



# 2006 Minerals Yearbook

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## LIBERIA AND SIERRA LEONE

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# THE MINERAL INDUSTRIES OF LIBERIA AND SIERRA LEONE

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## LIBERIA

The Republic of Liberia continued to recover from a 14-year-long civil war, which began in 1989 and brought the country's political system and economic sector to a standstill. Prior to the civil war, the Liberian economy had relied heavily on exports of iron ore, which ranged between 12 million metric tons per year (Mt/yr) and 24 Mt/yr during the period from 1964 to 1989. In 2006, the only mineral commodities being produced in the country were cement, crushed stone, diamond, gold, and sand. Diamond exports, however, continued to be under United Nations sanctions. In December 2006, the United Nations Security Council announced that Liberia had made insufficient progress to end the sanctions against it and therefore renewed the ban on diamond exports for an additional 6 months. The Security Council was to review the measure after 4 months to allow the Government time to establish an effective certificate of origin regime for the trade in rough diamond that would be transparent and internationally verifiable, with a view to joining the Kimberley Process Certification Scheme (United Nations Security Council, 2006).

### Minerals in National Economy

A new Government was elected in Liberia at the end of 2005 and the new administration was ratified in January 2006. One of the first tasks undertaken by the new Administration to revamp the mining industry was the reviewing of all mining contracts in the country in an effort to comply with extractive industry international standards. The Government's plan was to revise all mining contracts signed by the National Transitional Government of Liberia (NTGL). The NTGL was Liberia's legislative body during the country's transition from civil war to democratic rule and its primary responsibility at the end of the war was, among other things, to implement the peace treaty and to prepare the country for national elections (Mining Journal, 2006b). According to a report by the Congressional Research Service, although the NTGL carried out most of its basic functions, the restoration of state authority and the rehabilitation of state institutions under its authority were hampered by central Government ministry inefficiencies, resource constraints, lack of institutional and financial system capacities, and lack of trained manpower. National budget and fiscal obligation mechanisms and voucher record-keeping systems under the NTGL were reportedly, in some instances, inefficient and subject to manipulation by key officials. One of the main issues that drew attention to the NTGL administration was natural resource and land-concession contract deals signed during its tenure. Among these contested contracts was the one signed with Mittal Steel Company N.V., which provided for the mining of iron ore in the northern part of the country and the rehabilitation

of mining-related and transport infrastructure. The contract signed under the NTGL administration was to give Mittal a variety of rights, including surface rental, mining license, and transport infrastructure construction. These rights were granted in exchange for an investment of \$900 million, in addition to royalties, taxes, and other payments to the Government. The contract drew criticism from civil society groups that believed the award of such a long-term contract should be carried out only by a duly elected Government. The renegotiated Mittal contract was under review by the Government in 2006. The terms of the new contract included provisions requiring iron ore prices to be set by the market and not by Mittal; a limited 5-year tax holiday instead of an indefinitely extendable one; Government control over the Port of Buchanan and the railway to Yekepa; recognition of Mittal's responsibility for liabilities faced by its operating affiliate in Liberia; and increased balance between the rights of existing property holders and the company regarding Mittal's right to expropriate new concession land (Cook, 2007, p. 22-27).

In 2006, Liberia became a candidate country to join the Extractive Industries Transparency Initiative (EITI), which is a voluntary global compact for improving transparency in countries that are dependent on extractive industries (Extractive Industries Transparency Initiative, 2006).

### Production

According to the Central Bank of Liberia, the mining sector recorded no growth during 2006 compared with a decline of 14.9% in 2005. The low level of performance of the mining sector was attributed to unrecorded cross-border trade and to the diamond sanctions imposed by the United Nations (Central Bank of Sierra Leone, 2007, p. 35). The Ministry of Lands, Mines, and Energy was the Government agency responsible for the administration of the mining sector, which was regulated by the New Minerals and Mining Law of 2000. Data on mineral production are provided in table 1.

### Structure of the Mineral Industry

Table 2 is a list of major mineral industry facilities.

