



2013 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, copper, diamond, tantalum, and tin. In 2013, the country's share of the world's mined cobalt production amounted to 48%; tantalum, 17%; diamond, 12%; copper, 5%; refined cobalt, nearly 4%; and tin, 1%. 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 (Cobalt Development Institute, 2014; Janse, 2014; Anderson, 2015; Brininstool, 2015; Papp, 2015; Shedd, 2015).

Minerals in the National Economy

The mining and mineral processing sector accounted for an estimated 20.9% of the gross domestic product (GDP) in 2013, and the manufacturing sector, 22%. The copper mining subsector accounted for 13.5% of GDP; the cobalt mining subsector, 5%; the petroleum extraction subsector, 3.1%; the quarrying subsector, 2.9%; the diamond mining subsector, 0.8%; and other minerals, 0.7% (Banque Centrale du Congo, undated, p. 45).

Between 1.8 and 2 million artisanal miners were estimated to be employed in Congo (Kinshasa) in 2012 (the latest year for which data were available), which included between 800,000 and 1 million miners in diamond mining and between 100,000 and 130,000 miners in gold mining in the Ituri Interim Administration of Orientale Province. In 2013, a partial survey of mines in Katanga, Maniema, Nord-Kivu, and Sud-Kivu Provinces found that about 35,000 miners were employed in niobium, tantalum, tin, and tungsten mining. Additional surveys were planned for 2014 (United Nations Environmental Programme, 2011, p. 32; Diamond Development Initiative, 2012; van Puijenbroek and others, 2012, p. 12–13; Spittaels and Hilgert, 2013).

Government Policies and Programs

In 2002, 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. In 2013, the Government was considering a new mining code that would increase its free-carried and non-dilutable share in mining projects to 35% from 5%. The proposed mining code would increase royalty rates on precious metals to 6% from 2.5%, and on nonferrous metals, to 6% from 2%. Exploration permits would be reduced to 6 years from 15 years. The proposed mining code would not be submitted for approval

by the Congolese Parliament before the first quarter of 2014 (Engineering & Mining Journal, 2014a).

In April 2013, the Government issued a decree that banned the export of cobalt and copper concentrates. Companies were given a 90-day moratorium to comply with the ban; the moratorium subsequently was extended until yearend. The extension of the moratorium could be attributable to insufficient capacity to process cobalt and copper concentrates (Engineering & Mining Journal, 2014a).

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 armed groups in eastern Congo (Kinshasa). The U.S. Securities and Exchange Commission (SEC) issued regulations in final form in accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) in August 2012 (U.S. Securities and Exchange Commission, 2012, p. 56274–56275).

Under the regulations, all companies registered with the SEC that sold products containing gold, tantalum, tin, or tungsten were required to disclose whether these minerals originated from Congo (Kinshasa) or adjoining countries. Companies that sold products containing gold, tantalum, tin, or tungsten that originated in Congo (Kinshasa) or adjoining countries were also required to submit annual reports to the SEC describing the due diligence measures taken to determine the source and custody of such minerals and to provide a description of the products manufactured or contracted to be manufactured that are not conflict-free (U.S. Securities and Exchange Commission, 2012, p. 56274).

In March 2011, the Government of Katanga Province and the International Tin Research Institute (ITRI) started the ITRI Tin Supply Chain Initiative (iTSCi), which is a traceability mechanism for domestically produced tantalum, tin, and tungsten to meet end users' requirements under the Dodd-Frank Act and Organisation for Economic Co-operation and Development due diligence guidelines. By the end of 2012, 140 mine sites were covered by the scheme in Katanga Province. ITRI restarted certification in Sud-Kivu Province in October 2012 after 2 years of suspension and initiated certification in Maniema Province in December 2012 (International Tin Research Institute, 2013).

By the end of 2013, the iTSCi program had been implemented in 27 subsectors in the Kailo Territory and the Pangi Territory in Maniema Province. The mine sites covered by the iTSCi program in Pangi Territory were located near Kalima. In December, a feasibility study on expanding the program to Punia Territory in Maniema Province was completed with favorable results. The program was expected to commence in Punia Territory in January 2014 (International Tin Research Institute, 2014b).

Production

In 2013, the production of silver increased by 390%; mined copper, by an estimated 47%; refined copper, by 45%; sulfuric acid, by an estimated 44%; gold, by an estimated 21%; germanium, by an estimated 20%; zinc, by 19%; and mined cobalt, by an estimated 12%. Tin and tungsten production decreased by an estimated 23% each; tantalum, by an estimated 20%; diamond, by 18%; and niobium, by an estimated 17% (table 1).

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; Gécamines held shares of between 5% and 40% in numerous operations. Private companies held majority shares in the cement producers; Gécamines held a 49.73% share in Ciment et Matériaux du Katanga. 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 reported exports were valued at \$10.9 billion in 2013, and imports, \$10 billion. Copper accounted for 68% of the total value of Congolese exports; cobalt, 17%; crude petroleum, 8%; diamond, 2%; and gold, 1%. Other mineral exports included germanium, niobium, tantalum, tin, tourmaline, and tungsten. Mineral fuels accounted for about 10% of total imports in 2013. In 2013, the share of Congolese copper and cobalt production that was refined prior to export was 71% and 5%, respectively. Additional cobalt and 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, tantalum, tin, and tungsten production was exported prior to downstream processing (table 1; Banque Centrale du Congo, undated, p. 174–175).

