# ICSG Insight

**ICSG SECRETARIAT BRIEFING PAPER** **February 2010 - No. 9**

## Democratic Republic of the Congo Country Profile

### Introduction

This report, the ninth in the series of ICSG Insight briefing reports, is intended to provide members with information about one of the most dynamic and challenging copper producing countries, the Democratic Republic of the Congo (DRC). The copper sector has long been a vital component of the Congolese economy and has the potential to make an even greater contribution to the nation's economy and overall development. In recent years, the mining sector has experienced significant reforms, starting with the implementation of the new Mining Code in 2002, the restructuring of the state mining company La Générale des Carrières et des Mines (Gecamines) and more recently the investigation into irregularities in mining contracts that began in 2007 and resulted in the review of 61 contracts and subsequent renegotiations that in some cases remain on-going. While many of these reforms have added transparency and efficiency to the mining sector, a degree of uncertainty continues to overshadow the copper industry in the DRC, not only due to the problems stemming from the global financial crisis and economic downturn and accompanying copper price volatility, but also due to the challenges endemic in the DRC.

While the DRC is a nation rich in natural resources, including large reserves of copper, cobalt, gold, diamonds, and other materials, it also faces enormous obstacles to development. Chief among those challenges is the need for peace and security. Although estimates vary widely, by most accounts the war-time tragedies in the DRC have since 1998 claimed the lives of several million Congolese, mostly as indirect casualties of war, in addition to the millions of internally displaced persons and hundreds of thousands of refugees in neighboring countries. Other challenges include a history of widespread corruption, the need for infrastructure development, high poverty levels and substantial public health problems, among others. While the violence that has plagued the DRC continues in the east of the country, there have also been positive developments along the way. The Pretoria Accord, a peace agreement signed between the warring factions in 2002, paved the way for free elections in 2006 and the Goma Agreement signed by the DRC government and over 20 armed groups in 2008 further brightened prospects for political stability and economic growth. As a result, there has been an expansion of domestic credit and an influx of foreign investment, while the IMF estimates that real annual GDP growth in the DRC averaged 5.6% over the period 2002-2009 as average annual copper mine production surged by 30%.

In an effort to shed light on this rapidly changing and key copper producing country, this report first provides background information on the overall economic context in the DRC, including the role of the copper sector, followed by a brief overview of the historical development of the Congolese copper industry and recent developments. The paper provides detailed information on the copper industry in the DRC by sector and at the firm level, and reports on the latest ICSG forecasts of future mine and plant capacity expansion plans based on reported company projections. As with all forecasts, these figures are subject to change and can be affected by numerous unexpected economic, financial and political developments, perhaps especially so in the DRC.

**Notice**: This paper is for reference purposes only. References to sites, companies, and agencies are for information purposes only. For further information regarding this document please contact Mr. Joseph Pickard, Economist, International Copper Study Group (pickard@icsg.org).

**Figure 1. Map of the Democratic Republic of the Congo**


Source: Central Bank of the Congo

**Table 1. Democratic Republic of the Congo Basic Facts**

| | | | |
|---|---|---|---|
| Population (July 2009 est.) | 68,692,542 | Exports – US$ billions (2007) | 6.1 |
| Life Expectancy at birth, years (2009 est.) | 54 | Imports – US$ billions (2007) | 5.2 |
| Surface Area, sq km | 2,344,858 | Telephones – Main lines (2008) | 37,300 |
| Paved Roadways, km (2004) | 2,794 | Telephones – Mobile cellular, millions (2008) | 9.3 |
| GDP – US$ billions, official exchange rate (2009 est.) | 11.1 | Electricity Consumption, billion kWh (2007 est.) | 6.0 |
| GDP – Purchasing Power Parity, US$ billions (2009 est.) | 21.6 | External Debt – US$ billions (2007 est.) | 10.0 |

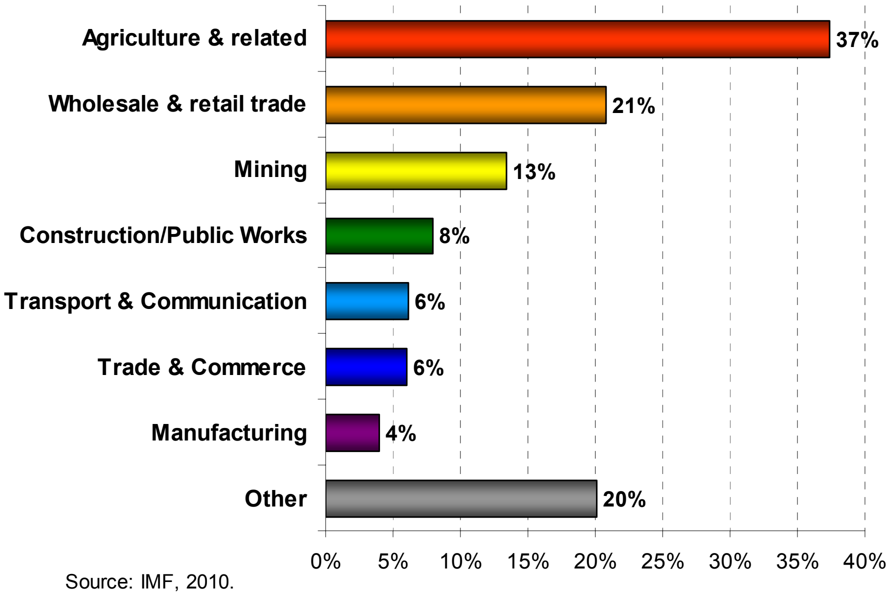
Sources: Central Intelligence Agency, 2009.

