

2009 Minerals Yearbook

SIERRA LEONE

THE MINERAL INDUSTRY OF SIERRA LEONE

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The mining sector was a significant contributor to Sierra Leone's economy; it accounted for about 90% of export revenues, mainly from diamond exports, and 20% of the gross domestic product (GDP). Sierra Leone was the world's 10th ranked producer of diamond by volume in 2009 and the world's third ranked producer of rutile. Other commodities produced included bauxite, cement, gold, and ilmenite (Gambogi, 2010; Kimberley Process Rough Diamond Statistics, 2010).

The absence of basic infrastructure continued to be an obstacle to Sierra Leone's economic growth and, therefore, to the further development of the mining sector. The country's key transport system, power generation and distribution installations, and water pipelines were destroyed during the civil war. Although the Government was committed to the rehabilitation of such infrastructure, the International Monetary Fund (IMF) reported that external donor contributions to infrastructure development have been relatively small. For the period 2008 to 2010, donors reportedly provided \$301 million, of which only \$36 million was intended for infrastructure development. For the same period, out of \$113 million domestically financed capital expenditures, the Government spent \$68 million on infrastructure. For the period 2011 to 2013, the Government estimated it would require \$1.4 billion for infrastructure projects alone; according to the IMF, donors were projected to finance about \$176 million and the Government \$161 million, creating a financial gap of about \$1.1 billion (International Monetary Fund, 2010, p. 8).

Government Policies and Programs

In November, Sierra Leone adopted a new Mines and Minerals Act. The Government was also in the process of reviewing its petroleum policy and legislation in readiness for the emerging development of the oil and gas sectors. Under the new law, all rights of ownership in and control of minerals in Sierra Leone are vested in the state. The Ministry of Mineral Resources and Political Affairs, through the Minister of Mines and the Director of Mines, is the Government agency responsible for the general administration and implementation of the law. The Sierra Leone Geological Survey is responsible for undertaking the geologic mapping of Sierra Leone in addition to reconnaissance and exploration operations, and the compilation, publication, and dissemination of data and information concerning the geology and mineral resources of the country (Ministry of Mineral Resources and Political Affairs, 2009, p. 12-14; Revenue Watch Institute, undated).

The new law also created the Minerals Advisory Board, which is responsible for advising and making recommendations to the Minister of Mines on matters relating to minerals, including reconnaissance, exploration, mining, processing, import and export, and the marketing of minerals; monitoring the implementation of every Government policy relating to minerals; granting applications for mining licenses, and renewing, suspending, transferring, and canceling licenses, among other tasks. The Advisory Board is made up of a Chairman; the Director of Mines; the Director of the Geological Survey; the Commissioner-General of the National Revenue Authority; a representative of the Attorney-General and Minister of Justice Office; a representative of the Ministry of Mines responsible for local government; a representative of the Ministry of Mines responsible for the environment; the Permanent Secretary of the Ministry of Mines responsible for mineral resources; two persons with considerable qualifications and experience in the mining industry; a representative from civil society appointed by the coalition of civil society in Sierra Leone; the chief of the Defense Staff; the Inspector General of Police; a representative of Paramount chiefs, nominated by the council of Paramount chiefs; and a representative from the Sierra Leone Youth Council (Ministry of Mineral Resources and Political Affairs, 2009, p. 15-17).

The right to explore for, to mine, and to market minerals is to be acquired and held under and in accordance with mineral rights granted under the new mining legislation. Applications for mineral rights are to be submitted to the Mining Cadastre Office and were to be accompanied by a nonrefundable application fee. The types of licenses to be granted include a reconnaissance license, an exploration license, an artisanal mining license, a small-scale mining license, and a large-scale mining license. The maximum area to be granted to the holder of a reconnaissance license is not to exceed 10,000 square kilometers (km²) and is valid for a period not to exceed 1 year. Reconnaissance licenses can be renewed for a period not to exceed 1 year with no option for a further renewal. An exploration license area is not to exceed 250 km² and is valid for an initial period not to exceed 4 years. The holder of an exploration license may apply to the Mining Cadastre Office for a first renewal of the license but the renewal may not be for more than 125 km² of the original exploration license area. Exceptions concerning the area limit for a renewal may be granted if data gathered during the initial exploration phase strongly indicate the presence of widespread mineralization (Ministry of Mineral Resources and Political Affairs, 2009, p. 12, 21-31, 38-57).

