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Meeting the Challenges of Mining in Africa

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Strengthening Africa's
economic performance



Executive Summary

Zambia has turned its failing copper mining industry around through the privatisation of Zambia Consolidated Copper Mines in 2000, halting a US\$1 million loss per day and preventing per capita GDP from decreasing further. Since then, First Quantum Minerals Ltd., through its operation of two of Zambia's largest mines, has had a profound impact on raising copper production and contributing to the development of the country. Following his 20-year experience working for First Quantum in Zambia, the author shares the challenges he encountered in operating a mine in Africa and his recommendations to enable a thriving private sector. These include governments recognising mining as a long-term investment and thus ensuring stable tax rates for current and future investors; maximising natural resources directly and indirectly, beyond their inevitable depletion; encouraging small investments that add to upstream beneficiation processes; stamping out corruption through transparent government tenders; striving for bureaucratic efficiency, in particular easing the obstacles to the establishment of new businesses; lowering the cost of inputs such as electricity and the movement of goods across borders; treating all stakeholders as equal under the law; and most notably, prioritising basic education and upskilling as the key groundwork to a modern economy. These challenges can be overcome, and the recommendations can be considered by African governments with a steadfast forward-looking mindset, towards improvement and growth of their economies and their people in future years.

First Quantum Minerals Ltd. is the largest producer of copper in Zambia. The company has single-handedly been responsible for uplifting annual Zambian copper to its pre-nationalisation peak. Since mines in Zambia were privatised by 2000, First Quantum has ploughed more than US\$5.7 billion worth of investments into developing its Zambian mines, driving up copper production towards the magical one million tonne mark. First Quantum currently operates two of the largest mines in the country: Kansanshi near Solwazi, the largest copper mine in Africa, which began operating in 2005 and produced 250 800 tonnes in 2017; and Kalumbila which was opened commercially in 2016 and produced 190 700 tonnes in 2017. These two mines have created nearly 10 000 full time high paying jobs for Zambians, as only private sector investment can. This is an edited version of the speech that Matt Pascall, First Quantum’s Operations’ Director, gave at the ‘Copper Cobalt Africa’ Conference, hosted by the Southern African Institute of Mining and Metallurgy (SAIMM) in Livingstone, Zambia, from 9 to 12 July 2018.

Winston Churchill said that ‘a pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty’. There are many difficulties to mining in Africa, but being optimists we prefer to view them as challenges that can be overcome. I would like to highlight below the components for a successful mining investment, particularly in Africa.

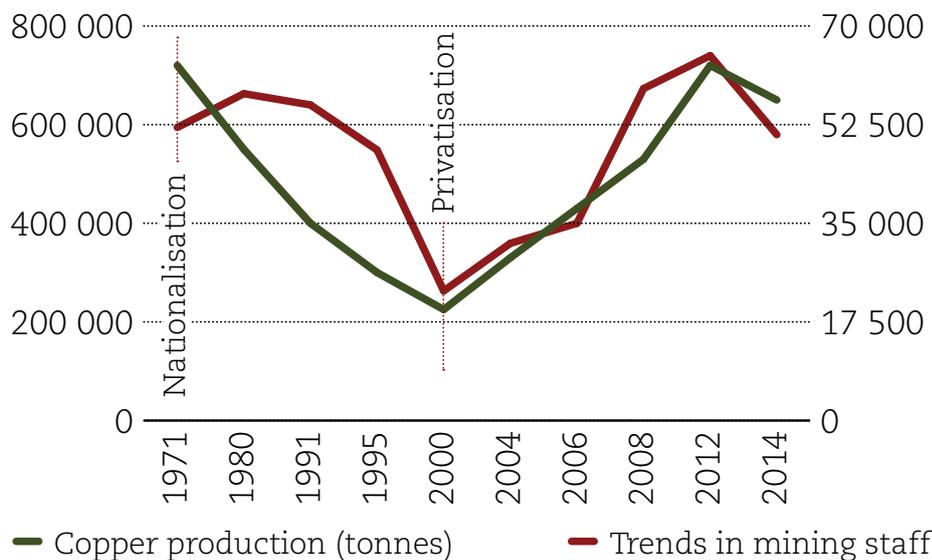
Stability

Mining investment is a long-term business. Exploration alone is a lengthy process and does not guarantee success, many exploration geologists go their whole lives without a discovery. Once a viable discovery is made, the studies, evaluation, fundraising, permitting and construction that follow can take 5–10 years. And depending

on metal prices, it can be many years before the capital expenditure on a project is recovered, let alone gives a reasonable return: in the 24 months from February 2016 to February 2018, for example, copper prices rose from US\$4 500 per tonne to US\$7 000. Six months later, they had dropped to under US\$6 000 again.¹

