science for a changing world

2007 Minerals Yearbook

TANZANIA

U.S. Department of the Interior
U.S. Geological Survey

March 2010

The Mineral Industry of Tanzania

By Thomas R. Yager

In 2007, Tanzania was the world's only producer of tanzanite. The country also played a significant role in the global production of gold, accounting for nearly 2% of the world's gold mine output. Other domestically significant mining and mineral processing operations included cement and diamond. Tanzania was not a globally significant consumer of minerals or mineral fuels (George, 2008).

Minerals in the National Economy

In 2007, the manufacturing sector accounted for 7.8% of the gross domestic product, and mining and quarrying, 3.5%. The value of output in the mining sector increased by 10.7% in 2007 after increasing by 15.6% in 2006. Formal employment in the mining sector amounted to about 8,000; an estimated 550,000 artisanal miners produced colored gemstones, diamond, gold, and other commodities (Mwamunyange, 2006; Phillips, 2007; Ministry of Finance and Economic Affairs, 2008, p. 11, 15).

Government Policies and Programs

The mining sector is regulated by the Mining Act of 1998, which, when enacted, simplified previous laws on mining and mineral trading. Tanzania is a signatory to the Kimberley Process Certification Scheme, which is a certification system established to reduce the trade in conflict diamond.

In 2003, the Government announced plans to ban exports of rough tanzanite by 2005. As of February 2007, no action has been taken on the ban. In November 2007, the Government appointed a committee to review all mining contracts. The committee was expected to complete its work and report to the Government by February 2008 (Dixon, 2007; Ihucha, 2007).

Production

In 2007, the production of phosphate rock increased by 187%; coal, 52%; pozzolanic materials, 42%; natural gas, 8%; cement, 6%; and diamond, 4%. Gypsum production decreased by 92%; lime, an estimated 20%; limestone, 18%; colored gemstones and silver, 17% each; gold, an estimated 14%; and bauxite, 7% (Ministry of Energy and Minerals, written commun., September 14, 2008).

In 2006 (the latest year for which data were available), gold accounted for nearly 89% of the value of Tanzania's reported mineral production; tanzanite, 4%; diamond, 3%; and copper, 2%. These figures did not include colored gemstones other than tanzanite or natural gas (Mussa Shanyangi, Geologist, Ministry of Energy and Minerals, written commun., January 22, 2008).

Structure of the Mineral Industry

Tanzania's gold mines were privately owned; the Nyanza salt mines and the Minjingu phosphate mines were also owned by private investors. The Government held minority interests in the privately owned Kiwira coal mine and the Williamson diamond mine. Artisanal miners accounted for most of the country's colored gemstone production; crushed stone, diamond, and gold were also produced by artisanal miners.

Mineral Trade

Gold exports declined in value to $763 million in 2007 from $786 million in 2006. In 2007, the share of gold in total exports was 38%; diamond, 1%; and colored gemstones, copper, silver, and other minerals combined, 5%. From 2003 to 2007, minerals composed 45% of Tanzania's total exports. The Bank of Tanzania reported that imports of petroleum products increased in value to nearly $1.51 billion in 2007 from $1.15 billion in 2006. Petroleum products accounted for 31% of the value of total imports, and fertilizers, 1% (Bank of Tanzania, 2008, p. 22-23; Ministry of Finance and Economic Affairs, 2008, p. 47).

Commodity Review

Metals

Cobalt, Copper, and Nickel.—Barrick Gold Corp. of Canada produced copper as a coproduct at the Bulyanhulu gold mine. Reserves at Bulyanhulu were estimated to be nearly 200,000 metric tons (t) of contained copper (Barrick Gold Corp., 2008a, p. 141).

Barrick (50%) and Xstrata plc of Switzerland (50%) had a joint venture for the exploration and development of the Kabanga nickel sulfide deposit in northwestern Tanzania. Resources at Kabanga were estimated to be 53 million metric tons (Mt) at a grade of 2.46% nickel; the deposit also contained cobalt, copper, and platinum. At the end of 2007, Xstrata was engaged in a prefeasibility study on the development of Kabanga (Barrick Gold Corp., 2008a, p. 47, 143).

If the Kabanga project were to proceed, construction of the mine was likely to last for nearly 3 years. The mine was expected to reach its full capacity after an additional 3 to 5 years. The life of the mine was estimated to be 20 years (Mbiro, 2007).

Goldstream Mining NL of Australia explored at the Mibango platinum-group metals (PGM)–cobalt–copper–nickel project near Lake Tanganyika and at the Luwumbu PGM-nickel project near Lake Malawi in 2007. The company had joint-venture agreements with Lonmin plc of the United Kingdom for these projects. Lonmin was required to complete feasibility studies at Luwumbu by the end of March 2009, and at Mibango, by the end of March 2012. In April 2007, Goldstream turned operatorship of the Lumuwbu and the Mibango projects over to Lonmin (Goldstream Mining NL, 2007, p. 4, 20, 24).

