RAID

Rights & Accountability in Development

Democratic Republic of the Congo

Key Mining Contracts in Katanga: The economic argument for renegotiation

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I. Introduction

“Any legitimate balanced review of what we're up to will be very favourably considered…”

(Arthur Ditto, President and Chief Executive Officer, Katanga Mining Limited)[1]

A. Purpose of this report

This report is intended to make a constructive contribution to the current debate about the fairness of the mining contracts in the Democratic Republic of Congo (DRC), in particular the Kolwezi joint venture agreements between the state-owned La Générale des Carrières et des Mines (Gécamines) and private companies, which were all signed and approved during the period of the Transitional Government. By way of illustration, an economic analysis is undertaken of one of the contracts, Katanga Mining Limited’s (KML) Kamoto project. The report provides an assessment, based on available information, of the distribution of the financial benefits between KML as the private partner and Gécamines. The data is used to present a possible model for the renegotiation of Gécamines’ joint venture agreements: the other key Katanga contracts should be subject to a similar transparent analysis, whether conducted by the World Bank, the DRC Government or the companies themselves.

Following the elections in the DRC, the new government, with encouragement from the World Bank, has announced its intention of reviewing past mining contracts. In February 2007, Antoine Gizenga, the Prime Minister, in an address to the Congolese Parliament, announced his intention of undertaking ‘a critical re-examination of the joint venture agreements with the DRC’s state owned enterprises’.[2] In March 2007, Martin Kabwelulu Labilo, the Minister of Mines, who has tutelary powers over state-owned mining enterprises, reminded the managers that they should suspend until further orders all negotiations for new concessions until the Government had issued a procedure for review of the existing contracts. The Minister also requested that all the documents concerning the joint venture agreements should be sent to his office no later than 4 April 2007.[3] So far mining companies have reacted calmly to this announcement.[4] Arthur Ditto, the President of Katanga Mining, told Business News that ‘…any legitimate balanced review of what we're up to will be very favourably considered and pass any legitimate test.’[5] It is in the context of Mr. Ditto’s invitation to review that RAID presents its own economic model and analysis of the Kamoto project.

B. The legacy of war

After 30 years of the Mobutu dictatorship and more than 15 years of war and transition, the needs of the Congolese population are immense, as was noted in the recent NGO Memorandum, *Public-Private Partnerships in the DRC’s mining sector: Development, good governance and the struggle against corruption*.[6] According to the World Bank:

> Virtually all of the DRC’s indicators of economic and social development place the country as among the most deprived in the world. Gross domestic product has fallen from about $10 billion in 1990 to approximately $4.1 billion in 2002. Per capita income has declined steadily from about $380 in 1985 to $250 in 1990 and to $87 in 2001. DRC is now one of the poorest countries in the world. The number of undernourished people in the country has more than doubled from 15 million to 32 million. Life expectancy stands at 45 years. One of every six children born never reaches his or her first birthday. In 1995 about 59 per cent of children were enrolled in primary school. This is a sharp decline compared with 1978 to 1979 when 72 per cent of children were enrolled in primary school.[7]

C. The 2006 elections

The elections that took place in the DRC in 2006, were seen by the international community as the best opportunity of restoring peace to the war ravaged country and of encouraging the return of an estimated 1.2 million displaced Congolese and 410,000 refugees in neighbouring countries. However, in March 2007, violence erupted in Kinshasa when the opposition leader Jean-Pierre Bemba refused to abide by an ultimatum to integrate his private guards into the national army. Sources indicate that as many as 600 people may have been killed in the fighting that ensued in which Angolan troops allegedly supported the forces loyal to President Kabila.[8] European diplomats have condemned the premature use of force. Jean Pierre Bemba, who has been charged with treason, has sought refuge in the South African embassy.

D. Reconstruction, the domestic economy and the contribution of the mining sector

The DRC government has one of the lowest levels of domestic revenue in the world – just CGF 721.4 billion [approximately $USI.5 billion] in 2006, including grants.[9] The DRC's Prime Minister recently announced programmes costing a massive $14 billion over the next five years to rebuild the economy, reduce poverty and improve the country's infrastructure.[10] Around half of this money – $6-8 billion over the next 3-4 years – will need to come from international donors.[11]

The mining sector is vitally important for the reconstruction of the DRC. The Congo has some of the world's most important reserves of numerous strategic and precious resources (copper, cobalt, uranium, colombo-tantalite, diamonds, gold). The DRC has an estimated 12 per cent of the world's copper reserves and almost half the world's cobalt reserves.[12] Katanga, where the copper and cobalt ore bodies are found, is the source of much of this potential wealth. Historically, the extractive sector accounted for approximately 75% of total export earnings, 25% of the country's GDP and 25% of fiscal revenue, until political instability and war intervened[13]. By 2001, the mining sector's recorded contribution to GDP had declined to 7% and by 2004 it was estimated at 9%.[14] According to the IMF, fiscal revenue from mining was 2.9% of the total Government revenue in 2003 and 2.5% in 2004. Mining exports are also vital in generating foreign exchange for the DRC: the IMF has recently warned that foreign reserves – necessary to pay for imports and to service debt – are at very low levels.[15]

It is apparent that for the Congolese economy to be rebuilt and for government revenues to increase to a level where social programmes can begin to address the problems caused by extreme poverty, then not only must the mining sector be revitalised, but it must be done in such a way that both the state and the private sector benefits equitably from the wealth generated.

E. The restructuring of Gécamines

Whilst the majority of DRC's mineral reserves were previously exploited by the state-owned Gécamines, the mining sector is currently undergoing extensive reforms. Since 1995, there has been a proliferation of public private partnership agreements: Gécamines alone has thirty such agreements.[16] From now on, key concessions will be exploited through joint venture contracts with private partners, in which Gécamines will retain only a minority stake. The new Mining Code which came into force with World Bank support in 2002, (and the Mining Law of March 2003) was supposed to ensure full transparency in the access to mineral resources (e.g. allocation of permits), reduce Government discretion, promote the disclosure of information and ensure “a fair distribution of revenues among Government, mining companies and affected communities”. The DRC Government was to design a restructuring plan that would transform Gécamines into a holding company.[17]

Gecamines’s concessions in Katanga have been divided for administrative purposes into three areas: Centre Group (*Groupe Centre*) near Likasi, which includes mines like Mukondo, the Southern Group (G*roupe Sud*) which has large deposits like Etoile and Ruashi and the West Group (*Groupe Ouest*) which comprises the enormous copper and cobalt deposits and mining installations of Kamoto and Kamoto East, Oliveira and Virgule (Kov). Standing apart is the vast greenfield site of Tenke Fungurume (TFM). The TFM concession is located approximately 180 kilometres northwest of the provincial capital of Lubumbashi and includes the towns of Tenke and Fungurume.

