



2007 Minerals Yearbook

ERITREA

THE MINERAL INDUSTRY OF ERITREA

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The geology of the East African country of Eritrea was considered to be favorable for the occurrence of mineral resources and several mining companies were involved in mineral exploration there in 2007. Several high-grade volcanic massive sulfide (VMS) discoveries had been made in the past 5 years. Notable exploration successes included those for copper, lead, and zinc deposits in the Asmara region; gold deposits in the Precambrian terranes west of Asmara; and iron ore deposits east and south of Asmara. To ensure the continued development of exploration opportunities, the Ministry of Energy and Mines was reviewing applications for the award of exploration licenses for base metals, gold, and industrial minerals. The Government was also seeking foreign investment for the exploration and development of offshore natural gas and petroleum reserves (Ministry of Information [Eritrea], 2007).

Minerals in the National Economy

All mineral resources in Eritrea are the property of the state. The Government indicated that it was committed to building a modern and efficient mining industry in partnership with both local and international mining development businesses and organizations. The Government continued to show strong support for the redevelopment of mining as an important sector of the national economy and was relying on mine operations for gold and other minerals to reverse the country's economic problems (Reuters, 2007).

Production

Eritrea produced a variety of minerals and mineral products, including basalt, cement, common clays, coral, granite, gravel, gypsum, kaolin, lime, limestone, marble, pumice, quartz, salt, sand, and silica sand (table 1). Small amounts of gold were produced in western Eritrea by artisanal miners. The country has deposits of asbestos, barite, copper, feldspar, iron ore, lead, magnesium, nickel, potash, silver, talc, and zinc that were not exploited in 2007. Gypsum and salt were the only mineral commodities exported in 2007. Refined petroleum products were imported to meet domestic needs.

Structure of the Mineral Industry

Table 2 is a list of the major mineral industry facilities and their capacities.

Commodity Review

Metals

Gold.—Eritrea's gold mineralization is typically hosted in quartz veins and stock works in shear zones associated with

felsic volcanic rocks, dioritic intrusions, and in various schists. Occurrences of gold within exhalative volcanic-hosted massive sulfide (VHMS) deposits, and in the weathered and supergene zones overlying them, were becoming more evident as a result of additional discoveries of gold at Adi Nefas and Debarwa in the central highlands and at Bisha and Harena in the western lowlands. Head grades in most of the historical gold mines that were active during the Italian colonial period from 1882 to 1941 were reported to be as high as 25 grams per metric ton (g/t) to 45 g/t gold (Ministry of Energy and Mines [Eritrea], 2007).

Sunridge Gold Corp. of Canada announced that the Minister of Energy and Mines had signed an assignment agreement that allowed the transfer of 100% of the Asmara project exploration license to Sunridge Gold from Sub Sahara Resources (Eritrea), a subsidiary of Sub Sahara Resources NL, in accordance with the Eritrea Mining Proclamation. Sunridge Gold had spent more than \$11 million on the Asmara project, which resulted in the company's discovery of four deposits. These deposits were the Adi Nefas copper, gold, and zinc VHMS deposit, which had estimated inferred reserves of 2.78 million metric tons (Mt) at grades of 1.36% copper, 2.56 g/t gold, 74.8 g/t silver, and 5.65% zinc; the Debarwa copper, gold, and zinc VHMS deposit, which had estimated inferred reserves with grades of 2.00% copper, 1.57 g/t gold, 21.04 g/t silver, and 0.79% zinc; the Emba Derho copper, gold, and zinc VHMS deposit, which measures more than 1,000 meters (m) in strike length with widths of massive sulfide mineralization that are more than 100-m wide and 350-m deep; and the Gupo Gold deposit, which contains estimated inferred reserves of 1.97 Mt at an average grade of 2.99 g/t gold. Sunridge Gold was concentrating its efforts on the Adi Nefas and the Debarwa deposits, which were the most advanced of the four (MBendi Information Services (Pty) Ltd., 2007).

Nevsun Resources Ltd. of Canada was continuing to advance its Bisha project. Bisha is a large precious metal and base metal VHMS deposit located in western Eritrea. The deposit is configured in three distinct layered zones that consist of a 35-m-thick surface oxide zone that contains gold and silver; this zone is overlain by a 30-m-thick copper enriched supergene zone, which itself overlies a primary sulfide zone that contains both copper and zinc. The feasibility study completed in 2006 envisaged the mining and processing of each zone in succession, starting with the surface oxide zone. The capital cost to develop the Bisha project was estimated to be \$250 million (African Mining Magazine, 2007).

