

KENYA AND UGANDA

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KENYA

The mineral industry in the East African country of Kenya has been chiefly noted for its production of fluorspar, salt, and soda ash. Other industrial minerals produced in recent years include barite, diatomite, feldspar, gypsum, lime, silica sand, and vermiculite. Building materials produced include cement, coral, granite, limestone, marble, and shale. Kenya has produced small amounts of metal products, including gold and secondary aluminum, lead, and steel. The country also produced carbon dioxide, gemstones, and refined petroleum products (table 1).

In 2001, Kenya's gross domestic product (GDP) increased by 1.2% after decreasing by 0.1% in 2000 and rising by 1.3% in 1999 and 1.6% in 1998. The GDP was \$38.6 billion at purchasing power parity and \$11.7 billion at market exchange rates. In 2000, manufacturing accounted for 13% of GDP; construction, 4%; utilities, 2%; and mining and quarrying, less than 1%. From 1995 to 2000, the mining and quarrying sector grew by an average of 1.7% per year. During the same period, employment in the mining industry grew to 5,300 from 4,720 (International Monetary Fund, 2002a, p. 106, 118; 2002b, p. 174; 2002a§¹-c§).

Government Policies and Programs

New environmental laws affecting most types of mining operations, including alluvial diamond mining, alumina, clay, coal, heavy mineral sands, limestone and other quarries, gemstones, phosphate, precious metals, and slate, as well as exploration and production for petroleum, came into effect in January 2001 (African Mining Intelligence, 2001b). Kenya faced numerous environmental issues related to mining, including fluorite poisoning in the Keiro Valley, mercury pollution from the processing of gold in the western part of the country, the effects of dust produced in the mining and processing of diatomite, air pollution from escaped volatiles from the production of soda ash at Lake Magadi, and habitat destruction from quarries.

In May 2001, Kenya resumed work on drafting the overhaul of its mining legislation. Lack of information about Kenya's mineral resources has made attracting foreign investors difficult; the Government started a program to update resource data in January 2001 (Africa Mining Intelligence, 2001a, b).

Trade

Kenya's mineral exports increased to \$57 million in 2001 from \$50 million in 2000; mineral exports accounted for 2% to

¹ References that include a section twist (§) are found in the Internet References Cited section.

3% of total exports. Soda ash accounted for nearly 51% of mineral exports in 2001; gold, 23%; fluorspar, 16%; and gemstones, 10% (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001; Jerono, 2002§). In recent years, Kenya also has exported cement and petroleum products. Mineral, metal, and fuel imports included aluminum, bentonite, crude petroleum, gypsum, kaolin, lead, salt, steel, and zinc.

Commodity Review

Metals

Gold.—Numerous deposits of gold occur in Kenya, including the greenstone belts in the western part of the country. Most of Kenya's gold production was artisanal; International Gold Exploration (IGE) AB, which owned the Teng Teng Mine and production facilities, was the only large-scale mining company operating in 2001. In 2000, the value of gold produced in Kenya amounted to \$10.3 million (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001).

IGE planned to conduct further exploration near the Teng Teng Mine and at the Sekerr and the Wakorr prospects in 2002. In January 2001, Kansai Mining Corporation signed an agreement to acquire all the shares of Mid Migori Mining Company Ltd., which held the licenses to the Kakamega and the Migori prospects. Azimut Exploration Inc. abandoned the Busia property in February 2001 (Resource Information Unit, 2001a).

Iron and Steel.—Anwarali & Brothers Ltd. and Athi River Mining Ltd. (ARM) mined small amounts of iron ore, which were used in the production of cement. Production of crude steel ceased in 1998. Kenya had four rolling mills with a combined capacity of 220,000 metric tons per year (t/yr) (table 2); these companies relied upon imported billet. Mabati Rolling Mills Ltd., which was the largest producer of flat steel products in East Africa, exported 87,000 metric tons (t) of galvanized and cold rolled steel products in 2001, mainly to other African countries (East African Standard, 2002§).

The International Iron and Steel Institute (2001, p. 81, 91) estimated that Kenya's imports of semimanufactured and finished steel products amounted to 303,000 t in 2000. This was a decrease from 347,000 t in 1999 and 341,000 t in 1995. From 1995 to 2000, Kenya's apparent consumption of finished steel fell to 321,000 t from 359,000 t.

Lead.—Associated Battery Manufacturers (East Africa) Ltd. operated Kenya's only secondary lead refinery at Athi River. The company also explored for lead near the Kenyan coast. National production of lead amounted to about 1,000 t/yr, and

consumption, 3,000 t/yr (Opiyo-Akech, 2001; International Lead and Zinc Study Group, 2002, p. 6, 8).

Titanium and Zirconium.—Substantial deposits of mineral sands containing ilmenite, rutile, and zircon occur in southeastern Kenya. Tiomin Resources Inc. planned to mine the Kilifi, the Kwale, the Mamburi, and the Vipingo deposits sequentially; the company decided to focus on the Kwale project first owing to its higher grades of economically recoverable minerals. During the first 6 years, output would be more than 300,000 t/yr of ilmenite, 75,000 t/yr of rutile, and 37,000 t/yr of zircon. The capital costs for the Kwale project were estimated to be \$137 million; annual cash flow was expected to be \$47 million (Africa Energy & Mining, 2000; Industrial Minerals, 2000).

