

A guide to mining taxation in Zambia

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June 2013

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The paper was edited by Alan Whitworth.

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Acronyms

AETR	Average Effective tax Rate
CSR	Corporate Social Accountability
DA	Development Agreement
ETR	Effective Tax Rate
GDP	Gross Domestic Product
LME	London Metal Exchange
METR	Marginal Effective Tax Rate
PSA	Production Sharing Arrangement
VAT	Value Added Tax
VPT	Variable Profits Tax
ZCCM	Zambia Consolidated Copper Mines

1 INTRODUCTION

With some of the worst poverty statistics in Africa, Zambia appears to have little to show for a century of mining. Zambia is not alone in this failure. There are many examples of countries rich in resources that are still mired in poverty (Sachs and Warner 1995; Collier and Goderis 2008). However, good policy and tax administration can produce good results. The economies of Botswana and Norway, for example, are both dominated by natural resource production, yet have made strong economic progress.

Given good policies, the country's considerable mineral wealth clearly represents a real opportunity to grow the economy and tackle poverty. Following the recovery of the mining industry since privatisation, and with booming world copper prices, there has been considerable public debate over how to ensure that an appropriate share of mineral resource revenues accrue to the Government. How to tax the mining sector has become a hot topic.

Debate is healthy and should lead to better policy, but only if it is well informed. While much work has been undertaken on mining taxation in Zambia, it has been quite technical in nature. This is out of reach of most participants in the debate, whether from civil society, academia or business. As a result, while technical terms such as “windfall tax” are frequently used by participants in the debate, there is no common understanding of the term. This guide has been written to address this information gap and to inform one of the most important debates in Zambia.

1.1 What this guide is not

This guide covers mining *taxation*, not mining in general. There are many other dimensions to the mining industry which are crucial if Zambia is to maximise the benefits from its mineral wealth, but which are beyond the scope of this guide. These include:

- An appropriate **enabling environment** for investment in mining
- Increasing **non-tax government revenue**, such as dividend payments from the state's minority shareholding in mining companies
- **Small-scale mining** – this guide covers *large-scale* mining operations,¹ not small-scale artisanal mines, which face quite different issues
- Most importantly, this guide does not consider the **use of mining tax revenues** once they have been collected.

A more holistic (but not country specific) guide to the management and use of natural resource wealth is provided by the Natural Resource Charter (www.naturalresourcecharter.org). In particular, Precept 3 of the Charter covers the taxation of extractive industries.

¹ “Large-scale” is defined as those mines that currently operate or would operate using a Large-Scale Mining Licence in Zambia.

2 CHALLENGES AND GUIDELINES OF MINING TAX POLICY

This section of the guide explains some of the issues that mining tax policy makers should be aware of, and some guidelines on designing a tax regime.

2.1 Challenges involved in the taxation of the mining industry

There are a number of characteristics of the industry that complicate the task of taxation. These characteristics are not necessarily unique to mining, but the combination and scale of these problems makes them more acute.²

2.1.1 Mineral extraction depletes Zambia's stock of wealth

Mining is very different from other industries. It is not, in itself, a beneficial activity for Zambia. A crucial concept to understand is that minerals in the ground represent part of a Zambia's capital wealth, in the same way that farms, factories, roads and educated workers are part of capital wealth. In the same manner, if the mineral wealth is not used effectively it cannot benefit the country. Zambia can only benefit from minerals if they are extracted and their value is captured by government and transformed into other productive assets.

A second characteristic is that minerals are non-renewable: once extracted they can never be replaced. So when copper is taken out of the ground and exported, the immediate effect is that Zambia's capital wealth falls. Ley (2010) estimates that minerals account for about 13% of Zambia's capital wealth (see Table 1). The mining and export of these minerals reduces the value of this component, therefore, making the country poorer, unless the value of the exports is captured and invested in productive assets above ground.³ Mining can also cause significant damage to Zambia's other natural assets – its environment. Mineral extraction can therefore lead to two forms of wealth depletion – depletion of subsoil assets, and above ground environmental assets.

Table 1. Sources of capital wealth in Zambia, per capita

	USD per capita	Per cent
Natural capital	3,420	34
<i>of which: sub-soil assets</i>	1,277	13
Produced capital	1,482	15
Intangible capital	5,094	51
Total wealth	9,996	100

Source: Ley (2010)

² A good treatment of these in a general context can be found in Daniel et al. (2010).

³ It is important to recognise that investment and high production levels are not benefits in themselves. Nearly \$4 billion worth of investment and production of 800,000 tonnes of copper a year do not benefit Zambia directly. These are merely indications that the industry is strong.

2.1.2 High “sunk costs” and long production periods

Much of the cost of a mining operation is expensed early in the operational cycle, while revenues are earned later, often over decades of production. This makes mining a risky business: the investor knows the costs with some certainty, but will be much less certain about earning sufficient revenue in the future to make a good return. The long production periods also make being able to predict future policies valuable – investors are more willing to invest in places where the politics of a country are stable.

2.1.3 Commitment problems

The previous characteristic produces a second problem. Resource extraction projects are especially prone to expropriation by the host government, particularly in developing countries. Usually governments must weigh the benefits of increasing tax rates on business against the possibility that the businesses will move to a country with lower tax rates. In industries with high sunk costs, such as mining, moving to another country is expensive, making it more likely that the benefits of raising tax rates will outweigh the costs. Hiking tax rates on one investor will be noticed by the rest of the world; in future, investors may be less willing to invest in the country. Yet governments often care more about the short-term gains from increased tax revenue than about these long-term costs. Where institutions are established to protect the long-term concerns of citizens, short-term government can be held in check. However, in many low-income countries such institutions are lacking or suffer from low capacity.

2.1.4 Volatility and long-term commodity price cycles

Commodity prices are much more volatile than for most other goods.⁴ Prices may be attractive when the investor decides to undertake a project, but may then slump for many years. This was the experience of the Zambian government following the nationalisation of the mining sector in 1972. Such volatility increases the risks faced by investors, as it is hard to predict future prices when making investment plans. It also affects host governments since their revenues from mining are volatile.

Price booms and slumps represent a challenge to governments and mining companies alike. When prices are high both the country and the mining company can share in the resulting windfall profits. But, if mismanaged, windfall profits can represent a risk for governments, and in turn for the mines. If the country does not capture an appropriate share, public resentment can destabilise the tax regime – as the 2008 reforms in Zambia show. This contributes to the political risk problem described above.

Just as commodity markets may experience long periods of high prices, they may also face sustained periods of low prices, which investors may not have predicted when making their investments. The long decline in the copper price from 1974 to 2000 caused substantial

⁴ Page and Hewitt (2001) provides a simple explanation of the concept. They also describe a range of proposed solutions.

damage to the Zambian mining industry (and Zambia itself). Given the possibility of both unusually high and low prices, tax systems should be designed to accommodate these changes to capture tax revenues in good times, and while not overtaxing mining companies in bad times.

2.1.5 Importance to the host economy

Where developing countries are rich in natural resources, the extraction industry is usually one of the largest – often the dominant – industry. One consequence of this is that mineral taxation is often conducted via one-on-one negotiations between mining company and government. This can result in individual companies facing different individual tax regimes. Further, because the revenue from each mining company can represent a significant proportion of the total revenue received by the government and because it can bestow so many other benefits on the economy, individual mining companies can have substantial bargaining power. This makes the negotiating ability of government particularly important in achieving the best tax regime for a country. Where companies request tax stability clauses, mistakes made in the negotiating process with a large mining company can have a dramatic future impact.

2.1.6 Foreign multinationals

For countries like Zambia, foreign owned mining companies are likely to be the norm. There are two important consequences for taxation.

First, multinationals have the opportunity to conduct transfer pricing. This is the practice of allocating particular costs of a business across different countries. If abused, this practice can be used to reduce the global tax payments for the multinational.

Second, when exploring the impact of a tax reform on a multinational company, it is important to consider not just the impact on the domestic business, but also how it affects the company's global tax position. Some tax payments in a host country are treated as costs for the multinational in its home country, so paying taxes in one location can result in paying less tax in another. These effects should be considered when a country wants to attract multinational investment.

2.1.7 Lack of information about mining operations and the capacity of government institutions

To enforce a tax regime, the government needs detailed information on mining operations. However, mining is technically complex and it is difficult for people outside the mining company to understand every aspect of the operation. While this problem of technical complexity applies to most industries, certain features of the mining industry make it difficult to tax.

First, as noted above, because most mining companies are multinationals there is scope for transfer pricing abuse. Second, monitoring mining companies requires highly trained experts and robust administration and information systems. Few developing country governments

have the resources to hire, train and retain experts, or install and maintain good systems. International donors can assist, but it is difficult to establish an efficient institutional framework for such staff to function properly. Conversely, governments are up against multinational mining companies who can afford to pay for the best legal and accounting skills in order to minimise their tax bill. This imbalance between the competence of government institutions and that of mining companies is one of the biggest problems in mineral policy, and is a recurring theme in this guide.

