TOWARDS AN OPTIMAL CAPTURING OF RENT FOR ZAMBIA'S LARGE SCALE COPPER MINING INDUSTRY

By

EDWARD CHISAKULO

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DECLARATION

I **Edward Chisakulo** do hereby declare that this thesis is the result of my own investigation and research and that it has not previously been submitted for a degree, diploma or other qualification at University of Zambia or any other university.

Signature:…….

Date:……..

APPROVAL

This **Thesis of Edward Chisakulo** has been approved as fulfilling the requirements for the award of the degree of Doctor of Philosophy in Mineral Economics by the University of Zambia.

NAME **SIGNATURE**

Dr. S Kambani _____ 12/07/2018

Supervisor

P.P. Dr. E. SIAME _____

External Examiner

Prof. Thomson Sinkala _____ 12/07/2018

Internal Examiner (1)

Dr. B. BESA _____ 12/07/2018

Internal Examiner (2)

Dr. E. SIAME _____ 12/07/2

Thesis Chairperson

ABSTRACT

Zambia is largely a mineral economy faced with challenges of designing a tax system that meets two fundamental objectives namely to ensure a fair share of rent for itself and simultaneously allowing for sufficient investment revenues needed by investors. Zambia's mine fiscal regime has evolved more than six times from privatisation time to date with the aim of striking a win-win situation in the capturing of mineral rents. These changes have not yielded satisfactory results since tax revenue captured has regularly remained lower than 4 percent of the gross domestic product (GDP). The main objective of this thesis is to examine the underlying reasons for the failure and how Zambia can optimise its rent capturing as part of a solution to the current problems facing the copper mining industry.

Literature reviewed highlighted various issues needed to optimise rent capturing from the mining industry covering the theoretical concepts of economic rent, optimal taxation and perspectives on "good tax" criteria as a condition for resource taxation. Furthermore, literature review covered concepts dealing with a blend of key taxation instruments and evaluation of their competitiveness, investment incentives, equity participation arrangements, institutional capacities, and additional benefits to mineral taxation clarified by social investment and local content.

Data was collected from a range of "experts" in the mining industry through a survey by semi-structured interview and structured questionnaire employing a non-probability purposive sampling for both. Thirteen interviews were conducted and 120 questionnaires were distributed to people covering the same scope of sources of information, to obtain experts' views based on the study objectives informed by the literature reviews. Out of these, 82 responses were received.

Results were achieved based on literature reviews, interview and questionnaire survey, competitive assessment of the mine fiscal regime using international best practice and quantitative evaluation of the fiscal regime through a stylised copper model. The study established that optimal capturing of rent in Zambia is devoid of a "best taxation" model for arguing taxation matters. Additionally, the study ascertained the underlying reasons for Zambia's failure to capture optimal rent including; poor design of the tax regimes that are inflexible to meet economic perspectives, improper evaluation of granted tax incentives, weak institutional capacities affecting tax administration and sector monitoring, dismal equity stake performance, and suboptimal performance of non-fiscal benefits dealing with social investment and local content.

These findings have significant implications for designing and performance of the Zambian mine taxation system and it is concluded that Zambia's mineral fiscal regime is not adequately structured to optimise rent capturing consistent with the interests of both investors and government.

Inductively, the study proposes a guide for the appropriation of an optimal government share of rent through the need to have parameters for fiscal stability, transparency and progressivity in the design of fiscal regime, maintaining headline fiscal tools consistent with global norms and instituting the excess-profit tax indexed to price movements. Other indicators include, satiated cost-benefit analysis for the offered tax incentives, government assuming equity stake in new and viable mineral projects, and need for strengthening institutional capacities.

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E. Chisakulo (2018)

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AfDB	African Development Bank
AETR	Average Effective Tax Rate
BEPS	Base Erosion and Profit Shifting
BGS	British Geological Survey
BOZ	Bank of Zambia
BPMPI	Best Practice Mineral Potential Index
CIF	Competitive Investment Framework
CIT	Corporate Income Tax
CMZ	Chamber of Mines of Zambia
CNMC	China Non Ferrous Metal Corporation
CPMPI	Current Practice Mineral Potential Index
CSO	Central Statistics Office
CSR	Corporate Social Responsibility
CTPD	Centre for Trade Policy and Development
ECA	Economic Commission for Africa
EI	Extractive Industry
EITI	Extractive Industries Transparent Initiative
EPF	Environmental Protection Fund
ETR	Effective Tax Rate
FDI	Foreign Direct Investment
FQM	First Quantum Minerals
GDP	Gross Domestic Product
GRZ	Government of the Republic of Zambia
HDI	Human Development Index
ICMM	International Council on Mining and Metals
ICTD	International Centre for Tax and Development
IDC	Industrial Development Corporation
IFF	Illicit Financial Flow
IMF	International Monetary Fund
IM4DC	International Mining for Development Centre
IRR	Internal Rate of Return
JCTR	Jesuit Centre for Theological Reflection
KCM	Konkola Copper Mines
MCI	Mining Contribution Index
METR	Marginal Effective Tax Rate
MFEZ	Multi Facility Economic Zone
MMD	Movement for Multiparty Democracy

MMMD	Ministry of Mines and Mineral Development
MMSD	Mining, Minerals and Sustainable Development
MRDP	Mineral Resources Development Policy
MRT	Mineral Royalty Tax
MSD	Mines Safety Department
MTU	Mining Tax Unity
NPI	Net Profits Interest
NPV	Net Present Value
NSR	Net Smelter Returns
NRC	Natural Resources Charter
NRGI	Natural Resources Governance Institute
OECD	Organisation for Economic Co-operation and Development
PAYE	Pay As You Earn
PSA	Production Sharing Agreement
PCS	Production Sharing Contract
PFM	Public Financial Management
PPI	Policy Perception Index
RRT	Resource Rent Tax
SADC	South African Development Community
SMC	State Mineral Company
SOE	State-Owned Enterprise
SSA	Sub-Saharan Africa
TNC	Transnational Corporation
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
VAT	Value Added Tax
VPT	Variable Profits Tax
WACC	Weighted Average Cost of Capital
ZCCM- IH	Zambia Consolidated Copper Mines – Investment Holdings Plc
ZCCM	Zambia Consolidated Copper Mines
ZDA	Zambia Development Agency
ZEITI	Zambia Extractive Industries Transparency Initiative
ZIPAR	Zambia Institute for Policy Analysis and Research
ZRA	Zambia Revenue Authority

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CHAPTER 1

PROBLEM AND BACKGROUND OVERVIEW

1.1 Problem outline on rent capturing

In African countries with mineral resource endowments, there are experiences and concerns from the past which show that countries have not successfully managed to translate their vast mineral resource endowments into state revenue and eventually sustainable development. Africa Mining Vision (2009) observed that most of the African states have not been able to take advantage of their resource endowment opportunities to realise critical linkages in order to underpin diversification, growth and development. The failures are due to issues dealing with "resource curse" where rent diversion occurs resulting in low levels of investment. This is on account of weak governance, particularly the lack of or ineffective appropriate institutions which impacts on the state's share of the resource rents since countries fail to impose resource tax regimes that ensure an equitable share of the rents particularly windfall rents. This is due either to a lack of state capacity or the subversion of that capacity to produce overly investor friendly outcomes. Additionally, poor capacities to exploit upstream and downstream value addition strategies have made African countries fail to benefit from their mineral resource endowment.

According to Illicit Financial Flow (2015) report, Africa loses US$50 billion a year in illicit financial flows (IFFs). Countries that are rich in natural resources and those with inadequate or non-existent institutional architecture are the most at risk of falling victim to IFFs. The various means by which IFFs take place via commercial activities in Africa include abusive transfer pricing, trade mispricing, misinvoicing of services and intangibles and using unequal contracts, all for purposes of tax evasion, aggressive tax avoidance and illegal export of foreign exchange.

The large multinational companies engage in IFFs. These exploit the lack of information and capacity limitations of government agencies to engage in base erosion and profit-shifting (BEPS) activities. The widespread occurrence of IFFs in Africa also points to a

governance problem in the sense of weak institutions and inadequate regulatory environments. Lack of transparency, secrecy and the difficulty of obtaining information and systematic data remain key challenges across the board.

Dobbs et al. (2013) equally noted the many pitfalls facing resource-driven countries, though some have managed successful transformations and established best practice that other nations can emulate. One of the difficulties noticed is capturing value from resources which should not only be examined on fiscal policy but also broader issues affecting competitiveness, such as production costs, political risk, and the provision of local content. Similarly, Korinek (2013) reported that natural resource wealth can benefit countries in which it is found through appropriate taxation and use of tax revenue, linkages and spillovers into other sectors of the economy and increasing investment flows.

Determining the optimum level of mineral taxation is one critical issue for public policy (Otto et al., 2006). In understanding the optimal tax and allocation of rents, Tilton (2004) assessed the concern that mining companies are not paying enough taxes and so are not providing the host country with a fair share of the wealth flowing from its mineral sector. Further, Tilton (2004) argued that as sovereign states, mineral producing nations should pursue taxation and other policies that achieve the goals and objectives they have for their mineral sector. For private companies, economics normally assumes that the goal, or objective function, is to maximise profits. Over time, this means maximising the net present value (NPV) of a company or its wealth creation. While the goal of public policy is different, mining countries presumably want to use their mineral wealth to promote the welfare of their citizens (*ibid.*). These competing objectives need to be balanced to attain a win-win situation.

This study was done by examining theories and practices on economic rent and evaluating various tax instruments and associated incentives. Institutional capacities as vehicles to enhance rent capturing coupled with an evaluation of the current additional benefits like Corporate Social Responsibility (CSR) and “local content” were also evaluated. This was aimed to determine what could be appropriate for the government

share based on some predetermined criteria from theory (literature review) and other possible practices in other mineral producing countries.