### Commodity Review

#### Metals

**Gold.**—Canada-based Mano River Resources Inc. (MRR), through its wholly-owned subsidiary Bea Mountain Mining Corp., signed a \$700,000 contract with MODEM Engineering (MODEM) of Johannesburg for the preparation of a bankable feasibility study for the New Liberty Gold Mine (NLG) deposit

(formerly King George Larjor deposit; name changed in 2006) and for the Weaju gold deposit in western Liberia, each of which were to be developed initially as open pit operations. The New Liberty Gold Mine deposit is an Archaean shear zone deposit, which is located about 90 kilometers (km) from Monrovia. Total measured and indicated mineral resources at NLG were estimated to be about 13.5 million metric tons (Mt) of ore at a grade of 3.18 grams per ton (g/t) gold. The mineral resource estimate was completed by Lower Quartile Solutions of South Africa (Mano River Resources Inc. 2006a, d).

**Iron Ore.**—The renegotiated Mining Development Agreement between Mittal Steel Company N.V. and the Government to mine the western iron ore deposits in Nimba County was signed and approved by the new Administration in December 2006 and was awaiting ratification by the National Legislature (Ministry of Lands, Mines, and Energy, 2007, p. 6-9). In 2005, Mittal Steel had entered into a Mining Development Agreement with the Government for the mining of about 1 billion metric tons of iron ore reserves in Nimba County. The contract, which was for 25 years, included the rehabilitation of the Buchanan Port and of the 267-km rail line to the old Yekepa Mine, which was closed during the 1990s owing to the civil war. Mittal did not plan to resume mining at Yekepa, although it did plan to reuse some of the remaining infrastructure at the mine. The first mining activities will take place instead at an abandoned mine in Tokadeh. The ore of the Tokadeh deposit was reportedly hematite ore with 45% to 55% iron content. The ore was to be processed as sinter feed instead of as lump or pellet. Mittal had an office in Monrovia with about 50 to 60 people and another in the Port of Buchanan with another 20 to 30 people. About 20,000 to 25,000 metric tons (t) of iron ore, which was owned by the Government, remained at the Port of Buchanan. The Government had put the ore up for tender and Mittal was awaiting its removal to begin the rehabilitation of the port. The rail line to Yekepa would be a single track operation with a capacity of 15 Mt/yr. Mittal's investment in the project will be about \$1 billion (Mittal Steel Company N.V., 2005; Metal Bulletin, 2006; Mining Journal, 2006a).

The Government planned to put up for tender the Western Iron Ore Cluster, which consisted of the remaining iron ore reserves at Kongo, the Western Bomi Hills, and the Bea Mountains, and it planned to rehabilitate the remaining iron ore reserves at the Bong Mines (Ministry of Lands, Mines, and Energy, 2007, p. 6-9). In December 2006, Cotton & Western Mining Inc. issued a letter of acceptance as the technical managing partner to Kkaf Nigeria Ltd. (KNL) for the redevelopment of the Bong Mine. KNL was granted a 25-year mining license to rebuild and reopen the mine, which was abandoned in 1990. The cost of the project was estimated to be about \$800 million. The overall responsibilities and share of the project had not been finalized at yearend but the first order of business was to arrange the sale and export of 300,000 t of direct-reduced iron (DRI) pellets that had been stockpiled at the mine since its closure (BNet.com, 2006).

MRR held a 3-year exploration license for an area of 425 square kilometers (km<sup>2</sup>) centered on the Putu iron ore prospect in Grand Gedeh County, eastern Liberia. In the 1950s and 1960s, Liberian-American-Swedish Mining Company and

Bong Mining Company had reviewed the Putu prospect and concluded that the prospect might potentially contain 500 Mt of iron ore with a 60% iron content. MRR planned to continue with its exploration program for Putu, which included in its first phase further geologic mapping and surface data collection and sampling and in its second phase, diamond drilling of mineralized zones (Mano River Resources Inc., 2006c).

### *Industrial Minerals*

**Diamond.**—According to the Ministry of Lands, Mines, and Energy, exploration for kimberlites has been ongoing in Liberia since 1999, although, intermittently, owing to the civil war. Exploration activities have concentrated in the western side of the country and in the Nimba County. The Government expected to make more acreages available for mineral exploration as companies relinquish portions of their concessions in line with the terms of their exploration agreements (Ministry of Lands, Mines, and Energy, 2007, p. 14-15).