2.2 The benefits of mining for Zambia

Despite these concerns, most countries encourage investment in mining because they believe the benefits exceed the costs. What are the benefits of mining for a country like Zambia? Five principal benefits can be identified:

1. Employment
2. Local infrastructure
3. Linkages to other sectors
4. Foreign exchange earnings
5. Government revenue.

2.2.1 Employment

Public debate on mining in Zambia frequently focuses on employment because this is the benefit that affects people most directly.⁵ However, Figure 1 shows that mining employment is much less significant than it used to be. Whereas 22% of the *formal* workforce was employed by mining companies in 1964, by 2009 (the latest year for which data is available) it had dropped to 9%.⁶ This reflects both the expansion of employment in other sectors and fundamental changes within the mining industry. Whereas mining was traditionally a relatively labour intensive industry, modern mining is capital intensive.⁷ The anticipated

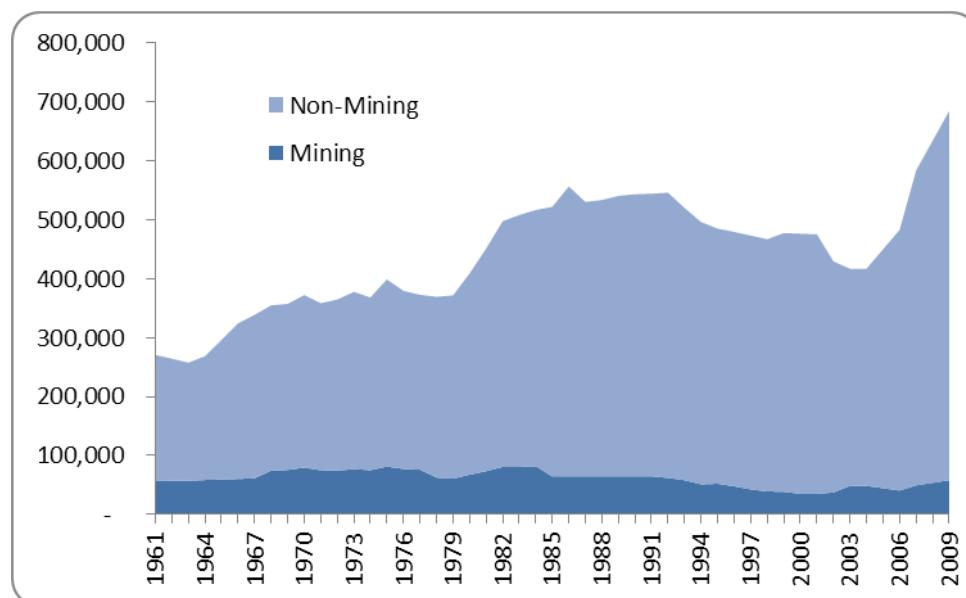
⁵ The perceived importance of employment might be explained in terms of political economy and the efficiency of government spending. The number of beneficiaries of mining employment is relatively small, but they are concentrated in the Copperbelt. By contrast, although the entire population benefits from tax revenues, it is dispersed throughout the country. It is therefore easier for beneficiaries of employment to lobby government than for the beneficiaries of tax revenues. A second potential explanation is that some of the value of tax revenues is likely lost through inefficiencies in transforming revenues into public investments.

⁶ Mining accounts for 13% of *private sector* formal employment. It is likely that each mining employee supports a number of other people, so the true impact of mining employment is larger than official statistics suggest. No estimates exist for Zambia. In Tanzania it is estimated that “8,000 people directly depend” on the employment of one mine formally employing a work force of 2,400 (Lange 2006). There is no evidence that mining jobs are any more beneficial in this regard than other jobs in the economy.

⁷ For the industry as a whole, labour productivity has improved, meaning fewer workers are needed per tonne produced. For example, 0.09 workers were needed for every tonne of copper produced in Zambia in 2006, compared to 0.12 workers in 2001 (Source: United States Geological Survey, Central Statistical Office of Zambia, and author’s calculations).

expansion in copper production is unlikely to benefit many Zambians through additional employment.⁸

Figure 1. Mining and other formal employment (1960–2009)



Note: Data for 2005 is missing and assumed to be an average of 2004 and 2006 levels

Source: Central Statistical Office

2.2.2 Local Infrastructure

New “green field” mines are usually responsible for constructing social infrastructure such as housing, schools, clinics, roads and water supplies and for providing social services for their employees and their families. Much of the social infrastructure in the Copperbelt was originally provided by the mines.⁹

While Zambia can benefit from this, it should be emphasised that tax revenues can also be used to finance the same construction and social services. There may be a trade-off between the amount companies pay to support local services and the amount they pay in taxes. The question becomes: which type of payment is more effective for government? For instance, if the capacity of the tax authority is weak, little tax revenue may be collected; or if the capacity

⁸ While large-scale mining operations employ relatively few workers, small-scale mining is relatively labour intensive. Zambia’s gemstone mining, for example, may have the potential to create significant employment, although not necessarily high wages (Dreschler 2001).

⁹ Such local social expenditures by mining companies is often called corporate social responsibility (CSR). CSR is made up of payments and projects undertaken by a company usually for the social benefit of local communities. While this can be significant for the communities close to mining operations the benefits are usually dwarfed by the potential benefits from the other sources listed here. In the case of Zambia, one can argue that these replace the payments made by the former national company, ZCCM, to local communities before privatisation. In fact, many of the Development Agreements (the contracts made between privatised mines and the government) included a provision that such local payments be continued in the form of CSR. Some Development Agreements are available from <http://minewatchzambia.blogspot.co.uk>.

to spend tax revenue effectively is poor, the country may benefit more from direct expenditure on local infrastructure by the mining company. On the other hand, tax revenues allow government much greater freedom over where and on what to spend the money.

2.2.3 Linkages to other sectors

The mining industry links with other sectors in the economy by buying an array of inputs. This boosts aggregate demand and so increases economic growth. There are also secondary effects as mining demand increases employment in other industries. Measuring such benefits is complicated and no analysis of this kind has been undertaken in Zambia. However, in most countries mining is considered an “enclave industry”: in other words, it is not well integrated into the local economy. This is because the characteristics of modern mining mitigate against the development of many linkages with developing host economies. For example, most mining machinery is too sophisticated to be produced in the local economy and has to be imported.

2.2.4 Foreign exchange earnings

Zambia needs foreign exchange to pay for its imports and to service its foreign debt. Because mining dominates Zambia’s exports (usually contributing around 75%)¹⁰ it is the main provider of foreign exchange for the economy. But because the mining sector imports many of its inputs, it is also a significant user of foreign exchange. Along with the repatriation of profits by mining firms, this reduces the net contribution to foreign exchange earnings.

2.2.5 Government revenue

While the above benefits are all significant, it is increasingly recognised that much the most important potential benefit of mining is the contribution the sector makes to government revenue (OSISA et al. 2009). Most of the above non-tax benefits accrue to a relatively small proportion of Zambia’s population – those working for or living near the mines. However, Zambia’s mineral resources belong to *all* Zambian citizens, not just to those living in the Copperbelt. When minerals are extracted the whole country’s wealth is diminished. It is important, therefore, that the benefits of mining are used to compensate all Zambians. The most effective way of achieving this is through increased government revenue, which can then be allocated throughout the country through the budget system.

Between independence and the start of state control of the mines in 1972,¹¹ a large proportion of government revenue was derived from mining tax. Much of Zambia’s public infrastructure was built during this period, largely financed by mining. This source of public revenue dried up owing to falling copper prices and nationalisation, forcing substantial cutbacks in public expenditure. Now the mines are once again (mainly) privately owned, it is important that government secures a fair share of the industry’s revenues and uses them for the benefit of all Zambians.

¹⁰ Central Statistical Office, Zambia – various Monthly Bulletins. Available at <http://www.zamstats.gov.zm>.

¹¹ Majority state ownership of the copper mines was achieved in 1969. State control was achieved in 1972.

2.3 The objective and guidelines of mineral tax policy

The previous section argued that despite the various ways in which mineral extraction can benefit Zambia, by far the most important channel is from tax revenues. Given this, the principal objective of mining policy should be **to maximise government revenue from the mining sector over time**.

Some might argue that government should also pursue some of the other benefits listed above, such as employment and local infrastructure. However, it is important to recognise that this is likely to be at the expense of company profits and, in turn, tax revenue. Since government revenue is the only benefit from mining in which all Zambians share, this guide takes the above as the overarching objective of government mining policy.

The objective can be broken down into two parts. Regarding the first part, “maximise government revenue”, there are two principal sources of government revenue:

1. Tax and royalty revenues, which incorporates:
 - a. Returns made to the owner of the resource (often the state)
 - b. General tax revenue
2. Returns from owning passive equity in mining companies.¹²

This guide focuses on the first channel, tax and royalty revenue, and does not cover issues related to state ownership of mines. Of course, since dividends are paid from *after-tax* profits, tax policy has consequences for the level of dividends that government receives. In many countries state ownership or partial state ownership is an important means of securing mining revenues. However, it is beyond the scope of this guide.

The second part of the objective – “over time” – is important. It may be possible to collect more tax today, but what about tomorrow? If mines are “over-taxed” today this may discourage future exploration, investment and production (both by existing mines and potential new mines), which will mean lower tax payments in future. This requires an appropriate balance between current and future tax.¹³

2.3.1 Guidelines to mining tax policy

As stated above, the objective of mining policy should be to maximise government revenue over time. This involves taxing mines as much as possible without discouraging new investment. Given the characteristics of mining described above, the policy maker has a difficult job.

