



2009 Minerals Yearbook

CAMEROON AND CAPE VERDE

THE MINERAL INDUSTRIES OF CAMEROON AND CAPE VERDE

By Harold R. Newman

CAMEROON

Cameroon was considered to have significant mineral resources, including bauxite, cobalt, iron ore, nickel, and uranium; however, mining of these resources was limited. Other mineral deposits included cassiterite, lignite, marble, mica, rutile, and tantalite. Considerable development of infrastructure would be required to exploit these resources.

All mineral resources belong to the state. Prospecting, exploration, and development activities for any mineral deposit are regulated by permit. The Ministère de l'Eau et l'Energie [Ministry of Water and Energy] is responsible for the administration of the mineral industry in accordance with the revised Mining Code of 2001 and the Petroleum Code of 2000.

Although the mineral resource sector had not been a priority of the Government in the past, that appeared to be changing in 2009. In an effort to attract new investment in the sector, the Government revised the 2001 Mining Code to provide investors with such incentives as a 5-year tax break and free transfer of capital out of the country. Planning for the construction of a new port, hydroelectric plant, and railway projects was initiated by the Government to support expected development (U.S. Department of State, 2009).

Production

In 2009, the petroleum sector continued to be the most significant segment of Cameroon's mineral industry. Petroleum products provided about 50% of Cameroon's exports. Other mineral commodities produced in the country were aluminum from alumina imported from Guinea, cement, and sand. Small-scale artisanal miners recovered 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. A variety of industrial minerals and other construction materials, such as aggregates, gypsum, and stone, were also produced for domestic consumption. The southeast region has a few mineral deposits that could possibly have future production potential (MBendi Information Services (Pty) Ltd., 2009b). Data on mineral production are in table 1.

Structure of the Mineral Industry

The mineral industry facilities in Cameroon were modest and mostly privately owned. The significant companies were Compagnie Camérounaise de l'Aluminium (aluminum), Cimentaries du Cameroon (cement), and Société Nationale de Raffinage (SoNoRa), (petroleum). Table 2 is a list of the major mineral industry facilities.

Commodity Review

Metals

Aluminum and Bauxite and Alumina.—Rio Tinto Alcan of Canada announced that it had secured a 30-year power supply for the Societe Camerounaise d'Aluminium (Alucam) plant at Edea. Electricity costs, however, would almost double, and output from the smelter would decrease by about 40% in the near future owing to power constraints. The Government had agreed to raise the power supply to Alucam to 250 megawatts (MW) in 2012 when the Kribi gas-fired power plant goes online and to 490 MW when other powerplants go online. Alucam is Cameroon's leading aluminum company (Thompson Reuters, 2009e).

In addition, Alucam and Rio Tinto began looking for a site to construct a 1,000-MW-capacity hydroelectric dam. The new dam would enable Alucam to increase its annual production to 400,000 metric tons (t) from 90,000 t. Cameroon, whose main source of energy is hydropower, was facing a power shortage owing to lack of sufficient rainfall to fill its dams. Rio Tinto stated that the new dam would be at the center of the company's projects in Cameroon, which included the future construction of an aluminum processing plant at Kribi (Tumanjong, 2009b).

The joint venture of Cameroon Alumina Ltd., which was a bauxite mining consortium of Dubai Aluminum Co. of the United Arab Emirates (45%), Hindalco Industries of India (45%), and Hydromine Inc. of the United States (10%), announced plans to construct a 1,400-MW-capacity powerplant to supply electricity for smelting alumina and refining aluminum from the Cameroon bauxite operations. Cameroon Alumina was undertaking feasibility studies for the building of three hydroelectric dams on the Sanaga River at an estimated cost of \$2.8 billion. The proposed refinery would cost an estimated \$4 billion and produce about 500,000 metric tons per year (t/yr). The construction timeline was 2015 to 2018 for both projects (Tumanjong, 2009a).

Alucam announced that it had found deposits containing an estimated 550 million metric tons (Mt) of bauxite at the Minim-Martap and the Ngaoundal properties in the Adamawa region. Cameroon Alumina was planning to build a mining facility that would start producing between 4.5 million metric tons per year (Mt/yr) and 9 Mt/yr of bauxite starting in late 2014 and an alumina refinery with a capacity to produce between 1.4 and 3 Mt/yr of aluminum. The project was expected to cost \$5 billion and would offset bauxite imported from Guinea (Thompson Reuters, 2009a).

