

THE MINERAL INDUSTRY OF

TANZANIA

By George J. Coakley

The United Republic of Tanzania, including the semi-independent islands of Zanzibar, is located between Kenya and Mozambique on the east coast of Africa and has a land area of 886,040 square kilometers. In 1998, the area supported a population of 30.5 million with a gross domestic product (GDP) per capita of \$730 based on purchasing power parity estimates. The mining and petroleum sectors, which played a relatively small role in the chiefly agrarian economy of Tanzania, accounted for less than 3% of the total nonsubsistence workforce of around 170,000 and for about 5% of the GDP. In 1998, the value of mineral exports, primarily diamond (\$12.11 million), semiprecious gemstones (\$8.13 million), and gold (\$3.35 million), declined by 14% to \$23.60 million, down from \$27.52 million in 1997. Mineral exports represented 3.5% of total exports of all goods of \$679 million in 1998 (Jairo, 1999). Encouraged by more aggressive Government investment policies and the exploration successes reported in 1996 and 1997, mining was on the verge of becoming a significant part of the Tanzanian economy. Although the country's natural resources include coal, cobalt, diamond, gemstones, graphite, iron ore, natural gas, nickel, and phosphate rock, development of gold resources will be the focus of the mining industry in the next 5 years.

During 1998, the Government passed a new Mining Act of 1998 to replace the old Mining Act of 1979 (Newafrica.com, September 1999, Mining Laws of Africa—Tanzania Mining Act, 53 p., accessed January 6, 2000, at URL <http://www.newafrica.com/mining/laws/tanzania.pdf>). The new Act will be administered by the Ministry of Energy and Minerals through a new office of the Commissioner for Minerals. The petroleum sector is governed by the provisions of the 1980 Petroleum (Exploration and Production) Act. The Tanzania Investment Act of 1997 created the Tanzania Investment Centre, a one-stop center to promote, coordinate, and facilitate investment. Investments are now guaranteed against nationalization and expropriation. The Tanzania Investment Act sets corporate tax rate for the mining sector at 30% and provides additional customs rates, capital allowance deductions, depreciation, and other tax incentives (Tanzania Investment Centre, 1997). Mining royalties are set at 3% of netback value (net sales revenue), with a rate of 5% for diamond. No royalties are paid on cut and polished gemstones. The new Financial Laws (Miscellaneous Amendments) Act of 1997 also provided improved fiscal incentives for the mining sector. In October 1997, the Ministry of Energy and Minerals issued a new minerals policy giving priorities to private-sector initiatives, the rationalization and organization of artisanal and small-scale mining and product marketing, and new initiatives to mitigate the adverse environmental and social aspects of mining. The

Ministry's vision statement included increasing mining contribution to the economy to more than 10% of the GDP and establishing a value-added gemstone-cutting and jewelry-manufacturing industry. It emphasizes the role of the Government as a regulator, promoter, facilitator, and service provider to the private sector and not as a direct player in production activities. 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. The 1997 minerals policy document further strengthens the Government's commitment to the environmental and social sustainability of mining development and sets the stage for additional environmental regulatory and management programs.

The country has been successful in attracting mineral exploration and investment and since 1992 has triggered a "gold rush" in the greenstone belts at the southern end of Lake Victoria. Exploration companies from Australia, Canada, Ghana, South Africa, Sweden, and the United Kingdom have been very active in Tanzania, with foreign direct investment in the mining sector increasing from \$56.9 million in 1997 to \$95.9 million in 1998 and with more than 650,000 kilograms (kg) (21 million troy ounces) of gold resources identified in the eight largest exploration projects through 1998 (Ministry of Energy and Minerals of Tanzania, January 1999, Tanzania mineral sector developments, accessed February 7, 2000, at URL http://www.newafrica.com/mining/tanzania_miningdev.htm).