¹² For example, the Zambian Government has minority shareholdings in a number of mining companies through ZCCM Investment Holdings.

¹³ Strictly, the objective of mining tax policy should be to maximise the ‘present value’ of government revenue over time. ‘Present value’ is an economic concept which recognises that revenue received today is worth more than the same amount received in a year’s time. Future payments from mining companies must be ‘discounted’, therefore, in order to be comparable with payments received today. See Begg et al. 2011.

There is no simple answer to this challenge. This guide distils the advice given by a range of experts (Natural Resource Charter 2011 and Daniel et al. 2010) into four broad guidelines that are relevant to Zambia.

1. **Compensate the state for a loss of wealth.** As mineral extraction depletes subsoil wealth, the country must be sufficiently compensated. The correct level of compensation for each unit of mineral extracted should be the value the country could have got by leaving extraction for another day.
2. **Be reasonably attractive to investors.** Subject to the first principle, the tax regime should be reasonably attractive to investors, given the other investment conditions in the country. That is to say, an investor should expect a reasonable return from risking her capital in the business of mineral extraction, but should expect no more than a reasonable return. Section 2.4 below explains some of the issues to look out for when understanding to what degree a tax regime is attractive to investors.
3. **Be flexible to changes in (true) profits.** The tax regime should still be flexible to changing profitability – often termed as “progressivity”. When conditions are poor, the tax regime should be sufficiently flexible to allow mining companies to remain in business – subject to the country receiving sufficient compensation for each unit of the extracted resource. Conversely, when conditions are good, the tax regime should be flexible enough to tax as much of the surplus profits as possible. This is particularly important for the stability of the tax regime. Section 2.1 showed that governments find it difficult to commit to future policies, particularly when the public perceive that an “unfair” distribution of mining proceeds is enjoyed by the mining company. Taxing some of these surplus profits can reduce instability, but it is important to realise that some of this surplus is the mining company’s reward for facing risks. Again a balance is required. A last point to note here is that flexibility should be with regard to changes in the true taxable profits of a company, not profits that have been artificially reduced as a result of tax avoidance practices. As this guide explains, this can be difficult to achieve without failing with respect to the other principles described here.
4. **Be administratively feasible.** No matter how well a tax regime follows the first three principles, if it is too complex for the tax authority to administer mining companies can avoid paying it. The tax regime should balance the need to follow the previous principles with the need to minimise the costs and technical challenges of administering and enforcing them.

2.4 Comparability of mineral tax regimes

This section briefly discusses the issue of comparing different mineral tax regimes to determine whether a country’s regime is “competitive” enough to attract investment.

To maximise tax revenue over the long term, mining tax policy must be designed to attract investment. However, while Zambia’s tax regime must clearly be reasonably competitive with

other mineral producing countries, the comparability of a tax system should not be over-emphasised.

Firstly, there are only a limited number of opportunities for firms to exploit mineral deposits. This limits the degree of choice over where to invest. As well as the *level* of tax rates, the *predictability* of tax rates (and any other significant part of the regulatory, legislative and contractual systems) is also very important for investors.¹⁴ Investors need to know what tax rates they will face when forecasting profits. If the tax regime is unstable, this will make forecasting difficult.

In Zambia, non-tax factors may be more significant than tax in investment decisions. For instance, according to a recent survey, investors are concerned about the “lack of beneficiation industry, relatively low levels of skills development among Zambians, opaque regulation of mining exploration and infrastructural bottlenecks in road, rail and power” (Brenthurst Foundation 2010).¹⁵ The World Bank notes that while Zambia has good mineral potential, costs for mining companies are higher than the world average, and investors rate the government’s mineral policy poorly (World Bank 2011).

Two conclusions follow from the above. First, a competitive tax regime will not attract investment if other investment criteria are neglected. Second, while a low tax rate might mitigate these deficiencies, this might be costly in terms of revenue foregone without correcting the underlying problems. Reducing tax rates to compensate for weaknesses in other areas can be self-defeating. There are likely to be diminishing returns to reducing tax rates – that is, a large reduction may be required to get even a small investment response.

¹⁴ A large survey of investment managers found that the level of taxes was only the 13th most important factor (Otto 2002). Behre Dolbear, a mining consultancy, conducts regular surveys in which the tax system is just one out of seven investment criteria. Even then, the important characteristics are stable, predictable tax regimes (with an effective tax rate below 50%).

¹⁵ In addition, the report highlights a lack of bureaucratic capacity, currency volatility and behaviour of governments in the run-up to elections.

Comparing tax systems using the Effective Average Tax Rate and the Effective Marginal Tax Rate

When choosing between policy options, governments often seek to ensure that their tax regime is “competitive” with other countries’ regimes, and to determine the impact of changes to tax policy on the behaviour of firms. To assess this, two metrics are often used: the Average Effective Tax Rate (AETR) and the Marginal Effective Tax Rate (METR). These terms are often quoted by governments and the industry, yet they can be very hard to measure – it is important to understand them properly.

We first need to understand what statutory, average and marginal tax rates are.

A statutory tax rate is the legally imposed tax rate. This is what is most often quoted. When someone says that company income tax is 35% in Zambia, they are referring to the statutory tax rate.

An Average Tax Rate is the average of the statutory tax rates faced by a company over time. In the context of judging the “competitiveness” of a country’s tax regime the Average Tax Rate can be calculated as the average of the statutory rates expected across the life time of a prospective investment project.

Statutory rates do not usually give an accurate depiction of the true tax burden for a company. Instead an Effective Tax Rate measurement is used. The Effective Tax Rate (ETR) is the proportion of a company’s income (gross profit) that is taken in tax. This is calculated using information from the company’s financial statements. It depends on a range of factors, in particular the revenue and costs of the company. As these factors change, so will the effective tax rate. Using just this measurement to analyse a tax regime can therefore be misleading. Nevertheless, the ETR is a better reflection than a statutory rate of the true tax burden borne by a company. This is because the ETR combines the effects of all the possible taxes and tax deductions faced by a company.

Combining these concepts together gives the Effective Average Tax Rate (or Average Effective Tax Rate, AETR). This calculates a company’s ETR for each tax period over the course of the investment project lifetime and then takes an average of these. The AETR therefore incorporates the entire expected changes in costs and prices throughout the lifetime of the project.

The Marginal Effective Tax Rate (METR) calculates the tax burden on an additional dollar of income. If a simple tax structure is used, say a flat company income tax of 35%, the tax burden on an additional dollar of profit by a company is the same as on the last dollar – 35%. In this simple case, the AETR and METR are the same. However, most tax structures are much more complicated than this and are either progressive (i.e. the tax burden on an additional dollar of income increases as income increases) or regressive (the tax burden decreases as income increases). If the tax burden increases as income increases then the METR will be higher than the ETR. Conversely if the tax burden decreases as income increases the METR will be lower than the ETR.

An analysis of recent tax regimes in Zambia requires knowledge of these two metrics. For instance, it is estimated that the METR of the 2008 regime was above 80% in some cases, while the AETR was only 47% (EAZ 2008). It is important not to confuse the two. It is not correct to say that if the METR is 80%, the company is paying a tax rate of 80% on all its income; the 80% only applies to the last dollar of income.

3 INSTRUMENTS OF MINING TAX POLICY

In this section we look at the different kinds of taxation applied to the mining sector around the world and at their relative strengths and weaknesses in relation to the principles of good tax design set out in the previous section. After an explanation of the general instruments of mining taxation, Section 4 looks at the specific mining tax regime in Zambia.

The main categories of taxes relevant to mineral extraction are shown in Figure 2.¹⁶

Figure 2. Categories of tax relevant to mineral extraction

Direct taxes				Indirect taxes	
Profit-based		Revenue-based			
Company income tax	Excess or variable profit tax	Mineral royalties	Windfall tax	VAT	Customs and import duty

3.1 Indirect taxes

3.1.1 Value Added Tax (VAT)

Definition: An indirect tax that is applied as a fixed percentage on the difference between the value of a good when it is sold and the value of the intermediate inputs used to produce that good.

While mining firms are usually liable for VAT, it is rarely a significant form of mining taxation. This is because, along with other exporters, mines are refunded by the tax authority for the VAT levied on their purchases of inputs. Sometimes the term “zero-rated” is used, i.e. the export copper product has a VAT rate of zero per cent. There are three reasons for this. First, VAT is intended to tax final consumption rather than production on a destination basis. Since the output of exporters is not consumed within the country, any VAT paid by an exporter would become a tax on production and production taxes are generally inefficient. Second, many governments try to promote export industries in order to strengthen economic growth and earn foreign exchange.¹⁷ Third, if exporters did not receive a VAT refund, the system would effectively be taxing their inputs. Input taxes have similar properties to revenue-based taxes, i.e. taxpayers must pay whether or not they have made a profit.

¹⁶ Taxes are not the only way for a government to derive revenue from extractive industries. Another system is Production Sharing Arrangements (PSA). PSAs are common in oil and gas industries in developing countries, but rare in mining. As such, this guide does not cover PSAs. The difference between a tax system and a PSA is largely legalistic; the end result in terms of distributing income between government and mining companies is similar in both systems.

¹⁷ Almost all countries allow VAT refunds to firms exporting minerals. In a sample of 19 tax regimes, all countries either refunded VAT or exempted firms from VAT payment (Otto 2000).