Tiomin planned to start production in the first quarter of 2003 if it obtained mining licenses in early 2001. However, in March 2001, parties opposed to the Kwale project on environmental grounds won an injunction from the High Court of Kenya preventing Tiomin from engaging in exploration or development. The court cited the new environmental legislation implemented in January 2001 to support its decision to halt the Kwale project until more information was available on its environmental effects (Africa Mining Intelligence, 2001b, c).

Zinc.—Kenya was known to have deposits of zinc, but none were being mined. The country consumed 12,000 t/yr of imported zinc for such applications as the production of galvanized steel. In 2001, Ambase Exploration explored for copper and zinc resources near the Kenyan coast. In February 2001, Azimut Exploration Inc. abandoned work on the Yala property, which contained the Bumbo polymetallic deposit (Opiyo-Akech, 2001; Resource Information Unit, 2001a; International Lead and Zinc Study Group, 2002, p. 40).

Industrial Minerals

Carbon Dioxide.—Carbacid Ltd. exploited resources of natural carbon dioxide at Kereita in the Kaimbu district. In 2000, East African Breweries Ltd., which accounted for about 30% of Carbacid's production, announced plans to build its own carbon dioxide production facility (Akumu, 2000§).

Cement.—In 2001, Kenya's cement industry suffered from severe overcapacity. Production fell to less than 1.09 million metric tons, while the combined capacity of Kenya's three cement manufacturers was about 2.8 million metric tons per year (Mt/yr) (tables 1, 2). Domestic demand for cement fell in 2000 and 2001 owing to weakness in the construction sector. Export markets (particularly in Uganda) have become more competitive; this development was partially attributable to high energy costs in Kenya. In 2000, the value of cement produced in Kenya amounted to \$101.8 million (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001; Daily Nation, 2001§; Mburu, 2001§).

Diatomite.—Numerous deposits of diatomite occur in the Great Rift Valley. African Diatomite Industries Ltd. produced high-grade diatomite for domestic and export markets at Soysambu and Kariandusi in the Nakuru district (Opiyo-Akech, 2001).

Fluorspar.—Kenya Fluorspar Ltd. exploited deposits in the Keiro Valley. Kenya exported most of its fluorspar production for use in the manufacture of hydrofluoric acid; domestic consumers of fluorspar included the cement and glass industries. In 2000, the value of fluorspar produced in Kenya amounted to \$8.2 million (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001).

Gemstones.—Kenya was a producer of numerous gemstones, including amethyst, aquamarine, cordierite, green garnet, ruby, sapphire, and tourmaline (table 1). The majority of Kenya's gemstones were produced from the Taita Taveta district; other gemstone deposits include agate in the northern Rift Valley, amazonite, and fluorite.

Rockland Kenya Ltd. was the country's largest producer and exporter of ruby. Gemkit Enterprises Ltd., which was a significant ruby producer in the Kwale district, explored for sapphire in the Isolo district. Kikisa Ltd. mined ruby in the West Pokot district. In the Taita Taveta district, Bridges Exploration Ltd. and First Green Garnet Mining Co. Ltd. mined tsavorite, which is a green grossular garnet that obtains its color from chromium and vanadium. Megalith Mining Co. explored for gemstones in the Taita Taveta district (Opiyo-Akech, 2001).

In 2000, the value of gemstones produced in Kenya amounted to \$3.66 million. The largest contribution came from ruby, with a value of \$1.18 million, followed by rhodolite garnet, \$840,000; green garnet, \$744,000; tourmaline, \$477,000; and sapphire, \$395,000 (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001). Although a small gem-cutting industry has developed, most of Kenya's gemstone exports were rough stones.

Granite and Limestone.—Bamburi Cement Ltd. exploited coral limestone along the Kenyan coast. ARM exploited the Kajiado and the Kaloleni deposits near Mombasa for use in the Kaoleni cement and lime plants. Lime also was produced by Homa Lime Company Ltd. About 32,000 t/yr of limestone was used for dimension stone; granite and marble deposits were exploited for use as dimension stone at Kakamega, Kisii, Machakos, and Makueni. The production of granite and marble dimension stone fell sharply in 2000 (table 1).

Kaolin and Other Clays.—Deposits of kaolin were found in the Nyeri district north of Nairobi. ARM produced small amounts of kaolin for use in ceramic tiles, paper, paint, and rubber products. The company mined bentonite at Ndulutu and china clay at Karatina. In 2000, small amounts of kyanite and other clays also were mined in Kenya (table 1).

Salt.—Lake Magadi, which was in the Great Rift Valley, contained notable resources of salt. Magadi Soda Ash Co. Ltd. extracted salt as a byproduct of the soda ash production process. Other salt producers included Krystalline Salt Ltd., Mombasa Salt Works Ltd., and Salt Manufacturers Kenya Ltd. In 2000, the value of salt produced in Kenya amounted to \$672,000 (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001).