Historically, diamond and gold have been the most important minerals produced in Tanzania, with mining of semiprecious gemstones increasing in its relative importance in recent years. Tanzania also produced construction materials, including cement and other industrial minerals. Fuel mineral production in Tanzania has been limited to steam coal from the mine at Kawire and a small amount of petroleum refinery products. Mineral production statistics for the period from 1994 to 1998 are listed in table 1.

Commodity Review

Metals

Gold.—During the year, gold exploration and development planning dominated the industry news, with several companies announcing or extending the discovery of significant gold resources. With an annual production of nearly 30 metric tons of gold possible by 2001 and with additional potential for

growth, Tanzania will become one of Africa's major gold producers.

The first of several likely new projects, the \$48 million Golden Pride Project, started up in November 1998 with the capacity to produce 5,600 kilograms per year (kg/yr) of gold. The mine produced 198 kg of gold during the last quarter of 1998. Golden Pride was a 50-50 joint venture between Resolute Ltd. of Australia and Ashanti Goldfields Co. Ltd. of Ghana. Ashanti acquired its interest when it purchased Samax Resources Ltd. of Canada in November 1998 for \$135 million. The Golden Pride open pit development was based on an October 1997 mineral resource estimate of 33.41 million metric tons (Mt) of ore grading 2.56 grams per metric ton (g/t) gold and containing 85,530 kg gold, including an interim minable reserve totaling 12.43 Mt grading 2.62 g/t gold and containing 32,380 kg gold (Samax Resources Ltd., 1998, p. 4-6).

Ashanti's acquisition of Samax included Samax's Kukuluma and Matandani deposits that were located near Ashanti's Geita-Lone Cone property in Tanzania. Ashanti planned to combine the properties to bring a new open pit mining, leach, and carbon-in-pulp processing operation on-stream by 2001 producing up to 14,800 kg/yr at a total project capital cost of about \$165 million. Ashanti reported the results of exploration drilling at the Geita Project through March 31, 1999, as having identified an undiluted, in-situ mineral resource of 208,000 kg (6.7 million ounces). The resource is distributed among six deposits. The total measured, indicated, and inferred resource at Geita Hill was 22.5 Mt grading 2.6 g/t gold; Nyankanga, 16.2 Mt grading 4.4 g/t gold; Lone Cone, 6.2 Mt grading 2.7 g/t gold; Kukuluma, 8.6 Mt grading 3.3 g/t gold; Matandani, 10 Mt grading 2.6 g/t; and Area 3 West, 2.7 Mt grading 2.7 g/t (Ashanti Goldfields Co. Ltd., September 1999, The Geita project—Part 4—Exploration, accessed January 31, 2000, at URL <http://www.ashantigold.com/geita.htm>). In January 1999, Ashanti took out an option to acquire 60% of the adjacent Geita East property held by Tan Range Exploration Corp. of Canada subject to completing a bankable feasibility study by the end of 2001.

At yearend, Kahama Mining Corp. Ltd., owned by Sutton Resources Ltd., was still working on project financing for the largest gold deposit outlined to-date in Tanzania, the Bulyanhulu deposit with reported measured, indicated, and inferred resources of 17.55 Mt grading 13.14 g/t gold (Sutton Resources Ltd., 1998). Sutton completed a favorable feasibility study in 1998 and was initiating development plans on its \$211 million, 2,500 metric-ton-per-day underground Bulyanhulu Mine to be in production by 2000 at a rate of 9,330 kg/yr of gold. In March 1999, Barrick Gold Corp. of Canada purchased Sutton Resources, including the Bulyanhulu gold property, for approximately \$281 million (Barrick Gold Corp., March 27, 1999, Barrick acquires 91% of Sutton, Barrick Gold Corp., press release, accessed March 27, 1999, at URL http://www.barrick.com/barrick_glance/press_releases/docs/pr990327.cfm).