3.1.2 Customs duty

Definition: A tax applied as a fixed percentage (usually on the value or sometimes on another metric such as the weight) of a good that is imported into or exported from the country.

Customs duties are most often levied on imports of goods into a country, as import duties, although export duties may also be levied. For example, Zambia levies export duty on exports of copper concentrate. Customs duties have two main functions for governments. They are a good source of revenues, particularly in developing countries where other forms of taxation are harder for authorities to administer. They can also be a tool of economic engineering, most often to protect domestic industries from foreign competition or to encourage certain activities. For instance, the export duty on copper concentrate was intended to promote the domestic processing of concentrate into the higher value copper cathode.

3.2 Profit-based taxes

The types of direct tax that mining companies pay can be categorised according to their tax base: profit- and revenue-based taxes.

3.2.1 Company (corporate) income tax

Definition: The tax is applied as a fixed percentage of a company's profits during a particular period, usually one year.

Company income tax is usually applied to all businesses, including mining. Despite its widespread use it can be a complex tax. This is because the taxable profits which the base on which the tax rate is applied can be defined in numerous ways with many additional provisions that can be used to alter the amount of tax that is payable. Some of the most important provisions with regard to mining are described below.

3.2.2 Excess (or variable) profits tax

Definition: profit-based taxes whose rate varies according to some measure of profitability or return on investment.

A growing number of countries apply some form of excess profit tax to their extraction industries. While the details differ from country to country, these taxes follow some common principles. Their aim is to be progressive – as some measure of a company's profitability increases, so does the tax burden. As the name suggests, the taxes are often designed to apply to profits above some defined threshold (hence the term “excess profits”) while applying the standard corporate tax rate to profits made below this threshold.

Such tax types are based on the concept of a “resource rent tax”.¹⁸ A resource rent tax is designed to extract the maximum possible revenue from a mining company without damaging the incentives for investors, thus preserving the long-term viability of the industry as a revenue source for the government.

¹⁸ Resource rent taxes are explained in detail in Garnaut and Clunies Ross (1975).

When making investment decisions, investors forecast a range of price scenarios that they think they are likely to face in the future. Little weight will be attached to scenarios that are thought unlikely to occur. As very high prices are unlikely, the weighting attached to windfall profits will be low. The viability of an investment will be decided based on what is considered a likely price range. Therefore, if very high prices do actually occur, the government can tax most of the corresponding profit without significantly damaging the operations of the company. The company had not expected to earn those profits anyway, and would have made sure that the business could operate at much lower prices. In other words, such a tax is generally “neutral”: its imposition does not significantly affect the incentive to invest.

The other attraction of variable profits tax is that it is widely perceived by the public as being “fair”. It is the company equivalent of the progressive personal income taxation found in most countries, in which the rich pay a higher proportion of their income in tax than the poor. Public opinion usually resents mines earning exceptionally high profits when these are due to factors beyond their control (e.g. high prices) and expects government to share in the windfall through increased taxation. Since excess profits tax automatically increases the government’s share of profits as these profits increase, it both placates public opinion and, by reducing the likelihood of retrospective taxation, increases the predictability and stability of the tax regime.

Excess profit taxes may use a similar tax base to corporate income taxes and hence the issue of adjustments to the tax base is also relevant in this case. These adjustments are described next.

3.3 Revenue-based taxes

Where profits-based taxes are difficult to enforce, governments may prefer to use taxes based on firms’ sales revenues instead of profits because they are easier to administer and enforce. There are two main revenue-based taxes: royalties and windfall tax.

3.3.1 Mineral royalties

Definition: Mineral royalty taxes are levied as a fixed percentage of the value of a company’s sales of a particular mineral.

The rate may differ for different minerals. Typically, royalties on mineral extraction are in the range 1%–5% of sales value. The base is usually gross sales value (although some royalties may allow certain cost deductions, see below).

Royalties have three main advantages for governments. First, since they are charged on the value of the mineral extracted, they are well suited as a charge for compensating the resource owner for the loss of wealth as a result of extraction.

Second, royalties are useful in influencing the timing and riskiness of payments to the government. Royalties are a more reliable revenue source than profit-based taxes, as some revenue will be collected as soon as production commences, regardless of whether the firm is profitable or not. Given that a mine may not start earning profits until many years later, this brings forward the date when tax becomes payable.

Third, royalties are relatively easy to administer because usually the only information required is the sales volume of the mineral and the unit price. The latter may be the price which the mine claims it received or, if this is considered unreliable, some independent reference price may be used such as the average monthly copper price published by the London Metal Exchange (or similar agency depending on the mineral).¹⁹

Some royalties allow some cost deductions such as transport, insurance and, sometimes, processing costs. Adding costs effectively changes the properties of the royalty to that of a profit-based tax, although the effect is limited.

In addition, royalty payments are often treated as a cost when calculating taxable profits for the purposes of taxes such as company income tax and excess profit tax. In these cases, royalty payments can be said to be “deductable” against taxable profits. One justification for this is if royalties are considered a payment by the mining company for the use of mineral inputs (following the principle of compensation to the mineral owner, as described in Section 2.3). Such payments can be considered as a cost of production in a similar manner as wages and other costs, and so should be expensed when calculating taxable profits.

3.3.2 Windfall tax (variable rate royalty)

Definition: a tax that is levied on the value of a company's sales of a particular mineral in which the rate increases with the price of the mineral.

A variable rate royalty can be a useful tax instrument that provides some of the advantages of a standard fixed rate royalty (as described above) while avoiding some of the disadvantages.

As the guidelines to mineral taxation in Section 2.3 suggest, as long as the resource owner has been sufficiently compensated, regressive taxes are best avoided. To avoid a highly regressive tax regime, one answer might be to lower the royalty rate and levy a profit based tax that is less regressive. However, if the capacity of the tax authority is low this can come up against another guiding principle: feasibility. An alternative solution is to use a royalty whose rate varies according to the market price of the mineral. With such a rule, a variable-rate royalty can be made to be less regressive than a fixed-rate royalty: if the price falls, the royalty rate also falls; conversely, when prices rise, the royalty rate rises.

As the base is still revenue, rather than costs, a variable rate royalty still shares other characteristics with a fixed-rate royalty. On the plus side it is comparatively easy to administer. However, it is still not as progressive as a profit-based tax.

In Zambia, the government levied a variable rate royalty called a “Windfall Tax” in 2008. For simplicity the rest of this paper will refer to a variable rate royalty as a Windfall Tax. Section 4 describes the particular aspects of this tax.

¹⁹ The London Metal Exchange (LME) is an electronic trading arena or market for minerals such as copper. As with any market, a common price is established for each mineral which is used across the world to trade the mineral. Using the LME price is often preferable to using the price that a company actually trades at because it reduces the opportunities for companies to reduce their tax bills.

3.4 Adjustments to the tax base

Tax regimes often include measures that allow companies to adjust a tax base, usually taxable profits. These measures can be used by governments to fine-tune the characteristics of a tax regime to meet certain objectives. This section explains four types:

1. Depreciation allowances
2. Loss carry forward provisions
3. Ring-fencing
4. Tax holidays.

3.4.1 Depreciation allowances

In addition to regular cash costs, companies can count a proportion of their capital investment as “depreciation”²⁰ costs each year. Since mines typically have to incur substantial capital costs before production commences, the particular percentage they are allowed to claim as depreciation each year can make a big difference to estimates of profit (and tax). In order to encourage mining investment, many countries allow mines to claim “accelerated depreciation”. This term merely reflects a higher rate at which expenses can be depreciated. Increasing the depreciation rate has the effect of reducing profit and tax in the early years and increasing it later on – so tax payment is postponed.

To illustrate this concept,

²⁰ Depreciation is an accounting method by which the cost of an investment is allocated across its normal operating life.

Table 2 shows the effect of two depreciation rates – 100% and 25%. The firm is able to make profits earlier – and start paying tax later – when capital costs are fully depreciated in the first year (100% depreciation) than when they are depreciated over four years (25% depreciation).²¹

²¹ In economics jargon, the effect of accelerated depreciation is to reduce the present value of tax payments.

Table 2. The effects of accelerated depreciation allowance

	Year 1	Year 2	Year 3	Year 4
100% depreciation allowance				
Revenue	80	80	80	80
Capital costs	80	0	0	0
Accounting cost depreciated	80	0	0	0
Operating profit	0	80	80	80
Tax paid	0	24	24	24
After tax profit	0	56	56	56
Cumulative profits	0	56	112	168
25% depreciation allowance				
Revenue	80	80	80	80
Capital costs	80	0	0	0
Accounting cost depreciated	20	20	20	20
Operating profit	60	60	60	60
Tax paid	18	18	18	18
After tax profit	-18	62	62	62
Cumulative profits	-18	44	106	168

3.4.2 Loss carry forward provisions

If a company's profit in a year is negative (i.e. it made a loss) in many countries it is allowed to carry the loss forward to the following year and use it to reduce its taxable income and tax in that year. (This applies to all industries, not just mining.) Tax only becomes payable once cumulative profits exceed cumulative losses. If losses are substantial, or if they accumulate over a number of years, the company may only start paying company tax several years after it starts earning profits.