MRR was among the companies exploring for diamond in western Liberia in joint venture with Trans Hex Group Limited (Trans Hex) of South Africa. In January, the MRR announced that kimberlite pipe K007 had proven to be diamondiferous. The company based its conclusion on the discovery of a single 0.4-carat diamond, which was obtained after processing a 600-kilogram (kg) sample of decomposed kimberlite. Following this discovery, the company began a drilling campaign to delineate pipes K001, K002, K003, and K007 at depth and to collect and process about 3 to 5 t of kimberlite. In May, MMR reported the discovery of six kimberlite pipes, five of which were reportedly diamondiferous. By July, the company had drilled pipes K001 and K003 and planned to drill pipe K002. The company announced the results of independent test work on a 74.82-kg sample collected from pipe K004, which yielded 57 diamonds weighing in total 0.035 carats. Based on these results, the company planned to conduct a drilling and surface bulk-sampling program to establish the macro-diamond grade and value of the pipes. Trans Hex was to ship a 5-metric-ton-per-hour dense media separation plant to Liberia to process bulk samples (Mano River Resource Inc., 2006b, e, f).

MMR in joint venture with African Aura Resources Limited (AAR) continued to explore for diamond throughout the year. A total of 80 stream samples were collected and processed in an area covering 400 km in western Liberia. MRR announced that many of the samples yielded abundant kimberlitic ilmenite with supporting garnet and chromite in at least five discrete areas within their exploration property. Followup work was to continue at one high-priority target area, which attracted 25,000 artisanal miners during the 1970s (Mano River Resources, 2006g).

### **Outlook**

The country's lack of sufficient progress in its attempt to have the ban on diamond exports imposed by United Nations sanctions lifted continues to hinder Liberia's mining activities. The Government's plan to revise all mining contracts in the country in order to comply with extractive industry international

standards and the fact that Liberia was being considered as a candidate country to join the EITI, however, suggest that the country is on its way to reestablishing self-governance and a transparent investment climate, which is likely to attract foreign direct investment in the mineral sector. If plans to redevelop the country's iron ore resources and to develop its diamond and gold resources come to fruition, the mineral sector is likely to become one of the main sources of foreign exchange and of employment in Liberia in the near future.

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## SIERRA LEONE

Diamond was the most significant mineral commodity to the Republic of Sierra Leone. In the past, the mineral industry had generated from 15% to 18% of the country's gross domestic

product (GDP), 90% of export earnings, and employed about 250,000 people before the forces of the Revolutionary United Front disrupted diamond mining operations in 1992. Other mineral commodities produced in the country included bauxite, cement, gold, gypsum, ilmenite, and rutile. Before the start of the civil war, the Sierra Rutile Mine was one of the world's leading producers of ilmenite and rutile; bauxite and rutile operations, however, also closed in late 1994 and early 1995, respectively, as a consequence of the war.

In 2006, the country continued to recover from years of civil unrest. Real GDP growth was estimated to be 7.8% compared with 7.3% in 2005. Exports earnings in 2006 increased by about 39% reaching nearly \$221 million from about \$159 million in 2005, mostly owing to the resumption of bauxite and rutile mining (Bank of Sierra Leone, 2007, p. 1-3, 8-10, 2-26). The mining sector is regulated by the Mines and Minerals Act of 1996. The Law Reform Commission was in the process of revising the Act and expected to complete the work by the end of 2007 (Mining Journal, 2006, p. 8).

The Government and the African Development Bank, in conjunction with the United Kingdom Department for International Development, the European Union, and the World Bank, signed the Improved Governance and Accountability Pact, which was aimed at streamlining the conditions under which the country was to receive direct budgetary support. Disbursements for budgetary support, mainly from these institutions, totaled \$61.52 million in 2006; an additional \$13.61 million was disbursed by the International Monetary Fund in support of the Government's 2006-2008 Economic Recovery Program. The African Development Bank also approved a \$4.3 million grant to strengthen the public financial management and energy sectors. An amendment to the National Power Authority Act removed the National Power Authority monopoly and allowed for the participation of the private sector in the provision of electricity (Bank of Sierra Leone, 2007, p. 1-3).

