



# 2011 Minerals Yearbook

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## CONGO (KINSHASA)

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# 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, copper, diamond, tantalum, and tin. In 2011, the country's share of the world's cobalt production amounted to 53%; industrial diamond, 34%; tantalum, 13%; gem-quality diamond, 7%; copper, 3%; and tin, 2%. Congo (Kinshasa) accounted for about 45% of the world's cobalt reserves. 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 (Carlin, 2012; Edelstein, 2012; Olson, 2012a, b; Papp, 2012; Shedd, 2012).

## Minerals in the National Economy

The mining and mineral processing sector accounted for an estimated 15.5% of the gross domestic product in 2010 (the latest year for which data were available), and the manufacturing sector, 3.7%. Between 800,000 and 1 million artisanal miners were estimated to be employed in diamond mining in Congo (Kinshasa). An additional 450,000 artisanal miners were estimated to be employed in the eastern Provinces of Congo (Kinshasa) in 2010; most of the miners produced gold, niobium (columbium), tantalum, tin, and tungsten. The number of miners employed in eastern Congo (Kinshasa) probably decreased substantially in 2011 (De Koning, 2011, p. 6; Diamond Development Initiative, 2012; Banque Centrale du Congo, undated, p. 39).

## Government Policies and Programs

The Parliament of Congo (Kinshasa) passed Law No. 007/2012 of July 11, 2002, which replaced Law No. 81–013 of April 2, 1981. The revised mining code encourages private sector development of the mineral industry; the principal role of the Government is to encourage and regulate the development of the industry. Mining rights are vested with the Government. Congo (Kinshasa) was a signatory to the Kimberley Process, which is a certification system established in November 2002 to reduce the trade in conflict diamond.

In February 2011, the Diamond Development Initiative (DDI) started a program to assist Congo (Kinshasa) with the implementation of the Kimberley Process. By yearend, DDI had registered more than 100,000 artisanal diamond miners and increased the number of known artisanal diamond mining sites to 667 from 254. The program was also designed to track diamond production from mining to exportation (Diamond Development Initiative, 2012).

In July 2011, the Government passed Article 33 of Law 11/009, which banned petroleum exploration and production in national parks. Several petroleum exploration blocks were located partially in Virunga National Park (International Crisis Group, 2012, p. 15–16).

In September 2010, the Government suspended mining in the eastern Provinces of Maniema, Nord-Kivu, and Sud-Kivu, which accounted for most domestic niobium, tantalum, tin, and tungsten production. The Government imposed the ban in an attempt to remove military and rebel groups from the local mineral trade. In March 2011, the Government lifted the ban (De Koning, 2011, p. 31).

In July 2010, the U.S. Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act, which contains provisions concerning the use of minerals to finance military operations in eastern Congo (Kinshasa). All companies registered with the U.S. Securities and Exchange Commission (SEC) that sell products containing cassiterite, columbite-tantalite, gold, or wolframite were required to disclose whether these minerals originated from Congo (Kinshasa) or adjoining countries. Companies that sell products containing cassiterite, columbite-tantalite, gold, or wolframite that originated in Congo (Kinshasa) or adjoining countries are required to submit annual reports to the SEC describing the due diligence measures taken, the smelters that processed the minerals, and the companies' efforts to determine the mine of origin. The reports also are required to describe products that contain conflict minerals and these reports are to be published on the companies' Web sites (U.S. Securities and Exchange Commission, 2010, p. 80948–80950).

The SEC issued proposed regulations in accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act in December 2010. The SEC was required to issue regulations in final form by April 15, 2011. At yearend, new regulations were not completed, and the SEC announced plans to issue the regulations in the first half of 2012 (U.S. Securities and Exchange Commission, 2010, p. 80948–80950; International Tin Research Institute, 2011b).

In March 2011, the Government of Katanga Province and the International Tin Research Institute (ITRI) started a certification scheme for domestically produced tantalum, tin, and tungsten to meet end users' requirements under the Dodd-Frank Wall Street Reform and Consumer Protection Act. By May 2011, 12 mine sites were covered by the scheme, and the ITRI planned to extend the scheme to between 50% and 75% of previously known production by yearend (International Tin Research Institute, 2011a, c).

## Production

In 2011, the production of zinc in Congo (Kinshasa) increased by 106%; silver, by 56%; sulfuric acid, by an estimated 41%; refined copper, by 38%; mined copper, by an estimated 26%; and diamond, by an estimated 17%. Tin production decreased by an estimated 48%, and refined cobalt, by 26%.

## 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 and Cimenterie Nationale SARL and Cemenkat were Government 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

Total exports were valued at an estimated \$8.48 billion in 2010, and imports, \$8.04 billion. Cobalt accounted for 45% of the total value of Congolese exports; copper, 37%; crude petroleum, 8%; diamond, 4%; and tin, 2%. Other mineral exports included germanium, gold, niobium, tantalum, and tungsten. Petroleum products accounted for about 9% of total imports in 2010. In 2011, the share of Congolese copper and cobalt production that was refined prior to export was 68% and 5%, respectively. About 41% of domestic cobalt mine production and 11% of copper mine production was exported after processing to intermediate products, such as cobalt carbonate, cobalt hydroxide, and black copper. Most or all Congolese diamond, niobium, tin, tantalum, and tungsten production was exported prior to downstream processing (table 1; Banque Centrale du Congo, undated, p. 127–128).