Zambia's current mining tax regime is a product of the historical development of the mining industry which has always been a contentious policy debate since the colonial period (Lungu, 2009). Until the 1970s, Zambian mining tax system was mainly a royalty system based on gross mine production value. The recurring discussion regarding the system was mainly focused on who were the recipients of the royalty. Prior to independence in 1964, the majority of mineral revenues were expatriated (Lundstøl et al., 2009). Therefore, after independence in 1964, Zambia embarked on its first negotiations to change the tax regime affecting the mining companies. This was necessitated by the fact that during the colonial era and the early years of the independence period, mineral royalties accrued to the British South African Company (Lungu, 2009).

The post-independence mineral tax structure had three major components: the royalty tax of 13.5 percent based on the London Metal Exchange copper price, the export tax of 40 percent if and when the copper price exceeded US$300 per long ton at the London Metal Exchange and an income or corporate tax of 45 percent (O'Faircheallaigh, 1986). This three-fold tax regime produced a total effective tax rate of 74.4 percent (O'Faircheallaigh, 1986).

During the period of the nationalised mining companies, some taxes were relaxed because the mines were state owned (Lungu, 2009). After nationalisation, the government changed the tax regime affecting the copper mines since now the government had become the majority shareholder. The new tax structure became effective in 1970. The mineral royalty and the export tax where replaced with the mineral tax of 51 percent and a corporation tax of 45 percent (*ibid*.). Although these measures raised the much-needed revenue for the government, the mining companies argued that such high taxes on production and profit discouraged investments and growth of the industry (Curry, 1984).

Over time, the taxation of the mining companies has been varied depending on the circumstances (Lungu, 2009). Following the privatisation process beginning 1990, mine tax regimes were revised for the large copper mines affecting basic elements dealing with royalty, corporate income tax (CIT), capital depreciation, loss carry forward provisions, value added tax (VAT) exemptions on inputs, withholding taxes and excise/customs levies and fees (Lundstøl et al., 2013). Since privatisation, the period 2000-2012 resulted in Zambia applying four fiscal regime changes in the mining sector. These encompassed the "Development Agreement (DA) regime", "2008 regime", "2009 regime" and "2012 regime" (Manley 2012). These regime changes were necessitated due to perceived non-equitable distribution of rents from the copper mining industry between the state and the mining companies. Further changes were made to fiscal regime under the "2014 regime", "January 2015 regime" and "July 2015 regime" (World Bank 2015a; ZEITI 2014b) which occasioned different adjustments to various tax instruments. In July 2016, the government announced a new Mineral Royalty Tax based on a sliding scale that varies between 4 percent and 6 percent linked to the copper price.

Centred on the preceding discussion, Zambia had more than eight changes performed on mine taxation regimes in the post-privatisation era. This indicates that the country is still searching for a win-win situation in its efforts of sharing benefits from the copper mining industry. These changes made to the mine taxation regimes make the country's mine taxation system among the least stable in the World.

1.2 Parameters influencing the research

Studies on capturing mineral rent with a focus on mineral taxation have been done in many jurisdictions with similar experiences to Zambia. In this thesis, reviews of theories on mineral rent, "good tax "criteria, optimal taxation and types of common taxation instruments employed in mineral taxation with taxation policies adopted were undertaken. The issue of institutional capacities to achieve efficient capturing of rent and additional benefits attributed to mining sector from equity participation, CSR and "local content" were examined.

A fundamental conflict between mining companies and governments over the division of risk and reward of mineral development exists. Both want to maximise rewards and shift as much risk as possible to the other party (Baunsgaard, 2001). Further, as reported by Ernst and Young (2014, p.43) the problem arising from the needs by companies and mining countries is highlighted and is stated as follows:

'The economic attractiveness of exploring in the country is strongly influenced by the fiscal system that is applied to the deposits that are discovered and subsequently developed. If tailored properly, fiscal terms are able to achieve overall objective of collecting an adequate share of the economic benefit generated by the mining industry for the government while maintaining high levels of exploration and production activities. In practice, however, it has proven extremely difficult for mining countries to implement fiscal packages that satisfy the interests of both host governments and mining companies.'

1.3 Rationale for the study

Zambia is largely a mineral economy depending on the mineral resources for its economic development through generation of revenue, foreign exchange earnings and employment creation. The national contribution of mining in 2012 was relatively high at 86 percent of FDI and 80 percent of export earnings. However, the contribution has progressively reduced in other macro-economic areas with less than 25 percent of government revenue, less than 12 percent of gross domestic product (GDP) and only 1.7 percent contribution to gross employment (ICMM, 2014).

The post-independent Zambia is a developing country with five decades of experience in mining-related activities. Despite being well endowed with wide mineral potential, copper and cobalt mining contributes with the largest activity with more than 65 percent of its export earnings from mining, emanating mainly from copper and cobalt (UNCTAD, 2006). Zambian mining is not fully integrated and operates as an "economic enclave" with very little value addition and forward and backward linkages. It is therefore quite evident that the capturing of mineral rent (taxation), in this regard, is a

major way the country can generate revenue from the exploitation of its mineral resources.

Developing mineral resource rich nations lack capital to develop the capital-intensive mineral projects on a broader perspective. These countries embrace the "*race to the bottom*" approach as a means to offer investment incentives to attract the much-required foreign investment to develop their mining industries while at the same time looking at ways to maximise government revenues from their mineral resources. Calder (2014) noted that governments have to provide sufficient investment incentives and many factors other than taxes exist that international companies take into account in deciding whether to invest in a country, but taxes are an important consideration. Therefore, private companies provide capital investment funds in these mineral resource-rich countries by assessing the attractiveness of the incentives provided.

For the past decade, Zambian revenue from the mining industry has been sub-optimal as a percentage of tax revenue until 2005 (Table 1.1). Manley (2013) indicated that from privatisation in 2000 until 2005, tax and royalty revenues from the mining industry were particularly poor.

Table 1.1: Direct tax revenue (K' million) from the Mining Industry (Manley, 2013)

Year	**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	2,641
Withholding Tax	0	-	-	1	2	3	-	-	-	-	-	-
Mineral Royalty	4	7	3	8	4	39	69	84	238	235	412	891
Export Duty	-	-	-	-	-	-	-	-	178	15		
Windfall Tax	-	-	-	-	-	-	-	-	126			
Total	**5**	**9**	**3**	**6**	**3**	**43**	**219**	**670**	**1,006**	**651**	**1,656**	**3,524**

The Mineral Resources Development Policy (MRDP) of 2013 also highlighted that the sector contributes 9 percent to GDP with low tax contribution to the treasury at 1.1 percent of the GDP. This was due to the incentives granted to large-scale mining companies through Development Agreements between 1995 and 2008, a measure that resulted in a weak fiscal and regulatory framework.

The African Progress Report (2013) observed that revenues secured by many resource-rich countries appear to be very low in relation to the value of exports, and compared with international standards. In 2011, Zambia's copper exports generated US$10 billion, while government revenues from copper were only US$240 million - or 2.4 percent of export value. This is a figure which exposes unfair tax regime against resource-rich countries in Africa representing only 2.4 percent of the total export value of Zambia's export earnings.

Further, World Bank (2011, p.1) studies on the mining sector in Zambia underscored the problem of poor capturing of rents that:

'Despite the revival of the industry since privatisation, the mining industry's contribution to government revenues has remained low, peaking at just 1.4 percent of GDP in 2008. Mining taxes amount to just 8 percent of total tax revenue. This is a low figure given the industry's share of GDP (15-18 percent) and the value of copper exports (over US$3 billion). Worldwide, taxes represent between 25-40 percent of export revenues. In Zambia, they represent 3-5 percent.'

The problems of poor capturing of rent leading to copper benefits being elusive were highlighted by the Finance Minister[1] that, despite Zambia being endowed with vast mineral resources, the country has not realised maximum benefits from the sector's potential. This has been against the backdrop of the sector experiencing high copper prices in the past. The country made various changes in tax policies in the last 10 years with a view to optimise benefits from the mines which have not yielded the desired

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[1] *Concerns by the Finance Minister reported, Times of Zambia (2015). 'Copper benefits still elusive'. Business Times, Volume # 17,111, dated March 4th, 2015.*

results. In addition, the minister indicated that the contribution of the mining sector revenue as a percent of GDP remains low at 4 percent. The January 2015 tax regime budget change was regarded as a solution to have tax policies that guarantee a win-win situation. Before the introduction of the 2015 tax regime, the tax system was vulnerable to all forms of tax planning schemes such as transfer pricing, hedging and trading through "shell" companies (*ibid.*). The minister pointed out that the tax structure was simply illusory as only two mining companies were paying company income tax under the previous regime since most of them claimed that they were not in the tax paying position.

Therefore, the justification of undertaking this research arose from the preceding with an understanding that optimal capturing of rent from the country's mineral wealth will result in improved benefits for Zambia and its nationals.

1.4 Problem statement

The tax regime needs to strike a balance between adequate tax revenues for the government and a reasonable level of taxation that still attracts private investment. The strong fluctuations in mineral commodity markets and the long-term investment cycles in the extractive sector make striking this balance especially challenging (Stürmer, 2010). As reported by the World Bank (2011), all countries that depend on natural resources face the shared challenge of taxation, that is: determining tax levels and administering tax revenues in a manner that balances the needs of government and investors.

Despite being a mineral economy, challenges linked to optimal capturing of rents in Zambia are areas of concern which have led to low contribution in terms of socio-economic development from the sector when compared to other resource-rich countries. These apprehensions form the problem statement presented as follows:

The current capturing of rent for Zambia's mineral industry is not optimal from the perceptions of both parties - the private investors and the government. Evaluation of the current rent capturing mechanism (mineral taxation) will seek to bring out some insights

which might create modifications to the current mine fiscal system that will try to make government gain an adequate share of economic rent without scaring off the investors.