# I. The Economic Context

## A. Structure of the Economy and Copper's Contribution

With estimated per capita GDP (purchasing power basis) of US$ 300 in 2009, the Democratic Republic of the Congo (DRC) ranked 227 out of 228 countries in that category (ahead of only Zimbabwe) and remains one of the least developed nations in the world, despite its wealth of natural resources.[1] As with many least developed countries, the DRC is heavily reliant upon commodity production, with agriculture, mining and related industries estimated to have accounted for just over 50% of GDP in 2008.[2] In contrast, manufacturing, public administration and related services, and electricity and water generation accounted for just 4%, 2% and 1% of GDP respectively in 2008.

**Figure 2. DRC GDP by Sector, 2008 (% of GDP)**




Source: IMF, 2010.

Although the share of GDP attributable to the primary sector (mining, agriculture and related industries) as a whole decreased from 57% of Congo's GDP in 2003 to 50.7% in 2008, the sector's diminishing importance masks divergent underlying trends. The mining sector, which includes the processing of minerals, accounted for 13.4% of GDP in the DRC in 2008, up from 12.7% in 2007 and 12% in 2003 according to the IMF. In terms of year-on-year growth, the mining sector in the DRC grew 11.4% in 2008, the second fastest rate of growth behind wholesale and retail trade. The falling share of the primary sector reflects instead the decreasing relative importance of agriculture and related industries, which fell from 45% of GDP in 2003 to 37% in 2008.

Within the mining sector, the key natural resources in the DRC include copper, cobalt, petroleum, diamonds, gold, silver, zinc, manganese, tin, uranium and coal, among others.[3] However, copper and cobalt production are the primary revenue generators. From a low of just 30 thousand tons (kt) of copper in 1999, copper mine production in the DRC has increased every year since, reaching nearly 215 kt in 2008 and forecast to approach 300 kt in 2009 (full year data for 2009 are not yet available).

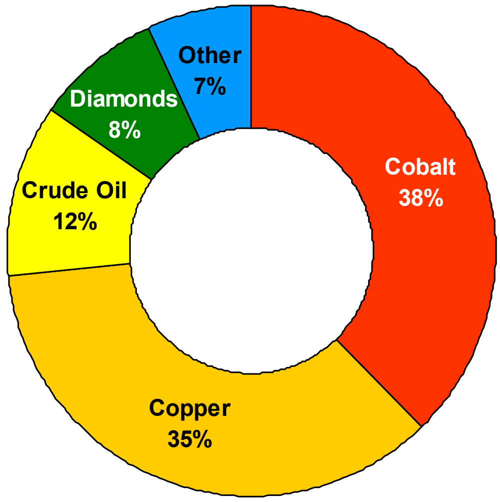
[1] Central Intelligence Agency, 2009.

[2] International Monetary Fund, 2010.

[3] Central Intelligence Agency, 2009.

Based on ICSG production data and prevailing copper prices, the value of copper production in the DRC is roughly estimated to have reached around US$ 1.4 billion in 2008, or approximately 12% of reported GDP. Of note, the estimated value of production may vary significantly from actual sales revenues realized by producers due to the high volatility of copper prices (and accompanying provisional price adjustments) that occurred in 2008. Based on data released from the IMF, copper export sales accounted for over one-third of the DRC's export earnings in 2008.[4]

**Figure 3. Estimated Composition of DRC Commodity Exports, 2008**




Source: IMF, 2010.

## B. Recent Economic Performance

As indicated, the DRC remains one of the poorest countries in the world on a per capita basis and requires rapid economic growth in order to raise its economic and development status. GDP growth over the period 2003-2008 is estimated by the IMF to have averaged 6.4% per year thanks in part to generally rising mineral demand and prices, which are especially important to this commodity-dependent nation.

**Table 2. Selected Economic Data, Democratic Republic of the Congo, 2003-2009**

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008* | 2009* |
|---|---|---|---|---|---|---|---|
| Real GDP | 5.8 | 6.6 | 7.9 | 5.6 | 6.3 | 6.2 | 2.7 |
| Consumer Prices (annual average) | 0.1 | 4 | 21.4 | 13.2 | 16.7 | 18 | 39 |
| Central Government Budget Balance (commitment basis, percent of GDP) | -0.6 | -3.8 | -3 | 0.4 | -2.5 | -2.3 | na |
| Central Bank Interest Rate (percent) | 8 | 14 | 15 | 16 | 16 | 16 | na |
| Net Domestic Credit | 34.9 | 15.8 | 36.8 | 36.9 | 29.5 | 54.7 | na |
| Current Account (percent of GDP) | 1.0 | -2.4 | -10.4 | -2.1 | -1.5 | -15.3 | -14.6 |
| Real Effective Exchange Rate[1] | -13.5 | -10.4 | -2 | 11.7 | -3.1 | -0.7 | na |

Source: IMF, 2010.
*Estimates.
[1]Negative value indicates depreciation.

[4] International Monetary Fund, 2010.

In addition, benefits that accrued from the improving if not fully resolved security situation in the DRC included an influx of capital investment and credit expansion, with net domestic credit having expanded 35% on average over the years 2003-2008. Foreign investment has been boosted by large Chinese/DRC investment agreements, including the joint agreements in 2008 with the China Railway Group, Sinohydro Corporation and the Metallurgical Group Corporation reportedly totalling US$ 9 billion that exchange infrastructure investment for copper and cobalt mining concessions.[5] By sector, the economic expansion has been driven not only by the mining and wholesale and retail trade sectors, but also by solid growth in transport, communications, construction and public works spending.