Cobalt.—Geovic Cameroon plc (GeoCam), which was a subsidiary of Geovic Mining Corp. of the United States, had a mining license for seven near-surface cobalt and nickel deposits in Cameroon. They were the Kondong, the Mada, the Messea, the Nkamouna, the North Mang, the Rapodjombo, and the

South Mang deposits. GeoCam announced that it was going ahead with its cobalt-manganese-nickel project, despite delays linked to the global financial crisis. GeoCam had initially planned to start mining cobalt and nickel at the Nkamouna laterite deposit (which would be the first deposit to be developed) in late 2010; GeoCam later stated, however, that the project would be delayed for about 1 year and that the company's investment in the project would be reduced to \$250 million from \$370 million. GeoCam expected to produce an average of 4,200 t/yr of cobalt and 2,100 t/yr of nickel for about 19 years from the estimated 52 Mt of ore at the deposit (Thompson Reuters, 2009c).

The Nkamouna project was in a competitive position (would likely to be able to realize significant cost savings) because of the metallurgical qualities of the cobalt. The unusual coarse accretions of hard cobalt mineralization can be concentrated in grade by a factor of three. The concentrate is readily leached at atmospheric pressure with low consumption of sulfurous acid in 6 hours of agitation at 60°C. The operating plan for Nkamouna includes an open pit mine followed by processing with conventional equipment and technology to produce an average of 4,200 t/yr of cobalt and 2,100 t/yr of nickel during the initial 19-year project life (African Mining, 2009).

Gold.—African Aura Mining Inc. of Australia was continuing with exploration at Kambele within the Batouri project in eastern Cameroon where it reported further high-grade intersections from an additional 12 holes in its diamond drilling program. Drill intersections included grades of 4.99 grams per metric ton gold (g/t) across 9 meters (m); 5.52 g/t gold across 5 m; 34.67 g/t gold across 1 m; and 37.42 g/t gold across 1 m. Drilling indicated that the prospect includes the presence of two or more subhorizontal, subparallel, gold mineralized zones up to 10-m thick containing quartz veins and stringers. The aerial extent of the target appears to be about 500 m by 700 m and remains open down dip to the north. The gold appeared to be associated with a specific generation of quartz veins and stringers that could be reliably targeted in future drilling programs (African Aura Mining Inc., 2009b).

Iron Ore.—African Aura announced plans to undertake a reconnaissance diamond drilling program on a 3-kilometer (km)-long section of the 10-km-long Nkout iron ore prospect, which is located in the Sangemalina-Djourn Archean greenstone belt in southern Cameroon. The 1,000-square-kilometer (km²) Djourn license was held by African Aura's wholly owned subsidiary Caminex SARL. African Aura had previously collected 44 grab samples from a 3-km by 3.75-km area that returned a maximum grade of 65% iron and an average grade of 54% iron. The samples contained mainly high-grade hematite along with goethite and magnetite (African Aura Mining Inc., 2009a).

Sundance Resources Ltd. continued with efforts to exploit iron ore at its \$2.5 billion Mbalam project. The ore deposit is located near the Gabon border and was expected to produce 35 Mt/yr of iron ore during a period of 25 years. Sundance was scheduled to begin exporting iron ore by 2011 but was involved in a tax dispute with the Government, and production was rescheduled to 2013. Reserves were estimated to be about 2.5 billion metric tons (Gt), including 2.3 Gt of phosphorus, low-alumina, and low-silica content itabirite hematite, and 215 Mt of high-grade hematite (Thompson Reuters, 2009b).

Industrial Minerals

Diamond.—The Government announced that it expected to become a significant diamond exporter by 2011 when C&K Mining Co. planned to start mining deposits discovered at Limokoali and Mobilong near Yokadouma in East Province. C&K Mining was a joint venture between C&C Mining Co. of South Korea (80%) and the Government (20%). Probable reserves were estimated to be 736 million carats (Musa, 2009).

Mineral Fuels and Related Materials

Petroleum.—Cameroon's petroleum reserves are located offshore in the Rio del Rey Basin, offshore and onshore in the Douala and the Kribi-Camp Basins, and onshore in the Logone-Birni Basin in the northern part of the country. Cameroon was the fifth ranked petroleum producing country in the sub-Saharan region (MBendi Information Services (Pty) Ltd., 2009a).

The Government planned to increase its oil production with the help from a new drilling contract let in 2009. The National Hydrocarbon Corp (SNH) reported that five companies were selected to drill 17 petroleum wells at a total investment of \$344.3 million. SNH stated that the investment was underway; the drilling projects were located in the southwestern part of the country along the Gulf of Guinea. Cameroon has estimated proven reserves of 400 million barrels and, in 2008 (the latest year for which data were available), petroleum revenues were \$1.9 billion (Oxford Princeton Programme, The, 2009).