Commodity Review

Metals

Cobalt, Copper, Germanium, and Silver.—In 2013, output at the Tenke Fungurume Mine increased to 209,774 metric tons (t) of refined copper and 12,751 t of contained cobalt in hydroxide from 157,671 t of refined copper and 11,669 t of contained cobalt in 2012. Production exceeded the mine's rated capacity of 195,000 metric tons per year (t/yr) of refined copper; the rated capacity of cobalt in cobalt hydroxide was 15,000 t/yr. In 2014, sales volumes were expected to be 202,000 t of refined copper and 13,600 t of contained cobalt. Tenke Fungurume was a joint venture of Freeport McMoran Copper & Gold Inc. of the United States (56%), Lundin Mining Corp. of Canada (24%), and Gécamines (20%) (Lundin Mining Corp., 2014, p. 21–22).

In 2013, Mutanda Mining SPRL (Glencore Xstrata plc of Switzerland, 69%, and Fleurette Properties Ltd., 31%) increased the capacity of its copper solvent extraction and electrowinning (SX-EW) plant at the Mutanda Mine to 200,000 t/yr from 110,000 t/yr. The plant had the capacity to produce 23,000 t/yr of cobalt in hydroxide. In 2013, output at Mutanda amounted to 150,600 t of copper, of which about 142,500 t was refined. In 2012, production was 83,500 t of refined copper and 3,500 t of copper in concentrate. Cobalt output in concentrate and hydroxide increased to about 13,700 t in 2013 from 8,500 t in 2012 (Hack, 2013; Glencore Xstrata plc, 2014, p. 7, 14; Kibawa, 2014).

Katanga Mining Ltd. of Canada produced copper and cobalt at the KOV and T17 open pit mines, the KTO underground mines, and the Luilu refinery. In 2013, production was 87,479 t of refined copper and 2,297 t of cobalt metal compared with 61,440 t of refined copper and 2,129 t of cobalt metal in 2012. Katanga also produced 48,713 t of copper in concentrate compared with 31,523 t in 2012. Higher production was attributable to increased ore mined at the KOV Mine (Katanga Mining Ltd., 2014, p. 6, 10–11).

At the end of 2013, Luilu had the capacity to produce 200,000 t/yr of refined copper. Katanga was engaged in a further expansion of its refined copper capacity to 260,000 t/yr and total copper capacity to 300,000 t/yr in 2014. The company also completed a feasibility study on the T17 Underground Mine in 2013; an investment decision was yet to be made at yearend (Bain, 2013b; Katanga Mining Ltd., 2014, p. 8).

Boss Mining SPRL [Eurasian Natural Resources Corp. Ltd. (ENRC) of the United Kingdom, 70%, and Gécamines, 30%] produced copper and cobalt at the Mukondo Mountain Mine and the Luita SX-EW plant. ENRC started mining at Comide in 2013. Total copper output at Mukondo Mountain and Comide increased to about 51,800 t from 35,200 t in 2012. Refined copper production increased to 28,985 t in 2013 from 24,368 t in 2012. Cobalt production increased to about 9,700 t in 2013 from 9,600 t in 2012 (Kitumba, 2013; Eurasian Natural Resources Corp. Ltd., 2014, p. 14; Kibawa, 2014).

ENRC planned to start mining at the Frontier Mine in July 2013 and to produce 40,000 t of copper in concentrate by yearend; actual production was 33,300 t in 2013. Output was expected to increase subsequently to 80,000 t/yr. ENRC planned to invest more than \$1 billion during the next 5 years on increasing total production at its Congolese operation to 200,000 t/yr by 2017 (Bahamin, 2013; Eurasian Natural Resources Corp. Ltd., 2014, p. 14).

Anvil Mining Ltd. of Australia started a new SX-EW plant at the Kinsevere Mine in May 2011. In early 2012, Anvil was purchased by MMG Ltd. of China. MMG produced 62,076 t of refined copper at Kinsevere in 2013 compared with about 40,000 t in 2012; output exceeded the nameplate capacity of 60,000 t/yr. The company planned to produce between 61,000 and 65,000 t of refined copper at Kinsevere in 2014 (Anvil Mining Ltd., 2012; MMG Ltd., 2014).

Gécamines planned to produce a total of 50,000 t of copper at its Kamfundwa, Kamoya Central, Kamoya South, Kilamusembu, and Shangalowe Mines in 2013. Actual production was about 40,000 t compared with 35,015 t of copper in 2012; output was limited by power shortages. Refined copper

production decreased to 15,456 t in 2013 from 18,742 t in 2012, and cobalt metal, to 700 t from 870 t. Gécamines also operated the Luswishi Mine, which had a capacity of 10,000 t/yr of copper and 4,000 t/yr of cobalt (Kitumba, 2013; Engineering & Mining Journal, 2013a; La Générale des Carrières et des Mines, 2013, p. 18; Cobalt Development Institute, 2014; Kibawa, 2014).

