



2011 Minerals Yearbook

CAMEROON AND CAPE VERDE [ADVANCE RELEASE]

THE MINERAL INDUSTRIES OF CAMEROON AND CAPE VERDE

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CAMEROON

Cameroon's undeveloped resources include bauxite, cobalt, cassiterite, gold from lode deposits, granite, iron ore, lignite, nepheline syenite, nickel, rutile, and uranium. The development of a viable mineral industry continued to be delayed in 2011 owing to inadequate infrastructure, insufficient electrical power, and a lack of financing. All Cameroon's mineral resources belong to the Government. Prospecting, exploration, and development activities for any mineral deposit are regulated by law and require a license or permit. Cameroon also had hydropower potential that remained undeveloped in 2011 [MBendi Information Services (Pty) Ltd., 2011a].

In 2011, the Ministère de l'Industrie, des Mines et du Développement Technologique [Ministry of Industry, Mines and Technological Development] is the agency responsible for the issuance of mineral exploration licenses. The agency responsible for oversight of the mineral resource sector is the Institute for Geological and Mining Research (IRGM) of the Ministry of Industries, Mines and Technological Development. The legal system of Cameroon is modeled after French civil law, and the Government's mineral policy is based on the revised Mining Code of 2001 and the Petroleum Code of 2000. The revised Mining Code provides investors with such incentives as a 5-year tax break and free transfer of financial capital out of the country (Ministère de l'Industrie, des Mines et du Développement Technologique, 2012).

IRGM is responsible for all geologic and mining activities. These include conducting geologic exploration programs and mechanized drilling operations, overseeing the mining of mineral deposits, and preventing unauthorized exploitation of mines and quarries (GIS.mapsofworld.com, 2011).

Production

In 2011, the main mineral commodities produced in Cameroon included aluminum from alumina (imported from Guinea), cement, petroleum, and sand. Artisanal mine operations recovered small amounts of diamond throughout the country. Gold was also produced by small-scale artisanal miners in the eastern and northern parts of the country from alluvial and elluvial deposits. The southeast region had a few known mineral deposits that were not exploited in 2011. Production from Cameroon's industrial minerals mining sector was not regionally significant, although a variety of industrial minerals, such as cement, sand, and stone, were produced for domestic consumption; however, the volume of output of these minerals was not reported. In 2011, the most valuable mineral commodity produced was petroleum; exports of petroleum accounted for about 50% of the value of Cameroon's exports [MBendi Information Services (Pty) Ltd., 2011b]. Data on mineral production are in table 1.

Structure of the Mineral Industry

Cameroon's mineral production facilities were modest and mostly privately owned. The significant private companies were the Société Camérounaise de l'Aluminium (Alucam), which produced aluminum, and the Cimentaries du Cameroon, which produced cement. Various small local operations also produced industrial minerals, although specific information about their output was not readily available. State-owned Société National des Hydrocarbures (SNH) was involved in hydrocarbon exploration and production with various joint ventures. The Société Nationale de Raffinage (SoNoRa), which refined crude petroleum, was 66% owned by the Government. Table 2 is a list of the major mineral industry facilities.

Commodity Review

Metals

Aluminum, Bauxite and Alumina.—United Company RUSAL of Russia announced that it was interested in investing in Cameroon as part of its efforts to diversify its sources of bauxite. RUSAL noted that Cameroon possessed significant reserves of bauxite, which is the basic raw material for the production of alumina and aluminum, and that the company was trying to expand its resource base. RUSAL and the Government set up a joint working group to explore investment opportunities, which could also involve energy and infrastructure projects (RIA Novosti, 2011).

Cameroon Alumina Ltd. [a subsidiary of the joint venture of Dubai Aluminum Company of the United Arab Emirates (45%), Hindalco Industries of India (45%), and Hydromine Inc. of the United States (10%)] was continuing with plans to establish a bauxite mining and alumina refining project based on the bauxite reserves of the Minim-Martap and Ngaoundal deposits located in the Adamawa region in northern Cameroon. Initially, mining would be carried out at the Danielle plateau (Minim-Martap deposit) and at the Simone plateau (Ngaoundal deposit). The combined bauxite project was planned to supply an estimated 8.5 million metric tons per year (Mt/yr) of bauxite to the proposed 3 Mt/yr alumina refinery (Cameroon Alumina Ltd., 2011).

Cobalt.—Geovic Mining Corp. (Geovic) of the United States was continuing its efforts to become a leading cobalt mining company. Geovic, through its subsidiary Geovic Cameroon plc (GeoCam), had mining licenses for seven near-surface cobalt and nickel deposits in Cameroon. They were the Kondong, the Mada, the Messea, the Nkamouna, the North Mang, the Rapedjombo, and the South Mang deposits. Geovic announced that completion of additional drilling on these deposits had increased the company's estimated measured and indicated resource base; also, that a new mining plan had been devised

that would reduce the mining and reclamation costs. In 2011, Geovic commissioned Lycopodium Minerals Pty Ltd. of Australia to conduct an updated feasibility study of the permit. GeoCam's mining permit covered the entire cobalt province in southeastern Cameroon (Geovic Mining Corp., 2011).

