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2012 Minerals Yearbook

LIBERIA

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The Mineral Industry of Liberia

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Liberia's real gross domestic product (GDP) increased in 2012 by 8.7% to about $835 million despite the global economic slowdown in Europe and the United States. Economic growth was mostly driven by the services sector, which accounted for about 47% of the GDP (at constant prices) followed by the agricultural and fishery, forestry, mining, and manufacturing sectors, which accounted for 27%, 11%, 8%, and 7% of the GDP, respectively. Although the mineral sector was not the most significant contributor to the economy in 2012, its contribution to the GDP was estimated to have more than doubled from 2011 to 2012, mostly owing to the resumption of iron ore exports (Central Bank of Liberia, 2013, p. 8–10).

Mineral commodities produced in Liberia included cement, diamond, gold, iron ore, sand, and crushed stone. Other mineral resources, which were still undeveloped, included base metals (such as cobalt, lead, manganese, nickel, and tin), and industrial minerals (such as dolerite, granite, ilmenite, kyanite, phosphate rock, rutile, and sulfur). Liberia continued to make significant progress in the rehabilitation of the mining sector by opening up to foreign direct investment and adhering to global standards for transparency. The country was a participant in the Extractive Industries Transparency Initiative (EITI) and the Kimberley Process Certification Scheme. Projects to rehabilitate mining-related infrastructure were underway, and foreign companies continued to engage in gold, iron ore, and petroleum exploration activities in Liberia (Extractive Industries Transparency Initiative, 2013; Kimberley Process Certification Scheme, 2013).

Government Policies and Programs

The Ministry of Lands, Mines, and Energy (MLME) is the Government agency responsible for the administration of the mining sector, and it has statutory oversight of the energy, land, mineral, and water sectors. The mineral sector is regulated by the Mining and Minerals Law of 2000. The Mineral Policy of Liberia was created in March 2010 to complement the Mining and Minerals Law. The document outlines the Government's expectations with regard to the contributions of all stakeholders in the sustainable development of Liberia's mineral resources. The legal framework for the hydrocarbon sector was provided by the Petroleum Law of 2002. The National Oil Company of Liberia (NOCAL) is the independent state-owned company charged with coordinating the development of Liberia's hydrocarbon sector (Ministry of Lands, Mines and Energy, 2011, p. 10, 14; National Oil Company of Liberia, 2012, p. 2).

In February 2012, the Government announced plans to reform the hydrocarbon sector in anticipation of future revenues from the development of its petroleum resources. The reform process would include the drafting and adoption of a new hydrocarbon policy to provide guidance concerning hydrocarbon exploration and production activities, the drafting and enactment of a new Petroleum Code, and the creation of a new production-sharing contract model, all of which were expected to be completed by the first quarter of 2013 (National Oil Company of Liberia, 2012, p. 2, 4).

Production

In 2012, the most significant increase in production was reported in the iron ore industry. Iron ore production increased almost threefold to 3.3 million metric tons (Mt) (from 1.3 Mt in 2011) as a result of the ramping up of production at the redeveloped western iron ore deposits of Nimba County. Sand production increased by 75% to 180,700 metric tons (t); crushed stone, by 69% to 4,400 t; and cement, by about 35% to 108,840 t (from a revised 80,594 t produced in 2011). The increase in production of these industrial minerals was mostly attributed to the development of new infrastructure projects and to a decrease in cement imports. Based on Kimberley Process Certification Scheme statistics, rough diamond production decreased by 18% to 34,271 carats compared with 41,932 carats produced in 2011. The Central Bank of Liberia (2013, p. 11–12) attributed this decline to a shift in labor inputs from diamond mining to gold mining. Production of gold increased by 43% to 641 kilograms (kg) compared with a revised 448 kg produced in 2011, mostly as a result of an increase in gold mining operations in the country following a surge in the global demand for gold. Data on mineral production are in table 1.

Structure of the Mineral Industry

Diamond and gold were produced by artisanal miners. Cement was produced by Liberia Cement Corp. Ltd., which was a joint venture between Scancem International ANS (62%) and the Government (29%). ArcelorMittal held a majority interest in the country's only iron ore mining operation. Table 2 is a list of major mineral industry facilities.

