



# 2010 Minerals Yearbook

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CONGO (KINSHASA) [ADVANCE RELEASE]

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# THE MINERAL INDUSTRY OF CONGO (KINSHASA)

By Thomas R. Yager

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 2010, the country's share of the world's cobalt production amounted to 51%; industrial diamond, 25%; tantalum, 14%; gem-quality diamond, 5%; and copper and tin, 3% each. Congo (Kinshasa) accounted for about 47% 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, 2011; Edelstein, 2011; Olson, 2011a, b; Papp, 2011; Shedd, 2011).

## Minerals in the National Economy

The mining and mineral processing sector accounted for an estimated 13.4% of the gross domestic product in 2009 (the latest year for which data were available), and the manufacturing sector, 4%. About 450,000 artisanal miners were estimated to be employed in eastern Congo (Kinshasa) in 2010; most of the miners produced gold, niobium (columbium), tantalum, tin, and tungsten (De Koning, 2011, p. 6; Banque Centrale du Congo, undated, p. 40).

## 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 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 established a certification system to reduce the trade in conflict diamond.

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 suspension remained in effect at the end of 2010. The Government imposed the ban in an attempt to remove military and rebel groups from the local mineral trade (De Koning, 2011, p. 30).

The Government also launched military operations in 2010 to take control of mines in eastern Congo (Kinshasa) from the Forces Démocratiques pour la Libération du Rwanda (FDLR) and the Mai-Mai militia. In Sud-Kivu Province, the Government succeeded in removing FDLR and Mai-Mai forces from mining areas in the Fizi, the Kalehe, the Mwenga, and the Shabunda Territories. By the end of 2010, the majority of the mineral trade in eastern Congo (Kinshasa) was under the control of Congolese military units; however, the FDLR and Mai-Mai still controlled some mines and engaged in retaliatory attacks. Most of the military units in control of the mines were former rebels from the Congres National pour la Défense du Peuple (CNDP) and

were poorly integrated into the national army (Global Witness, 2010, p. 7, 10; De Koning, 2011, p. 18).

In July 2010, the U.S. Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act, which contained provisions concerning the use of minerals to finance military operations in eastern Congo (Kinshasa). The U.S. Securities and Exchange Commission (SEC) issued proposed regulations in accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act in December. The SEC was required to issue regulations in final form by April 15, 2011 (U.S. Securities and Exchange Commission, 2010, p. 80948–80950).

Under the proposed regulations, all companies registered with the SEC that sold products containing cassiterite, columbite-tantalite, gold, or wolframite were required to disclose whether these minerals originated from Congo (Kinshasa) or adjoining countries. Companies that sold products containing cassiterite, columbite-tantalite, gold, or wolframite that originated in Congo (Kinshasa) or adjoining countries were also 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 were required to describe products that contained conflict minerals and to be published on the companies' Web sites (Global Witness, 2010, p. 21).

In May 2007, the Government initiated a review of more than 60 previously negotiated mining contracts that were signed between 1998 and 2005. By December 2009, the Government decided to terminate 24 of the contracts; most of the remaining contracts were cleared as acceptable or were successfully renegotiated. The Government renegotiated the contract for the Tenke Fungurume project with Freeport McMoran Copper & Gold Inc. of the United States and Lundin Mining Corp. of Canada in October 2010 (Mining Journal, 2010b; Tredway, 2010).

In October 2009, the government of Katanga Province imposed a tax of \$5 per kilogram on shipments of cassiterite and its coproducts to other Provinces. In April 2010, the national Government imposed a \$60 per metric ton tax on the export of unprocessed copper and cobalt ore to encourage domestic copper and cobalt beneficiation (Metal Bulletin, 2010a; Spittaels and Caesens, 2010).

## Production

In 2010, the production of refined copper in Congo (Kinshasa) increased by 57%; sulfuric acid, by an estimated 55%; mined cobalt, by an estimated 42%; refined cobalt, by 41%; mined copper, by an estimated 22%; cement, by 19%; and zinc, by 16%. Silver mine production restarted in 2010. Niobium (columbium) production decreased by an estimated 58%; tin, by an estimated 36%; tantalum, by an estimated 27%; and tungsten, by an estimated 25%.