## Minerals in the National Economy

The country's total value of exports in 2006 was \$231 million, a 45% increase from that of 2005. Export earnings from the mineral subsector, which comprised bauxite, diamond, gold, ilmenite, and rutile, amounted to \$179 million. Diamond accounted for about 70% of mineral exports and for about 54% of the country's total export earnings. A total of 582,300 carats was exported, of which 374,000 carats, or 64%, was gem quality and 208,300 carats, or 36%, was industrial quality (Bank of Sierra Leone, 2007, p. 25). Bauxite and rutile together accounted for about 29% of mineral export earnings and 22.5% of total export earnings. A total of 970,650 t of bauxite, 70,360 t of rutile, and 8,560 t of ilmenite worth \$23.57 million, \$28.5 million, and \$1.06 million, respectively, was exported during the year (Bank of Sierra Leone, 2007, p. 25-27).

## Production

Production of bauxite, ilmenite, and rutile was resumed in 2006. Bauxite output was 1.072 Mt, a 46% increase from the level of production in 1994. The Bank of Sierra Leone

(2007, p. 9) reported that there were indications of a decline in alluvial diamond deposits, which led to a drop in artisanal mining in 2006. Production of cement increased by about 36% to 234,440 t from 172,120 t produced in 2005, mostly owing to an increase in construction and rehabilitation activities, and to the installation of a new production plant in 2005. Diamond production decreased by about 9.7% to 603,566 carats from the 668,710 carats produced in 2005. A total of 582,330 carats with a value of \$125 million was exported in 2006; of this amount, 16,820 carats was reportedly from kimberlite mining. Gold output increased by about 34% to 71 kg from 53 kg produced in 2005. The increase in gold output was attributed to an increase in gold mining activities related to favorable world market prices.

### Structure of the Mineral Industry

The mining sector in Sierra Leone is regulated by the Mines and Minerals Amendment Act of 1994 and by the Mines and Minerals Amendment Act of 2003. The Petroleum Act of 2001 regulates petroleum activities. In 2003, a new “Core Mineral Policy” that was designed to revive the mining sector was established by the Ministry of Mineral Resources (MMR). The MMR is responsible for the administration of the mineral industry, the issuance of mining licenses, field monitoring, enforcement, and the maintenance of mining records. The Gold and Diamond Department (GDD) of the National Revenue Authority is responsible for implementing Sierra Leone’s participation in and compliance with the international diamond trade control requirements of the Kimberley Process Certification Scheme. The GDD values and levies export taxes on all diamond that is exported through official channels from Sierra Leone. The GDD had a staff of eleven, all of whom were Sierra Leone nationals, and earns 0.75% of the 3% export tax on diamond; an independent diamond valuation firm earns 0.4%. The Mines Department monitors and regulates the mining and marketing of precious minerals and the Geological Survey Division issues prospecting licenses and monitors the activities of exploration companies across the country. Both of these departments are under the Ministry of Mineral Resources (Mining Journal, 2006, p. 5 6).

The diamond sector is dominated by two foreign companies—Koidu Holdings Ltd. of South Africa and the Bermuda-based Sierra Leone Diamond Company, which had several subsidiaries in the country, including Fatkad Mining Company Limited, Kangaroo Mining Company Limited, and Molans Mining Company Limited (Mining Journal, 2006, p. 10-11). According to Partnership Africa Canada, a nongovernmental organization, there were nine major exporters of diamond from Sierra Leone and about 80 people or companies that served as agents for these exporters. The cost of an exporting license was \$40,000 per year and that of the agent was \$25,000 per year (Mining Journal, 2006, p. 9).

The number of mining licenses in the country increased to about 2,400 in 2006 from less than 100 licenses granted in 2002. About 70% of these licenses were for the Kono District and the Tongo diamond fields (Diamonds and Human Security Project, The, 2006, p. 1, 5). Among the companies exploring for

minerals in the country were African Diamond plc of Ireland; Cluff Gold Mining plc, through Cluff Gold UK Ltd. and Cluff Gold (SL) Ltd.; London-based Target Resources plc, through its subsidiary Milestone Trading Ltd.; Sierra Leone-based Sierra Leone Diamond Co. Exploration Ltd., which explored for primary diamond resources; African Diamonds plc, which held one exploration diamond license and two exclusive diamond prospecting licenses; and London-based Koidu Holdings Ltd., which was a joint venture between Energem Resources Inc. of Canada (40%), Switzerland-based Magma Diamond Resources Ltd. (35%), and Guernsey-based BSG Resources Ltd. (25%).

