



2015 Minerals Yearbook

ERITREA [ADVANCE RELEASE]

THE MINERAL INDUSTRY OF ERITREA

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Eritrea was a producer of copper, gold, and silver from volcanic massive sulfide (VMS) deposits. The country also produced basalt, brick clay, cement, coral, granite, gravel, gypsum, lime, limestone, kaolin, marble, pumice, quartz, salt, and sand. Eritrea was not a globally significant consumer or producer of minerals in 2015.

Minerals in the National Economy

In 2014, the manufacturing sector accounted for 5.8% of the gross domestic product, and the mining and quarrying sector, 1.7%. The value of output in the mining and quarrying sector increased by 2.5% in 2014 (African Development Bank Group, 2016).

All mineral resources in Eritrea were the property of the state, and licenses were required for exploration and development. The mining sector was governed by legislation that included the 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. The petroleum sector was governed by the Revised Petroleum Operations Proclamation No. 108/2000.

Production

In 2015, the production of gold increased by 54%; silver, by 33%; and cement, by an estimated 10%. Copper production decreased by 31% in 2015 (table 1).

Structure of the Mineral Industry

Under Eritrean law, the Government had a 10% free-carried interest in mining operations that were privately owned. The Government also had the right to purchase as much as an additional 30% interest in mining operations. Bisha Mining Share Co. [Nevsun Resources Ltd. of Canada, 60%, and Government-owned Eritrean National Mining Corp. (ENAMCO), 40%] mined copper, gold, and silver. The cement plants were privately owned (table 2).

Commodity Review

Metals

Copper, Gold, Silver, and Zinc.—In 2015, Nevsun and ENAMCO produced 61,600 metric tons (t) of copper at the Bisha Mine compared with 88,900 t in 2014. Total sales of silver increased to 70,330 kilograms (kg) in 2015 from a revised 52,668 kg in 2014, and sales of gold increased to 1,390 kg compared with a revised 905 kg. The decrease in copper production was attributable to lower ore grades and recovery rates, fuel shortages, mechanical problems, and power supply

interruptions. Gold and silver sales increased because of sales of pyrite sand ore (Nevsun Resources Ltd., 2016b, p. 5).

In 2016, Nevsun planned to produce between 18,000 and 23,000 t of copper in concentrate from the Bisha Mine's copper-rich supergene zone, which was expected to be depleted by yearend. The company planned to start mining at the zinc-rich primary sulfide zone of the deposit in mid-2016. Nevsun planned to produce between 32,000 and 45,000 t of zinc and between 18,000 t and 27,000 t of copper in concentrate from the primary sulfide zone by the end of 2016. From 2017 to 2025, production was likely to be about 102,000 metric tons per year (t/yr) of zinc and 24,000 t/yr of copper (Nevsun Resources Ltd., 2016b, p. 3, 7).

At the end of 2015, Nevsun estimated that reserves in the primary sulfide zone at the Bisha Main VMS deposit were 21 million metric tons (Mt) at grades of 5.57% zinc, 1.1% copper, 43.9 grams per metric ton (g/t) silver, and 0.68 g/t gold. Reserves in the supergene zone at Bisha Main were estimated to be 869,000 t at grades of 2.18% copper, 14.5 g/t silver, and 0.56 g/t gold (Nevsun Resources Ltd., 2016a, p. 29).

In May 2013, Sunridge Gold Corp. of Canada completed a feasibility study with positive results for a new mine at its Asmara project. The Asmara deposits include the Adi Nefas VMS copper-gold-zinc deposit, the Debarwa VMS copper-gold-zinc deposit, the Emba Derho VMS copper-gold-zinc deposit, and the Gupo gold deposit. Probable reserves in the Emba Derho primary zone were 44.5 Mt at grades of 1.6% zinc, 0.7% copper, 9.2 g/t silver, and 0.3 g/t gold. The Debarwa supergene zone, which included high-grade direct-shipping ore, had proven reserves of 423,000 t at grades of 8.9% copper, 0.2% zinc, 53.2 g/t silver, and 2.2 g/t gold. Sunridge planned to start mining in 2016 (Sunridge Gold Corp., 2013; 2015, p. 3).

In the first phase of the project, Sunridge planned to produce nearly 2,300 kilograms per year (kg/yr) of silver and 750 kg/yr of gold in concentrate for 4 years from the oxide zones at Debarwa, Emba Derho, and Gupo Gold. The company also planned to mine 116,000 t of direct-shipping ore from Debarwa at grades of 15.6% copper, 76.8 g/t silver, and 2.96 g/t gold. In the 15-month second phase, Sunridge planned to produce about 34,100 t/yr of copper, 24,000 kg/yr of silver, and 740 kg/yr of gold from the copper supergene ore at Debarwa and Emba Derho. During years 4 through 16 of production, the company planned to produce about 65,100 t/yr of zinc, 24,800 t/yr of copper, 23,100 kg/yr of silver, and 720 kg/yr of gold from copper-zinc primary sulfide ore at Adi Nefas, Debarwa, and Emba Derho. The estimated life of the project was more than 16 years (Sunridge Gold Corp., 2013, 2015, p. 11–17, 27).

China Shanghai Corporation for Foreign and Technological Cooperation (SFECO) of China held a 60% interest in the Zara project, which included the Koka gold deposit. ENAMCO held a 40% interest in the project. SFECO started construction of a new mine at Koka in 2013; production was expected to start

in the second half of 2015. In a feasibility study completed in 2010, planned output was about 3,200 kg/yr of gold during 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. At the end of 2015, the first gold had not yet been poured at Zara (Tarikh, 2012; State of Eritrea Ministry of Energy and Mines, 2014; Chalice Gold Mines Ltd., 2016).