Goldstream had a joint-venture agreement with Continental Nickel Ltd. of Canada for the Nachingwea property in southeast

Tanzania. Continental planned to spend $4.2 million on exploration at Nachingwea in 2007 (Goldstream Mining NL, 2007, p. 18).

Gold.—Tanzania's gold production declined to 40,193 kilograms (kg) in 2007 from an estimated 47,000 kg in 2006. The Bulyanhulu, the Geita, the Golden Pride, the North Mara, and the Tulawaka Mines had a combined capacity to produce about 46,700 kilograms per year (kg/yr) of gold. Tanzania's resources amounted to about 1,500 t of contained gold, of which about 830 t was reserves (tables 1, 2, and 3).

Barrick operated the Bulyanhulu underground gold mine, which produced copper and silver as coproducts. In 2007, the Bulyanhulu Mine produced nearly 7,600 kg of gold compared with 10,300 kg in 2006. The decline in output was attributable to labor disputes and lower ore grades. Barrick completed an upgrade of its processing plant that increased capacity by 750 kg/yr at a cost of $27 million. The company planned to increase gold output at Bulyanhulu to about 11,200 kg/yr. The remaining life of the Bulyanhulu Mine was expected to be nearly 25 years (Mining Review Africa, 2007c; Barrick Gold Corp., 2008a, p. 46; 2008b).

In 2007, production at the North Mara open pit mine amounted to about 7,400 kg of gold compared with 11,600 kg in 2006. Lower output was attributable to excess water in the pit, unfavorable drilling conditions, equipment shortages, and heavy rains that led to pit wall instability. Barrick planned to increase output at North Mara to about 8,600 kg/yr (Barrick Gold Corp., 2008a, p. 45-46; 2008b, c).

Barrick and its joint-venture partner Explorations Minières du Nord Ltée (MDN) of Canada produced gold at the Tulawaka open pit mine. Production at Tulawaka increased to nearly 5,600 kg in 2007 from 4,400 kg in 2006. Barrick mitigated the effects of heavy rains that led to pit wall instability by mining in higher-grade areas. Output was expected to be 5,600 kg in 2008, 3,100 kg in 2009, and 1,400 kg in 2010. Underground mining was expected to start in 2008 with the depletion of near-surface reserves and to continue until the planned closure of the mine in 2010 (Barrick Gold Corp., 2008a, p. 46; 2008b, d).

Barrick started construction of a new open pit mine at the Buzwagi deposit in 2007. The mine was expected to start production in the third quarter of 2009; output for 2009 was likely to be about 4,700 kg. Starting in 2010, Barrick planned to produce nearly 7,800 kg/yr of gold and 4,100 metric tons per year (t/yr) of copper; the life of the mine was expected to be 10 years. Capital costs for the project were estimated to be $400 million (Mining Review Africa, 2007c; Barrick Gold Corp., 2008a, p. 32).

Barrick was also considering the development of the Golden Ridge deposit. The company could complete a feasibility study on Golden Ridge by mid-2008. Depending upon favorable results from the study, a new mine could start production in early 2010. The mine was expected to produce more than 5,700 kg/yr of gold (Mining Review Africa, 2007c).

In 2007, Barrick and its joint-venture partner Sub-Sahara Resources NL of Australia explored at the Nyanzaga project, which included the Tusker deposit. Resources at Tusker were estimated to be 123.3 Mt of ore at a grade of 1.15 grams per metric ton (g/t) gold. Barrick and Sub-Sahara drilled at Tusker in late 2007 (Resource Information Unit, 2008, p. 274).

In 2007, Geita Gold Mining Ltd. (a subsidiary of AngloGold Ashanti Ltd. of South Africa) produced nearly 10,200 kg of gold at the Geita Mine compared with about 9,600 kg in 2006. Production was inhibited by the collapse of the Nyankanga pit wall in February 2007, which restricted access to deeper high-grade ore. The refractory nature of the ore mined also led to lower recovery rates. Production at Geita was expected to increase to between 10,300 and 10,600 kg in 2008 and to between 15,600 and 18,700 kg in 2010. Reserves declined by about 62,000 kg in 2007 because of higher costs and revised estimation methods; AngloGold Ashanti planned to continue exploration at Geita in 2008 (Mining Review Africa, 2007a; AngloGold Ashanti Ltd., 2008, p. 11, 20, 33).

Resolute Mining Ltd. of Australia owned the Golden Pride open pit mine. In fiscal year 2006-07, the Golden Pride Mine produced 4,305 kg of gold compared with 4,511 kg in fiscal year 2005-06. Lower recovery rates and volumes of ore milled more than offset higher ore grades. The life of the mine was estimated to be 5 years (Resolute Mining Ltd., 2007, p. 8).