Silica Sand.—ARM exploited deposits of silica sand which occurred at Kaloleni. Anwarali & Brothers Ltd. and Central Glass Industries Ltd. also mined silica sand. Central Glass

Industries manufactured glass bottles and containers; the company exported about 50% of its output. Impala Glass Industries Ltd. produced flat glass for automotive and construction applications.

Soda Ash.—The trona resources at Lake Magadi were exploited by Magadi Soda Ash Co. The company exported most of its production; domestic consumers of soda ash included the caustic soda, detergent, and glass industries. In 2000, the value of soda ash produced in Kenya amounted to \$25.4 million (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001).

Sulfur.—Kenya's known deposits of sulfur are small and uneconomic. However, the country produced an estimated 19,000 t of sulfuric acid for domestic industrial consumption from imported sulfur (table 1).

Vermiculite.—Kenmag Investments Ltd. mined vermiculite at Lodosoit in the Makueni district. In 2000, the value of vermiculite exported from Kenya amounted to \$713,000. Kenya was expected to import vermiculite from Uganda's new mine at Namekhela for use in horticulture and construction (R.M. Mutiso, Kenya Mines and Geological Department, written commun., August 20, 2001; Wakabi, 2001§).

Mineral Fuels

Kenya did not produce crude petroleum and relied on imports for its refinery. Imports of crude petroleum increased to about 18 million barrels (Mbbbl) in 2000 from 15.7 Mbbbl in 1999 and 12.33 Mbbbl in 1995. In 2000, imports of fuels and lubricants accounted for 25% of Kenya's total imports (International Monetary Fund, 2002a, p. 117, 140). In recent years, Iran and the United Arab Emirates have supplied Kenya with crude petroleum. Imports of petroleum products have been sourced from Bahrain, South Africa, and Saudi Arabia.

Kenya Petroleum Refinery Ltd. (KPRL) was the country's only refinery. It had a capacity of 90,000 barrels per day but has produced at about 40% capacity in recent years (table 1). KPRL needed nearly \$200 million for rehabilitation and upgrading. In July 2001, the Government issued a decree mandating that Kenya's importers and distributors of petroleum products refine part of their products at KPRL (Africa Energy Intelligence, 2001e).

Dana Petroleum plc of the United Kingdom announced plans for a seismic survey to identify drilling prospects in blocks L5, L7, and L10; work was expected to start in 2002. Star Petroleum International (Kenya) Ltd. was Dana's partner on these blocks. In 2001, the Government was negotiating with Afrex Ltd. over three offshore blocks in the Turkana region (Africa Energy Intelligence, 2001b).

Infrastructure

In January 2001, the Government announced that electric power would no longer be rationed. A prolonged drought had severely reduced Kenya's ability to generate electric power in 1999 and 2000. Capacity expansions, imports from Uganda, the rehabilitation of retired capacity, and the use of emergency generators allowed the country to compensate for the effects of

the drought.

The Government planned to expand domestic capacity and reduce reliance on hydroelectric power. From 2000 to 2005, generating capacity was expected to increase by 528 megawatts (MW), of which thermal accounted for 260 MW; hydroelectric, 140 MW, and geothermal, 128 MW. By 2017, geothermal capacity was expected to increase by 531 MW. The Sondu-Miriu hydroelectric project was expected to resume in January 2002; the project had been stalled for more than a year owing to environmental concerns. The project would divert the Sondu-Miriu River to a 60-MW powerplant. In June 2001, the Government announced that the 74-MW Kipevu II thermal power station would come online in September (Mwangi, 2000; Africa Energy Intelligence, 2001c, d).

The Governments of Kenya, Tanzania, and Zambia signed an agreement for Kenya to increase its imports of electricity from Tanzania and Zambia. The three Governments also discussed interconnections between their power grids. The Government of Uganda offered to increase its exports to Kenya to 110 MW of capacity in 2002 and 2003 and 190 MW in 2004 from 30 MW in 2001 (Africa Energy Intelligence, 2001a, f).

Kenya had about 63,800 kilometers (km) of roads, of which approximately 8,900 km was paved; the rail network covered 2,700 km. Pipelines for petroleum products covered about 480 km. Lake Victoria was a major waterway for internal commerce.

Outlook

The outlook for Kenya's cement and other construction materials depended mostly upon the strength of the domestic economy. GDP growth was expected to be 1.4% in 2002 and 2.8% in 2003 (International Monetary Fund, 2002b, p. 174).

The outlook for fluorspar, gemstones, gold, soda ash, and titanium depended heavily upon world market conditions. Modest decreases in expected gold mine production by 2003 were likely to be offset by falling demand. Demand for soda ash was expected to increase by 2.5% per year from 2003 to 2007, and production capacity was expected to increase by 0.5% per year during the same period. Demand for titanium dioxide pigment is expected to increase by about 3% to 4% per year from 2002 to 2006. About 95% of all titanium dioxide is consumed to produce titanium oxide pigment. Fluorspar production was expected to fall to 95,000 t in 2002 (Gambogi, 2001; SG Securities Ltd., 2001, p. 22; Chemical Week, 2002).

