

2014 Minerals Yearbook

CAMEROON

THE MINERAL INDUSTRY OF CAMEROON

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Mineral production was a small part of Cameroon's economy in 2014. The major mineral commodities produced were aluminum, crude and refined petroleum, and pumice and pumicite. In 2014, Cameroon was the seventh-ranked producer of pumice and pumicite in the world and accounted for about 4% of global production. In 2014, the oil sector represented about 4.6% of the country's gross domestic product (GDP). Crude petroleum was Cameroon's main export commodity and accounted for about 51% of total exports, and it was the source of about 26% of Government revenues in 2014 (International Monetary Fund, 2014, p. 21, 22, 28; Crangle, 2016).

Cameroon's mineral resources, including petroleum resources, belong to the Government. Prospecting, exploration, and development activities for any mineral deposit are regulated by law and require a license or permit. The mining sector in the country is governed by the provisions set forth in the Mining Code, which was established by law No. 001–2001 of April 16, 2001. The law was amended by Decree No. 2002/848/PM of March 26, 2002, which detailed the rules for the application of the law. Further amendments and supplements are law No. 2010/011 of July 29, 2010, Decree No. 2014/1882/PM of July 4, 2014, and Decree No. 2014/2349/PM of August 1, 2014. Exploration and exploitation licenses were issued subject to the Government of Cameroon having a right to receive 10% free-carried interest in the share capital of the project operating company (Bissou, Bamenjo, and Koagne, 2014, p. 13–14).

The principal Government organizations responsible for regulating the upstream oil and gas sector are the Ministry of Mines and the state oil and gas company Societe National des Hydrocarbures (SNH). The Ministry of Mines grants all licenses and authorizations and regulates petroleum operators. The SNH was created in 1980 by Decree No. 80/086 of March 12, 1980. It is the entity responsible for developing and monitoring petroleum activity in the country and managing the state's interest in the oil sector. The Petroleum Code was established by law No. 99/013 of December 22, 1999; the terms of application of the Petroleum Code are set forth in Decree No. 2000/465 of June 30, 2000. Decree No. 2008/012 of January 17, 2008, amended and supplemented certain provisions of Decree No. 80/086 of March 12, 1980, which established the SNH and extended the scope of the SNH to include the development of natural gas. Law No. 2012/006 of April 19, 2012, regulates and promotes the development of the downstream gas sector and replaces previous law No. 2002/13 of December 30, 2002 (Republic of Cameroon, 2012; Freshfields Bruckhaus Deringer LLP, 2013).

Decree No. 2011/3666/PM of November 2, 2011, created a system to account for diamond production and trade in accordance with the Kimberley Process Certification Scheme (KPCS). In October 2013, Cameroon achieved compliant

country status with the Extractive Industries Transparency Initiative (EITI) (Bonde, 2012; Extractive Industries Transparency Initiative, 2013).

Decree No. 2012/432 of October 1, 2012 reorganized the Ministère des Mines, de l'Industrie et du Développement Technologique [Ministry of Mines, Industries, and Technological Development] (MINMIDT), which develops and implements industrial and mining policy. The MINMIDT's Brigade Nationale de Contrôle des Activités Minières [National Brigade for the Control of Mining Activities] is responsible for enforcing mining regulations and monitoring logging activities, mineral exploration and mining activities, and the activities of spring and mineral water companies. The MINMIDT's Direction des Mines [Department of Mines] includes the Sous-direction des Activités Minières [Division of Mining Activities], the Sous-direction des Hydrocarbures [Division of Hydrocarbons], and the Sous-direction du Cadastre Minier [Division of Mining Registry]. The Direction de la Géologie [Department of Geology] includes the Sous-direction de la Prospection Géologique [Division of Geologic Prospecting] and the Sous-direction de la Cartographie Géologique et des Risques Naturels [Division of Geological Mapping and Natural Hazards]. The Direction de l'Industrie [Department of Industry] includes the Sous-direction de la Transformation Locale [Division of Local Transformation], which is responsible for policies and programs for the local processing of mineral production. The Cadre d'Appui et de Promotion de l'Artisanat Minier (CAPAM) [Support Framework and Promotion of Artisanal Mining] is responsible for supporting artisanal miners and promoting the development of informal gold, rutile, sand and gravel, and sapphire mining operations into more formal ventures, such as mining cooperatives or more mechanized operations (République du Cameroun, 2012, p. 4, 13, 20, 25; Ministry of Mines, Industries, and Technological Development, 2013).