1.5 Objectives of study

The main aim of the study was to evaluate the performance of the Zambian mineral fiscal regimes as a way to enhance effective capturing of rent that is attractive to investors and at the same time secure reasonable flow of revenue for the government.

To achieve this aim, the following were the specific objectives:

1) critically assess how the mine fiscal regime responds to attributes of a "good tax" criteria;
2) review the international competitiveness of the Zambian mine taxation system based on selected tax instruments;
3) evaluate how the offered taxation investment incentives have impinged on the performance of rent capturing in Zambia;
4) assess government institutional capacities regarding tax administration and monitoring of the sector;
5) examine the extent to which equity participation has performed with respect to capturing the share of rents for Zambia;
6) evaluate how the concepts of CSR and local content initiatives have been integrated in the Zambian domestic economy;
7) employ a stylised copper model to assess the international competitiveness of the current mine taxation system and the split of economic rent between the government and the investors; and
8) determine what could be an appropriate rent capturing mechanism for the government based on some predetermined criteria from theory and possibly best practices elsewhere.

1.6 Significance of the study

The results of the study have some policy and investment implications. The study will provide input to economic analysis upon which government and extractive industry can

draw in their negotiations of fiscal terms that can offer a fair, stable and just basis of rent capturing from the country's mineral wealth.

Since policies evolve depending on the conditions or developments in the environment, results from this current research can be used as inputs to help with subsequent government efforts of reviewing the mineral policy related to taxation consistent with performances in other jurisdictions. Being a mineral economy, capturing of mineral rent should be of interest to the Zambian government.

Since governments apply various taxation systems to capture rent from mine investment, policymakers need to be adequately enlightened based also on opinions from the public to make informed decisions on the types and levels of taxation to be applied to mineral investments.

In many circumstances, studies dealing with optimal capturing of rents in resource rich countries aim to contribute to current debates in the following areas: means to establish and identify the different expectations for different stakeholders; grant help to governments and policymakers to develop or enhance institutional frameworks in order to allow mining industry to contribute to sustainable economic development through optimal rent capturing; and outline policy recommendations to improve governance structures in the capturing of economic rents in the country.

It is also hoped that the study will add to the existing literature on mineral taxation design and implementation. Against this backdrop, it may serve as a useful reference material for those who want to undertake research on the design of mineral tax systems that will reduce the perceived risk in investment and balance the interests of both parties -government and investors. The study will also try to help the Zambian nationals at large to appreciate how revenue from the mining sector is appropriated.

1.7 Structure of thesis

The thesis is organised in seven chapters with the summaries of the various chapters presented below.

Chapter one presents a brief account of issues relating to mineral taxation and provides a background encompassing; study rationale; aims of the study, problem statement, and significance of the study.

Chapter two is the literature review discussing the conceptual framework of base metal taxation and provides a review of the Zambian mineral taxation system in relation to revenue capturing.

Chapter three discusses the research methodology and design approach in line with the variables in the study constructs.

The data analysis and results from the semi-structured interviews and questionnaire survey based on the study objectives are presented in Chapter four.

In Chapter five, assessments of constructs for optimal capturing of rent based on the semi-structured interview and questionnaire survey are presented.

Chapter six presents the competitive evaluation of Zambia's mine taxation system and uses the hypothetical copper model to understand the split of mineral rent between the government and investors. The chapter also offers the guide for appropriate rent capturing for the country.

Conclusions and recommendations for possible future studies are presented in Chapter seven.

1.8 Summary

The Chapter discussed introduction to the study with the rationale, main aim and specific objectives with significance of the study presented. This Chapter brought out information that African countries still face challenges to benefit from their resource endowments. The Chapter also highlighted that Zambia's capturing of rent from its mineral resources is sub-optimal starting from the colonial periods to date with varied objectives followed by the government and the investors resulting in various changes made to the fiscal regimes.

CHAPTER 2

LITERATURE REVIEW

The Chapter gives conceptual and literature review on general mineral taxation and on Zambian mine taxation systems. The importance of assessing taxation on a general perspective assists in appreciating the fiscal regime practices and how the resource-rich countries perform in terms of fiscal regime position within a broader context.

This Chapter is divided into Sections 2.1 - 2.2.16 which deals with general base metal taxation focusing on concepts of economic rent as a basis for resource taxation studies, the importance of the mining sector and its economic benefits, taxation policies, design (common tax instruments applied) and implementation of taxation, and flexibility of taxation system to attributes of "good tax" criteria. It further makes reviews on investment incentives, institutional capacities, equity participation models and non-fiscal benefits associated with corporate social responsibility (CSR) and local content.

Sections 2.3 - 2.3.10 provide a review of the Zambian mineral tax system. This is done through discussions of the background to Zambian mining industry and assessment of the stakeholder groups in the Zambian mining sector, regulatory frameworks available, and macroeconomic contribution from the Zambian mining sector. Furthermore, reviews on taxation instruments employed, available investment incentives, equity participation situation, institutional capacities, and additional non-fiscal benefits from the sector dealing with CSR and local content development are presented. Summary is given in section 2.4.

2.1 General taxation concepts of base metal mining

2.1.1 Concepts of economic rent

Nakhle (2008) acknowledged that taxation is a mechanism used to capture a large share of the economic rent accruing from the production of a scarce resource, such as oil. Rents are the basis upon which benefits get distributed among stakeholders. The concept of economic rent is important in the study of mineral taxation. Governments, therefore, try to create a tax system to capture a proportion of rent that is deemed to be fair, whilst

encouraging private investors to explore, develop and exploit minerals (Laporte and Quatrebarbes, 2015).

Economic rent is explained in terms of development, definition and why it is considered as the most appealing conception for mineral taxation. ICMM (2009) reported that the "resource rent" principle provides the theoretical underpinning for much of the theoretical mining taxation literature. Natural resource rents are important as implied by Barma et al. (2012) since they must be collected by government institutions and channeled through the budgetary process so that they can be transformed into productive public assets and sustainable development. Resource industries generate substantial economic rent (Anderson, 2006) as given in Figure 2.1. Different types of rents are discussed with some implications on the taxation policy.

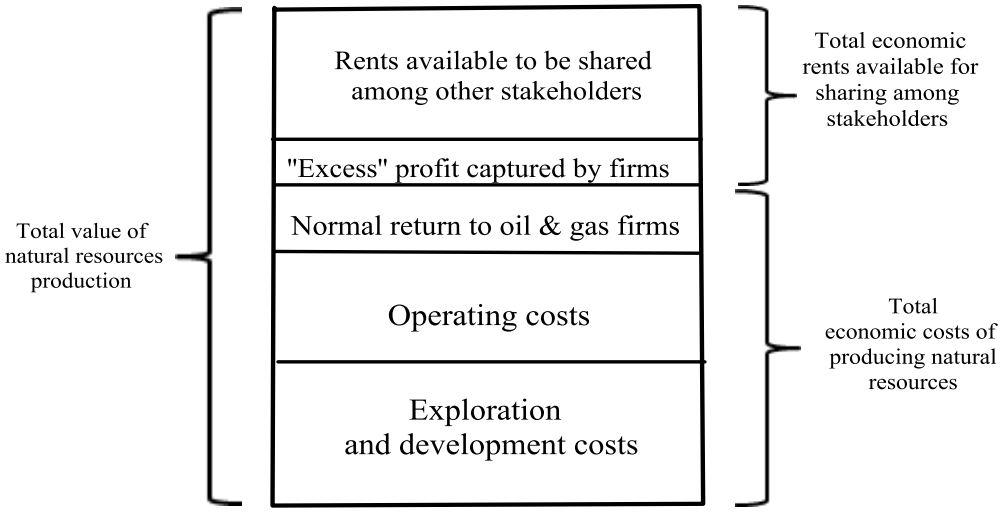

Figure 2.1: Economic rent
(Anderson, 2006)

The idea of economic rent was developed by economists examining how the profits of land owners varied with different qualities of land (Andrews-Speed, 2000). Ever since its original inception, Figueroa (1998) explained that the concept of rent has been understood as a surplus. In its initial historical link to land, land rent was conceived as the surplus accruing to land after all costs have been discounted from total revenues generated by the product of land. One of the prime movers of the concepts of economic rent was the earliest Scottish economist, Smith (1776). His argument was on rent of land

considered as a surplus explaining how it gets created and be distributed between the tenant and the landowner. Smith (1776) argued that the portions of land offer different rent depending on fertility and situations.

Figueroa (1998) reported that for classical economists, up to the industrial revolution, land was the main source of wealth and political power. Explaining how land generated rent and wealth, and how they were distributed among social actors or classes were some of the central issues studied by classical economists. Another most influential classical English economist Ricardo (1821) using the concept of agriculture land defined rent as: '*that portion of the produce of the earth, which is paid to the landlord for the use of the original and indestructible powers of the soil.'*

Ricardo (1821)[2] reported on the generation of rent and wealth and how they were distributed to three classes of the community classes - the proprietor of the land, the owner of the stock or capital necessary for its cultivation, and the labourers by whose industry it is cultivated. The proportion of the produce of the earth allocated to these classes under the names of rent, profit, and wages, will be essentially different; depending mainly on the actual fertility of the soil, on the accumulation of capital and population, and on the skill, ingenuity, and instruments employed in agriculture.

Garnaut and Ross (1983) argued that Ricardo's exposition of rent on agriculture land derived from the fact that the amounts of labour and capital that must be expended to provide a given amount of produce at the place increased indicating that the marginal cost of agricultural production rose with any increase in the amount of land under cultivation (Figure 2.2). The margin of cultivation will be extended to the point where the price of corn is equal to the margin of production.

As shown in Figure 2.2, at price OP, OQ of corn is produced with the total cost of producing OQ of corn given by the area OMCRQ (a supply price of the total amount of

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[2] *This is the correspondence derived from the third edition of Ricardo which was also the final revision of the book- The Principles of Political Economy and Taxation.*

labor and capital to produce OQ of corn). The excess of revenue over the supply price of sacrificial productive factors is the shaded area MCPR. This is the economic rent of agriculture land, which could in principle be taxed away without affecting the allocation of resources to productive uses.

