

# THE MINERAL INDUSTRIES OF CAMEROON AND CAPE VERDE

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## CAMEROON

Cameroon is a West African country that borders the innermost bay of the Gulf of Guinea between Equatorial Guinea and Nigeria. The country's estimated 16 million inhabitants share a total land area of about 470,000 square kilometers (km<sup>2</sup>) (U.S. Central Intelligence Agency, 2004§<sup>1</sup>). The petroleum sector is the most significant segment of Cameroon's mineral industry. Other commodities produced in the country were cement, clay, limestone, marble, pozzolana, primary aluminum, and sand and modest amounts of diamond and gold in placer deposits. A variety of industrial minerals and other construction materials, such as aggregates, gypsum, and stone, were also produced. Cameroon's undeveloped mineral resources include bauxite, cobalt, diamond, gold in lode deposits, granite, iron ore, nepheline syenite, nickel, and rutile (Ministry of Mines and Energy, 2004§). In 2004, the country's gross domestic product (GDP) at purchasing power parity was estimated to be \$37.8 billion (International Monetary Fund, 2005§). Petroleum products accounted for about 35% of total exports. Other exports included aluminum, cocoa, and timber (Knopf, 2004).

The longstanding dispute between Cameroon and Nigeria concerning sovereignty over the Bakassi Peninsula once again caused conflict between the two countries. In 2002, the International Court of Justice had ruled in favor of Cameroon by granting the country sovereignty rights over the Peninsula, awarding other disputed parcels along the border to Nigeria, and ordering each country to pull its troops out of the land handed over to the other. A joint Cameroon-Nigerian commission to demarcate land boundaries and to resolve issues was formed in November 2002. Nigeria had agreed to remove its troops from the Lake Chad area in December 2003 and to hand over the entire Bakassi Peninsula to Cameroon on September 15, 2004. On September 13, 2004, Nigeria refused to withdraw its troops as agreed and demanded that a new withdrawal timetable be negotiated. This time, the cause of the dispute was the demarcation of the maritime boundary, which is believed to hold great petroleum potential owing to its proximity to producing oilfields in the area. The new conflict may bar petroleum companies, which have concessions in the area, from exploring offshore the peninsula (Africa Energy Intelligence, 2004a-c; UN Chronicle Online Edition, 2004§).

### Structure of the Mineral Industry

In Cameroon, the Ministère des Mines de l'Eau et de l'Energie is responsible for the administration of the mineral

industry in accordance with the Mining Law of 2001 and the Petroleum Code of 2000. Compagnie Camérounaise de l'Aluminium (Alucam) and its subsidiary Société de Camérounaise de Transformation de l'Aluminium S.A. operated an aluminum smelter and a rolling mill at Edea. Cimenteries du Cameroun ran two cement plants. Numerous local operations produced industrial minerals. State-owned Société Nationale des Hydrocarbures (SNH) was involved in hydrocarbon exploration and production with various joint ventures; partners included Addax Petroleum Cameroon Ltd., Amerada Hess Corp., Fusion Oil and Gas NL, Mobil Producing Cameroon, Pecten Cameroon Co., Perenco Cameroon S.A., Petronas Carigali Overseas Sdh. Bhd., Phillips Petroleum Co. Cameroon, RSM Production Corp., Total Exploration and Production Cameroon, and Tullow Cameroon Ltd. (Mobbs, 2003§).

### Commodity Review

#### *Metals*

**Aluminum.**—The Government of Cameroon (53%) and Alcan Inc. of Canada (47%) coowned and operated the aluminum smelter of Alucam and the aluminum rolling mill of Société Camérounaise de Transformation de l'Aluminium at Edea. Alcan was considering increasing Alucam's capacity to 220,000 metric tons per year (t/yr) from its current capacity of 95,000 t/yr (Knopf, 2004).

**Cobalt and Nickel.**—In early 2004, Knight Piésold Ltd., which was a Canadian international environmental and geotechnical firm, was awarded the contract to prepare an environmental impact statement and environmental management plan for the Nkamouna property. The Nkamouna property hosted Geovic Cameroon S.A.'s (Geovic) cobalt-nickel project in East Province. The property hosted a lateritized serpentinite deposit for which Geovic (a subsidiary of Geovic Ltd. of the United States) was awarded a mining permit in December 2003. The company, which continued with its exploration and development program during 2004, planned to mine about 4 million metric tons per year (Mt/yr) of ore. Beneficiation from the run-of-mine ore was estimated to be about 1 Mt/yr of upgraded ore, which will be delivered to a leach plant to produce about 7,500 t/yr of cobalt and 4,700 t/yr of nickel (Geovic Ltd., 2004§).

**Gold.**—Small-scale artisanal miners recovered gold in eastern and northern Cameroon. Annual production was estimated to be about 1,500 kilograms per year (MBendi, 2005§).

#### *Industrial Minerals*

**Diamond.**—Annual diamond production was estimated to be 12,000 carats. Diamond is recovered throughout the country by small-scale artisanal miners (MBendi, 2005§).