UGANDA

In recent years, the East African country of Uganda has been known to produce cobalt, gold, limonite and other iron ore, niobium, steel, tantalum, tin, and tungsten. Uganda also has produced such industrial minerals as apatite, gypsum, kaolin and other clays, lime, and salt, and such building materials as cement, limestone, and pozzolanic materials (table 1).

Uganda's GDP increased by 5.6% in 2001 after rising by 5% in 2000, 7.6% in 1999, and 4.7% in 1998. The GDP was \$31.9 billion at purchasing power parity, and \$6.9 billion at market exchange rates. During the fiscal year ending in June 2001 (fiscal year 2000-2001), the construction sector grew by 2.8%; electricity and water, 9.3%; manufacturing, 8.9%; and mining and quarrying, 5.9%. In fiscal year 2000-2001, the

manufacturing sector accounted for 9.9% of GDP; construction, 7%; electricity and water, 1.5%; and mining and quarrying, less than 1% (International Monetary Fund, 2002b, p. 174; 2002a-c§; Uganda Ministry of Finance, Planning and Economic Development, 2002, p. 14).

The value of mineral production amounted to about \$24 million in 2001; mineral exports were about \$70 million. In 2001, the Ministry of Energy and Minerals granted 106 mineral licenses and renewed 34. During the same year, 80 licenses expired, and 172 were still current (Uganda Ministry of Energy and Mineral Development, 2002, p. 38).

Government Policies and Programs

By June 2002, the Government planned to implement a new mining law to replace the Mining Act of 1964; licenses, royalties and taxes, and environmental provisions were to be affected. The Government also planned a 5-year project to conduct geological surveys and to appraise mineral occurrences. The project was expected to cost \$25 million; the Government sought funding from the African Development Bank, the Nordic Development Fund, and the World Bank (Uganda Ministry of Energy and Mineral Development, 2002, p. A6.12-A6.14).

In 2001, a report issued by the United Nations Security Council accused Ugandan Government officials, military officers, and businessmen of illegally exploiting columbium (niobium), diamond, gold, and tantalum from Congo (Kinshasa) to enrich themselves and to finance their country's military presence in Congo (Kinshasa). Others accused of using their military presence to exploit Congolese mineral resources included rebel forces operating in Congo (Kinshasa) and the Governments of Namibia, Rwanda, and Zimbabwe. In July 2001, a board of inquiry chaired by a judge on Uganda's High Court began to investigate these accusations (Africa Mining Intelligence, 2001d; United Nations Security Council, 2001a, p. 16-21, 25, 29-37; 2001b, p. 6-11, 16-23).

Commodity Review

Metals

Cobalt.—Kasese Cobalt Co. Ltd. (KCCL) recovered cobalt from the Kilembe stockpile through bioleaching and solvent extraction electrowinning. In 2001, Normandy Mining Ltd., which owned 63% of KCCL through its affiliate Banff Resources Ltd. of Canada, indicated that it wanted to sell its assets in KCCL. The Kasese cobalt project was plagued by high operating costs and falling world cobalt prices. In 2001, the value of cobalt produced in Uganda amounted to more than \$14 million (Africa Mining Intelligence, 2001e; J.T. Tuhumwire, Uganda Geological Survey and Mines Department, written commun., July 8, 2002).

Columbium (Niobium) and Tantalum.—Uganda's deposits of columbium (niobium) and tantalum at Nyakasopu, Nyanga, and Rugomera were mined during the 1930s and 1960s. In 2001, Uganda Gold Mining Ltd. began recovering tantalite from tailings at the Nyanga property. The company planned a test program that would process 8,000 t of tailings, establish the grade and tonnage of the tailings, and set the stage for larger scale production. The test program would employ 50 to 100

artisanal miners. Uganda Gold Mining also acquired three exclusive prospecting licenses on properties close to Nyanga. Other companies that had licenses granted or renewed included Nabisoga Mining Ltd. and V.E.K. Global Mining Co. Ltd. in the Ntungamo district (Africa Mining, 2001; Engineering & Mining Journal, 2001; Uganda Ministry of Energy and Mineral Development, 2002, p. 38-39).

Gold.—In 2001, several gold exploration companies had licenses granted or renewed, including Anglo-Uganda Corporation PLC and Kisita Mining Ltd. in the Mubenda district. International Roraima Gold Corporation held licenses at Bude-Kitoja, Makina-Anonikakeni, and Mbarara. In September 2000, a cease-trade order was issued against the company for failing to file required financial statements. In December 2001, the company was delisted from the Canadian Venture Exchange. Mincor Resources NL relinquished its interest in Roraima's licenses. Glencar Mining plc held the Buinja, the Bulumbi-Makina, and the Lumino licenses, and International Gold Exploration Ltd. held the Buhwezu license (Resource Information Unit, 2001b; Uganda Ministry of Energy and Mineral Development, 2002, p. 38).