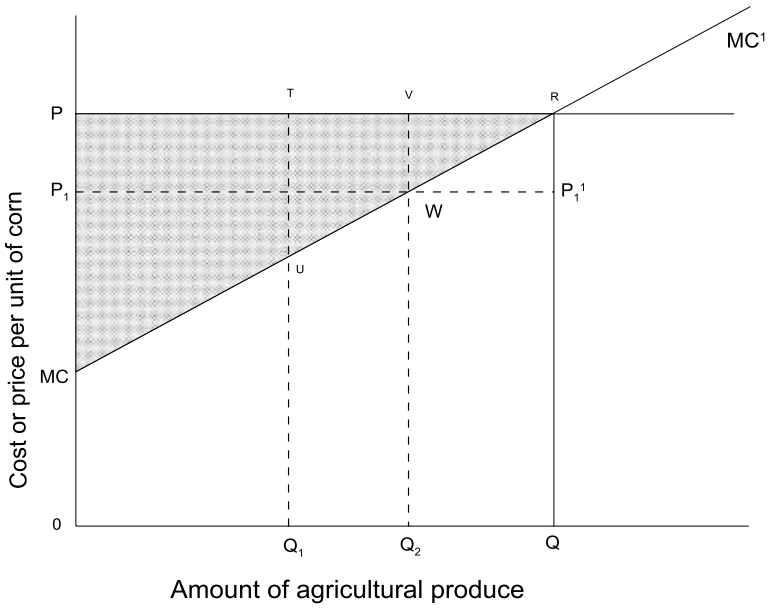

Figure 2.2: Rent determination on agriculture land
(Garnaut and Ross, 1983)

Ricardo (1821) defined rent in terms of difference of agricultural land fertility, and these concepts were applied to mineral deposits. Garnaut and Ross (1983) argued that economic rent as applied to mineral deposits need to be understood in terms of total mineral output over long periods rather than of annual output as in the case of agriculture land. This is in agreement with Land (2010) who maintained that the classic definition of resource rent is the ex-post surplus of the total project lifetime value arising from the exploitation of a deposit, in present value terms, over the sum of all costs of exploitation, including the compensation to all factors of production.

2.1.2 Definition of economic rent

Boadway and Keen (2014) stated that the economic value of a resource, after accounting for all the costs of discovering, developing, and extracting it, takes the form of a rent. In the study of rent taxation for non-renewable resources, Lund (2009) pointed out that a

properly designed tax should in principle be able to capture some or even all of this rent for the public sector. In order to minimise the need for distortionary taxes, economists have recommended rent taxes, which are supposed to be neutral. A combination of factors makes the design of these taxes or alternative arrangements for government revenue very challenging. There can be large rents in periods when resource prices are high, and thus a strong public demand for government revenue. There is high uncertainty in prices and geology, and technology is often owned by big multinationals. This raises issues about attitudes to risk and asymmetries of information, which are exacerbated by high tax rates.

Economic rent has been defined in various ways by different authors (Garnaut and Ross, 1983; Mintz and Chen, 2012; Rogers and Webster, 2007). Based on Mintz and Chen (2012, p.3), economic rent is defined as:

'*The surplus value of a resource after all costs, including opportunity costs, is subtracted from revenues arising from the sale of goods and services. Rent is thus measured as the difference between the price at which a resource can be sold and its discovery, extraction, and production costs, including a rate of return on capital that can be obtained by investing in projects with similar risk and scale.'*

2.1.3 Types of economic rents

Garnaut and Ross (1983) suggested a distinction to be made between three types of mineral rents taking into account short-term, medium-term and long-term costs. In the short-term the cost is due to the variable costs involved in extracting the ore from established mines, in the medium-term it is related to the total cost of producing ore from new mines based on known mineral deposits, and in the long-run it is related to the costs including prospecting costs.

Different types of rent need to be highlighted since such differences can be of particular significance in taxation policy and explaining the suitability of economic rent as a tax base (Nakhle, 2008). The types of economic rents are explained below.

2.1.3.1 Ricardian rents

Ricardian or differential rent (Eggert, 2001; Tilton, 2004) is described as being named after Ricardo (1821) who pointed out that agricultural land could be separated into different classes according to its fertility (Figure 2.3). The best land, represented by rectangle A, can produce food at the lowest cost (OCa). The next best land, represented by rectangle B, has somewhat higher costs (OCb), and so on. When population is small, all the food needed can be grown on the best land. The supply of the best land exceeds the demand for it; the price of food (P1) equals its production costs (OCa); and landowners receive no rent.

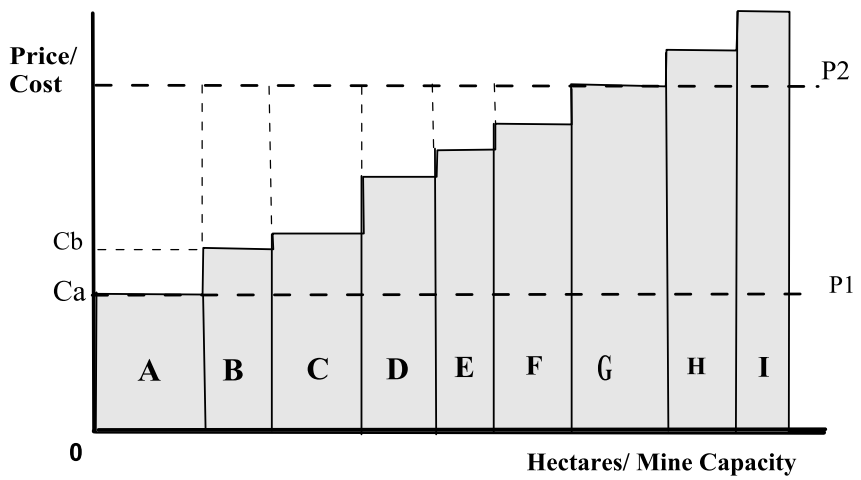

Figure 2.3: Ricardian Rent
(Tilton, 2004)

Like parcels of land, mineral deposits are of different quality and have different production costs. Therefore, as Ricardo (1821) noted, it is an easy step to extend this analysis of agricultural land to mining. The classes of land in Figure 2.3 now portray different mines, and the horizontal axis measures mine capacity rather than hectares of agricultural land. Mine A has the lowest production costs since it has rich ore and other factors. Mine B has different costs, and so on. The area for each mine under the price line and above its costs reflects its Ricardian rent. Eggert (1998) stated that it is an easy step to extend the concept to mineral resources. Some mineral deposits are of higher quality than other deposits; they may be larger, higher grade, easier to process and

located close to transport facilities. In a market place for mineral deposits, these high-quality deposits will fetch higher prices per unit of mineral than low-quality deposits.

2.1.3.2 Quasi - rents

The concept of quasi-rent owes its origin to Marshall (1890) who observed (Garnaut and Ross, 1983) that the earnings from the past and irreversible investment are in some way like economic rents or in some ways not. As indicated by Nakhle (2008), quasi-rent represents the returns that accrue to firms from past investment and innovative practice or as a result of changes in the market. Such rents only occur in the short-run before they are competed away since competitors will learn from the firm generating quasi-rent. Short-run rent is the difference between the market price and the supply prices of variable inputs. Normally, short-run rents can be expected to exceed long-run rents. The capture of quasi-rent can alter the long run efficiency behavior of firms, often causing them to reduce investment and therefore the social optimum level of output.

2.1.3.3 Scarcity (Hotelling) rents

The scarcity of an exhaustible resource, such as minerals, leads to generation of economic rent when it is extracted (Baunsgaard, 2001). Hotelling (1931, p.139) noted that: '*Problems of exhaustible assets are peculiarly liable to become entangled with the infinite. Not only is there infinite time to consider, but also the possibility that for a necessity the price might increase without limit as the supply vanishes.'*

Hotelling (1931) argument was on scarcity rent - a portion of the value of a mineral deposit attributable to the limited physical availability of the resource. Otto et al. (2006) supported the argument indicating that Hotelling noted that firms incur an opportunity cost in addition to their production costs in the process of producing mineral commodities. This is because increasing output by one more unit today, rather than leaving the required mineral resources in the ground, reduces the mineral resources available in the future. Therefore, the opportunity cost identified by Hotelling (1931) is the net present value (NPV) of the future profits that are lost because mineral resources are reduced by an additional unit of output today. Therefore, the profit-maximising,

competitive firms producing mineral commodities will only expand their output up to the point at which the market price equals the production costs of the last unit plus its opportunity cost (Figure 2.4).