In 2007, Resolute engaged in a scoping study at the Nyakafuru project, which was a joint venture with IAMGOLD Corp. of Canada, and drilled at its Canuck, Igusle, Kavsav, and Matinge West properties. Resolute also engaged in exploration at the Kahama project, which was a joint venture with Sub-Sahara (Resolute Mining Ltd., 2007, p. 19-21). In the first quarter of 2007, Resolute signed a joint-venture agreement with Barrick to explore to the east of Golden Pride Mine.

Time Mining Operations of South Africa operated the Buhemba Mine, which produced at an average rate of 2,100 kg/yr from 2003 to 2006. The mine shut down because of mechanical problems in 2007 (Ministry of Finance and Economic Affairs, 2008, p. 144).

In 2007, IAMGOLD spent $8.7 million on exploration at its Buckreef project in north-central Tanzania. IAMGOLD planned to spend an additional $9.8 million on exploration at Buckreef in 2008; the company planned to complete a scoping study by midyear. Resources at Buckreef and Rwamagaza amounted to about 57,000 kg of contained gold (IAMGOLD Corp., 2008, p. 23).

African Eagle Resources plc (AER) of the United Kingdom and MDN engaged in exploration at Msasa in 2007; MDN agreed to invest $200,000 initially on exploration to earn a 51% interest in the project. Depending upon the results, MDN's share could increase to 65% after the company invests an additional $1.7 million in exploration by January 2010 and completes a feasibility study (Resource Information Unit, 2008, p. 272-273).

In 2007, MDN and its joint-venture partners Jope Business Associates and Lakota Resources Inc. of Canada conducted a drilling program at the Simba project, which is located north of the Tulawaka Mine. MDN also engaged in drilling at its Viyonza project near the Tulawaka Mine in 2007; the company planned further drilling in 2008 (African Mining, 2008; Resource Information Unit, 2008, p. 275).

Tanzanian Royalty Exploration Corp. of the United States resumed exploration at its Ushirombo properties in 2007. The company also commenced drilling at Itetemia in September 2007 and completed three phases of a drilling program at its Kigosi project by yearend (African Mining 2008; Resource Information Unit, 2008, p. 269-270).

Currie Rose Resources Inc. of Canada and Sub-Sahara had joint-venture agreements to explore at the Mabale Hills and the Nyamirembe properties. The companies completed a drilling program at Mabale Hills in June 2007 (Resource Information Unit, 2008, p. 271).

Shanta Gold Ltd. focused on exploration at Chunya and Singida in 2007. In the fourth quarter of 2007, Shanta estimated that contained gold resources at Singida were at least 17 t. The company planned to resume exploration at Mgusu in early 2008. Helio Resource Corp. of Namibia started a drilling program at its Saza project in southwestern Tanzania in November 2007. Lakota Resources engaged in drilling at its Tembo project in the first three quarters of 2007 (Resource Information Unit, 2008, p. 272, 274-276).

Platinum-Group Metals.—Goldstream explored for platinum-group metals (PGM) at the Mibango project near Lake Tanganyika and at the Luwumbu project near Lake Malawi. Goldstream's joint-venture partner Lonmin planned to spend $4.2 million on exploration at Luwumbu in 2007 and, at Mibango, $2.4 million (Goldstream Mining NL, 2007, p. 23, 27).

Industrial Minerals

Cement.—In 2007, cement production increased to 1.51 Mt from 1.42 Mt in 2006. National cement capacity amounted to approximately 1.72 million metric tons per year (Mt/yr). Tanga Cement Company Ltd. produced 650,000 t of cement in 2007; the company planned to increase its capacity to 1.25 Mt/yr from 750,000 t/yr. The cost of the expansion was expected to be completed by the third quarter of 2009 at an estimated cost of nearly $43 million. Tanzania Portland Cement Company Ltd. (TPCC) planned to spend about $100 million from mid-2006 to 2009 to increase its capacity to 1.2 Mt/yr from 670,000 t/yr. TPCC's production supplied about 40% of domestic cement demand (HeidelbergCement AG, 2007a, b; Tanga Cement Company Ltd., 2008, p. 3, 7).

Diamond.—Diamond recovery at the Williamson Mine increased to 220,209 carats in 2007 from 189,396 carats in 2006. Higher output was primarily attributable to greater efficiencies at the main ore treatment plant. De Beers Group planned to complete its efficiency and security upgrades at Williamson by mid-2008. In November 2007, the company announced plans to conduct a feasibility study of a new ore treatment plant that would increase capacity to 7 Mt/yr from 4 Mt/yr. Depending on the results of the study, diamond production could increase to 500,000 carats per year (De Beers Group, 2008, p. 22).

Gemstones.—Tanzania produced a variety of gemstones that included amethyst, aquamarine, cordierite, emerald, garnet, ruby, sapphire, spinel, tanzanite, and tourmaline. In 2007, the total production of gemstones was about 2,063,272 kg compared with 2,493,133 kg in 2006 and 195,842 kg in 2002 (Ministry of Finance and Economic Affairs, 2008, p. 146).