Production

In 2014, the major mineral commodities produced in Cameroon included aggregates, aluminum, cement, and crude petroleum. Other minerals produced in the country included clay, diamond, gold, granite, kyanite, lime, limestone, marble, natural gas, pozzolanic materials, quartzite, refined petroleum products, sand and sapphire. Other minerals that occur in the country are bauxite, cobalt, iron ore, manganese, and nickel. Production of aluminum metal increased by 24% compared with that of 2013. Cement production decreased by an estimated 7%. Diamond recovery, as reported by the KPCS, increased by 37% in 2014 compared with that of 2013. Production of crude petroleum increased by 9% (table 1).

Structure of the Mineral Industry

The Government issued a number of exploitation permits (mining licenses) to companies registered in Cameroon, which included Geovic Cameroon plc for cobalt-nickel, C & K Mining Co. for diamond and gold, Cam Iron SA for iron ore, Cimenteries du Cameroun (Cimencam) for limestone, ETS Rocaglia for marble, Razel Fayat Cameroun for sand, and numerous other companies for aggregate and various types of stone. For many years, Cameroon's gold and diamond mineral resources were exploited primarily by artisanal miners. In 2014, the Government suspended the contracts of 38 small-scale artisanal mining companies for irregularities in the gold and diamond mining sectors (Tumanjong, 2014).

Cameroon's mineral processing facilities were mostly privately owned. Notable companies included the Cimencam, which produced cement and pozzolanic materials, and the Compagnie Camerounaise de l'Aluminium (Alucam), which produced aluminum. Rio Tinto Alcan Inc. of Canada and the Government of Cameroon each held a 46.67% interest in the Alucam smelter, which was located in Edea; the remainder was held by the Agence Française de Développement (5.6%), and the employees (1.1%). In October, Rio Tinto Alcan informed the Government of its intention to divest its shares by yearend. State-owned companies with mineral-related activities included the SNH, which was involved in hydrocarbon exploration and production in various joint ventures with multinational oil companies, and the Société Nationale de Raffinage (SONARA), which refined crude petroleum. Table 2 is a list of the leading mineral industry facilities (Rio Tinto Alcan Inc., 2014).

Commodity Review

Metals

Bauxite and Alumina and Aluminum.—Cameroon possessed significant reserves of bauxite, the basic raw material for the production of alumina and aluminum. Estimated reserves of bauxite were more than 1 billion metric tons (Gt). The Birsok project, which is located in an emerging bauxite region of Cameroon and is contiguous with the large Minim Martap bauxite deposit, was 75% owned by Canyon Resources Ltd. of Australia in a joint venture with Aluvance plc of the United Kingdom. Canyon planned to continue mapping and exploration drilling on the Baoua, the Becka, the Djombi, the Fedal, and the Mbon prospects at Birsok. In December 2014, the Government renewed the Birsok exploration permit for a period of 2 years (Aluvance plc, 2014a, b; KPMG, 2014, p. 2; Proactive Investors, 2014).

Cobalt and Nickel.—In September 2014, Geovic Mining Corp. of the United States announced that it had agreed to an extension of the Definitive Agreement (DA) with Jiangxi Rare Metals Tungsten Holdings Group Co. Ltd. (JXTC) of China through December 31, 2014. The transaction established JXTC's intent to acquire Geovic Mining's 60.5% interest in its subsidiary, Geovic Cameroon plc (Geocam), which was planning to develop the Nkamouna cobalt-nickel-manganese project. The DA anticipated the completion of a strategic

investment by JXTC in the project. In addition, JXTC would secure 100% of the mixed cobalt-nickel sulfide product to be produced by the project through a long-term offtake agreement with Geovic Cameroon (Geovic Mining Corp., 2014).

Iron Ore.—In December 2013, International Mining and Infrastructure Corp. plc (IMIC) of the United Kingdom acquired Afferro Mining Inc. of the United Kingdom. The acquisition transferred ownership of four iron ore licenses in southern Cameroon to IMIC—the Akonolinga, the Nkout, and the Ntem licenses were fully held by Caminex SA (100% owned by IMIC), and the Ngoa license was held by Ridgeway Energy SARL (70% owned by IMIC). The company's focus was on advancing the Nkout and Ntem deposits to achieve initial production in 3 years at Ntem. The Akonolinga and the Ngoa deposits were in early exploration stages (International Mining and Infrastructure Corp. plc, 2015a, p. 1–3, 5; 2015b, p. 6).