The Government signed an agreement with Nevsun for the development of the Bisha project, which would be the first new mine developed since the 1940s. Nevsun estimated that Bisha is among the largest undeveloped polymetallic deposits in Africa. Construction was expected to take 2 years, and mining was expected to begin in 2010 (Mukumbira, 2007)

The joint venture project of Dragon Mining Ltd. and Sub Sahara Resources NL is located at Zara in the northern

highlands of Eritrea on the Zara River. The project encompassed several areas of artisanal gold workings and consisted of four contiguous exploration licenses that covered a total area of 196 square kilometers (km²). Sub Sahara commenced drilling in mid-2005 and focused primarily on the Koka and the Konate prospects, which were two of the principal prospects already identified. The resource at Koka was estimated to be 5.13 Mt at a grade of 6.3 g/t gold. At yearend 2007, Sub Sahara commenced activities to advance Koka toward development with a scoping and prefeasibility study, which was scheduled to be completed by yearend 2008. The environmental baseline study, which was begun in mid-2007, continued through the end of 2007 (Dragon Mining Ltd., 2007).

Sanu was the leading exploration landholder in Eritrea with exploration licenses that totaled more than 2,600 km². Sanu continued exploration of its properties in western Eritrea. The company was concentrating mainly on the Hambok property, which was its most recent VHMS discovery in the polymetallic belt. A total of 7,382 m in 43 diamond drill holes confirmed massive sulfide mineralization. This mineralization was intersected across 1,050 m of strike length and 300 m of downdip and was open in all directions. Sanu considered that Hambok had the potential to be a significant copper-zinc deposit (Yahoo Finance Canada, 2006).

Outlook

Eritrea's mineral industry is small but could experience substantial growth in the near future because of the development of metal deposits. Demand for construction materials could

increase if Bisha and other metal deposits are developed. Other mineral resources include reserves of barite, feldspar, gypsum, kaolin, marble, and rock salt. If mining develops, Eritrea's proximity to Europe and the Middle East would be favorable for the export of minerals to these markets.

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TABLE 1
ERITREA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2,3}	2003	2004	2005	2006	2007 ^c
Basalt	111,677	323,499 ^r	119,617 ^r	211,053 ^r	45,335 ⁴
Cement ^e	45,000	45,000	45,000	45,000 ^e	45,000
Clays:					
Common	218,539	184,250 ^r	169,876 ^r	29,000	3,700 ⁴
Kaolin	281	46 ^r	471 ^r	129	183 ⁴
Coral	70,000 ^e	95,131	91,348	59,900 ^r	67,332 ⁴
Gold	9 kilograms	33	25	46 ^r	87 ⁴
Granite	140,418	192,803	350,280	144,775 ^r	21,394 ⁴
Gravel	240,125 ^r	187,070 ^r	242,977 ^r	187,826 ^r	79,913 ⁴
Gypsum	1,284	715 ^r	1,142 ^r	634 ^r	874 ⁴
Laterite	832	316 ^r	144 ^r	NA ^r	NA
Lime	5,400	2,915	22,423 ^r	164,227 ^r	165,000
Limestone ^{e,5}	2,900	2,900	2,900	3,000 ^e	3,000
Marble:					
Block	1,777,814 square meters	780,733	36,046	1,860,146	31,010 ⁴
Chip	17	3,101	972	4,058	NA
Pumice	50	439	23 ^r	1,072 ^r	55
Quartz	370	4,496	103	83 ^r	90
Salt	5,240 ^r	3,075 ^r	6,300 ^r	9,737 ^r	7,448 ⁴
Sand	788 thousand metric tons	2,100 ^r	2,100 ^r	2,100 ^e	2,309 ⁴
Silica sand ^e	40	32 ^r	NA	1,025 ^r	NA

^eEstimated; estimated data are rounded to no more than three significant digits. NA Not available. ^rRevised.

¹Table includes data available through September 30, 2008.

²Values converted from cubic meters to metric tons. Specific gravity, in grams per cubic meter is as follows: basalt, 2.8; clay, common, 1.09; clay, kaolin, 1.03; gypsum, 1.60; laterite, 2.55; lime, 1.54; marble chips, 2.56; pumice, 0.64; quartz, 1.55; salt, 1.44; sand, 2.08; and silica sand, 1.44.

³In addition to the commodities listed, feldspar and talc reportedly were produced, but information is inadequate to estimate output.

⁴Reported figure.

⁵For other than cement.

TABLE 2
ERITREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

Commodity	Major operating companies	Location of main facilities	Annual capacity
Cement	metric tons Eritrea Cement Works	Massawa	45,000