Pangea Goldfields Inc. (Canada) held about 36 gold exploration licenses in the greenstone belts south of Lake Victoria and had joint-venture agreements with the Anglo American Corp. of South Africa Ltd. to explore the

Kahama/Chocolate Reef prospect where a resource, using a 0.5-g/t cutoff, of 26 Mt grading 2.3 g/t gold has been identified; Ashanti to explore the Bulyanhulu South (51%) and Rubondo (51%) properties; and Explorations Minière du Nord Ltée of Canada to explore the Kangele (50%) and the Tulawaka (30%) deposits. Pangea also had joint-venture agreements with Iscor Ltd. of South Africa on the Suguti and Ushiroombo properties, Ormonde Mining plc of Ireland on the Mguzi property where an inferred resource of 1.83 Mt grading 4.6 g/t gold has been calculated, and Randgold Resources Ltd. of the United Kingdom to explore the Golden Ridge deposit where a total resource of 46,655 kg (1.5 million ounces) gold had been estimated, of which the measured and indicated portion of the overall resource contains 31,100 kg (1.0 million ounces) of gold, in mineralization grading 2.73 g/t gold. Although terms differ from property to property, in general, the company joint venturing with Pangea can earn up to a 51% interest in the respective property by funding the exploration phase and from 60% to 75% by completing a bankable feasibility study within a 2- to 3-year period. In March 1999, Barrick acquired all Randgold's interest in the Golden Ridge joint venture, Pangea's most advanced project. Barrick acquired a 50% interest in the Golden Ridge property and had the right to increase its interest to 65% by completing a bankable feasibility study and by securing total project financing by September 2000. Barrick will continue to drill for further resource extensions at Golden Ridge in 1999. Golden Ridge is about 35 km southeast of Barrick's recently acquired Bulyanhulu property (Pangea Goldfields Ltd. 1999, Annual report for 1998, accessed December 18, 1999, at URL <http://www.pangeagoldfields.com/ir-fr.htm>).

During 1998, AngloGold Ltd. of South Africa focused its exploration program on proving up minable reserves at their two most advanced projects—Buzwagi, in the Kahama district, and Nyamulilima Hill, also known as Ridge 8, southwest of Ashanti's Geita Mine. Drilling efforts had outlined an initial total resource of 55,986 kg of contained gold at Buzwagi and 65,317 kg of contained gold at Nyamulilima Hill with additional drilling planned in 1999 to increase and define these deposits (AngloGold Ltd., 1999, p. 31).

In November 1997, East African Gold Mines Ltd. (EAGM) of Australia acquired all the shares in Afrika Mashariki Gold Mines Ltd. and its interest in the Nyabirama and Nyabigena prospects in the Musuma-Mara district near the town of Tarime, on the eastern side of Lake Victoria by the border with Kenya. EAGM, in partnership with Anglo American, the Commonwealth Development Corp. of the United Kingdom, and Lion Selection Group Ltd. of Australia, completed a feasibility study on its Nyabirama and Nyabigena projects in 1998. The company established a total indicated and inferred resource of 20.1 Mt grading 3.1 g/t gold, of which there is a probable ore reserve of 16.8 Mt grading 2.9 g/t gold. The feasibility study was based on an open pit mine and carbon-in-pulp processing plant producing 4,355 kg/yr of gold at a capital cost of \$52 million. The project was being delayed by a legal challenge to the Nyabirama mining license (Lion Selection Group Ltd., 1999, Investments—East African Gold Mines Ltd., Lion Selection Group Ltd. annual report for 1998, accessed

January 22, 2000, at URL <http://www.lionselection.com.au/PDFS/ar-98.pdf>).

Tan Range Exploration Corp. of Canada held the rights to the Itetemia, Geita East, Luhala, Kabahalele, Mnekezi, and Mulehe concessions and continued with various stages of exploration during 1998. The Itetemia project with its Golden Horseshoe Reef mineralized zone, hosted in a banded to massive quartz sulfide zone with a carbonate component, was Tan Range's most advanced project. Further exploration work in 1999 on Tan Range concessions will be carried out under option agreements with Ashanti Goldfields on Geita East, Barrick on Itetemia, and Newmont Gold Co. of the United States on the Luhala, Kabahalele, Mnekezi, and Mulehe gold properties.