After rising to 56 kg in 2000 from 5 kg in 1999, Uganda's gold production fell to less than 1 kg in 2001 (table 1). Gold exports fell to 6,090 kg in 2001 from 7,300 kg in 2000. However, the value of gold exports increased by 13% to \$58.61 million in 2001. Gold accounted for 84% of Uganda's mineral exports. The majority of gold exports were reported to be re-exports from Congo (Kinshasa) (Uganda Ministry of Energy and Mineral Development, 2002, p. 40).

Iron and Steel.—Uganda's deposits of iron ore were located at Kyanyamuzinda, Metuli, Mugabuzi, Muko, Sukulu, and Wambogwe. In January 2000, Muko Iron Ore Development Co. Ltd. (MIDECO) was developed to exploit the Muko deposit on a commercial basis. MIDECO planned to use the direct reduction process to produce sponge iron that could be used in the Ugandan steel industry. The \$25 million project was expected to consume 60,000 t/yr of coal; MIDECO was considering the use of Tanzanian coal in the production process (Musoke, 2000§).

Uganda had two producers of crude steel with a combined capacity of 46,000 t/yr and four rolling mills with a combined capacity of 165,200 t/yr (table 2). Uganda's demand for steel products amounted to about 200,000 t/yr; the domestic rolling mills produced about 80,000 t/yr, and 120,000 t/yr was imported. Domestic production of crude steel amounted to only 7,000 t/yr. The local rolling mills were forced to use steel scrap as raw material, which was in short supply and usually mixed with other metals (Musoke, 2000§).

Lead.—Uganda Batteries Ltd. operated the country's only secondary lead refinery at Kampala. The company's production was estimated to be nearly at its capacity of 1,000 t/yr.

Tin.—Uganda's tin production increased to 18 t in 2001 from 6 t in 2000 (table 1). In September, the Government indicated that the state-owned Karuruma Tin Works (KTW) would be privatized; an invitation to tender for KTW was expected to be issued before the end of 2001. Castile Foundry of South

Africa, the Metal Processing Association of Rwanda, and Pyromet Technologies (Pty.) Ltd. of South Africa planned to make a joint bid for KTW. Pyromet offered \$650,000 for KTW and pledged to invest \$1.9 million in the company (Africa Mining Intelligence, 2001f).

Tungsten.—Deposits of wolframite occur at Bahati, Buyaga, Kirwa, Mpororo, Nyamulilo, Ruhizha, and Rushanga. Krone Uganda Ltd. mined the Nyamulilo deposit and exported its output to the United States. Production has been limited by a lack of electricity, infrastructure, and modern equipment. Uganda's tungsten production amounted to 17 t in 2001 (table 1; Olaki, 2002§).

Industrial Minerals

Cement.—Two local factories with a combined capacity of about 600,000 t/yr supplied Uganda's cement market (table 2). Uganda's cement production increased by nearly 6% in 2000 (table 1); the consumption of cement increased by 10% owing to rising demand in the housing sector. Housing accounted for 45% of the demand for cement; infrastructure and public works, 20%; and industry, 15%. Cement was exported to Congo (Kinshasa), Rwanda, and Tanzania. Uganda imported cement and clinker from India, Indonesia, Japan, and Kenya (International Cement Review, 2001, p. 296; Mburu, 2001§).

Clay.—The most substantial resources of brick clay are at Kajansi and Namanve. The expansion of the construction sector has led to increased demand for brick clay. Uganda's production of clay bricks and tiles increased to 20,744 t in 2000 from 15,817 t in 1995. The country's total production capacity for clay bricks and tiles was 50,000 t/yr (Uganda Investment Authority, 2001, p. 5).

Kaolin.—Deposits of kaolin were found at Buwambo, Kisai, Kilembe, Kuluva, Lunyenye, Mutaka, and Namasera. At Buwambo, a local company mined and processed small amounts of kaolin for use in manufacturing paint. Uganda's kaolin also may be used to manufacture floor and wall tiles in the future.

Limestone.—Uganda's deposits of limestone were used by the cement industry; limestone was found at Bukiribo, Dura, Gweri Hill, Hima, and Tororo Hill. In 2001, the production of limestone fell to 229,792 t from 253,032 t in 2000. The value of limestone produced amounted to about \$10.2 million in 2001 (J.T. Tuhumwire, Uganda Geological Survey and Mines Department, written commun., July 8, 2002).

Phosphate.—Uganda has substantial resources of phosphate rock at the Bukusu and the Sukulu deposits. In 2001, Foskor SA replaced Rhodia Chime SA as Madhvani International SA's partner in promoting the \$300 million Sukulu phosphate project. Rhodia Chime still planned to participate in feasibility studies and testing rock samples. Foskor and Madhvani hoped to produce 100,000 t/yr of granulated triple superphosphate and 1 Mt/yr of phosphate rock. In the fifth year of the project, the two companies planned to produce sodium tripolyphosphate detergent (Minerals Gazette, 2001).

Salt.—Resources of salt were found at Lake Katwe. General

Agencies Ltd. produced small amounts of salt; most of Uganda's salt demand has been met through imports in recent years.

Silica Sand.—Deposits of silica sand occur in the Masaka and Mukono districts. The Government and private companies have studied the feasibility of using these sands to produce container glass, sheet glass, and tableware. In recent years, Saudi Marble Co. Ltd. has produced small amounts of silica sand.