## Commodity Review

### Metals

**Aluminum.**—BHP Billiton Ltd. of Australia was considering a joint venture with the Government to build 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 between 1,600 and 2,500 megawatts of installed capacity at the proposed Inga 3 hydroelectric power station on the Congo River. The project depended on Government approval, the development of Inga 3, the negotiation of a purchase agreement for hydroelectric power, and a new deepwater port at Banana. Aluminum production could start in 2016 at the earliest. The estimated cost of the smelter was \$3 billion, and the port, \$1 billion (International Rivers, 2010, p. 19–20).

**Cobalt, Copper, and Silver.**—Mining at the Tenke Fungurume project started in 2009. In 2011, output increased to 127,367 metric tons (t) of refined copper and 11,182 t of contained cobalt in hydroxide from 120,271 t of refined copper and 9,225 t of contained cobalt in 2010. The mine's capacity increased to 130,000 t/yr of refined copper from 115,000 t/yr because of debottlenecking, an increased mining fleet, and upgrades to the processing plant in 2011. The rated capacity of cobalt in cobalt hydroxide increased to 10,000 t/yr from 8,000 t/yr. By the first quarter of 2013, the phase 2 expansion was expected to increase copper and cobalt capacity to

195,000 t/yr and 15,000 t/yr, respectively. 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 (20%) (Chadwick, 2012; Lundin Mining, Corp., 2012).

Katanga Mining Ltd. of Switzerland produced copper and cobalt at the KOV and the KTO Mines and the Luilu refinery. In 2011, production was 57,612 t of refined copper and 2,433 t of cobalt metal compared with 52,184 t of refined copper and 3,437 t of cobalt metal in 2010. Katanga also produced 33,538 t of copper in concentrate compared with 6,054 t in 2010. The T17 Mine was shut down in 2010 and was replaced by the KOV Mine. Because the copper-cobalt ratio was higher at KOV than at T17, copper production increased and cobalt production decreased (Katanga Mining Ltd., 2012, p. 4–5).

In 2011, Katanga increased the capacity at Luilu to 150,000 t/yr of refined copper and 8,000 t/yr of cobalt. By the third quarter of 2013, Katanga planned a further expansion of capacity. Refined copper production was expected to be ramped up to 270,000 t/yr and subsequently to 310,000 t/yr. Production of cobalt metal and cobalt in cobalt hydroxide was expected to increase to 30,000 t/yr (Darton Commodities Ltd., 2012, p. 8; Katanga Mining Ltd., 2012, p. 2–3).

In 2011, Mutanda Mining SPRL (Bazano Group, 40%, and Glencore International AG of Switzerland, 40%) planned to start a new copper solvent extraction and electrowinning (SX/EW) plant at the Mutanda Mine with a capacity of 20,000 t/yr and subsequently to expand the plant's capacity to 60,000 t/yr. The construction of the plant ran ahead of schedule; consequently, Bazano and Glencore made plans to increase the total capacity to 110,000 t/yr of refined copper and 23,000 t/yr of cobalt in hydroxide by the end of 2012. In 2011, output at Mutanda amounted to 44,000 t of refined copper and 19,700 t of copper in concentrate compared with 16,300 t of copper in concentrate in 2010. Cobalt production in concentrate and hydroxide decreased to 7,900 t from 8,900 t (Harrison, 2011; Glencore International AG, 2012, p. 16, 18).

Chemaf SPRL produced copper and cobalt at the Etoile Mine and the Usoke Avenue copper SX/EW and cobalt carbonate plants. In 2011, Chemaf produced 37,572 t of copper, of which 20,191 t was refined. Cobalt production amounted to 4,448 t, of which 2,155 t was in carbonate. Copper and cobalt output increased by 49.4% and 16.1%, respectively, because of increases in ore mined and processed that offset decreases in ore grades. Chemaf planned to increase refined copper production to 35,000 t/yr by 2011 and to increase cobalt production to between 5,000 and 6,000 t/yr in cathode and carbonate by the end of 2012. The company planned to open a new cobalt SX/EW plant. Chemaf's Usoke Avenue plant reportedly contributed to air and water pollution in Lubumbashi (Harrison, 2010; Mthembu-Salter, 2012, p. 16; Shalina Resources Ltd., 2012).

Ruashi Mining SPRL (Metorex Ltd. of South Africa, 80%) produced cobalt and copper from the Ruashi Mine; refined copper and cobalt carbonate were produced at the company's SX/EW plant. In 2011, output increased to 34,534 t of refined copper and 3,678 t of contained cobalt from 29,790 t of refined copper and 3,580 t of contained cobalt in 2010. Increases in

production were attributable to increases in recovery rates and the amount of ore milled. In November 2011, the Government of China approved Jinchuan Group of China's bid to purchase Metorex (Metorex Ltd., 2012, p. 24).