Gécamines planned to increase its copper production to 100,000 t/yr by 2015. Most of the increase in production was likely to take place at the Kamfundwa and the Kilamusembu Mines. The company planned to increase the total capacity of its concentrators by 50% in 2013. The capacity of the Shituru refinery was expected to increase to 30,000 t/yr in 2013 from 21,600 t/yr. At yearend, it was unclear whether the planned expansions had taken place (La Générale des Carrières et des Mines, 2013, p. 8, 18-19, 24; Engineering & Mining Journal, 2014b).

Gécamines and joint-venture partner Enterprise Generale Malta Forrest SPRL (EGMF) produced cobalt, copper, and germanium at La Société pour le Traitement du Terril de Lubumbashi's (STL) Big Hill tailings treatment plant in Lubumbashi. In 2013, OM Group Inc. sold its share in STL to EGMF and Gécamines. STL's capacity was about 5,500 t/yr of cobalt and 3,500 t/yr of copper. Cobalt production was 4,330 t in 2013; output was constrained by power shortages and technical problems. Germanium production increased to an estimated 18,000 kilograms (kg) in 2013 from 15,000 kg in 2012 (Construire L'Avenir, 2014).

Société d'Exploitation de Kipoi (Tiger Resources Ltd. of Australia, 60%, and Gécamines, 40%) started mining at the Kipoi Central deposit in 2011; output amounted to 41,255 t of copper in 2013. Tiger planned to produce 39,000 t of copper in concentrate at Kipoi Central in 2014; the first phase of the project was expected to shut down by yearend. In the second phase of the project, Tiger planned to open a new SX-EW plant at the Kipoi project with a capacity of 25,000 t/yr in the second quarter of 2014. Capacity at the SX-EW plant was expected to increase to 50,000 t/yr in the second quarter of 2015. The life of the second phase was estimated to be 9 years. Ore from the Kileba and the Kipoi North deposits was expected to feed the plant starting in 2018 and 2020, respectively (Tassell, 2014; Tiger Resources Ltd., 2014, p. 8).

Ruashi Mining SPRL (Jinchuan Group of China, 75%) produced cobalt and copper from the Ruashi Mine; refined copper and cobalt hydroxide were produced at the company's SX-EW plant. In 2013, output amounted to 34,647 t of refined copper and 3,045 t of contained cobalt compared with 26,976 t of refined copper and 3,035 t of contained cobalt in 2012. Production was limited by power supply problems in 2012; the increase in 2013 was attributable to the installation of new generators. At yearend, reserves were 13.1 million metric tons (Mt) at grades of 2.68% copper and 0.45% cobalt (Engineering & Mining Journal, 2014b; Jinchuan Group International Resources Co. Ltd., 2014, p. 12, 19).

In 2013, Jinchuan was engaged in reopening the Kinsenda Mine. The company planned to restart mining in 2015; production was likely to be 26,000 t/yr of copper in concentrate. Reserves at Kinsenda were estimated to be 6.1 Mt at a grade of 4.8% copper (Jinchuan Group International Resources Co. Ltd., 2014, p. 14, 19).

Jinchuan was engaged in a feasibility study of a new cobalt and copper mine at the Musonoi project in 2013. Resources at Musonoi were estimated to be 31.7 Mt at grades of 2.96% copper and 0.91% cobalt (Jinchuan Group International Resources Co. Ltd., 2014, p. 15, 18).

Mawson West Ltd. of Australia through Anvil Mining Congo SARL operated the Dikulushi Mine near Lake Mweru in Katanga Province. Dikulushi was the only Congolese silver-producing mine. In 2013, Mawson West produced 20,948 t of copper and 60,431 kg of silver compared with 5,818 t of copper and 12,342 kg of silver in 2012. The company planned to produce between 7,000 and 9,000 t of copper in 2014 as Dikulushi moved to underground mining (Mawson West Ltd., 2014, p. 11–12).

Mawson West planned to commission the Kapulo project in the first quarter of 2014. Kapulo was likely to produce more than 20,000 t/yr of copper in concentrate from a new mine with an estimated life of 6 years. The life of the mine could be extended to 10 years depending on reserves at the Safari North and the Safari South deposits (Avery, 2013).

Chemaf SPRL produced copper and cobalt at the Etoile Mine and the Usoke Avenue copper SX-EW and cobalt carbonate plants. In 2013, Chemaf produced 19,124 t of refined copper compared with 19,150 t in 2012 and 20,191 t in 2011. Output of cobalt in carbonate and hydroxide decreased to 1,170 t in 2013 from 1,278 t in 2012 and 2,155 t in 2011. Decreased cobalt production was attributable to lower cobalt grades. By 2016, Chemaf planned to increase refined copper capacity to 50,000 t/yr from 31,500 t/yr, and cobalt capacity, to 6,000 t/yr from 2,400 t/yr (Engineering and Mining Journal, 2013a; Shalina Resources Ltd., 2014).

Black copper, which is an intermediate product that 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 2013, Congo Dong Fang International Mining SPRL (CDM) of China produced nearly 25,000 t of copper in black copper; Rubamin SPRL (a subsidiary of Rubamin Ltd. of India), about 14,000 t; and Congo Loyal Will Mining SPRL of Hong Kong, about 4,400 t (Kibawa, 2014).

