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2009 Minerals Yearbook

SUDAN

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The Mineral Industry of Sudan

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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 2009. 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 on October 13, 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 (Bush, 2006).

Minerals in the National Economy

In 2008 (the latest year for which data were available), the petroleum sector accounted for 18.6% of the gross domestic product; manufacturing, 7.4%; and mining and quarrying, 0.6%. The value of output in the petroleum sector decreased by 4% compared with that of 2007, and mining and quarrying remained unchanged. In the first half of 2009, crude petroleum exports amounted to $2.53 billion, or 84% of total exports, and petroleum products, 4% (Bank of Sudan, 2009a, p. 8; 2009b, p. 88).

Production

Salt production increased by 238% in 2009; cement, by an estimated 170%; gypsum, by 136%; and mica, by 51%. Manganese and silver mining restarted. Talc output decreased by 75%; chromite, by 48%; kaolin, by 24%; and gold, by 16%. Marble production shut down in 2009. From 2005 to 2009, cement production increased by an estimated 202% and crude petroleum production increased by 38%. Gold production decreased by 47% from 2005 to 2009 (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 Oil Refinery was a joint venture between state-owned China National Petroleum Corp. (CNPC) and Sudan Petroleum Corp. The Government held a 56% share in the Hassai gold mine. The cement plants were privately owned.

Commodity Review

Metals

Copper, Gold, and Zinc.—In 2009, La Mancha Resources Inc. of Canada produced 1,922 kilograms (kg) of gold at the Hassai Mine compared with 2,276 kg in 2008. Production decreased in 2009 because of lower ore grades. In 2010, La Mancha planned to produce between 1,900 and 2,300 kg of gold (La Mancha Resources Inc., 2010, p. 7).

The Hassai Mine had resources of 22,000 kg of contained gold, of which 5,100 kg was reserves. La Mancha discovered a polymetallic deposit under the Hassai open pit in 2009. Resources in the newly discovered deposit were estimated to be nearly 20.2 million metric tons (Mt) at a grade of 1.48% copper, 0.18% zinc, and 1.55 grams per metric ton gold. The company focused on gold exploration because of decreased prices for base metals (La Mancha Resources Inc., 2009; 2010, p. 13).

Industrial Minerals

Cement.—In 2008, production at Al-Rahji Group's Atbara cement plant decreased to 207,400 metric tons (t) from 231,800 t in 2007, and at Nile Cement Company Ltd.'s Rabak plant, to 39,100 t from 94,400 t. The Rabak plant was shut down for rehabilitation from January to July 2008; its capacity was expanded to 365,000 metric tons per year (t/yr) from 128,000 t/yr. Al-Salam Cement Production Co. Ltd. started cement production in October 2008 at its new plant in Atbara; the company's production was reported to be 580,000 t in 2009. Domestic cement production was insufficient to meet demand; cement was imported and bagged at Port Sudan (Bank of Sudan, 2009b, p. 102-103; Cemix Cement Co. Ltd., 2010).

Al-Salam planned to increase its capacity to 1.8 million metric tons per year (Mt/yr) in 2010 from 600,000 t/yr in 2009. ASEC Cement Co. of Egypt (a subsidiary of Citadel Capital) was building a new cement plant at Atbara with a capacity of 1.6 Mt/yr. ASEC planned to start production in the first half of 2010. Al-Nefeidi Group planned to complete a new 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. LaFarge Group of France planned to build a new plant near Atbara with a capacity of 4 Mt/yr; capital costs were estimated to be $800 million. Cemix Cement Co. Ltd. planned to build a new plant with a capacity of 1.8 Mt/yr, and Berber Cement Co., 1.5 Mt/yr (Abdelsalam, 2008; Sudan News Agency, 2009; HC Securities and Investment, 2010, p. 10-11).

Mineral Fuels and Related Materials

Natural Gas and Petroleum.—In 2009, Sudan's production of crude petroleum increased by about 3%. 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 2009, production in Blocks 1, 2, and 4 declined to 176,000 barrels per day (bbl/d) from 205,000 bbl/d in 2008 (Sudan Petroleum Corp. Ltd, 2010).