In 2011, Metorex updated a feasibility study on reopening the Kinsenda Mine, which produced copper from 1977 to 2002. Depending on approval of the project, Metorex could produce 26,000 t/yr of copper in concentrate at Kinsenda. The estimated life of the mine was more than 20 years (Metorex Ltd., 2012, p. 28–29).

Anvil Mining Ltd. of Australia started a new SX/EW plant at the Kinsevere Mine in May 2011. The company produced about 29,000 t of refined copper and copper in concentrate at the Heavy Media Separation (HMS) plant in 2011 compared with about 16,000 t in concentrate from the HMS plant in 2010. The HMS plant shut down after the SX/EW plant started production. Anvil planned to increase output at the SX/EW plant to its full capacity of 60,000 t/yr by December 2011; the rampup to full capacity was delayed until the first quarter of 2012 because of mechanical problems and power outages. In September, Minmetals Resources Ltd. of China agreed to purchase Anvil (Bahamin, 2011; Anvil Mining Ltd., 2012).

Gécamines produced 17,286 t of copper and 716 t of cobalt in 2011. The company's mining operations were constrained by aging equipment; a lack of investment, fuel, and spare parts; and poor infrastructure. Gécamines planned to increase copper and cobalt output to 100,000 t/yr and 7,400 t/yr, respectively, by 2015. Most of the increase in production was likely to take place at the Kamfundwa and the Kilamusembu Mines. In December 2010, Gécamines decided not to form new joint ventures with other mining companies because of its plans to focus on expanding its own operations (African Business, 2012).

Gécamines' joint ventures included its partnerships with Enterprise Generale Malta Forrest SPRL (EGMF) to produce cobalt and copper at the Luiswishi Mine and La Société pour le Traitement du Terril de Lubumbashi's (STL's) tailings treatment plant in Lubumbashi. Contained cobalt and copper output at STL in 2010 was 4,232 t and 2,454 t, respectively. In 2010, contained copper and cobalt production at Luiswishi was 7,224 t and 2,545 t, respectively. In September 2011, Gécamines announced plans to exercise its claimed preemptive right to buy EGMF's share in the Luiswishi Mine. EGMF disputed Gécamines' claims, and announced that plans to build a new copper and cobalt plant with joint-venture partner Samsung C&T of the Republic of Korea were on hold until the disagreement with Gécamines was resolved. The planned capacity of EGMF's plant was 15,000 t/yr of refined copper and 10,000 t/yr of cobalt in carbonate (La Générale des Carrières et des Mines, 2011; Njini, 2011a, b).

Boss Mining Sprl [a subsidiary of Eurasian Natural Resources Corp. plc (ENRC) of the United Kingdom] produced copper and cobalt at the Mukondo Mountain Mine and the Luita SX/EW plant. In 2011, output amounted to about 26,700 t of refined copper and 9,200 t of cobalt in concentrate compared with 17,960 t of refined copper and 8,424 t of cobalt in concentrate in 2010 because of increased copper capacity and higher copper and cobalt ore grades. Refined copper production capacity increased to 40,000 t/yr from 20,000 t/yr; ENRC was

considering a further increase to 70,000 t/yr. ENRC also planned to start a new cobalt SX/EW plant that would reach full capacity of 3,000 t/yr in 2012 (La Générale des Carrières et des Mines, 2011; Darton Commodities Ltd., 2012, p. 8; Eurasian Natural Resources Corp. plc, 2012, p. 14, 34).

The joint venture of Tiger Resources Ltd. of Australia and Gécamines planned to produce 35,000 t/yr of copper in concentrate at the Kipoi Central deposit during a period of about 3 years. The new mine started production in 2011. Tiger completed a scoping study on the second stage of the project in September that yielded favorable results. In the second stage, Tiger planned to build a new 50,000-t/yr-capacity SX/EW plant with a capacity of that would process ore from the Kileba South, the Kipoi Central, and the Kipoi North deposits starting in 2014. The estimated life of the second stage of the project was 8 years. Capital costs of the entire project were expected to be \$422 million (Mining Journal, 2011a).

In late June 2010, Mawson West Ltd. of Australia restarted production from a stockpile at the Dikulushi Mine near Lake Mweru in Katanga Province in late June. In 2011, Mawson West produced 4,285 t of copper and 10,080 kilograms of silver compared with 2,408 t of copper and 6,446 kilograms (kg) of silver in 2010. The company planned to produce from the stockpile and the Boomgate deposit until mining started at the Dikulushi Cutback project in the second half of 2012. In the first 12 to 14 months of mining at Dikulushi Cutback, Mawson West planned to produce 29,000 t of copper and 87,000 kg of silver (Mawson West Ltd., 2012, p. 1–2, 12).

Anvil and Mawson were engaged in a joint venture to develop the Kapulo project, which would produce 20,000 t/yr of copper from a new mine with an estimated life of 7 years. The Kapulo project included the Safari North, the Safari South, and the Shaba deposits. The cost of the project was estimated to be nearly \$70 million. Production was expected start at Kapulo by December 2012 (Metal Bulletin, 2011).

In 2011, CuCo Resources Ltd. of Canada planned to produce about 3,000 t of cobalt in concentrate at Kisanfu. The company also planned to mine copper at Kisanfu and to open two new processing plants with a capacity of 19,000 t/yr each. The first plant was expected to be commissioned in mid-2011, and the second, by yearend (Hill, 2011).

