



2008 Minerals Yearbook

CONGO (KINSHASA)

THE MINERAL INDUSTRY OF CONGO (KINSHASA)

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The Democratic Republic of the Congo [Congo (Kinshasa)] played a globally significant role in the world's production of cobalt and diamond. In 2008, the country's share of the world's cobalt production amounted to 45%; industrial diamond, 30%; gem-quality diamond, 6%; and copper, 2%. Congo (Kinshasa) accounted for about 48% of the world's cobalt reserves. Copper and crude petroleum production also played a significant role in the domestic economy. The country was not a globally significant consumer of minerals or mineral fuels (Edelstein, 2009; Olson, 2009a, b; Shedd, 2009).

Minerals in the National Economy

The mining and mineral processing sector accounted for an estimated 13.4% of the gross domestic product in 2008, and the manufacturing sector, 4%. The mining sector grew by 11.4% in 2008. In 2007 (the latest year for which data were available), between 500,000 and 1 million artisanal and small-scale miners were estimated to be involved in diamond production; employment in diamond trading amounted to about 100,000. Employment in diamond mining and trading declined substantially in late 2008 because of the worldwide economic crisis (Partnership Africa Canada, 2007; Africa Mining Intelligence, 2009a; Ames and others, 2010, p. 6-7).

Government Policies and Programs

The Parliament of Congo (Kinshasa) passed a mining code in July 2002 that replaced Ordinance No. 81-013 of April 2, 1981. The revised code promotes private sector development of the mining industry; the principal role of the Government is to promote and regulate the development of the industry. Mining rights are vested with the Government. Congo (Kinshasa) was a signatory to the Kimberley Process, which established a certification system in November 2002 to reduce the trade in conflict diamond.

Mining rights were often allocated to artisanal miners by unwritten local customs. In most areas of the country, local chiefs played the most important role in the allocation of mining rights. The mining code had no provisions for operation or ownership of artisanal mines. Local customs came into conflict with the mining code when the Government granted licenses to small-scale diamond mining companies for mines operated by artisanal miners in Kasai Orientale Province, particularly in the Tshikapa area (Partnership Africa Canada, 2007).

In May 2007, the Government initiated a review of 61 previously negotiated mining contracts. By November 2008, 14 of the contracts were cleared as acceptable, 26 required further negotiation, and 21 were ruled to be unacceptable in their current (2008) form. The rejected contracts could face cancellation. The newly appointed Government called for a swift conclusion to the process in November (Welch, 2008).

Production

In 2008, the production of refined copper in Congo (Kinshasa) increased by 621%; niobium (columbium), by an estimated 254%; refined cobalt, by 137%; mined copper, by an estimated 64%; tantalum, by an estimated 41%; tin, by an estimated 33%; and mined cobalt, by an estimated 23%. Silver mine production decreased by 55%; tungsten, by an estimated 41%; gold, by an estimated 35%; diamond, by 26%; and cement, by 22%. Copper smelter production ceased.

Structure of the Mineral Industry

La Générale des Carrières et des Mines (Gécamines), which was a state-owned company, produced cobalt and copper; other cobalt and copper mining companies were privately owned. The cement producers Cimenterie de Lukala and Interlacs were privately owned. The Government held an 80% share in the large-scale diamond producer Société Minière de Bakwanga (MIBA). Artisanal and small-scale miners accounted for most Congolese output of diamond, gold, niobium, tantalum, tin, and tungsten. Artisanal and small-scale miners also played a significant role in the country's cobalt mine production.

Mineral Trade

Exports were estimated to be about \$6.59 billion in 2008, and imports, \$6.71 billion. Cobalt accounted for 38% of total exports; copper, 35%; crude petroleum, 12%; and diamond, 11%. Other mineral exports included gold, niobium, tantalum, tin, tourmaline, and tungsten. The share of diamond in total exports declined from nearly 61% in 2003, and crude petroleum, from 19%. Most of the decline was attributable to increased production and prices for cobalt and copper; crude petroleum exports tripled in value from 2003 to 2008, and cobalt and copper exports increased at an even faster rate. Petroleum products accounted for nearly 12% of total imports in 2008 (Ames and others, 2010, p. 29-30).

Commodity Review

Metals

Aluminum.—BHP Billiton Ltd. of Australia was engaged in a feasibility study of a new aluminum smelter in Bas-Congo Province. The proposed smelter would have a capacity of 800,000 metric tons per year (t/yr) in its first phase and would consume electricity produced from about 2,000 megawatts (MW) of installed capacity at the proposed Inga 3 hydroelectric power station on the Congo River. The feasibility study was expected to be completed in 2009. Depending on the results of the study and the development of Inga 3, aluminum production could start in 2014 or 2015. The estimated cost of the project was \$3 billion (Mining Review Africa, 2007a).