Depending on the outcome of a referendum on the independence of the autonomous region of Southern Sudan in January 2011, Blocks 1, 2, and 4 could be divided between Sudan and the newly independent country of South Sudan. The Bamboo, the Bamboo West, the Garaad, the Heglig, the Taiyib, and the Toma oilfields are north of the proposed national boundary and would remain in Sudan regardless of the outcome of the referendum. The El-Haar, the El-Nar, the El-Toor, the Khairat, the Khairat Northeast, the Toma South, and the Unity oilfields are south of the proposed national boundary and could be affected by the outcome of the referendum (European Coalition on Oil in Sudan, 2010, p. 11, 25).

CNPC held Block 6, which is located to the northwest of Muglad in northern Sudan. In 2009, production in Block 6 increased to 38,000 bbl/d from 36,000 bbl/d in 2008. CNPC reportedly planned to increase production to 60,000 bbl/d by late 2011. In December 2009, CNPC and Petronas agreed to exchange part of CNPC's share in Block 6 for Petronas' share in Block 5A (Watkins, 2009a; Sudan Petroleum Corp. Ltd., 2010).

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 2009, production in Blocks 3 and 7 increased to 242,000 bbl/d from 194,000 bbl/d in 2008. Increased output was partially attributable to the opening of the Qamari oilfield. Depending on the outcome of the referendum on Southern Sudan's independence, Blocks 3 and 7 could be divided between Sudan and South Sudan. All of the currently operating oilfields in Blocks 3 and 7 are south of the proposed national boundary (European Coalition on Oil in Sudan, 2010, p. 10-11, 25; Sudan Petroleum Corp. Ltd., 2010).

Blocks 5A and 5B are located in the Muglad Basin in Southern Sudan. Block 5A was held by White Nile Petroleum Operating Co. [Petronas (68.9%), ONGC Videsh (24.1%), and Sudapet (7%)]. Output was about 20,000 bbl/d in 2009 compared with 22,000 bbl/d in 2008. Oil production in Block 5A reportedly led to contamination of local drinking water with arsenic, cadmium, cyanides, lead, and nickel. In the second quarter of 2009, Petronas, Lundin Petroleum AB of Sweden, and ONGC Videsh withdrew from Block 5B because of disappointing exploration results (Lundin Petroleum AB, 2009, p. 5; Sign of Hope, 2009; European Coalition on Oil in Sudan, 2010, p. 11, 25; Sudan Petroleum Corp. Ltd., 2010).

In June 2009, Petronas and Sudapet announced the discovery of about 3 billion cubic meters of natural gas reserves at Hosan and Tawakul in Block 8, which is located northeast of Block 7 in northern Sudan. Depending on successful results of further planned exploration, natural gas produced from Block 8 was to be consumed domestically; Petronas and Sudapet were considering fertilizer and power generation projects (Karrar, 2009).

Nile Valley Petroleum Ltd. (a subsidiary of Citadel Capital) acquired Block A, which is located southwest of Blocks 3 and 7, and Blocks 9 and 11, which are located in the Khartoum Basin, in June 2008. The company engaged in exploration at Blocks 9, 11, and A in 2009. PetroSA of South Africa withdrew from Block 14 in early 2009. Blocks 9, 11, and 14 are north of the proposed national boundary between Sudan and South Sudan; Block A could be divided between Sudan and South Sudan depending on the outcome of the referendum on Southern Sudan's independence (Africa Energy Intelligence, 2009; Orban, 2009; European Coalition on Oil in Sudan, 2010, p. 11, 25).

At the end of 2009, Total S.A. of France and its joint-venture partners had not started exploration on Block B in Southern Sudan because of security concerns and the lack of an investor to replace Marathon Oil Corp. of the United States. Marathon withdrew from the project in 2008. Total's plans were on hold pending the outcome of the referendum on Southern Sudan's independence (Africa Energy Intelligence, 2010).

CNPC operated a petroleum refinery at Jali with a capacity of 100,000 bbl/d; the company accounted for most of Sudan's refined petroleum products output. By 2011, CNPC and the Government of Sudan planned to increase capacity to 200,000 bbl/d (Pachymuthu, 2009).

In October 2009, the governing authorities of Southern Sudan announced plans to open to tender a new petroleum products refinery in Akon with a capacity of 50,000 bbl/d. Construction of the refinery was expected to take 36 months; the capital costs were estimated to be $2 billion. The refinery's production is likely to be consumed domestically (Watkins, 2009b).

