



2012 Minerals Yearbook

ERITREA

THE MINERAL INDUSTRY OF ERITREA

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Eritrea is a part of the Arabian-Nubian Shield, which is known to host valuable mineral deposits. The greenstone belt of Eritrea, which hosts base- and precious-metals deposits and occurrences, covers about 60% of the country. The greenstone belt contains volcanic massive sulfide (VMS) deposits, such as Adi Nefas, Bisha, Debarwa, and Emba Derho. Known gold mineralization occurs predominately in quartz veins and as disseminations within shear zones (Mining Journal, 2010).

All mineral resources in Eritrea are the property of the state, and licenses are required for the exploration and development of these resources. The legal framework governing the conduct of all mining and related operations in Eritrea includes Minerals Proclamation No. 68/1995, Mining Income Tax Proclamation No. 69/1995, Regulations on Mining Operations Legal Notice No. 19/1995, and Mining Law Proclamation No. 68/1995 Amendment Proclamation No. 165/2011 (Mining Journal, 2010; Ministry of Energy and Mines, 2011).

Minerals in the National Economy

In 2011 (the latest year for which data were available), the manufacturing sector accounted for 6.2% of the gross domestic product, and the mining and quarrying sector, 1.8%. Gold accounted for 95% of total exports in 2011. Eritrea was not a globally significant producer or consumer of minerals (African Development Bank Group, 2013).

Production

In 2012, the production of cement increased by an estimated 37%. Gold production decreased by 18%, and silver, by an estimated 15% (table 1).

Structure of the Mineral Industry

The Government had a 10% free-carried interest in mining operations, which were privately owned. The Government also had the right to purchase as much as an additional 30% in mining operations (table 2).

Commodity Review

Metals

Copper, Gold, Silver, and Zinc.—In 2012, Nevsun Resources Ltd. of Canada and Government-owned Eritrean National Mining Corp. (ENAMCO) produced 9,700 kilograms (kg) of gold at the Bisha Mine compared with 11,800 kg in 2011. Silver production was estimated to have decreased to 17,000 kg from 20,000 kg. Decreased production was attributable to lower ore grades and recovery rates. In the first half of 2013, Nevsun planned to produce between

2,500 and 2,800 kg of gold as the oxide zone of the VMS deposit was depleted. Based on previously stated production plans, silver production could be between 4,300 and 4,800 kg (Nevsun Resources Ltd., 2011; 2013, p. 3, 5).

Nevsun planned to produce between 27,000 metric tons (t) and 36,000 t of copper in the second half of 2013 as mining started in the supergene zone of the deposit. The supergene zone was expected to be depleted at the end of 2016. Nevsun planned to start mining at the zinc-rich primary sulfide zone of the deposit in 2015. From 2014 to 2016, production was likely to be between 72,400 and 75,500 metric tons per year (t/yr) of copper, 28,000 kilograms per year (kg/yr) of silver, and 600 kg/yr of gold. From 2017 to 2024, production was expected to be about 98,700 t/yr of zinc, 17,100 t/yr of copper, 27,000 kg/yr of silver, and 470 kg/yr of gold (Nevsun Resources Ltd., 2013, p. 5).

In May 2012, Nevsun estimated that total reserves at the primary sulfide zone at the Bisha Main and Harena deposits were 19.2 million metric tons (Mt) at grades of 6.33% zinc, 1.09% copper, 47 grams per metric ton (g/t) silver, and 0.72 g/t gold. Total reserves in the supergene zone at Bisha Main and Harena were estimated to be 6.42 Mt at grades of 4.09% copper, 28 g/t silver, and 0.67 g/t gold (Nevsun Resources Ltd., 2012).

In May 2012, Sunridge Gold Corp. of Canada completed a prefeasibility study with positive results for a new mine at its Asmara North project. The Asmara North deposits include the Adi Nefas VMS copper-gold-zinc deposit, the Debarwa VMS copper-gold deposit, the Emba Derho VMS copper-gold-zinc deposit, and the Gupo gold deposit. In the 15-month first phase of the project, Sunridge planned to produce about 44,400 t/yr of copper, 19,000 kg/yr of silver and 750 kg/yr of gold from copper supergene ore at Debarwa and Emba Derho. In the 13.25-year second phase, the company planned to produce about 65,000 t/yr of zinc, 26,000 t/yr of copper, 24,500 kg/yr of silver, and 750 kg/yr of gold from copper-zinc primary sulfide ore at Adi Nefas, Debarwa, and Emba Derho (Sunridge Gold Corp., 2012b).

Sunridge also reported a completed feasibility study with positive results on a proposed new mine at the Debarwa deposit in May 2012. In the first phase of the project, Sunridge planned to produce 15,900 t/yr of copper, 8,700 kg/yr of silver, and 350 kg/yr of gold. In the second phase, the company planned to produce 7,800 kg/yr of silver and 910 kg/yr of gold. Production plans depended on the results of the feasibility study for the entire Asmara North project, which was expected to be completed in 2013. Debarwa would operate as a stand-alone mine with an estimated 5-year life starting in the fourth quarter of 2014 if the other Asmara North deposits were deemed to be subeconomic. If the Asmara North feasibility study yielded favorable results, production at Debarwa and Emba Derho would start in the first half of 2016 (Sunridge Gold Corp., 2012a, b).

In December 2012, Sunridge completed a resource estimate for the Adi Rassi copper-gold deposit located on the Asmara project. Inferred mineral resources were estimated to be 15.77 Mt at a grade of 0.54% copper, 1.5 g/t silver, and 0.33 g/t gold (Sunridge Gold Corp., 2012c).