In 2000, the Zambian government privatised most of the Zambian Consolidated Copper Mines (ZCCM). This decision was motivated by the precipitous cost of nationalisation to the Zambian economy: the mines were losing US\$1 million a day and had had very limited replacement capital spend over a long period, costing at least US\$45 billion in national revenue for the 25-year nationalisation period. Real GDP per capita had fallen 3.6 per cent per year from US\$1 455 in 1976 to US\$1 037 by 1987, and then to US\$892 by 2000.²

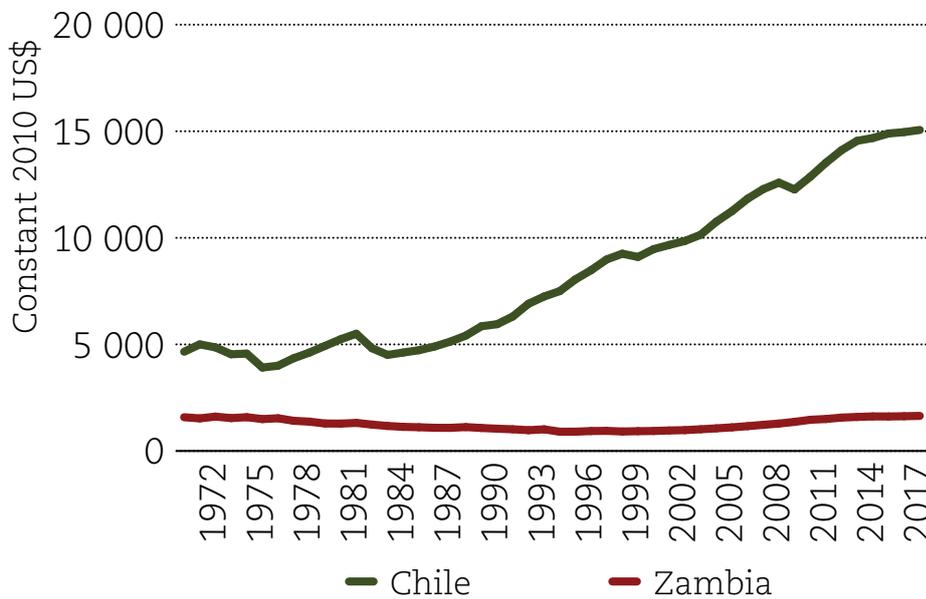
Trends in Zambian Copper Production & Mine Employment



By comparison, Chile, which produced less copper than Zambia in 1970, rapidly increased its production over these four decades to become the world's leading producer, nudging 5.5 million tonnes and comprising one-third of global production. Zambia comprises just 5 per cent, shrinking from 14 per cent in 1970. While a decline in the copper price after 1973 did not help either country, Chile positioned itself to take full advantage of the doubling of world copper demand from 1990. Today Chile has a GDP nearly ten-fold that of Zambia, and a poverty rate of less than 3 per cent to Zambia's 42 per cent.³

As a result of the decades of under-investment, the ZCCM mines were extremely run down, rendering privatisation, more appropriately, a sale of liabilities than of assets. The face-value sale price of the mines thus appeared low. But, the government saved US\$1 million per day, effective immediately in an environment which saw metal prices continue to drop for another three years to all-time lows, undoubtedly causing further daily losses. Since privatisation, mining companies in Zambia have provided 80 per cent of export income, 12 per cent of GDP and around one-third of all tax income.⁴ It is unknown to many that the

GDP per Capita Comparison: Chile and Zambia



new owners of the Zambian mines also absorbed the historic retrenchment liabilities for the entire ZCCM work force, valued at well over US\$100 million, without which all previous ZCCM workers would have lost their retrenchment and retirement benefits.

