2008, Ansan Wikfs Investments Company Ltd. signed an agreement with the Government to explore for gold in Red Sea State. The Government also awarded two licenses for gold exploration to Al-Sharif and Managem SA at Wadi-Gigiya in September (Heavens, 2008).

Industrial Minerals

Cement.—The Atbara and the Rabak cement plants, which produced 326,200 metric tons of cement in 2007, supplied about 10% of Sudan's cement demand. By 2015, demand was expected to increase to more than 23 million metric tons. In 2008, ASEC Cement Co. of Egypt was building a new cement plant at Atbara with a capacity of 1.5 million metric tons per year (Mt/yr). ASEC planned to start production by the first quarter of 2010. Alsalam Cement Production Co. was building a plant near Atbara; its capacity was expected to reach 1.8 Mt/yr in January 2010. Al-Nefiedi Group planned to complete a new cement plant with a capacity of 1 Mt/yr in 2010 and to increase the capacity to 2 Mt/yr in 2011 and 3 Mt/yr in 2012. Berber Cement Co. also planned to build a cement plant with a capacity of 1.5 Mt/yr (Abdelsalam, 2008; Bank of Sudan, 2008b, p. 94; Citadel Capital SAE, 2009, p. 17).

Mineral Fuels and Related Materials

Natural Gas and Petroleum.—In 2008, Sudan's production of crude petroleum decreased by about 4%. The Greater Nile Petroleum Operating Co. [CNPC (40%), Petronas Carigali Overseas Shd. Bhd. of Malaysia, (30%), ONGC Videsh Ltd. of India (25%), and Sudan Petroleum Company Ltd. (Sudapet) (5%)] produced crude petroleum in Blocks 1, 2, and 4 in south central Sudan. In 2008, production in Blocks 1, 2, and 4 declined to 205,000 barrels per day (bbl/d) from 246,000 bbl/d in 2007. The decline in output may be attributable to overproduction in previous years (Sudan Ministry of Finance, 2008; 2009, p. 7).

CNPC held Block 6, which was located to the northwest of Muglad. In 2008, production in Block 6 decreased to 36,000 bbl/d from an estimated 39,000 bbl/d in 2007. CNPC reportedly planned to increase production to 60,000 bbl/d by the end of 2008 (Dow Jones Newswires, 2008; Sudan Ministry of Finance, 2008; 2009, p. 7).

Blocks 3 and 7 in eastern Sudan were held by the Petrodar Consortium [CNPC (41%), Petronas (40%), Sudapet (8%), China Petroleum and Chemical Corp. (6%), and the Al-Thani Group of Sudan (5%)]. In 2008, production in Blocks 3 and 7 increased to 198,000 bbl/d from 175,000 bbl/d in 2007. Output increased because of newly drilled wells, which included horizontal wells (Sudan Ministry of Finance, 2008; 2009, p. 7).

Blocks 5A and 5B are located in the Muglad Basin. Block 5A was held by White Nile Petroleum Operating Co. [Petronas (68.9%), ONGC Videsh (24.1%), and Sudapet (7%)]. Output was about 22,000 bbl/d in 2008 compared with 24,000 bbl/d in 2007. Block 5B was held by Petronas (39%), Lundin Petroleum AB of Sweden (24.5%), ONGC Videsh (23.5%), and Sudapet (13%). In December 2008, the Muny Deng-1 well drilled in Block 5B was reported to be dry (Petroleum Economist, 2008; Sudan Ministry of Finance, 2008; 2009, p. 7).

Kuwait Foreign Petroleum Exploration Co., Nile Petroleum Corp. (which was owned by the governing authorities of South Sudan), Sudapet, and Total S.A. of France held Block B in southern Sudan. In June 2007, the National Petroleum Commission upheld Total's exploration rights in Block B, which were disputed by White Nile Ltd. of the United Kingdom. White Nile abandoned all claims to Block B in December 2008 (Watkins, 2008).

CNPC operated a petroleum products refinery at Jali with a capacity of 100,000 bbl/d; the company accounted for most of Sudan's refined petroleum products output. In May and June 2008, one-half of the refinery was shut down for maintenance. The partial shutdown of the refinery accounted for the estimated 7% decrease in national petroleum products output (Irish, 2008).

Petronas was engaged in a joint venture with the Government of Sudan to build a new refinery at Port Sudan with a capacity of 100,000 bbl/d. In May 2008, Petronas announced that it was delaying work on the project because of the increase in estimated costs to \$5 billion from \$2 billion (Irish, 2008).

In 2008, Ansan and Sudapet were engaged in exploration at Block 17, which is located south of Block 6. Ansan and its joint-venture partners also explored at Block 12A in North Darfur State. In November 2008, Petronas and Sudapet discovered natural gas reserves of 15 billion cubic meters at Hosan in Block 8, which is located northeast of Block 7. PetroSA of South Africa started seismic work on Block 14 in northern Sudan in early 2008 (Dow Jones Newswires, 2008; Karrar, 2009).

Uranium.—Brinkley Mining plc of the United Kingdom and its joint venture partner New Kush Exploration and Mining Company Ltd. explored for uranium in Eastern Equatoria State. The companies completed an aeromagnetic and radiometric survey in mid-November 2008; further exploration was planned for 2009 (Brinkley Mining plc, 2008).