Vermiculite.—In 2001, Canmin Resources Ltd. (a subsidiary of International Business Investments Corp.) started the production of vermiculite from the Namekhela deposit. Canmin planned to produce 40,000 t/yr of vermiculite for domestic consumption and export to African, European, and Middle Eastern countries. The Namekhela vermiculite is a high-quality material well suited to insulation and horticultural applications (Industrial Minerals, 2001, 2002; Wakabi, 2001§).

Mineral Fuels

In 2001, Heritage Oil and Gas Ltd. and its joint-venture partner Energy Africa carried out exploration work and an environmental impact assessment in exploration area 3, which covers the Semliki Basin. The first exploration well was expected to be drilled in the third quarter of 2002. Energy Africa was also in a joint venture with Hardman Resources Ltd. in exploration area 2, which covers the northern part of Lake Albert. The companies signed a production-sharing agreement with the Government in October 2001. China National Petroleum Corporation signed a memorandum of understanding with the Government in January (Uganda Ministry of Energy and Mineral Development, 2002, p. 28-30).

Uganda does not have production facilities for crude petroleum or petroleum products. In 2001, Uganda consumed about 3.45 Mbbl of imported petroleum products, which was an increase from 3.36 Mbbl in 2000 and 2.68 Mbbl in 1996. Consumption of diesel amounted to 1.3 Mbbl; gasoline, 1.26 Mbbl; kerosene, 349,000 barrels (bbl); jet fuel, 276,000 bbl; fuel oil, 243,000 bbl; and liquified petroleum gas, 18,000 bbl (Uganda Ministry of Energy and Mineral Development, 2002, p. A3.3).

Infrastructure

Uganda's electricity production increased to 1,593 gigawatt hours (GWh) in 2001 from 1,555 GWh in 2000 and 1,130 GWh in 1996. After electricity losses of 535 GWh, domestic electricity sales amounted to nearly 913 GWh, most of which came from hydroelectric power sources. About 223 GWh was consumed by industrial users. Exports of electricity fell to 145 GWh of electricity in 2001 from 251 GWh in 2000; the decline was probably attributable to Kenya's alleviation of its own severe power shortages (Uganda Ministry of Energy and Mineral Development, 2002§).

The Government of Uganda offered to increase its exports to Kenya to 110 MW of capacity in 2002 and 2003 and 190 MW in 2004 from 30 MW in 2001. Norpak Power Ltd. planned to build a 200-MW hydroelectric plant at Karuma in northern Uganda, but construction was unlikely to start until a new

supply contract was signed between the Governments of Kenya and Uganda. In December 2001, the World Bank approved funding of \$215 million for the 250-MW Bujagali hydroelectric powerplant. AES Nile Power Ltd., which agreed to invest \$111 million for the project, would build the plant on a build-own-operate basis. Other projects included the 14-MW Kakira Sugar Works Ltd. plant to generate power from fiber residue of sugar cane, and several small hydropower projects in western Uganda with a total capacity of 30 MW (Africa Energy Intelligence, 2001f, g; Uganda Ministry of Mineral and Energy Development, 2002, p. 11-12; World Bank, 2002, p. 33).

In March 2001, the Uganda Electricity Board (UEB) was divided into three successor companies. Uganda Electricity Generation Company Ltd. took over the Kiira and Nalubale hydroelectric plants; Uganda Electricity Transmission Company Ltd. took over transmission; and Uganda Electricity Distribution Company Ltd. took over distribution. The UEB maintained responsibility for isolated diesel powerplants. The Government started to seek bidders for the privatization of generation and distribution in June (Uganda Ministry of Energy and Mineral Development, 2002, p. 6-7).

In December 2001, the World Bank approved the Energy for Rural Transformation (ERT) Program. The ERT was a plan developed by the Government and the African Rural and Renewable Energy Initiative of the World Bank to increase Uganda's rural electrification to at least 10% by 2012 from 1% in 2001. The plan included several small hydropower projects and solar energy programs (Uganda Ministry of Energy and Mineral Development, 2002, p. 10-13).

Uganda had about 27,000 km of roads, of which approximately 1,800 km was paved; the rail network covered about 1,240 km. Lake Albert, Lake George, Lake Edward, Lake Yoga, Lake Victoria, the Albert Nile River, and the Victoria Nile River were the country's principal waterways.

Outlook

The International Monetary Fund (2002b, p. 174) predicted that Uganda's GDP would grow by 5.7% in 2002 and 6.5% in 2003. If the construction industry grows at a similar rate, then the production of such construction materials as brick clay, cement, gypsum, limestone, pozzolanic materials, and sand and gravel could increase substantially.