Artisanal mining licenses may be granted to any citizen of Sierra Leone, to a cooperative society registered in Sierra Leone and comprising citizens of Sierra Leone exclusively, to a joint venture or partnership registered in Sierra Leone comprising citizens of Sierra Leone exclusively, or to a corporation that has been incorporated or registered in Sierra Leone with 100% of its shares held by citizens of Sierra Leone. No artisanal mining license is to be granted to an applicant in an area that has been designated for small-scale mining operations. An artisanal mining license is to be accompanied by a certified copy of the agreement between the applicant and the Chiefdom Mining Allocation Committee or the rightful occupiers or owners of the land over which the artisanal mining license is granted. The area covered under the license is not to exceed one-half hectare and the license, which is valid for a period of 1 year, may be renewed for up to three additional periods not to exceed 1 year at a time (Ministry of Mineral Resources and Political Affairs, 2009, p. 57-58).

Small-scale mining licenses may be granted to any company incorporated or registered in Sierra Leone if at least 25% of the shares of the company are held by citizens of Sierra Leone, or a cooperative society registered in Sierra Leone of which a minimum of 25% of its members are citizens of Sierra Leone. A small-scale mining license area is not to be less than 1 hectare and not more than 100 hectares, is to be valid for a period not to exceed 3 years, and may be renewed for further periods not to exceed 3 years at a time (Ministry of Mineral Resources and Political Affairs, 2009, p. 63-70).

The period for which a large-scale mining license is granted is to be stated in the license and is not to exceed 25 years or the estimated life of the ore body proposed to be mined, whichever is shorter. The holder of a large-scale mining license may apply to the Ministry of Mines for subsequent renewals of the license at any time, and a renewal may be for all or part of the large-scale mining license area, but renewal applications must be submitted not later than 1 year before the expiration of the license. The renewal is not to exceed 15 years for each renewal sought (Ministry of Mineral Resources and Political Affairs, 2009, p. 71-78).

Under the new mining law, a 15% royalty is to be paid to the Government for special stones, which are defined as those precious stones whose market value is above \$500,000; a 6.5% royalty for precious stones; a 5% royalty for precious metals whose market value is below \$500,000; and a 3% royalty for all other minerals (Ministry of Mineral Resources and Political Affairs, 2009, p. 102).

Production

Output levels for most mineral commodities decreased during the year with the exception of diamond, which showed an increase of 8%. Bauxite production decreased by 20.7% to 757,000 metric tons (t) from 954,000 t in 2008; cement production decreased by 7% to 236,240 t; gold production decreased by 17.8% to 157 kilograms (kg); ilmenite production decreased by 13.5%; and rutile production decreased by 19.1% to 63,864 t.

Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

Mineral Trade

Based on statistics reported by the Kimberley Process Certification Scheme, a total of 401,393 carats of diamond worth \$78.8 million was exported during the year. In terms of volume, this indicated an increase of 8.1% compared with 2008; however, the value of these exports decreased by 20.2%. Exports of bauxite by volume, as reported by the Bank of Sierra Leone, decreased by 16.6% to 680,220 t from 815,370 t in 2008; ilmenite exports decreased by 54.9% to 10,230 t from 22,660 t; and rutile exports decreased by 16.6% to 66,670 t from 69,160 t; the corresponding value of these exports also decreased by 33.4% to \$18.7 million, 64.3% to \$920,000, and 2% to \$35.9 million, respectively. Gold exports decreased slightly by 5.1% to 166 kg from 175 kg in 2008. Gold export revenues increased by 15.5% to \$4.76 million from \$4.12 million reported during the previous year (Bank of Sierra Leone, 2010, p. 32; Kimberley Process Rough Diamond Statistics, 2010).