Noble Energy Inc. of the United States and Petronas Carigali Gas Ltd. of Malaysia signed a \$119 million natural gas and petroleum exploration contract with SNH. The 7-year contract covers an area off the main Port of Douala. SNH stated that there were estimated reserves of between 40 million barrels (Mbbbl) and 70 Mbbbl of hydrocarbons in that area. If commercial hydrocarbons are discovered, the Government could take a 25% stake in the production, and the joint venture could be granted a 35-year exclusive exploitation license renewable once for 10 years for natural gas and a 25-year exclusive exploitation license renewable once for 10 years for petroleum. The Government was continuing with its efforts to increase both onshore and offshore exploration projects (Thompson Reuters, 2009d).

Cameroon's only petroleum refinery, which is located in the port city of Limbe, had a capacity to produce 45,000 barrels per day of petroleum and was operated by SoNaRa, which was 66% owned by the Government (the remaining interest was owned by various petroleum companies). The Government announced that it had signed a \$93 million loan deal to raise production capacity from 2.1 million barrels per year (Mbbbl/yr) to 3.5 Mbbbl/yr. The upgrade would enable SoNaRa to process the heavy crude that Cameroon produces, not just the light grades of crude that it imports. About one-half of SoNaRa's production was sold within Cameroon; the rest was exported to France, other central African countries, and the United States (Gulf Oil and Gas, 2009).

Uranium.—Mega Uranium Ltd. of Canada had a 92% interest in Mega Uranium Cameroon plc, which held three projects consisting of six concessions with a total area of 4,654 km².

The three projects were the Kitongo (2,578 km²), the Lolodorf (994 km²), and the Teubang (1,082 km²). Eleven diamond drill core holes in the Kitongo project were drilled along a 300-m strike length of the east-northeast-trending Kitongo fault scarp. Intersections included 3.4 m grading 0.10% uranium oxide (U₃O₈), 3 m grading 0.13 U₃O₈, and 41.9 m grading 468 parts per million U₃O₈. The cores showed that the uranium mineralization was concentrated in zones of albitized granite lying parallel to the Kitongo fault and also along crosscutting faults of a northwest trend. Drilling programs were being developed to test these two targets elsewhere along the Kitongo fault (Marketwire, 2009).

Outlook

Interest in exploration for metals and uranium is expected to continue. The Government is expected to continue its efforts to increase interest in offshore and onshore petroleum exploration and to continue with infrastructure development efforts.

References Cited

- African Aura Mining Inc., 2009a, African Aura to drill Nkout iron ore prospect: African Aura Mining Inc. news release, April 15. (Accessed February 10, 2010, at http://www.african-aura.com/s/NewsRelease.asp?printVersion=now&_Title=African-Aura-Mining-Ltd.)
- African Aura Mining Inc., 2009b, Further positive gold grades at Batouri project in Cameroon: African Aura Mining Inc. news release, July 7. (Accessed February 10, 2010, at http://www.african-aura.com/s/newsreleases.asp?printVersion=now&_title=further-post=now&title=further-gold-grades-at-batouri-project.)
- African Mining, 2009, Nkamouna—just the beginning: African Mining, v. 13, no. 4, July-August, p. 18.
- Gulf Oil and Gas, 2009, Cameroon to upgrade refinery to run its own crude: Thompson Reuters. (Accessed February 10, 2010, at <http://www.gulfoilandgas.com/webpro1/MAIN/Mainnews.asp?id=10103.>)
- Marketwire, 2009, Mega Uranium Ltd.—Update on exploration activities in Cameroon: Marketwire. (Accessed February 12, 2010, at <http://www.marketwire.com/press-release/Mega-Uranium-Ltd-Update-on-Exploration-Activities-in-Cameroon.>)
- MBendi Information Services (Pty) Ltd., 2009a, Crude petroleum and natural gas extraction in Cameroon: MBendi Information Services (Pty) Ltd. (Accessed February 10, 2010, at <http://www.mbendi.com/indy/oilg/ogus/af/ca/p0005.htm.>)