Relatively low tax and royalty levels were written into so-called Development Agreements by the Zambian government to induce would-be buyers. These agreements, together with Power Supply Agreements, had a 15-year stability period guaranteed in order to attract investors. Yet they were unilaterally abrogated in 2008. Since then tax,

royalty and capital redemption rates have been changed at least ten times with the worst renditions being as follows:

- ▶ A windfall tax in 2008 that varied as a percentage of revenue based on copper price, with a maximum of 75 per cent of revenue if prices went above US\$3.50/lb. At prices slightly above this rate, mines would lose money and would need to shut down until metal prices dropped.
- ▶ In 2016, a 20 per cent Mining Royalty Tax on gross revenue. This was, however, dropped after six months as it became apparent the industry was in severe distress.

Since early 2017, tax and royalty rates have been unchanged, however, frequent upward changes in other government-supplied services, such as power, dispel the illusion of stability to investors. Furthermore, recent pronouncements by senior cabinet members about the ‘need to review tax rates’ do not inspire investor confidence. Ironically, for 15 years since 2002 the Democratic Republic of the Congo (DRC) adhered to the Mining Code tax rates as prescribed by the World Bank. During this period the country, from a much lower base, overtook Zambia as the continent’s largest copper producer. This did not last, however, and the DRC government has now changed tax rates, causing a familiar negative effect on mining investments.

Natural Resources

Many resource-rich developing countries remain poor. The irony cannot be lost that many of the world’s richest countries, by the same measure, would be resource poor. Japan, Germany, Switzerland, England, and South Korea are examples. The difference lies in the manner in which one defines ‘resources’. The greatest resource in many richer countries is not minerals, but the quality of its people and its institutions.

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The challenge for mining companies is that many African governments, in particular, expect the ‘wealth in the ground’ to disproportionately benefit the country. They do not consider the investment risk, the commodity risk, or the technology risk, and by so doing introduce the biggest risk of all: political risk.

Many companies in ‘rich’ countries are far bigger and wealthier than mining companies and sell their products at far greater margins, examples would be Apple, Amazon, Facebook, IBM,

and GE. The governments of these companies do not demand the payment of higher taxes whenever a new product with a higher profit margin is launched – and they do not implement royalties or windfall taxes. They are simply happy that companies are making profits on which the standard rate of tax will be paid. It is important to remember the bigger the profit, the bigger the tax. It does not make sense to single out mining companies and request higher tax rates at higher metal prices. This is not the behaviour of rich countries.

Mining, alongside farming, is often the pioneer industry into a country. The challenge for countries is to encourage further investment associated with the mining activity, directly and indirectly, while the mining resource lasts. This is how Johannesburg developed – it is Africa’s largest commercial city despite the depletion of its mines many decades ago.

Beneficiation

The view of ‘our mineral resources’ as a national treasure often goes hand-in-hand with a call for the beneficiation of the product in-country. It is clear here that the desire to add value in-country makes sense as it will lead to capital investment, jobs and most likely higher profit margins.

However, depending on the mineral, beneficiation is easier said than done. For example, the major down-stream products of copper are either copper cable or copper piping. While neither of these processes is technically that difficult, the resulting products fall into an altogether different market category to selling a bulk commodity. In Zambia’s case, if all the copper produced was turned into wire, internal demand would be less than 5 per cent of all copper wire produced – meaning 95 per cent of the copper wire would have to be exported. Here, the skill-set required to know where the market is, and what size and kind of cable is required, is far from that required to mine and produce bulk copper.

In Zambia, First Quantum has hoped to create an ‘upstream beneficiation’ process rather than a downstream one. To this end, we have managed to task a mill ball manufacturer to set up a factory at

Kalumbila. We have tried to support the development of indirect suppliers such as shops, banks, restaurants, and hotels. But for any of these spin-offs to take place, whether direct or indirect beneficiation, it is critical that governments create an environment that actively encourages small investments. Sadly, governments cry out for beneficiation. They fail to establish incentives to encourage the necessary investment, but then resort to coercion through legislation. Investors, with the option to go elsewhere, do not respond well to this coercion.