## 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

Exports were estimated to be about \$4.37 billion in 2009, and imports, \$4.95 billion. Cobalt accounted for 39% of the total value of exports; copper, 38%; crude petroleum, 11%; diamond, 5%; and tin, 3%. Other mineral exports included germanium, gold, niobium, tantalum, and tungsten. Petroleum products accounted for nearly 14% of total imports in 2009. In 2010, the share of Congolese copper and cobalt production that was refined prior to export was 60% and 7%, respectively. About 43% of domestic cobalt mine production was exported after processing to intermediate products, such as cobalt carbonate and cobalt hydroxide. Most or all Congolese diamond, niobium, tin, tantalum, and tungsten production was exported prior to downstream processing (table 1; Province du Katanga Division Provinciale des Mines, 2011; Banque Centrale du Congo, undated, p. 176–177).

The share of diamond in total exports decreased to 5% from nearly 53% in 2004, and crude petroleum, to 11% from 19%. Most of the decrease was attributable to increased production of and prices for cobalt and copper; crude petroleum exports increased in value by 35% from 2004 to 2009, and cobalt and copper exports increased at a much faster rate. The value of copper exports also increased because of the increasing share of copper production that was refined prior to export. In 2009, 46% of Congolese copper production was refined domestically compared with 5% in 2007 (table 1; Banque Centrale du Congo, undated, p. 176–177).

## 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 (MW) of installed capacity from 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 and Copper.**—Mining at the Tenke Fungurume project started in the second quarter of 2009. In 2010, output increased to 120,271 metric tons (t) of refined copper and 9,225 t of contained cobalt in hydroxide from 70,001 t of refined copper and 2,580 t of contained cobalt in 2009. The mine's capacity was 115,000 t/yr of refined copper and nearly 8,200 t/yr of cobalt in cobalt hydroxide; copper capacity was likely to be increased to 130,000 t/yr in 2011. Depending on favorable results of expansion studies, copper production could increase to between 175,000 and 220,000 t/yr by 2012 or 2013. Tenke Fungurume was a joint venture of Freeport McMoran (56%), Lundin (24%), and Gécamines (20%) (Tredway, 2010; Lundin Mining Corp. 2011).

Katanga Mining Ltd. of Switzerland produced copper and cobalt at the KOV, the KTO and the T17 Mines and the Luilu refinery. In 2010, production was 52,184 t of refined copper and 3,437 t of cobalt metal compared with 41,964 t of refined copper and 2,534 t of cobalt metal in 2009. Katanga also produced 6,054 t of copper in concentrate compared with 1,714 t in 2009. Production was limited by the lack of sulfide ore from the KTO Mine, processing constraints at Luilu, power outages, and variability in power frequency (Katanga Mining Ltd., 2011, p. 2, 4, 9).

In 2010, Katanga increased the capacity at Luilu to 110,000 t/yr of refined copper from 70,000 t/yr. The company planned to increase capacity at Luilu to 150,000 t/yr of copper and 8,000 t/yr of cobalt by the end of the second quarter of 2011. By 2015, Katanga planned to increase capacity to 310,000 t/yr of refined copper, 22,000 t/yr of cobalt in cobalt hydroxide, and 8,000 t/yr of cobalt metal (Katanga Mining Ltd., 2011, p. 2).

First Quantum Minerals Ltd. of Canada produced copper at the Frontier Mine. In 2010, production amounted to 47,508 t of copper in concentrate compared with 92,353 t in 2009. In May 2010, the Government annulled First Quantum's mining rights to the Frontier and the Lonshi Mines and forced the company to shut down production in late August. The Government subsequently awarded the Frontier and the Lonshi Mines to a joint venture of Fortune Ahead Ltd. of China and state-owned company Société de Développement Industriel et Minier du Congo. First Quantum announced plans to contest the Government's decision (Njini, 2010; First Quantum Minerals Ltd., 2011, p. 26).

In December 2010, First Quantum announced plans to sue Eurasian Natural Resources Corp. plc (ENRC) of the United Kingdom for \$2 billion over the Kolwezi Tailings cobalt and copper project. The Government annulled First Quantum's mining rights for the Kolwezi Tailings project in August 2009 because of an alleged breach of contract. ENRC purchased a majority share in the project in August. First Quantum was also engaged in a legal dispute with the Government over the Kolwezi Tailings project (Mining Journal, 2010b, c).

Gécamines produced 20,015 t of copper in concentrate and 745 t of cobalt metal in 2010. 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 (EGMF) to produce cobalt and copper at

the Luiswishi Mine and La Société pour le Traitement du Terril de Lubumbashi's (STL) tailings treatment plant in Lubumbashi. In 2010, contained copper production at Luiswishi increased to 7,224 t from 1,512 t in 2009 as the mine reopened, and contained cobalt production increased to 2,545 t from 437 t. Contained cobalt output at STL decreased to 4,232 t in 2010 from 4,590 t in 2009; contained copper output decreased to 2,454 t from 2,639 t. Decreased output was attributable to a furnace relining in the first half of 2010 (Metal Bulletin, 2010b; La Générale des Carrières et des Mines, 2011).