In the illustration in Table 3 tax is only paid in year six, once the mine has made sufficient profit to cancel out past losses.

Table 3. Illustration of the loss carry-forward rule

Year	Profit/loss	Cumulative profit/loss	Taxable profit
1	-100	-100	0
2	-50	-150	0
3	0	-150	0
4	50	-100	0
5	100	0	0
6	100	100	100
7	100	200	100

3.4.3 Ring-fencing

Ring-fencing is the separation of a company's operations for the purposes of calculating taxes. Such a separation can be done in a variety of ways, for example, according to the geographical location of different operations, the types of operations, and so forth. Ring-fencing is used to limit the ability of companies using costs from one operation to offset taxable profits in another.

Table 4 gives an example of a company with two operations ("Operation A" and "Operation B"), each with separate accounting items for revenue, cost and profit, as well as the total revenue, cost and profit for the whole company. The last two lines in the table compare the total tax payable if the company is taxed with or without a ring-fencing provision. The ring-fencing provision increases the amount of tax that the company must pay from 9 to 12. More tax is paid under the ring-fencing arrangement as the profit-making operation A cannot subsidise the loss-making operation B.

Table 4. Illustration of a ring-fencing rule

	Operation A	Operation B	Whole company (Operations A and B taxed as a single entity)
Revenue	100	50	150
Cost	60	60	120
Profit	40	-10	30
Tax (@30% of profit)	12	0	9
<i>Total tax payable if operations are taxed as ring-fenced entities (Tax from A + B)</i>			12
<i>Total tax payable if operations are not ring-fenced (Tax from whole company)</i>			9

3.4.4 Tax holidays

A tax holiday is a temporary reduction or even elimination of a tax. It can be applied on an individual company basis or across a whole industry. Tax holidays can be used to relieve cash flow problems a company may experience in the early years of the production cycle, in a similar manner to a loss carry-forward provision. The effect can be different however. It is important to not mistake this for a company enjoying a tax holiday since the total tax payments over the long-term may be different.

3.5 Fiscal stability contracts

Since mining projects are long-term ventures, investors need to be able to predict the possible returns in the future, and so need to be able to predict the amount of tax they will need to pay.

Governments cannot credibly commit to not changing taxes in the future for two reasons. First, the life span of the averaging mining project is longer than that of the average government.

Second, as explained in Section 2, even with the best intentions governments may find it difficult to credibly commit to a tax policy.

Many governments use fiscal stability clauses. These are agreements by the host government not to increase the tax burden for participating mining companies over a period of years, sometimes decades. While such agreements may provide some assurance to mining companies, they are not failsafe. Enforcing these contracts still appears to be difficult, and few cases have been brought before a court (Daniel and Sunley 2010).

Fiscal stability clauses should be backed up by a progressive tax regime. A good contract will provide each party with a “reasonable” share of the rent and risk over all conceivable eventualities. Mining companies have an interest in ensuring governments receive a “fair share” as this is likely to result in a more stable tax regime.

However, a contract will always be imperfect: it is not possible to include clauses for all circumstances. Instead, the use of a “renegotiation clause” can be considered (see Hogan, Sturzenegger and Tai 2010). This allows a contract to be suspended when adverse circumstances prevail. In this manner, long-term stability can be achieved at the expense of short-term action. To avoid abuse, it is important to define what circumstances warrant invoking such a crisis clause, and when to revoke it.

Firms can also “buy” stability. Peru and Chile for example, allows companies to choose a stable tax regime, but at the cost of having a higher corporate tax rate. At a later date, the company has the option to migrate to the “unstable tax regime” to enjoy a lower corporate tax rate, but without the guaranteed stability of the tax regime. Since the greatest risk is in the early stages before a company is able to recoup its costs, such a policy may be beneficial for companies.

Contracts pose a danger to developing country governments that do not have the technical competence to negotiate well, sometimes leaving them no choice but to break contracts when situations change. This can be mitigated through technical assistance to the negotiating team.

A key source of instability is often the electorate. If high mineral prices do not result in higher tax revenues, the public may question whether it is getting a good deal from the mineral regime. This may lead to destabilising calls for reform.

3.6 Problems faced by tax administrators

This section describes four problems frequently faced by tax administrators:

- Transfer pricing abuse
- Reported value of production
- Debt payments
- Hedging.

As will become clear, these problems mostly affect the measurement of costs. Hence they are of greater relevance in the administration of profit-based taxes than for revenue-based taxes.

3.6.1 Transfer pricing abuse

The global mining industry is dominated by multinational companies (companies with operations in more than one country). Such companies do not pay taxes on their global income, but on their operations in each tax jurisdiction. While companies are concerned about their operations as a whole, across all regions, they have to calculate taxable income for their operations in each country in order to pay taxes to individual governments.

Many goods and services are traded between different operating units within multinational organisations in the course of their operations.²² To calculate the financial position of each operating unit, a company must assign prices to the traded goods and services. This is problematic for tax purposes. Prices are usually determined by markets. However, by definition, there are few markets for the goods traded within the same company. For instance, suppose that the UK head office sends a team of technical experts to undertake some work in a Zambian subsidiary. What price should be assigned to this service? There will be no market value for the specific expertise or the specific assignment. How companies deal with this issue is called transfer pricing. This poses problems for tax administration because there is an incentive for firms to deliberately price their inter-company transactions in such a way as to reduce their overall tax payments.

Companies can reduce their overall tax payments by selling goods and services from an operating unit in a low tax jurisdiction to one in a higher tax jurisdiction at a relatively high transfer price. Income is transferred away from the high tax jurisdiction, where both taxable profits and tax payments fall. Correspondingly, taxable income increases in the low tax jurisdiction. Because the tax rate is lower there the company's overall tax bill is reduced.

A country's tax regulations will usually detail how a company can legally set transfer prices (see OECD 2010). However, there is no clear method for tax authorities to monitor this, and a significant amount of their work can involve ensuring that companies adhere to transfer pricing regulations.

3.6.2 Under-reporting of production values

Another form of transfer pricing abuse is where mines report to the tax authority that the value of their production is less than its actual market value. This can be done in a number of ways: mines may under-report the volume of production or the grade of the mineral,²³ or they may fail to report by-products contained in the ore. Often multiple minerals are found within the same ore body. For example, minerals such as gold and silver are sometimes found within copper ore.

²² A third of total global trade is made up of inter-company transactions (Djankov 2009).

²³ The grade is the percentage of the product that is pure marketable mineral. For instance, if copper ore (the unrefined product that is extracted straight from the ground) has a grade of 10%, this means that 10% of the volume of the ore is pure copper.

Checking the quality and content of all production – not just in mines, but also in smelters and refineries – poses significant problems for governments. They need to have an understanding both of the geology of the area being mined and of the processing technology for extracting the various mineral types from the ore. This requires close cooperation between the mines ministry and the tax authority. Without proper processes in place and competent staff to operate them, under-reporting of production can cost government considerable tax revenue.

3.6.3 Debt payments abuse

Interest payments on debt are almost always allowed to be deducted from profits when determining taxable income. This can create an incentive for a multinational company to lend funds to a subsidiary at a high rate of interest in order to reduce the subsidiary's taxable profits. This is a different form of transfer pricing.

To prevent such abuse, some countries stipulate the maximum amount of debt that subsidiaries can hold (sometimes termed as a “thin capitalisation rule”). This is usually expressed as a proportion of the total capital value of the subsidiary (which is made up of debt and equity).

3.6.4 Hedging manipulation

Mining companies face more volatile prices for their products than firms in most other industries. To reduce the impact on their profits, mines can purchase derivative contracts (like futures and options) that guarantee a specific price for their output in the future. For instance, a firm may buy a futures contract that stipulates that it must sell a tonne of copper at a price of \$7,000 in three months' time. The firm no longer has to worry that the copper price will fall; the futures contract acts as insurance against a fall in the copper price. This is called hedging. It is a legitimate and useful business activity.

However, hedging can also be used to shift income out of high tax jurisdictions in the same manner as transfer pricing described above. Instead of using derivatives to protect themselves against falls in mineral prices, firms can deliberately trade in order to lose money in a subsidiary facing a high tax rate and to gain in another subsidiary facing a lower tax rate. In effect, firms can transfer income from one subsidiary to another by trading derivatives.

4 ZAMBIA'S MINING TAX REGIMES SINCE PRIVATISATION

Having outlined the general concepts of mineral taxation, this guide now provides details of Zambia's experience with mineral taxation. Since the privatisation of Zambia's mining industry in 1997 and 2000, four distinct tax regimes have applied:²⁴

1. The Development Agreements (DAs) negotiated with individual mines at privatisation²⁵
2. The "2008 regime" (the tax regime used between April 2008 and March 2009)²⁶
3. The "2009 regime" (the tax regime used between April 2009 to March 2012)
4. The "2012 regime" (the tax regime that has been in effect since April 2012).

The key features are set out in Table 5 and Table 6.