Merelani, which is located near Arusha, was the world's only source of tanzanite. Artisanal and small-scale miners operating in Blocks B and D of the Merelani deposit accounted for most of the country's tanzanite production. Kilimanjaro Mines Ltd. and Tanzanite Africa Ltd. operated medium-scale mines in Block A and the Block D Extension, respectively. Production at Blocks B and D has declined in recent years as near-surface resources have been depleted and mine tunnels became intertwined. The artisanal and small-scale miners lacked the capital needed to buy equipment for deep underground mining (Kondo, 2007).

TanzaniteOne Ltd. of South Africa mined tanzanite in Block C; the company also cut high-quality tanzanite at its lapidaries in Tanzania. In 2007, TanzaniteOne produced 340 kg of rough tanzanite compared with 240 kg in 2006; increased volumes of ore processed more than offset lower ore grades. The company planned to increase its production to between 360 and 400 kg in 2008 and to 460 kg by 2010. TanzaniteOne also engaged in exploration on properties near Block C in 2007 (Mining Review Africa, 2007b; TanzaniteOne Ltd., 2008, p. 7-8, 10).

Tsavorite, which is a green grossular garnet that obtains its color from trace amounts of chromium and vanadium, was produced by small-scale miners at Ruangwa. In October 2007, TanzaniteOne purchased the Lemshuku-Shamberai Tsavorite Project, which comprised 12 prospecting licenses located about 20 kilometers from the tanzanite mines. TanzaniteOne commenced a bulk sampling program at the project; the company planned to complete a resource assessment by the end of the first quarter of 2009 (TanzaniteOne Ltd., 2008, p. 22).

Spessartine, which is an orange garnet that obtains its color from manganese that is part of its chemical structure, was produced by small-scale miners near Lolindo in northern Tanzania. In late 2007, the mine was producing at a rate of about 3 kilograms per month of gem-quality spessartine (Chadwick and others, 2008).

Ruby and sapphire were mined at Mahenge, Songea, and Tunduru in southern Tanzania. In November 2007, ruby and sapphire mining started at a newly discovered deposit near Winza in the Mpwapwa District in the Dodoma Region (Pardieu and Schwarz, 2008).

Artisanal and small-scale miners produced alexandrite and emerald from four mines near Lake Manyara in the Mbulu District in north-central Tanzania. Alexandrite was also produced at Tunduru, and emerald, in the Sumbawanga District.

Lime.—Athi River Mining Ltd. (ARM) of Kenya produced lime for consumption in the gold mining industry at its plant in Tanga. Production declined in 2007 because of shutdowns for maintenance. ARM planned to double its capacity to 80,000 t/yr in 2008 (Athi River Mining Ltd., 2008, p. 7).

Soda Ash.—Tata Chemicals Ltd. of India planned to mine soda ash from Lake Natron in northeast Tanzania. The company planned to build a processing plant with a capacity of 500,000 t/yr; production was expected to start in 2010. Costs for the project were estimated to be about $450 million. The project was opposed by environmental groups because of concerns about habitat destruction (Mwamuyange, 2007).

Mineral Fuels and Related Materials

Coal.—Kiwira Coal and Power Ltd. operated the Kiwira underground mine in Ileje District. The company planned to double the Kiwira Mine's capacity; the mine's output was expected to be consumed by a new coal-fired powerplant with a capacity of 200 megawatts (MW). In 2008, the powerplant was expected to start up operations with an initial capacity of 50 MW; the full capacity of 200 MW was expected to be reached by the end of 2009 (Edwin, 2006; Orca Exploration Group Inc., 2008, p. 18).

Natural Gas.—Orca Exploration Group Inc. produced natural gas from Songo Songo Island. In 2007, Orca produced 544 million cubic meters compared with 504 million cubic meters in 2006. The installation of new gas-fired powerplants and the expansion of Tanzania's cement plants were expected to lead to increased demand for natural gas. Orca planned to increase capacity to nearly 1.1 billion cubic meters per year in 2008 to meet higher demand; the company planned a subsequent increase to more than 1.4 billion cubic meters per year. Reserves were estimated to be 13.4 billion cubic meters (Orca Exploration Group Inc., 2008, p. 4, 6, 12).

In March 2007, Artumas Group Inc. of Canada commenced a new 12-MW gas-fired powerplant at Mtwara in southeastern Tanzania. Artumas supplied natural gas from its production facilities in Mnazi Bay. The company planned to build a new gas-fired powerplant at Mtwara with a capacity of 300 MW and to export compressed natural gas to Kenya by 2011. The new powerplant could consume between 560 million and 620 million cubic meters per year at full capacity (Artumas Group Inc., 2008, p. 8, 19; Orca Exploration Group Inc., 2008, p. 18).

