

THE MINERAL INDUSTRY OF

TANZANIA

By David Izon¹

Tanzania has a variety of mineral resources, although they have not been fully explored or developed. Gold and diamond are the mainstay of the country's mineral production. Mineral production accounted for the major share of export earnings and 13% of gross domestic product (GDP) of \$17 billion.² Diamond contributed about 85% of total mineral export earnings. Major minerals produced, in order of value and foreign exchange earnings, were diamond, gold, gemstones, phosphates, salt, and tin. Tanzania's gem diamonds are very high quality. Recent exploration and investment activities in the minerals sector provide potential opportunities for growth in the mineral economy of the country. Crude petroleum is the major mineral import for the energy-dependent country.

Investment in the mining and petroleum sectors was governed by the provisions of the 1979 Mining Act and the 1980 Petroleum (Exploration and Production) Act, respectively. The incorporation of 1988 minerals trade policies into the 1979 Act and the establishment of the National Investment Promotion Center (IPC) helped to create a favorable environment for foreign investment. Prospectors must obtain exploration and development licenses through the IPC. Exploration licenses were issued for a period of 1 year and could be renewed yearly. These cover specific areas and minerals. Mining licenses, when issued, give exclusive rights to investors to prospect, produce, and sell the minerals recovered. The mining licenses expire after 25 years or at the end of the estimated life of the deposit, whichever was shorter, and were renewable for another 15 years.

The Government's recent liberalization measures have attracted private mining investors from Australia, Canada, Japan, South Africa, the United Kingdom, and the United States. Some of these measures included simplification of the tax system.

The 1979 Mining Act required that prospectors provide environmental statements with applications for permits before a license was issued. The National Environment Management Act of 1983 covered environmental matters and authorized a National Environmental Council to regulate environmental activities. Mining is not permitted in National Parks or in the Ngorongoro Conservation area, but is allowed by special permits in game reserves.

Diamond output declined owing to depletion of higher grades of ore at Mwadui and equipment failure. Gold production was believed to be significantly underreported

owing to lack of regulations governing the large number of small-scale miners, and the inefficient Government purchasing procedures for gold by the Bank of Tanzania. (See table 1.)

Major minerals traded included diamond and gold, which accounted for about 85% of foreign exchange earnings. Other minerals of importance were gemstones and phosphate.

Tanzania's main trading partners remained Germany, Italy, the Netherlands, United Kingdom, and neighboring east African countries.

Major imports from the United States were manufactured goods, machinery and transport equipment, and spare parts.

The state has owned all mineral rights in the country since 1964. The National Development Corp., formed in 1966, took over most of the private enterprises. The State Mining Corp. (STAMICO) controlled the mineral industry and operated most mines and plants. The Mining Act of 1979 applied to investments that dealt directly with mining. Foreign participants in mining ventures are now allowed to have more than 50% of the shares. Development of any new, remote mineralized areas would have to provide for infrastructure development.

Tanzania's base-metal deposits have been well documented in the past few years. Mineral exploration continued to identify new deposits and reserves. Notable production of copper and lead was reported from the Mukwamba Mine in Mpanda district. According to the Government of Tanzania, cobalt, copper, lead-zinc, and nickel, occur widely in the country. Other deposits include iron ore at Liganga and Njombe, with proven resources of about 45 million metric tons (Mmt) at Liganga grading 52% iron. The lack of production of iron ore at Linganga may be due to its remoteness. Also, large amounts of coal, tin, titanium, and tungsten have been found. Coal was found in the karoo beds of southwestern Tanzania; tin and tungsten in the Karagwe coalfields in the northwestern part; and titanium along the coast between Dar es Salaan and Bagamoyo, but most importantly near the Ruvu River.

In 1994, three semi-mechanized, small-scale gold mining operations were reportedly in the country. They included TANCAN Gold Ltd., at Matinjie near Nzega; Mans Mining Ltd.'s Sengambi Mine, near Lupa; and DEMCO's Rubble Mine, at Suza in the Lupa District. STAMICO's Buckreef Mine remained closed as negotiations continued between the Government and East Africa Mines Ltd., a subsidiary of

Portman Mining Co. of Australia, for a takeover and development of the Buckreef property by the latter. The gold purchase price offered by the Bank of Tanzania failed to meet market price, thereby encouraging a flourishing parallel market system often used by artisanal miners. Small-scale miners were well organized in their mining efforts by local village authorities, and actual labor was estimated at 20,000 workers.