In recent years, however, this growth has been accompanied by rising inflation, generally growing government and current account deficits, high public external debt levels and a falling real exchange rate. In 2009, with the global economic slowdown and falling commodity prices, these problems were exacerbated as estimated GDP growth in the DRC cooled to 2.7%, inflation shot up to nearly 40% and the current account deficit approached US$ 1.6 billion, or nearly 15% of GDP.[6]

### C. Challenges

In addition to the recent economic challenges indicated above, the DRC faces other long-standing and formidable threats to development. Chief among those have been the civil wars and internal conflicts that the UN reports have caused an estimated 3.5 million deaths since 1998, mostly as indirect casualties of war, in addition to 3.4 million internally displaced Congolese and hundreds of thousands refugees in neighboring countries.[7] While the accords signed in 2002 and 2008 have resolved many problems and improved the security situation, violence continues to resurface in the eastern DRC and in December 2009 the UN Security Council agreed to extend the UN peacekeeping operation there for another five months.[8] That mission, with 19,000 troops, is the largest UN peacekeeping mission in the world and is scheduled to be drawn down prior to the DRC's 50th anniversary of independence in June 2010. Given the tremendous toll that these conflicts have taken on the Congolese economy, infrastructure and people, the security situation continues to be a significant risk factor for the development of the DRC in general and the copper industry in particular.

Fighting corruption, strengthening the rule of law, rebuilding the nation's infrastructure, addressing poverty and public health issues, and providing education and training in order to provide for a skilled workforce are some of the other key pressing issues facing the DRC. According to Transparency International, the DRC tied for 168th place out of 179 countries in its 2007 Corruption Perceptions Index, while the IMF reported in 2007 that, for the country as a whole, the incidence of poverty stood at 71.3%.[9] The need for infrastructure improvement also ranks high on the list of economic challenges, especially the need for improved power generation and roads. Paved roads in the DRC totalled less than 3,000 km in 2004 in a country slightly smaller than the combined areas of the Eurozone countries.

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[5] Bloomberg, 2008.

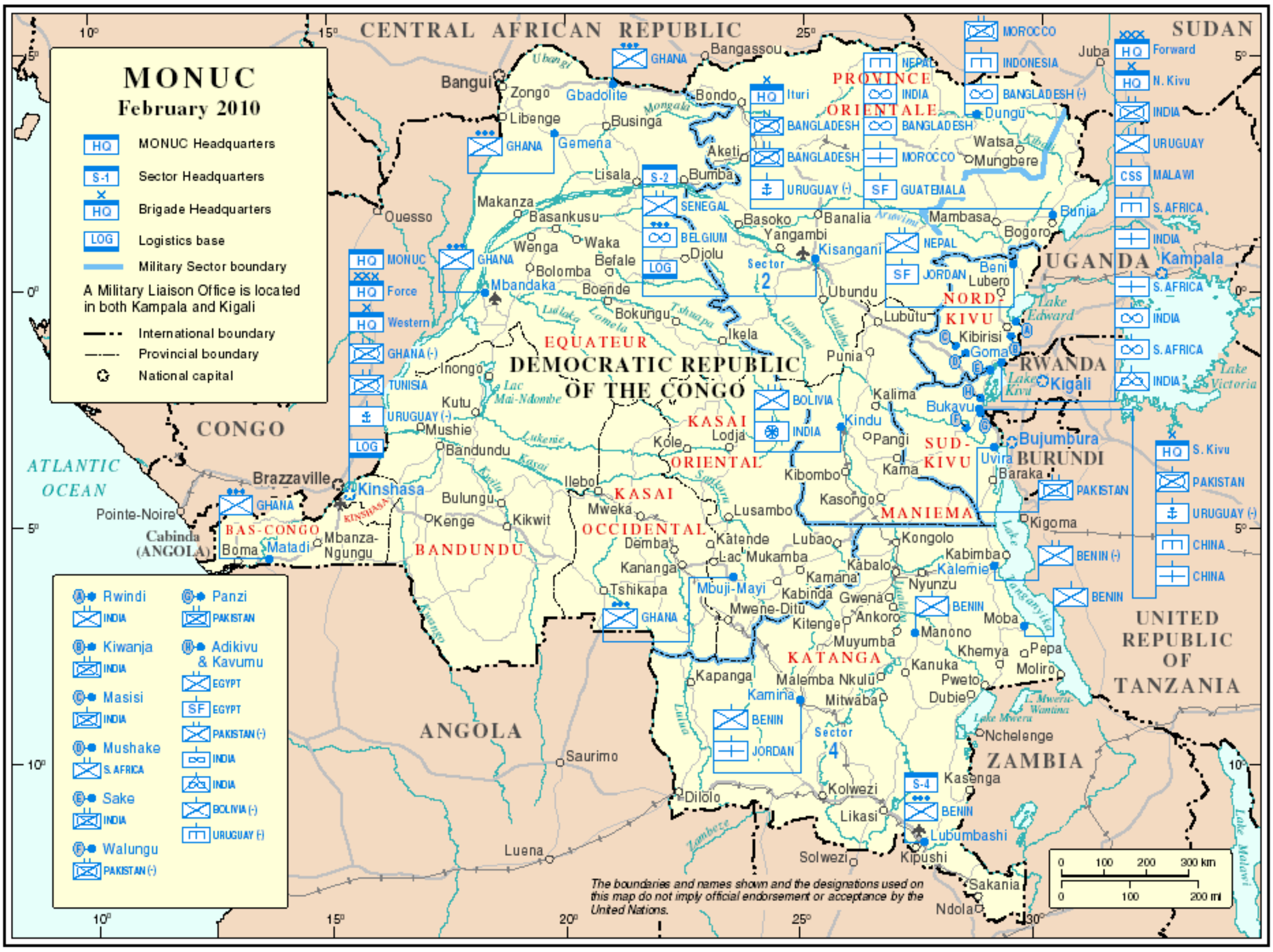
[6] International Monetary Fund, 2010.

[7] "Why the DRC Matters?", http://www.un.org/en/peacekeeping/missions/monuc/documents/drc.pdf.

[8] Wall Street Journal, 2009.

[9] International Monetary Fund, 2007 and www.transparency.org.