### Commodity Review

#### Metals

**Bauxite and Alumina.**—Production at the SML bauxite mine was resumed in January 2006 after 10 years of being idle. Titanium Resources Group Ltd. (TRG), through Sierra Mineral Holdings Ltd. (SMHL), is the company that took over the production of bauxite in the country. The mine had closed in 1995 when members of the Revolutionary United Front vandalized the plants and equipment of the Sierra Rutile Limited and Sierra Leone Ore and Metal companies. Production of bauxite reached 1.07 Mt during the year. Bauxite reserves were estimated to be 12.4 Mt; the mine’s nameplate capacity was 1.2 Mt/yr of bauxite. First bauxite production was shipped from the Nitti Port in February 2006. Full production was to be sold to Alcoa World Alumina LLC of the United States and Glencore AG (a subsidiary of Glencore International AG) of Switzerland under long-term sales contracts signed in 2005. The SML Mine is located in southwestern Sierra Leone about 150 km southeast of Freetown. SMHL’s mining license was for a period of 10 years (Titanium Resources Group Ltd., 2006a, b; 2007, p. 6, 8-10).

Moydow Mines International Inc. of Canada and Luxembourg-based Gondwana Investments S.A. each held a 50% interest in the Porto Loko bauxite exploration project. In December 2006, the companies announced that they had agreed to grant TRG the right to acquire a one-third interest in the project by submitting a bankable feasibility study by December 31, 2007, and investing \$2.5 million. The joint venture, however, was in the process of renewing its exploration license for Porto Loko, which expired at the end of 2006, and was pending Government approval to continue with exploration activities. Previous exploration on the property had reportedly outlined a resource of about 100 Mt of bauxite at an average grade of 47% Al<sub>2</sub>O<sub>3</sub> (Moydow Mines International Inc., 2007, p. 4, 8).

**Gold.**—Gold in Sierra Leone is associated with greenstone belts and occurs in the Kangari Hills, the Sula Mountains, and in the Bo, Koinadougou, and Tonkolili Districts. Cluff Gold plc in joint venture with Winston Mines Limited completed 13,600 meters (m) of core drilling on three zones within the southern sector of the Baomahun gold prospect. The completion of the core drilling enabled SRK Consulting to complete an updated resource estimate for the Baomahun prospect. SRK’s updated mineral resource estimate for Baomahun was 8.65 Mt at an

average grade of 3.16 g/t gold. The joint venture planned to further conduct a 30,000-m drilling program during 2007. The Baomahun gold prospect is located in Sierra Leone's Southern Province about 180 km east of Freetown (Cluff Gold plc, 2007, p. 6).

Axmin Inc. held exploration permits for the Nimini Hills, the Gori Hills, the Makong, the Matotaka, and the Sokoya properties. In 2006, the company reported a resource estimate for the Komahun gold prospect located within the Nimini Hill property. The resource estimate, which was prepared by SRK, yielded an inferred mineral resource of 4.87 Mt at a grade of 2.5 g/t gold. The company planned to continue with its exploration program for all its properties in Sierra Leone through 2007 (Axmin Inc., 2007, p. 3).

Other companies exploring for gold in the country included London-based Target Resources plc, through its subsidiary Milestone Trading Ltd.; Vancouver-based Mano River Resources Inc. (MRR) in joint venture with Golden Star Resources Ltd. (GSR) of the United States, which explored for gold at the Nimini, the Pampana, and the Sonfon properties; and African Diamond plc of the United Kingdom, which held a mining license for the reworking of tailings from an old alluvial mining operation for which initial sampling had shown the presence of both gold and platinum-group metals (PGM) reportedly containing 0.24 to 0.57 g/t gold and 0.01 g/t PGMs (Mining Journal, 2006, p. 4, 8).

**Platinum-Group Metals.**—Ambrian Capital plc of the United Kingdom through its wholly owned subsidiary Golden Prospect Mining Company Limited (Bermuda) explored for PGM at the York platinum deposit in joint venture with Jubilee Platinum plc of the United Kingdom. The York deposit is located in the village of York about 37 km south of Freetown. A geologic reconnaissance program for the property had been completed as of November 2006 (Ambrian Capital plc, 2006).