Table 5. Profit-based tax details of the four post-privatisation tax regimes

	DA	2008	2009	2012
Profit tax types				
Company Income Tax rate (%) of profit base)	25%	30%	30%	30%
Variable Profit Tax in effect? (See below for details)	No	Yes	Yes	Yes
Profit tax base details				
Capital Depreciation Allowance (% of annual capital expenditure)	100%	25%	100%	100%
Loss carry forward (maximum years)	15 to 20 years (depending on company)	10 years	10 years	10 years
Allowed Debt to Equity ratio	2:1	3:1	2:1	2:1

²⁴ Note that there is a difference between the tax regimes that the Zambian government legislated, the tax regimes that the mining companies formally recognised, and the taxes that the mining companies actually paid. The 2008 regime was never formally recognised by the whole mining industry, although some companies did pay some of the taxes throughout this period. There also remains a question over whether the Development Agreements are still technically in force. However, in 2010 the Zambian government announced that the mining companies had agreed to pay taxes according to the 2009 tax regime.

²⁵ Two new mines, Kansanshi and Lumwana mining companies, which were not previously part of the nationally controlled mining company ZCCM, also negotiated Development Agreements.

²⁶ Many of the changes shown as part of the 2008 regime were introduced announced in 2007. However, an exclusion clause meant that those companies with Development Agreements did not have to pay these new taxes until the law was amended in 2008. Since all the most important mines operated under Development Agreements, it was not until 2008 that there was a significant change in the types of taxes the industry was meant to pay. Even then, a number of mines did not fully comply with the 2008 regime. It was only in 2010 that all mining companies agreed to start paying taxes according to the 2009 regime, and pay arrears on taxes payable in 2008.

Table 6. Revenue-based and other tax details of the four post-privatisation tax regimes

	DA	2008	2009	2012
Revenue tax types				
Mineral Royalty	0.6%	3%	3%	6%
Windfall Tax	No	Yes	No	No
Other tax types				
Customs Duty	Exempt in most cases	Customs apply, but rebate, refund or remission of the duty payable in respect of plant, machinery, or equipment.		
Export duty (on copper anodes)	No	15% (but with some waivers)	15% (but with some waivers)	10% (but with some waivers)
Withholding profit tax	0%	15% on services, 0% on other payments	15% on services, 0% on other payments	15% on services, 0% on other payments

4.1 Development Agreements

Agreements were made between the Zambian government and each company that bought the assets of the former national company ZCCM. These have never been made publicly available by the Zambian government. However the agreements with some companies were leaked.²⁷ The tax rates and other details for each company differed to some extent. Those agreements signed in 1997 had higher tax rates than those signed in 2000. However, in 2003 it was agreed that all mining companies operating former ZCCM assets would pay the same rates for Company Income Tax and Mineral Royalty. Other details such as the length of fiscal stability clauses and the allowed period of loss carry forward stated in each agreement appears to have remained the same. The following details relate to the tax regime that mining companies faced after 2003. Where details relate to individual Development Agreements reference is made to those contracts that are now publicly available.

- **Income Tax** was levied at a rate of 25% on gross profits less deductions. The three principle deductions were mineral royalty payments, any price participation payments, capital expenditure incurred during the year (100% depreciation rate), and accumulated losses from previous years (loss carry forward). The period for which losses could be carried forward varied between companies, but typically was between 10 and 20 years. Losses from hedging could be counted alongside normal operating costs when calculating gross taxable profits.
- **Mineral royalty** was levied at a rate of 0.6% on the gross value of sales, less the cost of transporting, insuring and processing/refining the mineral products. This meant that the true tax burden was less than if the base was purely gross sales value. The value of

²⁷ See <http://minewatchzambia.blogspot.co.uk>.

sales was calculated using the realised prices submitted by the companies, rather than a standard defined price such as the LME price.

- **Price participation agreements.** Some mining companies also faced price participation agreements. These essentially acted like a variable-rate royalty (like the Windfall Tax levied in 2008). They were levied on the gross value of production less transport and other costs and the rate varied according to the prevailing LME price. This was not officially a tax, but rather a charge that was paid to ZCCM Investment Holdings (the holding company for the government's remaining mining assets).²⁸ However, since mining companies still had to pay, it contributed to their fiscal burden and so should be considered alongside other payments to government.
- **Fiscal stability clause.** Each Development Agreement contained a clause that stated that the Zambian government would not adversely alter the tax regime for a given period of time. This period differed between agreements and range from 15 to 20 years. The box below provides an example of a fiscal stability clause from Mopani's Development Agreement with the government.

The Fiscal Stability clause between Mopani Copper Mines and the Government of Zambia

The following is an extract from Clause 16.1 of the Development Agreement between Mopani Copper Mines (referred to in this contract as the 'Company') and the Zambian government (referred to as 'GRZ').

16.1. ... GRZ undertakes that it will not for the Stability Period

Increase corporate income tax or withholding tax rates applicable to the Company (or change the basis of calculation which would result in a decrease of deductions or decrease allowances available to the Company in computing its liability to such Taxes) ...

Otherwise amend the VAT and corporate Tax regimes applicable to the Company ...

Impose new Taxes or fiscal imposts ...

Provided that in the case of Clause 16.1 (b) and Clause 16.1 (c) amendments may be made which taken together do not have a material adverse effect (compared with what the position would have been but for the amendments) on the Company's Distributable Profits or the dividends received by its Shareholders ... or the amounts received by lenders to it ...

GRZ further undertakes that for the Stability Period, it will not:

... (b) increase:

the rate of royalty referred to in Schedule 8 from the levels set out therein

²⁸ This has made it relatively more difficult to obtain information on the amount paid in the form of price participation agreements, and as such are not reflected in the tax revenue statistics in this guide.

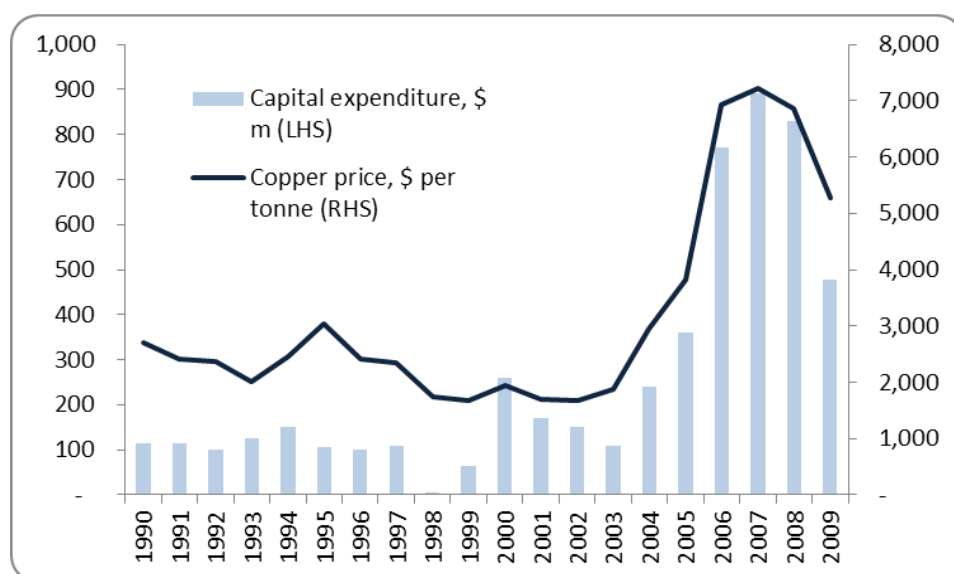
The DA regime offered mining companies a comparatively low tax rate and with a comparatively low exposure to risk. This made investment in Zambia's mining industry more attractive, a reasonable aim considering the long period of under-investment and decline of the industry under ZCCM control. It reduced the risks and tax burden faced by the mining companies in three ways:

- **Stabilised tax burden.** This provision reduced the risk of paying higher taxes in the future. As section 2 explains, given the “time inconsistency problem” there would have been a significant risk of tax rises after investment had been sunk. While the events in 2008 show that such risks were in fact realised, there is some evidence to suggest that the stabilisation clauses at least helped to delay expropriation by government.²⁹
- **Predominantly profit-based taxes.** The DA regime was predominantly based on profits. The mineral royalty rate, at 0.6%, was low compared with later tax regimes in Zambia. This reduced the risks faced by mining companies since little tax would have to be paid if profits were low. Correspondingly, the state faced higher risk – during periods of low prices, the Zambian government received negligible cash flows from the mining sector. With such low royalty rates one could also question whether the state, as the resource owner, received sufficient compensation for extraction of its mineral wealth during the period under which the DA regime was levied.
- **Below global average tax burden.** The average tax burden was around 31% (EAZ 2008). Estimates put the global average tax rate for mining projects at between 40–50% (World Bank 2011). It could be argued that this compensated for the perception of higher costs and risks in Zambia compared with other copper producing regions, but as the previous point suggests, the tax regime provided an insufficient return to the resource owner.

Despite the lack of compensatory measures of the DA regime, it could be argued that the low tax rates helped attract large amounts of capital into Zambia and transform the extractives industry. During the period in which the Development Agreements were in operation investment in the Zambian mining sector increased substantially, as shown in Figure 3. However, this investment trend also corresponded with a rapid increase in copper prices, which increased the returns on investment. The extent to which the generous terms of the agreements contributed to increased investment is unclear, therefore.

²⁹ See the Zambia case study in Daniel and Sunley 2010.

Figure 3. Capital expenditure in the mining industry



Source: Chamber of Mines and LME

In addition to this substantial increase in investment, the fiscal burden on government was eliminated. Towards the end of the ZCCM era, the government was forced to inject large sums to keep the mines afloat, peaking at 4.1% of GDP in 2000.³⁰ Privatisation – assisted by this generous tax regime – relieved the government of this burden.