Cobalt and Copper.—First Quantum Minerals Ltd. of Canada produced copper ore from the Lonshi Mine; the company shipped its ore across the border with Zambia to the Bwana Mkubwa solvent extraction-electrowinning (SX/EW) facility. Reserves at the Lonshi Mine were depleted in the third quarter of 2008 (First Quantum Minerals Ltd., 2009, p. 18, 33).

In November 2007, First Quantum started production at the Frontier Mine and output amounted to 8,712 metric tons (t) of copper for that year. In 2008, production at the Frontier Mine was 80,177 t. Production in 2008 was limited by heavy rains early in the year, but the recovery rate increased during the year. Production was expected to increase to 98,000 t in 2009 and to an average of 103,000 t/yr of copper from 2010 to 2013 (First Quantum Minerals Ltd., 2009, p. 18, 28-29, 32).

By the end of 2008, First Quantum had completed 47% of the Kolwezi tailings project. Production was expected to start at the company's mine and SX/EW plant in the third quarter of 2010 at an initial rate of 35,000 t/yr of refined copper and 7,000 t/yr of cobalt hydroxide. First Quantum planned to increase production to an average of 70,000 t/yr of refined copper from 2011 to 2013; the life of the project was estimated to be 22 years with production at 70,000 t/yr. The cost of the expansion was estimated to be \$40 million. First Quantum also planned to complete a study of the development of a cobalt refining plant in the first quarter of 2009 (First Quantum Minerals Ltd., 2009, p. 25, 29).

Anvil Mining Ltd. of Australia operated the Dikulushi open pit copper-silver mine, which is located near Lake Mweru in Katanga Province. The company exported copper concentrates from the Dikulushi Mine to Namibia for smelting. Anvil produced 11,047 t of copper in 2008 compared with 24,561 t in 2007; silver production decreased to 34,083 kilograms (kg) from 76,242 kg. Ore grades and recovery rates decreased in 2008 because of the shift from open pit mining to underground mining. In the fourth quarter of 2008, Dikulushi was shut down and placed on care-and-maintenance status; the mine was subeconomic at world copper prices of \$1.40 per pound (Metal Bulletin, 2008; Anvil Mining Ltd., 2009, p. 14-15).

Anvil was engaged in a joint venture with DeMoura Enterprises and Gécamines to produce copper at the Mutoshi Mine (formerly known as the Kulu Mine). In 2008, production at Mutoshi declined to 7,448 t of copper from 10,066 t in 2007. Production was limited by lower ore grades and recovery rates. In November, the Mutoshi Mine was shut down (Anvil Mining Ltd., 2009, p. 15-16).

In 2008, Anvil produced 22,858 t of copper at the Kinsevere Mine compared with 13,006 t in 2007. In August, Anvil completed construction of an electric arc furnace at Kinsevere for the production of blister copper ingots with a grade of 92% copper. Blister copper production amounted to 820 t in 2008. Mining operations were suspended at Kinsevere in November. Anvil planned to make a decision on continuing blister copper production in the first quarter of 2009. If blister copper production were to continue, Anvil could produce at a rate of 5,100 t/yr from stockpiles (Anvil Mining Ltd., 2009, p. 15, 20-21).

Anvil completed nearly 40% of the construction on the second stage of the Kinsevere project in 2008. The company planned to build an SX/EW plant with a capacity of 60,000 t/yr of refined

copper. In the fourth quarter of 2008, Anvil halted work on the plant because of the worldwide economic crisis. The capital costs of the second stage were estimated to be \$380 million, of which \$180 million was already spent. Anvil was searching for financing for the remaining \$200 million in capital costs; the company hoped to complete construction in the second half of 2010 (Metal Bulletin, 2008; Anvil Mining Ltd., 2009, p. 3, 8).

Ruashi Mining SPRL (Metorex Ltd. of South Africa, 80%) produced cobalt and copper from tailings near the Ruashi Mine. In 2008, copper production from the tailings amounted to 9,175 t, and cobalt production, 388 t. The company's copper and cobalt production amounted to 8,971 t and 391 t, respectively, in 2007. Ruashi Mining started the second phase of the project in the second half of 2008, which involved mining the Ruashi ore body. Refined copper output from the Ruashi ore body that was produced at a new SX/EW plant amounted to 2,215 t. The company planned to produce at the SX/EW plant's full capacity of 45,000 t/yr of refined copper and 3,500 t/yr of cobalt hydroxide by December 2009. Capital costs of the second phase of the project were estimated to be \$335 million (Metorex Ltd., 2008, p. 20-22; 2009).

At the beginning of 2008, Nikanor plc operated the Kananga and the Tilwezembe Mines. In 2008, production at Kananga and Tilwezembe amounted to 4,489 t of copper and 1,776 t of cobalt. Katanga Mining Ltd. of Canada merged with Nikanor in January. Mining operations were suspended at Tilwezembe in November because of declining cobalt and copper prices (Katanga Mining Ltd., 2009, p. 8, 36).