Nkout is a large-scale asset located 330 kilometers (km) east of Kribi. IMIC had a target production of 35 million metric tons per year (Mt/yr) of iron ore with a grade of between 62.6% and 66.3% iron. The prefeasibility study for Nkout was initiated in January 2014, with completion expected in early 2015; the study would also address associated rail and port infrastructure. In October, IMIC released an updated mineral resource estimate, which increased the total indicated and inferred resources at Nkout to 2.7 Gt at a grade of 31.8% iron and increased the total direct shipping ore (DSO) saprolite-indicated resource by 68% to 252 million metric tons (Mt) at a grade of 43.2% iron. The company expected to start a definitive feasibility study in 2015 (International Mining and Infrastructure Corp., 2015a, p. 1–2; 2015b, p. 2, 5).

Ntem is a smaller deposit located 80 km east of Kribi. It had a maiden indicated and inferred resource of 115 Mt at a grade of 34% iron; IMIC's targeted production was 4 Mt/yr of high-grade concentrate, with production beginning in 3 years. An updated mineral resource estimate, completed in the 6-month period that ended on December 31, 2014, increased the overall mineral resource to 176.3 Mt and substantially increased the total indicated resource to 96.9 Mt at a grade of 34.92% iron. The company expected to commence a definitive feasibility study in early 2015 (International Mining and Infrastructure Corp., 2015a, p. 1, 3; 2015b, p. 2, 6).

The Bikoula project, which was 100% owned by Aluvance plc, is located in the regional iron ore province of southern Cameroon. The project hosted a Joint Ore Reserves Committee (JORC)-compliant inferred resource of 45 Mt at a grade of 44% iron from the first 3.5 km of the 17-km-long Libi Hills prospect. Less than 25% of the 13-km geophysical anomaly at the prospect had been drill tested as of the end of September (Aluvance plc, 2014c).

In 2014, West African Minerals Corp. focused exploration activities on its South Sanaga license area. Results from a mapping and sampling program in July outlined several areas of coarse-grained magnetite-bearing gneiss. A subsequent infill drilling program, completed in November, encountered multiple magnetite gneiss units from the surface to depths of 150 meters and provided sufficient data for a maiden mineral resource estimate to be completed in 2015. At the Binga iron ore license area in the coastal region of Cameroon, an initial

inferred mineral resource estimate indicated 30.5 Mt at a grade of 29.7% iron and a cutoff grade of 25% iron. In addition, ground gravity and magnetic surveys in the central region of Binga had identified several promising targets extending along approximately 10 km of strike length. At the Lélé and Djadom license areas in the interior region of Cameroon, surface mapping of gravity and magnetic anomalies in previously unexplored areas revealed iron mineralization along several kilometers of strike. At the South Djadom deposit, the combined inferred mineral resource for Blocks 1 and 2 was estimated to be 111.5 Mt at a grade of 30.0% iron with an iron cutoff grade of 25%, including 15.6 Mt at a grade of 40.7% and an iron cutoff grade of 35% (West African Minerals Corp., 2014a–d).

Sundance Resources Ltd. of Australia continued with the development of the Mbalam-Nabeba iron ore project, which straddles the border of Cameroon and the Republic of the Congo [Congo (Brazzaville)]. The goal of the project was to mine 35 Mt/yr of iron ore from deposits in both countries for a minimum of 25 years. Contracts to construct the port and rail infrastructure for the project were signed in June between Mota Engil Africa and Sundance. The contracts were valued at \$3.5 billion and construction was to be completed in 3.5 years from the closing of the contracts (Sundance Resources Ltd., 2014, p. 1, 4, 33).

The Mbalam-Nabeba iron ore project was regulated by three permits—Exploration Permit 92, which is located in Cameroon’s East Province and was owned by Cam Iron SA (a 90%-owned subsidiary of Sundance); and the Nabeba-Barnegod mining permit and the Ibanga exploration permit, which are located in the Sangha Province of Congo (Brazzaville) and are owned by Congo Iron SA (an 85%-owned subsidiary of Sundance). The iron ore project contained high-grade hematite and low-grade itabirite deposits that Sundance planned to exploit in two stages. In stage one, production was anticipated of near-surface high-grade hematite DSO at a rate of 35 Mt/yr for at least 10 to 12 years, with estimated ore reserves of 436.3 Mt at an average grade of 62.6% iron. In stage two, the production of hard, lower grade itabirite that underlies the DSO was expected to be produced at a rate of 35 Mt/yr for an additional 15 years or more and would require beneficiation to produce a concentrate grading 66% to 68% iron. Mineral reserves have not yet been estimated from the itabirite resources for stage two. These resources are estimated to total (indicated and inferred) 4.05 Gt with an average grading of 36.3% iron (Sundance Resources Ltd., 2014, p. 1, 4, 16–18).