Gécamines was also engaged in a joint venture with Glencore International plc of Switzerland and Groupe Bazano sprl to produce copper and cobalt from the Mutanda Mine. Mutanda Mining sprl (Glencore, 40%; Groupe Bazano, 40%; and Gécamines, 20%) was the second-ranked producer of cobalt in Congo (Kinshasa). In 2010, contained copper production at Mutanda amounted to 16,564 t, and contained cobalt, 9,058 t (La Générale des Carrières et des Mines, 2011).

Ruashi Mining SPRL (Metorex Ltd. of South Africa, 75%) produced cobalt and copper from the Ruashi Mine; refined copper and cobalt carbonate were produced at a solvent extraction and electrowinning (SX/EW) plant. In 2010, output increased to 29,790 t of refined copper and 3,580 t of contained cobalt from 21,371 t of refined copper and 2,198 t of contained cobalt in 2009. Increases in production were attributable to increases in recovery rates and the amount of ore mined and processed. Metorex planned to produce 36,000 t/yr of refined copper and between 4,000 and 5,000 t/yr of contained cobalt starting in 2011 (Metorex Ltd., 2010; 2011, p. 36–37; Mining Journal, 2010d).

In 2010, Metorex was engaged in a feasibility study on reopening the Kinsenda Mine, which produced copper from 1977 to 2002. The company planned to complete the study by mid-2011. Depending on the results of the study, Metorex could produce 22,000 t/yr of copper in concentrate at Kinsenda. The estimated capital cost of the project was between \$130 million and \$150 million (Metorex Ltd., 2011, p. 42).

Chemaf SPRL produced copper and cobalt at the Etoile Mine and the Usoke Avenue copper SX/EW and cobalt carbonate plants. In 2010, Chemaf produced 25,144 t of copper, of which 15,776 t was refined. Cobalt production amounted to 3,832 t, of which 2,744 t was in carbonate. Copper and cobalt output increased by 61% and 16%, respectively, because of increases in the amount of ore mined and processed. 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, which would require the opening of a new cobalt SX/EW plant (Harrison, 2010; Shalina Resources Ltd., 2011).

In late March 2009, Anvil Mining Ltd. of Australia reopened the Kinsevere Mine, which was placed on care-and-maintenance status in November 2008 because of the worldwide economic crisis. Production at Kinsevere remained nearly unchanged at 16,538 t of copper in 2010. Increases in the amount of ore processed were offset by decreases in ore grades and recovery rates. Anvil planned to complete a new SX/EW plant at Kinsevere with a capacity of 60,000 t/yr of refined copper in the second quarter of 2011; the plant was likely to reach full

production capacity by yearend. Production then would be shut down at the existing plant. The life of the mine was estimated to be 14 years (Anvil Mining Ltd., 2011, p. 1, 4, 8).

Anvil also held a 90% interest in the Dikulushi copper-silver mine, which is located near Lake Mweru in Katanga Province. In 2008, Anvil placed the mine on care-and-maintenance status because of sharp decreases in copper prices. In April 2010, Mawson West Ltd. of Australia purchased Anvil's share in the Dikulushi Mine. Mawson West restarted production from a stockpile at Dikulushi in late June; the company planned to produce at the rate of 4,800 t/yr copper and 11,000 kilograms per year (kg/yr) silver. Resources in the stockpile were estimated to be sufficient for between 12 and 14 months of production. Mawson West was also considering mining a high-grade zone in the Dikulushi deposit and the nearby Kazimbula deposit (Avery, 2010; Metal Bulletin, 2010c).

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; resources at Shaba were estimated to be 8.1 million metric tons (Mt) at a grade of 2.5% copper and 8 grams per metric ton (g/t) silver. The cost of the project was estimated to be between \$40 million and \$50 million. Production could start at Kapulo in the second half of 2012 (Avery, 2010; Metal Bulletin, 2010c).