Commodity Review

Metals

Bauxite and Alumina.—Netherlands-based Vimetco N.V. operated the country's only bauxite mine. Operations at the mine were suspended in May as a result of the renegotiation of the mining contract with PW Mining International Ltd. (PWM) of Ireland. PWM was the company subcontracted by the former owner of the mine, Titanium Resources Group Ltd. The mine resumed operations on October 12, and annual production was shipped to Vimetco's aluminum smelter in Romania (Vimetco N.V., 2010, p. 6, 13-16).

Gold.-London-based Cluff Gold plc completed a 7,000-meter (m) core-drilling program for its 100%-owned Baomahun gold project. An updated resource estimate for Baomahun reported measured and indicated mineral resources to be 12 million metric tons (Mt) at an average grade of 2.9 grams per metric ton (g/t) gold and inferred mineral resources to be 9.2 Mt at an average grade of 3.2 g/t gold. The majority of work for the preliminary assessment of Baomahun was reportedly completed during the year. Preliminary results from the study foresee the processing of more than 12 Mt of ore sourced from both open pit and underground mining operations at a 92% metallurgical recovery rate and the operation was expected to be sustainable for 8 to 10 years. The company planned to complete an updated resource model for Baomahun prior to the finalization of the preliminary assessment, which would include the results of the ongoing drilling program. International consulting firm SRK Consulting was finalizing detailed mine schedules. Work on a final feasibility study was ongoing, with additional environmental and social studies planned to start in 2010 (Cluff Gold plc, 2010, p. 14-15).

On March 12, Axmin Inc. announced the results of a preliminary economic assessment for its Komahun gold project, which is located within the Nimini Hill concession in east-central Sierra Leone. The assessment indicated that Komahun had the potential to be developed as an underground gold mine, with target production levels of about 1,600 kilograms per year (kg/yr) (reported as 50,000 troy ounces per year) and an estimated mine life of 6 years. Axmin announced that it would make a decision to go forward with the development of Komahun based on its ability to raise capital for the project or source funds in the near future (Axmin Inc., 2010, p. 5).

Iron Ore.—In February, SRK Consulting completed a preliminary mineral resource estimate that totaled 4.7 billion metric tons (Gt) of indicated and inferred resources at an average grade of 29.9% iron for the Numbara and the Simbili deposits. The deposits were part of Bermuda-based African Minerals Ltd.'s (AML) 100%-owned Tonkolili project. The results of SRK's preliminary resource estimate, which were based on 60,056 m of diamond drilling, were further updated in May to 5.1 Gt at an average grade of 30% iron after the company conducted an additional 9,996 m of diamond drilling. The Tonkolili project is located in the Sula Mountains Greenstone Belt about 190 kilometers (km) from Tagrin Point. Also in May, the Government granted AML a lease to manage the refurbishing of the Pepel Port and the Pepel-Marampa railway system to enable the shipping of ore from the Tonkolili project. In October, WorleyParsons Europe Ltd. began the first phase of a definitive feasibility study and engineering design program for Tonkolili. The first phase was completed in mid-December (African Minerals Ltd., 2010a, p. 12-19).

An outstanding dispute between AML and London Mining plc (LMP) concerning the boundaries that separated each company's respective exploration and mining licenses for the Marampa iron ore concession was settled in 2009. The dispute came about when LMP allegedly trespassed into the area licensed to AML to remove iron ore tailings for its own operation, claiming that it had a valid 25-year mining license for the old Marampa mine area. LMP sought an injunction from the Government to keep African Minerals out of the Marampa concession area and, in turn, AML announced in September 2008 that it would sue LMP. The settlement granted the rehabilitation of the defunct Marampa Mine to LMP. The Marampa Mine had been operated by the Development Corporation of Sierra Leone (DELCO) between 1933 and 1975. During that period of time, the mine reportedly produced about 60 Mt of iron ore. LMP began the first phase of the project, which would involve the construction of a 1.5-million-metric-ton-per-year (Mt/yr) tailings operation at Marampa, as well as the construction of a haul road (AllAfrica Global Media, 2009, Tex Report, The, 2009; African Minerals Ltd., 2010b; London Mining plc, 2010, p. 14).