**Titanium and Zirconium.**—The Sierra Rutile Mine was reopened during the first quarter of 2006 by TRG. The company commissioned its first dredge in January and in May announced that it had made its first shipment of 7,000 t of rutile. TRG planned to commission a second dredge during the third quarter of 2007, which would produce an additional 100,000 t/yr, and a third dredge in 2008, which would add another 40,000 t/yr of rutile. Dredge D1 had a production capacity of 100,000 t/yr (Titanium Resources Group Ltd., 2006b, d; 2007, p. 4, 8-9). Offtake agreements were signed for about 80% of annual rutile production; ilmenite was produced as a byproduct (Industrial Minerals, 2006b). Ilmenite and rutile output did not reach 1994 production levels, yielding 13,819 t and 73,802 t, respectively, in 2006 compared with 47,000 t and 137,000 t, respectively, in 1994.

TRG also signed an agreement with Gondwana (Investments) S.A. to acquire the rights to the Rotifunk mineral sands deposit at a cost of \$120,000 subject to due diligence. The Rotifunk prospect is reportedly the second ranked mineral sands deposit known in Sierra Leone and is located 45 km northwest of the Sierra Rutile Mine and 65 km southeast of Freetown. Identified mineral resources were estimated to be 170 Mt at a grade of 0.7% rutile, 0.84% ilmenite, and 0.06% zircon (Titanium Resources Group Ltd., 2006c; Industrial Minerals, 2006a, b).

## *Industrial Minerals*

**Diamond.**—Sierra Leone's diamond production is mainly from alluvial mining, the majority of which has come from the Bo, the Kenema, and the Kono Districts along the drainages of the Bafi, the Mano, the Moa, the Sewa, and the Woa Rivers. Artisanal diamond mining, which has occurred since the 1930s, reached its peak during the late 1960s when production reached about 2 million carats per year. According to Kimberley Process Certification Scheme statistics, diamond production was 603,566 carats in 2006, about a 72% increase from the 351,860 carats produced in 2002. Reportedly, large areas of potentially diamondiferous gravel still remain unprocessed in the country owing to thick overburden cover that impedes manual operations. Kimberlites known to exist in the Koidu area and at Tongo and other areas, such as Kamaranka-Kamkwei and Kambia, are thought to host kimberlitic source rocks. The country's sole active kimberlite mining operation was owned by London-based Koidu Holdings Ltd., which was a joint venture between Energem Resources Inc. (40%), Magma Diamond Resources Ltd. (35%), and BSG Resources Ltd (25%) (Mining Journal, 2006, p. 8-9).

Partnership Africa Canada, a nongovernmental organization, reported that Sierra Leone's historical problem, in terms of managing and controlling the diamond industry in the past, relies on the fact that diamonds in the country are largely alluvial in nature, they have a very high unit value, and are easy to mine. These factors made diamond mining attractive to criminals and smugglers and helped establish a warlord economy in the country between 1992 and 2002 when the Revolutionary United Front rebel group captured the diamond fields of the Kono District. Government revenue from artisanal diamond mining comes mainly from mining, dealer, and export licenses and from a 3% tax on exports (Diamonds and Human Security Project, The, 2006, p. 1). The loss of revenue from the unrecorded trade in diamond is unknown; however, the value of diamond exports in 2006, as reported by the Bank of Sierra Leone, was \$125 million, about one-third of the \$400 million that the Peace Diamond Alliance (a Sierra Leone-based nongovernmental organization) estimated the country's current value of diamond production per year to be.

Other companies exploring for diamond in the country included Canada-based Cream Minerals Ltd., Mano River Resources Inc., and Sierra Gold Corporation, and United Kingdom-based African Diamonds plc, River Diamonds plc, and Target Resources plc.

## *Mineral Fuels*

**Petroleum.**—Sierra Leone did not produce or refine petroleum and was dependent upon imports for its petroleum requirements. Through an international tender held in 2003, the Government awarded Repsol YPF S.A. of Spain, in joint venture with Woodside Petroleum Ltd. of Australia, exploration licenses for offshore Blocks SL-6 and SL-7. The joint venture was in the process of interpreting three-dimensional seismic data for its exploration properties in 2006 (Woodside Petroleum Ltd., 2007).