The prospects for cobalt, columbium (niobium), gold, tantalum, tin, and tungsten depended heavily upon world market conditions for these commodities. Columbium (niobium) demand is driven primarily by the steel and aerospace industries. Global consumption of finished steel was predicted to fall by about 0.7% in 2002 and rise by 2.3% per year from 2003 to 2006. Tin consumption was expected to decline by about 1% in 2002 and increase by nearly 3.6% in 2003. Cemented carbides represented the greatest end use of tungsten. Future consumption depends upon the strength of the aerospace, construction, mining, oil and gas drilling, semiconductor, and other manufacturing industries. More information on the world gold market can be found in the "Kenya" part of this report (SG Securities Ltd., 2001, p. 19, 22; Shedd, 2002, p. 81.5; MEPS (International) Ltd., 2002§).

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TABLE 1
KENYA AND UGANDA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Country and commodity	1997	1998	1999	2000	2001
KENYA 2/					
Aluminum, secondary e/	2,400	2,400 r/	2,400 r/	2,400 r/	2,400
Barite e/	20	10	-- r/ 3/	-- r/ 3/	--
Carbon dioxide gas, natural	9,214	8,498	10,006	7,744 r/	5,645
Cement, hydraulic thousand tons	1,506	1,426	1,204	1,146 r/	1,085
Clays:					
Bentonite	NA	NA	--	64	50
Kaolin	500 e/	500 e/	192 r/	793 r/	700
Kyanite	NA	NA	NA	(4/)	--
Other	NA	NA	15,000	18,000	17,000 e/
Diatomite	297	468	3,587 r/	3,634 r/	3,500
Feldspar e/	120 r/	115 r/	115 r/	82 r/ 3/	73 3/
Fluorspar (acid grade)	68,700	60,854	93,602	100,102 r/	108,000
Gemstones, precious and semiprecious:					
Amethyst 5/ kilograms	104	166	514 r/	1,107 r/	1,100 e/
Aquamarine 5/ do.	12	15	1,216 r/	132 r/	130 e/
Cordierite (iolite) 5/ do.	19	34	444 r/	280 r/	270 e/
Green garnet 5/ do.	18,181	5,186	1,174 r/	1,763 r/	1,700 e/
Rhodolite garnet 5/ do.	NA	NA	1,214	3,409	3,300 e/
Ruby kilograms	5,175	4,001	4,488 r/	5,896 r/	5,862
Sapphire 5/ do.	615	3,313	7,232 r/	10,686 r/	10,000 e/
Tourmaline do.	6,969	3,790	4,617 r/ 5/	18,844 r/ 5/	18,000 e/
Gold, mine output, Au content do.	440 5/	388 5/	990	1,243 r/	1,200 e/
Gypsum and anhydrite e/	11,900 r/	11,300 r/	9,500 r/	8,416 r/ 3/	8,200 3/
Iron ore	NA	NA	NA	790	920
Lead, refined, secondary	1,000	1,000	1,000	1,000	1,000
Lime e/	15,000	16,000	4,473 r/ 5/	1,282 r/ 5/	1,200
Petroleum refinery products:					
Gasoline thousand 42-gallon barrels	2,555	2,555	2,481 r/	2,828 r/	2,800 e/
Kerosene and jet fuel do.	2,920 r/	2,555 r/	2,676 r/	3,175 r/	3,100 e/
Distillate fuel oil do.	3,285	3,285	3,798 r/	4,531 r/	4,500 e/
Residual fuel oil do.	3,650	3,650	2,871 r/	3,402 r/	3,400 e/
Liquified petroleum gas do.	365	365	314 r/	395 r/	300 e/
Other do.	730	730	127 r/	134 r/	100 e/
Total do.	13,505	13,140	12,267 r/	14,465 r/	14,200 e/
Salt, crude	6,280	21,742	44,886	16,359 r/	5,664
Soda ash	257,640	242,910	245,680	238,190 r/	297,780
Steel, crude e/ thousand tons	33	25	-- r/ 3/	-- r/ 3/	--
Stone, sand and gravel:					
Coral e/ do.	500	500	-- r/ 3/	-- r/ 3/	--
Granite for dimension stone	500 5/	1,619 5/	860 r/	182 r/	170 e/
Limestone for cement thousand tons	700	700	700	690 e/	650 e/
Limestone for dimension stone do.	32,935	32,000	32,000	32,000 r/	31,000
Marble for dimension stone	966 5/	84 5/	433 r/	116 r/	110 e/
Sand, industrial (glass) e/	13,000	12,000	12,000	11,800	11,500
Shale e/	200,000	180,000	180,000	177,000	170,000
Sulfuric acid	20,000	20,000	20,000	20,000	20,000
Vermiculite	1,418	353	164 5/	124 r/ 5/	--
UGANDA 6/					
Cement, hydraulic	289,560	321,329	347,274	367,500 r/	416,000 e/
Cobalt	--	--	77	411	634
Columbite-tantalite, ore and concentrate:					
Gross weight kilograms	--	--	--	2,712	11,092
Nb content do.	--	--	--	841	3,439
Ta content do.	--	--	--	1,418	5,801
Gold, mine output, Au content do.	6	8	5	56	(4/)

See footnotes at end of table.