Gold.—Cameroon had numerous artisanal workings, but primary gold deposits had not been discovered by modern exploration methods. Gold production was from alluvial and elluvial deposits. Work carried out by the Bureau de Recherches et Géologiques et Minières (BRGM) of France, however, suggests that gold mineralization is related to the volcano-sedimentary belts characteristic of the Birimian Belt in Burkina Faso, Mali, and Niger. Aureus Mining Inc. had received positive results from its Batouri project, which is located in southeastern Cameroon; the company's sampling of 122 pits in the Kimbele-Dem trend and 50 pits in the Mongonam-Dimako trend established that gold was present within quartz veins and that lower grades of gold were present in altered wall rock (Aureus Mining Inc., 2011).

Iron and Steel.—In 2011, Afferro Mining Inc. (formerly African Aura Mining Ltd.) of the United Kingdom announced the release of its third Canadian National Instrument 43-101 compliant mineral resource estimate prepared by SRK Consulting (UK) Ltd. for the Nkout project. The total estimated Nkout resource was increased by 41% to 2 billion metric tons of iron ore. The Nkout project is located on the 489-square-kilometer (km²) Djoum license in an iron ore region within 30 kilometers (km) of the proposed 490-km rail line that would link Sundance Resources Ltd. of Australia's Mbalam iron ore project to the proposed Port of Lolabe. Afferro Mining was an exploration company; its portfolio included the Nkout project and surrounding iron ore targets, for which a resource expansion drilling program was scheduled (Afferro Mining Inc., 2011).

Legend Mining Ltd. of Australia announced that data from its aeromagnetic survey of the Ngovayang area and its drilling program of the Melombo East project in the Ngovayang area identified the occurrence of magnetite within specific horizons. Melombo East was considered highly prospective for a large tonnage of magnetite, given the thick intersections of magnetite gneiss that were open at depth, along with the large strike extent of the magnetic gneiss. The Melombo East project is located near Sundance Resource's proposed rail and road networks to the proposed Port of Lolabe, which could greatly assist the exploration phase of the project and facilitate the startup of production. Legend Mining had about 3,900 km² of permit area in Cameroon, including the Bibondi, the Hill 335, the Hill 419, the Logmangan, the Melombo, the Melombo East, and the Melombo West permits (Phillips, 2011).

Sundance continued with efforts to exploit iron ore at its \$2.5 billion Mbalam iron ore project. The company announced an updated estimate of resources for the project, including estimated indicated and inferred hematite resources that totaled a combined 484 million metric tons (Mt) grading 61% iron at the Mbarga, the Mbarga South, the Metzimevin, and the Nabeba deposits. Drilling was continuing in an effort to further increase the high-grade hematite resources (Metals Economics Group, 2011).

Sundance and CRCC China-Africa Construction Ltd. announced that they had signed a memorandum of understanding (MOU) to establish the scope, cost, and program plan for construction of the rail line to the Port of Lolabe. The project would enable Sundance to expand its Mbalam iron ore project, and the rail line would be sufficient to support the planned output of 35 Mt/yr of iron ore from Sundance's proposed mines in Cameroon and the Republic of the Congo [Congo (Brazzaville)]. The MOU recognizes that the rail project would be integral to the mine project itself and to the proposed Port of Lolabe development project (China Cameroon Co. Ltd., 2011).

Pohang Iron and Steel Co. (POSCO) of the Republic of Korea announced that it was planning to construct a steel mill in Cameroon, along with a hydroelectric plant to furnish electricity to operate the plant. The steel facility and hydroelectric plant were expected to help Cameroon develop its natural resources, enhance value-added exports, and sustainably spur economic growth. No details on the expected costs or timing of the project had been announced as of yearend 2011. POSCO announced that it had also agreed to build a \$7 million mineral research laboratory in Cameroon to assist the Government in developing its mineral resources (Musa, 2011).

Industrial Minerals

Cement.—Cameroon had a shortage of cement in 2011. In the northern region of the country, the shortage led to a rise in speculation and cement prices. Cameroon had only one company that produced cement—Cimentaries du Cameroon—and the plant's production fell short of demand by about 500,000 metric tons (t). In 2011, the Dangote Group of Nigeria signed a \$115 million investment agreement for the construction of a cement plant in Douala that would produce 1.5 Mt/yr of cement (Anofochi, 2011).

Diamond.—Diamond was recovered throughout the country by artisanal miners. Annual production was estimated to be about 10,000 carats per year.

Botswana Diamonds Ltd. was awarded a 430-km² exploration license, and the company initiated a bulk sampling program in 2011 to examine the diamond potential in its license. The license included the AK8, the AK9, and the BK5 kimberlites. Several sequences of sedimentary rock layers had been identified that host a distinct conglomerate, which is geologically correlated with the paleo-conglomerate that has been identified as being diamondiferous. A followup program that included drilling and trenching and (or) pitting was proceeding in 2011. The program was aimed at better defining the extent of the conglomerate and determining if the conglomerate is diamondiferous (Bond, 2011).