In mid 2005, the Transitional Government approved three joint venture contracts between Gécamines, the DRC’s main state owned mining company, and a number of foreign private companies: Kinross Forest Ltd (now Katanga Mining Ltd), Global Enterprises Limited (GEC - now Nikanor Plc) and a consortium formed by Phelps Dodge Corporation and a subsidiary of the Lundin Group called Tenke Mining Corporation.[18] These three joint venture agreements concern, between 50 and 75 per cent of the DRC’s copper and cobalt reserves and form an important part of Katanga’s industrial capacity.[19] There was great disquiet about way these deals had been negotiated, signed and approved, with a total lack of transparency, either on the basis of a flawed or non existent international tendering process. In November 2003, when the agreements were still being negotiated, the consultants, IMC Group Consulting Ltd, appointed by the World Bank on behalf of the Congolese Government to conduct an audit and to define a new business plan for Gécamines, recommended that all on-going negotiations should be immediately halted and that steps should be taken to prepare for a wholesale renegotiation of the joint venture agreements[20]. Furthermore according to the Implementation Completion Report for the Economic Recovery Credit “a moratorium” on new mining concessions was one of the measures taken by the Government which demonstrated its commitment to implementing far reaching reforms and facilitated the decision by major creditors to provide support. But the moratorium was not respected and other crucial measures, such as the reform of the Mining Cadastre and making the Commission for the validation of mining titles operational were never implemented.[21]

At the conclusion of its recent mission to the DRC in March 2007, the head of the IMF's Africa division, Cyrille Briancon, stated: “It is important for the mining sector to contribute more to state resources. At the moment, certain companies do, but I think this sector should be able to contribute more revenues.”[22] To this end, the IMF has urged the government to publish and analyze the partnership agreements that have been signed in the mining sector.[23]

II. An economic assessment of the Katanga contracts

A. The economic model

In view of the controversy surrounding the Katanga contracts, it is important to assess whether the right balance has been struck between the financial rewards accruing to the private companies and the stake in the assets and level of control retained by Gécamines. An independent mining expert, with extensive experience of conducting evaluations around the world on behalf of the European Investment Bank, was therefore invited to examine and model key economic aspects of the Kamoto project.[24] The assessment considers, *inter alia*:

- The level of returns generated by the project, comparing this to the accepted norms for similar mining ventures. Key to this assessment is determining whether the base price for copper and cobalt, which KML uses to calculate the internal rate of return, is reasonable.

- The stake in the joint venture company retained by Gécamines and whether or not this minority holding fairly reflects the contribution of the state-owned company to the project, i.e., the value of the assets that it has transferred.

- Whether or not, based on modelling realistic scenarios concerning metal prices, the call for the renegotiation of the joint venture contracts is justified on economic grounds.

- The extent to which the DRC Government benefits from revenue streams – taxes and royalties – generated by the project. The private investors have emphasised these benefits.

The Feasibility Study for Kamoto has recently been completed and a summary of this, together with a Technical Report, including an economic analysis of the project, has been posted on KML's website.[25] The economic analysis shows the sources and uses of funds over the 20 year life of the project. The data made available by the company in its Technical Report is used by the independent mining analyst in assessing and modelling the Kamoto project.

The approach used in the economic modelling is rigorous and the methodology and workings are available in full: <http://kamotominingproject.blogspot.com>. The purpose of this report is to stimulate debate on the distribution of the economic benefits and costs of the joint venture agreements based upon a credible model to analyse a number of realistic scenarios. It should be emphasised that other parties – the World Bank, the DRC government, the companies themselves – are free to run, and, indeed, encouraged to run, their own rigorous and transparent models or to model scenarios other than those presented here.

The economic sensitivity model developed by the analyst has been run in the first instance for Kamoto because this project is nearest to production and because the necessary data is available. It is important to emphasise that the same or similar models should be commissioned to analyse all the Gécamines joint venture contracts, including those with Nikanor and Tenke Mining/Phelps Dodge, and that where questions are asked of the Kamoto partners, these must also be asked of the other companies. In March 2007, shareholders of both companies approved the acquisition by Freeport-McMoRan Copper & Gold Inc. of Phelps Dodge Corp. The deal has created the world's largest publicly traded copper company.[26]

The Kamoto Concession

Project description

On Feb 7 2004 a Joint Venture Contract n° 632/6711/SG/GC/2004[27] was signed between Gécamines Kinross-Forrest Limited (KFL) establishing the Joint Venture Company Kamoto Copper Company SARL (KCC). KCC is 75% owned by KFL and 25% by Gécamines. The contract was approved on August 4th 2005 by Presidential Decree n° 05/070[28].

Under the contract, KCC has the right to mine in Kolwezi district in Katanga province, south-DRC for the next 20 years, with an option to extend.[29] The 15,235 hectares awarded to KCC includes the underground Kamoto mine, three open-pit mines, and the Musonoie T17 deposit.[30] Other assets comprise the Kamoto Concentrator and the Luilu metallurgical plant, as well as all other infrastructure. The total proven and probable reserves of copper and cobalt at Kamoto are 3.28 million tonnes and 344,000 tonnes respectively.[31]

Current Status

KCC is to become a leading copper company[32]. On January 31 2007, the company announced the closing of two contracts related to the rehabilitation of the Kamoto Mine[33]. The Kamoto underground mine and Dima open pits are on schedule to start production in April 2007, with work on the Kamoto concentrator and Luilu Metallurgical plant completed by, respectively, July and September 2007. First copper is to be shipped in December 2007. The figures for total production have recently been increased by the company: 2,507,708 of copper (average annual production of 125,385 tonnes over twenty years) and 121,818 tonnes of cobalt (average annual production of 6,090 tonnes over twenty years).[34]

Company structure

Kamoto Copper Company SARL (KCC) is owned 75% by Kinross Forrest Limited (KFL) and 25% by Gécamines. KFL is itself a wholly owned subsidiary of the holding company Katanga Mining Limited, registered in Bermuda but with its corporate address in London.[35] An independent company, Kamoto Operating Limited, has been set up to operate the mine through a service agreement.[36]

Kamoto Operating Limited (KOL)
Registered in DRC
Subcontractor of KCC

Kamoto Copper Company SARL (KCC)
Registered in DRC
Joint venture company owned by KFL (75%) and Gécamines (25%)

Kinross Forrest Limited (KFL)
Registered in British Virgin Islands[37]
On 26 June 2006 KML took over KFL - KFL is now a 100% subsidiary of KML[38]

Gécamines

Katanga Mining Limited (KAT)
Holding company
Registered on Bermuda – 7 Oct 1996[39]
Listed on Toronto Stock Exchange – 28 Jun 2006[40]

B. The level of returns

1. Measuring returns

To estimate the value and the feasibility of a project and to be able to decide whether to invest or not, companies calculate the Internal Rate of Return (IRR). The IRR is the rate of interest that renders the initial capital cost equal to future revenues. In other words, a company must compare how much capital it has invested in a project with the revenue that it expects to receive back from a project.[41] However, the annual revenues must be discounted or reduced in value because, if the initial capital had been put into alternative safe investments, this in itself would have generated a certain level of returns. This level of returns or interest is generally referred to as "the opportunity cost of capital". In general, if the IRR is greater than the opportunity cost of capital, then the project will add value for the company.[42] The extent to which risks attach to a particular project – for example, whether production may be disrupted by political instability or even conflict – requires that the opportunity cost of capital should include a premium to offset these risks.