In November 2009, AML divested its 100% interest in Marampa Iron Ore Ltd. to Cape Lambert Resources Ltd. of Australia in exchange for a 19.9% interest in Cape Lambert's issued share capital. AML reportedly sold its share in Marampa in order to focus on the development of the 5.1-Gt Tonkolili project. The Marampa project is located 150 km northeast of Freetown. Cape Lambert planned to conduct a comprehensive work program for the property, including determining the viability of establishing a tailings retreatment operation, defining the resource potential of the hard rock extensions to the old DELCO mine, and defining the resource potential of regional prospects for mining. Air core drilling of the tailings began in late March 2009 (African Minerals Ltd., 2010a, p. 22; 2010b).

Titanium and Zirconium.—The Sierra Rutile Mine produced 15,161 t of ilmenite and 63,864 t of rutile during the year, which was a decrease of 13.5% and 19.1%, respectively, compared with production in 2008. The decrease in production was in part owing to the buildup of slimes in the Lanti South pond where Dredge I was mining, which resulted in the mechanical breakdown of pumps and consequently a reduction in recovery rates. The company purchased a new dredge during the year at a cost of \$1.1 million and planned to increase rutile production by 30,000 metric tons per year (t/yr) in 2010. The Sierra Rutile Mine is located in southwestern Sierra Leone near the Imperri Hills, about 30 km from the Atlantic Ocean and 135 km from the capital city of Freetown (Titanium Resources Group Ltd., 2010, p. 6).

Industrial Minerals

Diamond.—Sierra Leone's diamond production is mainly from alluvial mining, the majority of which came from the Bo, the Kenema, and the Kono districts along the drainages of the Bafi, the Mano, the Moa, the Sewa, and the Woyie Rivers. Although diamond exports by volume increased during the year, the value of Sierra Leone's diamonds, in terms of dollars per carat, decreased by 26.3% to \$196 per carat from \$266 per carat in 2008. The decrease in the price of diamond was reportedly driving artisanal miners to shift to gold mining and subsistence farming. The United Nations Office for the Coordination of Humanitarian Affairs reported in early March that, in some areas, about 70% of an artisanal miner's profits went to a financier and the rest went to the license holder and that the miner received only a bowl of rice and sauce for the work in the event that no diamonds are found. If a discovery was made, the miner would be paid at the end of the season; in many cases, it took months before a discovery was made. Koidu Holdings S.A. was the leading mining company operating in the Kono district. The company reportedly decreased its number of employees to 60 from 600 in May 2008, which is a decrease of 90%. The reason for the scale-back was reportedly the result of the Government's review of mining contracts and the plummeting of the price of diamond as a result of the 2008-09 global financial crisis (Integrated Regional Information Networks, 2009; Woollcombe, 2009; Kimberley Process Rough Diamond Statistics, 2010).

Mexivada Mining Corp. of Canada through its subsidiary Mexivada Gold and Diamond Mining Company (SL) Ltd. announced on February 17 that it had begun mining diamond from its concession area in the Kono district. The company mined diamond from alluvial diamondiferous gravels and dump piles from a previous artisanal operation (Mexivada Mining Corp., 2009).

Target Resources plc of the United Kingdom suspended its diamond exploration activities in the Kono district in March reportedly owing to its inability to operate profitably. The company had announced in January that yields from its concession area were lower than expected and that, owing to the drop in the market price of diamond, the company was unable to cover its overhead expenses (Target Resources plc, 2009; 2010, p. 1).