Black copper, which has a copper content of between 80% and 98%, was produced by numerous companies in Katanga Province. Some companies produced black copper from concentrate produced at their own mines and others sourced concentrate from artisanal miners. In 2011, Congo Dong Fang International Mining sprl of China produced nearly 25,000 t of copper in black copper; Congo Loyal Will Mining SPRL of Hong Kong, about 20,000 t; and Rubamin SPRL (a subsidiary of Rubamin Ltd. of India), about 5,400 t.

Other companies, such as Congo International Mining Corp. of China, Golden African Resources SPRL of India, and Société Minière du Katanga SPRL (Somika) of India, operated small copper refineries. In 2011, Somika completed an expansion of its refinery's capacity to 12,000 t/yr from 3,600 t/yr (Mthembu-Salter, 2012, p. 16).

Somika produced about 2,700 t of cobalt in hydroxide and 1,000 t in concentrate in 2011; the company expanded its cobalt

production capacity in 2011. Groupe Bazano SPRL mined about 3,400 t of cobalt; Volcano Mining SPRL, about 2,400 t; and Bolfast Co., about 1,600 t.

First Quantum Minerals Ltd. of Canada was engaged in a legal dispute with Fortune Ahead Ltd. of China and state-owned company Société de Développement Industriel et Minier du Congo (Sodimico). The Government annulled First Quantum's mining rights to the Frontier and the Lonshi Mines in May 2010 and forced the company to shut down production. The Frontier and the Lonshi Mines were subsequently awarded to Fortune Ahead and Sodimico (Njini, 2010).

First Quantum was also engaged in a legal dispute with ENRC over the Kolwezi Tailings cobalt and copper project. The Government annulled First Quantum's mining rights for the Kolwezi tailings project in 2009; ENRC subsequently purchased the project (Njini, 2010).

**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; most of the reported gold exports from Burundi and Uganda reportedly were reexports from Congo (Kinshasa). It is unclear whether recent declines in gold exports from Burundi and Uganda represented declines in Congolese production or fewer exports being reported as the gold trade moved further underground (De Koning, 2011, p. 10–12).

In October 2011, Banro Corp. of Canada started production at a new gold mine at Twangiza in Sud-Kivu Province. Banro planned to produce about 3,700 kilograms per year (kg/yr) during the estimated 7-year life of the first phase of the mine, when gold would be recovered from oxide ore. Reserves at Twangiza were estimated to be 82.5 million metric tons (Mt) at a grade of 1.7 grams per metric ton (g/t) gold (Bahamin, 2011, 2012).

Banro planned to start production at the new Namoya Mine in Sud-Kivu Province by mid-2013. Gold output was expected to be 3,900 kg/yr during the estimated 7-year life of the mine. In December, the company estimated that resources at Namoya were 34.2 Mt at a grade of 1.8 g/t gold. Banro also engaged in drilling at the Lugushwa and the Kamituga projects, which had contained gold resources of 84 t and 28 t, respectively. The company planned to conduct a preliminary economic assessment on a new mine at Lugushwa in 2012 (Bahamin, 2011; Banro Corp., 2011, p. 5, 7–11).

AngloGold Ashanti Ltd. of South Africa and Randgold Resources Ltd. of the United Kingdom each held a 45% share in the Kibali gold project. The companies planned to open a new mine at Kibali by 2014; AngloGold Ashanti and Randgold planned to produce 12,400 kg of gold in 2014, 16,400 kg in 2016, and 17,200 kg in 2018. Production was likely to decline after 2018; the life of the mine was estimated to be 16 years. Reserves at Kigali were estimated to be 74.3 Mt at a grade of 4.21 g/t gold (Moto Goldmines Ltd., 2009, p. 1, 8; Bahamin, 2011).

In April 2011, Kilo Goldmines Ltd. of Canada estimated that resources at the Adumbi deposit were 46.1 Mt of ore at a grade of 1.37 g/t gold. Mwana Africa plc of the United Kingdom engaged in drilling at its Zani Kodo project in 2011; the

company planned further drilling in 2012 (Kilo Goldmines Ltd., undated).

Armed groups in eastern Congo (Kinshasa) obtained revenue from the illegal taxation of artisanal and small-scale miners. The Allied Democratic Forces taxed miners at Chuchubo and Kaynama in Nord-Kivu Province; the Mai Mai Yakutumba, at Kaboga, Katchoka, and Kingizi in Sud-Kivu Province; and the Mai Mai Sheka, at more than 30 mines north of Goma and Walikale (United Nations Group of Experts, 2011, p. 25–29, 56, 60).

**Niobium (Columbium) and Tantalum.**—The Lueshe pyrochlore mine accounted for a majority of domestic niobium production between 2000 and 2003. The mine was reportedly reopened in 2008 before shutting down again in September 2009. The ownership of the mine was disputed by Krall Metal Congo (KMC) of Austria and Société Minière du Kivu (Somikivu) [GfE Metalle und Materialien GmbH of Germany, 70%]. In March 2010, the Government awarded mining rights to Somikivu. The mine subsequently changed hands several times between Congolese military units that supported KMC or Somikivu. In early August 2011, Somikivu started the restoration of the processing plant. The company planned to restart production at the rate of 1,440 t/yr of pyrochlore by May 2012. Work reportedly stopped after armed conflict between Congolese military units at the mine and remained suspended at yearend (Africa Mining Intelligence, 2011b, 2012; United Nations Group of Experts, 2011, p. 118–119).