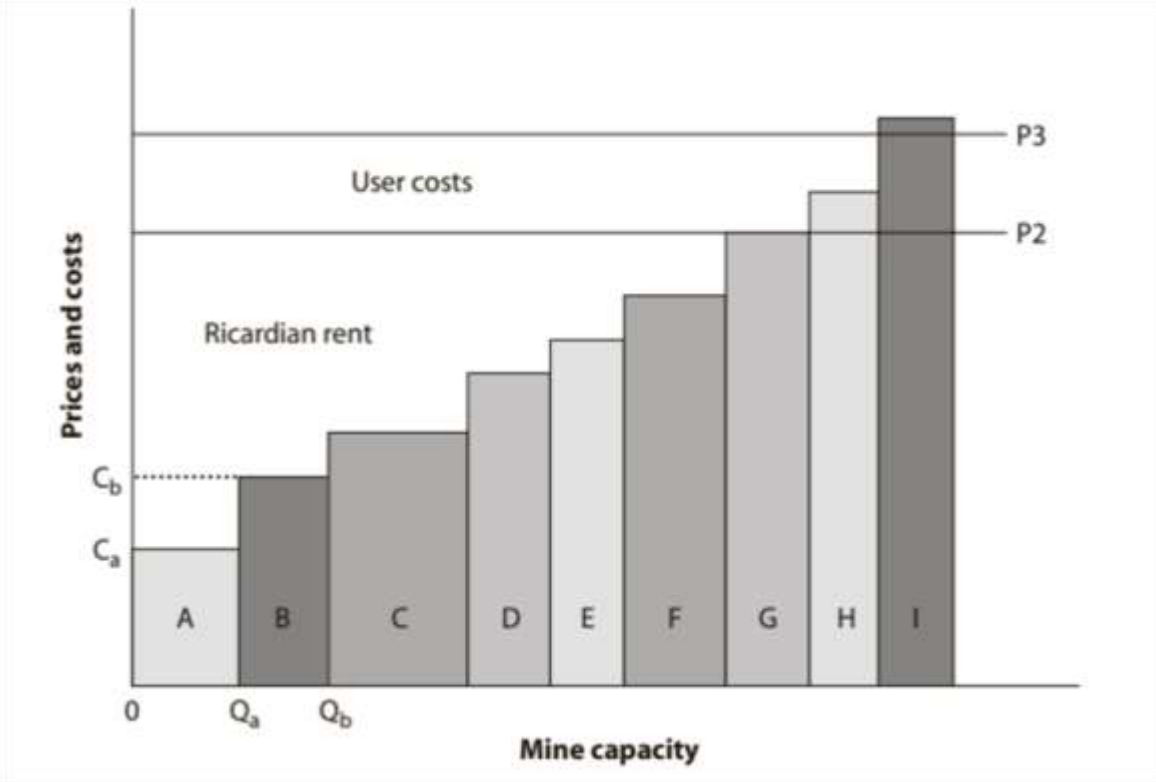

Figure 2.4: User cost in the mining industry
(Otto et al., 2006)

The user costs are the NPV of the future profits forgone by using marginal mineral resources (that is, the ore of mine G) to produce an additional unit of output today rather than saving these resources in the ground for the future. When intra-marginal mineral resources are consumed (that is, the ores of mines A through F), the NPV of the lost future profits reflects both user costs and pure Ricardian rent.

2.1.3.4 Monopoly rents

A source of rent due to monopoly (or market) power in a sense that a firm is able to influence the price at which it sells its output can achieve a higher surplus than otherwise (Eggert, 2001). Hughes and Singh (1978) argued that mineral markets are typically imperfect with a strong tendency towards oligopoly. There exist complex patterns of

horizontal and vertical integration. This meant that transfer pricing between the various stages of mining and processing does not take place at arm's length, and competitive market prices at any particular stage of production are very difficult, if not impossible, to determine. In mining and mineral processing output, prices have to be thought of not as being independently determined, but as a mobile network linked by vertical and horizontal integration. A vertically integrated producer can push prices up and down the chain to declare profits at various stages of the production process according to ownership, taxation and other conditions. These conditions give rise to monopolistic rents captured by a monopoly (or oligopoly) engaged in mineral exploitation or in mineral processing.

2.1.4 Justification for rent taxation

Hogan and Goldsworthy (2010) reported that fiscal regimes for minerals (and other resources) tend to differ from those found in other sectors due to the presence of resource rents and unusual risks. Since rent is pure surplus, it can be taxed whilst upholding the core taxation principle of neutrality. Garnaut and Ross (1983) and Eggert (1998), consented that taxing economic rent is efficient since returns are above the levels needed to reward capital.

Further, Nakhle (2008) argued that there is a general presumption that a tax based on economic rent is optimal since it satisfies the tax criteria. Since the magnitude of such rent profits is seen as unrelated to management skills or the wisdom of economic decisions, it is judged to be a fully justifiable base for taxation. In theory, economic rent tends to be viewed as an important and legitimate source of government revenue since its appropriation, again in theory, can take place without destroying economic incentives.

2.1.5 Mechanisms for extracting rents

Royalties and taxes on economic rents are a more efficient form of taxation (Mintz and Chen, 2012). According to Garnaut and Ross (1983), classical economists familiar with the concept of agriculture land rent were puzzled by the apparent truth that at any time,

even the highest cost mines in the mineral industries appeared to generate rent. This led to the formulation of the doctrine that the income of the mine comprised two parts:

(i) a "royalty" which was compensation for reducing the capital value of the mine through the removal of minerals; and

(ii) "rent" which was a payment for differential costs of production or location determined in the same manner as land rent.

Some of the options to capture rent (Boadway and Flatters, 1993; Dahlby, 1998; Fischer, 2007) comprise:

(a) State-owned production

Where government has some direct participation in resource exploitation. Dahlby (1998) noted that the problem with public enterprise to capture rents could be that public managers have little motivations to minimise costs of production. As noted by NRGI (2015), in many countries, these enterprises have served as vehicles for public officials to steer valuable contracts toward their own interests, or to create bloated bureaucracies that do little to advance broader development. Furthermore, Dahlby (1998) noted that these public enterprises fail in that government may treat them as "cash cows", inhibiting their ability to make productivity enhancing investment.

(b) Fees and auctions

The government may charge a fee for accessing the resource. This maybe a fixed amount, negotiated or maybe based on auctioning the rights of access. The latter ensures maximum rent accrual from the resource for the government (Fischer, 2007).

(c) Tax and royalty

The government may use royalties as a charge to the company accessing the resource on the basis of the resource being extracted. However, Dahlby (1998) refuted the use of resource royalties as alternative way to capture all of the economic rents from the resources, because their tax bases are not equivalent to economic rents thereby frequently distorting extraction decisions. The extractive industry may also be charged income tax like other businesses.

(d) Resource rent tax (RRT)

A RRT attempts to capture rents above an expected rate of return (Fischer, 2007). The tax is applied when the calculated payback factor exceeds one, or when cumulative cash flow (which may incorporate a certain real rate of return) turns positive. RRT ties taxation to profitability, making the tax system less distortive for investors. RRT is not common since it is more difficult to administer and ensure compliance (*ibid.*).

2.1.6 Design principles and factors influencing economic rent

Boadway and Flatters (1993) indicated that rents are virtually impossible to measure as they accrue. To do so requires being able to measure accrued real capital costs accurately, including real depreciation, real costs of financing, real capital losses, replacement cost of inventories and the cost of risk-bearing.

Nakhle (2008) reported that many complications arise when estimating the quantum of economic rents which include:

(i) distinguishing between various types of rent. Scarcity rent and differential rent generate the total resource rent which is an appropriate tax base since taxation of this rent does not affect the behavior of the firm. This is not the case with quasi-rent which only occurs in the short run. As such, quasi-rent is not to be included in the tax base but the question is how to identify or quantify that rent and distinguish it from other types;

(ii) the difficulty governments have in determining acceptable rates of return for all companies, especially oil companies, as they do not normally reveal directly their required rate of return on investment; and

(iii) measuring economic rent which requires knowledge of the differing costs of the individual factors of production as well as their opportunity costs. The difficulty in measuring each of these components is what makes the determination of economic rent and its capture complex and controversial.

2.1.7 Factors influencing economic rent

Rent will vary and depend on a wide range of technical and commercial factors (Andrews-Speed, 2000; Land, 2010; World Bank, 1992). These include: the size, grade,

and ease of extraction of the deposit; the physical location and terrain; the transport infrastructure; the efficiency of the project management; the size and nature of the local market; and the availability of local skills and technology. Based on these factors, Andrews-Speed (2000) conceded further that defining in advance the magnitude of economic rent is not so straightforward because of uncertainties concerning the geology and therefore, the costs; the evolution of technology and therefore, the costs; and the markets and therefore, the revenue.

2.1.8 Dissipation and diversion of mineral rent

Garnaut and Ross (1983) argued that governments do not always receive in their revenues the full potential rent value of mineral resources that they own. Sometimes this is because the resource is exploited in an economically inefficient manner, a situation termed as "dissipation of rent". At other times, it is because part of the rent accrues to persons or organisations other than the state, a condition referred to as "diversion of rent."

(a) Dissipation of Rent

This has been discussed by Andrews-Speed (2000) and Garnaut and Ross (1983) and might include the following:

(i) processes of bargaining for rent shares among the parties cause delays in investment or otherwise sub-optimal investment decisions;

(ii) poor co-ordination among various parties that have approval powers, with each levying rent charges in one form or another may lead to a total fiscal system that is markedly non-neutral and generates less than maximum possible economic rent;

(iii) the government may impose conditions on the timing or the manner of exploitation;

(iv) the governments which fail to grant and enforce exclusive exploitation rights will be unable to prevent duplication of effort and investment; and

(v) the existence of numerous layers of government bureaucracy and of complex procedures for approval also dissipates rent, regardless of the level of fees for such approvals.

(b) Diversion of Rent

Discussed examples of rent diversion (Andrews-Speed, 2000; Garnaut and Ross, 1983) include the following:

(i) presence of the party other than the state (or perhaps another tier of government or the owner of land upon which the resource is found) which might give its approval for the resource development. This could result in illegal rewards demanded by land-owners or land users;

(ii) incidence of some decentralised regulatory agency of the state which has the powers to enforce some conditions upon the operations of the resource project. These could be taxes imposed by local government which are beyond the control of central government; and

(iii) existence of monopolistic organisation in the supply of inputs to mineral production and investment. These can create high fixed prices for inputs or low fixed prices for outputs.

Andrews-Speed (2000) argued that substantial dissipation and diversion of rent will, in the short term, result in the government losing control over the destination of the economic rent and in receiving less revenue. In the long term, investment from the private sector may dry up entirely as investors lose patience with a perverse and inefficient government administration.

2.2.1 Optimal taxation

Striking the government needs and investor requirements is important in taxation of minerals. Otto et al. (2006, p.8) noted the importance of obtaining an optimal tax level and commented that:

'The more the government taxes the mineral sector, the greater the share of wealth created by mining that flows to the government. This means, of course, that less of the wealth is flowing to the companies. Therefore, raising tax rates undermine companies' incentive to carry out exploration, to develop new mines, and even to remain in production at existing operations.'