The opportunity cost of capital used here is 4%, plus a risk factor of 8% to hedge against investing in politically unstable DRC, giving a total of 12%. Hence an IRR in the DRC would need to be in the order of 24% to allow a margin of 12% after the opportunity cost of capital has been taken into consideration.

2. Typical returns for mining projects

IRRs of mining projects are typically fairly low, between 12 -15 per cent because they involve a long time lag (20 years), high levels of risk in prices of minerals, and technical risks related to mining, ore processing and metallurgy.

3. The returns for Kamoto

Establishing the IRR for Kamoto gives an indication as to whether or not this is over and above the typical return that might be expected from other mining projects. However, one factor of particular importance in determining the IRR is the market price paid for the copper and cobalt produced by Kamoto. Two scenarios are presented:

- low metal prices, as used by the company in its Technical Report;

- cautiously realistic prices, used in the expert model.

(a) The IRR using low metal prices

With the capital and operating cost estimates given in the Feasibility Study and Technical Report, and copper/cobalt prices of 1.10/10.00 US$/lb, the project's internal rate of return is 29.3 %. This value, which compares to a 12% opportunity cost of capital, allows a good margin of return of 17.3% for the project sponsors in the case of Kamoto. This produces revenues for developing other mines, or investing in other industrial projects in DRC and in other parts of the world. The returns are shared between the project owners, KML and Gécamines at 75% and 25% respectively, under the Kamoto Copper Company (KCC) Joint Venture agreement.

(b) The IRR using realistic prices

Copper and cobalt prices are volatile and, as of the end of the first quarter of 2007, copper and cobalt prices, at 3.31/32 US$/lb are very much higher than 1.1/10 US$/lb used in KML's Technical Report as the base price.[43] Of course, current prices may rise or fall. The expert view is that historical prices are a better guide. Over the last fifty or so years, the average copper price has been 1.52 USD/lb and the average cobalt price 15.00 USD/lb.[44] When these prices are used, the IRR for Kamoto increases significantly to 76.9%, which compared to a 12% opportunity cost of capital, leaves a margin of 64.9% to the project sponsors.[45]

C. Dividing the returns

1. The respective stakes of Gécamines and the private partners

The returns that have been calculated, including those that model more realistic metal prices, benefit the Kamoto Copper Company Joint Venture as a whole. In other words, both the private sponsors and Gécamines, as a state owned company, are rewarded. However, in order to determine whether the returns from the project as a whole are distributed equitably between the parties, it is necessary to assess whether the return that each expects to receive from the venture is commensurate, i.e., a fair reflection of their contribution to the project.

Gécamines' contribution to the Kamoto project is considered in more depth in the section that follows. At this juncture, it is sufficient to note that Gécamines provides, by way of a lease, the copper and cobalt deposits and the mining, processing and production facilities.[46] Under other circumstances – for example, if it had been decided to privatise the DRC's mining assets and sell them to private investors – then Gécamines would have received an outright payment for the Kamoto concession. Rather, the decision was taken to develop Kamoto as a joint venture between the state owned mining company and a private partner. Under this arrangement, in order to receive recompense for providing the concession in the first place, Gécamines should either receive an equity share in the project equivalent to its contribution or else receive a combination of equity share and a balancing up front payment.

Indeed, under the joint venture agreement, Gécamines retains a 25% stake in KCC while the private sponsors, KML, are given a 75% stake, entitling both parties to their respective shares of future revenue. No up front payment is made to Gécamines for the assets it has transferred. Hence, of the margins of return above the opportunity cost of capital generated by the mine – i.e., 17.3% in the base case and 64.9% with higher metal prices – one quarter will go to Gécamines and three quarters to KML.

In order to assess whether Gécamines' contribution to the project is fairly reflected in the Joint Venture agreement, it is necessary to establish:

- What it is that Gécamines has contributed to the project;

- The value of Gécamines' contribution – how much it has put into the project;

- The value of the Kamoto deal to Gécamines – how much it gets back for its 25% stake.

2. Gécamines' Contribution to KCC

The Technical Report outlines the defined assets contributed by the two partners to the joint venture: [47]

> Gécamines leases to KCC the Kamoto Mine, Kamoto and DIMA concentrators, the Luilu hydrometallurgy plant facilities, together with all their infrastructures and surface holdings, including the processing facilities, and all mobile equipment, together with all related files and records and all technical data. Gécamines also leases to KCC the Kamoto, Dikuluwe, Mashamba East and Mashamba West deposits, as well as the Musonoie-T17 West deposit, or any other deposits that will provide ores to ensure project profitability. KFL contributes the management expertise to operate the mines and the plants, and the technology and the organization of the equity and debt financing to start the project and to carry it through the life of the agreement.

While Gécamines remains the sole title-holder and owner of the mines and the tailings, the concessions confer to KFL the sole and exclusive right to mine.[48]

(a) Plant, equipment and installations

The value of the existing underground mine infrastructure, the ore processing facilities and metallurgical and electrolysing plants depends upon how much money is needed to refurbish them. Statements made by KML acknowledge the importance of the mineral assets and plant contributed by Gécamines at Kamoto.

According to KML's Technical Report, Gécamines assets are considerable, and much of plant, though in need of refurbishment and upgrading, requires relatively modest levels of investment before production can be started: "The initial refurbishment and rehabilitation of the Kamoto Mine, Kamoto Concentrator and Luilu Metallurgical plant and related infrastructure will require approximately six months as the Kamoto Mine requires only limited work to restore it to production".[49] The Technical Report also notes that: "Limited maintenance of the remaining infrastructure is required. Mining can begin almost immediately once the equipment arrives on site."[50]

(b) The copper and cobalt reserves

Kamoto has impressive proven and probable copper and cobalt reserves. KML has recently posted increased totals for the copper reserves (up 12% from the Feasibility Study) and cobalt reserves (up 19% from the feasibility study).[51]

	Copper Grade %		**Cuopper Tonnes (000s)**		**Cobalt Grade %**		**Cobalt Tonnes (000s)**	
	Feasibility Study	Revised Schedule	Feasibility Study	Revised Schedule	Feasibility Study	Revised Schedule	Feasibility Study	Revised Schedule
Total Reserves Proven & probable	3.16 %	3.53%	2,924	3,280	0.31%	0.37%	288	344
Total resources Measured and indicated	3.47%	3.47%	2,388	2,388	0.39%	0.39%	270	270
Total Reserves & Resources	3.29%	3.50%	5,312	5,668	0.35%	0.38%	558	614

Source: Katanga Mining Limited, Revised production schedule and costs, April 2007

In addition to the proved and probable reserves (i.e., those reserves reported with a high degree of certainty), KML is also confident about Kamoto's potential: "As meaningful exploration has not been carried out in the region since the early 1980's, the Project area holds significant potential for new discoveries, and further target generation and exploration drilling should be undertaken."[52]