In the first 6 months of 2011, artisanal and small-scale miners produced 104 t of columbite-tantalite in Katanga Province. About 56% of production was reported to be in the Kalemie and Nyunzu Territories and 44% in the Manono Territory. Columbite-tantalite was also mined in Maniema, Nord-Kivu, and Sud-Kivu Provinces. Mining Mineral Resources (MMR), which was a subsidiary of Somika, purchased cassiterite and columbite-tantalite from artisanal miners (International Peace Information Service, 2011, p. 59–63).

**Tin.**—Artisanal and small-scale miners produced cassiterite in Katanga, Maniema, Nord-Kivu, and Sud-Kivu Provinces. From January to early September 2010, cassiterite exports from Nord-Kivu Province amounted to 6,689 t, and Sud-Kivu Province, 3,221 t. From early March to the end of August 2011, exports from Nord-Kivu amounted to 1,505 t. From early March to mid-September, exports from Sud-Kivu Province were 598 t. Before the 6-month ban on mining operations in Maniema, Nord-Kivu, and Sud-Kivu Provinces, the Bisie Mines in Nord-Kivu Province produced between 6,000 and 7,200 t/yr of cassiterite. After the ban was lifted in March 2011, estimates of production ranged between 1,100 and 2,900 t/yr. Output was severely limited by the flooding that resulted from the ban on mining that prevented rainwater from being pumped out of the open pits (International Peace Information Service, 2011, p. 59–63; Wimmer and Hilgert, 2011).

Cassiterite exports from Katanga Province were 3,345 t in 2010 and 2,309 t in the first 8 months of 2011. In 2010, cassiterite shipments from Katanga to Nord-Kivu and Sud-Kivu Provinces shut down because of the \$5 per kilogram tax imposed by the Provincial Government; cassiterite shipments shifted to Lubumbashi. In the first 6 months of 2011, mines in

Manono Territory accounted for 29% of the cassiterite produced in Katanga Province; Luena Territory, 27%; Mitwaba, 25%; and Malemba, 17% (International Peace Information Service, 2011, p. 56–57, 64).

By 2012, MMR planned to complete a new tin smelter in Lubumbashi with a capacity of 3,600 t/yr. MMR also planned to build a tin refinery. The company was considering the possibility of toll smelting and refining (International Peace Information Service, 2011, p. 58; Mthembu-Salter, 2012, p. 17).

**Tungsten.**—Wolframite was mined in Nord-Kivu and Sud-Kivu Provinces. From early March to the end of August 2011, national wolframite exports were 34 t. In June and July, small amounts of wolframite were reportedly mined at four sites in Walungu Territory in Sud-Kivu Province. Wolframite mining declined sharply prior to the Government's suspension of mining in Maniema, Nord-Kivu, and Sud-Kivu Provinces because of poor working conditions resulting from heavy rains, decreased production from mines, including the Kamole Mine, and decreases in wolframite prices (Cuvelier, 2010; International Peace Information Service, 2011, p. 59–62).

### *Industrial Minerals*

**Cement.**—National cement production decreased to 457,761 t in 2011 from a revised 489,745 t in 2010. In recent years, production was constrained by inadequate cash flow at Cimenterie Nationale SARL, outdated equipment at Cimenterie du Lukala, increases in raw material costs, and security and transportation problems. The Government imposed price caps on cement in August 2010; insufficient production and speculation in black markets led to sharp increases in cement prices (CemWeek, 2011).

HeidelbergCement AG of Germany held a 70% share in Interlacs and a 55% share in Cimenterie du Lukala, which had a combined capacity of about 500,000 t/yr. The company planned to increase the total capacity of the plants to about 1.4 million metric tons per year (Mt/yr). The Government planned to sell Cimenterie Nationale to LaFarge S.A. of France (Waerp and Arnoldson, 2011).

Lucky Cement Ltd. of Pakistan and Groupe Rawji planned to form a joint venture to build a new cement plant. The companies planned to start construction on a new plant with a capacity of 1 Mt/yr by February 2012 and to complete the plant in late 2014 or early 2015 (International Cement Review, 2011).

**Diamond.**—Artisanal and small-scale miners accounted for most Congolese output of diamond. In 2011, artisanal and small-scale diamond production was 19.2 million carats compared with 16.8 million carats in 2010. Diamond was mined primarily in Kasai-Occidental, Kasai-Oriental, and Orientale Provinces.

MIBA mined mostly industrial and near-gem-quality diamond at Mbuji-Mayi in Kasai-Oriental Province before shutting down in November 2008 because of declining diamond prices, labor disputes, and power supply problems. Prices for the industrial diamonds produced by MIBA decreased to \$6 per carat from \$32 per carat; the company's cost of production was about \$15 per carat. In 2011, MIBA restarted production; output

amounted to 243,522 carats (Africa Mining Intelligence, 2008; Bahamin, 2012).