CDM, La Minière de Kalumbwe Myunga (MKM), Minière du Katanga SPRL (Somika) of India, Shituru Mining Corp., and other companies operated small copper refineries. In 2013, Shituru Mining produced 22,636 t of refined copper; MKM, 14,278 t; CDM, 11,423 t; and Somika, 7,168 t. Somika's production capacity was 12,000 t/yr of refined copper and 8,000 t/yr of black copper. By 2015, the company planned to increase its production capacity to 50,000 t/yr of copper, most of which was expected to be refined and black copper (Engineering & Mining Journal, 2013a; Kibawa, 2014).

In 2013, Somika produced more than 600 t of cobalt; the company's production capacity was 3,000 t/yr of cobalt in hydroxide. Somika was considering the production of cobalt metal. CDM mined more than 2,400 t of cobalt; and Metals Mines, about 900 t (Engineering & Mining Journal, 2013a; Kibawa, 2014).

In its first preliminary economic assessment (PEA) of a new mine at its Kamoia project, Ivanhoe Mines Ltd. of Canada planned to produce 143,000 t/yr of copper in concentrate. In December 2013, Ivanhoe completed a new PEA with positive results. The company planned to start construction on the mine in early 2014 and mining in 2017. In the first phase of mining, Ivanhoe planned to produce about 100,000 t/yr of copper in concentrate. Ivanhoe planned to start the second phase in 2022; output was likely to be 306,000 t/yr of blister copper. Capital costs in the first phase of the project were estimated to be \$1.4 billion, and in the second phase, an additional \$3.5 billion. Indicated resources were estimated to be 739 Mt at a grade of 2.67% copper. The planned life of the mine was 30 years (Engineering & Mining Journal, 2013b, 2014b; Northern Miner, 2013).

Gold.—Artisanal and small-scale miners produced gold in the Ituri Interim Administration, Nord-Kivu Province, and Sud-Kivu Province in eastern Congo (Kinshasa). Most gold exports were undeclared; most Congolese gold production reportedly was smuggled through Burundi and Uganda. In 2012, between 5,000 and 7,000 kilograms per year (kg/yr) of gold was produced at 15 large mines and between 70 and 100 smaller mines in Nord-Kivu and Sud-Kivu Provinces. Between 6,000 and 7,000 kg/yr was produced at 813 sites in Ituri Interim Administration, which included 343 sites in Mambasa Territory, 230 sites in Djugu Territory, and 209 sites in Irumu Territory (Enough Project, 2012, p. 2–4, 7, 14; United Nations Group of Experts, 2012, p. 5; van Puijenbroek and others, 2012, p. 11).

Armed groups in eastern Congo (Kinshasa) including the Forces Démocratiques de Libération du Rwanda and units of the Congolese armed forces obtained revenue from the illegal taxation of artisanal and small-scale miners. The majority of the conflict gold mines reportedly were located in Sud-Kivu Province (Enough Project, 2012, p. 3–4; United Nations Group of Experts, 2012, p. 25, 30, 34–35).

In October 2011, Banro Corp. of Canada started production at the new Twangiza Mine in Sud-Kivu Province. The company produced 2,569 kg of gold in 2013; output was expected to be between 3,100 and 3,400 kg in 2014. By the end of 2013, Banro had nearly completed an expansion of its processing plant that would increase its capacity to between 3,400 and 3,700 kg/yr. Resources at Twangiza were estimated to be 128 Mt at a grade of 1.54 grams per metric ton (g/t) gold, of which 13.7 Mt at a grade of 2.34 g/t gold was reserves (Bain, 2013a; Banro Corp., 2014, p. 5, 8–9, 13).

Banro started mining ore at the new Namoya Mine in Sud-Kivu Province in late December 2013. The company planned to complete construction in April 2014 and to produce about 3,900 kg/yr of gold at Namoya. Resources at Namoya were estimated to be 36.3 Mt at a grade of 2.06 g/t gold, of which 23.7 Mt at a grade of 1.75 g/t gold was reserves. Banro also revised its estimate of resources at the Lugushwa project to 88.1 Mt at a grade of 1.5 g/t gold; resources at the Kamituga project were estimated to be 7.26 Mt at a grade of 3.94 g/t gold. The company planned further exploration at Kamituga and Lugushwa in 2014 (Banro Corp., 2014, p. 15–16).

AngloGold Ashanti Ltd. of South Africa and Randgold Resources Ltd. of the United Kingdom started operations at the Kibali Mine in 2013; the companies produced more than

2,700 kg of gold by yearend. Production was likely to be 17,000 kg in 2014 and an average of 18,700 kg/yr during the first 12 years of the mine's life. Mining at Kibali was expected to continue until 2031. Reserves at Kibali were estimated to be 88 Mt at a grade of 4 g/t gold (Randgold Resources Ltd., 2014, p. 44–47).

AngloGold Ashanti and state-owned l'Office des Mines d'Or de Kilo-Moto (OKIMO) held the Mongbwalu concession, which is located in the Ituri Interim Administration. Reserves at Mongbwalu were estimated to be nearly 78 t of contained gold. AngloGold Ashanti and OKIMO had planned to start mining at Mongbwalu by the end of 2013; production was expected to be about 4,000 kg/yr for the first 3 years. The development of Mongbwalu was suspended in May 2013 (Bahamin, 2012; AngloGold Ashanti Ltd., 2014, p. 131).