In a recent interview, the president and chief executive officer (CEO) of KML is unequivocal about the quality of both the reserves and production facilities: 'I am unaware of any start-up enterprise in the base metal mining sector that has come into the marketplace with such large, high-grade reserves and large installed capacity….If you look at the grade of these deposits, the production grade of the ore going into the mills and the plants, it's extremely high by world standards, and as a result this operation will be one of the lowest cost producers in the world.'[53]

3. The value of Gécamines' contribution: the failure to audit Kamoto

In the absence of an audited book value of the assets transferred by Gécamines to KCC at Kamoto, there is no sound basis upon which to calculate whether the 25% stake it retains in the project is fair. Yet, incredibly, the value of these assets has either not been calculated at all or else the result of any audit has not been included in the Feasibility Study and Technical Report or otherwise published by KML.[54]

The World Bank's principal mining specialist has stated:[55] "Divestiture of state mineral reserves and producing assets in favor of private companies is generally done after a through analysis, appraisal and valuation of the assets….This has not been the case with the contracts in question." (Andrews confirms: "The contracts in question are between Gécamines and Kinross-Forrest, Global Enterprises Company (G.E.C.), and the consortium for the development of Tenke Fungarume (Lundin Holdings and Phelps-Dodge)."). Andrews continues: "The result is that the government may not have received the full value of the assets to be transferred."

The fact that the assets that Gécamines brings to the project have not been valued must raise serious concerns about the basis upon which the returns from the project are divided. As a result, the split 25% to Gécamines and 75% to KML appears entirely arbitrary. The expert advice is that the only accurate way to obtain the actual value of assets transferred by GCM to KCC is to visit the site and to run a technical and financial audit of the assets and accounts – something which should have been done before the terms of the joint venture were finalised.

In the absence of this audit, however, it is still possible to make an assessment of whether the Kamoto deal is fair to Gécamines. The first step, in the absence of an audit, is to estimate a value for the Gécamines assets that have been transferred. The second step is to model how much Gécamines 25% stake in the project is worth. To do this, it is necessary to consider both the scenario presented by KML – which both reflects and justifies the existing Joint Venture Agreement – and an alternative scenario which uses more realistic copper prices, referred to above.

4. An estimated value for the Kamoto assets

The president and CEO of KML has recently gone on record stating that 'we can we can create the size of output that I have referred to with modest capital, compared to a greenfield undertaking. The program I highlighted will take CDN$427 million [US$365 million] to accomplish. If you looked at the cost of a greenfield program, it would be in excess of

CDN$1 billion [US$0.85 billion]. So, in other words, we can compress the time it's going to take to complete all this and we can achieve this level of production for far less than if it was a greenfield project.'[56] According to this estimation, it would therefore appear that the infrastructure and plant alone at Kamoto are worth over CDN$570 million (US$488 million).

5. The value of Gécamines 25% stake

Establishing a value for the assets transferred by Gécamines is an important first step in determining whether its 25% stake in the project is a fair reflection of its contribution. However, having estimated a value for these assets, the second step is to calculate what Gécamines' 25% stake in the project is worth. If it is worth an equivalent amount to, or more than, the value of the assets, then Gécamines 25% holding is fair. If, however, the value accruing to Gécamines is worth less than its contribution, then the agreement is unfair. Of course, in making this calculation, a number of factors have to be taken into account, the most important of which is again the price of copper and cobalt. A model has therefore been used to calculate how much the Kamoto project is worth to each party – the net present value (NPV) – which allows metal prices to be varied. In calculating this worth, the fact that the different parties have higher or lower costs – for example, KML brings more investment funds to the project – has been taken into consideration. Once more the scenario envisaged in the feasibility study, which was used to determine how the joint venture was framed, is contrasted with a scenario of realistic metal prices, much more in line with prevailing market conditions.

(a) How much is the 25% equity stake worth? The scenario favoured under the existing joint venture

Low metal prices, Gécamines actual 25% stake

Equity split	25% Gécamines 75% KML
Metal prices	Copper $1.1/lb Cobalt $10/lb
Up front payment	0
Value (NPV @ 12% discount factor)	$143.2 Gécamines $145.5 KML
% share value*	26.7% Gécamines 27.1% KML
Project IRR Cost of capital/discount factor Margin	29.3% 12% 17.3%

*% share values relate to total NPV of the project; the balance is DRC's share (see section E, below)

The Kamoto project is worth $143.2 million (i.e., NPV) to Gécamines. The project is worth a similar amount – $145.5 million – to KML, giving an attractive IRR of 29.3% or 17.3% above the opportunity cost of capital. Hence, the initial impression is that the value generated by the project is equally divided under the scenario modelled in the Feasibility Study and Technical Report and reflected in the terms of the Joint Venture agreement. Gécamines receives well under a third of the estimated value of the assets it has contributed to the project, but there is no scope for an up front payment under this scenario if KML are to benefit from their investment. Indeed, the scenario favoured by KML justifies the principal tenets of the Joint Venture Agreement: 25% to Gécamines, and no up front payment made nor envisaged for the assets transferred. However, the apparent equity of this arrangement relies on the use of low copper and cobalt prices that are not realistic in terms of average historical prices.

(b) How much is the 25% equity stake really worth? A more realistic scenario

Realistic metal prices, Gécamines actual 25% stake

Equity split	25% Gécamines 75% KML
Metal prices	Copper $1.52/lb Cobalt $15/lb
Up front payment	0
Value (NPV @ 12% discount factor)	$351.2 million Gécamines $716.5 million KML
% share value*	21.4% Gécamines 43.6% KML
Project IRR Cost of capital/discount factor Margin	76.9% 12% 64.9%

*% share values relate to total NPV of the project; the balance is DRC's share (see section E, below)

When metal prices are increased in line with historic prices to more realistic levels, a significant part of the value realised from the project under the terms of the existing Joint Venture Agreement is captured by KML at the expense of Gécamines. Although the project's worth to Gécamines improves, the state mining company receives a significantly smaller share (i.e., 21% compared to 44% for KML) of the project's value – which, at $351.2 million, is also worth considerably less than the value of the assets it has contributed to the project – and under the existing Joint Venture, it receives no up front payment for the assets it has transferred. In comparison, the worth of Kamoto to KML increases dramatically to $716.5 million or over twice the value received by Gécamines. This scenario is much closer to the prevailing scenario at Kamoto: in other words, Gécamines is bound into a Joint Venture Agreement based on unrealistically low metal prices and no up front payment when, in reality, prices are much higher. A disproportionate amount of the value generated by the Kamoto project accrues to KML.

D. Arriving at a fair deal for Gécamines

In order to arrive at an equitable deal for both parties, there are two possible solutions: the first is for KML to make a one off, balancing payment to Gécamines; the second is for Gécamines to increase the amount of equity it holds in the project.

1. A balancing payment

Taken together, the worth of the Kamoto project to Gécamines, when combined with an up front balancing payment, should be equivalent to the book value of the assets the state owned mining company contributed at the outset. This combination of up front payment and present value can again be modelled for different metal prices: the scenario considered here uses realistic prices.