Corruption

Corruption is a scourge in any country. Any form of corruption distorts the market and, over time, reduces honest competition which ultimately leads to impoverishment of the majority of people at the expense of the few. Corruption is spoken about widely, but often hard to prove.

First Quantum has, however, been impacted directly by what presumably could only be corrupt practices on many occasions. Two large scale experiences were:

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In 2008, the government of the DRC chose to remove our Kolwezi Tailings mining license on the basis that we, and our fellow shareholders, the International Finance Corporation and Industrial Development Corporation, would not, like other companies, accept any change to the terms of our mining agreement. We lost the Kolwezi tailing project a few months before completion, despite having invested over US\$600 million. We initiated international arbitration and the government removed our license on the Frontier mine

in response, and gave us four hours to clear the site. The beneficiaries of these acts sold the assets to a London-listed company for US\$925 million. The losers, other than our shareholders, were the Congolese people. Kolwezi would have been the biggest cobalt producer in the world for the past decade, with many jobs and potentially over US\$3 billion paid in taxes, but has since not produced one ounce of metal. Frontier was the biggest taxpayer in the DRC's history, but has since been run to premature depletion.

A second direct exposure to corruption, or at least poor management of the worst example, was in Zambia during the construction of the 600km power line to Kalumbila. As First Quantum paid for the line, we should be entitled to see the official tender documents relating to its construction. These documents were withheld from us at the last minute, and the contract was awarded to a Chinese company for US\$245 million. Luckily, we had obtained sufficient information about the other tender prices to challenge this award in court. Our injunction was granted and we worked with one of the other tenderers to build the line for US\$84 million.

Both of these examples involve governments or their parastatal state utilities – one would wonder how many other government contracts are awarded on this basis.

Bureaucracy

Bureaucracy and corruption often go together. Corruption is not the exclusive preserve of governments, but the most corrupt deals often involve state expenditures. Of course, not all bureaucratic action involves corruption. Bureaucracy becomes problematic when officials use their power to slow down or even stop progress on a daily basis. At Kalumbila, for example, officials delayed the granting of land tenure for six years with no valid reason. This inaction prevented the creation of several thousand jobs through an investment loss of over US\$50 million in the service sector.

All government officials get paid through taxes raised from the private sector. You'd think that most civil servants would therefore encourage private sector investment. Most countries claim to be encouraging business, yet too often road blocks are imposed by officials in basic areas such as company registration, or countries require the completion of exhaustive documentation from a multitude of government departments, sometimes making mutually exclusive demands. Botswana and Rwanda are exceptions, as they only require two forms – one to register the company and one for the tax authorities. It is little wonder that these are viewed as the preferred destinations for major capital projects by overseas investors.

An example of bureaucratic madness was when First Quantum constructed a sawmill in Zambia to obtain value from trees that had to be cut down (with a heavy heart) to make way for the mine, roads, waste dumps, and tailings dams. We also built a carpentry shop and trained local people in high quality woodwork. But, the then-Minister of Forestry and Environment instructed us to shut down the sawmill and carpentry, which would have caused the loss of 150 jobs, as we had failed to fill in pages of requirements. He further reiterated that burning the trees would be acceptable and preferable. We could only continue our operations after the Minister of Mines intervened.

Stakeholders

Much has been written about stakeholders in business and how they should be all be involved and treated. Typically, stakeholders include the government, the investor, workers and unions, local residents, environmentalists, and NGOs. In our highly politicised world with an emphasis on political correctness, it is easy to overlook the fact that without the investor, no other stakeholder would have a role. The investor is the key player at the table.

In their election manifestos, governments around the world claim that during their tenure they will *create jobs*. The fundamental flaw in this claim is that real, net-tax paying jobs are created only through private sector investment.

Governments can create *employment*. Public salaries are dependent on taxes paid by the private sector. Even capital projects set up by the government depend on private sector taxes to fund them.