Petroleum.—Aminex plc of Ireland started a drilling program at Nyuni in November 2007; the company planned to start drilling in the Ruvuma Basin in southern Tanzania in January 2009. Maurel & Prom of France planned to drill in the Rufiji and Mafia Block starting in April 2008. Ophir Energy plc of South Africa held Blocks 1, 3 and 4 (Aminex plc, 2008, p. 4; Maurel & Prom, 2008, p. 19).

Uranium.—In the first quarter of 2007, Sub-Sahara Resources and Tanganyika Uranium Corp. of Canada formed a jount venture to explore at the Madaba-Mkuju project. The companies agreed to spend $2.5 million on exploration during a 2-year period starting in September 2007 (Resource Information Unit, 2008, p. 278).

Uranex NL of Australia (Goldstream Mining NL, 39.5%) explored for uranium at its Lake Bahi and Mkuju properties in 2007. Uranium Resources plc of Australia spent a total of $2 million on exploration in 2006 and 2007 at its Mtonya project in southern Tanzania; the project was a joint venture with Western Metals Ltd. of Australia. Mantra Resources Ltd. of Australia acquired the Handa properties in July 2007 and completed a drilling program at its Mkuju River property in September. Atomic Minerals Ltd. of Canada held 10 properties that covered about 5,300 square kilometers in southern Tanzania; the company planned to start a drilling program in early 2008 (Resource Information Unit, 2008, p. 277-279; Atomic Minerals Ltd., undated).

Outlook

Tanzania's mineral industry is likely to grow in the near future. The production of cement, coal, copper, diamond, gold, lime, and natural gas is expected to increase. Higher gold output from the Bulyanhulu and the Geita Mines and the opening of the Buzwagi Mine is likely to more than offset the shutdown of the Golden Pride and the Tulawaka Mines. Soda ash and nickel production could start as early as 2010 and 2011, respectively. Artisanal tanzanite production is likely to decline because of resource depletion; it is unclear to what extent increased production by TanzaniteOne will offset the decline.

References Cited

African Mining, 2008, Exploration update—Tanzania: African Mining, v. 13, no. 1, January/February, p. 16-17.
Aminex plc, 2008, Annual report and accounts 2007: Dublin, Ireland, Aminex plc, 56 p.
AngloGold Ashanti Ltd., 2008, Annual financial statements 2007: Johannesburg, South Africa, AngloGold Ashanti Ltd., 326 p.
Artumas Group Inc., 2008, 2007 business review: Dar es Salaam, Tanzania, Artumas Group Inc., 36 p.
Athi River Mining Ltd., 2008, Annual report—Athi River Mining Ltd. 2007: Nairobi, Kenya, Athi River Mining Ltd., 44 p.
Atomic Minerals Ltd., undated, Tanzania project: Vancouver, British Columbia, Canada, Atomic Minerals Ltd., 2 p.
Bank of Tanzania, 2008, Monthly economic review: Dar es Salaam, Tanzania, Bank of Tanzania, January, 29 p.
Barrick Gold Corp., 2008a, Annual report 2007: Toronto, Ontario, Canada, Barrick Gold Corp., 148 p.
Barrick Gold Corp., 2008b, Mine statistics (gold): Toronto, Ontario, Canada, Barrick Gold Corp., 8 p.
Barrick Gold Corp., 2008c, North Mara: Toronto, Ontario, Canada, Barrick Gold Corp., 2 p.
Barrick Gold Corp., 2008d, Tulawaka: Toronto, Ontario, Canada, Barrick Gold Corp., 2 p.
Chadwick, K.M., Koivula, J.I., Laurs, B.M., Attard, John, Simmons, W.B., and Falster, A.U., 2008, Spessartine from Longido, Tanzania: Gems & Gemology, v. 44, no. 1, Spring, p. 76-78.
De Beers Group, 2008, Operating and financial review 2007: Southdale, South Africa, De Beers Group, 37 p.
Dixon, Catherine, 2007, Tanzania proposes contract reviews: Mining Journal, November 23, p. 4.
Edwin, Wilfred, 2006, Kiwira to double coal output to boost power production: Guardian [Dar es Salaam, Tanzania], April 3, 1 p.
George, M.W., 2008, Gold: U.S. Geological Survey Mineral Commodity Summaries 2008, p. 72-73.
Goldstream Mining NL, 2007, Annual report 2007: West Perth, Australia, Goldstream Mining NL, 80 p.
HeidelbergCement AG, 2007a, Expansion plan for Tanzania Portland Cement Company production facilities: Heidelberg, Germany, HeidelbergCement AG press release, January 26, 2 p.
HeidelbergCement AG, 2007b, TPCC to expand operations and invests more than USD 100 million: Heidelberg, Germany, HeidelbergCement AG press release, February 15, 2 p.
IAMGOLD Corp., 2008, Annual report 2007: Toronto, Ontario, Canada, IAMGOLD Corp., 124 p.
Ihucha, Adam, 2007, Korean jewelry house mulls tanzanite plant: Guardian [Dar es Salaam, Tanzania], February 2, 2 p.
Kondo, Hamza, 2007, Peace and tanzanite: Colored Stone, v. 20, no. 1, January/February, p. 26-29.
Maurel & Prom, 2008, Annual report 2007: Paris, France, Maurel & Prom, 192 p.
Mbiro, Michael, 2007, Hopes high on Kabanga nickel project: Sunday Observer [Dar es Salaam, Tanzania], August 27, 1 p.
Mining Review Africa, 2007a, Geita recovering—Back in the black this year: Mining Review Africa, no. 4, p. 14-16.
Mining Review Africa, 2007b, Tanzanite sparkles—Sharp production rise expected: Mining Review Africa, no. 4, p. 24-26.
Mining Review Africa, 2007c, Two new mines—Exciting future for gold: Mining Review Africa, no. 4, p. 22-23.
Ministry of Finance and Economic Affairs, 2008, The economic survey 2007: Dar Es Salaam, Tanzania, Ministry of Finance and Economic Affairs, 208 p.
Mwamunyange, Joseph, 2006, Meghji seeks to change mining laws for public gain: East African [Nairobi, Kenya], June 20, 2 p.
Mwamunyange, Joseph, 2007, $450 million soda ash project still on: East African [Nairobi, Kenya], August 27, 2 p.