Equity split	25% Gécamines 75% KML
Metal prices	Copper $1.52/lb Cobalt $15/lb
Up front payment	$266.3 million
Value (NPV @ 12% discount factor)	$589 million Gécamines $716.5 million KML
% share value*	31.3% Gécamines 38.1% KML
Project IRR Cost of capital/discount factor Margin	76.9% 12% 64.9%

*% share values relate to total NPV of the project; the balance is DRC's share (see section E, below)

Using this scenario, Gécamines receives a total equivalent to $589 million for the assets it has contributed to the project, a figure that is in line with a plausible value for the plant, equipment and metal reserves, at a reasonable discount. At the same time, KML still receives a somewhat advantageous split of the value generated, i.e., 38% compared to 31% for Gécamines.

2. An increased stake for Gécamines

Equity split	40% Gécamines 60% KML
Metal prices	Copper $1.52/lb Cobalt $15/lb
Up front payment	0
Value (NPV @ 12% discount factor)	$528.5 million Gécamines $539.1 million KML
% share value*	32.2% Gécamines 32.8% KML
Project IRR Cost of capital/discount factor Margin	76.9% 12% 64.9%

*% share values relate to total NPV of the project; the balance is DRC's share (see section E, below)

Again using realistic metal prices, rather than Gécamines receiving a one off balancing payment, it is possible to model an increased equity holding for Gécamines that results in the state owned mining company deriving fair value from Kamoto over the duration of the project. Of course, Gécamines holding should only be increased to the point where the Kamoto deal remains attractive for KML. On this basis, it would appear that a fair distribution of equity is 40% to Gécamines and 60% to KML. This still allows KML to derive a value of $539 million from the project. At the same time, the project is worth $528 million to Gécamines, which is in line with with a plausible worth of the plant, equipment and metal reserves transferred, at a reasonable discount. In other words, both parties derive an approximately equal share of the value from the project.

E. The wider benefits to the DRC: a justification for the existing joint venture?

So far the analysis has dealt with the fairness of the KCC Joint Venture in relation to Gécamines and the private partners. From this standpoint, it is apparent that, given the significantly underestimated metal prices and the zero value placed on the assets transferred by the state owned company for its 25% stake, the deal is unfair to Gécamines. However, KML has consistently argued that the Kamoto project should be seen in the wider context of contributing to the rebuilding of the Congolese economy and the reconstruction of the country. Clearly investment in DRC is vital: it will ultimately provide tax revenue (both corporate and income tax) to central government, create waged jobs and foster a domestic market for goods and services. Such factors need to be taken into account when assessing the wider benefits of the Kamoto project, in order to establish to what extent, if any, they offset the existing poor deal for Gécamines.

Katanga Mining is planning to invest $675 million in the Kamoto project.[57] The company estimates that the project over its twenty year lease will contribute almost $2.2 billion in taxes, royalties, wages and other spending to the DRC economy.[58] Ultimately, 2,500 people will be employed during the operational phase, with 'double that number indirectly employed in the supply chain.' The company also points to 'a significant multiplier effect as increased consumer spending supports local businesses.' The initial redevelopment has created 1,700 jobs and the company claims that, even at current levels of employment, $950,000 a month is injected into government and the local economy.[59] As of the beginning of 2007, KML estimated its contribution to date into the DRC economy at $10.4 million, of which expenditure on locally sourced goods accounted for $5.1 million and 'payroll and social support' $4.6 million.[60] No detailed breakdown of social expenditure per se to date or in the future is given: the focus is to be upon 'strategically high impact, self sustaining projects – healthcare & education and training.'

It is, of course, pertinent to note that an improved deal for Gécamines will not, of course, adversely effect many of these wider benefits: job creation, social expenditure, revenue streams from taxation and royalties.

While KML has provided little or no data or explanations of how it has calculated the wider benefits it cites, the expert model can again be used to determine the relative worth of the Kamoto project not only to the project partners, but also to the DRC government. Again, this value alters depending on the metal prices used and whether or not a balancing payment is made for the assets transferred. The following scenario is used: a 25% share for Gécamines, with no up front payment (as under the current joint venture contract), with three price different price levels of $1.10/$10/lb copper/cobalt (the base case in the Feasibility Study), $1.52/$15/lb copper/cobalt (based on historic prices) and $1.25/$10/lb copper/cobalt. This latter scenario is added because these prices are used by KML in its February 2007 presentation when calculating returns for the DRC government.[61]

Value (NPV @ 12% discount factor) $US million % of total	**Metal prices Copper/Cobalt $US/lb**		
	1.10 10	1.25 10	1.52 15
KML	145.5 27.1	274.4 35.2	716.5 43.6
Gécamines	143.2 26.7	189.6 24.3	351.2 21.4
DRC Government	248.1 46.3	316.7 40.6	576.3 35.1

It should be noted that increasing metal prices from the low levels used in the Feasibility Study and Technical Report, through the conservative prices used in KML's February 2007 presentation, to realistic levels based on historic data, results in a smaller proportion of the project's value accruing to the DRC Government (i.e., through taxes and royalties) and a larger proportion accruing to KML as the private sector partner.

F. Erring on the side of caution: final considerations

The object of modelling the returns and worth generated for each of the project partners at Kamoto is to obtain an independent assessment of the fairness or otherwise of the joint venture agreement. Considerable care has been taken to avoid using base data that would result in overstating the case for renegotiation in favour of Gécamines. Indeed, a conservative value has been given to many of the variables:

- The realistic, historically based, copper and cobalt prices used throughout this assessment are well below current prices for copper and cobalt. As of the end of the first quarter of 2007, copper and cobalt prices were 3.31/32 US$/lb respectively.[62] Current prices may rise or fall. For as long as prices remain high, KML will benefit from the lion's share. Hence the call for any redistribution based on realistic prices is reinforced should high metal prices persist.

- The opportunity cost of capital or discounting factor of 12% used here in the analysis is stringent, in fact more so than the 6% discounting factor used by KML in the Technical Report and Feasibility Study. Running the model based on the latter figure of 6%, as used by the company, would further increase the IRR and skew the distribution of net present value towards KML and away from Gécamines.

- Estimating a value for the Kamoto assets is based upon average annual production figures of 115,000 tonnes copper and 6000 tonnes cobalt. However, this level of production will leave 26% of proven and probable copper reserves (765,906 million tonnes) and 60% of proven and probable cobalt reserves (174,659 million tonnes) untouched. In other words, the in ground assets are worth considerably more than allowed for, should annual production increase.[63]

- Moreover, since the Feasibility Study and Technical Report were completed, KML has revised upwards both the extent and grade of the copper and cobalt ores. Proven and probable ore grades for both the Kamoto underground mine and the T17 open pit mine increased significantly.[64] The copper grade at Kamoto increased by 23.7% to 3.86% and cobalt grade increased by 33.3% to 0.48%. The amount of proven and probable ore reserves has increased by 399,000 tonnes.[65] Again, in the RAID analysis, the lower figures from the Feasibility Study and Technical Report are used.