Katanga started copper mining at the KTO and T17 Mines in the first half of 2007; the company also reopened the Luilu refinery in December 2007. In 2008, production amounted to 26,611 t of refined copper and 749 t of cobalt metal. The combined mining operations of Katanga and Nikanor were expected to produce 45,500 t of refined copper and 4,000 t of cobalt metal in 2009. Katanga planned to increase capacity at Luilu to 70,000 t/yr of copper by mid-2009. From 2011 to 2013, Katanga planned further capacity increases at Luilu to 150,000 t/yr of copper. By 2015, a new SX/EW plant was expected to increase capacity to 310,000 t/yr of refined copper and 30,000 t/yr of refined cobalt and cobalt salt. Capacity increases after 2009 depended on securing additional financing (Katanga Mining Ltd., 2009, p. 28, 36).

Copper Resources Corp. (CRC) of Australia (Metorex, 50%) and its joint-venture partners planned to reopen the Kinsenda Mine by May 2009 and produce 35,000 t/yr of copper in concentrate. The capital costs of the project were estimated to be \$93 million. The life of the mine was expected to be 13 years (Mining Review Africa, 2007b; Arenson, 2008).

Gécamines produced 26,051 t of copper and 690 t of cobalt in 2008. The company's production was constrained by aging equipment; a lack of investment, fuel, and spare parts; and poor infrastructure. Gécamines' joint ventures included its partnerships with Enterprise Generale Malta Forrest SPRL to produce cobalt and copper at the Luiswishi open pit mine and La Société pour le Traitement du Terril de Lubumbashi's (STL) tailings treatment plant in Lubumbashi. In 2008, the production of copper at Luiswishi increased to 11,204 t from about 10,000 t in 2007, and cobalt production decreased to 2,991 t

from about 4,500 t. Starting in late 2008, the Luiswishi Mine was expected to be temporarily shut down; plans to build a new hydrometallurgical plant at Luiswishi were likely to continue in 2009. The plant's estimated costs were \$165 million. Cobalt and copper output at STL remained nearly unchanged at 5,545 t and 3,113 t, respectively (George Forrest International S.A., 2008; Africa Mining Intelligence, 2009b; La Générale des Carrières et des Mines, 2009).

Chemaf SPRL started the production of refined copper at the Etoile Mine in 2007; the mine opened in 2005. Cathode production increased to 11,353 t in 2008 from 1,063 t in 2007; copper carbonate production amounted to 5,344 t in 2007. Cobalt production decreased to 2,402 t in 2008 from 2,599 t in 2007. By the end of 2009, Chemaf planned to commission a new 6,000-t/yr-capacity SX/EW plant to produce refined cobalt (Chemaf SPRL, 2009).

Central African Mining and Exploration Company plc (CAMEC) of the United Kingdom started operations at its Luita SX/EW plant near Lubumbashi in 2007. The Luita plant was supplied by mines in the 467 and 469 concessions. In 2008, CAMEC produced 10,091 t of refined copper and 3,703 t of cobalt in concentrate compared with 4,948 t of copper and 699 t of cobalt in 2007. The company planned to increase capacity to 30,000 t/yr of refined copper and 8,000 t/yr of contained cobalt by March 2009, and 100,000 t/yr of copper and 12,000 t/yr of cobalt by March 2011. In November 2008, CAMEC shut down its mining operations; plans to restart mining and produce at the expanded capacity of 30,000 t/yr in the first quarter of 2009 depended on world cobalt market conditions (Central African Mining and Exploration Company plc, 2008, p. 14, 21; Mukumbira and Harrison, 2008).

TEAL Exploration & Mining Inc. of Canada and Gécamines started mining operations at the Luputo property in May 2007. In mid-2008, resources at Luputo were estimated to be 23.3 million metric tons (Mt) at a grade of 2.3% copper. Copper production was expected to be 8,500 t in concentrate in 2008; TEAL was engaged in a feasibility study of increasing copper production to 40,000 t/yr. By the fourth quarter of 2008, output had declined by 83% compared with that of the second quarter of 2008 (Arenson, 2008; TEAL Exploration & Mining Inc., 2008).

Mining at the Tenke Fungurume project was expected to start in the second half of 2009; output was planned to be 115,000 t/yr of refined copper and 8,000 t/yr of cobalt in metal and cobalt hydroxide in the first phase of the project. In 2008, the estimate of the project's capital costs was revised to about \$1.9 billion from \$900 million. Tenke Fungurume was a joint venture of Freeport McMoran Copper & Gold Inc. of the United States (57.75%), Lundin Mining Corp. of Canada (24.75%), and Gécamines (17.5%) (Arenson, 2008).

Africo Resources Ltd. of Canada planned to produce about 16,400 t/yr of copper and 3,800 t/yr of cobalt in concentrate at the new Kalukundi open pit mine starting in 2010. The capital costs of the project were estimated to be \$163 million. Reserves were estimated to be 7.8 Mt at a grade of 2.44% copper and 0.69% cobalt. The life of the mine was expected to be 10 years (Africa Mining, 2007; Arenson, 2008).