Orca Exploration Group Inc., 2008, Annual report 2007: Tortola, British Virgin Islands, Orca Exploration Group Inc., 69 p.
Pardieu, Vincent, and Schwarz, Dietmar, 2008, Field report from Winza: Rapaport Diamond Report, v. 31, no. 26, July 4, p. 173-175.
Phillips, L.C., 2007, Why formalize artisan miners?, *in* Conference on Enterprise Formalization in Africa, Accra, Ghana, January 10-11, 2007, Presentation, Washington, DC, International Finance Corporation, unpaginated.
Resolute Mining Ltd., 2007, 2007 annual report: Perth, Australia, Resolute Mining Ltd., 103 p.
Resource Information Unit, 2008, Tanzania, *in* Register of African Mining 2008: Subiaco, Australia, Resource Information Unit, p. 264-279.
Tanga Cement Company Ltd., 2008, 2007 annual report: Tanga, Tanzania, Tanga Cement Company Ltd., 11 p.
TanzaniteOne Ltd., 2008, Annual report 2007: Hamilton, Bermuda, TanzaniteOne Ltd., 76 p.

TABLE 1
TANZANIA: PRODUCTION OF MINERAL COMMODITIES[1]

(Metric tons unless otherwise specified)

Commodity[2]		2003	2004	2005	2006	2007
Bauxite		--	--	1,640	5,373	5,003
Calcite[e]		40	40	40	100 r, 3	100 e
Cement, hydraulic	thousand metric tons	1,186	1,281	1,366	1,422	1,513
Coal, bituminous		54,610	65,041	74,800	17,940	27,198
Copper, contained in concentrates and doré		3,715	4,240	3,462	3,285 r	3,276
Diamond[4]	carats	236,582	303,920	219,639 r	272,204 r	282,786
Gemstones, excluding diamond:[5, e]						
Amethyst	kilograms	270	270	270	270	270
Aquamarine	do.	278 3	280	280	280	280
Cordierite (iolite)	do.	310	310	310	310	310
Garnet	do.	5,911 3	5,900	5,900	5,900	5,900
Ruby	do.	2,675 3	2,700	2,700	2,700	2,700
Sapphire	do.	1,338 3	1,300	1,300	1,300	1,300
Tanzanite	do.	4,490 3	3,400	3,400	3,400	3,400
Other	do.	1,520,000	1,600,000	1,920,000 r	2,480,000	2,050,000
Total	do.	1,531,547 r	1,613,848 r	1,936,618 r	2,493,133 r	2,063,272
Gold	do.	48,018	48,176 r	52,236	47,000 e	40,193
Gypsum and anhydrite, crude		33,232	59,231	63,377 r	32,798 r	2,730
Kaolin		--	--	--	--	1,020
Lime		--	20,000	20,000	30,000 r, e	24,000 e
Natural gas[6]	million cubic meters	--	119	408	504 r	544
Phosphate rock:						
Gross weight		3,738	6,570	7,096	2,881	8,261
P_2O_5 content		1,100	2,000 r	2,100 r	860 r	2,500
Salt, all types		58,978	57,062	135,410 r	34,798 r	35,224
Silver, contained in concentrates and doré	kilograms	7,986	13,216	12,891	14,906	12,381
Steel, semimanufactured		38,794	40,029	47,652	53,818 r	48,666
Stone, sand, and gravel:						
Aggregates[e]		107,960 3	120,000	140,000	160,000	180,000
Dolomite[e]		2,197 3	1,800 r	1,400 r	950 r, 3	1,100
Limestone, crushed		1,206,000	1,390,900	2,006,400	1,607,600	1,322,000
Marble		NA	NA	NA	337	370 e
Pozzolanic materials		105,910 r	152,679	163,499	129,295	184,070
Sand[e]		2,035,960 3	3,900,000 r	5,800,000 r	7,577,210 r, 3	8,400,000

[e]Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. [r]Revised. do. Ditto. NA Not available. -- Zero.