Mineral Fuels and Related Materials

Natural Gas and Petroleum.—Cameroon was the fifth ranked petroleum producing country in the sub-Saharan region, and the petroleum sector continued to be the most significant segment of Cameroon's mineral industry. Cameroon has two main hydrocarbon provinces; the Rio de Rey Basin and the

Douala Basin offshore Cameroon. Together, these provinces are referred to as the Etinde Permit area. Natural gas reserves were thought to be substantial; however, these reserves had not been exploited owing to a lack of a market and infrastructure. Most of the petroleum reserves were located in the offshore Rio de Rey Basin (Bowleven Oil and Gas plc, 2011).

Bowleven Oil & Gas plc announced that its Sapele-3 well, which was the company's fourth well in the Douala Basin, had encountered significant hydrocarbon intervals at multiple levels. Sapele-3 was well drilled to a total depth (TD) of 4,480 meters (m). The hydrocarbon discoveries made in the Epsilon Complex and shallower Tertiary intervals represented a total of 19 m of net hydrocarbon-bearing pay (Oilbarrel.com, 2011).

Victoria Oil and Gas plc of the United Kingdom reported that it had completed production facilities for the Logbaba natural gas field near Douala and that precommissioning was finished. Victoria expected first natural gas sales by yearend 2011. A 34-km pipeline network was expected to be completed by yearend 2012 (Oil & Gas Journal, 2011).

Outlook

Interest in exploration for metals and petroleum in Cameroon is expected to continue. The petroleum sector is likely to remain a significant sector of the mineral industry. Consequently, the Government is expected to continue its efforts to increase interest in offshore and onshore petroleum exploration. Energy and infrastructure development efforts are also expected to continue.

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CAPE VERDE

Cape Verde is an archipelago of 10 islands and 8 islets located about 600 km off the western coast of Africa. All islands except Santa Luzia are inhabited. Mining's contribution to the country's economy was minimal. Most of the country's mineral requirements were imported. Production of mineral commodities was not reported and was limited mainly to cement and salt for local consumption (U.S. Department of State, 2012).

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TABLE 1
CAMEROON AND CAPE VERDE: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2007	2008	2009	2010	2011
CAMEROON					
Aluminum metal, primary	87,000 ⁴	89,700	57,287 ⁴	59,593 ⁴	69,000
Cement, hydraulic	1,150,000 ⁴	1,000,000	1,000,000	1,100,000	1,100,000
Clay	10,000	10,000	10,000	10,000	10,000
Diamond carats	12,000	12,000	12,000	12,000	10,000
Gold, mine output, Au content ⁵ kilograms	2,000	1,800	1,800	1,800	1,600
Petroleum:					
Crude thousand 42-gallon barrels	30,364	29,685	28,000	23,324 ^{r,4}	22,046 ⁴
Refinery products do.	12,000	12,000	12,000	10,000	10,000
Pozzolana, ash for cement	600,000	550,000 ^r	550,000 ^r	600,000	600,000
Sand and gravel	600,000	600,000	600,000	600,000	600,000
Sapphire kilograms	1,000	1,000	1,000	1,000	1,000
Silica sand	14,000	14,000	14,000	14,000	14,000
Stone:					
Limestone	100,000	100,000	100,000	100,000	100,000
Marble	500	500	500	500	500
CAPE VERDE⁶					
Cement	160,000	160,000	160,000	160,000	160,000
Salt	1,600	1,600	1,600	1,600	1,600

^rRevised. do. Ditto.

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

²Includes data available through June 30, 2012.

³In 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. The National Institute of Statistics reports salt production to be less than 1 metric ton per year.

⁴Reported figure.

⁵From artisanal mining.

⁶Cape Verde also produced clay, gypsum, limestone, and pozzolana, but output is not reported, and available information is inadequate to make reliable estimates of output.

TABLE 2
CAMEROON AND CAPE VERDE: STRUCTURE OF THE MINERAL INDUSTRIES IN 2011

(Thousand metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location	Annual capacity
CAMEROON			
Aluminum	Société Camérounaise de l'Aluminium (Alcan Inc., 46.7%)	Plant at Edea	95
Cement	Cimentaries du Cameroon (Lafarge Group, 57%)	Plant at Bonaberi near Douala	1,200
Diamond carats	Artisanal	Various locations	12,000
Gold kilograms	do.	do.	1,500
Limestone	Cimentaries du Cameroon (Lafarge Group, 57%)	Figuil	275
Petroleum, refinery barrels per day	Société Nationale de Raffinage (SoNaRa) (Government, 66%)	Refinery at Limbe	45,000
Pozzolana	do.	Sud-Quest and Littoral Provinces	750
CAPE VERDE			
Cement metric tons	Cimentos de Cabo Verde S.A.	Plant at Santiago	160,000
Salt do.	Artisanal	Various locations	1,600