In October 2013, Mwana Africa plc of the United Kingdom revised its estimate of contained gold resources at the Zani Kodo project to nearly 93,000 kg. Mwana Africa was considering the development of a new mine at Zani Kodo. Depending on the results of its feasibility study, the company could produce between 4,700 and 7,800 kg/yr of gold. Production was planned to start by the end of 2015. At yearend, Mwana Africa put the project on hold temporarily (Williams, 2013; African Mining, 2014).

In December 2013, Armadale Capital plc of the United Kingdom estimated that resources at the Mpokoto project in southwestern Katanga Province were 11.2 Mt at a grade of 1.42 g/t gold. Armadale planned further exploration in 2014 (Modern Mining, 2014).

Niobium (Columbium), Tantalum, and Tin.—Exports of columbite-tantalite were 500 t in 2013 compared with 586 t in 2012. In 2013, exports of columbite-tantalite from Katanga Province were 423 t. Most niobium and tantalum in Katanga Province was produced from mixed cassiterite and columbite-tantalite ore, which was separated into cassiterite and columbite-tantalite before export. In 2013, mines in Malemba Nkulu Territory accounted for 66% of mixed cassiterite and columbite-tantalite output; Manono Territory, 32%; and Nyunzu Territory, 1%. Miners in Nyunzu Territory produced 134 t of columbite-tantalite in 2013; in Bukama/Luena Territory, 17 t; and Kalemie Territory, 7 t (Chambre des Mines, 2014, p. 19; International Tin Research Institute, 2014a).

Niobium and tantalum were also contained in cassiterite. Based on historical production of niobium and tantalum from slag at smelters in Congo (Kinshasa), the estimated tantalum and niobium content of cassiterite in 2013 was 110 t and 90 t, respectively (World Mining, 1979; Ellis, 1981).

Artisanal and small-scale miners produced cassiterite in Katanga, Maniema, Nord-Kivu, and Sud-Kivu Provinces. In 2013, reported cassiterite exports decreased to 6,231 t from 8,018 t in 2012 and 15,512 t in 2009. Exports from Nord-Kivu and Sud-Kivu Provinces declined because of the ban on mining operations in Maniema, Nord-Kivu, and Sud-Kivu Provinces from September 2010 through early March 2011; the Government's requirement that mineral production from Maniema Province be exported through Katanga Province; the Government's suspension of trading companies in Goma that reportedly purchased uncertified minerals from mines near Walikale; and the decline in prices for minerals that were not

compliant with iTSCi (United Nations Group of Experts, 2012, p. 40, 46; Johnson, 2013, p. 52).

In 2013, cassiterite exports from Katanga Province were 4,124 t. The Malemba Nkulu Territory accounted for 832 t of cassiterite production in Katanga Province in 2013; the Mitwaba Territory, 675 t; the Lubudi Territory, 472 t; the Bukama/Luena Territory, 287 t; and the Manono Territory, 268 t. Cassiterite was also produced from mixed cassiterite and columbite-tantalite ores in Katanga Province. Reported output from the Pangi Territory in Maniema Province was 990 t in 2013, and the Kalehe Territory in Sud-Kivu Province, 489 t (Chambre des Mines, 2014, p. 18; International Tin Research Institute, 2014a).

Mining Mineral Resources (MMR), which was a subsidiary of Somika, purchased cassiterite and columbite-tantalite from artisanal miners. In 2012, MMR and joint-venture partner Malaysian Smelting Corporation Berhad of Malaysia completed a new tin smelter in Lubumbashi with a capacity of 3,600 t/yr. At the end of 2013, production had not started because of the lack of a reliable supply of power. African Smelting Group SPRL completed a new smelter at Sake in Nord-Kivu Province; it was unclear whether the plant was operating at yearend (Malaysian Smelting Corporation Berhad, 2014, p. 22).

Tungsten.—In recent years, wolframite was mined in Katanga, Nord-Kivu, and Sud-Kivu Provinces. Production was reduced because of the depletion of near-surface deposits on Idjwi Island in Sud-Kivu Province. National production of wolframite decreased to 57 t in 2013 from 71 t in 2012 (table 1).

Industrial Minerals

Cement.—National cement production increased to 446,610 t in 2013 from a revised 413,181 t in 2012; cement consumption increased to 420,975 t from 385,206 t. 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. Nova Cimangola of Angola held a 58% share in Cimenterie Nationale SARL, which had a capacity of 300,000 t/yr (Banque Centrale du Congo, 2014, p. 3).

Lucky Cement Ltd. of Pakistan and Groupe Rawji were engaged in a joint venture to build a new cement plant with a capacity of 1.2 million metric tons per year (Mt/yr). The companies planned to complete the plant at Songololo in Bas-Congo Province in the second half of 2015. In the fourth quarter of 2013, PPC Ltd. of South Africa signed an agreement with joint-venture partner Barnet Group to build a new plant at Kimpese in Bas-Congo Province with a capacity of 1 Mt/yr. The construction of the plant was likely to be completed after 2 years (International Cement Review, 2013a, b).

Diamond.—Artisanal and small-scale miners accounted for most Congolese output of diamond; the majority of artisanal and small-scale diamond mining was in Kasai-Occidental and Kasai-Oriental Provinces. In 2013, artisanal and small-scale diamond production was 17.8 million carats compared with a revised 21.5 million carats in 2012. Decreased production was attributable to the Government's new system of mining permits for artisanal miners that reduced the areas available for diamond mining (Chambre des Mines, 2014, p. 18; Research and Markets, 2014).