In other gold exploration activity, East African Gold Corp., a subsidiary of Spinifex Gold NL of Australia, reported initial results of its 1998 exploration program in the Lake Victoria gold field. They reported a total measured, indicated, and inferred resource of 3.7 Mt grading 3.26 g/t gold at the Buckreef/Rwamagaza project; a total measured, indicated and inferred resource of 10.47 Mt grading 1.34 g/t gold at the Kitongo project; and an inferred resource of 0.7 Mt grading 6.13 g/t gold at the Nyakafuru concession for a combined resource of more than 31,200 kg of contained gold (Lion Selection Group Ltd., June 19, 1999, Spinifex Gold NL—Projects, accessed January 22, 2000, at URL <http://www.lionselection.com.au/spxprojects.html>).

Tanganyika Gold NL of Australia continued work on its Buhemba project and on the Busolwa project on its Mawe Meru license, 40 km south of Geita. Near-surface resources at Buhemba were reported to be 11.45 Mt grading 2.03 g/t and containing 23.2 t of gold (African Mining, 1998). Anglo American also held a 14.9% equity interest in Tanganyika Gold and was committed to expend \$2 million during 1998 and 1999 in the exploration of Tanganyika Gold's Lupa Goldfield licences and on the Samena area near Geita. Tanganyika Gold also signed an option agreement with Ormonde Mining to explore Ormonde's Simba Sirori South prospecting license adjacent to the Buhemba property.

During 1998, Maiden Gold NL of Australia entered a joint venture with Avgold Ltd. of South Africa to explore Maiden's 11 prospecting licences in southern Lake Victoria greenstone environments, including the Nyanzaga prospect and the area around the old Jubilee Reef gold mine. Avgold purchased a 20% interest in Maiden with an option to acquire an additional 40% interest.

In the Lupa gold fields in southwestern Tanzania, Serengeti Diamonds Ltd. of Canada had joint-venture agreements with Ormonde Mining to explore the Lyaru, the Kasanga Bridge, and the Makhona-Nijwa gold prospects and with Anmercosa Explorations (Tanzania) Ltd., a wholly owned subsidiary of AngloGold. Anmercosa identified five exploration targets from the 1998 evaluation of historical airborne geophysical data held by Serengeti and conducted initial rotary air blast drilling on two of the targets, at the Razorback and the Gap prospecting licences, during 1998. Ormonde also had a farm-in agreement with Iscor Ltd. of South Africa, whereby Iscor could earn a 50% interest in the Ormonde's Mrangi prospecting license in

the Seka area.

Nickel.—After the withdrawal of its joint-venture partner BHP Minerals International Exploration Inc. in 1997, Sutton Resources regained its 100% interest in the Kabanga and Kagera nickel-cobalt properties in northwestern Tanzania. During 1998, Anglo American conducted an aggressive exploration and engineering program on the Kabanga project under its 1997 agreement with Sutton to earn a 60% interest in Kabanga by committing to spend \$27 million, including at least \$7 million within 24 months, on exploration, feasibility studies, and arrangement of project financing. Anglo American reported new preliminary resource estimates on the North and the Main deposit at Kabanga, using a 0.8% nickel cutoff grade, of 15.5 Mt grading 2.43% nickel, 0.30% copper, and 0.18% cobalt at North Kabanga and 5.8 Mt grading 1.50% nickel, 0.19% copper, and 0.16% cobalt at Main Kabanga. Anglo American's detailed prefeasibility study examining the potential for developing a mine that could produce 15,900 metric tons per year (t/yr) of nickel and 1,130 t/yr of cobalt for more than 15 years was continuing into 1999 (Sutton Resources Ltd., 1999).