In March, Sundance signed a binding long-term offtake agreement with Noble Resources International Pte Ltd. of Singapore, stipulating that Noble must buy all product produced by Mbalam-Nabeba for the first 10 years of operation, minus any product that might be allocated to project equity participants (Sundance Resources Ltd., 2014, p. 9, 33).

In November 2013, Legend Mining Ltd. of Australia entered into a Share Sale and Debt Assignment Agreement (SSDAA) with a wholly owned subsidiary of Jindal Steel and Power Ltd. of India for the sale of Legend’s 90% interest in Camina SA, the holding company of the Ngovayang Iron Ore Project in southwestern Cameroon. Completion of the sale was announced in August 2014. Under the SSDAA, Jindal acquired 100% of the

shares of Legend Iron Ltd., which was a subsidiary of Legend Mining Ltd. The Ngovayang project, which is located about 90 km northeast of Kribiti, consisted of several prospects that had a magnetite ore with 15% to 40% iron content; DSO had not been discovered at Ngovayang (Legend Mining Ltd., 2013; 2015, p. 2, 5; Economic Times, The, 2014).

Industrial Minerals

Cement.—Demand for cement in Cameroon continued to increase, despite increased volumes of imports and domestic production. In 2014, the country’s cement production was 1.3 Mt and imports were approximately 1.2 Mt. Construction of several cement plants continued in 2014, but as of yearend, Cimencam remained Cameroon’s only cement producer; the company operated a cement plant at Bonaberi, near Douala, and a grinding plant at Figuil. Work continued on the Dangote Group of Nigeria’s grinding plant in Douala. As of the end of June 2014, the plant was 85% complete, with initial production anticipated in early 2015. The \$140-million plant had a capacity of 1.5 Mt/yr, but startup production was expected to be 1.0 Mt/yr. Eren Holding A.S. of Turkey, through its local subsidiary Medcem Cameroon, was constructing a new cement plant scheduled to be operational by 2015; the plant was expected to produce 600,000 metric tons (t) in its first year (Construction Review Online, 2014; Tabe, 2014; Global Cement, 2015; Dangote Cement plc, 2015, p. 17).

Diamond.—Diamond was recovered primarily by artisanal miners operating throughout the country. Cameroon’s annual diamond production from small-scale artisanal miners has ranged from approximately 6,000 carats to less than 3,000 carats during the past 5 years (table 1).

Cameroon gained membership as a participant in the KPCS in 2012, which allowed Cameroon’s diamond production to be certified and sold in the international market. In 2010, the Government of Cameroon issued a mining license to the Cameroon and Korea Mining Co. (C&K Mining Inc.), a joint venture between investors from Cameroon and the Republic of Korea. Thomson Reuters reported that production was expected to begin in January 2013 at the Mobilong diamond field (Cameroon’s first industrial diamond mine), which is located at Yokadouma in East Province. As of yearend 2014, however, work had been halted on the project for more than 12 months owing to a change in investors in 2013 and legal issues. Evaluations suggest that alluvial deposits at the field may contain 300,000 carats of diamond, but the larger conglomerate deposits remain unevaluated (Thomson Reuters, 2013; Business in Cameroon, 2014; KPMG, 2014, p. 18, 20; Kimberley Process Certification Scheme, 2015; Nfor, 2015).

Pumice and Pumicite.—Pozzolanic ash, used in the manufacture of hydraulic cement, was produced by Cimencam. Production had been decreasing steadily during the past 5 years. In 2013, the company produced 363,655 t of pozzolana, which was a decrease of 9% from 2012 production, and in 2014, production decreased slightly to 360,000 t (table 1; Moore Stephens LLC, 2015, p. 11, 121).

Mineral Fuels

Petroleum.—In 2013, five companies produced crude petroleum in Cameroon. Perenco Rio Del Rey SA (Perenco Oil & Gas International Ltd. of the United Kingdom, 75.8%) operated five concessions and produced more than 16 million barrels (Mbbbl) of petroleum. Perenco Cameroon SA (Perenco Oil & Gas International Ltd. of the United Kingdom, 80%) operated two petroleum concessions that produced 1.8 Mbbbl of crude oil and also produced 4,000 cubic meters of gas from the Sanaga concession. Addax Petroleum Cameroon Co. LLC (Addax Petroleum Holdings, Ltd. of China, 80%) operated two offshore concessions that produced about 6 Mbbbl of crude oil. Rodeo Development Ltd. (Victoria Oil and Gas plc of the United Kingdom, 60%) produced approximately 18.7 million cubic meters of gas from the onshore Logbaba field. SNH produced 12,871 barrels of crude petroleum. Cameroon's total hydrocarbon production in 2013 was 24.2 Mbbbl of crude petroleum and 18.7 million cubic meters of gas. In 2014, crude petroleum production increased by 10% to 26.5 Mbbbl and natural gas production increased slightly to 19 million cubic meters (table 1; Moore Stephens LLC, 2015, p. 10–11, 120).