TABLE 1--Continued
KENYA AND UGANDA: PRODUCTION OF MINERAL COMMODITIES 1/

(Metric tons unless otherwise specified)

Country and commodity	1997	1998	1999	2000	2001
UGANDA--Continued 6/					
Gypsum	--	2,000 e/	256	--	--
Iron ore:					
Limonite	NA	NA	3,169	2,231	--
Other	2,432	300 e/	61	2,401	1,236
Kaolin	NA	NA	198	14	90
Lime, hydrated and quick e/	10,000 r/	10,000 r/	10,000 r/	10,000 r/	10,000
Limestone	919,353	300,000 e/	121,524	253,032	229,792
Phosphate minerals, apatite	--	(4/) e/	(4/) e/	-- r/	--
Pozzolanic materials	NA	NA	20,213	35,603	22,782
Salt e/	10,000 r/	5,000 r/	5,000 r/	5,000 r/	5,000
Steel e/	7,400 r/	7,400 r/	7,900 r/	7,000	7,000
Tin, mine output, Sn content	2	1	(4/)	6 r/	18
Tungsten, mine output, W content	--	--	(4/)	--	17
Vermiculite	--	--	--	--	100

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

1/ Includes data available through January 27, 2003.

2/ In addition to the commodities listed, a variety of minerals and construction materials [brick clays, coal, gravel, meerscham, mica, murrum (laterite), crushed rock, and construction sand] may be produced, but quantities are not reported, and information is inadequate to make estimates of output.

3/ Reported figure.

4/ Less than 1/2 unit.

5/ Exports.

6/ In addition to the commodities listed, the following are presumably produced but information is inadequate to estimate output: clay, copper content of slag corundum, lead, marble, sand and gravel, and silica sand.

TABLE 2
KENYA AND UGANDA: STRUCTURE OF THE MINERAL INDUSTRIES IN 2001

(Metric tons unless otherwise specified)

Country and commodity	Major operating companies	Location of main facilities	Annual capacity
<u>KENYA</u>			
Carbon dioxide gas, natural	Carbacid Ltd.	Kereita	NA
Cement	Bamburi Cement Ltd.	Mombasa	1,100,000
Do.	do.	Nairobi	1,000,000
Do.	East African Portland Cement Co. Ltd.	Athi River	550,000
Do.	Athi River Mining Ltd.	Kaloleni	110,000
Diatomite	African Diatomite Industries Ltd.	Kariandusi and Soysambu	4,000
Fluorspar	Kenya Fluorspar Ltd.	Kerio Valley	120,000
Glass	Central Glass Industries Ltd.	Nairobi	51,100
Do.	Impala Glass Industries Ltd.	do.	NA
Gold kilograms	International Gold Exploration AB	Akala, Lolgorien, and Kisii	155
Lead, refined secondary	Associated Battery Manufacturers Co. Ltd.	Athi River	3,000
Lime	Homa Lime Company Ltd.	Koru	30,000
Petroleum, refined thousand barrels	Kenya Petroleum Refineries Ltd. [Government, 50%; British Petroleum plc, Caltex Oil (Kenya) Ltd., and Royal Dutch/Shell Group, 50%]	Mombasa	32,850
Salt	Magadi Soda Ash Ltd.	Magadi	40,000
Do.	Krystalline Salt Ltd.	Nairobi	NA
Do.	Mombasa Salt Works Ltd.	Mombasa	NA
Do.	Salt Manufacturers Kenya Ltd.	do.	NA
Soda ash	Magadi Soda Ash Ltd.	Magadi	300,000
Steel:			
Crude	Kenya United Steel Co. Ltd. (E.A. Wire Industries Ltd., 81%)	Mombasa	20,000
Rolled	Mabati Rolling Mills Ltd.	do.	120,000
Do.	Standard Rolling Mills Ltd.	do.	40,000
Do.	Kenya United Steel Co. Ltd.	do.	30,000
Do.	Steelmakers Ltd.	do.	30,000
Vermiculite	Kenmag Investments Ltd.	Lodosoit	2,000
<u>UGANDA</u>			
Cement	Tororo Cement Industries Ltd.	Tororo	360,000
Do.	Hima Cement Industries Ltd. (Bamburi Cement Ltd., 70%)	Kasese	240,000
Cobalt	Kasese Cobalt Company Ltd. (Banff Resources Ltd., 63%; Government, 25%; International Finance Corp., 8%; Société de Promotion et de Participation pour la Coopération Economique, 4%)	do.	1,000
Lead, refined secondary	Uganda Batteries Ltd.	Kampala	1,000
Steel:			
Crude	East African Steel Corp. Ltd. (subsidiary of Madhvani Group)	Jinja	25,000
Do.	Steel Rolling Mills Ltd. (subsidiary of Alam Group Ltd.)	do.	21,000
Billet	Steel Corporation of East Africa Ltd.	do.	60,000
Rolled	do.	do.	101,200
Do.	Steel Rolling Mills Ltd.	do.	24,000
Do.	BM Technical Services Ltd.	Mbarara	20,000
Do.	Sembule Steel Mills Ltd.	Kampala	20,000
Tungsten	Krone Uganda Ltd.	Nyamurilo	115
Vermiculite	Canmin Resources Ltd. (subsidiary of International Business Investments Corp.)	Namekhela	NA

NA Not available.