Industrial Minerals

Cement.—In the cement sector, Tanzania was more than 95% self-sufficient in meeting its domestic demand. During 1998, Tanzania Portland, one of three producers in the country, was acquired by Scancem International of Sweden (41%) and the Swedish state agency Swedfund International (19%). Tanzania Portland, located outside of Dar es Salaam, had a capacity to produce 700,000 t/yr of cement. Tanga Cement, located on the northeastern coast, with a capacity of 500,000 t/yr of cement, was owned by Alpha Ltd. of South Africa (60%). The state-owned Mbeya Cement Works, located in the far southwest of the country, had a capacity of 300,000 t/yr of cement (International Cement Review, 1998, p. 131).

Gemstones.—Williamson Diamonds Mines Co. Ltd., owned by De Beers Centenary AG (75%) and by the State Mining Corp. (25%), operated the Williamson (Mwadi) Mine. Production levels at the Williamson Mine decreased by 20% in 1998 compared with that of 1997 as a result of heavy rains that flooded the mine and slimes dam early in the year. With the surficial gravels nearly depleted, De Beers was bulk sampling the main kimberlite pipe at Williamson to determine the future of the mine. Additional diamond exploration was being conducted by De Beers; Reunion Mining plc of the United Kingdom at Mabuki; Tan Range at the Tabora kimberlite pipe, 65 km southwest of the Williamson Mine; and Serengeti Diamonds of Canada.

Merelani, in Arusha, the center of the production of the semiprecious gem, tanzanite, with 42 small-scale mining operations, was the site of a major mining tragedy in 1998. In April, torrential rains flooded the working pits, killing an estimated 100 workers. The individual working plots typically measure 50 by 50 meters (m) and can be as deep as 90 m. Licensed and illegal artisanal miners were active at Merelani.

The Ministry of Energy and Minerals indicated that the failure to clear all mine waste material from the mouth of the working pits contributed to the disaster. Some of the mines remained closed for the year, with a resulting upward impact on world prices for the popular blue-purple tanzanite. Tanzania was exporting between \$450,000 and \$700,000 per month in tanzanite material (Mining Journal, 1998b; Kibanga, Premy, July 6-12, 1998, Tanzanite mines back in operation after April accident, The East African [Nairobi], accessed July 13, 1998, at URL <http://www.nationaudio.com/News/EastAfrican/current/Regional/Regional7.html>).

Graphite.—Phoenix Minerals Ltd. of the United Kingdom closed its graphite mine near Arusha and put the mine up for sale with 1 Mt of graphite reserves remaining (Mining Journal, 1998a). The mine, originally developed in 1995 at a capital cost of \$20 million mine, produced 6,776 t of graphite in its first full year of production in 1996. Sufficient reserves were initially identified for a 40-year operation at a mining rate of 15,000 t/yr of high-grade flake graphite of 97 to 98% purity (Ministry of Water, Energy and Minerals, Tanzania, 1998). The mine, however, ran into operational problems in 1997, and the last shipment of remaining stockpiled ore was made in February 1998 (Industrial Minerals, 1998).

Mineral Fuels

Coal.—Kiwiri Coal Ltd. operated the only significant coal mine at its underground Songwe-Kiwiri operation, at the northwest end of Lake Nyasa. Kiwiri Coal had a rated production capacity of 150,000 t/yr of coal or 93,000 t/yr of washed bituminous coal. All production was consumed at a mine-mouth power-generating plant. Planning was underway to expand the capacity of the powerplant from 6 megawatts (MW) to 18 MW (Hestor, 1998, p. 90-92).

Petroleum and Natural Gas.—During the past 2 to 3 years, the Government has been trying to privatize its controlling interests in petroleum refining and exploration. The state-owned Tanzanian Petroleum Development Corp. (TDPC) entered production sharing agreements with a number of companies to explore offshore oil and gas targets while reducing its maximum participation in joint-venture agreements to 25%. These included Antrim Resources Inc. of Canada on the Pemba-Zanzibar blocks; Canop Worldwide Corp. of Canada and its joint-venture partner, Paladin Resources plc. of the United Kingdom on the Dar es Salaam Basin; Tanganyika Oil Co. on the Rufiji and Mandawa Basins; Tullow Oil plc. of Ireland on the Mnazi Bay Block; Dublin International Petroleum Ltd. of Ireland; and Klosa of Dubai.