Gold.—Artisanal and small-scale miners produced gold in the Ituri District of Orientale Province, Nord-Kivu Province,

and Sud-Kivu Province in eastern Congo (Kinshasa). Most gold exports were undeclared; reported gold exports from Sud-Kivu Province amounted to about 240 kilograms per year (kg/yr) (Global Witness, 2009, p. 52).

Gold mines in the Fizi, the Kalehe, and the Mwenga Territories in Sud-Kivu Province were reportedly under the control of the Forces Démocratiques pour la Libération du Rwanda (FDLR). Illegal taxation of artisanal gold mining accounted for an estimated 75% of the FDLR's revenues. Congolese military forces took control of the Mukungwe Mines in Sud-Kivu in March 2008 in response to civil unrest related to an ownership dispute. The Mufa Mine at Tubimbi in Sud-Kivu was also controlled by Congolese military forces. Gold produced in mines in the southern part of Sud-Kivu was exported to Burundi across Lake Tanganyika (Garrett and Mitchell, 2009, p. 9; Global Witness, 2009, p. 33-35, 40-41, 73).

In July 2008, Banro Corp. of Canada completed its prefeasibility study of developing a new mine at Twangiza in Sud-Kivu Province. Banro initiated a full feasibility study in July. Depending on the results of the study, the company planned to produce an average of 10,700 kg/yr of gold during the first 3 years of mining at Twangiza and an average of 7,300 kg/yr during the first 7 years of mining. Reserves were estimated to be 48.9 Mt at a grade of 2.1 grams per metric ton (g/t) gold. The life of the mine was expected to be 12 years. Initial capital costs at Twangiza were estimated to be \$541 million. Banro planned to complete a prefeasibility study at Namoya and a scoping study at Kamituga in 2009 (Mining Journal, 2008).

Moto Goldmines Ltd. of Australia and its joint-venture partners were considering the development of a new mine at the Moto project in the Ituri District of Orientale Province. According to the feasibility study of an open pit mine completed in December 2007, gold production would amount to an average of 12,400 kg/yr. Capital and infrastructure costs, which included a new 24-MW hydroelectric power station, were estimated to be \$483 million. Reserves were estimated to be 37.8 Mt at a grade of 3.2 g/t gold. Moto planned to complete a feasibility study of an underground mine in the first quarter of 2009 (Moto Goldmines Ltd., 2009).

TransAfrika Resources Ltd. of Mauritius started soil sampling at EP6062 in Sud-Kivu Province in the second half of 2008; the company planned further exploration after the end of the rainy season in May 2009. AngloGold Ashanti Ltd. of South Africa explored at Mongbwalu in Orientale Province. In November 2008, the company suspended its exploration activities in Congo (Kinshasa) because of fighting between Government and rebel forces (Welch, 2008).

Niobium and Tantalum.—The Lueshe pyrochlore mine, which accounted for a majority of domestic niobium production between 2000 and 2003, reportedly reopened in 2008. Pyrochlore was shipped to Goma for export in late 2008. The Government blocked exports because of the continuing legal dispute concerning ownership of Lueshe that caused the mine to close in 2004 (Global Witness, 2009, p. 21).

Mwangachuchu Hizi International and other mining companies produced columbite-tantalite at Bibatama in Nord-Kivu Province using labor-intensive methods. The Congres National pour la

Défense du Peuple (CNDP) reportedly obtained revenue from the illegal taxation of mining operations at Bibatama. About 15% of the CNDP's revenues were estimated to be attributable to mineral taxation and trading. The FDLR and Congolese military forces also reportedly obtained revenue from the illegal taxation of columbite-tantalite mining operations near Shabunda in Sud-Kivu Province (Spittaels and Hilgert, 2008, p. 24-25, 33-34; Garrett and Mitchell, 2009, p. 9; Global Witness, 2009, p. 40-41).

Exports of columbite-tantalite from Nord-Kivu and Sud-Kivu Provinces amounted to about 380 t in 2008 compared with 267 t in 2007. In the first 11 months of 2008, Sud-Kivu accounted for 84% of columbite-tantalite exports, and Nord-Kivu, 16% (Garrett and Mitchell, 2009, p. 31).

Tin.—Artisanal and small-scale miners produced cassiterite in Katanga, Maniema, Nord-Kivu, and Sud-Kivu Provinces. The Bisie Mines in the Walikale Territory in Nord-Kivu were the largest Congolese cassiterite mines; production was between 9,600 and 12,000 t/yr. The 85th Brigade of the Congolese military forces, which was not integrated into the unified national Congolese military forces, controlled the Bisie Mines. An estimated 95% of the 85th Brigade's revenues were obtained from the illegal taxation and trade of minerals. Kivu Resources Ltd. of South Africa held the mining rights for the Bisie Mines. The company planned to spend \$28 million on the development of large-scale mining at Bisie. In October 2008, Kivu Resources declared force majeure at Bisie because of the 85th Brigade's control of the mines (Mukumbira, 2008; Garrett and Mitchell, 2009, p. 6; Global Witness, 2009, p. 27-30).