**Figure 4. UN Peacekeeping Operations in the DRC**




Map No. 4121 Rev. 45 UNITED NATIONS
February 2010 (Colour)

Department of Field Support
Cartographic Section

Finally, the daunting task of trying to strike the right balance in government policies that aim to encourage the utilization of the DRC's vast natural resources by attracting foreign investment while simultaneously ensuring that the Congolese people enjoy a fair share of the revenues and economic development generated from these resources, especially during times of economic uncertainty and commodity price volatility, is something that the DRC continues to work toward.

## FIGURE 5. DRC COPPER OPERATIONS

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **COMPANIES** | Anvil Mining | ENRC (formerly CAMEC) | First Quantum | Freeport McMoRan | Gecamines | George Forrest Int. | Katanga Mining (Kinross Forest 75%, Gecamines 25%) | Metorex | OMG | TEAL (50% African Rainbow Minerals, 50% Vale) |
| **MINES** | Dikulushi (Community Trust, 10%)[1, 5] | Luita | Frontier | Tenke Fungurume (Tenke Mining Corp. 24.75%, Gecamines 17.5% | Kolwezi Mill | Luiswishi (Gecamines) | Kamoto | Ruashi I* (Gecamines 20%) | | Lupoto |
| | Kinsevere Phase 1 (Mining Company Katanga, MCK, 5%)[2] | | Lonshi[3] | | Lubumbashi | | KTK | Ruashi II (Gecamines 20%) | | |
| | Kulu Mutoshi (Gecamines 20%)[1] | | | | | | | | | |
| **SMELTERS** | | | | | Luilu (Kolwezi)[4] | | | | Lubumbashi Slag Treatment (George Forrest Int., Gecamines) | |
| | | | | | Shituru Electrolysis Plant[4] | | | | | |
| **REFINERIES** | Ruashi II (Gecamines 20%) | Luita | | Tenke Fungurume (Tenke Mining Corp. 24.75%, Gecamines 17.5% | Shituru Refinery | | Luilu (leach plant) | Ruashi II (Gecamines 20%) | | |

SX-EW

Notes

[1] On care and maintenance since January 2009.

[2] Restarted March 2009.

[3] Ore depleted in 2008, remaining stockpile to be leached at Bwana Mkubwa in Zambia in 2010 following the lifting of the ban on trade.

[4] Low grade SX-EW.

[5] Subject to shareholder approval, Anvil Mining has announced it expects to complete the sale of its 90% stake in Dikulushi to Mawson West Limited in March 2010.

## II. Congo's Copper Industry

### A. Historical Development

Copper has been mined in Congo for centuries, with commercial production commencing in earnest in the late 19th century under colonial rule. One of the earliest mining firms to operate in what was then the Congo Free State, the Union Minière du Haut Katanga (UMHK), was created in 1906 as a merger between Belgian and British mining interests and focused on mining copper, cobalt, tin and precious metals. By the 1950s UMHK would grow to become one of the largest copper mining companies in the world. However, following the former Belgian Congo's independence in 1960, many private firms and sectors were nationalized, including copper. On January 1, 1967, the government assumed control of all UMHK assets and conferred them on a newly created company, la Générale Congolaise des Minerais, a state enterprise later to be become Gecamines.[10] (UMHK was subsequently reorganized as Union Miniére and became a sub-holding of Sociéte Générale de Belgique. In 2001, Union Miniére changed its name to Umicore, but split off its copper business in 2005 to form Cumerio, a firm that was then acquired by Norddeutsche Affinerie in April 2008.[11])

Gecamines served not just as a copper mining company but was an integral part of the local community in Katanga, providing education, food, social services, entertainment, and other services in addition to jobs and salaries. At its peak, Gecamines was reportedly the largest mining organization in Africa, providing nearly two-thirds of then Zaire's foreign exchange, but at the same time struggling with corruption issues and a lack of investment in modern mining methods.[12] Copper mine production suffered as a result of these problems and the Kamoto mine cave-in in 1990, with concentrate production falling from a peak of nearly 560 kt in 1985 to less than 30 kt just nine years later. The two civil wars also wreaked havoc on the copper sector as rebel groups attempted to seize mining assets and take over control of the entire Katanga province. Following the formal cessation of hostilities, the Democratic Republic of the Congo, with assistance of multilateral funding agencies, began to reform the mining sector. In 2002, a new Mining Code came into effect based in international standard practices of mining licenses for exploration and exploitation of mineral resources, with exploitation licenses having a validity of 30 years.[13]

In addition, with the assistance of the World Bank, a permanent committee was set up at the level of the presidency to oversee the restructuring of Gecamines. That committee's mandate contained five components:

> "1) renegotiate the existing agreements where appropriate, and to sell specific assets on competitive bid basis;
> 2) establish a policy regarding the severance of redundant employees, including the size and nature of a social safety net to be provided to those that leave the company;
> 3) formulate a plan to transfer the provision of social services provided by the company to local governments and communities;

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[10] Bureau of Mines, 1967. The other state-owned mining companies included Sté de devpt Indust. & Min du Congo (SODIMICO), Off. Mines d´Or de Kilo-Moto (OKIMO), Entreprise Minière de Kisenge (EMK´Mn), and Centre d'Expertise, d'Evaluation et de Certification des substances minières (CEEC), although these groups were primarily concerned with the mining of minerals other than copper.

[11] www.umicore.com.

[12] VOA News, 2007.