[1]Table includes data available through November 13, 2008.

[2]In addition to the commodities listed, modest quantities of crude construction materials, including brick clay, are produced, but available information is inadequate to make reliable estimates of output.

[3]Reported figure.

[4]Diamond figures are estimated to represent 85% gem-quality or semigem-quality stones and 15% industrial-quality stones. Does not include smuggled artisanal production.

[5]Other precious and semiprecious stones produced include alexandrite, chrysoprase, emerald, kyanite, moonstone, opal, peridot, quartz, spinel, and tourmaline. Does not include smuggled artisanal production.

[6]Orca Exploration Group Inc. only. Artumas Group Inc. also produced small amounts of natural gas in 2007.

TABLE 2
TANZANIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2007

(Metric tons unless otherwise specified)

Commodity		Major operating companies	Location of main facilities	Annual capacity
Cement		Tanga Cement Company Ltd. (Holcim South Africa (Pty) Ltd., 62.5%)	Plant at Tanga	750,000.
Do.		Tanzania Portland Cement Company Ltd. (TPCC) (HeidelbergCement AG, 69.3%)	Plant at Wazo Hill	670,000.
Do.		Mbeya Cement Company Ltd. (LaFarge Group, 58%)	Plant at Mbeya	300,000.
Coal, bituminous		Kiwira Coal and Power Ltd. (Tanpower Resources Ltd., 85%, and Government, 15%)	Kiwira Mine	150,000 run of mine; 93,000 washed.
Copper, in concentrates and doré		Bulyanhulu Gold Mine Ltd. (Barrick Gold Corp., 100%)	Bulyanhulu Mine near Kahama	6,300.
Diamond		Williamson Diamonds Ltd. (De Beers Group, 75%, and Government, 25%)	Williamson Mine near Shinyanga	4,000,000 ore processing.
Do.	carats	do.	do.	270,000 diamond.
Do.	do.	El Hillal Minerals Ltd.	Near Williamson Mine	24,000.[e]
Glass		Kioo Ltd.	Dar es Salaam	36,000.
Gold		Geita Gold Mining Ltd. (AngloGold Ashanti Ltd., 100%)	Geita Mine near Nyakabale	6,000,000 ore processing.
Do.	kilograms	do.	do.	18,000 gold.
Do.		Bulyanhulu Gold Mine Ltd.	Bulyanhulu Mine near Kahama	1,100,000 ore processing.
Do.	kilograms	do.	do.	11,400 gold.
Do.		North Mara Gold Mine Ltd. (Barrick Gold Corp., 100%)	North Mara Mine in Tarime District	2,900,000 ore processing.
Do.	kilograms	do.	do.	9,000 gold.
Do.		Resolute Mining Ltd.	Golden Pride Mine near Isanga	3,000,000 ore processing.
Do.	kilograms	do.	do.	4,800 gold.
Do.		Pangea Minerals Ltd. [Barrick Gold Corp., 70%, and Explorations Minières du Nord Ltée (MDN), 30%]	Tulawaka Mine	365,000 ore processing.
Do.	kilograms	do.	do.	3,500 gold.
Do.		Time Mining Operations (subsidiary of Time Mining Group)	Buhemba Mine, 47 kilometers southeast of Musoma[1]	1,300,000 ore processing.
Do.	kilograms	do.	do.	2,600 gold.
Lime		Athi River Mining Ltd. (ARM)	Plant at Tanga	40,000.
Natural gas	million cubic meters	Orca Exploration Group Inc.	Gasfield on Songo Songo Island	720.
Do.	do.	Artumas Energy (Tanzania) Ltd. (subsidiary of Artumas Group Inc.)	Gasfield at Mnazi Bay	100.
Petroleum products	thousand 42-gallon barrels	Tanzanian and Italian Petroleum Refining Co. Ltd.	Refinery at Dar es Salaam[2]	5,440.
Phosphate rock		Minjingu Mines and Fertilizers Ltd.	Mine at Minjingu	100,000.
Salt		Nyanza Mines (Tanganyika) Ltd.	Nyanza Mines at Uvinza	60,000.
Silver	kilograms	Bulyanhulu Gold Mine Ltd.	Bulyanhulu Mine near Kahama	9,200.
Steel		Aluminum Africa Ltd.	Plant at Dar es Salaam	45,000.[e]
Do.		SITA Rollings Ltd.	do.	14,000 rolled.
Do.		MM Integrated Steel Mills Ltd.	do.	2,000 rolled.
Do.		Aluminum Africa Ltd.	do.	40,000 galvanized.
Do.		MM Integrated Steel Mills Ltd.	do.	36,000 galvanized.
Tanzanite		TanzaniteOne Ltd.	Mine at Merelani, Block C[3]	120,000 ore processing.
Do.	kilograms	do.	do.	1,600 tanzanite.
Do.	do.	Tanzanite Africa Ltd. (IPP Media Ltd.)	Mine at Merelani, Block D Extension	NA.
Do.	do.	Kilimanjaro Mines Ltd.	Mine at Merelani, Block A	NA.
Do.	do.	Small-scale and artisanal miners	Mines at Merelani, Blocks B and D	NA.