Cassiterite mines near Shabunda produced at least 840 t/yr, from which the FDLR and Congolese military forces reportedly obtained revenue from illegal taxation. The FDLR also controlled cassiterite mines in Walikale Territory and in Kalehe and Mwenga Territories in Sud-Kivu Province. The Karhembu Mine near the town of Tubimbi and the Lemera Mines in Sud-Kivu Province were controlled by Congolese military forces (Spittaels and Hilgert, 2008, p. 33-34; Global Witness, 2009, p. 33, 36, 40-42).

Other significant artisanal mining areas included Kasese and Kalima in Maniema Province and Kamituga in Sud-Kivu Province. Cassiterite production from Maniema Province was at least 1,639 t in 2007 (Garrett and Mitchell, 2009, p. 29).

Congolese exports of cassiterite from Nord-Kivu and Sud-Kivu Provinces amounted to about 18,200 t in 2008 compared with 13,656 t in 2007. In Goma, such companies as Mining and Processing Congo (MPC) (a subsidiary of Kivu Resources) and Society for Mining Development (Sodexmines) (a subsidiary of Elwyn Blattner Group of the United States) processed cassiterite concentrates to a tin content of 65% before export. In the first 11 months of 2008, about 75% of cassiterite exports was shipped from Nord-Kivu, and 25%, from Sud-Kivu. Belgium received 62% of Congolese cassiterite exports in 2007; Thailand, 14%; and the United Kingdom, 11% (Garrett and Mitchell, 2009, p. 29, 31; Global Witness, 2009, p. 60).

Tungsten.—More than 1,000 artisanal miners produced wolframite at Kamole in Sud-Kivu Province; the Kamole Mine was reportedly controlled by Congolese military forces. Wolframite was also mined in Nord-Kivu Province. Congolese wolframite exports from Nord-Kivu and Sud-Kivu Provinces amounted to about 650 t in 2008 compared with 1,095 t in

2007. In the first 11 months of 2008, about 76% of exports was shipped from Nord-Kivu, and 24%, from Sud-Kivu. In 2007, Belgium received about 63% of wolframite exports; the United Kingdom, 10%; and the Netherlands, 8% (Spittaels and Hilgert, 2008, p. 34; Garrett and Mitchell, 2009, p. 31; Global Witness, 2009, p. 60).

Industrial Minerals

Diamond.—MIBA mined mostly industrial and near-gem-quality diamond at Mbuji-Mayi in Kasai-Oriental Province; production amounted to about 100,000 carats per month in 2008. The company planned to increase production to 200,000 carats per month. In September 2008, MIBA was granted \$140 million in financing by the Industrial Development Corp. of South Africa and the Development Bank of Southern Africa. MIBA needed \$25 million to rehabilitate its hydroelectric plants that were operating at 25% of capacity and an additional \$100 million to build a new hydroelectric plant. The company's diesel generators were incapable of supporting large-scale mining and were increasingly difficult to operate because of high fuel prices. MIBA's financial difficulties were exacerbated by declining diamond prices in the second half of 2008. In October, MIBA was forced to shut down operations because of labor disputes; workers were unpaid for 20 months because revenues were less than labor costs (Africa Mining Intelligence, 2008; Bavier, 2008).

Artisanal miners produced diamond at Aketi in Orientale Province; at Bakongo, Bakwachimuna, and Tshibue in Kasai-Oriental Province; at Tshikapa in Kasai-Occidental Province; and at various operations in Bandundu, Bas-Congo, Equateur, and Katanga Provinces. Artisanal diamond production declined to 20.1 million carats in 2008 from 27.2 million carats in 2007. In the fourth quarter of 2008, artisanal diamond production declined sharply; miners in the Mbuji-Mayi area sought employment in the agricultural sector after many diamond traders shut down operations. In addition to the worldwide economic crisis, artisanal diamond production was also constrained by the lack of mining skills and access to capital, the absence of cooperatives, and poor working conditions (Partnership Africa Canada, 2007; Africa Mining Intelligence, 2009a).

Global Diamond Resources plc (GDR) of the United Kingdom engaged in bulk sampling and trial mining at alluvial deposits on the Tshumbe River in 2008. By the end of 2010, GDR planned to start a mining operation that would produce between 150,000 and 200,000 carats per year. By the end of 2012, production could increase to a rate of about 600,000 carats per year. Capital expenditures were estimated to be \$25 million (Global Diamond Resources plc, 2008, p. 11, 13-14, 26, 29).

In March 2008, Pangea Diamondfields plc commissioned a new bulk sampling plant at its Longatshimo River project; the company recovered more than 1,000 carats of diamond by the end of June. Pangea also explored at the Tshikapa River project. Resources at Longatshimo River were estimated to be nearly 15.7 million cubic meters of gravel that contained 5.05 million carats, and at Tshikapa River, 16.5 million cubic meters of gravel that contained 3.35 million carats (Arenson, 2008; Pangea Diamondfields plc, 2008).