Investors are often seen as villains – the late Zambian president Michael Sata even referred to them as '*infesters*' in his 2011 campaign.⁴ Countries need to create investment climates using measures such as competitive tax rates, ease of setting up and doing business, labour laws that are conducive to hiring workers, stability, access to infrastructure at affordable rates, and others. Unfortunately, it is often expedient for political vote scoring to do exactly the opposite, especially surrounding the issues of hiring workers and the demands of unions.

The lucky few with jobs have an electoral voice, the poor masses who need jobs have none.

Education

One of the key requirements to operate in Africa is to train and up-skill the local workforce. This is indeed a worthy objective, but some skills, not least that of management itself, are products of experience and require more time. It is impractical to force timetables for the transfer of skills.

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The problems of up-skilling is compounded if basic education is lacking. Amongst other things, First Quantum has concentrated its Corporate Social Responsibility efforts on education. This covers pre-school, schooling, tertiary scholarships, artisan training, and training the local communities in skills such as Conservation Farming.

When we assessed schooling in Zambia and decided to build six schools, above sponsoring over 40 government schools surrounding our mines, we reviewed statistics on Zambian education standards and were shocked at the results.

Around 95 per cent of the local rural population was deemed to be functionally illiterate, and an even higher percentage was functionally innumerate. It was found that many qualified local teachers had a reading age of a 12-year-old. It has been (bureaucratically) difficult to hire expatriate teachers, which has meant that we had to build a Teacher Training College to up-skill local teachers as well.

The lesson here is that efforts to provide quantity should not compromise quality. Misplaced pride in preventing good foreign teachers from working in a country is definitely a loss. As always, there is an exception – Rwanda has acknowledged the critical nature of education and moved 90 per cent of its children to computer tablets. If Rwanda is able to achieve this, other African countries can do the same.

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The issue of malnutrition is associated with education. Some studies in Zambia have found that at least 45 per cent of children are malnourished to the extent that they are physically and/or mentally handicapped.⁶ This statistic is skewed: rural areas fare far worse than urban areas. At some government schools that First Quantum supports, we have given children a daily supplement containing vitamins, minerals and proteins and have seen their performance to improve dramatically. The situation is so dire that some children prefer to take the supplement home to share with their siblings.

It is often ignorance or poor education that leads to poor nutrition. Examples of this dire situation would include the use of 'slash and burn' agriculture, the use of mosquito nets to catch every last fish, the use of snares to wipe out every last animal, the use of fire to catch rodents. These activities constitute, at best, subsistence existences. Poverty begets desperation,

and desperation begets short-term thinking that leads to a downward spiral.

Logistics and Services

Africa is a huge continent with many land-locked countries. But, even those with sea access are not necessarily serviced with efficient port facilities. First Quantum projects in western Zambia (and in the DRC, when we were still there) had to be built at the end of a 2 600km road link, crossing three border crossings with most material purchased overseas. Naturally, these long supply lines increase the cost of imports and exports, and contribute to a competitive disadvantage that is made worse by bureaucratic inefficiency.

But, with the right attitude things can improve. Rwanda, again, found that it was taking more than two months for containers to move from East African ports to Kigali. President Paul Kagame made his ministers travel in vehicles themselves and record what took so long, to which they found scores of road blocks that all required some form of clearance. President Kagame placed pressure on neighbouring countries to clear the way, and now it takes three days for a container to cover the same distance. Conversely, in Zambia it still takes at least three days to clear a container at the border, while in Singapore it takes less than two minutes.

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In most countries, and Zambia is no exception, electricity is one of the most important government services. Ninety per cent of Zambia's power comes from amortised hydropower stations for which the Zambia Electricity Supply Commission (ZESCO), the electricity utility, charges high tariffs to cover costs. But costs are unknown as ZESCO never publishes its financial reports. Eleven years

ago, external consultants conducted a study that found an average ZESCO employee earned 64 times the national average.⁷ Power has become the biggest single cost of our operations – it is of little comfort that the DRC makes a bigger mess of even more hydropower potential.