In 2011, Government-owned Société Congolaise d'Investissement Minier (SCIM) restarted production at Tshibwe, which was operated by Sengamines from 2001 to 2005. SCIM planned to produce 600,000 carats per year of diamond from mining and tailings retreatment operations at Tshibwe. The company needed diamond prices of more than \$35 per carat for its operations to be profitable because of its reliance on high-cost thermally generated electricity. Reserves at Tshibwe were estimated to be 45 million carats (Africa Mining Intelligence, 2011a).

Namakwa Diamonds Ltd. of South Africa mined diamond from alluvial deposits at the Kasai Central project. In fiscal year 2011 (which ran from the beginning of September 2010 through the end of August 2011), Namakwa produced 77,872 carats compared with 40,104 carats in fiscal year 2010. The company had planned to mine between 196,000 and 240,000 carats in fiscal year 2011. Production was constrained by flooding, geologic conditions, and shortages of diesel and spare parts. In September 2011, Namakwa decided to sell its diamond assets to Hall Farm Avenue Ltd. because output was insufficient to cover operating costs (Namakwa Diamonds Ltd., 2011, p. 32–33, 37–38).

Sankuru River Diamond Mines Ltd. and MIBA were considering the development of a new mine about 13 kilometers from MIBA's operations. The companies planned to start a 7-month sampling program and trial mining. Depending on the success of the sampling and trial mining, initial production could start within an additional 3 to 7 months. Sankuru River and MIBA planned to ramp up production from 274,000 carats in the first year of mining to the full capacity of 2.85 million carats per year in the fourth year. Resources in the alluvial deposits at Tshibwe were estimated to be about 20.6 million carats (Sankuru River Diamond Mines Ltd., undated, p. 1–4).

IGE Resources AB of Sweden held exploitation and small mining licenses for the Longatshimo River and the Tshikapa River projects, which had resources of more than 3.5 million carats each in alluvial deposits. The projects were on care-and-maintenance status at the end of 2011 pending the availability of financing (IGE Resources AB, 2012, p. 5).

**Phosphate Rock.**—Minbos Resources Ltd. held the Kanzi deposit in western Congo (Kinshasa). In 2011, Minbos estimated that resources at Kanzi were 46 Mt at a grade of 17.2% phosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>) (Mining Journal, 2011b).

### *Mineral Fuels*

**Petroleum.**—Crude petroleum was produced by Perenco plc of the United Kingdom and its joint-venture partners. Block 5 in the Lake Albert basin was held by a joint venture of Dominion Petroleum Ltd. of Bermuda (46.75%), Soco International plc of the United Kingdom (38.25%), and state-owned Congolaise des Hydrocarbures SARL (15%). About 52% of Block 5 is located in Virunga National Park; the Government suspended petroleum exploration activities in March 2011 because of environmental concerns. The Government reversed its decision and awarded an exploration license to Soco and its partners in September (International Crisis Group, 2012, p. 15–16).

## Outlook

Cobalt output and copper output in Congo (Kinshasa) are expected to increase substantially in the near future. At least 11 companies planned to increase or start copper mining, and at least 6 planned to increase cobalt mining. Gold production is also expected to increase with the opening of the Kibali and the Namoya Mines. Diamond production could also increase at the Mbuji-Mayi and the Tshibwe 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 COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2007	2008	2009	2010 <sup>e</sup>	2011 <sup>e</sup>
METALS					
Cobalt:					
Mine output, Co content <sup>e,3</sup>	25,300	31,000	40,000 <sup>r</sup>	60,000 <sup>r</sup>	60,000
Metal, Co content <sup>4</sup>	606	1,049	2,970	4,182 <sup>5</sup>	3,083 <sup>5</sup>
Copper:					
Mine output, Cu content <sup>e</sup>	146,000	238,000	340,000 <sup>r</sup>	430,000 <sup>r</sup>	540,000
Smelter, electrowon (low grade)	1,800	--	--	-- <sup>5</sup>	-- <sup>5</sup>
Refined	6,697	38,632	166,917	264,708 <sup>r,5</sup>	366,000 <sup>5</sup>
Germanium, mine output, Ge content kilograms	2,500	2,500 <sup>e</sup>	2,500 <sup>e</sup>	2,500	2,500
Gold, mine output, Au content <sup>e</sup> do.	5,100	3,300	3,500	3,500	3,500
Niobium (columbium) and tantalum:					
Columbite-tantalite concentrate:					
Gross weight <sup>6</sup>	428	527	468	397 <sup>r,5</sup>	380
Nb content <sup>e</sup>	98	120	110	90 <sup>r</sup>	90
Ta content <sup>e</sup>	120	140	130	110 <sup>r</sup>	100
Pyrochlore concentrate:					
Gross weight <sup>6</sup>	--	119	80	-- <sup>5</sup>	-- <sup>5</sup>
Nb content	--	59 <sup>e</sup>	40	-- <sup>5</sup>	-- <sup>5</sup>
Silver, mine output, Ag content kilograms	76,242	34,083	--	6,446 <sup>r,5</sup>	10,080 <sup>5</sup>
Steel, crude	110,000	113,000	109,700 <sup>r</sup>	104,000 <sup>r,5</sup>	120,000
Tin, mine output, concentrate:					
Gross weight <sup>6</sup>	14,903	19,335	15,195	13,255 <sup>r,5</sup>	6,900
Sn content <sup>e</sup>	9,700	12,600	9,900	8,600 <sup>r</sup>	4,500
Tungsten, mine output, concentrate:					
Gross weight <sup>6</sup>	1,174	716	385	45 <sup>r,5</sup>	40
W content <sup>e</sup>	600	370	200	23 <sup>r</sup>	21
Zinc, mine output, Zn content	11,925 <sup>r</sup>	15,465 <sup>r</sup>	19,636 <sup>r</sup>	9,223 <sup>r,5</sup>	19,035 <sup>5</sup>
INDUSTRIAL MINERALS					
Cement, hydraulic	530,196	411,212	460,344	489,745 <sup>r,5</sup>	457,761 <sup>5</sup>
Diamond: <sup>7</sup>					
Artisanal thousand carats	27,223	20,146	16,998	16,800 <sup>5</sup>	19,227 <sup>5</sup>
Large-scale do.	1,042	801	1,277	70 <sup>r</sup>	500
Total do.	28,265	20,947	18,275	16,900 <sup>r</sup>	19,700
Lime <sup>e</sup>	25,000	25,000	25,000	25,000	25,000
Stone, crushed	230,000	237,000	250,000	250,000	250,000
Sulfuric acid <sup>e</sup>	35,000	150,000	550,000	850,000	1,200,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	-- <sup>r</sup>	--
Petroleum, crude thousand 42-gallon barrels	8,816	8,365	9,382	8,628 <sup>r,5</sup>	8,558 <sup>5</sup>