Mineral Trade

Liberia's export earnings were estimated to have increased by 25.2% to $459.4 million in 2012 compared with a revised $367 million in 2011. Rubber, which accounted for about 34% of total export earnings, remained the country's most significant source of income. Proceeds from the iron ore sector, however, increased fivefold to about $117 million and represented about 25.5% of total export earnings. Proceeds from gold exports also increased significantly, by about 53% to $26.3 million, mostly as a result of an increase in the world price of gold, and represented about 5.7% of total export earnings. Preliminary data reported by the Central Bank of Liberia (2013, p. 24–25) indicated that export earnings from the diamond sector decreased by about 6% to $14.5 million from a revised $15.4 million in 2011.

Liberia's total exports to the United States were valued at about $144 million in 2012 compared with about $158 million in 2011 and $180 million in 2010. These exports included

$62,000 worth of rough diamond and $46,000 worth of gold. Imports from the United States were valued at $245 million in 2012 compared with $195 million in 2011 and $191 million in 2010. These imports included nearly $70 million worth of drilling and oilfield equipment, $6.3 million worth of excavating machinery, $1 million worth of iron and steel mill products, $956,000 worth of petroleum products, $686,000 worth of nonmetallic minerals, and $590,000 worth of specialized mining equipment (U.S. Census Bureau, 2013a, b).

Commodity Review

Metals

Gold.—Aureus Mining Inc. of Canada continued with the development of the New Liberty gold mine. In late 2012, Aureas completed a Canada National Instrument (NI) 43–101-compliant feasibility study for the development of the mine. The study disclosed a revised reserve estimate of 8.7 Mt grading 3.3 grams per metric ton (g/t) gold in the proven and probable categories and resource estimates of 9.8 Mt grading 3.6 g/t gold in the measured and indicated categories and 5.7 Mt grading 3.2 g/t gold in the inferred category. The reserve estimate would reportedly support an open pit operation with a capacity to produce about 3,700 kilograms per year (kg/yr) (reported as 120,000 troy ounces per year) of gold for a period of 8 years. The New Liberty Mine, which would be located about 90 kilometers (km) north of the capital city of Monrovia, was expected to be commissioned in 2014 and to employ between 300 and 500 people. This mine would be Liberia's first commercial gold mine (Aureus Mining Inc., 2013, p. 2–9).

Iron Ore.—ArcelorMittal produced direct-shipping iron ore from one of three iron ore deposits located about 300 km northeast of the capital city of Monrovia along Nimba County's mountain range. The three deposits, collectively known as the Western Range Project (WRP), are the Mt. Gangra, the Mt. Tokadeh, and the Mt. Yuelliton deposits. Only high-grade ore reserves of oxidized iron ore, which required only crushing and screening before export, were mined in 2012. Iron ore was transported from Mt. Tokadeh to the Buchanan Port by way of a 250-km single-track railway. Iron ore had been mined at Mt. Tokadeh since 1985, but production ceased in 1992 following the onset of the Liberian civil war. The WRP deposits consist of a 250- to 450-meter (m)-thick itabirite iron formation, which has been highly weathered to form the iron-enriched deposits mined by London-based ArcelorMittal. During the year, ArcelorMittal's Board of Directors approved the second-phase expansion of the WRP, which was expected to increase iron ore production to 15 million metric tons per year (Mt/yr) by 2015. The WRP was operated by ArcelorMittal's subsidiary ArcelorMittal (Liberia) Ltd., which held a 70% interest in the project (ArcelorMittal, 2013, p. 23, 207, 211–212).

Vedanta Resources plc. of India, through its subsidiary Sesa Goa Ltd., acquired the remaining 49% interest in Liberia's Western Cluster Iron Ore project (WCIO) from Western Cluster Ltd., which was a subsidiary of Elenilto Minerals of Israel. In 2011, Vedanta had acquired a 51% stake in the project from Elenilto, which was the company that held the mining rights for the development of the WCIO. The WCIO project included the Bea Mountain, the Bomi Hills, and the Mano River iron ore deposits, which are located between 70 and 140 km northwest of Monrovia. A Joint Ore Reserves Committee (JORC)-compliant study confirmed reserves of 966 Mt, which the company planned to develop in phases with a target capacity of 30 Mt/yr. Iron ore was to be transported to the Monrovia Port using the existing rail line, and first production of the ore was expected to be shipped by the company in 2014 (Vedanta Resources plc., 2013, p. 61).