[13] www.miningcongo.cd

4) evaluate the legacy of environmental damage and coordinate the clean-up work; and
5) define milestones for the implementation of the restructuring."[14]

As a result, Gecamines sold or donated shares in over 26 developed or developing mines to private investors, retaining around 20-25% ownership in most cases. These actions did not completely solve Gecamines problems, though, as reports indicate that as of 2007 Gecamines still owed creditors approximately $2.3 billion, including around $1.6 billion to state-owned companies such as the railways and the power authority and some $700 million to the private sector.[15] More recently, the management of Gecamines has undergone significant changes. In September 2009 it was reported that Gecamines CEO, Mr Paul Fortin, resigned amid the problems surrounding contract renegotiations and that the former deputy Chief Executive Officer, Mr Calixte Mukassa, would serve as acting CEO.[16] In November 2009, news reports surfaced citing UN-sponsored Radio Okapi that 18 company executives at Gecamines had been suspended on suspicion of making false declarations regarding the volume of ore exports and of misappropriating sales revenues.[17]

In 2007, the DRC created an inter-ministerial commission to recommend steps to further reform the mining sector and to investigate irregularities in mining contracts with private sector firms, including major copper producers. The commission's report, completed in late 2007 and released in March 2008, indicated that of the 61 mining contracts under review, 14 were classified as acceptable ("green"), 26 require agreement on some points ("orange"), and 21 face cancellation ("red"). At issue for many of the contracts under investigation was whether or not feasibility studies had been completed for the projects, with the commission indicating that it could raise the government's stake in projects that have not completed feasibility studies to as high as 51%. Completion of the mining review has been repeatedly delayed due in part to the government's shifting focus onto the resurgence of rebel groups in the east, but to date the following announcements have been reported:

- In February 2008, the Minister of Mines informed African Rainbow Minerals of the outcomes of the DRC Mining Contracts Review Commission and, following negotiations, an agreement was reached in December 2008. An amended agreement was proposed by the DRC authorities in March 2009 and the final agreement was expected before the end of 2009, although that announcement remains forthcoming.[18]

- In February 2008, First Quantum indicated that the commission recommended it can retain its Kolwezi tailings project if it fulfils earlier contract obligations; in August 2009 First Quantum was informed, through its subsidiary Congo Mineral Developments Limited (CMD), that the Kolwezi Contract of Association would not be pursued and that the exploitation permit should be returned to Gecamines; in September 2009 First Quantum, again via CMD, received an order from General Prosecutor of Katanga to seal the Kolwezi Tailings facility; First Quantum continues to seek to negotiate a solution to the mining contract review and announced it will "pursue all available legal remedies."[19] First

[14] www.worldbank.org.

[15] VOA News, 2007.

[16] Wall Street Journal 2009a.

[17] Dow Jones Newswires 2009.

[18] http://www.arm.co.za/im/files/annual/2009/index.html.

[19] http://www.first-quantum.com/i/pdf/NR_09-30.pdf

Quantum and the International Finance Corporation (IFC) subsequently announced the commencement of international arbitration regarding the Kolwezi project in February 2010 and IFC has indicated its support for the project moving forward as originally agreed.

- In March 2008, CAMEC indicated that it had cleared the mining review.
- In January 2009 Freeport McMoran reported that negotiations with the DRC government regarding Tenke Fungurume were on-going but expected to conclude in the near future and indicated in January 2010 that it is continuing to negotiate the review of the contract, which it believes is in compliance with the Congolese Law and "enforceable without modification."[20]
- In January 2009 Simberi Mining Corporation reported it had signed a Memorandum of Understanding with Gecamines on the Kakanda Mine that included a signing bonus payable to Gecamines, the retention of a royalty by Gecamines that would amount to 1.5% to 2.5% of net revenues, and that Gecamines would appoint two of the five members of the Kakanda Mining Development Board.[21]
- In February 2009 Metorex announced it had completed negotiations for Rusahi that included: a US$ 4 million mineral content fee payable to Gecamines, raising the Gecamines shareholding from 20% to 25%, and a royalty payment of 2.5% on gross revenue payable to Gecamines; for CRC/MMK a mineral content fee of US$ 3 million to be paid to Sodimico, raising Sodimico's shareholding from 20% to 23%, and the return to Sodimico of the Musoshi mine plus a royalty of 2.4% on gross revenue to be paid to Sodimico. Metorex reported that to date it had paid US$ 1 million to Gecamines and US$ 1 million to Sodimico and returned the Musoshi mine to Sodimico.[22]
- Katanga Mining Limited announced on 27 July 2009 that the company signed an amended agreement with Gecamines that releases the Dikuluwe and Mashmba West Deposits, merges the DRC Copper and Cobalt Project and KCC joint ventures, and addresses requirements of the DRC Government resulting from the review of mining partnerships with Gecamines. Earlier terms of the agreement included the return of the KZC concentrator to Gecamines, the right of Gecamines to undertake exploration activities to find replacement reserves, that the 25% equity interest of Gecamines would be non-dilutable, that 2.5% of net revenues would be payable as royalties to Gecamines, an entry premium of US$ 140 million would be payable to Gecamines in instalments until 2016, that the Katanga Board would be increased to eight members, including three members appointed by Gecamines, and that Gecamines would have the right to appoint the deputy CEO.[23]

The final results of the review will have important implications for future investment in the copper sector in the DRC and the resulting changes in copper production capabilities, which are reviewed below.

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[20] http://www.fcx.com/news/2010/012110.pdf.

[21] http://www.simberimining.com/news/2009/index.php?&content_id=139.

[22] http://www.metorexgroup.com/downloads/annual_reports/2009%20AR.pdf.

[23] Katanga Mining 2009 and

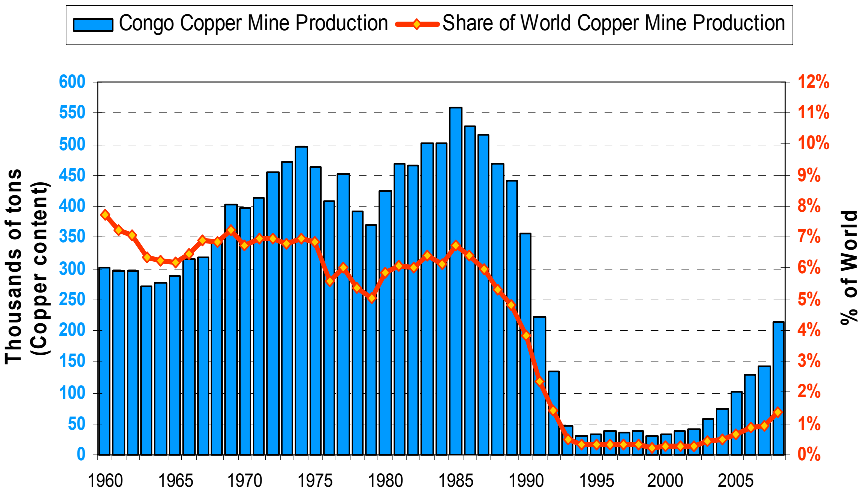
http://www.katangamining.com/kat/investor_relations/presentations/pre2009/agm_pres2009/agm_pres2009.pdf.