Based on these explanations, Tilton (2004) and Tadros and Svensson (2010) indicated that a tax regime should not distort mining investment, production, or extraction. If the policy goal is to maximise short-term revenue, policymakers might be tempted to impose a high effective tax rate. However, if the rate is too high, in the end, there will be fewer mines and fewer taxpayers because investors will not come, explore, and discover new mines. This can result in the lower net present value of government revenue. However, if the effective tax rate is too low, the government will forgo revenue as more mining investment is made but the government's fiscal take is lower per mine. Therefore, a good tax policy should strive to set the effective tax rate at T *, as defined in Figure 2.5. This gives a mix of taxes resulting in an optimal net present value (NPV) of government revenues.

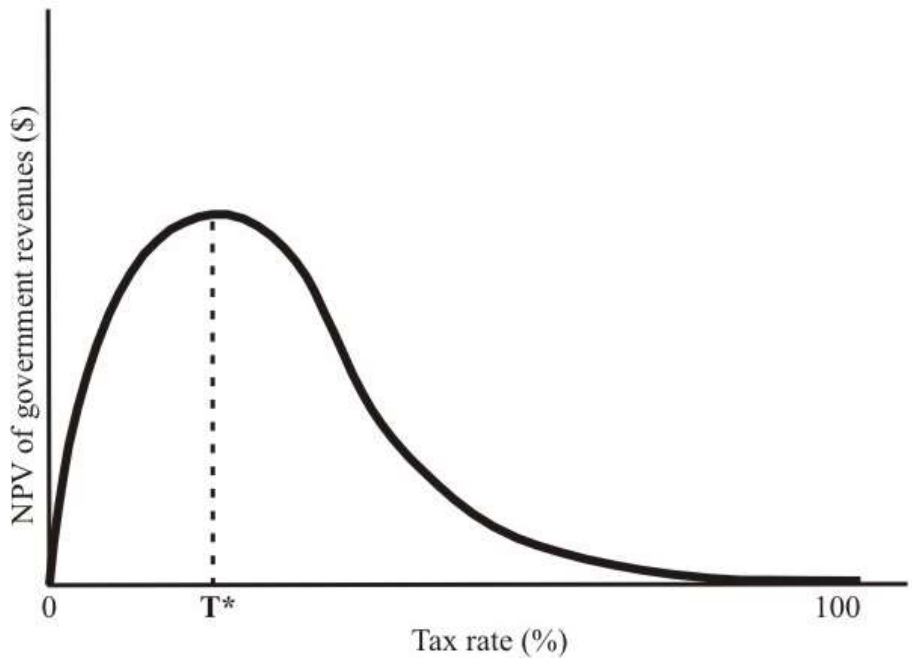

Figure 2.5: Optimal taxation
(Otto et al., 2006)

The most important aspect of fiscal policy is to ensure it is clear, transparent, and predictable, enabling investors to accurately assess investments and compare them with opportunities elsewhere (Otto, 2007).

2.2.2 Government take

Otto et al. (2006) described that each mineral deposit is different and the tax system will affect it differently. The only way to really compare across jurisdictions is to look at a range of deposits and commodities based on the overall level of taxation or on their effective taxation rate. According to Otto (2009), some models used for tax system analysis will usually also calculate the distribution of net revenues between the investors and the government. The effective tax rate (ETR) as a measure of "government take" is expressed as a percentage of the effective net cash flow, of all amounts payable by the company to the government (including dividends in the case of a free carried government equity share) divided by the total pre-tax annual cash flow of a project (Otto, 2002).

Daniel et al. (2010) indicated that a forward-looking average effective tax rate (AETR) is familiar in resource industries, calculated as the ratio of the net present value (NPV) of tax payments to the NPV of the pre-tax net cash flow from a project that generates a return greater than that from a marginal investment. Various assumptions on the determination of the ETR exist (Daniel et al., 2010; Otto, 2002) which include geology, capacities, mine life, costs (operating and capital), price forecasts, financing structures and hurdle rates. For most nations, the optimal ETR is between the international range of 40 and 50 percent (Otto, 2007). However, Tadros and Svensson (2010) indicated that there are tax administration and auditing issues that many countries face through large gaps between mining taxes - which should be paid based on effective tax rates – and the amounts actually received. The reasons for gaps are largely tied to tax administration, including limited capacity to enforce contracts, lack of coordination between ministries of mining and finance, non- transparent contracts and rent seeking. Without remedial actions, these gaps will worsen as mining expands and investment increases.

2.2.3 Importance of mineral taxation

Andrews-Speed (2000) reported a number of reasons why taxation is important to both governments and companies which include the following aspects:

(a) raising money needed to pay for the expenditure;

(b) used as an instrument of social and economic policy by imposing higher or lower taxes on different activities;

(c) promotion or destruction of certain industries either intentionally or unintentionally by using tax policies; and

(d) control of sector development by employing tax policies to influence the development of selected sectors of the economy.

Additionally, Dobbs et al. (2013) specified that a robust mineral resources industry creates jobs, contributes to government's finances through tax and royalty payments, and ensures sustained spending on exploration, increasing the viability of marginal deposits.

2.2.4 Economic benefits from extractive industry

The main economic impacts of extractive industries are reflected on the macroeconomic performance, the government revenues, the direct employment, and the economic externalities and spill over effects on other sectors of the economy (Sigam and Garcia, 2012). The mining industry is also a very important force in the global economy, occupying a primary position in the supply chain of resources. The benefits conferred by the mining industry segment to national governments include foreign direct investment, exports, government taxes and national income measured in terms of GDP (Dorin et al., 2014).

In understanding "mineral economies"[3], ECA (2002) identified the potential problems of mineral dependence which relate to three areas, namely; international trade, mining's links to other domestic economic activities, and how government uses mineral revenues. Constructing an index incorporating all these three measures of mineral dependence is not easy because of lack of data for a large number of countries over an extended period of time. ECA (2002) instead used data on international trade as a proxy for mineral dependence - more specifically, mining's percentage share of a nation's total exports.

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[3] *ECA (2002) listed developing nations whose mining exports exceeded 10 percent of total exports on average during the 1990s as "mineral economies". The choice of 10 percent as a cut-off was arbitrary.*

Equally, Dobbs et al. (2013) defined "resource-driven countries" as those economies where the oil, gas, and mineral sectors play a dominant role, using three criteria where mineral resources:

- account for more than 20 percent of exports;
- generate more than 20 percent of fiscal revenue; or
- rents are more than 10 percent of economic output.

ICMM (2012) reported that as a basis for discussion and a first step towards providing a long-overdue and continuously updated set of data on mining's overall economic contribution, a preliminary index was developed by ICMM, with Oxford Policy Management (OPM). This index ranks countries by the importance of mining and metals within each national economy (the Mining Contribution Index - MCI). ICMM (2012, p.8) stated that:

> *'The MCI is calculated based on aspects of mining and metals contribution to national economies where country-by-country data exists. At present the MCI is limited to three variables based on contributions to exports and production values, which are used to calculate an overall MCI score for each country.'*

The MCI provides a reasonable first approximation of the relative importance of mining and metals to each national economy, however, there are many more direct and indirect potential contributions from the mining sector (ICMM, 2012). A measure of the given indices in the selected mineral economies is given in Table 2.1.

ECA (2002) in the tabulation of the mineral economies showed that there are other indicators of economic and social growth and development in each nation. One of the measures is the broader United Nations Human Development Index (HDI) - a composite index incorporating life expectancy, adult literacy rates, enrolment in educational institutions, and per capita GDP (*ibid.*).

(a) Foreign direct investment (FDI)

Twerefou (2009) stated that FDI is considered the main driving force for the mining industry's liberalisation in Africa. The sector has been a major source of FDI over the

years, accounting for about 65 percent of all FDIs in Africa in the 1990s. FDI inflows into the continent increased from a modest US$11 billion in the 1970s to US$80 billion in the 1980s and leaped further to US$100 billion in the 1990s.

Table 2.1: Measure of chosen indices in selected minerals economies (ICMM, 2012)

Country	2010 Mineral Export Contribution (%)	2010 production value ($ million)	2011 Human Development Index (HDI)	Mining Contribution Index (MCI)
Australia	40.3	71,995	0.93	87.9
Botswana	83.7	741	0.63	61.9
Canada	11.9	13,984	0.91	67.1
Chile	65.9	31,275	0.81	92.1
Namibia	53.4	352	0.63	86.5
Norway	6.4	333	0.94	37.8
Peru	62.7	18,832	0.73	88.0
South Africa	37.4	27,116	0.62	81.2
Tanzania	40.7	1,340	0.47	82.3
Zambia	83.6	3,850	0.43	97.7

In many African countries, FDI inflows came along with the establishment of large-scale mining companies employing capital-intensive methods with minimal labour requirement. The proliferation of these large mining companies and procurement of large sites with their crowding out of small-scale indigenous mines have caused some disaffection in many mining communities (Twerefou, 2009).

(b) Macroeconomic performance

Sigam and Garcia (2012) recounted that extractive industries' exports are a valuable source of foreign exchange in host countries. These resources finance imports of goods and services needed for industrialisation, diversification and growth. Capital inflows from the development stage of projects and revenues from operations have a positive impact in the country's balance of payments. However, Sigam and Garcia (2012) stated that if these inflows are not well managed, especially when there is a dominance of a

natural resource in an economy, they might harm economic performance. In these cases, extractive industries can be a source of macroeconomic instability and distortions, commonly referred to as the "Dutch disease".[4]

(c) Contribution to exports

ICMM (2012) conducted case studies which give evidence confirming the high contribution mining makes to exports for many countries. The contribution of mining to exports is about 30-60 percent of total exports value (Dorin et al., 2014). As noted by Conrad and Shalizi (1988), downstream linkages to diversified modern manufacturing are largely absent in many developing countries because of the *enclave nature* of most mineral investments. Domestic demand for finished mineral products is generally insufficient to justify extensive capital-intensive downstream developments for local markets. Thus, mineral products are generally exported in raw forms.