In April, OAO Severstal of Russia consolidated its interest in the Putu Range iron ore project by acquiring the 38.5% outstanding interest in the project from its former joint-venture partner African Aura Mining Inc. of the United Kingdom. The Putu Range project included the Putu iron ore deposit, which is a 13-km-long iron-rich ridge located 130 km inland from the deepwater shoreline of eastern Liberia. During the year, Severstal announced the results of a new mineral resource estimate for the Putu deposit, which yielded an estimated 38% resource increase to 4.4 billion metric tons of iron ore at an average grade of 34% iron. In addition to these resources, the project was reported to hold about 100 Mt of high-grade direct-shipping ore. A definite feasibility study for the Putu Range was underway and was expected to be completed by 2014, with first iron ore production of 20 Mt/yr expected by 2018 (OAO Severstal 2013, p. 40, 48, 166).

London-based Sable Mining Africa Ltd. held exploration licenses for three areas prospective for iron ore that are located in the metamorphosed Archaean granitoid-gneiss-greenstone terrane of the Kenema-Man domain on the West African Shield. The West African Shield is a 2.7-billion- to 3.4-billion-year-old rock formation made of gneiss, granite, and schist, which is interspersed with iron-bearing formations known as itabirites. The company's three areas under exploration included the 532-square kilometer (km^2) Kpo prospect, the 486-km^2 Timbo prospect, and the 477-km^2 Bopolu prospect. During the year, Sable concentrated its exploration activities in Liberia on the Kpo prospect. Rock samples analyzed from Kpo reportedly yielded grades of up to 62.4% iron (43.9% on average). A ground mapping and surface sampling program was the company's next step in estimating the resources of the Kpo ore body. The Bopolu, the Kpo, and the Timbo prospects are located within 60 km of the existing Bong railway line and in close proximity to the proposed Bomi railway line, which has the potential to provide access routes to transport iron ore to the Ports of Buchanan and Monrovia (Sable Mining Africa Ltd., 2012a; 2012b, p. 21, 35–37).

In October, China Union Mining Co. Ltd. signed a $50 million agreement with Liberia's National Port Authority for the rehabilitation of the Bong Mine Pier. The agreement was for 25 years and was expected to be completed in June 2013, at which time China Union planned to begin exporting iron ore from its Bong Range concession area. The Government had granted China Union and China Union Investment (Liberia) Bong Mines Co. Ltd. the exploration and mining rights to the Bong Range area in January 2009. The Non-Goma deposits within Bong Range were estimated to contain iron ore reserves of 304 Mt at a grade of 36.5% iron. The Bong Mine was expected to produce 1 Mt/yr during its first phase of production and then to ramp up to 10 Mt/yr by 2014. During the year, China Union also began paving the 35-km Kakata-Bong Mines road, which would be used to transport iron ore from the Bong Range area to the Bong Mine Pier for export (Government of the Republic of Liberia, 2009, p. 15–16; AllAfrica Global Media, 2012; DiploNews.com, 2012; Global News Network Liberia, 2012).

Mineral Fuels

Petroleum.—Liberia did not produce or refine petroleum and was dependent upon imports for its domestic petroleum requirements. The Government, however, was in the process of reviewing its hydrocarbon sector policies and legislation following the discovery of petroleum at the Narina-1 well in late February. The Narina-1 well, which was operated by African Petroleum Corp. Ltd. of Australia, is located offshore Liberia within Block LB–09. African Petroleum reported that the quality of the petroleum found at Narina-1 was favorable, given the good quality of the petroleum found in both the Albian (44 degrees API) and Turonian (37 degrees API) reservoirs. API is the standard specific gravity used by the oil industry to compare the density of oil to that of water. The lighter or less dense the petroleum, the easier it is to convert to gasoline. The company planned to carry out additional drilling in 2013 to further test the prospects of Block LB–09 (African Petroleum Corp. Ltd., 2012; National Oil Company of Liberia, 2012, p. 2, 4).