<sup>1</sup>References that include a section mark (§) are found in the Internet References Cited sections.

## Mineral Fuels

**Natural Gas.**—Cameroon's natural gas reserves, which were located in the Doukala, the Kribi-Campo, and the Rio del Rey Basins, were estimated to be about 110 billion cubic meters (reported as 3.9 trillion cubic feet). In March 2004, Scottish company Euroil Ltd. and Oklahoma-based Syntroleum Corp. announced plans to begin developing the 17-billion-cubic-meter (reported as 600-billion-cubic-foot) Sanaga Sud Field offshore Cameroon (U.S. Energy Information Administration, 2004§).

**Petroleum.**—In 2004, Cameroon produced about 35 million barrels (Mbbbl) of petroleum (table 1). According to the U.S. Energy Information Administration (2004§), Cameroon was sub-Saharan Africa's sixth leading petroleum producer. The country's petroleum reserves, which were estimated to be 400 Mbbbl, are located offshore in the Rio del Rey Basin of the Niger Delta, offshore and onshore in the Doukala/Kribi-Campo Basins on the western coast, and onshore in the Logone-Birni Basin in the northern part of the country.

Cameroon's only refinery, which was located in the port city of Limbe, was operated by Société Nationale de Raffinage and had a production capacity of 42,000 barrels per day (bbl/d) (U.S. Energy Information Administration, 2004§). Cameroon's petroleum production was exported. Petroleum used at the refinery was imported from Equatorial Guinea and Nigeria.

Cameroon Oil Transportation Company S.A. and Esso Exploration and Production Chad Inc. operated Cameroon's 870-kilometer (km) segment of the Chad-Cameroon crude petroleum pipeline. The pipeline, which began pumping its first oil in July 2003, runs from the Doba Basin in southern Chad to a marine terminal near Kribi in Cameroon. In 2004, average daily production was about 200,000 bbl. The pipeline's capacity was estimated to be about 225,000 bbl/d (U.S. Energy Information Administration, 2004§).

## Infrastructure

An environmental impact study for a hydroelectric dam on the Lom River was underway during 2004. The dam would be located a few kilometers (km) downstream of the river's confluence with the Pangar River. The rivers are tributaries to Cameroon's Sanaga River, which provides more than 90% of the country's need for electricity. Construction work was scheduled to begin in 2008 (afrol News, 2004§).

## Outlook

Cameroon's mineral industry will continue to be dominated by the petroleum industry in the immediate future. If no new petroleum discoveries are made and average production continues at the 2004 rate, then petroleum resources might last for about 11 years. This would seriously affect the country's economy given that petroleum accounts for about 35% of total exports.

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## CAPE VERDE

Cape Verde is an archipelago of 10 islands and 8 islets located about 600 km off the West Coast of Africa. The country's estimated 415,000 inhabitants share a total land area of about 4,033 km<sup>2</sup> (U.S. Central Intelligence Agency, 2004§). In 2004, mining continued to play a minor role in the country's economy. Production of mineral commodities was limited to the production of clay on the islands of Boa Vista, Sal, and São Vicente; gypsum on the island of Maio; limestone on the islands of Boa Vista, Sal, and Santo Antão; pozzolana on the island of Santo Antão; and salt on the islands of Mindelo and Sal. Cape Verde's GDP at purchasing power parity was estimated to have been \$2.75 billion in 2004 compared with \$2.4 billion in 2003 (International Monetary Fund, 2005§). On the basis of 2003 statistics, exports were valued at \$54 million and consisted mainly of bananas, fish, and manufactured products (World Bank, 2004§).

## Commodity Review

### Industrial Minerals

**Cement.**—Cape Verdean and Italian investors (not identified) began the construction of a 40,000 t/yr cement plant in Porto Novo. The plant, which will use pozzolanic materials from Santo Antão Island and imported clinker from Italy, was expected to cost \$5 million and to begin operation in 2005 (Cabo Verde 24, 2004b§).

## Mineral Fuels

**Petroleum.**—Cape Verde is not a petroleum producer. In November 2004, the President of Angola visited Cape Verde to discuss the possibility of conducting petroleum exploration offshore Cape Verde. Principal companies interested in exploring Cape Verde's territorial waters were Sociedade Nacional de Combustíveis de Angola (Sonangol) and Petróleo Brasileiro S.A. of Brazil (Cabo Verde 24, 2004a§; Miranda Correia Amendoeira & Associados, 2005§). Sonangol planned to construct its local headquarters on the island of Sal during 2004. The project was estimated to cost \$1.5 million (Africanidade, 2004§; Cabo Verde 24, 2004c§).

## Infrastructure

The Cape Verdean Highway Institute, which was created in 2004, was working on the approval of the National Highway Plan; this project was aimed at classifying the country's roads and defining the responsibilities of those who will manage them. The Highway Institute planned to construct new roads on several of the country's islands at a total cost of \$30 million, which would be financed by the World Bank. In addition, the Arab Bank for Economic Development in Africa planned to construct a number of roads on the islands of Boa Vista and Santo Antão, a highway that will run the circumference of the island of Fogo, a road that will link Nossa Senhora do Monte to Tantom on the island of Brava, and a number of small roads on the island of Santiago (Cabo Verde 24, 2004d§).