Environmental Issues and Double Standards

Mines and mining are often viewed as environmental monsters desecrating the earth, and things that should be banned if there were an alternative way to make cars, iPhones, electricity, and other modern technologies. Unfortunately, every now and then a mine makes a serious environmental mistake that is used to smear the whole industry. However, the footprint of all the world's mines is less than that of Walmart's car parks in the United States alone. Car parks are environmental nightmares.

Since privatisation in 2000, four new smelters have been built in Zambia to meet World Bank standards, with emissions of 2 per cent to 3 per cent of SO₂. The smelter at Kansanshi is possibly the biggest that has ever been built from scratch. Prior to privatisation, the smelters at Mufulira, Nkana and Luanshya had zero per cent SO₂ capture, such that 100 per cent of their emissions fell directly onto surrounding communities. Ironically, there were no complaints of the awful pollution emitted during those 'good old days', whereas there is an outcry whenever there is a sniff of gas nowadays.

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These double standards, whether environmental, or other, certainly present one of the most difficult challenges of working in Africa. The concept of 'everyone is equal under the law', despite it being critical to success, is sadly lacking.

How to Address the Challenges

Many of the challenges facing companies, not just in the mining sector, are caused by the low level of general education. As mentioned previously, education affects basic requirements to human activity such as nutrition, which then worsens the capacity to receive education. Improving education is not simply a matter of spending more. Outside of welfare payments, South Africa spends the highest portion of its national budget on education, but the commitment of teachers and educationists to provide quality education is lacking, committing future generations to ignorance and poverty.

What is needed is a genuine desire to improve standards. Lowering the bar is not acceptable. This requires countries to look to the future and stop looking backwards. Leaders need to accept responsibility for the situation, to stop blaming something or someone else.

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Time has moved on since most African countries shed colonialism. Many inherited working infrastructure and systems, not the war-ravaged ruins of other countries in the 20th century, such as Britain, Finland, Italy, Germany, Japan and even Singapore and Hong Kong, all after World War II; South Korea after the Korean conflict; and Rwanda after the ghastly genocide. Within a single generation London, Helsinki, Rome, Tokyo and Munich hosted the Olympic games; Seoul within two generations; and Rwanda has been mentioned several times for the way it has put the past behind and moved on. But, progress in African countries remains slow or even negative in part because some still lament their past rather than face their future, and in part because countries lack the basic educational underpinnings of a modern society.

Countries must place value on education as the basic driver towards improvement.

Conclusion

In my years of experience working in Africa I have encountered many challenges from which I have developed some key learnings to share. Most critically, we need to improve the quality of education across the African continent for future generations. It is vital, too, to encourage private sector investment – without which there can be no new jobs. To do so, African governments must remove

the levels of bureaucracy required to establish private companies, remove the bureaucracy in the free flow of material, machines, goods, and people. Governments must set up competitive, clear and stable tax regimes. Governments must uphold the notion that every person is equal under the law, and stamp out corruption by ensuring all public tenders are fully transparent. We must not forget that our people are our primary resource, and so African governments must pay their (small) bureaucracy well to do their jobs well. Finally, we must learn to look ahead towards overcoming our challenges, towards improvement and growth, not backwards into the past.

Endnotes

1. www.infomine.com/ChartsAndData/ChartBuilder.aspx?z=f&gf=110563.USD.lb&dr=1y&cd=1
2. See Fraser, A. and Lungu, J. 2006. *For Whom the Windfalls? Winners & Losers in the Privatisation of Zambia's Copper Mines* at http://www.woek-web.de/web/cms/upload/pdf/kasa/publikationen/fraser_2006_for_whom_the_windfalls.pdf
3. <http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators>
4. <http://www.worldbank.org/en/news/feature/2016/07/18/how-can-zambia-benefit-more-from-mining>
5. See <https://www.newyorker.com/business/currency/china-zambia-and-a-clash-in-a-coal-mine> for Sata's use of the word 'infesters' during his 2011 campaign
6. See UNICEF. Update of the Situation Analysis of Children and Women in Zambia https://www.unicef.org/zambia/Updated_Situation_Analysis_of_Women_and_Children_In_Zambia.pdf
7. Revised ZESCO's Cost of Service Report to the ERB, (Task 13), March 2007, Section 1.3.3, p. 14.