A gold concession covering 207 square kilometers (km²) in the Kahama District was acquired by Tan Range Explorations of Canadian. The Bulyanhulu deposits in the Kahama District reportedly had reserves of about 4.3 Mmt, grading about 11 grams per metric ton (g/mt) gold, 12.05 g/mt silver, and 0.66% copper. Other companies exploring for gold and evaluating potential targets in the country included Tan Range's Tanzanian subsidiary, Tan Can Mining of Canada, East African Gold Mines of Australia, SAMAX of the United Kingdom, and Skeat Mining of South Africa, among others.

Exploration activities by Sutton Resources and Romanex International, both of Canada, continued at two concessions in northwest Tanzania for nickel, cobalt, lead, and platinum-group metals. BHP Minerals International of Australia held a 52%-share in the project, and funded the exploration work. Kabanga Nickel Co. and Kagera Mining Co., subsidiaries of the Sutton Resources and Romanex International, work the concessions. The Kabanga property is an area of approximately 65 km², held under license by Kabanga Nickel Co. Ltd. According to Sutton Resources' evaluation of the Kabanga project, indicated resources were about 25.5 Mmt grading 1.36% nickel, 0.11% cobalt, and 0.20% copper. The proposed \$321-million facilities would include the mine, mill, and smelter with throughput of 2.5 million metric tons per year. The facility is expected to produce 28,800 metric tons per year (mt/a), of nickel, 2,000 mt/a of cobalt and 4,800 mt/a of copper. The total reserves estimated at yearend 1994 were about 80 Mmt at the Kabanga-Kagera concessions. Based on the preliminary results, Sutton Resources envisaged a 15,000-metric-tons-per-day open pit operation lasting about 20 years.

Tanzania's industrial minerals included bentonite, graphite, gypsum, and phosphate. Large reserves of bentonite occurred at Lake Manyara, Mount Gelai, and Sinya. Tanzania has rich deposits of gemstones, including diamond, emerald, rhodolite, ruby, sapphire, tanzanite, and tourmaline.

Diamond has been one of the primary minerals produced in Tanzania. The country contained about 300 known kimberlites, but only the Mwadui pipe has been commercially exploited. The Mwadui Mine has produced about 17 million carats since its inception in 1940. Production continued to decline at Mwadui from 40,747 carats to 15,666 carats in 1994 owing to the age of the plant and equipment. According to the Government, De Beers Centenary AG, through its subsidiary Wilcroft Co. of Bermuda, would rehabilitate and modernize the Mwadui

Mine at a cost of \$7.5 million. European Ventures Corp., a Vancouver Canada-based company, acquired a 50%-interest in Tan Range Exploration Corp.'s shares and reportedly intended to explore for diamond. According to the agreement, European would fund between \$100,000 and \$200,000 of the exploration costs in the first and second years respectively, and issue 100,000 common shares to Tan Range. European acquired and would explore 60 km² of the Shinyanga region. Tanex Ltd., a subsidiary of De Beers Centenary, explored an area covering 23,000 km² in the Mwanza, Shinyanga, and Tabora regions. Other parties that showed interest in diamond concessions were Reunion Mining Co. and RTZ of the United Kingdom, who submitted applications for diamond prospecting.

Tanzania possesses considerable low-sulfur coal resources that were only being exploited on a small scale. The active mines are the Kiwira and Ilima Mines, northeast of the Kipengere range. The mines produced about 39,000 mt/a, all processed for local consumption. The estimated output capacity of the mines was 150,000 mt/a, which was planned to be raised to 180,000 mt/a by 1995. The continued shortage of equipment and adequate funds resulted in limited output. Coalfields of importance are the Songwe-Kiwira and the Ruhuhu, both in southwest Tanzania. The Ruhuhu Coalfield contains the largest and best quality coal resource. Reserves were estimated to be about 1.2 billion metric tons.

The development of the Songo Songo natural gasfields continued on schedule and funding was being provided by Ocelot International Inc. of Canada.

According to the Government, Tanzania's estimated reserves of natural gas are 41 billion cubic meters (m³) in the offshore-Songo Songo Field 300 km off the southern coast. The total in situ coal reserves were 1.2 billion mt in nine main coalfields in the southern part of the Rift Valley. Estimated iron ore resources were 85 Mmt with an average iron content of 52% iron. Gold reserves at the Bulyanhulu deposits were 10 Mmt of ore. Estimated diamond reserves were 3.8 million carats. Phosphate reserves were 10 Mmt. Nickel-cobalt-copper ore resources were about 80 Mmt. No official reserve figures were reported for tin and other minerals.

