



2011 Minerals Yearbook

CHAD

THE MINERAL INDUSTRY OF CHAD

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Hydrocarbons were a leading segment of Chad's economy in 2011. Government oil revenues increased to more than \$2 billion as the international market price of Doba Basin crude oil increased in 2011 compared with that of 2010 (International Monetary Fund, 2011, p. 24; Esso Exploration and Production Chad Inc., 2012, p. 90).

Mining of minerals, which was a negligible contributing sector of the national economy, was regulated by the Mining Code (law No. 011/PR/95 of 1995). Exploration and production of hydrocarbons were covered by the conventions governing research, exploration, production, and transportation of hydrocarbons dated December 19, 1988, and May 10, 2004, and amendments, including law No. 028/PR/00 of December 5, 2000. The Petroleum Revenue Management Law (law No. 001/PR/99 of 1999) and amendments, such as law No. 002/PR/06 of 2006, defined the allocation of petroleum revenues. Law No. 014/PR/98 of 1998 covered the general principles for the protection of the environment.

Petroleum produced in the Doba Basin was exported by way of the Chad-Cameroon pipeline to an export terminal at Kribi, Cameroon. Most official nonfuel exports from landlocked Chad were trucked to seaports in Cameroon and Nigeria. In December, the Ministry of Transport and Civil Aviation and China Civil Engineering Construction Corp. agreed to build a 1,364-kilometer (km) rail network that would initially run from Adre, which was located near the border with Sudan, to N'Djamena. The rail line would eventually be extended south to Moundou and on to the Cameroon border (Railway Gazette, 2012).

Production

Production of crude oil far exceeded the output of the country's limited suite of other mineral commodities, which included cement, clay, gold, lime, limestone, salt, sand, soda ash (natron), and stone. In 2011, the continued decline of crude oil output from the Doba Basin was offset partially by the start of production on Permit H. Estimates of Chad's mineral production are in table 1.

Structure of the Mineral Industry

The Ministère des Mines et de la Géologie and the Ministère du Pétrole et de l'Énergie monitored the activity of various sectors of the mineral industry. Société des Hydrocarbures du Tchad S.A. was the national oil company. Small-scale domestic mining operations produced most of the country's nonfuel minerals. International companies were involved in the exploration for and the production of crude oil.

Mineral industry facilities that began production in 2011 included the Baore cement plant, which was the country's first cement plant and which was owned by Ciment du Tchad [a subsidiary of Government-owned Société Nationale de

Cimenterie (SONACIM)]; the Ronier oilfield on Permit H, which was operated by CNPC International (Chad) Ltd. (a subsidiary of China National Petroleum Corp.); and the Djerjama petroleum refinery, which was the country's first petroleum refinery. The Djerjama refinery was operated by a joint venture of CNPC International (Chad) Ltd. and Société des Hydrocarbures du Tchad S.A.

Commodity Review

Industrial Minerals

Cement.—Chad's first cement plant was inaugurated in December for Ciment du Tchad. Located near Bisi Keda, the 200,000-metric-ton-per-year (t/yr)-capacity plant was expected to reduce the country's dependence on cement imports, which was estimated to be about 700,000 t/yr (Xinhua News Agency, 2012).

Mineral Fuels

Petroleum.—Esso Exploration and Production Chad, Inc. (Esso Chad) reported that its crude oil output decreased to an average of 115,000 barrels per day (bbl/d) compared with 122,500 bbl/d in 2010. In 2011, Esso Chad drilled an additional 69 production wells. At yearend, 633 production wells and 56 water-injection wells, which were used to maintain reservoir pressure and to dispose of produced formation water, were active in Esso Chad's Doba Basin oilfields (Esso Exploration and Production Chad, Inc., 2012, p. 11–12).