Outlook

The Government planned to increase crude petroleum production to 600,000 bbl/d by mid-2009; higher production was likely to be attributable to Blocks 3, 6, and 7. Further increases in production could come from Block 5A. These increases could more than offset lower output from Blocks 1, 2, and 4. Cement and limestone production was expected to increase sharply from 2008 to 2012; cement output could reach nearly 7.65 Mt/yr in 2012. Little change was expected for chromite, gold, and silver production (Dow Jones Newswires, 2008).

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TABLE 1
SUDAN: PRODUCTION OF MINERAL COMMODITIES ¹

Commodity ²		2004	2005	2006	2007	2008 ^e
Cement, hydraulic	metric tons	307,100	331,200	202,200	326,200 ^f	330,000
Chromite, mine output, gross weight ³	do.	26,000	21,654	28,772	15,476	15,000
Gold, mine output, Au content ⁴	kilograms	5,000 ^e	3,625	3,158	2,703 ^f	2,276 ⁵
Gypsum ^e	metric tons	11,000 ^f	9,000 ^f	7,000 ^{f,5}	7,974 ^{f,5}	8,000
Kaolin	do.	NA	NA	11,641	27,846	28,000
Manganese ore	do.	NA	NA	--	400	400
Marble ^e	cubic meters	24,000	24,000	26,000	26,000	26,000
Petroleum:						
Crude, including lease condensate	thousand 42-gallon barrels	111,000	126,000	132,738 ^f	176,574	168,898 ⁵
Refinery products:						
Liquefied petroleum gas	do.	3,235	3,010	3,742	3,587 ^f	3,300
Gasoline	do.	8,109	7,827	9,717	10,279 ^f	9,600
Naphtha	do.	248	248	216	170 ^f	160
Jet fuel	do.	1,562	1,596	1,445	929 ^f	870
Kerosene	do.	294	340	320	239 ^f	220
Distillate fuel oil	do.	9,708	9,965	13,554	15,410 ^f	14,300
Residual fuel oil	do.	2,444	2,589	2,566	4,175 ^f	3,900
Total	do.	25,600	25,575	31,560	34,789 ^f	32,400
Salt ^e	metric tons	45,000 ^f	30,000 ^f	11,638 ^{f,5}	22,922 ^{f,5}	23,000
Silver ^e	kilograms	2,800	2,600 ^f	2,437 ^{f,5}	2,405 ^{f,5}	2,400
Steel, semimanufactured ^e	metric tons	35,740 ⁵	67,015 ⁵	67,000	67,000	67,000

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^fRevised. do. Diito. NA Not available. -- Zero.

¹Table includes data available through August 12, 2009.

²In 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 at least 1.25 metric tons per metric ton of finished cement), agriculture, lime manufacture, and construction aggregate and fill; other construction materials (clays, sand and gravel, stone, and others for local use); and mica.

³Presumed to be ores and concentrates with an estimated average grade of about 54% chromic oxide.

⁴Does not include artisanal output.

⁵Reported figure.

TABLE 2
SUDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement		Al-Rahji Group	Plant at Atbara	400,000
Do.		Nile Cement Company Ltd.	Plant at Rabak	150,000
Chromite		Ingessana Hills Mines Corp.	Mine at Ingessana Hills	48,000
Gold	kilograms	Compagnie Miniere Or (Government of Sudan, 56%, and La Mancha Resources Inc., 40%)	Mine at Hassai	5,000
Gypsum		Sudanese Mining Corp. (Government, 100%)	Bir Eit Mine in Red Sea State	15,000
Limestone		Al-Rahji Group	Mine at Atbara	500,000
Do.		Nile Cement Company Ltd.	Mine at Rabak	200,000
Mica		Sudanese Mining Corp. (Government, 100%)	Mines at Sheriek	1,800
Petroleum:				
Crude	thousand 42-gallon barrels	Petrodar Consortium [China National Petroleum Corp. (CNPC), 41%; Petronas Carigali Overseas Shd. Bhd., 40%; Sudan Petroleum Company Ltd., 8%; China Petroleum and Chemical Corp., 6%; Al-Thani Group, 5%]	Blocks 3 and 7 in Upper Nile State	82,000
Do.	do.	Greater Nile Petroleum Operating Co. [China National Petroleum Corp. (CNPC), 40%; Petronas Carigali Overseas Shd. Bhd., 30%; ONGC Videsh Ltd., 25%; Sudan Petroleum Company Ltd. (Sudapet), 5%]	Blocks 1, 2, and 4 in Unity State	75,000
Do.	do.	China National Petroleum Corp. (CNPC)	Block 6 near Muglad	14,600
Do.	do.	White Nile Petroleum Operating Co. [Petronas Carigali Overseas Shd. Bhd., 68.9%; ONGC Videsh Ltd., 24.1%; Sudan Petroleum Company Ltd. (Sudapet), 7%]	Block 5A in Unity State	8,800
Refined	do.	Khartoum Refinery Co., Ltd. [China National Petroleum Corp. (CNPC), 50%, and Sudanese Petroleum Corp., 50%]	Refinery at Jali	36,500
Do.	do.	Port Sudan Refining Ltd. (Government, 100%)	Refinery at Port Sudan	7,900
Steel:				
Crude		Sudan Master Technology	Plant at Giad Industrial City	60,000
Rebar		do.	do.	150,000
Do.		Sudanese Steel Products Ltd. (subsidiary of Hafez Elsayad Barbary Ltd.)	Plant at Khartoum	150,000
Galvanized		do.	do.	20,000
Do., do. Ditto.				