- The effect of improved ore grades is to increase both the amount of copper and cobalt that can be processed and produced – by 30 per cent and 63 respectively in the first three phases of operations to 2010. According to the CEO of KML: "This improved production profile creates opportunity to reduce the already low cost of production projected from the feasibility study. We expect our net cash flow in the early stages of the project to improve and the financial benefits for all stakeholders to increase." As the model has been run using the higher production costs from the Feasibility Study and Technical Report, it would be necessary to run it again using the revised figures in order to assess the distribution of these benefits between KML, Gécamines and the DRC government.

- Account has only been taken here of proven and probable reserves. Figures from the company suggest that measured and indicated resources – that is, estimates of resources which may turn out to be underground – could amount to as much as 2.4 million tonnes of copper and 270,000 tonnes of cobalt.[66]

III. Conclusion: justifying the call for renegotiation of the Joint Venture Agreements

- KCC, Gécamines and KML, appear to have underestimated the long term copper price (1.10$/lb instead of 1.52$/lb) and the cobalt price (10$/lb instead of 15$/lb) when compared with prices based on real historical data.

- Hence the IRR for the project is significantly increased to 76.9%, which compared to a 12% opportunity cost of capital, leaves a margin of 64.9% to the project sponsors.

- However, KML, as the private partner, captures a disproportionate amount of these returns because the 25% stake in the project owned by Gécamines under the existing agreement does not reflect the true value of its contribution to the project.

- It is a matter of serious concern that the considerable value of the assets – the reserves of copper and cobalt and the plant and equipment – brought to the project by Gécamines have never been properly assessed. Comments by the KML's CEO suggest that, when compared to a greenfield site, and after taking into consideration the cost of refurbishment, these assets are worth in the region of $570 million.

- Modelling the worth of the Kamoto project using realistic metal prices produces a net present value to KML of $716.5 million and to Gécamines of $351.2 million. Not only is the NPV accruing to Gécamines worth considerably less than the value of the assets it has contributed to the project, but the state owned company receives a disproportionately low percentage of the value created – less than half that received by KML.

- The imbalance in the distribution of the benefits from the Kamoto project can be redressed either by an up front payment to Gécamines or through an increase in its equity stake in the project. Using realistic metal prices in the model suggests that an up front payment in the region of $266 million or an increased equity stake for Gécamines of 40%. Both scenarios would result in a broadly equitable distribution of the NPV of the project, albeit slightly more favourable to KML.

- Increasing metal prices from the low levels used in the Feasibility Study and Technical Report, through the conservative prices used in KML's February 2007 presentation, to realistic levels based on historic data, results in a smaller proportion of the project's value accruing to the DRC Government (i.e., through taxes and royalties) and a larger proportion accruing to KML as the private sector partner.

- An improved deal for Gécamines will not, of course, adversely effect many of these wider benefits: job creation, social expenditure, revenue streams from taxation and royalties.

IV. Recommendations

Both a former and present chief executives of Gécamines have stated that consideration should be given to the review and renegotiation of the joint venture contracts. Robert Crem has advocated the "revocation or suspension of mining contracts and conventions under negotiation or signed" and "[t]he examination and audit of these contracts and/or conventions as a condition for their implementation, together with their technical, commercial and financial plans with a view to their eventual revision or annulment."[67] In an interview published in July 2006 by the Financial Times (FT), Paul Fortin, the incumbent head of Gécamines, confirmed that there is a possibility some of the mining contracts could be renegotiated.[68] He also stated that if Gécamines enters into new joint ventures, it would be through open tenders. While Fortin acknowledges that the annulling of contracts could undermine the DRC's development prospects, he states that if companies failed to produce then "we will cancel the contract, we will apply to court." Finally, and most importantly, the DRC mines minister, Martin Kabwelulu, announced as recently as 27 March 2007 that government officials must "suspend, until further notice, all negotiations aimed at the conclusion of new partnerships as long as the government is conducting a process of reviewing existing contracts."[69] On March 7 2007, Kabwelulu announced that that he had established a commission to review all mining deals with the aim of amending those deemed unfair to the Congolese state.

There currently appears to be the political space for the renegotiation, where necessary, of joint venture contracts that are genuinely disadvantageous to Gécamines or the Congolese state. In the light of this, and in the light of the current analysis, RAID recommends that:

- This or a similarly rigorous model should be run for the other joint venture projects, including with Nikanor and with Tenke Mining/Phelps Dodge, to establish whether or not there is an equitable distribution of the project benefits between the parties. Nothing precludes the private companies, Gécamines, the World Bank or the Ministry of Mines from carrying out such an analysis. The results of such an analysis should be made public.

- Given that one of the most important variables is the price of copper and cobalt the base rate should be set by an independent expert, possibly the World Bank.

- The returns and value of the Kamoto project should be re-modelled, taking into consideration the improved production figures and reduced costs.

- The value of the assets that Gécamines brings to each of the joint venture projects should be properly audited.

- Based on the current modelling exercise, the terms of the existing KCC Joint Venture Agreement should be renegotiated so that they more equitably reflect Gécamines contribution to the project. Either the latter's equity stake should be increased or KML should make an up front payment made to the state owned mining company.

- Based on the results from an equivalent model, the other joint venture projects, including those with Nikanor and with Tenke Mining/Phelps Dodge, should be reviewed to determine the relative distribution of the project benefits between the parties to establish whether these are commensurate with their respective contributions.

- Clearly there is a need for a much wider review that should include the equally problematic contracts related to gold, diamonds and other minerals. For this reason the

Congolese Government's announcement that it will review all mining contracts is welcome with the proviso that:

- i) it is not simply an exercise designed to impose arbitrary and additional levies on private companies[70]; and
- ii) that the Government, given the past failure to establish a credible independent and functioning commission to validate mining titles, to show its good faith, accepts the help of an international body of experts, nominated by the World Bank, to conduct the review.

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[1] Arthur Ditto, Business News Network, The Street, Power Breakfast, TV interview, March 15, 2007. Available at:

<http://www.bnn.ca/servlet/HTMLTemplate/!robVideo/robtv0726.20070315.00049000-00049003-clip4/h/220asf/true//>.