Petroleum exploration had been carried out offshore Liberia between 1970 and 1972 and then again between 1983 and 1989 by several international petroleum companies, including American companies Amoco Liberia Exploration Co., Chevron Oil Co. Liberia, Frontier International Petroleum Inc., and Union Carbide Petroleum Corp. These exploration activities were eventually discontinued, however, reportedly amid unfavorable economic conditions. Between 2000 and 2010, NOCAL hired TGS Nopec Geophysical Co. of Houston, Texas, to carry out two-dimensional and three-dimensional seismic data surveys for most of Liberia's offshore petroleum acreage, which led to the establishment of Liberia's existing 30 concessionary blocks. These blocks were divided into 17 deepwater blocks, which extend from the continental shelf to water depths of between 2,500 and 4,000 m and 13 ultra-deepwater blocks. The latter extend to water depths of 4,500 m. As of June 2012, 10 of the 17 deepwater blocks had been awarded for exploration, 2 were under review, and 5 had not been awarded (National Oil Company of Liberia, 2012, p. 16–17).

Concessionary areas under contract included Blocks LB–08 and LB–09, which were awarded to African Petroleum (100%) in 2005; Block LB–10, which was awarded to a consortium of Anadarko Petroleum Corp. of Woodlands, Texas (80%), Mitsubishi Corp. of Japan (10%), and Repsol S.A. of Spain (10%) in 2009; and Blocks LB–11 and LB–12, which were awarded to California-based Chevron Corp. (70%) in joint venture with Oranto Petroleum Ltd. of Nigeria (30%) in 2005. Block LB–14 was also awarded to Chevron and Oranto in 2009. Block LB–13 was awarded to Peppercoast Petroleum Ltd. (formerly known as Broadway Consolidated plc) of the United Kingdom in 2005, and Blocks LB–15, LB–16, and LB–17 were awarded to the consortium of Anadarko (47.5%), Repsol (27.5%), and Tullow Oil plc of the United Kingdom (25%) in 2005. Contracts under review included those for Blocks LB–06 and LB–07, which were being negotiated with Hong Kong Tai and CNOOC Ltd. of China (National Oil Company of Liberia, 2012, p. 20–21).

Outlook

Iron ore production in Liberia is expected to increase fivefold to 15 Mt by 2015 and then to more than double again by 2017. This increase in iron ore output will not only have the potential to increase Government proceeds from the mineral sector but could also benefit Liberia's economy as a whole as the iron ore industry could become a new source of direct and indirect employment. The discovery of petroleum at the Narina-1 well suggests that Liberia could in the longer run become a significant petroleum producer in the region. The petroleum industry, however, is still in its early stages of development. The discovery of petroleum offshore Liberia together with the Government's initiatives to reform the hydrocarbon sector are likely to attract increased foreign direct investment to the country. Five deepwater blocks and 13 ultra-deepwater blocks remain available for exploration, although the Government has yet to announce a competitive bidding process for these blocks.

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TABLE 1
LIBERIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity		2008	2009	2010	2011	2012
Cement, hydraulic		94,037	70,584	71,733	80,594 r	108,840
Diamond[2]	carats	47,007 [3]	28,368 [3]	26,591 [3]	41,932 [3]	34,271 [4]
Gold, mine output, Au content	kilograms	624	524	666	448 r	641
Iron ore[5]	thousand metric tons	--	--	--	1,300	3,300
Sand[6]		160,000	120,000	110,000	103,000	180,700
Stone, crushed[6]		4,000	3,000	3,000	2,600	4,400

rRevised. -- Zero.
[1]Table includes data available through August 15, 2013.
[2]Production estimated to be approximately 60% gem quality.
[3]Reported by the Kimberley Process Certification Scheme.
[4]Reported by the Central Bank of Liberia.
[5]Direct-shipping ore.
[6]Estimated based on cement production.

TABLE 2
LIBERIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement	Liberia Cement Corp. Ltd. (Scancem International ANS, 62%, and Government, 29%)	Monrovia	220
Diamond	Artisanal and small-scale mining	NA	NA
Gold	do.	NA	NA
Iron ore	ArcelorMittal (Liberia) Ltd. (ArcelorMittal, 70%)	Western Range Project, 300 kilometers northeast of Monrovia	4,000

do. Ditto. NA Not available.