## B. Production

### i. Mine

While copper mine production in the DRC accounted for nearly 8% of total world output in the early 1960s, that figure fell to less than one half of one percent after the precipitous decline in copper production starting in the 1990s. Since 1999, copper mine production has registered nine consecutive years of growth, reaching nearly 215 kt in 2008 as the DRC's share of world mine copper production edged higher to 1.4%. In 2009, ICSG estimates copper mine production during Jan-Nov approached 270 kt and is likely to reach around 300 kt for the year, which would represent an annual increase of 40%.

**Figure 6. Democratic Republic of Congo: Copper Mine Production, Total and Share of World, 1960-2008 (thousands of tons and %)**




Source: ICSG

The largest copper mine by capacity currently operating in the DRC is the Tenke Fungurume Mine, owned by Freeport-McMoran, Tenke Mining Corp. and Gecamines. First started in March 2009, Tenke is expected to have the capacity to produce 115 kt of copper this year with a 40 year expected life. First Quantum's Frontier mine, which started operations in 2007, and CAMEC's (ENRC's) Luita mine are tied for second place with annual capacity of 100 kt each in 2010. (See Table 3 below for additional information.)

Despite recent setbacks associated with the economic slowdown and mine review that have led some firms to lay off workers and put operating mines on care & maintenance (Anvil Mining) or suspend construction on developing mines (First Quantum), copper mine production capacity in the DRC has been expanding rapidly in recent years and the expansion is set to continue. As recently as 2000 the DRC's total copper mine capacity was only 45 kt, which by 2007 had surged to 180 kt and is expected to reach just over 525 kt this year.[24] In addition, based on reported expansion plans and discounting offsetting reductions, ICSG forecasts the copper mine capacity in the DRC could reach 790 kt by 2013. By production process, SX-EW production capacity accounted for about 54% of total copper mine capacity in the DRC in 2009, but that share of capacity is expected to jump to 68% in 2013. By 2014 SX-EW capacity could reach 75% of the total as projects in development are disproportionately hydrometallurgical. This expected surge in SX-EW capacity in the DRC will have important implications not only for world mined copper supply but also for world refined copper supply and market balance in the years to come.

[24] ICSG Directory of Copper Mines and Plants - January 2010.

**Table 3. Democratic Republic of the Congo: Copper Mines by Capacity, 2009-2013 (Thousands of tons)**

| Mine | Owners | Process | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Dikulushi | Anvil Mining (90%), Community Trust (10%)[1] | Concentrates | 20 | 20 | 20 | 20 | 20 |
| Frontier | First Quantum Minerals Ltd | Concentrates | 100 | 100 | 100 | 100 | 100 |
| Kamoto | Katanga Mining (Kinross Forest 75%, Gecamines 25%) | SX-EW | 70 | 70 | 90 | 130 | 150 |
| Kinsenda | Miniere Musoshi Kinsenda (Metorex 75%, SODIMICO 20%, Forrest Group 5%) | Concentrates | 0 | 0 | 0 | 10 | 35 |
| Kinsevere Phase 1 | Anvil Mining 95%, Mining Company Katanga (MCK) 5% | Concentrates | 12 | 16 | 0 | 0 | 0 |
| Kinsevere Phase 2 | Anvil Mining 95%, Mining Company Katanga (MCK) 5% | SX-EW | 0 | 0 | 20 | 60 | 60 |
| Kipoi Project | Tiger Resourses Ltd | Concentrates | 0 | 5 | 31 | 40 | 40 |
| Kolwezi Mill | La Générale des Carrières et des Mines - Gecamines | Concentrates | 25 | 25 | 25 | 25 | 25 |
| Kolwezi Tailings | First Quantum Minerals Ltd 65%, Gecamines 12.5%, Government 5%, Others 17.5% | SX-EW | 0 | 0 | 10 | 35 | 70 |
| KTK | Katanga Mining | Concentrates | 5 | 5 | 5 | 5 | 5 |
| Kulu Mutoshi | Anvil Mining | Concentrates | 20 | 0 | 0 | 0 | 0 |
| Lubumbashi | Gecamines | Concentrates | 3 | 3 | 3 | 3 | 3 |
| Luiswishi | George Forrest Int., Gecamines | Concentrates | 12 | 12 | 12 | 12 | 12 |
| Luita | CAMEC | SX-EW | 100 | 100 | 100 | 100 | 100 |
| Lupoto | TEAL (50% African Rainbow, 50% Vale) | Concentrates | 10 | 10 | 10 | 10 | 10 |
| Ruashi I | Metorex 80%, Gecamines 20% | SX-EW | 2 | 0 | 0 | 0 | 0 |
| Ruashi II | Metorex 80%, Gecamines 20% | SX-EW | 18 | 45 | 45 | 45 | 45 |
| Tenke Fungurume | Gecamines (17.5%), Tenke Mining Corp. (24.75%), Freeport-McMoRan Copper & Gold Inc. 57.75% | SX-EW | 50 | 115 | 115 | 115 | 115 |
| **TOTAL** | | | **447** | **526** | **586** | **710** | **790** |

[1]Subject to shareholder approval, Anvil Mining has announced it expects to complete the sale of its 90% stake in Dikulushi to Mawson West Limited in March 2010.