The substantial increase in mining investment can be considered an increase in *potential future* government revenue. However, despite rapid increases in copper prices and production following the DAs, tax revenues from the mining sector did not rise nearly so fast. This contributed to the growing public perception that Zambia was not receiving a “fair share” of the benefits from mining. This led to increasing calls to reform the tax regime and for the government to break the Development Agreements.

4.2 The 2008 reforms

In 2008 the Zambian government broke the fiscal stability clauses contained in the Development Agreements and imposed a new tax regime with a higher tax burden. (The box at the end of this sub-section explains the legal and economic implications of this move.)

The company income tax rate was increased from 25% to 30%. Deductions also changed:

- **Depreciation** allowance was cut from 100% to 25%. This meant that only a quarter of the value of a company’s capital expenditure (investment) could be charged to depreciation each year, instead of the full amount. In other words, tax payments would be brought forward and it would take longer for companies to recoup investment expenditure.

³⁰ Edith Nawakwi, the finance minister, was quoted as saying that the Zambian government had been forced to give the equivalent of \$1m a day to the industry (Lungu 2009).

- **Losses could be carried forward** for a maximum of 10 years, instead of 10 to 20 years. Again, this would have the effect of bringing forward income tax payments.
- **Hedging** operations were to be taxed separately from mining operations. Losses from hedging could no longer be used to reduce taxable profits from operations. This was intended to prevent companies from adopting hedging strategies deliberately designed to reduce taxable profits in Zambia.
- The **Mineral Royalty** rate for copper and cobalt was increased from 0.6% to 3%. In addition, henceforth it was to be based solely on gross sales value using the LME price instead of the price claimed by the mining companies. This ensured that mines could not avoid taxes by understating the realised sales price, or over-stating the costs of transport, etc. As before, royalty payments could be deducted from taxable income for the purposes of calculating income tax.
- A **Windfall tax** was introduced and operated like a variable rate royalty. It was calculated each month from the gross sales revenue of the taxpayer (in the same manner as the Mineral Royalty), using a tax rate that increased with the average LME cash price (for copper) or the Metal Bulletin price (for cobalt). Figure 4 shows how each rate would have been applied to prices during the last six years for copper sales. Note that the rate is cumulative. For example, if the price is \$3.25 per lb. then the first \$2.50 per lb. is taxed at 0%, the next \$0.50 at 25% and the last \$0.25 at 50%.

Figure 4. Structure of the 2008 Windfall tax for copper sales



There were two main criticisms of the 2008 Windfall Tax (EAZ 2008). First, unlike Mineral Royalties, Windfall tax payments could not be deducted from profits for income tax purposes. In other words, the base for company income tax was operating profits less mineral royalties, but not less windfall tax payments. This was a technical error in the design of the tax. It meant that a mining firm could potentially pay large amounts of both windfall tax and company income tax, increasing the overall tax burden to an unacceptably high level. For instance, when prices were high enough for the 75% rate to be applicable, the marginal effective tax rate was

above 100%. In other words, at these high prices, an increase in taxable income would actually cause a company to lose money, as the tax payable would be higher than the increase in profits. Second, the tax was too onerous, given the rest of the tax regime burden. The price thresholds were set too low, or alternatively the rates were set too high.

A **Variable Profits Tax (VPT)** was also introduced at the same time. It was intended to make the tax regime more progressive by collecting a higher proportion of revenue when profits were high than when profits were low. VPT allows mining companies to earn profits equivalent to 8% of their gross sales revenue before the tax kicks in. The rate is determined by the following formula:

If X is greater than 8%:

$$\text{Variable Profit Tax rate} = 15\% - (15\% * (8\% / X))$$

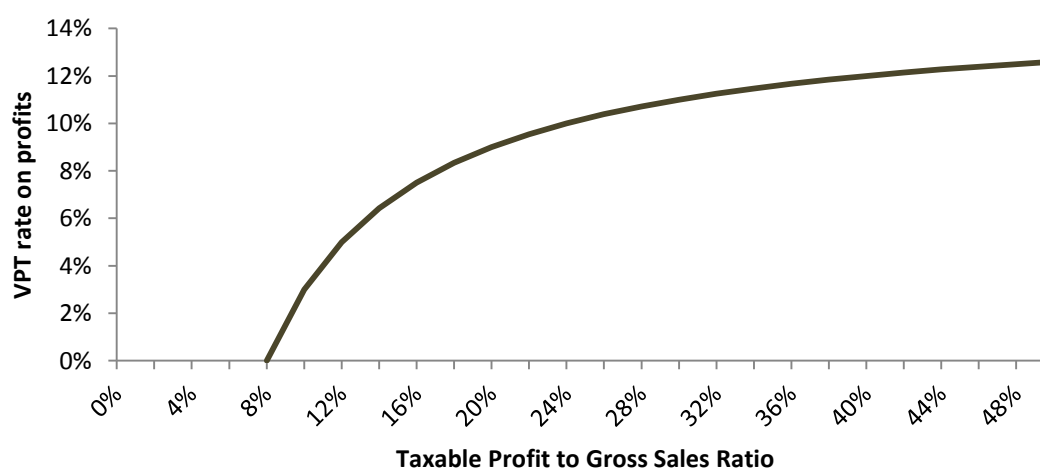
If X is less than or equal to 8%:

$$\text{Variable Profit Tax rate} = 0\%$$

Where X = taxable profits / sale revenue

Figure 5 shows how the VPT rate increases as the profitability of the firm increases. Once the ratio of taxable profits to sales revenue rises above 8%, the VPT becomes applicable. As the profit to sales ratio increases, so does the VPT rate. The rate of this increase falls as the profit to sale ratio increases. Figure 5 shows the respective tax rates for a profit to sales ratio between zero and 50%.

Figure 5. Structure of the VPT



Implications of breaking fiscal stability clauses in the Development Agreements

Imposing tax reforms that increased the tax burden on the mining companies which held Development Agreements was illegal. It gave the mining companies the right to seek financial damages from the government by taking the matter to the International Centre for Settlement of Investment Disputes.

Despite some posturing at the time, no case was actually taken to arbitration by the industry. This does not mean that there were no costs as a consequence of the government's actions. Investors must be confident that government will not expropriate their assets after they have invested. Without this assurance they will be less willing to invest. The 2008 tax reforms would have damaged investor confidence that Zambia's political and legal systems would protect investors.

While investment in recent years has been strong, it could have been even better. While it is not possible to accurately determine the impact on investment, results from investor surveys can help. Zambia's ranking in the Behre Dolbear survey fell from 16 in 2007 to 19 in 2010, precipitated by falls in the areas of Corruption and Tax Regime (Behre Dolbear 2006 to 2010). In the Policy indicator of the Fraser Institute survey, Zambia also fell from 50 in 2007/2008 to 35 in 2010/2011 (McMahon and Cervantes, 2005 to 2010).)

4.3 The 2009 and 2012 reforms

The 2008 regime only lasted a year. The mining companies were upset by the unilateral revocation of the Development Agreements and some refused to pay the new taxes. The announcement was followed shortly after by the onset of the global financial crisis. Copper prices fell sharply and marginal mines started laying off workers. The Government responded by reversing some of the 2008 tax measures in the 2009 Budget:

- Windfall tax was abolished
- Tax depreciation reverted to 100%
- Mines were again allowed to combine hedging and operating income for income tax purposes.

Following general elections in September 2011 and the resulting change of government, further reforms were made to the mining tax regime in the 2012 Budget. The two main changes for the mining industry were:

- The mineral royalty rate for copper and cobalt was doubled from 3% to 6%
- Hedging and operating income were again to be treated separately for income tax purposes.

4.4 Other taxes

Having described the reforms to the direct tax types in the mining tax regime, in this section we briefly describe the arrangements for the other taxes that are currently applicable: VAT and custom duties.

4.4.1 VAT

Along with other exporters, mining firms in Zambia are refunded by the tax authority for the VAT levied on their purchases of inputs.

The issue of VAT refunds in Zambia is somewhat contentious. The aggregate value of refunds to mining companies has often been larger than the value of total taxes paid by the industry. Although one might argue from this that the industry is a net receiver of tax revenues rather than a net contributor to government, this would be incorrect. For example, consider a mining firm that purchases inputs from a supplier in Zambia. The price paid by the mining firm includes the price of the input plus VAT. The supplier (if it is fully compliant) will then pay that VAT to the Zambia Tax Authority. This VAT payment will be recycled and paid to the mining firm in the form of a refund. Thus, there is no drain on the collections of the tax authority despite the seemingly high value of refunds. The system can fail if the supplier to the mine is not compliant and does not pay its VAT obligations. This is a common problem across the world. However, it is a *separate issue* from the taxation of mining firms.

4.4.2 Customs duties

Mining companies face customs duties when importing goods into Zambia. These range from zero to 5% for capital equipment, 15% for intermediate goods, and 25% for finished goods. However, mining companies have the opportunity to negotiate refunds and rebates on these duties with the government.

There is a 15% export duty applicable on the export of copper concentrate. This is intended to encourage the processing of copper concentrate into copper cathode within Zambia. However, most companies have been given an exemption, so little revenue is actually collected from this tax.