Ocelot Energy Inc. and Trans Canada Pipelines Ltd., a Canadian joint venture under contract to the Government, continued development of the \$300 million Songo Songo offshore natural gas production and processing project with the delivery of gas to a Dar es Salaam power station expected around the end of 2001. All five existing gas wells in Songo Songo were reworked and made production ready during 1997. Testing confirmed total gas deliverability of more than 2.8

million cubic meters per day (Mm³/d) at high pressure and a total reserves of more than 28 billion cubic meters of natural gas. The first phase of the project required only 1.12 Mm³/d of deliverability and 7 billion cubic meters of reserves, leaving capacity for subsequent phases of gas sales from Songo Songo. During 1998, acquisition of the right-of-way for a 12-inch pipeline from Songo Songo Island to Dar es Salaam was completed. The gas-fueled powerplant at Ubungu will have an electrical generating capacity of 150 MW. Ocelot had a production-sharing agreement with TPDC to market any excess gas not required for use on the Songo gas to electricity project (Ocelot Energy Inc., 1999, Projects—Tanzania, accessed September 22, 1999, via URL <http://www.ocelot.ca/projects/tanzania.HTM>).

Independent Power Tanzania Ltd. (IPTL) of Malaysia in a joint venture with the state-owned Tanzania Electric Supply Co. was well under way on the construction of its \$160 million, 100-MW diesel-fueled powerplant. Discussions between IPTL and the Government over power rates to be charged to consumers from the plant were continuing into 1999.

In January 1998, TDPC signed an agreement with Tornado Resources Ltd. of Canada for development of the Nazi Bay natural gas-to-power project. Tornado will joint venture with Caterpillar Power Ventures International Ltd. on the project. The proposed \$32.5 million project would supply power to the Mtwara and Lindi Administrative Districts in southern Tanzania, which were unconnected to the main Tanzanian power grid. Gas reserves of 15.5 billion cubic meters of gas were originally identified at the Nazi Bay-1 Gas well during exploration in 1982, but further work was then suspended. The project will include reentry and production testing of the well, construction of a 15-MW powerplant at Mtwara, and construction and upgrading of transmission lines in the region (Alexander's Gas and Oil Connections, March 12, 1998, Tornado signs MOU with Tanzania on power project, accessed November 18, 1998, at URL <http://www.gasandoil.com/goc/company/cna81174.htm>).

The Tanzanian Government also agreed to purchase hydroelectric power from Uganda to develop transmission lines to new mines being developed in northern Tanzania (Dan Elwana, March 13, 1999, Kampala seeks new power customers, Daily Nation on the Web [Nairobi], accessed March 16, 1999, at URL <http://www.nationaudio.com/News/DailyNation/130399/Business/Business7.html>).

Outlook

The future outlook for the minerals sector in Tanzania is promising, stimulated by positive new mining and foreign investment legislation and by the success of mineral exploration in the country since 1996. Decisions on proceeding with future new mining developments, particularly for gold and nickel, however, will be subject to external market forces and world commodity prices. Lack of adequate infrastructure remains a problem, but efforts, supported by international development funds, have begun to upgrade harbors, pipelines, road, and railroad transport systems. The development of domestic natural gas resources may provide help in cost-saving

energy import substitution and as a source of cheaper energy for new industrial developments.