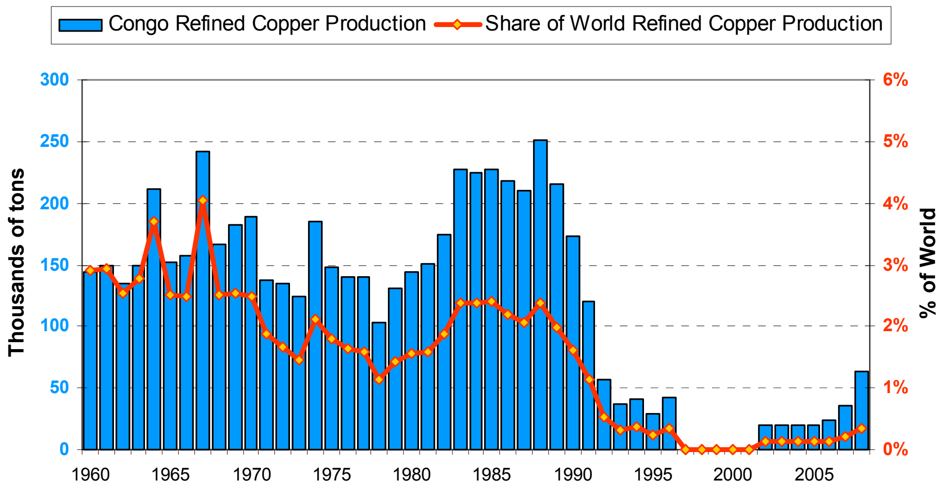
Source: ICSG Directory of Copper Mines and Plants – January 2010.

Additional projects in development include the KOV mine and SX-EW plant that is being rehabilitated by DCP (Katanga Mining 75%, Gecamines 25%) and is scheduled to have the capacity to produce 160 kt per year starting in 2014. The second stage of the Kipoi project being developed by Tiger Resources Ltd will add an SX-EW plant with the expected capacity to produce 25 kt starting in 2014, although the expanding resource at Kipoi is thought to have the potential to support 100 kt per year of SX-EW output. Other mines in the feasibility stage include Simberi Mining Corp's Kakanda Project (32 kt per year potential), TEAL's Kalumines project (potential capacity of 40 kt per year), and KGHM's Kimpe project, which has the potential to produce 100 kt per year alhtough the project is currently on hold. As a result, the capacity for projects in operation or currently identified in the DRC exceeds 1 million tonnes.

ii. Smelter & Refinery

Copper smelter production in the DRC had consisted largely of low-grade electrowon production with output falling from 10 kt in 2006 to 2 kt in 2007. However, three smelters in the DRC that remain operational in 2010 with a total capacity of 63 kt are Gecamine's Luilu (Kolwezi) and Shituru Electrolysis plants and OMG's Lubumbashi Slag Treatment plant. Refinery production, as with mine production, plummeted in the DRC during the early 1990s and civil war years. From a peak of over 250 kt of refined copper production in 1998, refinery operations ground to a halt during the years 1997-2001. In recent years refinery output has been sharply increasing, from 36 kt in 2007 to 64 kt in 2008 as production increased at Katanga Mining's Luilu leach plant. In 2009, refined copper production in the DRC is estimated to have surged to around 150 kt through November and is likely to reach aroudn 170 kt for the year as production was ramped up at Metorex's Ruashi II plant and at Freeport-McMoRan's Tenke Fungurume facility.

**Figure 7. Democratic Republic of Congo: Refined Copper Production, Total and Share of World, 1960-2008 (thousands of tons and %)**




Source: ICSG

In 2010, Tenke Fungurume is also expected to have the largest refinery capacity at 115 kt, followed by the Luita plant and Shituru refineries (100 kt each), Katanga Mining's Luilu leach plant (70 kt), and Metorex's Ruashi II plant (45 kt). By 2013, however, Katanga Mining's Luilu plant is expected to surpass Tenke's capacity as refurbishment of the old Luilu Metallurgical Plant could raise the plant's capacity to 150 kt. Other expansion plans in the works include Anvil Mining's Kinsevere Phase 2 plant which is back in development after Anvil and Trafigura reached a finance agreement to allow construction to recommence in August 2009. While the negotiations between First Quantum and Kinshasa over the Kolwezi Tailings plant remain tenuous, the facility still has the potential to reach a production capacity of 70 kt by 2013. Based on these expansion plans, total refined capacity in the DRC is forecast to increase from 338 kt in 2009 up to 640 kt in 2013.

**Table 4. Democratic Republic of the Congo: Copper Refineries by Capacity, 2009-2013 (Thousands of tons)**

| Refinery | Owners | Process | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|
| Kinsevere Phase 2 (SX-EW) | Anvil Mining 95%, Mining Company Katanga (MCK) 5% | Electrowinning | 0 | 0 | 20 | 60 | 60 |
| Kolwezi Tailings (SX-EW) | First Quantum Minerals Ltd 65%, Gecamines 12.5%, Government 5%, Others 17.5% | Electrowinning | 0 | 0 | 10 | 35 | 70 |
| Luilu (leach plant) | Katanga Mining (Kinross Forest 75%, Gecamines 25%) | Electrowinning | 70 | 70 | 90 | 130 | 150 |
| Luita (SX-EW) | CAMEC | Electrowinning | 100 | 100 | 100 | 100 | 100 |
| Ruashi II (SX-EW) | Metorex 80%, Gecamines 20% | Electrowinning | 18 | 45 | 45 | 45 | 45 |
| Shituru Refinery | La Générale des Carrières et des Mines - Gecamines | Fire Refining | 100 | 100 | 100 | 100 | 100 |
| Tenke Fungurume (SX-EW) | Gecamines (17.5%), Tenke Mining Corp. (24.75%), Freeport-McMoRan Copper & Gold Inc. 57.75% | Electrowinning | 50 | 115 | 115 | 115 | 115 |
| **TOTAL** | | | **338** | **430** | **480** | **585** | **640** |

Source: ICSG Directory of Copper Mines and Plants - January 2010.