ENRC produced copper and cobalt at the Mukondo Mountain Mine and the Luita SX/EW plant. In 2010, ENRC produced 17,960 t of refined copper and 8,424 t of cobalt in concentrate compared with 9,880 t of copper and 6,545 t of cobalt in 2009. The company planned to increase refined copper production to 75,000 t/yr and cobalt production to 8,000 t/yr by 2013. About 3,200 t/yr of ENRC's cobalt production would be refined at a new SX/EW plant (Mining Journal, 2010a, b; La Générale des Carrières et des Mines, 2011).

Copper blister, which has a copper content of about 95%, was produced by numerous companies in Katanga Province. In 2010, Congo Loyal Will Mining sprl of Hong Kong produced about 16,100 t of copper in blister; Congo Dong Fang International Mining sprl of China, about 13,300 t; and Rubamin SPRL (a subsidiary of Rubamin Ltd. of India), nearly 5,800 t (Province du Katanga Division Provinciale des Mines, 2011).

Société Minière du Katanga SPRL (Somika) produced about 3,600 t of cobalt in hydroxide and 1,500 t in concentrate in 2010. Volcano Mining SPRL mined about 2,400 t of cobalt; Groupe Bazano SPRL, about 1,800 t, and Bolfast Co., about 1,200 t. In the first quarter of 2010, CuCo Resources Ltd. of Canada was producing nearly 1,500 t/yr of cobalt in concentrate at Kisanfu; the company planned to increase output to between 2,300 and 2,900 t/yr. CuCo completed the expansion in September. Concentrates from Kisanfu were sold to Société Minière du Katanga SPRL (Somika) for further processing. In November, CuCo completed a drilling program for copper at Kisanfu (Wallop, 2010; CuCo Resources Ltd., 2011; Province du Katanga Division Provinciale des Mines, 2011).

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 was expected to open in the first half of 2011. Tiger also planned to complete a feasibility study on the second stage of the project in 2011. Depending on the results of the study, Tiger could build a new SX/EW plant that would process ore from the Kileba South, the Kipoi Central, and the Kipoi North deposits starting in 2014. The capacity of the plant was expected to reach 85,000 t/yr by 2016. The life of the second stage of the project was estimated to be 10 years (Foster Stockbroking Pty Ltd., 2010, p. 1, 7, 11).

**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 decreases in reported gold exports from Burundi and Uganda represented decreases in Congolese production or the gold trade moving further underground (De Koning, 2011, p. 10–12).

In 2010, Congolese military forces maintained control over the Lugushwa and the Mukungwe Mines in Sud-Kivu Province. At Lugushwa, military forces obtained revenue from illegal taxation of miners. The FDLR illegally taxed miners at the Lubamba Mine in Sud-Kivu Province. Congolese armed forces engaged in conflict with a local militia for control of the Moba Mine in Shabunda Territory. Gold produced in mines in the southern part of Sud-Kivu was exported to Burundi across Lake Tanganyika (De Koning, 2011, p. 18, 20).

In 2010, Banro Corp. of Canada was building a new mine at Twangiza in Sud-Kivu Province. Banro planned to open a new mine in late 2011 with a capacity of between 2,500 and 3,400 kg/yr; the company planned to increase capacity to more than 9,300 kg/yr. Production for the scheduled 21-year life of the mine was expected to be nearly 5,300 kg/yr. Reserves were estimated to be 82.5 Mt at a grade of 1.7 g/t gold. Capital costs for the mine were estimated to be \$377 million, and for a 30-MW hydroelectric plant to supply power to the mine, \$134 million (Banro Corp., 2010).

Banro also held the Lugushwa deposit, which had contained gold resources of 84 t; Namoya, 48 t; and Kamituga, 28 t. The company hoped to increase contained gold resources at Namoya to at least 62 t (Banro Corp., 2010).

In the fourth quarter of 2009, AngloGold Ashanti and Randgold Resources Ltd. of the United Kingdom each purchased a 45% share in the Kibali gold project. The companies planned to start construction at Kibali in mid-2011. The Kibali Mine was expected to open by January 2014; AngloGold Ashanti and Randgold planned to produce 12,400 kilograms (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 286 t of contained gold (Moto Goldmines Ltd., 2009, p. 1, 8; Mining Journal, 2010b).

Mwana Africa plc of the United Kingdom engaged in drilling at its Zani Kodo project in 2010. In July, Mwana estimated that resources at Zani Kodo were 11.1 Mt at a grade of 3.53 g/t gold. Kilo Goldmines Ltd. of Canada engaged in drilling at the KGL Somituri project in the fourth quarter of 2010. The company planned to continue drilling in the first quarter of 2011 and

to complete a resource estimate by the end of February 2011 (African Mining, 2010; Kilo Goldmines Ltd., 2011).