## Outlook

Sierra Leone's economy is likely to continue to depend greatly on revenues from the diamond industry in the short run. In the longer run, however, rutile production, which was Sierra Leone's top export commodity during the early 1990s, could also contribute significantly to future earnings. Plans to increase rutile production capacity at the Sierra Rutile Mine by an additional 140,000 t/yr will likely place Sierra Leone among the world's leading producers of rutile after Australia and South Africa if such production were to come online in 2008. The country is also likely to benefit in the near future from expected increases in global bauxite demand, given that the country's bauxite is used as a process "sweetener" in the industry owing to its low digestion temperature (145°-150°C), which makes it more economical to process by major alumina refineries.

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TABLE 1  
 LIBERIA AND SIERRA LEONE: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity	2002	2003	2004	2005	2006	
LIBERIA						
Cement, hydraulic	53,622	25,000 <sup>e</sup>	121,059 <sup>r</sup>	143,847 <sup>r</sup>	154,990	
Diamond <sup>c</sup>	80,000	40,000	10,000	NA <sup>r,2</sup>	NA	
Gold <sup>c</sup>	42	20	110 <sup>3,4</sup>	27 <sup>r</sup>	11	
Sand	NA	NA	213,892 <sup>3,4</sup>	222,274 <sup>4</sup>	220,000 <sup>e</sup>	
Stone, crushed	NA	NA	NA	5,964 <sup>4</sup>	6,000 <sup>e</sup>	
SIERRA LEONE						
Bauxite	thousand metric tons	--	--	--	1,072	
Cement		144,145	169,109	180,460	172,120 <sup>r</sup>	234,440
Diamond <sup>5</sup>	carats	351,860 <sup>6</sup>	506,819 <sup>6</sup>	691,757 <sup>r,7</sup>	668,710 <sup>7</sup>	603,566 <sup>7</sup>
Gold	kilograms	1 <sup>r</sup>	6 <sup>r</sup>	27	53	71
Gypsum <sup>c</sup>		4,000	4,000	-- <sup>3</sup>	-- <sup>3</sup>	--
Ilmenite		--	--	--	--	13,819
Rutile		--	--	--	--	73,802
Salt		1,821	1,005	827	--	--

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. NA Not available. -- Zero

<sup>1</sup>Table includes data available through October 2007.

<sup>2</sup>Export of diamond under United Nations Security Council sanctions.

<sup>3</sup>Reported figure.

<sup>4</sup>Ministry of Lands, Mines, and Energy of Liberia.

<sup>5</sup>About 60% gem quality and 40% industrial quality.

<sup>6</sup>Exports.

<sup>7</sup>Kimberley Process Certification Scheme.

TABLE 2  
LIBERIA AND SIERRA LEONE: STRUCTURE OF THE MINERAL INDUSTRIES IN 2006

(Thousand metric tons unless otherwise specified)

Country and commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
<b>LIBERIA</b>			
Diamond	Artisanal miners	Throughout the country	NA
Gold	Mano River Resources	New Liberty gold deposit (under bankable feasibility study)	NA
Iron ore	Mittal Steel Company N.V.	Tokadeh iron ore deposit (Awaiting Government approval to begin mining)	NA
<b>SIERRA LEONE</b>			
Bauxite	Sierra Mineral Holdings I Ltd. (Titanium Resources Group Ltd.)	SML Mine, 150 kilometers southeast of Freetown	1,200
Cement	Sierra Leone Cement Corp. Ltd.	Freetown plant	NA
Diamond	carats Koidu Holdings Ltd. (Energem Resources Inc., 40%, and BSG Resources Ltd., 25%)	Two kimberlite pipes, Koidu	120
Ilmenite	Sierra Rutile Ltd. (Titanium Field Resources Ltd. and U.S. Titanium, LLC)	Sierra Rutile Mine	15
Titanium, rutile concentrate	do.	do.	100 <sup>1</sup>

NA Not available.

<sup>1</sup>Production capacity is expected to increase to 200,000 metric tons per year (t/yr) in 2007 and 240,000 t/yr in 2008.