



# SFP Cobalt Research

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## Credit Suisse raises average cobalt price forecast by 50% from \$30/lb to \$45/lb

The image of the DRC ramping up its Cobalt production overnight in line with numerous 'rose-tinted' forecasts by local projects vying for the attention of the investment world has been shattered by two developments this week that bring the market back face to face with the stark reality.

Credit Suisse, who in February 2007 forecast with precise accuracy the level to which the price would rise by that year end, have revised their annual average price forecasts significantly upwards for 2008 (50% increase) and 2009 (60% increase) accompanied by a sober report of the difficulties faced by the new cobalt production projects in the DRC. This report has coincided with suggestions that Freeport may be considering abandoning their giant Tenke Fungurume project blaming logistic and cost difficulties.

### **Credit Suisse: Raising Cobalt Forecasts**

In a report issued this week Credit Suisse confirmed a rise in their cobalt annual average price forecasts in which they have increased their figures significantly from \$30/lb to \$45/lb for 2008 (50% increase) and from \$18.50 to \$30/lb for 2009 (60% increase). Below is a summary of their latest report:

- Cobalt price forecasts are raised from \$30 to \$45/lb in 2008 and from \$18.50 to \$30/lb in 2009.

- Credit Suisse are increasingly of the view that the DRC is unlikely to increase output nearly as much as the market was expecting.
- This is contrary to over-optimistic market thinking that the DRC could add another 20,000 to 30,000 mt of cobalt from the startup of long awaited new projects like KOV (Katanga/Nikanor), Kolwezi (First Quantum) and Freeport's Tenke Fengerume.
- Electricity is now becoming a massive bottleneck for any new entrant in the region
- In the last two years, there have been over 15 new Chinese copper smelters and given their basic furnace technology, they are generally inefficient and take much of the spare power generating capacity from the grid in the Katanga region.
- They estimate that KOV, Kolwezi Tailings and Tenke will need a combined 300 megawatts of power. At the moment this does not appear to be available unless a radical investment in the countries vast hydro potential is fast tracked.
- At Freeport's Tenke Fungurume project, management believe they can begin operations in late 2009 for a capital cost of around \$900m if they can secure the power.
- Time will tell how quickly Tenke will secure the power, although it is feared that the rampup in Chinese production from their 20 smelters has taken most of the spare capacity. Especially given the strong relationship between the DRC and the Chinese.
- In short, the delays of KOV, Kolwezi Tailings and Tenke in the last two years have robbed the market of expected tonnages. How long these projects continue to suffer startup delays, the longer this potential capacity will be sidelined from the market.
- The reality is that the cost of producing cobalt has materially increased in the last 2 years due to growing raw material tightness and rising electricity costs.

[Credit Suisse 26/03/08. Read source article? – See page 4]

## Freeport May Halt or Slow Congo Copper Project

In addition to Tenke's power supply problems, the DRC Mines Review Commission now wants state-owned Gecamines to increase its stake in the Tenke Fungurume copper and cobalt project from 17.5% to 45%. Freeport has explored less than half of its Tenke Fungurume concession area and the risk is that the government is trying to gain control of part of the property that would only be developed in a decade's time. Freeport owns a 57.75% stake in Tenke Fungurume, while Lundin Mining owns 24.75% and Gecamines currently owns the remaining 17.5%.

- Freeport may slow or stop work on its \$900m Tenke Fungurume copper development in the DRC after a state-appointed panel recommended the government take a bigger stake in the project.
- The panel, which reviewed 61 mining contracts in the past year, recommended that the government raise its stake in Tenke to 45% from 17.5%. A committee of Congolese ministers will review the recommendations before making a final ruling.
- The mine would have become the largest in a country and has 10% of the world's copper reserves and more than half of its cobalt.
- Tenke was expected to produce for about 40 years and yield 113,000 mt of copper and 18 m lbs of cobalt annually in its first decade.