References Cited

- African Mining, 1998, Australian juniors merge: African Mining, v. 3, no. 1, January-February, p. 53.
- AngloGold Ltd., 1999, Annual report of AngloGold Ltd. for 1998: AngloGold Ltd., p. 31.
- Hestor, B.W., ed., 1998, Tanzania—Opportunities for mineral resource development (3d ed.): Government of the United Republic of Tanzania, 109 p.
- Jairo, David, 1999, Tanzania: Mining Journal [London], Annual review—Africa, July 2, p. 97.
- Industrial Minerals, 1998, Merelani graphite operation finally folds: Industrial Minerals, no. 370, July, p. 14.
- International Cement Review, 1998, Tanzania, in The global cement report: International Cement Review, 310 p.
- Mining Journal, 1998a, Graphite/tanzanite mine for sale: Mining Journal [London], a KPMG Peat Marwick classified display advertisement, v. 331, no. 8496, August 28, p. 164.
- 1998b, Mining disaster in Tanzania: Mining Journal [London], v. 330, no. 8476, April 17, p. 297.
- Ministry of Water, Energy and Minerals, 1998, Tanzania mining—A new engine for growth: Dar es Salaam, Ministry of Water, Energy and Minerals, 32 p.
- Samax Resources Ltd., 1998, Annual Samax Resources Ltd. report—1997: Samax Resources Ltd., p. 4-6.
- Sutton Resources Ltd., 1998, Sutton Resources Ltd. announces Bulyanhulu, Tanzania—More tonnes—Higher grade: Vancouver, Canada, Sutton Resources Ltd., news release, March 26, 2 p.
- 1999, Kabanga nickel project keeps growing: Vancouver, Sutton Resources Ltd. press release, February 12, 2 p.
- Tanzania Investment Centre, 1997, Investor's guide to Tanzania: Tanzania Investment Centre, 51 p.

Major Sources of Information

Commissioner for Mineral Resources

Ministry of Energy and Minerals

P.O. Box 2000

Dar-es-Salaam, Tanzania

Telephone: 255-51-117153-9/112793/371442/110414

Fax: 255-51-116719

Geological Survey of Tanzania

P.O. Box 903

Dodoma, Tanzania

Telephone: 255-61-23281/5

Fax: 255-51-44071

Tanzania Investment Centre

P.O. Box 938

Dar es Salaam, Tanzania

Telephone: 255-51-113365 or 34200

Fax: 255-51-112761

Major Publication

Hestor, B.W., ed., 1998, Tanzania—Opportunities for mineral resource development: 3d edition, prepared for the Ministry of Energy and Minerals of Tanzania, 109 p.

TABLE 1
TANZANIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Metric tons unless otherwise specified)

Commodity 3/	1994	1995	1996	1997	1998 e/	
Calcite	540	37	40 e/	40	40	
Cement, hydraulic e/	thousand tons	490	320	1,100 r/ 4/	1,150 r/ 4/	1,200 4/
Clays:						
Bentonite e/	70	70	75	75	75	
Kaolin	541	596	1,332	1,300	1,300	
Coal, bituminous	45,000	43,200	52,000	35,000	35,000	
Diamond 5/	carats	17,177	49,538	126,670	116,750 r/ 4/	93,205 4/
Gemstones, excluding diamond 6/	kilograms	48,509	111,403	142,160	106,537 r/ 4/	48,518 4/
Gold, refined	do.	2,861	320	318	250	720 4/
Graphite	--	359	6,776	11,000	--	
Gypsum and anhydrite, crude	7,536	1,052	8,765	8,800	8,800	
Lime, calcined and hydrated	101	--	--	--	--	
Limestone, crushed	648,474	1,062,081	120,000	120,000	120,000	
Phosphate minerals:						
Apatite e/	--	6,700 e/	28,020	3,000	1,935	
P ₂ O ₅ content	--	2,080 e/	8,686 r/ 4/	930 r/ 4/	600 4/	
Salt, all types	84,289	105,000	86,700	119,710	97,000	
Sand, glass e/	4,200	4,200	4,200	4,200	4,200	
Soda ash e/	300	300	300	300	300	
Tin, mine output, Sn content	9	3	-- e/	--	--	

e/ Estimated. r/ Revised.

1/ Includes data available through December 1999.

2/ Estimated data are rounded to three significant digits.

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/ Reported figure.

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

6/ Precious and semiprecious stones produced included amethyst, chrysoprase, emerald, peridot, rhodolite, ruby, tanzanite, and tourmaline.