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 in April 2009. By the end of the second quarter, Brinkley decided to sell its interest in the project because of security concerns and incompatibility with the company's exploration criteria (Brinkley Mining plc, 2009).

Outlook

Sudan's crude petroleum production could increase modestly in 2010 and 2011 because of expansions in Blocks 3, 6, and 7; the increases are likely to be at least partially offset by decreasing production in Blocks 1, 2, and 4. The output of refined petroleum products is expected to increase with the expansion of the refinery at Jali by 2011. Cement and limestone production is likely to increase sharply from 2009 to 2012; planned cement production capacity is at least 5.2 Mt/yr for 2010, 6.2 Mt/yr for 2011, and 7.2 Mt/yr for 2012. Cement demand is projected to increase to 11.1 Mt in 2012 and 23.2 Mt in 2015 from 4.1 Mt in 2008. Little change is expected for gold and silver production in 2010. The outlook for chromite production depends heavily upon world stainless steel markets. Exploration for base metals at La Mancha's polymetallic deposit could become more attractive if prices increase (Abdelsalam, 2008).

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TABLE 1
SUDAN: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2005	2006	2007	2008	2009
Cement, hydraulic		331,200	202,200	326,200	370,000 [r, e]	1,000,000 [e]
Chromite, mine output, gross weight[3]		21,654	28,772	15,476	27,094 [r]	14,087
Gold, mine output, Au content[4]	kilograms	3,625	3,158	2,703	2,276	1,922
Gypsum		9,000 [e]	7,000	7,974	12,705 [r]	30,000
Kaolin		NA	11,641	27,846	87,151 [r]	66,379
Manganese ore		NA	--	400	-- [r]	500
Marble[e]	cubic meters	18,000 [r]	12,000 [r]	6,000 [r]	1,600 [r, 5]	-- [5]
Mica		NA	NA	NA	66	100
Petroleum:						
Crude, including lease condensate	thousand 42-gallon barrels	126,000	132,738	176,574	168,898	173,453
Refinery products:						
Liquefied petroleum gas	do.	3,010	3,742	3,587	3,332 [r]	3,300 [e]
Gasoline	do.	7,827	9,717	10,279	9,244 [r]	9,200 [e]
Naphtha	do.	248	216	170	219 [r]	200 [e]
Jet fuel	do.	1,596	1,445	929	836 [r]	800 [e]
Kerosene	do.	340	320	239	251 [r]	200 [e]
Distillate fuel oil	do.	9,965	13,554	15,410	13,903 [r]	13,800 [e]
Residual fuel oil	do.	2,589	2,566	4,175	4,534 [r]	4,500 [e]
Total	do.	25,575	31,560	34,789	32,319 [r]	32,000 [e]
Salt		30,000 [e]	11,638	22,922	10,581 [r]	35,793
Silver	kilograms	2,600 [e]	2,437	2,405	-- [r]	413
Steel, semimanufactured[e]		67,015 [5]	67,000	67,000	67,000	67,000
Talc		NA	NA	NA	4,667	1,167

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. do. Ditto. NA Not available. -- Zero.
[1]Table includes data available through November 10, 2010.
[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 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.
[3]Presumed to be ores and concentrates with an estimated average grade of about 54% chromic oxide.
[4]Does not include artisanal output.
[5]Reported figure.

TABLE 2
SUDAN: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(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	600,000
Do.		Al-Rahji Group	do.	400,000
Do.		Nile Cement Company Ltd.	Plant at Rabak	365,000
Chromite		Ingessana Hills Mines Corp.	Mine at Ingessana Hills	48,000
Gold	kilograms	Compagnie Minière Or SA (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-Salam Cement Production Co. Ltd.	NA	730,000 [e]
Do.		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. (Sudapet), 8%; China Petroleum and Chemical Corp., 6%; Al-Thani Group, 5%]	Blocks 3 and 7 in Upper Nile State	110,000
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.	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	22,000
Do.	do.	China National Petroleum Corp. (CNPC)	Block 6 near Muglad	14,600
Refined	do.	Khartoum Oil Refinery [China National Petroleum Corp. (CNPC), 50%, and Sudan 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

[e]Estimated. NA Not available.