MIBA mined mostly industrial and near-gem-quality diamond at Mbuji-Mayi in Kasai-Oriental Province. In 2013, MIBA's production from its alluvial deposits was 174,262 carats compared with 500,726 carats in 2012 because of decreased amounts of gravel processed and the lowest grade since at least 1980 (Chambre des Mines, 2014, p. 13).

In 2011, Government-owned Société Congolaise d'Investissement Minier (SCIM) restarted diamond production at Tshibwe, which was operated by Sengamines from 2001 to 2005. In 2013, Anhui Foreign Economic Construction Group of China and the Government formed Societe Anhui-Congo d'Investissement Minier SPRL, which was a new joint-venture company to replace SCIM. By 2016, Anhui and the Government planned to mine 6 million carats per year at Tshibwe. Reserves at Tshibwe were estimated to be 158 million carats (Kavanagh, 2013).

Nickel Mountain Group AB of Sweden (formerly IGE Resources AB) held exploitation and small mining licenses for the Longatshimo River and the Tshikapa River projects. The development of the projects was put on hold in early 2013; Nickel Mountain decided to spin off its Congolese assets into a separate company in the fourth quarter (Nickel Mountain Group AB, 2014, p. 8, 10).

Phosphate Rock.—Minbos Resources Ltd. of Australia held the Kanzi deposit in western Congo-Kinshasa, which had estimated resources of 66 Mt at a grade of 15.3% phosphorus pentoxide (P_2O_5). In November 2012, Minbos completed a scoping study on a new mine at Kanzi that yielded favorable results; production was likely to be about 1 Mt/yr of phosphate rock at a grade of about 32% P_2O_5 during an estimated 17-year mine life. In the third quarter of 2013, Minbos announced plans to divest its Congolese assets to focus on phosphate resources in Angola (Minbos Resources Ltd., 2012, 2013).

Mineral Fuels

Coal.—Gecamines reopened the Luena Mine in 2011 and produced small amounts of coal. In 2013, the company started a feasibility study on a new coal-fired power station with a capacity of 500 megawatts. The power station would be supplied by coal from the Luena Mine (Engineering & Mining Journal, 2014b).

Outlook

Cobalt and copper output in Congo (Kinshasa) are expected to increase in the near future. At least nine companies planned to increase or start copper mining, and at least four planned to increase cobalt mining. Gold production is also likely to increase because of the opening of the Kibali and the Namoya Mines. The opening of new plants is expected to result in increased cement production by late 2015. Diamond mining could also increase because of the expansion at Tshibwe. The development of these projects will depend heavily upon adequate power supplies, political and economic stability, and favorable conditions in world markets. In 2013, Jinchuan and other companies were engaged in discussions about cooperating on power supply issues.

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 armed groups. Miners in Provinces with low levels of compliance with iTSCi were likely to face lower demand and prices for niobium, tantalum, tin, and tungsten.

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TABLE 1
CONGO (KINSHASA): PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

Commodity ²	2009	2010	2011	2012	2013
METALS					
Cobalt:					
Mine output, Co content ^{c,3}	40,000	60,000	63,000 ^r	52,000 ^r	58,000
Metal, Co content ⁴	2,950 ^r	4,222	3,103	3,021	3,007
Copper:					
Mine output, Cu content ^e	330,000	420,000	530,000	660,000	970,000
Refined	166,915	260,759	362,000	473,000 ^r	684,653
Germanium, mine output, Ge content ^e	19,000	17,000	21,000	15,000 ^r	18,000
Gold, mine output, Au content ^e	11,000	12,000	12,000	14,000	17,000
Niobium (columbium) and tantalum:					
Columbite-tantalite concentrate:					
Gross weight ⁵	464 ^r	440 ^r	536 ^r	586 ^r	500
Nb content ^e	80 ^r	80 ^r	90 ^r	100 ^r	90
Ta content ^e	100 ^r	100 ^r	120 ^r	130 ^r	110
Pyrochlore concentrate:					
Gross weight ⁵	80 ^e	--	--	--	--
Nb content	40 ^e	--	--	--	--
Cassiterite concentrate:					
Gross weight ⁵	15,512 ^r	13,415 ^r	9,267 ^r	8,018 ^r	6,231
Nb content ^e	150	130	90	80	60
Ta content ^e	220	190	140	120	90
Silver, mine output, Ag content	--	6,446	10,080	12,342	60,431
Steel, crude	NA ^r	NA ^r	NA ^r	NA ^r	NA
Tin, mine output, cassiterite concentrate:					
Gross weight ⁵	15,512 ^r	13,415 ^r	9,267 ^r	8,018 ^r	6,231
Sn content ^e	9,300 ^r	8,000 ^r	5,600 ^r	4,800 ^r	3,700
Tungsten, mine output, concentrate:					
Gross weight ⁵	365 ^r	45 ^r	87 ^r	71 ^r	57
W content ^e	170 ^r	21 ^r	41 ^r	35 ^r	27
Zinc, mine output, Zn content	12,843 ^r	9,223	12,342 ^r	10,571 ^r	12,566
INDUSTRIAL MINERALS					
Cement, hydraulic	460,344	489,745	457,761	413,181 ^r	446,610
Diamond: ⁶					
Artisanal	21,298 ^r	20,166 ^r	19,249 ^r	21,524 ^r	17,799
Large-scale	-- ^r	--	244 ^r	569 ^r	246
Total	21,298 ^r	20,166 ^r	19,493 ^r	22,093 ^r	18,045
Stone, crushed	253,800	279,100	307,000	337,800 ^r	340,000 ^e
Sulfuric acid ^e	550,000	850,000	1,200,000	1,600,000	2,300,000
MINERAL FUELS AND RELATED MATERIALS					
Coal, bituminous	--	-- ^e	1,469	3,870	4,000 ^e
Petroleum, crude	9,382	8,628	8,558	8,545	8,351