Most mining projects and mineral deposits are in remote areas where the infrastructure is extremely poor. The Kiwira Mine in the Songwe-Kiwira Coalfields is near the Tanzania-Zambia Railway Authority (TAZARA) and Lake Nyasa. The Ruhuhu Coalfield lies in a remote area. TAZARA is used mainly to transport goods for Zambia and Malawi. Dar Es Salaam is the ocean terminus of the railway to the inland ports of Kigoma at Lake Tangayika, and to Mwanza at Lake Victoria. Major ocean ports are at Dar Es Salaam, Mtwara, Tanga, and Zanzibar.

Tanzania relies largely on hydroelectric power for its electricity. The Tanzania Electric Supply Co. on the mainland and the Zanzibar State Fuel & Power Corp. on the island are responsible for all public power generation and

delivery.

Nonfuel minerals, such as diamond and gold, should continue to dominate the mineral economy of Tanzania for the near future. Development of key mineral resources, such as coal, cobalt, diamond, gold, graphite, and nickel, would increase sources of revenue and foreign exchange for the country.

The Government's economic recovery program should continue to improve Tanzania's ability to attract investors and promote industrial growth. Road and rail improvement projects being implemented or studied would help to alleviate transportation problems now barring the efficient distribution of commodities. Toll roads, when installed in the country, could raise funds for construction of additional infrastructure needed for remote areas.

¹Text prepared in June 1995.

²Where necessary, values have been converted from Tanzanian shilling (Tsh) to U.S. dollars at Tsh550=US\$1.00 in December 1994.

Major Sources of Information

Ministry Water, Energy and Minerals
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TABLE 1
TANZANIA: PRODUCTION OF MINERAL COMMODITIES 1/2/

(Metric tons unless otherwise specified)

Commodity 3/	1990	1991	1992	1993	1994
Cement, hydraulic e/	540,000	540,000	540,000	540,000	540,000
Clays:					
Bentonite e/	75	75	70	70	70
Kaolin	2,020	1,740	1,360	1,300	1,300
Coal, bituminous	51,600	33,200	38,600	38,500	38,500
Diamond 4/	84,600	99,800	67,300	40,900	15,700
carats					
Gemstones, precious and semiprecious excluding diamond 5/					
kilograms	38,700	59,600	59,600	33,000	33,000
Gold, refined e/	3,500	4,200	5,210	3,370	3,370
do.					
Gypsum and anhydrite, crude	36,200	35,300	35,200	17,600	17,600
Lime, calcined and hydrated e/	1,470	870	1,810	1,800	1,800
Limestone, crushed	861,000	553,000	553,000	991,000	991,000
Mica, sheet	(6/)	(6/)	(6/)	(6/)	(6/)
Petroleum refinery products:					
Liquefied petroleum gas		thousand 42-gallon barrels			
Gasoline	50 e/	35	33	30	30
do.					
Kerosene	800 e/	858	855	850	850
do.					
Jet fuel	300 e/	437	432	400	400
do.					
Distillate fuel oil	100 e/	237	262	250	250
do.					
Residual fuel oil	1,000 e/	820	820	800	800
do.					
Other	1,500 e/	1,570	1,560	1,500	1,500
do.					
Total including refinery fuel and losses	300 e/	470	450	450	450
do.					
Total	4,050 e/	4,430	4,410	4,280	4,280
Phosphate minerals:					
Apatite	25,070	22,400	22,400	7,160	7,160
P ₂ O ₅ content e/ 7/	7,770	6,950	6,940	2,220	2,220
Salt, all types	39,300	64,400	64,400	64,000	64,000
Sand, glass	6,370	4,270	4,200	4,200	4,200
Soda ash e/	300	300	300	300	300
Tin, mine output, Sn content e/	15	8	8	12	12

e/ Estimated.

1/ Includes data available through Jun. 9, 1995.

2/ Previously published and 1994 data are rounded by the U.S. Bureau of Mines to three significant digits; data may not add to totals shown.

3/ In addition to the commodities listed, modest quantities of unlisted varieties of crude construction materials (other clays, sand and gravel, and stone) presumably are produced, but output is not reported quantitatively, and available information is inadequate to make reliable estimates of output levels.

4/ Diamond figures are estimated to represent 70% gem-quality or semigem-quality and 30% industrial-quality stones.

5/ Exports.

6/ Less than 1/2 unit.

7/ P₂O₅ figures are estimated to represent 31% of apatite (Ca₅Cl(PO₄)₃). Consideration is given for impurities.