In February 2008, BRC Diamond Corp. of Canada merged with Diamond Core Ltd. of South Africa to form BRC DiamondCore Ltd. In June, BRC formed a joint venture with Rio Tinto Group of Australia to explore for diamond at five of BRC's projects in Equateur and Orientale Provinces; the companies engaged in stream sampling. BRC also explored at its Candore East, Kwango River, Lubao, and Tshikapa projects. In November, BRC announced plans to engage in bulk sampling at Kwango River in 2009 and to discontinue exploration at Lubao (Arenson, 2008; BRC DiamondCore Ltd., 2008).

De Beers Group of South Africa and Bugeco SA of Belgium (African Diamonds plc of the United Kingdom, 35.42%) were engaged in a joint venture to explore at Bugeco's properties in Kasai-Oriental Province. In November 2008, De Beers announced plans to withdraw from the joint venture because of the worldwide economic crisis and the small size and low grade of the kimberlites (African Diamonds plc, 2009, p. 3, 17-18).

Gem Diamonds Ltd. of the United Kingdom engaged in dredging and alluvial exploration at its Longatshimo, Lubembe, and Mbelenge properties in 2008, which are located on the Longatshimo, the Lubembe, and the Kasai Rivers, respectively. In November, Gem Diamonds suspended all dredging and alluvial exploration activities; the company planned to continue with kimberlitic exploration (Ryan, 2009).

Gravity Diamonds Ltd. of Australia and BHP Billiton explored at Gravity's Gunge, Luebo, Maniamuna, and Penge concessions on the Kasai Craton. In May 2007, Gravity was purchased by Mwana Africa plc of the United Kingdom. BHP Billiton and SouthernEra Diamonds Inc. of Canada were engaged in a joint venture to explore at 39 of SouthernEra's 56 permits in Kasai-Oriental Province. SouthernEra was purchased by Mwana in November 2007. In early December 2008, BHP Billiton announced plans to withdraw from the agreement signed with SouthernEra by yearend and proposed to terminate the agreement signed with Gravity. Mwana subsequently suspended its diamond exploration activities in Congo (Kinshasa) (Jessop, 2008).

Mineral Fuels

Petroleum.—In April 2008, Soco International plc of the United Kingdom's production-sharing contract for the Nganzi Block became effective. Soco planned to conduct a seismic survey at Nganzi. In May, Dominion Petroleum Ltd. of Bermuda signed an agreement to explore at Block 5, which included areas on and near Lake Edward on the border with Uganda. Tullow Oil plc of the United Kingdom held Block 1, which included areas on and near Lake Albert. The company's exploration rights were withdrawn by the Government in 2008 because of alleged contract irregularities (Petroleum Economist, 2008; Irish Times, 2009).

Outlook

Cobalt and copper output in Congo (Kinshasa) is expected to increase substantially in the near future. The closing of the Dikulushi, the Kinsevere, and the Mutoshi Mines because of the worldwide economic crisis is likely to be more than offset by the opening of the Kalukundi and the Tenke Fungurume Mines and

increased production from the Frontier, the KTO, the Ruashi, and the T17 Mines. The development of these projects depends heavily upon political and economic stability and favorable conditions in world markets. The outlook for gold, niobium, tantalum, tin, and tungsten is particularly dependent upon political stability because of continued civil unrest in eastern Congo (Kinshasa) and upon international concerns about the reported use of minerals to finance military operations.