Outlook

The exploration work of recent years suggests that Cameroon is rich in mineral resources, yet only approximately 40% of the country has been explored, leaving much potential for the future. Despite continued low iron ore prices in 2014, some exploration and production companies expected their medium- to long-term prospects to be positive and remained engaged in their activities while looking to reduce capital and operating costs. Continued investments and development of basic infrastructure in the mining regions, particularly of rail lines, port facilities, electrical power generation, and hard-surface roads, are critical in advancing mine development in the emerging iron ore belt of west and central Africa. The Government is expected to maintain its efforts to increase international interest in exploration for petroleum and solid minerals. Cameroon's accession to the KPCS (2012) and the EITI (2013) will make the country more attractive to global markets and contribute to its economic development.

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TABLE 1
CAMEROON: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2010	2011	2012	2013	2014 ^c
Aluminum metal, primary	76,000	69,000	52,000	75,000	93,000 ³
Cement, hydraulic	1,000,000 ^e	1,146,000	1,275,000	1,400,000 ^e	1,300,000 ³
Clay ^e	9,966 ^f	13,223 ^r	8,922 ^r	12,107 ^r	12,000
Diamond ^{e,4} carats	6,000	6,000	5,000	2,723 ³	3,718 ³
Gold, mine output, Au content ^{e,4} kilograms	1,600	1,600	1,500	1,600	1,500
Granite	NA	3,821	2,615	1,754	1,800
Kyanite kilograms	NA	NA	324,900	220,350	220,000
Lime ^e	1,000	1,157 ³	1,251 ³	1,200	1,200
Limestone	189,748	182,926	164,936	143,463	143,000
Marble	100 ^e	11,983 ^r	5,959 ^r	10,134 ^r	10,000
Natural gas: thousand cubic meters	NA	NA	2,533	18,722	19,000
Petroleum:					
Crude thousand 42-gallon barrels	23,700 ^f	21,427 ^r	21,878 ^r	24,206 ^r	26,463 ³
Refinery products					
Gasoline do.	3,267	3,403	3,557	3,753	3,800
Jet kerosene do.	2,633	2,744	2,871	3,029	3,000
Diesel fuel do.	6,312	6,568	6,867	7,251	7,300
Fuel oil do.	2,454	2,559	2,678	2,827	2,800
Liquified petroleum gas do.	232	244	255	267	270
Total do.	14,898 ^r	15,518 ^r	16,228 ^r	17,127 ^r	17,200
Pozzolana, ash for cement	437,656 ^r	424,202 ^r	400,205 ^r	363,655 ^r	360,000
Quartzite	NA	NA	149	3,950	4,000
Sapphire kilograms	NA	NA	1	8	10

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. NA Not available.

¹Table includes data available through February 18, 2016.

²In addition to the commodities listed, a variety of industrial minerals and construction materials, such as aggregate, gypsum, sand and gravel, silica sand, and stone, may have been produced, but available information was inadequate to make reliable estimates of output.

³Reported figure.

⁴From artisanal mining.

TABLE 2
CAMEROON: STRUCTURE OF THE MINERAL INDUSTRY IN 2014

(Thousand metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location	Annual capacity
Aluminum		Compagnie Camerounaise de l'Aluminium (Alucam) [Rio Tinto Alcan Group., 46.7%; Government, 46.7%; Agence Française de Développement (AFD), 5.6%; Alucam staff, 1.1%]	Plant at Edea	100
Cement		Cimenteries du Cameroun (Lafarge Group, 55%; Government, 43%; Cimenteries du Cameroun staff, 2%)	Plant at Bonaberi near Douala	1,600
Do.		do.	Grinding plant at Figuil	100
Diamond	carats	Artisanal	Various locations	12,000
Gold	kilograms	do.	do.	1,500
Limestone		Cimenteries du Cameroun (Lafarge Group, 55%; Government, 43%; Cimenteries du Cameroun staff, 2%)	Figuil	275
Petroleum:				
Crude	barrels per day	Various	Offshore and onshore	NA
Refined	do.	Société Nationale de Raffinage (SONARA) (Government, 100%)	Refinery at Limbe	45,000

Do., do. Ditto. NA Not available.