In July 2004, the United States Trade and Development Agency (2004) awarded Empresa Nacional de Administração dos Portos, S.A. (ENAPOR) a \$420,000 grant to fund a feasibility study for a transshipment port in Cape Verde. ENAPOR was the Government entity responsible for the management and modernization of Cape Verde's port infrastructure.

## Outlook

The interest of foreign companies in petroleum exploration offshore Cape Verde in 2004 suggests that the growth potential of Cape Verde's mineral industry will likely rely on the development of the energy sector if petroleum discoveries are made.

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TABLE 1  
CAMEROON AND CAPE VERDE: ESTIMATED PRODUCTION OF MINERAL COMMODITIES<sup>1,2</sup>

(Metric tons unless otherwise specified)

Country and commodity	2000	2001	2002	2003	2004 <sup>e</sup>
<b>CAMEROON<sup>3</sup></b>					
Aluminum metal, primary	86,384 <sup>4</sup>	80,900 <sup>4</sup>	67,000 <sup>r</sup>	77,200 <sup>r</sup>	85,900 <sup>4</sup>
Cement, hydraulic	890,000 <sup>4</sup>	930,000 <sup>4</sup>	950,000	930,000	930,000
Clay	21,558 <sup>4</sup>	22,000	22,000	22,000	22,000
Diamond <sup>5</sup> carats	NA	NA	NA	NA	12,000
Gold, mine output, Au content <sup>5</sup> kilograms	1,000	1,000	1,000	1,500 <sup>r</sup>	1,500
<b>Petroleum:</b>					
Crude thousand 42-gallon barrels	32,100	29,200	26,280 <sup>r,4</sup>	24,820 <sup>r,4</sup>	34,675 <sup>4</sup>
Refinery products do.	15,000	12,000	12,000	12,000	12,000
Pozzolana, ash for cement	604,960 <sup>4</sup>	600,000	620,000	600,000	600,000
Sand	35,078 <sup>4</sup>	35,000	40,000	35,000	35,000
<b>Stone:</b>					
Limestone	258,517 <sup>4</sup>	260,000	260,000	260,000	260,000
Marble	21,165 <sup>4</sup>	20,000	20,000	20,000	20,000
<b>CAPE VERDE<sup>6</sup></b>					
Salt	1,600	1,600	1,600	1,600	1,600

<sup>r</sup>Revised. NA Not available.

<sup>1</sup>Includes data available through May 3, 2005.

<sup>2</sup>Estimated data are rounded to no more than three significant digits.

<sup>3</sup>In addition to the commodities listed, a variety of industrial minerals and construction materials (aggregate, gypsum, and stone) are produced, and bauxite may be produced, but information is inadequate to make reliable estimates of output.

<sup>4</sup>Reported figure.

<sup>5</sup>From artisanal mining.

<sup>6</sup>Cape Verde also presumably produced clay, gypsum, limestone, and pozzolana, but output is not reported, and available information is inadequate to make estimates of output levels.

TABLE 2  
CAMEROON AND CAPE VERDE: STRUCTURE OF THE MINERAL INDUSTRIES IN 2004

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>CAMEROON</b>			
<b>Aluminum, metal:</b>			
Primary	Compagnie Camérounaise de l'Aluminium (Government, 53%, and Alcan, Inc., 47%)	Smelter at Edea	95,000
Secondary	do.	Edea	8,000 <sup>1</sup>
Aluminum, products	Société de Camérounaise de Transformation de l'Aluminium S.A. (Alcan Inc., 53%; Government, 42%; Aluminium Pechiney, 5%)	Rolling mill at Edea	NA
Cement	Cimentaries du Cameroun (Lafarge Group, 57%)	Bonaberi Mill near Douala and the Figuil kiln and mill at Garoua	1,100,000
Gold kilograms	Artisanal placer operations	Various locations	1,500
Petroleum, crude 42-gallon barrels per day	Total Exploration and Production Cameroun (Total S.A., 100%)	About 21 oilfields, which included Bavo, Ekoundou Horst, Eloundou, Eloundou Nord Marine, Ekoundou Sud, Itindi, and Kombo Centre	500,000
Do.	do. Pecten Cameroon Co. (Pecten International, 80%, and Société Nationale des Hydrocarbures, 20%)	Makoko Northeast and Makoko South Marine Fields	NA
Do.	do. Perenco Cameroon S.A. (Perenco Group, 100%)	Ebome and Moudi Fields	10,500
Petroleum products	do. Société Nationale de Raffinage (Government, 66%)	Refinery at Limbe	42,000
<b>CAPE VERDE</b>			
Salt	Groupe Salins de France (private, 100%)	Mindelo and Sal Islands	2,000

NA Not available.

<sup>1</sup>May include aluminum alloys.