However, as indicated above, additional SX-EW plants currently in development in the DRC could also add to refinery capacity beyond 2013. In particular, DCP's KOV plant and Tiger Resources' Kipoi facility could respectively add 160 kt and 25 kt of refined capacity per year starting in 2014. This would bring total refined capacity in the DRC up to 725 kt in 2014, with the potential to expand production capacity even higher in the years ahead.

### C. Usage

The only recently identified first user of refined copper within the DRC was Gecamines' GCM-Laminoir & Cablerie wire rod plant, which had a capacity of just 2 kt per year. However, that plant was reportedly closed in 2000 and apparently has not restarted. With no other known semis plants currently operating in the DRC, refined copper usage is thought to be minimal, although there exists significant potential to boost copper usage in the future as the country's economy and infrastructure develop.

### D. Outlook

In addition to constantly changing market dynamics, the DRC's volatile security situation, need for improved infrastructure, evolving government policies and numerous other variables complicate not only the nation's development plans but also make difficult any attempt to predict what the future holds for the country's copper industry. Few would have predicted in 1989 that mined copper output would collapse by 90% in the DRC in just four years. Nevertheless, should the planned capacity expansions outlined above come to fruition, they would elevate the DRC to the 9$^{th}$ largest mined copper producer and the 12$^{th}$ largest refined copper producer, by capacity, in the world.

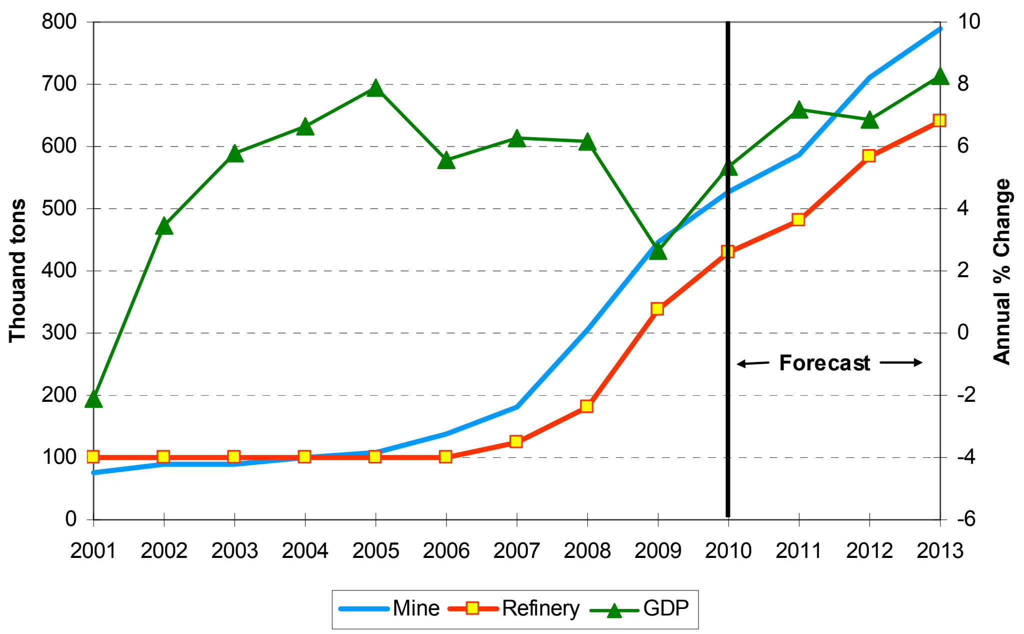
**Table 5. Projected Change in World Copper Mine and Refinery Capacity Rankings, 2010-2013**

| | Copper Mine Capacity | | | Copper Refinery Capacity | |
|---|---|---|---|---|---|
| Rank | 2010 | 2013 | Rank | 2010 | 2013 |
| 1 | Chile | Chile | 1 | China | China |
| 2 | United States | Peru | 2 | Chile | Chile |
| 3 | Peru | United States | 3 | United States | United States |
| 4 | China | Zambia | 4 | Japan | Japan |
| 5 | Australia | China | 5 | Russia | India |
| 6 | Zambia | Indonesia | 6 | India | Russia |
| 7 | Indonesia | Australia | 7 | Zambia | Zambia |
| 8 | Russia | Russia | 8 | Australia | Peru |
| 9 | Kazakhstan | **Congo** | 9 | Germany | Australia |
| 10 | Canada | Canada | 10 | Mexico | Germany |
| 11 | Mexico | Kazakhstan | 11 | Peru | Mexico |
| 12 | Poland | Mexico | 12 | Korea Republic | **Congo** |
| 13 | **Congo** | Poland | 13 | Poland | Korea Republic |
| 14 | Iran | Brazil | 14 | Kazakhstan | Kazakhstan |
| 15 | Brazil | Iran | 15 | Spain | Poland |
| 16 | PNG (1) | Mongolia | 16 | Canada | Iran |
| 17 | Argentina | Afghanistan | 17 | **Congo** | Indonesia |
| 18 | Mongolia | PNG (1) | 18 | Belgium | Spain |
| 19 | Laos | Argentina | 19 | Indonesia | Belgium |
| 20 | Uzbekistan | Laos | 20 | Iran | Canada |

Source: ICSG Directory of Copper Mines and Plants – January 2010.

The forecast expansion of the Congolese copper industry would not only have substantial implications for the global copper market but also for the development of the Congolese economy and society. The extent to which the DRC can resolve the formidable challenges to the development of its copper sector and its ability to overcome the obstacles to economic development in general should move in tandem.

**Figure 8. Democratic Republic of the Congo: Mine and Smelter Capacity and Real GDP Growth, 2001-2013**




Sources: ICSG Directory of Copper Mines and Plants - January 2010 and IMF, 2010.

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