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TABLE 1
CONGO (KINSHASA): PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2004	2005	2006	2007	2008 ^e
METALS					
Cobalt:					
Mine output, Co content ^{e,3}	20,200	24,500	27,100	25,300	31,000
Metal, Co content ⁴	735	600	550	606	1,439 ⁵
Copper:					
Mine output, Cu content	73,000	97,000	142,000 ^r	148,000 ^e	243,000
Smelter, electrowon (low grade)	20,000	10,000 ^r	10,000 ^r	1,800 ^r	-- ⁵
Refined	--	--	--	6,351 ^r	45,781 ⁵
Germanium kilograms	2,500	2,500	2,500	2,500	2,500
Gold, mine output, Au content ^e do.	6,300 ^r	7,200 ^r	10,300 ^r	5,100 ^r	3,300
Niobium (columbium) and tantalum:					
Columbite-tantalite concentrate:⁶					
Gross weight	74	124	52	267 ^r	380
Nb content ^e	17	28	12	61 ^r	86
Ta content ^e	20	33	14	71 ^r	100
Pyrochlore concentrate:					
Gross weight	--	--	--	--	270
Nb content	--	--	--	--	130
Silver, mine output, Ag content kilograms	32,953	53,553	67,633	76,242	34,083 ⁵
Steel, crude	145,000	110,000	104,000	110,000 ^r	113,000 ⁵
Tin, mine output, concentrate:⁶					
Gross weight	7,564	6,748	5,878	13,656 ^r	18,200
Sn content ^e	4,900	4,400	3,800	8,900 ^r	11,800
Tungsten, mine output, concentrate:⁶					
Gross weight	42	342	975	1,095 ^r	650
W content ^e	22 ^r	180	500	580 ^r	340
Zinc, mine output, Zn content	8,027	7,588	16,831	18,500	18,000
INDUSTRIAL MINERALS					
Cement, hydraulic	402,500	511,000	519,233 ^r	530,196 ^r	411,000 ⁵
Diamond:⁷					
Artisanal thousand carats	21,646	26,839	26,034 ^r	27,223 ^r	20,146 ⁵
Large scale do.	7,870	8,368	2,914 ^r	1,042 ^r	801 ⁵
Total do.	29,516	35,207	28,948 ^r	28,265 ^r	20,947 ⁵
Lime ^e	25,000	25,000	25,000	25,000	25,000
Stone, crushed	205,000	210,000	217,000	230,000 ^r	237,000 ⁵
Sulfuric acid ^e	15,000	15,000	15,000	15,000	15,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous	108,000 ^r	120,000 ^r	124,000 ^r	128,000 ^r	116,000 ⁵
Petroleum, crude thousand 42-gallon barrels	10,100	9,000	9,009 ^r	8,816 ^r	8,000 ⁵

^eEstimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. ^rRevised. do. Ditto. -- Zero.

¹Table includes data available through January 26, 2010.

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

³Includes mine production and reprocessed tailings.

⁴Salable refined production only; excludes white alloy and matte.

⁵Reported data.

⁶Reported exports from Nord-Kivu and Sud-Kivu Provinces.

⁷An estimated 20% of total diamond is gem quality; the majority of production is from artisanal mining.

TABLE 2
CONGO (KINSHASA): STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement	Cimenterie de Lukala [Enterprise Malta Forrest SPRL (EGMF), 80%]	Lukala plant near Kinshasa	360,000.
Do.	Interlacs [Enterprise Malta Forrest SPRL (EGMF), 98.7%]	Kabimba plant near Lubumbashi	50,000.
Do.	do.	Katana plant in Sud-Kivu Province ¹	NA.
Do.	Cimenterie Nationale SARL	Kimpese plant, 40 kilometers south of Kinshasa	318,000.
Do.	Cemenkat [Enterprise Malta Forrest SPRL (EGMF), and La Générale des Carrières et des Mines (Gécamines)]	Lubudi plant, between Likasi and Kolwezi, Katanga Province	200,000.
Coal	La Générale des Carrières et des Mines (Gécamines)	Luena Mine	800,000 bituminous.
Copper and cobalt:			
Mine	do.	Kamfundwa Mine	400,000 copper in ore; 48,000 cobalt in ore.
Do.	do.	Kamoya Central Mine	79,000 copper in ore; 7,000 cobalt in ore.
Do.	do.	Kamoya South Mine	36,000 copper in ore; 11,000 cobalt in ore.
Do.	do.	Shangalowe Mine	NA.
Do.	do.	Kambove concentrator	700,000 concentrates; 130,000 ^c copper; 39,000 ^c cobalt.
Do.	First Quantum Minerals Ltd.	Frontier Mine	84,000 copper.
Do.	do.	Lonshi Mine in Katanga Province	50,000 copper.
Do.	Katanga Mining Ltd.	KTO and T17 Mines	46,000 ^c copper; 4,000 ^c cobalt.
Do.	do.	Kananga Mine	14,000 ^c copper in ore; 7,000 ^c cobalt in ore.
Do.	do.	Tilwezembe Mine ¹	13,000 ^c copper in ore; 4,000 ^c cobalt in ore.
Do.	Anvil Mining Ltd.	Kinsevere Mine ¹	26,000 copper.
Do.	do.	Dikulushi Mine ¹	20,000 copper.
Do.	do.	Mutoshi Mine ¹	16,500 copper.
Do.	Central African Mining and Exploration Company plc (CAMEC)	Kakanda concentrator ¹	60,000 copper; 5,000 cobalt.
Do.	Chemaf SPRL	Etoile Mine	16,000 ^c copper in ore; 3,300 ^c cobalt in ore.
Do.	Compagnie Minière du Sud Katanga [Enterprise Generale Malta Forrest SPRL (EGMF), 60%, and La Générale des Carrières et des Mines (Gécamines), 40%]	Luiswishi Mine near Lubumbashi ¹	12,000 copper; 4,500 cobalt.
Do.	Ruashi Mining SPRL (Metorex Ltd., 80%)	Ruashi tailings project	10,000 copper; 1,000 cobalt.
Do.	TEAL Exploration and Mining Inc.	Kalumines	10,000 copper.
Do.	La Société pour le Traitement du Terril de Lubumbashi (STL) [OM Group Inc., 55%; Enterprise Generale Malta Forrest SPRL (EGMF), 25%; La Générale des Carrières et des Mines (Gécamines), 20%]	Big Hill plant at Lubumbashi	2,500 copper; 5,000 cobalt.
Refined	Katanga Mining Ltd.	Luilu plant	46,000 ^c copper; 4,000 ^c cobalt.
Do.	La Générale des Carrières et des Mines (Gécamines)	Shituru plant	50,000 copper; 6,000 cobalt.
Do.	do.	Fonderie Electrique de Panda cobalt plant	1,200 cobalt.
Do.	Chemaf SPRL	Etoile plant	16,000 copper.
Do.	Central African Mining and Exploration Company plc (CAMEC)	Luita plant ¹	10,000 copper.