See footnotes at end of table.

TABLE 1—Continued
 CONGO (KINSHASA): PRODUCTION OF MINERAL COMMODITIES¹

(Metric tons unless otherwise specified)

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

¹Table includes data available through February 27, 2015.

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 exports.

⁶An 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 2013

(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 (Nova Cimangola, 58%)	Kimpese plant, 40 kilometers south of Kinshasa	300,000.
Do.	Ciment et Matériaux du Katanga [Enterprise Malta Forrest SPRL (EGMF), 50.27%, and Générale des Carrières et des Mines (Gécamines), 49.73%]	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 ¹	25,000.
Coal	La Générale des Carrières et des Mines (Gécamines)	Luenta Mine	NA.
Copper and cobalt:			
Mine	Katanga Mining Ltd. [Glencore Xstrata plc, 75.2%, and Générale des Carrières et des Mines (Gécamines), 24.8%]	KOV and KTO Mines	250,000 copper; ^c 8,000 cobalt. ^c
Do.	Mutanda Mining SPRL (Glencore Xstrata plc, 69%, and Fleurette Properties Ltd., 31%)	Mutanda Mine	200,000 copper; ^c 23,000 cobalt. ^c
Do.	Tenke Fungurume Mining SARL [Freeport McMoran Copper & Gold Inc., 56%; Lundin Mining Corp., 24%; Générale des Carrières et des Mines (Gécamines), 20%]	Tenke Fungurume Mine	195,000 copper; 15,000 cobalt
Do.	Eurasian Natural Resources Corp. plc (ENRC)	Frontier Mine	80,000 copper.
Do.	Boss Mining SPRL [Eurasian Natural Resources Corp. plc (ENRC), 70%, and Générale des Carrières et des Mines (Gécamines), 30%]	Mukondo Mountain Mine	40,000 copper; ^c 10,000 cobalt. ^c
Do.	Eurasian Natural Resources Corp. plc (ENRC)	Comide Mine	30,000 copper. ^c
Do.	La Générale des Carrières et des Mines (Gécamines)	Kamfundwa, Kamoya Central, Kamoya South, Kilamusembu, and Shangalowe Mines	50,000 copper; ^c 2,500 cobalt. ^c
Do.	Compagnie Minière du Sud Katanga [subsidiary of La Générale des Carrières et des Mines (Gécamines)]	Luiswishi Mine near Lubumbashi	10,000 copper; 4,000 cobalt.
Do.	MMG Ltd.	Kinsevere Mine	60,000 copper.

See footnotes at end of table.

TABLE 2—Continued
 CONGO (KINSHASA): STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity	Major operating companies and major equity owners		Location of main facilities	Annual capacity
Copper and cobalt—Continued:				
Mine	Artisanal miners		Mines in Katanga Province	45,000 copper. ^e
Do.	Congo Dong Fang International Mining SPRL		do.	40,000 copper; ^e 1,900 cobalt. ^e
Do.	Tiger Resources Ltd., 60%, and La Générale des Carrières et des Mines (Gécamines), 40%		Kipoi Mine	40,000 copper.
Do.	Ruashi Mining SPRL [Metorex Group, 75% (subsidiary of Jinchuan Group)]		Ruashi Mine	36,000 copper; 5,000 cobalt.
Do.	Chemaf SPRL (subsidiary of Shalina Resources Ltd.)		Etoile Mine	31,500 copper; ^e 2,400 cobalt. ^e
Do.	Shituru Mining Corp. SPRL		Mines in Katanga Province	30,000 copper. ^e
Do.	Société Minière du Katanga SPRL (Somika)		do.	20,000 copper; ^e 3,000 cobalt.
Do.	Anvil Mining Congo SARL (Mawson West Ltd., 90%)		Dikulushi Mine	20,000 copper.
Do.	La Société pour le Traitement du Terril de Lubumbashi (STL) [Entreprise Générale Malta Forrest SPRL (EGMF), 70%, and La Générale des Carrières et des Mines (Gécamines), 30%]		Big Hill tailings treatment plant at Lubumbashi	3,500 copper; 5,500 cobalt.
Black copper	Congo Dong Fang International Mining SPRL		Plant in Lubumbashi	25,000 copper. ^e
Do.	Congo Loyal Will Mining SPRL		do.	20,000 copper. ^e
Do.	Rubamin SPRL		Plant in Likasi	20,000 copper.
Do.	Société Minière du Katanga SPRL (Somika)		Plant near Lubumbashi	8,000 copper.
Refined	Katanga Mining Ltd.		Luilu plant	200,000 copper; 8,000 cobalt.
Do.	Mutanda Mining SPRL		Mutanda plant	200,000 copper.
Do.	Tenke Fungurume Mining SARL		Tenke Fungurume plant	195,000 copper.
Do.	MMG Ltd.		Kinsevere plant	60,000 copper.
Do.	Boss Mining SPRL		Luita plant near Lubumbashi	40,000 copper.
Do.	Ruashi Mining SPRL		Ruashi plant	36,000 copper.
Do.	Chemaf SPRL		Usoke Avenue plant in Lubumbashi	31,500 copper.
Do.	Congo International Mining Corp.		Plant in Katanga Province	30,000 copper.
Do.	Shituru Mining Corp. SPRL		do.	30,000 copper.
Do.	La Générale des Carrières et des Mines (Gécamines)		Shituru plant	21,600 copper.
Do.	do.		Fonderie Electrique de Panda cobalt plant	1,200 cobalt.
Do.	Société Minière du Katanga SPRL (Somika)		Plant near Lubumbashi	12,000 copper.
Diamond	carats	Artisanal miners	Mines at Aketi in Orientale Province, at Bakongo, Bakwachimuna, and Tshibue in Kasai-Oriental Province, and at Tshikapa in Kasai-Occidental Province	20,000,000. ^e
Do.	do.	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	1,000,000. ^e
Do.	do.	Societe Anhui-Congo d'Investissement Minier SPRL (Anhui Foreign Economic Construction Group and Government)	Mine at Tshibwe	600,000.
Germanium	kilograms	La Société pour le Traitement du Terril de Lubumbashi (STL)	Big Hill tailings treatment plant at Lubumbashi	20,000.