[2] Note Circulaire No 001 CAB.Mines/01/03/2007 du 27 MARS 2007 : « Dans son discours a l'Assemblée Nationale, le 22 février 2007, Son Excellence Monsieur le Premier Ministre a pris l'engagement devant la Nation de procéder a une relecture critique des contrats de partenariat conclus par les entreprises publiques et paraétatiques minières. »

[3] Note Circulaire No 001 CAB.Mines/01/03/2007 du 27 MARS 2007 : … « En référence aux dispositions de l'article 10 littera f de la Loi no 007/2002 du 11 juillet 2002 portant Code Minier, le Ministre des Mines qui exerce la tutelle des institutions, organismes publics ou paraétatiques se livrant aux activités minières et aux travaux de carrières.. Instruit les gestionnaires publics et paraétatiques du secteur minier de suspendre, jusqu'à nouvel ordre, toute négociation visant la conclusion de nouveaux partenariats des lors que le Gouvernement a lance une procédure de relecture/revisitation des contrats existants ; Demande la transmission a son cabinet, au plus tard le 04 Avril 2007, de tous les éléments relatifs aux contrats de partenariats conclus a ce jour. »

[4] Moneyweb, 'D-Day in the Congo,' 2 April 2007. In an official announcement at the end of March 2007, the AIM-listed mining company, Nikanor, which is redeveloping the gigantic KOV copper-cobalt mine, noted that the DRC government had confirmed that "a review of all mining contracts entered into during the period of the previous transitional government will take place." Available at:: <http://www.moneyweb.co.za/mw/en/page1329?oid=84086>.

[5] Arthur Ditto, Business News Network, TV interview, op. cit..

[6] 11 11 11, Broederlijk Delen, RAID et.al, *Public-Private Partnerships in the DRC's mining sector: Development, good governance and the struggle against corruption,* Brussels 13 March 2007. Available at: <www.11.be/fairshare>.

[7] World Bank, Private Sector Unit, Africa Region, *Economic and Sector Work: Reforming Public Enterprises through Improved Governance,*10 March 2004, 'Economic and Political Background,' paragraph 4.

[8] International Crisis Group, *Crisis Watch*, No. 44, 1 April 2007.

[9] International Monetary Fund, 'Democratic Republic of the Congo: Staff-Monitored Program,' *IMF Country Report*, No. 06/259, July 2006, Table 2, p.16. Available at:: <http://www.imf.org/external/pubs/ft/scr/2006/cr06259.pdf>.

[10] Joe Bavier, 'Congo must contain spending as economy slows – IMF,' Reuters, 13 March 2007. Available at: <http://today.reuters.co.uk/news/CrisesArticle.aspx?storyId=L13638442>.

[11] See UK Department for International Development, <http://www.dfid.gov.uk/countries/africa/congo.asp>.

[12] 56 million tones of copper out of total of 480 million and 3.4 million tonnes of cobalt out of a total of 7 million. See, respectively, Paul Fortin, Chief Executive of Gécamines, *La Stratégie de la Gécamines*, presentation, Liege, Belgium, 12 January 2007; US Department of the Interior, US Geological Survey: *Mineral Commodities Summaries 2006*, page 53 (available at: <http://minerals.usgs.gov/minerals/pubs/commodity/copper/coppemcs07.pdf>) and; *Mineral Commodities Summaries, January 2007*, p.195, Appendix C (available at: <http://minerals.usgs.gov/minerals/pubs/mcs/2007/mcsapp07.pdf>).

[13] See Extractive Industries Transparency Initiative: <http://www.eitransparency.org/section/countries/_democraticrepublicofcongo>.

[14] Idem.

[15] IMF, 'Statement at the Conclusion of an IMF Mission to the Democratic Republic of the Congo,'

Press Release No. 07/55, 19 March 2007.

[16] Fatal Transactions – International Peace Information Service, IPIS , *The State vs. the people*, p. 28-33.

[17]World Bank, *Reforming Public Enterprises*, op. cit., paragraph 78.

[18] On 15 July 2005, the Transitional Government gave its support to two joint venture agreements, which were concluded in February and September 2004 respectively by Gécamines with Kinross Forrest Ltd (KFL) and Global Enterprises Corporate Ltd (GEC). These joint ventures were for the exploitation of the mines and ore bodies of Kamoto, Kamoto Oliviera Virgule (KOV), Kananga and Tilwezembe as well as the concentrators and metallurgical processing plants situated in the Kolwezi and Likasi regions. On 4 August 2005, President Joseph Kabila issued a presidential decree ratifying these agreements. In September 2005 the DRC Government signed an Amended and Restated Mining Convention (ARMC) with Tenke Fungurume Mining, Lundin Holdings and. Phelps Dodge Corp, the latter had been authorized to acquire shares in the TMF venture. In 1996, Lundin Holdings Ltd had entered into a joint venture with Gecamines and established Tenke Fungurume Mining (TFM).

TFM will mine the Kwatebala, Goma and Kavifwafwalu deposits for an initial 20 year period, and will process ore for another 40 years.

[19] Estimation of IPIS based on: Katanga Mining Limited, 'Katanga Announces Higher Grade Reserves,' *News Release*, No. 2/2007, 22 February 2007 (available at: <http://www.katangamining.com/news/news-releases/pdf/070222.pdf>); Global Enterprises Corporate Ltd , *Technical Report*, 26 June 2006 (incorporated in Nikanor Prospectus, available at : <http://www.nikanor.co.uk/downloads/Prospectus.pdf)>; Kalala Budimbwa, *Valorisation de la Gécamines engagées dans les contrats: Chemaf, KMT Tenké Fungurumé, KCC; GEC; et necessité de révision de ces contrats pour protéger les intérêts de las République,* Kinshasa, Septembre 2006.

[20]IMC Group Consulting Ltd, *Restructuration de la Gécamines (Phase 2),* Kinshasa, 26 Septembre 2003, 'Présentation et recommandations preliminaires'.

[21] World Bank, Africa Region Poverty Reduction and Economic Management Unit (AFTP3), *Implementation Completion Report (IDA-36600) on a Credit in the Amount of US$450 Million to the Democratic Republic of Congo for an Economic Recovery Credit*, 18 June 2004, paragraph 7.4.2.

[22] Reuters, 'Congo must contain spending as economy slows – IMF,' op. cit..

[23] IMF, 'Statement at the Conclusion of an IMF Mission to the Democratic Republic of the Congo,' op. cit..

[24] Pierre Ratcliffe, a retired mining engineer, has some 20 years experience of working as a consultant for SOFREMINES (a French company which is part of the SOFRESID group), on whose behalf he carried out technical and financial evaluations of international mining and metallurgical complexes. He has also worked as a mining specialist for the African Development Bank and the European Investment Bank where he was responsible for the technical and financial evaluations of mining projects. One of his assignments for the Banque de Paris et des Pays Bas (Paribas) concerned the privatisation of the Balkashmed copper complex in Kazahstan. M. Ratcliffe states: 'The processing of all data accessed on the Internet, notably data published by KML on their website, is used to undertake an independent economic assessment, with a view to understanding the sharing of profits (net surplus cash generated over the 20 year project lifetime). The methodology used is my own and the results of the assessment, presented in a neutral form, are [a] matter of opinion over future development.'

[25] *Technical Report for Kamoto Copper Company, Kolewezi, Katanga Province, Democratic Republic of Congo,* Prepared for Katanga Mining Limited, compiled by McIntosh RSV LLC, 16 May 2006 (Revision 1). Available at: <http://katangamining.com/operations/pdf/060516-43-101-report.pdf>. See also, Hatch, *Kamoto Copper Company, Executive Summary Report for Kamoto Development Project*. Available at: <http://katangamining.com/operations/pdf/060519-feasibility-study.pdf >.