**Niobium (Columbium) and Tantalum.**—The Lueshe pyrochlore mine, which accounted for a majority of domestic niobium production between 2000 and 2003, was reportedly reopened in 2008 by Krall Metal Congo (KMC) of Austria. In September 2009, the Government ordered KMC to stop mining operations at Lueshe; the ownership of the mine was disputed by KMC and Société Minière du Kivu (GfE Metalle und Materialien GmbH of Germany, 70%) since 2004. In March 2010, the Government awarded mining rights to Société Minière du Kivu (Africa Mining Intelligence, 2009, 2011).

Mwangachuchu Hizi International and other mining companies produced columbite-tantalite at Bibatama in Nord-Kivu Province using labor-intensive methods. Columbite-tantalite was exported mostly through Goma in Nord-Kivu Province and Bukavu in Sud-Kivu Province. In 2009, columbite-tantalite exports from Nord-Kivu Province increased to 281 t from 87 t in 2008, and exports from Sud-Kivu Province decreased to 187 t from 440 t. About 72% of the columbite-tantalite exported from Nord-Kivu Province in 2009 was mined within the Province (Province du Nord-Kivu Division Provinciale des Mines, 2010, p. 28; De Koning, 2011, p. 6).

Substantial amounts of columbite-tantalite were produced by artisanal miners in the Tanganyika District in Katanga Province. In the first 10 months of 2009, production from the Kisengo Mine amounted to nearly 75 t of columbite-tantalite; the Katonge Mine, 24 t; the Mayi Baridi Mine, 19 t; and the Malemba Mine, 3 t. In March 2010, the Government of Katanga granted mining rights for the Katonge, the Kisengo, and the Mayi Baridi Mines to Mining Mineral Resources sprl (MMR), which was a subsidiary of Somika. By the end of 2011, Somika planned to build smelters at Kalemie and Lubumbashi (Spittaels and Caesens, 2010).

**Tin.**—Artisanal and small-scale miners produced cassiterite in Katanga, Maniema, Nord-Kivu, and Sud-Kivu Provinces. In the first 6 months of 2010, cassiterite exports from Nord-Kivu Province amounted to 4,652 t, and Sud-Kivu Province, 1,908 t. In 2009, cassiterite exports from Nord-Kivu Province decreased to 10,543 t from 13,331 t in 2008, and from Sud-Kivu Province, to 4,652 t from 6,004 t. In 2009, mines in Nord-Kivu accounted for at least 6,640 t of the cassiterite exported from Goma; Maniema Province, at least 1,687 t; Sud-Kivu Province, at least 656 t; and Katanga Province, 287 t (Province du Nord-Kivu Division Provinciale des Mines, 2010, p. 28; De Koning, 2011, p. 8).

The Bisie Mines in the Walikale Territory in Nord-Kivu were the largest Congolese cassiterite mines. In the first 6 months of 2010, production from Bisie accounted for about two-thirds of reported Congolese cassiterite exports. In early 2010, the Bisie Mines were controlled by the 212th Brigade of the Congolese military forces, which was a former CNDP unit. The 212th Brigade was estimated to obtain between \$14 million and \$29 million per year from the illegal taxation of local miners. The Government reportedly sent forces to remove the 212th Brigade from Bisie (Global Witness, 2010, p. 8; De Koning, 2011, p. 17–18).

In 2009, cassiterite production from Malemba Nkulu, Manono, and Mitwaba Territories in Katanga Province amounted to 1,368 t, of which about 900 t was mined at

former state-owned company Congo-Etain's mine sites in Manono Territory. In 2010, cassiterite exports 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 Maniema Province, cassiterite production amounted to at least 2,579 t in 2009, of which 1,016 t was mined in Punia Territory and 996 t in Kindu Territory (Matthysen and Nimpagaritse, 2010, p. 28; Spittaels and Caesens, 2010).

**Tungsten.**—Wolframite was mined in Maniema, Nord-Kivu, and Sud-Kivu Provinces. In 2009, wolframite exports from Nord-Kivu decreased to 304 t from 548 t in 2008, and from Sud-Kivu, to 168 t from 440 t. About 68% of the wolframite exported from Nord-Kivu Province in 2009 was mined in Maniema Province. Mines in Kailo and Kindu Territories reportedly accounted for most of the wolframite mined in Maniema Province. Artisanal miners also produced wolframite on Idjwi Island in Sud-Kivu Province. The peak of production on Idjwi Island was reportedly in 2007. Many artisanal miners abandoned the wolframite mines in the last 4 months of 2009 and moved to cassiterite mining in Kalehe and Walikale Territories because of poor working conditions resulting from heavy rains, decreased production from mines, including the Kamole Mine, and decreases in wolframite prices (Cuvelier, 2010; Matthysen and Nimpagaritse, 2010, p. 28; Province du Nord-Kivu Division Provinciale des Mines, 2010, p. 28; De Koning, 2011, p. 6).