- MBendi Information Services (Pty) Ltd., 2009b, Mining in Cameroon—Overview: MBendi Information Services (Pty) Ltd. (Accessed February 9, 2010, at <http://www.mbendi.com/indy/ning/af/ca/p0005.htm.>)
- Musa, Tansa, 2009, Cameroon sees diamond mine starting in 2010: Thompson Reuters. (Accessed February 12, 2010, at <http://www.reuters.com/assets/print?aid=USLP28315220090625.>)
- Oxford Princeton Programme, The, 2009, Cameroon set to boost oil production: The Oxford Princeton Programme. (Accessed February 10, 2010, at <http://www.oxfordprinceton.com/dib/dib.asp?article=19120066&title=Cameroon+set+to+boost+oil+production.>)
- Thompson Reuters, 2009a, Cameroon Alumina finds 550 Mt bauxite: Creamer Media (Pty) Ltd. (Accessed November 19, 2009, at <http://www.miningweekly.com/print-version/cameroon-alumina-says-finds-550mm-tons-bauxite-2009-10-16.>)
- Thompson Reuters, 2009b, Factbox—Cameroon oil, minerals investment projects: Thompson Reuters. (Accessed February 10, 2010, at <http://www.reuters.com/articlePrint?articleId=UKGEE5AN1HW20091124.>)
- Thompson Reuters, 2009c, Geovic to press ahead with Cameroon project: Thompson Reuters. (Accessed February 10, 2010, at <http://minerals-and-metals.blogspot.com/search/label/cameroon.>)
- Thompson Reuters, 2009d, Petronas, Noble sign Cameroon energy exploration deal: Thompson Reuters. (Accessed February 12, 2010, at <http://www.reuters.com/assets/print?aid=USL720558120090707.>)
- Thompson Reuters, 2009e, Rio costs up, output down in new Cameroon power deal: Thompson Reuters. (Accessed February 11, 2010, at <http://www.reuters.com/assets/print?aid=USLL4379020091121.>)
- Tumanjong, Emmanuel, 2009a, Cameroon jv to build \$2.b power plant for aluminum smelter/tradingmarket: Thompson Reuters. (Accessed February 11, 2010, at http://www.tradingmarkets.com/print/news/stock-alert/awc_dj-cameroon-jv-to-build--2-8b-.)
- Tumanjong, Emmanuel, 2009b, Rio Tinto, Cameroon's Alucam project [sic] energy site to lift output: Dow Jones & Company Inc., February 7. (Accessed February 11, 2010, at <http://english.capital.gr/Newsprint.asp?id=672007.>)
- U.S. Department of State, 2009, Investment climate statement—Cameroon: U.S. Department of State. (Accessed February 10, 2010, at <http://www.state.gov/e/eeb/rls/2009/117419.htm.>)

CAPE VERDE

Cape Verde is an archipelago of 10 islands and 8 islets located about 600 km off the western coast of Africa. Mining's contribution to the country's economy was very minimal. Most of the country's mineral requirements were imported. Production of mineral commodities was limited mainly to cement and salt for local consumption. Cape Verde was not a producer of mineral fuels in 2009.

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

(Metric tons unless otherwise specified)

Country and commodity ³	2005	2006	2007	2008	2009
CAMEROON					
Aluminum metal, primary	86,977 ⁴	91,000	87,000 ⁴	89,700 ^r	90,000
Cement, hydraulic	1,000,000	1,000,000	1,150,000 ⁴	1,000,000	1,000,000
Clay	9,811 ⁴	10,000	10,000	10,000	10,000
Diamond	carats	12,000	12,000	12,000	12,000
Gold, mine output, Au content ⁵	kilograms	1,889 ⁴	2,000	2,000	1,800
Petroleum:					
Crude	thousand 42-gallon barrels	30,100 ^{4,6}	31,667 ⁴	30,364 ^{4,6}	29,685 ^{r,4,6}
Refinery products	do.	12,000	12,000	12,000	12,000
Pozzolana, ash for cement		600,000	600,000	600,000	600,000
Sand and gravel		601,000	600,000	600,000	600,000
Sapphire	kilograms	1,000	1,000	1,000	1,000
Silica sand		14,000	14,000	14,000	14,000
Stone:					
Limestone		103,000	100,000	100,000	100,000
Marble		500	500	500	500
CAPE VERDE ⁷					
Cement		150,000	160,000	160,000	160,000
Salt		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 March 31, 2010.

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.

⁶Reported by the U.S. Energy Information Administration.

⁷Cape 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 2009

(Thousand metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location	Annual capacity
CAMEROON			
Aluminum	Compagnie 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
Gold	kilograms	do.	do.
Limestone		Cimentaries du Cameroon (Lafarge Group, 57%)	Figuil
Petroleum, refinery	barrels per day	Société Nationale de Raffinage (SoNaRa) (Government, 66%)	Refinery at Limbe
Pozzolana		Cimentaries du Cameroon (Lafarge Group, 57%)	Figuil
CAPE VERDE			
Cement	metric tons	Cimentos de Cabo Verde S.A.	Plant at Santiago
Salt	do.	Artisanal	Various locations
do. Ditto.			