[[Bloomberg.com 24/03/08](#). Read source article? – See page 5]

## Credit Suisse and Camec: Raising cobalt forecasts

'Central African Mining', Credit Suisse (26 March 2008)

We are raising our cobalt forecast from \$30 to \$45 per pound in 2008 and from \$18.50 to \$30 per pound in 2009. We are increasingly of the view that DR Congo is unlikely to increase output nearly as much as the market was expecting. We think cobalt production will rise from 16,000tpa in 2008 to around 22,000tpa by 2010 depending on the startup success of both Kamoto Deep and the rampup of Mukondo. This is contrary to current market thinking that DR Congo could add another 20,000 to 30,000 tonnes of cobalt from the startup of long awaited new projects like KOV (Katanga/Nikanor), Kolwezi (First Quantum) and Freeport's Tenke Fengerume which neighbours Camec. Two years ago the combined potential capacity of these three projects amounted to at least 40,000 tonnes of new cobalt by 2011. Already today, given KOV is now part of Katanga that potential number has now dropped to around 26,000 tonnes. However, the reality is that electricity is now becoming a massive bottleneck for any new entrant in the region. In the last two years, we have seen over 15 new Chinese 'backyard' copper smelters startup in both Lubumbashi and Likasi taking the total number of Chinese smelters to some 20. We estimate these smelters produce approximately 100,000–150,000 tonnes of contained copper and 2000–3,000 tonnes of contained cobalt. The feed for these smelters is largely sourced from artisanal miners. Given the basic furnace technology, the smelters are generally energy inefficient and hence taking much of the spare generating capacity from the grid in the Katanga region. We estimate these 20 smelters are consuming as much as 120MW of power. This means that many of the larger projects like Kov. Kolwezi Tailings and Tenke Fengerume could find near term supply of electricity harder than originally expected. We estimate that KOV, Kolwezi Tailings and Tenke will need approximately a combined 300 megawatts of power. At the moment this does not appear to be available unless a radical investment in the countries vast hydro potential is fast tracked. The Katanga grid delivers about 440MW in the province of which 130MW travels some 1,800 kilometres from Inga Dam situated near Kinshasa. The remainder is produced from four hydro plants in the Katanga province that currently produce 310MW, compared to their potential capacity of 460MW. Mag Energy are refurbishing Inga 2 and is expected to bring on up to 178MW of power in the first half of this year. We estimate 40% of this will be redistributed to the Katanga Province which will provide an additional 70MW, which is still well short of the 250MW required to develop both Kov and Tenke. Phase 2 of the rehabilitation of Inga 2 has yet to commence but could add a further 700MW to the grid. Much of this is likely to be sent to the Katanga grid, although it is still too early to assess the timing of this new supply. When Nikanor Plc listed in London in September 2006, the then management believed the KOV pit would reach maximum capacity of 250,000 tonnes of copper cathode and 25,000 tonnes of cobalt by 2011. Since Nikanor was injected into Katanga last year, the new management team said they would develop KOV on a 'modular basis' with the intention to produce some 10,000 tonnes of cobalt through SX/EW in 2010/11. This is 15,000 tonnes below Nikanor's original estimate made two years ago. With the growing tightness in electricity, we believe such a development will not proceed unless the Government can give it assurances that the power will be available once the project is developed. The feasibility on both Kamoto Deep and KOV as a combined operation is expected to be complete in Q4'08. Nearer term, under the old management, KOV was also supposed to produce some 10,000 tonnes of cobalt in 2008 and over 16,000 tonnes in 2009. This is a massive shortfall, and underscores why we are also becoming increasingly excited about cobalt's nearer term prospects. In the meantime, Kamoto Deep is on track to produce about 2,100 tonnes of cobalt in 2008 and some 4,000 tonnes in 2009. We have been very impressed by the progress of Kamoto Deep that has started on time and budget. Outside of Mukondo Mountain, Kamoto Deep this is the only near term growth project in DR Congo until KOV, Kolwezi Tailings and Tenke come onstream. The Kolwezi tailing project is owned by First Quantum (65%), Gecamines (12.5%), IDC (10%), IFC (7.5%) and Government of Congo (5%). The project is scheduled to commence production in 1H 2010 with an initial capacity of 35,000 tonnes of copper and 7,000 tonnes of cobalt hydroxide for a capex of \$553 million. This compares with the original target set by the previous owners Adastra to commence production in 2008. At Freeport's Tenke Fengerume project which neighbours Camec's operations, management believe they can begin operations in late 2009 for a capital cost of around \$900 million to produce 110,000 tonnes of copper cathode and 8,000 tonnes of cobalt. By way of comparison, Camec will spend less than \$220 million to achieve a similar size of operation. This underscores the operational strength of Camec and their long history in the country. If Tenke cannot secure the power to produce the copper cathode, then it will not be able to produce the 8,000 tonnes of