(d) Foreign exchange earnings

The mining sector generates significant foreign exchange earnings. A substantial proportion of these do not, however, enter the national economy as they are used by mining companies to import goods and services during construction and operation (ICMM, 2012). Nevertheless, the case studies by ICMM (2012) point to a significant net foreign exchange contribution in the operational phase, even when imports are factored in. During the construction phase, the high-import content is typically almost fully accounted for by the inflows of foreign equity and loan capital. Sigam and Garcia (2012) recounted that volatility in the price of commodities is also a major concern for countries that are heavily reliant on extractive industries' exports, as recurrent booms and busts in commodity prices tend to affect the stability of the exchange rate, the local industry activity and even the government finances.

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[4] *The "Dutch Disease" theory explains the poor economic performance of the Netherlands following the discovery of North Sea oil. It postulates that a natural resource boom causes a country's exchange rate to appreciate, making its manufacturing exports less competitive.*

(e) Contribution to national treasury

Revenue from mineral operations offers governments, among other things, the financial resources to fund physical and social infrastructure, including human capital (UNECA, 2011). As indicated by ICMM (2012), total mineral taxation contributes about 3-20 percent of the government revenue. Sigam and Garcia (2012) also approved that in many countries, extractive industries represent an important part of annual government revenues. These revenues have a positive impact as a source to finance public infrastructures, human capital investments (education, health) or to support the development of other economic sectors. However, at the same time, an excessive dependence can also have negative and destabilising effects on fiscal budgets, as volatility of prices is directly mirrored in government cash inflows.

(f) Gross domestic product (GDP)

Mining industry typically provides only a modest direct contribution to GDP of a country and to various components of national income (usually about 2-4 percent of national income) (Dorin et al., 2014). This relatively low number is partly explained by the fact that developing host countries often lack the industrial base to supply the sophisticated mining technology used in modern mines. As a result, many downstream value additions (GDP contributions), such as mineral beneficiation, take place outside the host country (ICMM, 2012).

(g) Employment creation and wages

Extractive industries in general are capital intensive and make a limited direct contribution to employment (Sigam and Garcia, 2012). For example, as noted by OECD (2008), the mining sector employs 22 million to 25 million people worldwide (approximately 1 percent of the total global workforce), and in some mining countries like Botswana, Chile and Peru that percentage varies from 3 to 0.7 percent of the local work force. Dorin et al. (2014) denoted that new jobs created directly by large mining companies are usually well-paid compared to national average salary on the economy. Unfortunately, the number of these jobs is quite small, rarely reaching the level of 1.5 percent of the total jobs, nationwide. Case studies by ICMM (2012) also revealed that

mining may be successful in generating indirect employment in the supply chain, as well as induced employment as the salaries of direct employees or supplier employees are spent within the wider economy. Such employment multiplier effects can often be significant.

2.2.5 Taxation policy

The aim in minerals taxation policy is to enable governments to collect a reasonable return from the extraction of the community's mineral resources, while ensuring that industry outcomes remain efficient and administrative costs are not excessive (Hogan, 2008). The taxation policy of a country is an important consideration for any investor as it impacts on levels of returns and growth in shareholder value (ECA, 2004a). Palmer (1980) specified that the problem of mineral taxation policy in developing countries is to establish a stable fiscal framework, that under conditions of uncertainty, obtains a high share of mineral rent for the resource-owning country while, at the same time, ensuring the investor the prospect of a return on investment commensurate with the risk. Therefore, tax policy is an important instrument of government intervention in any sector, including minerals. Equally, KPMG (2014, p.12) emphasised the importance of consultation in taxation policy indicating that:

> *'An effective mining tax policy, well communicated, and developed in consultation with the mining industry in advance of implementation and investment decisions, often produces a win-win result for all stakeholders. On the other hand, when new mining tax regimes are rushed into law with minimal practical analysis and consultation, after mining acquisition and development decisions are made, questions of fairness may often arise.'*

Gentry and O'Neil, (1984) reported that responsible taxation of mining must recognise the unique characteristics[5] associated with the minerals industry, for these characteristics

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[5] *Discussed unique features relating to taxation are bonanza image, high risk, economic rent, exhaustibility, capital intensity, long lead times, uncertainty in determination of ore deposit value, indestructibility of metals and rental payments.*

determine the economic impact of a specific tax policy on the operating and investment decision making of individual firms.

Otto and Cordes (2002) gave some of the important mineral taxation policy issues which include:

- the mix of direct and indirect taxation methods;
- the types and levels of taxes;
- maximisation of government take in the short and long run;
- tax incentives available to achieve specific policy objectives and behavior;
- application and division of revenues between different levels of government;
- agencies of government responsible for monitoring and collection; and
- tax system stability, reinvestment incentives, and foreign exchange consideration.

2.2.6 Design of fiscal regimes

Kumar (1991) described taxation regime as the range of levies which the government makes on the mining enterprise, which includes all the allowances and fiscal incentives affecting the level of return to equity holders. Nakhle (2010) stated that the central objective in designing mineral fiscal regimes is to acquire for the state in whose legal territory the resources in question lie, a fair share of the wealth accruing from the extraction of that resource, whilst encouraging investors to ensure optimal economic recovery of the resources. How to achieve this balance is a subject of enduring controversy.

Further, ECA (2002) on designing a tax system reported that government's tax policy influences both the pattern and pace of mineral development and the share of revenues which the government can obtain from each project and from the sector as a whole. A mineral tax system must reconcile the twin (and conflicting) objectives of (i) creating sufficient incentives for companies to explore and invest; and (ii) securing a fair share of revenues overtime for public use. These objectives as indicated by ECA (2002) need to be met through achieving three guidelines, as stated below:

- fiscal regime should not be varied from those in countries with similar prospectivity and operating conditions;
- the government can tax more if it structures taxes in ways that reduce risk faced by investors; and
- "tax neutrality" should not mean uniform tax rates and tax rule across all sectors, but identify the presence of rent, investment origin and risk profile of the business.

Tadros and Stevenson (2010) stated that a government must determine how to identify, maximise, and retain a fair share of mineral rents through designing a revenue-sharing system that:

- maximises government revenue over time;
- does not deter exploration and development activities that would otherwise be economically justified;
- prevents resources from being exploited inefficiently; and
- does not allow substantial rents to accrue to recipients other than the state and investors.

2.2.7 Fiscal objectives ("good tax" principles)

Musgrave (2005) reported that criteria for "good taxation" found an early statement in Smith (1776) famous "maxims". Among them, Smith (1776) included equality, certainty, convenience of payment, and economy in collection as most important. These were referred to as as "cannons of taxation" for a "good tax" (Smith, 1904).

Nakhle (2010) stated that the performance and robustness of any tax system or regime needs to be measured against certain basic criteria. These are benchmarks or basic criteria, against which the soundness of any particular tax can be initially measured and which can provide a framework for evaluation. The most fundamental criteria against which any tax, if it is to succeed in its basic purpose, requires to be appraised (Harman and Guj, 2013; Nakhle, 2008; Tordo, 2007; Otto and Cordes, 2002; Gentry and O'Neal, 1984) include neutrality, economic efficiency, stability, equity, risk sharing, transparency, and clarity and simplicity. Baunsgaard (2001) also evaluated several fiscal

instruments in mineral taxation by employing the ratings approach as a means to provide an overview of the advantages and disadvantages of the most common fiscal instruments in the mining sector. These were based on seven criteria dealing with neutrality, stability, project risk, flexibility, fiscal loss, revenue delay, and administration.

2.2.7.1 Neutrality

Neutrality in taxation of mining and petroleum activities means that a tax does not, of itself, alter the order in which projects including exploration are undertaken; nor does it alter the speed of extraction, decisions about reinvestment, or the decision to abandon a petroleum field, or close a mine (Daniel et al., 2010).

Nakhle (2008) argued that neutrality criterion determines whether the tax system interferes with investment and operational decisions in such a way as to cause them deviate from what is the social optimum. A neutral tax will generate revenues when a company earns profits and nothing when it makes a loss. This means it does not distort investment decisions while a distortionary tax affects the decision-making process, so that individuals make inferior choices to those that would have been made in the absence of the tax. Consequently, resources are not allocated efficiently.

2.2.7.2 Stability

A fiscal regime is defined as stable when it does not change over a certain period of time or its changes are predictable. Royalty/tax based regimes have an intrinsic instability since governments cannot deny future administrations the right to legislate taxation (Tissot, 2010). Tax stability is of critical importance for investors as it freezes fiscal terms during the whole life of a project. It is usually realised by minimising changes to fiscal policy by the government of host country or through special clauses regarding tax stability in the mining law or in investment agreements (UNCTAD, 2010). However, stability clauses do not always guarantee an unchanged fiscal regime and government provide tax stability through a number of different legislated and negotiated approaches (Otto et al., 2000). In some countries, governments offer explicit fiscal stability clauses in contracts, promising renegotiations or immunity in the event of future tax increases.

Otto (2007) indicated that tax stabilisation has been found to be attractive to companies while many governments are hesitant to use them. The government has a dilemma because on one hand, stabilisation agreements enhance the potential for mineral development, and on the other, they complicate the tax system and raise administrative challenges.

2.2.7.3 Economic efficiency

An efficient tax neither impedes nor reduces the productive capacity of an economy, nor does it create distortions in the allocation of resources by favoring one industry or type of investment at the expense of others (Nakhle, 2008). Governments should formulate fiscal policy in a manner that ensures, as far as possible, that the same level of exploration and production activities would occur whether or not the rent-collecting taxes were in place. Failure to achieve a reasonable level of economic efficiency will result in distortion of investment decisions and sub-optimal exploitation of the resources (Guj et al., 2013).