See footnotes at end of table.

TABLE 2—Continued
 CONGO (KINSHASA): STRUCTURE OF THE MINERAL INDUSTRY IN 2008

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Diamond	carats	Société Minière de Bakwanga (MIBA) [Government, 80%, and Sibeka Group (which was owned by Mwana Africa plc), 20%]	Mines at Mbuji Mayi in Kasai-Oriental Province ¹	10,000,000.
Do.	do.	Artisanal miners	Mines at Aketi in Orientale Province, at Bakongo, Bakwachimuna, and Tshibue in Kasai Oriental Province, at Tshikapa in Kasai Occidental Province, and at various sites in Bas-Congo, Bandundu, Equateur, and Katanga Provinces	27,000,000. ^e
Gold	kilograms	Artisanal miners	Mines at various sites in Ituri District	5,200. ^e
Do.	do.	Artisanal miners, Congolese military forces, and Forces Démocratiques pour la Libération du Rwanda, of which: Artisanal miners Congolese military forces Forces Démocratiques pour la Libération du Rwanda	Includes in Sud-Kivu Province: Various sites Mufa and Mukungwe Mines Mines in Fizi, Kalehe, and Mwenga Territories	4,800. ^e
Niobium (columbium) and tantalum		Mwangachuchu Hizi International	Bibatama in Nord-Kivu Province	120.
Do.		Artisanal and small-scale miners	Mines at Bibatama in Nord-Kivu Province and Shabunda in Sud-Kivu Province	NA.
Petroleum:				
Crude	thousand 42-gallon barrels	Perenco REP (subsidiary of Perenco plc) and Congolaise des Hydrocarbures	Kifuku, Kinkasi, Liawenda, Makelekese, Muanda, Nsiamfuma, and Tschiede onshore wells	5,480.
Do.	do.	Muanda International Oil Co. (subsidiary of Perenco plc), 50%; Teikoku Oil Co. Ltd., 32.3%; ODS Ltd., 17.7%	GCO, Libwa, Lubi, Mibale, Moko, Motoba, Mwambe, and Tshlala offshore wells	3,650.
Silver	kilograms	Anvil Mining Ltd.	Dikulushi Mine ¹	50,000.
Sulfuric acid		La Générale des Carrières et des Mines (Gécamines)	Sulfuric acid plants at Kolwezi and Shituru	NA.
Do.		Central African Mining and Exploration Company plc (CAMEC)	Plant at Kambove	7,200.
Tin		85th Brigade of the Congolese military forces	Bisie Mines in Nord-Kivu Province	12,000 cassiterite.
Do.		Artisanal miners	Kalima Mines in Maniema Province	1,200 ^e cassiterite.
Do.		Artisanal miners, Forces Démocratiques pour la Libération du Rwanda, and Congolese military forces	Mines near Shabunda in Sud-Kivu Province	840 ^e cassiterite.
Do.		Artisanal miners	Kasese Mines in Maniema Province	500 ^e cassiterite.
Do.		Forces Démocratiques pour la Libération du Rwanda	Mines in Kalehe and Mwenga Territories in Sud-Kivu Province and in Walikale Territory in Nord-Kivu Province	NA.
Do.		Congolese military forces	Mines at Lemara and Tubimbi	NA.
Do.		Mining Processing Congo (MPC), Sodexmines, and other companies	Processing plants at Goma	14,000 ^e cassiterite.
Tungsten		Congolese military forces and artisanal miners, of which: Congolese military forces Artisanal miners	Includes: Mines at Kamole in Sud-Kivu Province Mines at various sites in Nord-Kivu and Sud-Kivu Provinces	1,000 ^e wolframite.
Zinc		La Société pour le Traitement du Terril de Lubumbashi	Big Hill plant at Lubumbashi	15,000 zinc in zinc oxide.
Do.		United Resources AG	Kipushi Mine ¹	NA.
Do.		La Générale des Carrières et des Mines (Gécamines)	Kolwezi zinc leach plant and refinery ¹	30,000.
Do.	do.		Kolwezi zinc smelter ¹	72,000.

^eEstimated. Do., do. Ditto. NA Not available.

¹Not operating at the end of 2008.