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits; may not add to totals shown. <sup>r</sup>Revised. do. Ditto. -- Zero.

<sup>1</sup>Table includes data available through January 31, 2013.

<sup>2</sup>In 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.

<sup>3</sup>Includes mine production and reprocessed tailings.

<sup>4</sup>Salable refined production only; excludes white alloy and matte.

<sup>5</sup>Reported data.

<sup>6</sup>Reported exports from Nord-Kivu and Sud-Kivu Provinces.

<sup>7</sup>An 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 2011

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners	Location of main facilities	Annual capacity
Cement	Cimenterie de Lukala (HeidelbergCement AG, 55%)	Lukala plant near Kinshasa	420,000.
Do.	Cimenterie Nationale SARL	Kimpese plant, 40 kilometers south of Kinshasa	300,000.
Do.	Cemenkat [Enterprise Malta Forrest SPRL (EGMF), and La Générale des Carrières et des Mines (Gécamines)]	Lubudi plant, between Likasi and Kolwezi, Katanga Province	87,000.
Do.	Interlacs (HeidelbergCement AG, 70%)	Kabimba plant near Lubumbashi	50,000.
Do.	do.	Katana plant in Sud-Kivu Province <sup>1</sup>	25,000.
Copper and cobalt:			
Mine	Fortune Ahead Ltd. and Société de Développement Industriel et Minier du Congo	Frontier Mine <sup>1</sup>	84,000 copper.
Do.	do.	Lonshi Mine in Katanga Province <sup>1</sup>	50,000 copper.
Do.	Tenke Fungurume Mining SARL (Freeport McMoran Copper & Gold Inc., 57.75%, and Lundin Mining Corp. of Canada, 24.75%).	Tenke Fungurume Mine	130,000 copper in ore; 10,000 cobalt in ore.
Do.	Katanga Mining Ltd.	KOV and KTO Mines	150,000 <sup>c</sup> copper; 8,000 <sup>c</sup> cobalt.
Do.	Mutanda Mining SPRL (Bazano Group, 40%, and Glencore International AG, 40%)	Mutanda Mine	80,000 <sup>c</sup> copper; 9,000 <sup>c</sup> cobalt.
Do.	Anvil Mining Ltd.	Kinsevere Mine	60,000 copper.
Do.	do.	Mutoshi Mine <sup>1</sup>	16,500 copper.
Do.	Chemaf SPRL (subsidiary of Shalina Resources Ltd.)	Etoile Mine	55,000 <sup>c</sup> copper; 5,300 <sup>c</sup> cobalt.
Do.	Boss Mining SPRL [subsidiary of Eurasian Natural Resources Corp. plc (ENRC)]	Mukondo Mountain Mine	40,000 <sup>c</sup> copper; 10,000 <sup>c</sup> cobalt.
Do.	La Générale des Carrières et des Mines (Gécamines)	Kamfundwa, Kamoya Central, Kamoya South, and Shangalowe Mines	40,000 <sup>c</sup> copper; 2,500 <sup>c</sup> cobalt.
Do.	Ruashi Mining SPRL (Metorex Ltd., 75%)	Ruashi Mine	36,000 copper; 5,000 cobalt.
Do.	Artisanal miners	Mines in Katanga Province	35,000 <sup>c</sup> copper.
Do.	Tiger Resources Ltd.	Kipoi Mine	35,000 copper.
Do.	Congo Dong Fang International Mining sprl	Mines in Katanga Province	25,000 <sup>c</sup> copper.
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	12,000 copper; 4,500 cobalt.
Do.	TEAL Exploration and Mining Inc.	Kalumines <sup>1</sup>	10,000 copper.
Do.	Rubamin SPRL	Mines in Kolwezi and Likasi Districts	9,000 <sup>c</sup> copper; 1,000 <sup>c</sup> cobalt.
Do.	Mawson West Ltd.	Dikulushi Mine	4,800 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 tailings treatment plant at Lubumbashi	2,500 copper; 5,000 cobalt.
Do.	CuCo Resources Ltd.	Mine at Kisanfu	3,000 <sup>c</sup> cobalt.
Blister	Congo Dong Fang International Mining sprl	Plant in Lubumbashi	25,000 <sup>c</sup> copper.
Do.	Congo Loyal Will Mining sprl	do.	20,000 <sup>c</sup> copper.
Do.	Rubamin SPRL	Plant in Likasi	9,000 copper.
Refined	Katanga Mining Ltd.	Luilu plant	150,000 copper; 8,000 cobalt.
Do.	Tenke Fungurume Mining SARL	Tenke Fungurume plant	130,000 copper.
Do.	Anvil Mining Ltd.	Kinsevere plant	60,000 copper.
Do.	Mutanda Mining SPRL	Mutanda plant	60,000 copper.