See footnotes at end of table.

TABLE 2—Continued
 CONGO (KINSHASA): STRUCTURE OF THE MINERAL INDUSTRY IN 2013

(Metric tons unless otherwise specified)

Commodity		Major operating companies and major equity owners	Location of main facilities	Annual capacity
Gold	kilograms	Artisanal and small-scale miners	Mines at 813 sites in Ituri Interim Administration, including:	6,000. ^e
Do.	do.	do.	343 sites in Mambasa Territory	NA.
Do.	do.	do.	230 sites in Djugu Territory	NA.
Do.	do.	do.	209 sites in Irumu Territory	NA.
Do.	do.	do.	15 large mines and between 70 and 100 smaller mines at various sites in Nord-Kivu and Sud-Kivu Provinces	6,000. ^e
Do.	do.	AngloGold Ashanti Ltd., 45%, and Randgold Resources Ltd., 45%	Kibali Mine in Ituri District	18,700.
Do.	do.	Banro Corp.	Namoya Mine in Maniema Province	3,900.
Do.	do.	do.	Twangiza Mine in Sud-Kivu Province	3,100.
Niobium (columbium) and tantalum		Société Minière du Kivu (Simikivu) [GfE Metalle und Materialien GmbH of Germany, 70%]	Lueshe Mine ¹	1,440 pyrochlore.
Do.		Artisanal and small-scale miners	Mines in Malemba Nkulu Territory	180 columbite-tantalite. ^e
Do.		do.	Mines in Nyunzu Territory	140 columbite-tantalite. ^e
Do.		do.	Mines in Manono Territory	90 columbite-tantalite. ^e
Do.		do.	Mines in Bukama/Luena Territory	20 columbite-tantalite. ^e
Do.		do.	Mines in Kalemie Territory	10 columbite-tantalite. ^e
Petroleum, crude	thousand 42-gallon barrels	Perenco REP (subsidiary of Perenco plc) and Congolaise des Hydrocarbures SARL	Kifuku, Kinkasi, Liawenda, Makelekese, Muanda, Nsiamfuma, and Tschienne onshore wells	5,480.
Do.	do.	Muanda International Oil Co. (Perenco plc, 50%; Teikoku Oil Co. Ltd., 32.3%; ODS Ltd., 17.7%)	Mibale, Motoba, and Tshiala offshore wells	3,650.
Silver	kilograms	Anvil Congo Mining SARL	Dikulushi Mine	60,000.
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.
Tin:				
Mine		Artisanal and small-scale miners	Mines in Malemba Nkulu Territory	2,000 cassiterite. ^e
Do.		do.	Mines in Pangi Territory	1,000 cassiterite. ^e
Do.		do.	Mines in Manono Territory	800 cassiterite. ^e
Do.		do.	Mines in Kalehe Territory	500 cassiterite. ^e
Do.		do.	Mines in Lubudi Territory	500 cassiterite. ^e
Do.		do.	Mines in Bukama/Luena Territory	300 cassiterite. ^e
Do.		do.	Mines in Kailo Territory	200 cassiterite. ^e
Refined		Malaysian Smelting Corp. Bhd. and Mining Mineral Resources	Plant in Lubumbashi ¹	3,600.
Tungsten		do.	Mines in Bukama/Luena Territory	58 wolframite. ^e
Do.		do.	Mines in Manono Territory	33 wolframite. ^e
Zinc		La Société pour le Traitement du Terril de Lubumbashi (STL)	Big Hill tailings treatment plant at Lubumbashi	15,000 zinc in zinc oxide.

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

¹Not operating at the end of 2013.