In 2015, Andiamo Exploration Ltd. of the United Kingdom (Ortac Resources Ltd. of the British Virgin Islands, 42.2%) engaged in drilling at the Hoba target, which was part of the Haykota license. The company planned to complete drilling by yearend. In late 2015, Andiamo was planning to complete an initial resource estimate for the Yacob Dewar VMS deposit, which also was part of the Haykota license (Ortac Resources Ltd., 2015).

Industrial Minerals

Cement.—Eritrea's cement plants were producing at the rate of about 260,000 t/yr in 2012 and 2013 and at about 300,000 t/yr in 2014. Gedem Cement Works and Eritrea Cement Works had capacities of 350,000 t/yr and 45,000 t/yr, respectively. Although both plants operated below capacity because of power shortages, production likely increased in 2015 because of the expansion of the Hirgigo power station to 132 megawatts (MW) from 84 MW (Ghebrehiwet, 2011; Edwards, 2013; Woldu, 2014; TesfaNews, 2015).

Potash.—Danakali Ltd. of Australia (formerly South Boulder Mines Ltd.) and ENAMCO's Colluli potash project is located in the Danakil Depression region. In 2015, Danakali completed prefeasibility and feasibility studies of a new mine at Colluli with favorable results. Danakali planned to start the mining license application process in the first quarter of 2016, and to start production by the fourth quarter of 2018. Kainite and sylvinitic would be converted to potassium sulfate at a processing plant at Colluli. Production in the first phase of the project was likely to be 425,000 t/yr of potassium sulfate; an expansion to 850,000 t/yr was planned in the sixth year of mining (Danakali Ltd., 2015).

Based on production of 850,000 t/yr of potassium sulfate, the life of the project could be more than 200 years. Kainite resources at Colluli were estimated to be 497 Mt at a grade of 11% potassium oxide (K_2O); carnallite, 363 Mt at a grade of 8% K_2O ; and sylvinitic, 253 Mt at a grade of 13% K_2O (Danakali Ltd., 2015).

Salt.—Eritrea's salt miners produced at the rate of about 290,000 t/yr in 2013; production increased to an estimated 300,000 t/yr in 2014 and 2015. Assab Salt Works and Salina Salt Works had capacities of 150,000 t/yr and 80,000 t/yr, respectively. Danakil planned to extract more than 1.8 million metric tons per year of rock salt from the overburden at Colluli. In 2015, the company was engaged in negotiations for offtake agreements. Rock salt resources at Colluli were 347 Mt at a grade of 96.9% sodium chloride (Woldu, 2013; Danakali Ltd., 2015).

Outlook

Eritrea's mineral sector could expand significantly in the near future. Zinc and potash mining are expected to start in 2016 and 2018, respectively. Gold production is likely to increase because of the planned opening of the Asmara and Zara projects in 2016. Decreased copper and silver production from the Bisha Mine is expected to be partially offset by increased production at the Asmara project. Cement output is likely to increase because of the capacity expansion at the Hirgigo power station.

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

(Metric tons unless otherwise specified)

Commodity ³		2011	2012	2013	2014	2015
METALS						
Copper		-- ⁴	-- ⁴	21,800 ⁴	88,900 ⁴	61,600
Gold	kilograms	11,788 ⁴	9,735 ⁴	3,008 ⁵	905 ^{r,5}	1,390
Silver ⁵	do.	4,400	29,900	15,799	52,668 ^r	70,330
INDUSTRIAL MINERALS						
Basalt		60,000	61,000 ^r	63,000	65,000 ^r	65,000
Cement		190,000	260,000	260,000	300,000	330,000
Clays:						
Common		110,000	120,000	120,000	130,000 ^r	130,000
Kaolin		240	250	260 ^r	260 ^r	260
Coral		89,000	91,000	93,000	96,000 ^r	96,000
Granite		28,000	29,000	30,000	30,000	30,000
Gravel		105,000	110,000	110,000	110,000	110,000
Gypsum		1,100	1,200	1,200	1,200	1,200
Lime		190,000	190,000	200,000	200,000	200,000
Limestone		4,000	4,100	4,200	4,300 ^r	4,300
Marble, block	cubic meters	41,000	42,000	43,000 ^r	44,000 ^r	44,000
Pumice		72 ^r	75	76 ^r	78 ^r	78
Quartz		120	120	130	130	130
Salt		180,000	240,000	290,000	300,000 ^r	300,000
Sand	thousand metric tons	3,000	3,100	3,200	3,300 ^r	3,300

^rRevised. do. Ditto. -- Zero.

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

²Table includes data available through May 26, 2016.

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

⁴Reported figure.

⁵Reported sales.

TABLE 2
ERITREA: STRUCTURE OF THE MINERAL INDUSTRY IN 2015

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location	Annual capacity
Brick		Dahlak Brick and Block Factory	Plant at Massawa	7,300 ^e
Cement		Gedem Cement Works	Gedem	350,000
Do.		Eritrea Cement Works	Massawa	45,000
Copper		Bisha Mining Share Co. [Nevsun Resources Ltd., 60%, and Eritrean National Mining Corp. (ENAMCO), 40%]	Bisha Mine near Bishia	90,000 ^e
Gold	kilograms	do.	do.	1,400 ^e
Granite	cubic meters	Margran plc	Gheleb	5,000
Lime		Badme Construction Co.	Plants at Gogne	7,300
Do.		do.	Plant at Barentu	1,800
Marble	cubic meters	Margran plc	Gogne	3,000
Salt		Assab Salt Works	Assab	150,000
Do.		Salina Salt Works	Massawa	80,000
Silver	kilograms	Bisha Mining Share Co.	Bisha Mine near Bishia	71,000 ^e

^eEstimated. Do., do. Ditto.