



2008 Minerals Yearbook

ERITREA

THE MINERAL INDUSTRY OF ERITREA

By Harold R. Newman

The East African country of Eritrea has occurrences of mineral resources, such as copper, lead, and zinc deposits in the Asmara region; gold deposits in the Precambrian terrains west of Asmara; and iron ore deposits east and south of Asmara. More-detailed research had not been carried out to identify the amount, quality, and type of mineral resources in Eritrea; based on exploration carried out so far, however, results appeared to indicate that a mining industry could possibly be developed.

Several mining companies were involved in mineral exploration in 2008. Major exploration target areas were Adinfas, Embaderho, Ketina, and Mdrizien in the Maekel Region; Bisha in the Gash Barka Region; Dbarwa in the Southern Region; and Kerkebet, Melhoy, Melobso, Wegrait, and Zara in the Anseba Region. Notable exploration successes include several high-grade volcanic massive sulfide (VMS) discoveries that have been made in the past 6 years. The Southern and Northern Red Sea regions were being explored as major sources of raw materials for the cement industry (People's Front for Democracy and Justice, 2008).

Minerals in the National Economy

All mineral resources in Eritrea are the property of the state and licenses are required for the exploration and development of these resources. Contributions by mining and quarrying to the gross domestic product were not significant. The Government indicated that mining could help contribute to the economic development of Eritrea. Six exploration companies conducted exploration activities in different parts of the country in 2008; they were Beijing Donia Resources Co. Ltd. and Eritrea China Mining Corp. of China; Nevsun Resources Ltd. and Sanu Resources Ltd. of Canada; and Sub Sahara Resources NL of Australia. The legal framework governing the conduct of all mining and related operations is embodied in a mining code that comprises Minerals Proclamation No. 68/1995, Mining Income Tax Proclamation No. 69/1995, and Regulations on Mining Operations Legal Notice No. 19/1995, all of which were promulgated in March 1995. The Government has a right to a 10% free stake in mining ventures and the right to purchase an additional 30% share at the market price. The Government continued to show strong support for the redevelopment of mining as an important sector of the national economy and indicated that it was relying on mining operations for gold and other minerals to help solve the country's economic problems (Ministry of Energy and Mines, 2008).

Production

Eritrea produced a variety of minerals and mineral products, including basalt, cement, common clay, 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

had deposits of asbestos, barite, copper, feldspar, iron ore, lead, magnesium, nickel, potash, silver, talc, and zinc that were not exploited in 2008. Gypsum and salt were the only mineral commodities exported in 2008. 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 was typically hosted in quartz veins and stock works in shear zones associated with felsic volcanic rocks and dioritic intrusions, and in various schists. Gold also occurs within exhalative VMS deposits and in the weathered and supergene zones overlying them. These deposits occur in the highlands near the capital of Asmara and include the Emba Derho prospect, which was owned by Sunridge Gold. Another VMS area is located in the lowlands and includes the Bisha and the Harena projects of Nevsun Resources, and the Hambok project of Sanu Resources (Ministry of Energy and Mines, 2008).

Nevsun Resources's Bisha project is configured in three distinct layered zones: (1) a 35-meter (m)-thick surface oxide zone that contains gold and silver; (2) an underlying 30-m-thick copper-enriched supergene zone; and (3) a primary sulfide zone that underlies the copper-enriched supergene zone and contains both copper and zinc. Construction was initiated in 2008 and included plant site earthwork and expanded camp facilities, and procurement commitments; preparation for project financing was continuing. Commissioning was expected in 2010 (MBendi Information Services (Pty) Ltd., 2008a).

The Zara joint-venture project of Sub Sahara Resources (69%) and Dragon Mining Ltd. (20%) is located at Zara in the northern highlands of Eritrea on the Zara River. The project consisted of four contiguous licenses totaling 196 square kilometers (km²); the licenses were located about 160 kilometers (km) northwest of Asmara and encompassed several areas of artisanal gold workings. The project was managed by Sub Sahara Resources, which upgraded the estimated resource in 2008 to 5.1 million metric tons (Mt) grading 6.3 grams per metric ton (g/t) gold at a cutoff of 1.5 g/t. The Government was entitled to a 10% free carried interest on the project and up to a 5% royalty on mined precious metals (Dragon Mining Ltd., 2008).

Sunridge Gold reported the gold assay results from 13 diamond drill holes at its Emba Derho VMS deposit. The gold cap extends from the surface to a vertical depth of about 35 m and overlies the copper-gold-zinc deposit. The purpose of the drill program was to expand, further define, and upgrade the surface gold zone from

inferred to indicated category for inclusion in future resource estimates. The surface gold oxide cap drill highlights were as follows: ED-217-D (13.5 m grading 4.6 g/t gold), ED-220-D (31.5 m grading 1.7 g/t gold), HD-223-D (6 m grading 4.5 g/t gold), and ED-223-D (22 m grading 2.5 g/t gold). An updated resource for the main Emba Derho deposit was scheduled for completion by yearend 2008. The deposit contained an estimated 333,000 metric tons (t) (reported as 735 million pounds) of copper and 770 t (reported as 1.7 billion pounds) of zinc (Mbendi Information Services (Pty) Ltd., 2008b).

Mineral Fuels

Petroleum.—The Government signed two agreements with Defba Oil Share Co. for petroleum exploration and development. Defba Oil Share would undertake exploration activities in two blocks of the Eritrean northern territorial waters in the Red Sea. Defba Oil Share was established through a partnership of the Government and Energy Alliance Co. W.L.L. (Offshore Oil and Gas News, 2008).

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 its minerals to these markets.

References Cited

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TABLE 1
ERITREA: PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ^{2,3}	2004	2005	2006	2007	2008 ^c
Basalt	323,499	119,617	211,053	45,335	50,000
Cement ^c	45,000	45,000	45,000	45,000	45,000
Clays:					
Common	184,250	169,876	29,000	3,700	4,000
Kaolin	46	471	129	183	200
Coral	95,131	91,348	59,900	67,332	65,000
Gold kilograms	33	25	46	87	50
Granite	192,803	350,280	144,775	21,394	25,000
Gravel	187,070	242,977	187,826	79,913	80,000
Gypsum	715	1,142	634	874	800
Laterite	316	144	NA	NA	NA
Lime	2,915	22,423	164,227	165,000 ^c	165,000
Limestone ^{c,4}	2,900	2,900	3,000	3,000	3,000
Marble:					
Block square meters	780,733	36,046	1,860,146	31,010	32,000
Chip	3,101	972	4,058	NA	NA
Pumice	439	23	1,072	55	60
Quartz	4,496	103	83	90	100
Salt	3,075	6,300	9,737	7,448	7,500
Sand thousand metric tons	2,100	2,100	2,100	2,309	2,200
Silica sand ^c	32	NA	1,025	NA	NA

^cEstimated; estimated data are rounded to no more than three significant digits. NA not available.

¹Table includes data available through June 30, 2009.

²Values converted from cubic meters to metric tons. Specific gravity, in grams per cubic meter—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.

⁴For other than cement.

TABLE 2
ERITREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

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