### *Industrial Minerals*

**Cement.**—National cement production increased to 527,331 t in 2010 from 443,550 t in 2009. EGMF held a 98.7% share in Interlacs and an 80% share in Cimenterie du Lukala, which had a combined capacity of about 500,000 t/yr. In late 2010, HeidelbergCement purchased majority shares in Cimenterie du Lukala and Intelacs. Heidelberg planned to increase the total capacity of the plants to about 1.4 million metric tons per year (Waerp and Arnoldson, 2011).

Congolese cement demand was estimated to be about 5.34 Mt in 2010, of which about 1.25 Mt was attributable to Katanga Province and 0.55 Mt to the eastern Provinces. Cement prices were estimated to be about \$400 per metric ton in eastern Congo (Kinshasa) compared with \$130 per metric ton in Tanzania and \$120 per metric ton in Kenya. Congolese cement prices were also substantially higher than those in neighboring landlocked countries with high power and transportation costs, such as Burundi (about \$350 per metric ton), Rwanda (about \$300 per metric ton) and Uganda (nearly \$200 per metric ton) (Renaissance Capital LLC, 2011, p. 9, 35).

**Diamond.**—Artisanal and small-scale miners accounted for most Congolese output of diamond. In 2010, artisanal and small-scale diamond production was 16.8 million carats, which was nearly unchanged from that of 2009. 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 the mines in November 2008 because of declining diamond prices, labor disputes, and power supply problems. Prices for

the industrial diamond produced by MIBA decreased to \$6 per carat from \$32 per carat; the company's cost of production was about \$15 per carat. In 2010, the Government granted \$10 million to restart mining operations at Mbuji-Mayi; an additional \$10 million was expected to be granted to MIBA in January 2011. By July 2011, the company planned to start producing between 200,000 and 700,000 carats per year. The cost of increasing production to 12 million carats per year was estimated to be between \$150 million and \$200 million. The Government also planned to grant nearly 80% of MIBA's concessions to artisanal miners (La Prospérité, 2010).

Namakwa Diamonds Ltd. of South Africa mined diamond from alluvial deposits at the Kasai Central project. In fiscal year 2010 (which ran from the end of September 2009 through the end of September 2010), Namakwa mined 40,104 carats compared with 20,485 carats in fiscal year 2009. The company planned to increase its production for fiscal year 2011 to between 196,000 and 240,000 carats. Resources at Kasai Central were estimated to be 2.05 million carats, and at the Kasai-Lumbembe, the Kasai North, the Longitshimo, and the Lumbembe projects, a total of 4.11 million carats (Namakwa Diamonds Ltd., 2010, p. 13–14, 30).

Pangea Diamondfields plc of the United Kingdom held the Longatshimo River and the Tshikapa River projects, which had combined resources of more than 9 million carats in alluvial deposits. In February 2010, Pangea announced that it was merging its diamond assets with IGE Resources AB. By late September, IGE had converted the exploration licenses at Longatshimo River and Tshikapa River to exploitation and small mining licenses (IGE Resources AB, 2010; Nairn, 2010).

### *Mineral Fuels and Related Materials*

**Petroleum.**—Crude petroleum was produced by Perenco plc of the United Kingdom and its joint-venture partners. Tullow Oil plc of Ireland held Blocks 1 and 2 in the Lake Albert basin. In late June 2010, the Government awarded to Blocks 1 and 2 to Caprikat Ltd. and Foxwhelp Ltd. of the British Virgin Islands. The Government also awarded Block 3 to SacOil Holdings Ltd. of South Africa and Block 5 to a joint venture of Dominion Petroleum Ltd. of Bermuda (46.75%), Soco International plc of the United Kingdom (38.25%), and state-owned Cohydro (15%). Soco drilled its first well in the onshore Nganzi Block in the western part of the country (Petroleum Economist, 2010).