[26] http://www.examiner.com/a-618934~Shareholders_approve_Freeport_McMoran_s_takeover_of_Phelps_Dodge.html

[27] *Convention de Joint Venture 632/6711/SG/GC/2004*, 7 February 2004.

[28] *Journal Officiel de la Républiqe Démocratique du Congo*, première partie – n° 21, 1 November 2005.

[29] The initial period can be extended by two more periods of ten years each.

[30] The Kamoto mine comprises Kamoto Principal and Etang. The DIMA open-pit mines are Dikuluwe, Mashamba East and Mashamba West. On November 4, 2005 KCC signed a Leasing Contract with Gécamines, obtaining the exclusive right to perform mining activities on the above mentioned sites that are under mining permit n° 525. For the Musonoie T17 site, which is under mining permit n° 4958 an additional leasing contract was signed. (See

Katanga Mining Limited, *Technical Report*, op. cit., p.10, '3.0 SUMMARY' and pp.171 ff., '26.1 Copies of mineral Concession Certificates').

[31] Katanga Mining Limited, 'Katanga Announces Higher Grade Reserves,' op. cit..

[32] Katanga Mining Limited, *Building a leader copper company*, presentation at INDABA, South Africa, 7 February 2007.

[33] Katanga Mining Limited, 'Katanga Awards Important Infrastructure Contracts,' *News Release*, No. 1/2007, 31 January 2007. Available at: <http://www.katangamining.com/news/news-releases/pdf/070131.pdf>.

[34] See Katanga Mining Limited, 'Katanga Announces Improved Production Profile,' *News Release*, No. 3/2007, 22 March 2007. Available at:

<http://www.katangamining.com/news/pdf/PR%20-%20Production%20profile%20March%2022%202007.pdf>. There are four phases of the project, each with its timing and production targets.

[35] <http://www.katangamining.com/about/structure.html>.

[36] Idem.

[37] Katanga Mining Limited, *Technical Report*, op. cit., '6.4 The nature and extent of title,' p. 27.

[38] Katanga Mining Limited, 'Notice of Change in Corporate Structure,' 12 October 2006. Available at: <http://www.sedar.com/DisplayCompanyDocuments.do?lang=EN&issuerNo=00008895>.

[39] Government of Bermuda, Review of Companies Register: <https://www.roc.gov.bm/roc/rocweb.nsf/public+register/k+public+companies>.

[40] Company profile Katanga Mining Limited: <http://www.sedar.com/DisplayProfile.do?lang=EN&issuerType=03&issuerNo=00008895>.

[41] IRR applies to gross margins, i.e., sales less direct costs.

[42] The investment costs, known as the project's cost of capital is made up of two components: the cost of equity and the cost of debt (i.e., interest payments on money borrowed for investment in the project).

[43] The cash buyer price for grade A copper on the London Metal Exchange (LME), 4 April 2007, was $7,304/tonne. To calculate $/lb, a conversion factor of 2.2046 lbs per kilogram is used. The cobalt price is from the Cobalt Open Sales System (COSS) for April 2007, posted on 5 April 2007 (see: <http://cobalt.bhpbilliton.com/>). COSS prices are for Zambian-grade material (99.3 percent).

[44] Stated in $US dollars at 2005 values, using US GDP deflators.

[45] Based on annual average production of 115000 tonnes of copper and 6000 tonnes of cobalt.

[46] See Katanga Mining Limited, *Technical Report*, op. cit., section 6.4.

[47] Idem.

[48] Ibid.

[49] Katanga Mining Limited, *Technical Report*, op. cit., p.14.

[50] Idem.

[51] 'Katanga Announces Higher Grade Reserves,' op. cit..

[52] Katanga Mining Limited, *Technical Report*, p.15.

[53] Arthur Ditto, President and Chief Executive Officer of KML, interview, Wall Street Reporter, 23 February 2007, available at : <http://www.wallstreetreporter.com/profile.php?id=22932>.

[54] The value of the assets is estimated according to their book value in the accounts, their physical state and capacity to resume operations, and allowing for a reasonable discount.

[55] World Bank Office Memorandum (e-mail), 'Contracts between Gécamines and Private Companies,' from Craig Andrews, Principal Mining Specialist, to Pedro Alba, Country Director for DRC, 8 September 2005. The Craig Andrews memo was leaked to the Financial Times, which published an article on a review of key joint venture contracts between Gécamines and private partners. See Dino Mahtani, 'Transparency fears lead to review of Congo contracts,' *Financial Times*, 3 January 2007, available at:

<http://www.ft.com/cms/s/c918d3a2-9a8a-11db-bbd2-0000779e2340,_i_rssPage=abb716b0-2f7a11da-8b51-00000e2511c8.html>

[56] Arthur Ditto, President and Chief Executive Officer of KML, interview, Wall Street Reporter, op. cit.

[57] Katanga Mining Limited, *Revised production schedule and costs*, 2 April 2007, available at: <http://www.katangamining.com/news/pdf/Website%20tables%20final%20v2.pdf>. In the Feasibility Study, the figure for investment was $658 million.

[58] The breakdown of this total: DRC royalty payments $173.54 million; Gécamines royalty payments $123.231 million; Tax on income $1194.181 million; dividend tax $242.724 million; capital equipment duties $15.657 million; import duties consumables $16.994 million; payroll & social $413.787 million. Total $2180.114 million. See *Building a leader copper company,* op. cit..

[59] See, respectively: Arthur Ditto, President and Chief Executive Officer of KML, interview, Wall Street Reporter, op. cit.; and *Building a leader copper company,* op. cit., p.18.

60 Contributions to date: locally sourced goods: $5.097 million; import duties $0.69 million; payroll & social support $4.626 million. Total $10.413 million.

[61] *Building a leader copper company,* op. cit., p.20.

[62] *Intra*, endnote 43.

[63] Increasing production will depend on many factors, including, for example, the capacity of the Luilu hydrometallurgy plant if all concentrate is to be processed in-house.

[64] 'Katanga Announces Higher Grade Reserves,' op. cit..

[65] *Revised production schedule and costs*, op. cit..

[66] Katanga Mining Limited, *Technical Report*, op. cit., Table19-19, p.85.

[67] Robert Crem, Honorary Chairman and former Chief Executive of Gécamines, Letter to Paul Wolfowitz, President of the World Bank, 26 February 2006.

[68] *Financial Times*, 'Congo mining chief puts private sector contracts under spotlight,' 20 July 2006.

[69] *Mining Journal Online*, 'DRC Government suspends mining deal talks,' 2 April 2007, available at: <http://www.mining-journal.com/Breaking_News.aspx?breaking_news_article_id=2163>.

[70] World Bank, REFORMING PUBLIC ENTERPRISESTHROUGH IMPROVED GOVERNANCE, March 2004; paragraph 78: "A number of amendments have been introduced [in the new Mining Code] including the mandatory requirement for the state to hold at least a 5 percent equity stake in all companies and the right to appoint the chairman of the board. Such amendment will prove detrimental to the reform and will have to be addressed."