See footnotes at end of table.

TABLE 2—Continued  
 CONGO (KINSHASA): STRUCTURE OF THE MINERAL INDUSTRY IN 2011

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Copper and cobalt—Continued:				
Refined—Continued		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.		Boss Mining SPRL	Luita plant near Lubumbashi	40,000 copper.
Do.		Ruashi Mining SPRL (Metorex Ltd., 80%)	Ruashi plant	36,000 copper.
Do.		Chemaf SPRL	Usoke plant in Lubumbashi	31,500 copper.
Do.		Société Minière du Katanga SPRL (Somika)	Plant near Lubumbashi	12,000 copper.
Diamond	carats	Société Minière de Bakwanga (MIBA) [Government, 80%, and Sibeka Group, 20% (which was owned by Mwana Africa plc)]	Mines at Mbuji Mayi in Kasai-Oriental Province	10,000,000.
Do.	do.	Societe Congolaise d'Investissement Minier (SCIM) (Government, 80%)	Mine at Tshibwe	600,000.
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. <sup>e</sup>
Gold	kilograms	Artisanal and small-scale miners	Mines at various sites in Ituri District	5,200. <sup>e</sup>
Do.	do.	do.	Mines at various sites in Sud-Kivu Province	4,800. <sup>e</sup>
Do.	do.	Banro Corp.	Twangiza Mine in Sud-Kivu Province	3,700.
Niobium (columbium) and tantalum		Société Minière du Kivu (Simikivu) [GfE Metalle Metalle und Materialien GmbH of Germany, 70%]	Lueshe Mine <sup>1</sup>	1,440 pyrochlore.
Do.		Artisanal and small-scale miners	Mines in Kalemie and Nyunzu Territories	130 <sup>e</sup> columbite- tantalite.
Do.		do.	Mines in Manono Territory	100 <sup>e</sup> columbite- tantalite.
Do.		do.	Mines in Maniema, Nord-Kivu, and Sud-Kivu Provinces	NA.
Petroleum, crude	thousand 42-gallon barrels	Perenco REP (subsidiary of Perenco plc) and Congolaise des Hydrocarbures SARL	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	Mawson West Ltd.	Dikulushi Mine	11,000.
Stone, crushed		Chemaf SPRL	Kilimasimba quarry near Lubumbashi	440,000.
Sulfuric acid		La Générale des Carrières et des Mines (Gécamines)	Sulfuric acid plants at Kolwezi and Shituru	NA.
Do.		Chemaf SPRL	Plant in Lubumbashi	36,000.
Do.		Central African Mining and Exploration Company plc (CAMEC)	Plant at Kambove	7,200.
Tin		Artisanal and small-scale miners	Bisie Mines in Nord-Kivu Province	3,000 <sup>e</sup> cassiterite.
Do.		do.	Kalima Mines in Maniema Province	1,200 <sup>e</sup> cassiterite.
Do.		do.	Mines in Manono Territory	1,000 <sup>e</sup> cassiterite.
Do.		do.	Mines in Luena Territory	1,000 <sup>e</sup> cassiterite.
Do.		do.	Mines in Mitwaba Territory	900 <sup>e</sup> cassiterite.
Do.		do.	Mines in Malemba Territory	600 <sup>e</sup> cassiterite.
Do.		do.	Kasese Mines in Maniema Province	500 <sup>e</sup> cassiterite.
Tungsten		do.	Mines in Walungu Territory	100 <sup>e</sup> wolframite.
Do.		do.	Mines in Lubero and Masisi Territories	50 <sup>e</sup> wolframite.
Zinc		La Société pour le Traitement du Terril de Lubumbashi	Big Hill plant at Lubumbashi	15,000 zinc in zinc oxide.

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Not operating at the end of 2011.