### **Outlook**

Cobalt and copper output in Congo (Kinshasa) is expected to increase substantially in the near future. Production is likely to increase at the Etoile, the Kinsevere, the KTO, the Mukondo Mountain, the Ruashi, the T17, and the Tenke Fungurume Mines. The Kipoi and the Kapulo Mines are expected to open in 2011 and 2012, respectively. The opening of the Kibali and the Twangiza Mines is expected to result in increased gold production. Diamond production could also increase if sufficient funds are available to reopen the Mbuji-Mayi Mines. The development of these projects depends heavily upon political and economic stability and favorable conditions in world

markets. Disputes over the results of the 2011 election could result in civil unrest.

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. The suspension of mining in Nord-Kivu and Sud-Kivu Provinces remained in effect at the end of 2010. It is unclear whether sufficient markets could be found for minerals produced in Nord-Kivu and Sud-Kivu Provinces when the suspension is lifted because of concerns about conflict minerals.

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TABLE 1  
CONGO (KINSHASA): PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2006	2007	2008	2009 <sup>e</sup>	2010 <sup>e</sup>
<b>METALS</b>					
<b>Cobalt:</b>					
Mine output, Co content <sup>e,3</sup>	27,100	25,300	31,000	43,000 <sup>r</sup>	61,000
Metal, Co content <sup>4</sup>	550	606	1,049 <sup>r</sup>	2,970 <sup>5</sup>	4,182 <sup>5</sup>
<b>Copper:</b>					
Mine output, Cu content <sup>e</sup>	142,000	146,000	238,000	360,000 <sup>r</sup>	440,000
Smelter, electrowon (low grade)	10,000	1,800	--	--	--
Refined	--	6,697 <sup>r</sup>	38,632 <sup>r</sup>	166,917 <sup>r,5</sup>	262,401 <sup>5</sup>
Germanium, mine output, Ge content kilograms	2,500	2,500	2,500 <sup>e</sup>	2,500	2,500
Gold, mine output, Au content <sup>e</sup> do.	10,300	5,100	3,300	3,500	3,500
<b>Niobium (columbium) and tantalum:</b>					
<b>Columbite-tantalite concentrate:</b>					
Gross weight <sup>6</sup>	52	428 <sup>r</sup>	527 <sup>r</sup>	468 <sup>5</sup>	350
Nb content <sup>e</sup>	12	98 <sup>r</sup>	120	110	80
Ta content <sup>e</sup>	14	120 <sup>r</sup>	140	130	95
<b>Pyrochlore concentrate:</b>					
Gross weight <sup>6</sup>	--	--	119	80 <sup>r</sup>	-- <sup>5</sup>
Nb content	--	--	59 <sup>e</sup>	40 <sup>r</sup>	-- <sup>5</sup>
Silver, mine output, Ag content kilograms	67,633	76,242	34,083	-- <sup>5</sup>	5,600
Steel, crude	104,000	110,000	113,000	120,000	120,000
<b>Tin, mine output, concentrate:</b>					
Gross weight <sup>6</sup>	5,878	14,903 <sup>r</sup>	19,335 <sup>r</sup>	15,195 <sup>r,5</sup>	9,700
Sn content <sup>e</sup>	3,800	9,700 <sup>r</sup>	12,600 <sup>r</sup>	9,900 <sup>r</sup>	6,300
<b>Tungsten, mine output, concentrate:</b>					
Gross weight <sup>6</sup>	975	1,174 <sup>r</sup>	716	385 <sup>r,5</sup>	290
W content <sup>e</sup>	500	600 <sup>r</sup>	370 <sup>r</sup>	200 <sup>r</sup>	150
Zinc, mine output, Zn content	16,831	18,500 <sup>e</sup>	13,523 <sup>r,5</sup>	13,354 <sup>r,5</sup>	15,546 <sup>5</sup>
<b>INDUSTRIAL MINERALS</b>					
Cement, hydraulic	519,233	530,196	411,212	443,550 <sup>5</sup>	527,331 <sup>5</sup>
<b>Diamond:<sup>7</sup></b>					
Artisanal thousand carats	26,034	27,223	20,146	16,998 <sup>5</sup>	16,800 <sup>5</sup>
Large-scale do.	2,914	1,042	801	1,277 <sup>5</sup>	40
Total do.	28,948	28,265	20,947	18,275 <sup>5</sup>	16,800
Lime <sup>e</sup>	25,000	25,000	25,000	25,000	25,000
Stone, crushed	217,000	230,000	237,000	250,000	250,000
Sulfuric acid <sup>e</sup>	15,000	35,000	150,000	550,000 <sup>r</sup>	850,000
<b>MINERAL FUELS AND RELATED MATERIALS</b>					
Coal, bituminous	124,000	128,000	116,000	120,000	120,000
Petroleum, crude thousand 42-gallon barrels	9,009	8,816	8,365	9,382 <sup>5</sup>	8,586 <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 November 4, 2011.