[e]Estimated; estimated data are rounded to no more than three significant digits. Do., do. Ditto. NA Not available.

[1]Shut down in 2007.

[2]Shut down in 2000.

[3]Formerly the graphite processing plant at Merelani operated by Phoenix Minerals Ltd.

TABLE 3

TANZANIA: GOLD RESOURCES AND RESERVES IN 2007

Project	Major operating companies	Tonnage (million metric tons)	Grade (grams per metric ton)	Contained gold (metric tons)
Reserves:				
Bulyanhulu[1]	Bulyanhulu Gold Mine Ltd. (Barrick Gold Corp., 100%)	36.1	10.4	375
Geita[2]	Geita Gold Mining Ltd. (AngloGold Ashanti Ltd., 100%)	68.0	3.0	202
North Mara[1]	North Mara Gold Mine Ltd. (Barrick Gold Corp., 100%)	36.5	3.1	112
Buzwagi[1, 3]	Barrick Gold Corp.	72.7	1.5	112
Golden Pride[2]	Resolute Mining Ltd.	13.1	1.6	22
Tulawaka[1]	Pangea Minerals Ltd. (Barrick Gold Corp., 70%, and Exploration Minières du Nord Ltée, 30%)	1.1	9.5	10
Total		227.5	3.7	833
Resources:				
Bulyanhulu	Bulyanhulu Gold Mine Ltd.	37.6	10.5 [4]	395
Geita	Geita Gold Mines	109.0	3.5 [4]	387
Tusker	Barrick Gold Corp., 51%, and Sub-Sahara Resources NL, 49%	123.3	1.2	142
North Mara	North Mara Gold Mine Ltd.	49.0	2.8	137
Buzwagi[3]	Barrick Gold Corp.	92.7	1.4	131
Buckreef/Rwamagaza:	IAMGOLD Corp.	26.8	2.1	57
Golden Pride	Resolute Mining Ltd.	38.5	1.4	56
Golden Ridge	Kahama Mining Corp. Ltd.	33.1	1.5	46
Nyakafuru	do.	19.4	1.7	33
Buhemba	Time Mining Group	11.4	2.0	23
Mgusu	Shanta Gold Ltd.	6.2	3.7	23
Singida	do.	24.0	1.4	17
Kitongo:				
Main Zone	IAMGOLD Corp.	10.5	1.3	14
Isegenghe Hill	do.	0.2	14.4	2
Miyabi	African Eagle Resources plc	12.4	1.3	16
Tulawaka	Pangea Minerals Ltd.	1.4	9.3	13
Ikungu	Lakota Resources Inc.	2.5	2.3	6
Total		598	2.5	1,500

do. Ditto.

[1]Definitions of resources and reserves are based on National Instrument 43-101.

[2]Definitions of resources and reserves are based on the Australasian Code for the Reporting of Identified Mineral Resources and Ore Reserves issued by the Joint Committee for the Australasian Institute of Geoscientists and the Australian Mining Industry Council.

[3]Formerly known as Chocolate Reef.

[4]Note that, in most cases, the grade of resources is lower than the grade for reserves, but in this case, the grade of the less economic material is higher, leading to the paradox of a higher resource grade.

Sources:

AngloGold Ashanti Ltd., 2008, Annual financial statements 2007: Johannesburg, South Africa, AngloGold Ashanti Ltd., 326 p.

Barrick Gold Corp., 2008, Annual report 2007: Toronto, Ontario, Canada, Barrick Gold Corp., 148 p.

Resolute Mining Ltd., 2007, 2007 annual report: Perth, Australia, Resolute Mining Ltd., 103 p.

Resource Information Unit, 2001, Tanzania, *in* Register of African mining 2001/02: Subiaco, Australia, Resource Information Unit, p. 279-301.

Resource Information Unit, 2007, Tanzania, *in* Register of African mining 2007: Subiaco, Australia, Resource Information Unit, p. 211-225.

Resource Information Unit, 2008, Tanzania, *in* Register of African mining 2008: Subiaco, Australia, Resource Information Unit, p. 264-279.

VIPR Industries Inc., 2008, VIPR Industries closes acqusition of Singida Gold property adjacent to project with 543,000 oz indicated gold resource valued at over $500 million: Toronto, Ontario, Canada, VIPR Industries Inc. press release, July 28, 2 p.