cobalt by product either. Time will tell how quickly Tenke will secure the power, although we suspect that the rampup in Chinese production from their 20 smelters has taken most of the spare capacity. In reality the Chinese used the window of opportunity that presented itself when both KOV, Kolwezi Tailings and Tenke began to experience delays two years ago. Unless the DR Government were to turn off these 20 new Chinese smelters then this spare capacity will not be available again until the four new turbines at Inga 2 are commissioned sometime between 2009-12. Given the strong relationship now between the DR Congo Government and the Chinese we doubt this is likely anytime soon. In reality the Chinese were fast and nimble in developing this new capacity whilst others producers were in the middle of their feasibility studies. In addition to the electricity concerns, the DR Congo Government last week announced that Gecamines would increase its holding in Tenke to 45%. This is just another reason for why Tenke could be delayed. When Camec had its ownership issues with Gecamines last year, investment in Luita was frozen for one year. Clearly Freeport would need to reassess the economics of the project if its equity ownership of 57.75% is diluted, but its capital commitments rise. In short, the delays of both KOV, Kolwezi Tailings and Tenke in the last two years have already taken out some 22,000 tonnes of cobalt from the system in 2008 and 24,000 tonnes in 2009. How long these projects continue to suffer startup delays, the longer this potential capacity will be sidelined from the market. As a result, we are raising our cobalt forecasts from \$30 per pound in 2008 to \$45 per pound and \$18.50 per pound in 2009 to \$30 per pound. The reality is that the cost of producing cobalt has materially increased in the last two years due to growing tightness of DR Congo supply and rising electricity costs. As a rule, cobalt cathode production requires twice the amperage of electricity in the cells as opposed to copper cathode. With rising electricity costs around the world, this is another cost burden to the industry. If big projects like KOV, Kolwezi Tailings and Tenke continue to be delayed, then this could open the door for Camec to increase its production to 12,000 tonnes of cobalt which would make them the world's largest producer by a clear margin. Such an increase would still only represent some 20% of the planned capacity that was supposed to be produced by both KOV and Tenke in 2009. Camec have the electricity and also the richest cobalt orebody known to man, Mukondo Mountain that could be ramped up with relative ease. At 12,000 tonnes and assuming a cobalt price of \$40 per pound, Mukondo Mountain has the potential to generate as much as \$650 million of EBITDA for Camec from cobalt alone. An increase from 8,000 to 12,000 tonnes would represent a payback of only 1 month for their upfront investment of \$25 million (at current cobalt prices). This would be money well spent, but for now, management will assess all options that are in the best interests of shareholders and it is still too early to say if this expansion will go ahead.

## **Freeport May Halt, Slow Congo Copper Project, Citigroup Says**

[Bloomberg.com](http://Bloomberg.com) 24/03/08

Freeport-McMoRan Copper & Gold Inc. may slow or stop work on its \$900 million Tenke Fungurume copper development in the Democratic Republic of Congo after a state-appointed panel recommended the government take a bigger stake in the project, Citigroup Inc. analysts said. The panel, which reviewed 61 mining contracts in the past year, recommended that the government raise its stake in Tenke to 45 percent from 17.5 percent. A committee of Congolese ministers will review the recommendations before making a final ruling, the mines ministry said when the study was released March 20. 'We expect Freeport to vigorously advocate on behalf of standards and to slow/halt construction as necessary,' Citigroup analyst John Hill said today in a note to clients. Phoenix-based Freeport, the world's largest publicly traded copper producer, said March 20 that its contract complied with the law and that it would continue developing the mine while working with the government to resolve the issue. Freeport spokesman Bill Collier declined to comment further when contacted today by Bloomberg. A 'negotiated settlement' to the dispute is likely, Hill said, without saying what the resolution may be. The government is seeking about \$1.1 billion to \$1.8 billion in changes, of which Freeport's share is \$770 million to \$1.3 billion, he said. Freeport acquired the project when it bought Phelps Dodge Corp. last year. The mine would become the largest in a country that has 10 percent of the world's copper reserves and more than half its cobalt. Tenke is expected to produce for about 40 years and yield 250 million pounds (113,000 metric tons) of copper and 18 million pounds of cobalt annually in its first decade of operation, Freeport said on its Web site. Freeport owns a 57.75 percent stake in Tenke; Vancouver-based Lundin Mining Corp. owns 24.75 percent, and Gecamines, Congo's state-owned copper producer, owns the remainder. Freeport rose \$3.01, or 3.5 percent, to \$90.09 as

of 1:36p.m. in New York Stock Exchange composite trading. The shares have gained 44 percent in the past year.