5 COMMENTS ON THE 2012 MINERAL TAX REGIME IN ZAMBIA

The previous sections to this guide have been exactly that – a guide to the issues that Zambians might be concerned with. This section briefly comments on the current state of the country's mineral tax regime to show how the concepts in the rest of this guide can be applied to a current analysis. As such, this is not intended as a complete analysis of a tax regime, but merely as an introduction to one.

This section comments first on the revenue performance of the industry and the potential for the future. It then assesses the performance of the current tax regime according to the guidelines proposed in Section 2.3 of this guide.

5.1 Revenue performance

Here we take a more detailed look at the tax revenues paid by the mining sector over the last decade.³¹ Table 7 shows the revenue figures for the direct taxes paid by the mining sector in Zambia.

Table 7. Direct tax revenue from the mining industry, 2000–2011

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Company tax	2	2	1	0	0	1	160	603	464	401	1,244	2,632
Withholding tax	0	-	-	1	2	3	-	-	-	-		
Mineral royalty	4	7	3	8	4	39	59	68	238	235	412	891
Export duty	-	-	-	-	-	-	-	-	178	15		
Windfall	-	-	-	-	-	-	-	-	126	-		
Total	5	9	3	9	6	43	219	670	1,006	651	1,656	3,524

Source: Zambia Revenue Authority

Table 7 shows that from privatisation in 2000 until 2005 tax and royalty revenues from mining companies were particularly poor. Since 2005, revenues have grown considerably. There are five principle drivers that could explain this:

1. Rise in copper and cobalt prices
2. Rise in production
3. Depletion of mining companies' loss carry forward provisions (i.e. they have written off most of their initial investment costs)
4. Increase in tax rates

³¹ It is important to understand that this should not be taken as a comment on the current tax regime for two reasons: it only took effect in 2012; and the effect of loss carry forward provisions means that losses made under old tax regimes will affect the amount of tax that can be collected under the current tax regime.

5. Potentially smaller tax gap from better tax administration procedures and better tax instruments.

These potential factors suggest that the recent rise in tax revenues is not necessarily a result of a “well performing” tax regime. These revenue statistics cannot tell us how well the tax regime has performed against the objective of capturing the maximum value of the extracted mineral over the long term. Even though revenues have increased significantly, this has been at the expense of depleting close to 5.6 million tonnes of Zambia copper reserves.³² The question to ask is: has Zambia been sufficiently compensated for losing these 5.6 million tonnes of copper?

The answer requires a more detailed analysis than can be provided here. At the very least we would need to know the value of mineral extracted, the true costs of extraction and the future profile of extraction and revenues. However, it is important to at least be aware of this question when reporting on revenue performances in the mining sector.

5.2 How well does the current regime adhere to guidelines of good tax design?

This section briefly comments on the current mining tax regime in Zambia in terms of the principles of mineral taxation set out in section 2.3:

- Compensation to the mineral owner
- Attractiveness to investors
- Flexibility to changes in profits
- Administrative feasibility.

5.2.1 Compensation

Compensation is primarily given by a royalty tax. Zambia’s Mineral Royalty is currently at 6% for copper production. Does this provide sufficient compensation for the depletion of Zambia’s mineral wealth? It certainly offers more compensation than the other tax regimes described in this guide since the effective Mineral Royalty rate is the highest of the four regimes. A further question is whether the Mineral Royalty rate is so high it reduces the performance of the tax regime with regard to the other principles presented here.

5.2.2 Attractiveness to investors

Although no formal study is available to reference, most mineral tax regimes appear to have average effective tax rates within the 40–50% range (World Bank 2011). No estimate of the AETR for Zambia’s current mining tax regime has been undertaken, but it is probably close to the upper end of this range, depending on the assumptions used (the following box explains how this is calculated).

³² By way of comparison, the US geological survey estimates Zambia’s current *known* reserves at 20 million tonnes. It is important to note, that this is unlikely to be the full extent of copper in Zambia. The country is comparatively under-explored and may yield additional reserves in future exploration efforts.

Simplified calculation of the average Effective Tax Rate per year

Because the tax regime uses a mix of revenue- and profit-based tax types, a simple estimate of the average ETR that a mining company faces in a year requires making assumptions about the relative mineral prices and unit costs of a mining company. Purely to illustrate the concept, assume unit costs of \$3,000 per tonne of copper and a copper price of \$9,000 per tonne. This results in a unit profit of \$6,000 per tonne.

Using these assumptions, the table below calculates the amount of tax paid per unit of copper produced to find the effective tax rate. For simplicity, the calculation does not take in to account tax deductions such as depreciation, ring-fencing, etc.

Tax type	Tax base and rate	Tax payment
a. Mineral Royalty	\$9,000 MR rate = 6%	\$540
b. Company Income Tax	<i>Gross Profit = \$9,000 - \$3,000 = \$6,000</i> <i>Less Mineral Royalty payment of \$540</i> <i>= \$5,460</i> CIT Rate = 30%	\$1,638
c. Variable Profit Tax	Same as Company Income Tax. <i>VPT rate = 15% - (15% * (8% / c))</i> <i>[Where c = \$5,460 / \$9,000]</i> <i>= 13%</i>	\$711
Total tax payment (a+b+c)		\$2,889
Unit profit per tonne		\$6,000
Effective Tax Rate (total tax payment/unit profit per tonne)		48.2%

This illustrates a simple calculation of the effective tax rate that a mining company would pay under these particular assumptions. What is important to note here is that the ETR changes with different assumptions. For instance, for a mining company with unit costs of \$6,000, this model calculates an ETR of 51.3%. When a particular ETR is quoted by an analyst one should be aware of what assumptions are being made.

As noted in Section 2.4, the competitiveness of a country's tax regime cannot be assessed in isolation of other factors that affect investment decisions. No meaningful conclusions can be drawn solely from this information. As an example, the World Bank (2011) suggests that there are significant non-tax problems that reduce Zambian competitiveness, such as high operating costs. A lower effective tax rate may partially mitigate this loss of competitiveness, but addressing the problem of high costs directly may be a more suitable course of action.

5.2.3 Flexibility to changes in (true) profits

The 2012 regime scores lower on the flexibility criterion than the 2009 regime because of the higher royalty rate on copper and cobalt. Royalty tax types do not compensate for cost differences and their inclusion makes a tax regime less progressive. When prices are high, this may not be a significant problem. When prices fall, which given their cyclical nature they usually do, a high royalty rate might damage the commercial viability of high cost mines. A royalty rate that is more flexible to price changes, such as a variable rate royalty, might in this circumstance mitigate this problem. Careful consideration is required however, in light of the other principles. In particular, while some flexibility to the royalty rate might be considered, it is still important to ensure that royalty payments are high enough to fully compensate the state for the depletion of its mineral wealth.

5.2.4 Administrative feasibility

The feasibility of the tax system is a function of both the design of the tax types used and the capacity of the tax authority. In recent years, the Zambia Revenue Authority has made efforts to improve mining tax administration, supported by donors. This should make the administration of complex taxes such as the Company Income Tax and Variable Profit Tax somewhat easier to manage.

The 2012 reform to separate hedging income from other mining income is also designed to reduce the burden of administration. This measure reduces the risk that hedging transactions can be abused to reduce taxable profits. With such risk reduced, less tax authority resources need be used to monitor hedging transactions.

There are other measures that might be appropriate to take, after careful consideration. Conrad (2012) suggests that the administrative details of Zambia's tax regime could be substantially improved. For instance, having clear definitions of terms used in the tax legislation reduces opportunities for disputes, tax planning and corruption.

5.3 Stability of tax regime

As Section 2.3 argues, a tax regime should be stable and, more importantly, predictable. In other words, the government should resist changing either the level or structure of the regime too much, and it should use tax instruments that change according to clearly defined variables without discretionary government influence. Historically, the tax regime has been particularly unstable, despite fiscal stability agreements. Is there anything to indicate that it will be more stable in the future? Analysing the stability of a tax regime is far from an exact science, particularly since it involves understanding the behaviour of future governments. However, looking at some issues can provide an indication: the flexibility of the tax regime, and stability clauses.

5.3.1 Flexibility

The greater the ability to capture revenues when prices are high, the more likely it is that public pressure to reform the tax reform will be mitigated. The Development Agreement

regime was not progressive enough in this regard, and probably contributed to calls to reform the tax system leading up to 2008. As discussed above, the current regime is more progressive. However, the relatively high royalty rates may in fact be destabilising. If the copper price fell significantly the mining industry might successfully lobby for a lower rate. However, it would then become more difficult to capture revenues, potentially leading to public pressure for further reforms in the future. If the Zambian government does want high royalty rates in times of high prices and low royalty rates in times of low prices, it might choose an instrument that provides this variability coupled with *predictability*. Clearly defining how the royalty rate would change according to price levels would provide such predictability. A variable rate royalty might be one such instrument.

5.3.2 Stabilisation clauses

The current tax regime provides no contracted or legislated stability clauses, unlike the Development Agreement regime. Would a stabilisation clause be appropriate? Such clauses can be useful when attracting investment. For the large mining companies already in place in Zambia, further assurances are not needed and would merely restrict the actions of government. On the other hand, offering stability periods to new investors only, or new investment projects might be worth further consideration.

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