Mineral Fuels

Petroleum.—Sierra Leone did not produce or refine petroleum and was dependent upon imports for its petroleum requirements; however, on September 16, Houston-based Anadarko Petroleum Corp. announced a deepwater discovery at its Venus B-1 exploration well within offshore exploration Block SL 6/07. The well, which was drilled to a total depth of approximately 5,639 m (reported as 18,500 feet) in about 1,798 m (reported as 5,900 feet) of water, reportedly encountered more than 14 m (reported as 45 net feet) of hydrocarbon pay. The company reported that the discovery confirmed the existence of an active petroleum system in the basin, which enhanced the prospectivity of its acreage in West Africa. Anadarko was in the process of evaluating the initial results from the well and planned to conduct additional drilling in the area. Anadarko (40%) operated the Venus B-1 well in joint venture with Woodside Petroleum Ltd. (25%), Repsol YPF, S.A. (25%), and Tullow Oil plc (10%) (Anadarko Petroleum Corp., 2009; 2010, p. 7; Oil & Gas Financial Journal, 2009).

Outlook

Growth in real gross domestic product is expected to recover to 4.5% in 2010 and to increase gradually to 6% by 2012 as a result of, among other things, the completion of several infrastructure projects and the recovery of the global economy, which is likely to increase the demand for mineral exports. The IMF estimated that mineral exports could generate between \$370 million and \$3.3 billion per year in the next decade and that revenue from royalties alone could range from \$16 million to \$114 million per year based on the new royalty rates established by the new mining law. Revenues from iron ore mining were estimated to possibly reach between 10% and 12% of the GDP by 2014 or 2015 if planned iron ore projects come online as expected (International Monetary Fund, 2010, p. 10-11).

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TABLE 1 SIERRA LEONE: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity		2006	2007	2008	2009
thousand metric tons		1,072	1,169	954	757
	172,120	234,440	235,830	254,160	236,240
carats	668,710	603,566	603,623	371,261	400,843
kilograms	53	71	212	191 ^r	157
		13,819	15,750	17,528	15,161
		73,802	82,527	78,908	63,864
	carats	172,120 carats 668,710 kilograms 53	thousand metric tons 1,072 172,120 234,440 carats 668,710 603,566 kilograms 53 71 13,819	thousand metric tons 1,072 1,169 172,120 234,440 235,830 carats 668,710 603,566 603,623 kilograms 53 71 212 13,819 15,750	thousand metric tons 1,072 1,169 954 172,120 234,440 235,830 254,160 carats 668,710 603,566 603,623 371,261 kilograms 53 71 212 191 r 13,819 15,750 17,528

^rRevised. -- Zero.

¹Table includes data available through September 16, 2010.

²Source: Kimberley Process Certification Scheme.

³About 60% gem quality and 40% industrial quality.

⁴In addition to ilmenite and rutile, the country produced small amounts of zircon.

TABLE 2

SIERRA LEONE: STRUCTURE OF THE MINERAL INDUSTRY IN 2009

(Thousand metric tons unless otherwise specified)

				Annual
Commodity		Major operating companies and major equity owners	Location of main facilities	capacity
Bauxite		Sierra Mineral Holdings I Ltd. (Vimetco N.V., 100%)	Sierra Minerals Mine, 150 kilometers	1,200
			southeast of Freetown	
Cement		Sierra Leone Cement Corp. Ltd.	Freetown plant	NA
Diamond	thousand carats	Koidu Holdings S.A. (KHSA) (BSG Resources Ltd.,	Two kimberlite pipes, 2 kilometers from	120
		65%, and Magma Diamond Resources Ltd., 35%)	the district capital of Koidu	
Titanium, ilmenite		Sierra Rutile Ltd. (Titanium Resources Group Ltd.)	Sierra Rutile Mine, 130 kilometers southeast	15
			of Freetown	
Titanium, rutile concentrate		do.	do.	100
Titanium, rutile concentrate		do.	1	

do. Ditto. NA Not available.