In 2012, Chalice Gold Mines Ltd. of Australia announced that it had sold its 60% interest in the Zara project, which included the Koka gold deposit, to the China Shanghai Corporation for Foreign & Technological Cooperation (SFECO) of China. ENAMCO held a 40% interest in the project. SFECO started construction on a new mine at Koka in 2012; production was likely to start in 2014. In a feasibility study completed in 2010, planned output was about 3,200 kg/yr for the estimated 7-year life of the mine. Reserves were estimated to be 4.6 Mt at a grade of 5.1 g/t gold (African Mining, 2012; Tarikh, 2012; Williams, 2013).

In 2012, Chalice and ENAMCO entered into a joint-venture agreement for exploration of the Hurum and the Mogoraib North projects. Chalice started drilling at Mogoraib North; the company hoped to identify VMS deposits there (Chalice Gold Mines Ltd., 2012).

NGEx Resources Inc. of Canada held the Hambok copper-zinc VMS deposit, which was located about 16 kilometers from the Bisha Mine. In 2012, NGEx sold the Hambok deposit to Nevsun and ENAMCO (NGEx Resources Inc., 2012).

Industrial Minerals

Cement.—Eritrea's cement production increased to an estimated 260,000 t from 190,000 t as the Gadem Cement Works had its first full year of production; operations started in mid-2011. Gadem Cement Works and Eritrea Cement Works had capacities of 350,000 t/yr and 45,000 t/yr, respectively. Both plants were operating below capacity because of power shortages. Domestic cement consumption was estimated to be about 320,000 t in 2012 compared with 290,000 t in 2011 (Edwards, 2013; Erigazette.org, 2013; International Cement Review, 2013).

Potash.—South Boulder Mines Ltd. of Australia's Colluli project is located in the Danakil Depression region. The company planned to complete a feasibility study on a new mine at Colluli in 2013. Depending on the results of the study, South Boulder could start mining by 2016. Planned production from carnallite resources was 1 million metric tons per year (Mt/yr) of potash during the estimated 17-year life of the mine. After the completion of the feasibility study, South Boulder planned to study the possibility of increasing production to 2 Mt/yr and extending the lifetime of the mine to 26 years by mining sylvinitic resources. Carnallite resources were estimated to be 309 Mt at a grade of 12.3% potassium chloride (KCl), and sylvinitic resources, 110 Mt at a grade of 28.4% KCl (South Boulder Mines Ltd., 2012).

Outlook

Eritrea's mineral industry could expand significantly in the near future. Copper mining is likely to start in 2013; zinc mining, in 2015; and potash mining, in 2016. Silver production is expected to increase because of the mining of supergene and primary ore from the Bisha and the Asmara North projects. The decrease in gold production resulting from the depletion of the oxide zone at Bisha is likely to be offset partially by the opening of the Koka Mine and the Asmara North project in 2014 and 2016, respectively. Increases in cement output depend on the alleviation of power shortages.

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TABLE 1
ERITREA: ESTIMATED PRODUCTION OF MINERAL COMMODITIES^{1,2}

(Metric tons unless otherwise specified)

Commodity ³	2008	2009	2010	2011	2012
Brick	10,000	10,000	10,000	10,000	10,000
Cement	45,000	45,000	45,000	190,000 ^r	260,000
Clays:					
Common	4,000	4,000	4,500	4,500	4,500
Kaolin	183	200	175	200	200
Coral	65,000	60,000	58,000	58,000	58,000
Gold kilograms	30	30	50	11,800 ⁴	9,700 ⁴
Granite	25,000	25,000	25,000	25,000	25,000
Gravel	80,000	78,000	80,000	80,000	80,000
Gypsum	800	900 ^r	1,000 ^r	1,000 ^r	1,200
Lime	165,000	165,000	150,000	150,000	150,000
Limestone	3,000	3,000	3,000	3,000	3,000
Marble, block cubic meters	35,000	32,000	36,000	36,000	36,000
Pumice	60	60	60	60	60
Quartz	100	100	100	100	100
Salt	26,071 ^{r,4}	26,000 ^r	27,000 ^r	27,000 ^r	28,000 ^r
Sand thousand metric tons	2,200	2,200	2,200	2,200	2,200
Silver kilograms	-- ^{r,4}	-- ^{r,4}	35	20,000	17,000

^rRevised. -- Zero.

¹Estimated data are rounded to no more than three significant digits.

²Table includes data available through April 23, 2014.

³In addition to the commodities listed, basalt, feldspar, and talc were thought to be produced, but available information was inadequate to make reliable estimates output.

⁴Reported figure.

TABLE 2
ERITREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location	Annual capacity
Brick	each	Badme Construction Co.	Plant at Barentu	10,000
Cement		Gedem Cement Works	Gedem	350,000
Do.		Eritrea Cement Works	Massawa	45,000
Gold	kilograms	Bisha Mining Share Co. (Nevsun Resources Ltd., 60%, and Eritrean National Mining Corp., 40%)	Bisha Mine near Bisha	9,700
Granite	cubic meters	Margran plc	Gogne	3,000
Lime		Badme Construction Co.	Plants at Gogne	7,300
Do.		do.	Plant at Barentu	1,800
Marble	cubic meters	Margran plc	Gheleb	5,000
Salt		Assab Salt Works	Assab	150,000
Do.		Salina Salt Works	Massawa	80,000
Silver	kilograms	Bisha Mining Share Co. (Nevsun Resources Ltd., 60%, and Eritrean National Mining Corp., 40%)	Bisha Mine near Bisha	18,000

Do., do. Ditto.