<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 2010

(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.
Coal	La Générale des Carrières et des Mines (Gécamines)	Luenta Mine	800,000 bituminous.
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., 24.75%)	Tenke Fungurume Mine	115,000 copper in ore; 8,000 cobalt in ore.
Do.	Katanga Mining Ltd.	KOV, KTO, and T17 Mines	70,000 <sup>c</sup> copper; 4,000 <sup>c</sup> cobalt.
Do.	Anvil Mining Ltd.	Kinsevere Mine	26,000 copper.
Do.	do.	Mutoshi Mine <sup>1</sup>	16,500 copper.
Do.	Central African Mining and Exploration Company plc (CAMEC)	Kakanda concentrator	60,000 copper; 5,000 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., 80%)	Ruashi Mine	36,000 copper; 5,000 cobalt.
Do.	Chemaf SPRL (subsidiary of Shalina Resources Ltd.)	Etoile Mine	27,000 <sup>c</sup> copper in ore; 4,400 <sup>c</sup> 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	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	2,500 <sup>c</sup> cobalt.
Blister	Congo Loyal Will Mining sprl	Plant in Lubumbashi	16,100 <sup>c</sup> copper.
Do.	Congo Dong Fang International Mining sprl	do.	13,300 <sup>c</sup> copper.
Do.	Rubamin SPRL	Plant in Likasi	9,000 copper.
Refined	Tenke Fungurume Mining SARL	Tenke Fungurume plant	115,000 copper.
Do.	Katanga Mining Ltd.	Luilu plant	110,000 copper; 4,000 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.	Ruashi Mining SPRL (Metorex Ltd., 80%)	Ruashi plant	36,000 copper.
Do.	Chemaf SPRL	Usoke plant in Lubumbashi	16,000 copper.
Do.	Central African Mining and Exploration Company plc (CAMEC)	Luita plant near Lubumbashi	10,000 copper.

See footnotes at end of table.

TABLE 2—Continued  
 CONGO (KINSHASA): STRUCTURE OF THE MINERAL INDUSTRY IN 2010

(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, 20% (which was owned by Mwana Africa plc)]	Mines at Mbuji Mayi in Kasai-Oriental Province <sup>1</sup>	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. <sup>e</sup>
Gold	kilograms	Artisanal miners	Mines at various sites in Ituri District	5,200. <sup>e</sup>
Do.	do.	Artisanal miners, Congolese military forces, and Forces Démocratiques pour la Libération du Rwanda, of which:	Includes in Sud-Kivu Province:	4,800. <sup>e</sup>
Do.	do.	Artisanal miners	Various sites	NA.
Do.	do.	Congolese military forces	Mufa and Mukungwe Mines	NA.
Do.	do.	do.	Mines in Kalehe and Mwenga Districts	NA.
Do.	do.	do.	Mines in Fizi District	NA.
Do.	do.	do.	Mines in Lubero District in Nord-Kivu Province	NA.
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	Mawson West Ltd.	Dikulushi Mine <sup>1</sup>	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		Congolese military forces	Bisie Mines in Nord-Kivu Province	12,000 cassiterite.
Do.		Artisanal miners	Kalima Mines in Maniema Province	1,200 <sup>e</sup> cassiterite.
Do.		do.	Mines in Katanga Province	1,000 <sup>e</sup> cassiterite.
Do.		Artisanal miners and Congolese military forces	Mines near Shabunda in Sud-Kivu Province	840 <sup>e</sup> cassiterite
Do.		Artisanal miners	Kasese Mines in Maniema Province	500 <sup>e</sup> cassiterite.
Do.		Forces Démocratiques pour la Libération du Rwanda	Mines in Mwenga and Uvira Districts in Sud-Kivu Province and in Walikale District in Nord-Kivu Province	NA.
Do.		Congolese military forces	Mines at Lemara, Lutunkulu, Mushangi, and Tubimbi and in Kalehe Territory	NA.
Do.		Mining Processing Congo (MPC), Sodexmines, and other companies	Processing plants at Goma	14,000 <sup>e</sup> cassiterite.
Tungsten		Artisanal miners	Mines at Kamole in Sud-Kivu Province and various sites in Nord Kivu and Mainiema Provinces	1,000 <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 2010.