In May, CNPC International (Chad) Ltd., which was a subsidiary of China National Petroleum Corp., began production from wells on the Permit H concession. CNPC completed a 311-kilometer (km) pipeline from the fields to the new petroleum refinery at Djerjama. The 7-million-barrel-per-year-capacity refinery, which was located about 30 km north of N'Djamena, began operations in late June (China National Petroleum Corp., 2011; Reuters Africa, 2011).

In February, Overseas Petroleum Investment Corp. (OPIC), which was a subsidiary of CPC Corp., Taiwan, indicated that the Benoy-1 exploration well had penetrated a new oil reservoir. After evaluation and well tests, OPIC estimated that the reservoir contained an estimated resource of 100 million barrels of crude oil. OPIC expected to continue its exploration drilling on the BCOIII, the BCSII and the BLT1 concessions. In July, ERHC Energy Inc. of the United States entered into a 5-year production-sharing contract with the Government on the BDS 2008, the Chari-Ouest III, and the Manga Blocks. ERHC planned to initiate environmental and seismic studies after the Government awarded an exclusive exploration authorization, which would cover the blocks (ERHC Energy Inc., 2011; Yuan and others, 2011).

Outlook

In the past few years, the Government has resumed its encouragement of mineral exploration, especially for metals. Petroleum exploration and development is expected to continue. In the future, production from CNPC International's Permit H oil reservoirs is expected to provide feedstock for the Djermaya oil refinery, the domestically produced refined petroleum products are expected to reduce Chad's dependence on imported petroleum products, and an electrical-power-generation plant associated with the Djermaya refinery is expected to increase the availability of electrical power in N'Djamena.

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TABLE 1
CHAD: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Thousand metric tons unless otherwise specified)

Commodity ³	2007	2008	2009	2010	2011	
Aggregate, sand, and stone	300	300	350	350	350	
Cement	--	--	--	--	10	
Gold, mine output, Au content	kilograms	150	100	100	100	
Petroleum:						
Crude ⁴	thousand 42-gallon barrels	52,400	46,500	43,600	44,500	44,000
Refined	do.	--	--	--	--	1,800
Salt		10	10	10	10	10
Soda ash, natron		12	12	12	12	12

do. Ditto. -- Zero.

¹Estimated data are rounded to no more than three significant digits.

²Table includes data available through May 3, 2012.

³In addition to the commodities listed, other industrial minerals and construction materials (clay, lime, and limestone) are produced, but information is inadequate to make reliable estimates of output.

⁴Includes reported crude shipments from the Doba Basin in Chad, which was metered on a floating storage-and-offloading vessel that was located offshore Kribi, Cameroon.

TABLE 2
CHAD: STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Metric tons unless otherwise specified)

Commodity		Major operating companies and and major equity owners	Location of main facilities	Annual capacity
Cement		Ciment du Tchad [Société Nationale de Cimenterie (SONACIM)]	Baore plant, Bisi Keda, Mayo-Kebbi Ouest Department	200,000
Gold	kilograms	Artisanal placer operations	Mayo Dala Department	150
Petroleum:				
Crude	million 42-gallon barrels	Esso Exploration and Production Chad, Inc. (Esso Chad) (Exxon Mobil Corp., 40%; Petronas Carigali Overseas Sdh. Bhd., 35%; Chevron Overseas Petroleum Inc., 25%)	Bolobo, Kome, Maikeri, Miandoum, Moundouli, and Nya, and the Timbre fields, Doba Basin	79
Do.	do.	CNPC International (Chad) Ltd. (a subsidiary of China National Petroleum Corp.)	Permit H, which includes the Mimosa and the Ronier fields	22
Refined products	do.	CNPC International (Chad) Ltd. (a subsidiary of China National Petroleum Corp., 60%, and Société des Hydrocarbures du Tchad S.A., 40%)	Djermaya refinery, about 30 kilometers north of N'Djamena	7
Salt		Various local operators	Various locations	10,000
Soda ash		do.	Lake Chad, near Liwa	12,000
Do., do. Ditto.				