2.2.7.4 Progressive/regressive tax

Daniel et al. (2010) mentioned that progressivity means that a tax regime will yield a rising present value of government revenue as the pre-tax rate of return on a project increases. Progressive taxation assures the governments of some resource rent from particularly rich deposits or a significant share of profits during periods of high prices, but without penalising investment in less profitable mines. Progressive tax systems include progressive profit taxes, price based windfall taxes and sliding scale royalties. Under progressive taxation, higher tax rates are triggered at certain thresholds. These are thresholds designed by policymakers during tax formulations. For example, escalating tax rates can be linked to higher annual taxable income, profit-to-sales ratio or rate of return achieved over the project life to that point (UNCTAD, 2010).

Land (2008) contended that many fiscal regimes for the extractive industries are regressive rather than progressive implying that the government's share falls as profitability improves. It is difficult to ascertain why this has occurred - potentially due

to weaknesses in tax administrations. Land (2010) mentioned that fiscal flexibility in the design of the fiscal regime can be provided by progressive taxation under which the share of the total benefits are reallocated progressively in favour of the host country as the overall value of benefits increases. This is precisely of the opposite of what happens when a fiscal regime is regressive as illustrated in Figure 2.6.

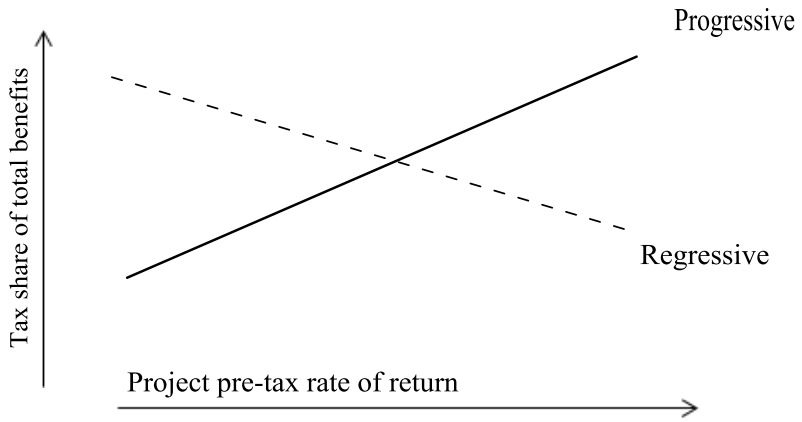

Figure 2.6: Progressive and regressive fiscal regime (Land, 2010)

2.2.7.5 Equitable

Otto and Cordes (2002) stressed that equity principle has been used to encourage taxation based on the ability to pay. Equity is an issue concerned with whether a tax is fair on taxpayers. Guj et al. (2013) reported that equity ensures that taxpayers in the same industry pay the same proportion of economic rent to government. This ideal situation is extremely difficult to achieve in practice, as it would require the capacity of the system to differentiate projects in terms of mineral commodities, profitability and location.

The fairness of equity has a number of dimensions (Harman and Guj, 2013). There is horizontal equity which implies equal treatment of equals and which would query whether miners generating the same amount of economic rent are paying the same type of tax. By contrast, vertical equity is concerned with whether miners who generate different amount of economic rent are treated differently in the amount of tax they pay.

Nakhle (2008) referred to vertical equity as equivalent treatment of companies or resources with different characteristics. This means that firms that exploit more valuable resources have a greater ability to pay and so their tax liabilities can be greater. Similarly, fields with high profitability can be taxed more heavily than those with low profitability. This criterion is more satisfied with a progressive tax. Harman and Guj (2013) also reported that violation on vertical equity principle exists when a tax system fails to discriminate between high rent and low rent operations and instead imposes a tax on a base that does not give explicit recognition to the differences in levels of economic rent associated with different mining operations.

2.2.7.6 Transparency

Guj and Harman (2013) affirmed that transparency principle relates to whether miners are fully informed about the tax liability that may flow from any proposed activity. This is also the openness of the taxation arrangement and tax collection to examination by the community. ICMM (2009) explored that companies emphasised on transparency-related issues in relation to ensuring that citizens are made aware of the fiscal contribution, and how revenue is spent. Companies, therefore, are increasingly reporting publicly on the amount of tax that they pay. The Extractive Industry Transparency Initiative (EITI) has made significant contribution to enhanced transparency in the use of extractive industry revenues in many countries.

Otto and Cordes (2002) reported that tax system should be clearly understood by both taxpayers and government officials. Ambiguity in interpretation leads to increased perception of risk, opportunities for tax minimisation strategies and conflict.

2.2.7.7 Risk sharing

Otto et al. (2006) specified that the mix of taxes influences the distribution of risks between the state and mining companies. Mining is a particularly risky activity partly because of the long gestation period associated with the development of newest mines and the difficulty of anticipating prior to development all the potential technical,

geological, economic, and political problems. In addition, most mineral commodity markets are highly volatile over the business cycle, with wide price fluctuations.

Dobbs et al. (2013) argued that taxation on profits encourage risk sharing between the company and the state, and take into account the fluctuations in global prices, changes in the geological and technical determinants of the mining operations as well as financial and political factors over the mining cycle. Therefore, a corporate profits tax and royalties based on profitability tend to distribute the risk of mining evenly between the state and companies.

2.2.7.8 Revenue predictability

A tax system should facilitate a predictable revenue stream from mining that enables governments to budget with greater certainty, especially when commodity prices are highly volatile (Guj et al., 2013). Stable and predictable tax policies are essential in evaluating a mining project's perceived risks and viability (Behre Dolbear, 2014). One of the government's objectives in the design of a tax system is to have a tax that supports macroeconomic stability by providing predictable and stable tax revenue flows (Tordo, 2007). A summary of fiscal objectives as presented by Goldsworthy and Zakharova (2010) are given in Tables 2.2.

2.2.8 Fiscal regimes and tax instruments

Governments must choose the most suitable mix of tax bases and tax rates to meet their particular economic tax policy objectives in terms of revenue, risk, competitiveness and investment incentive (Calder, 2014). In developing countries, Otto (2000) explained many types of taxes and tax incentives that governments can impose or offer, and each type is useful for achieving different objectives. The mix of tax types can be important because investors have strong preferences for some versus others.

Therefore, governments have many choices in selecting the types of taxes and incentives they include in their fiscal system. On a global perspective, it is not surprising that several resource producing countries have in practice adopted a combination of two or

more tax instruments in an attempt to capture the economic rent and minimise distortions in the investment decisions (*ibid.*).

Table 2.2: Taxation objectives of a desirable oil taxation
(Goldsworthy and Zakharova, 2010)

Objectives	**Description**
Neutrality	Avoids investment and production distortions. The fiscal regime should not alter the order in which projects are undertaken; nor should it change the speed of extraction, decisions about reinvestment, etc.
Capture of rents	Satisfies the neutrality criterion, enables the government to share in the upside of projects, and supports the government's role as owner of the oil.
Stability and timing of revenue	Provides a stable revenue stream to government. Governments favor stable and early revenue. However, the counterpart to this goal is a transfer of risk to the investor and delayed payback. This objective should be less of a concern when there are multiple oil fields at different stages of development.
Progressivity and adaptability	Ensures progressivity. A progressive regime yields a rising government take as the project's profitability increases. A system that responds flexibly to changes in prices and costs might be perceived as more stable, lowering the investor's perceived risk of regime stability and avoiding the rent-seeking behavior associated with discretionary changes. It also ensures a low tax burden on marginal projects.
Administrative simplicity and enforceability	Supports ease of administration. To the maximum extent possible, given other objectives, the regime should be transparent and simple to administer. It should also be designed to avoid leakages through abusive transfer pricing and other tax avoidance practices.
International competitiveness	Supports competitiveness. Adjusting for investor's perceptions of country risk, the regime should be competitive with those of other countries in order to attract investment.

According to Conrad (2012), policymakers and the general public should consider improving each element so that the tax system as a whole can function in a more coordinated fashion.

Alba (2009) explained that extractive industry (EI) activities are subject to a great variety of fiscal instruments. These include taxes that apply to all other sectors of the economy and taxes that are specific to the petroleum and mining industry. Kumar (1991) in an effort to understand the fiscal instruments affecting the mining industry identified the following instruments; royalties, corporate tax, additional profits tax, withholding taxes on interest and dividends, and government equity holding acquired on

concessional terms. The royalties are usually categorised as an output related tax, while corporate tax, additional profits tax and withholding taxes are classified as profit related. Equity stake is not strictly a fiscal imposition, but may be viewed *de facto* as a tax where the government or its agency acquires part of the equity in the mining enterprise on concessional terms.

Host countries apply a range of fiscal instruments to control the amount and timing of their share of the rents generated by the mining industry. These are taxes payable at different definitions of income and on different items of production (ECA, 2004a). In broad terms, Hogan (2008) reported that minerals taxation arrangements maybe classified according to whether they are profit based or output based.

Korinek (2013) specified that many different types of taxes are applied to the minerals sector. The optimal mix of these policies implies; finding a balance between advantages and disadvantages of each instrument with respect to economic efficiency, trade-offs between development at different stages of mining operations, and the division of risks and rewards between the state and the exploiting enterprises. In terms of implementation of the tax regime, Korinek (2013) stated that many other considerations come into play, such as the ease of administration and the information gap between tax administrators and mining enterprise officials.

A royalty-tax arrangement is widely used for mining in most developing countries throughout the world (Conrad, 2012, UNCTAD, 2010). The distribution of revenues under the traditional royalty-tax system is as given in Figure 2.7.

The royalty/tax regime may involve three levies, namely; a royalty to secure a minimum payment, the regular income tax, and an additional tax, such as a resource rent tax, to capture a larger share of the profits of the most profitable projects (Daniel and Sunley, 2010).

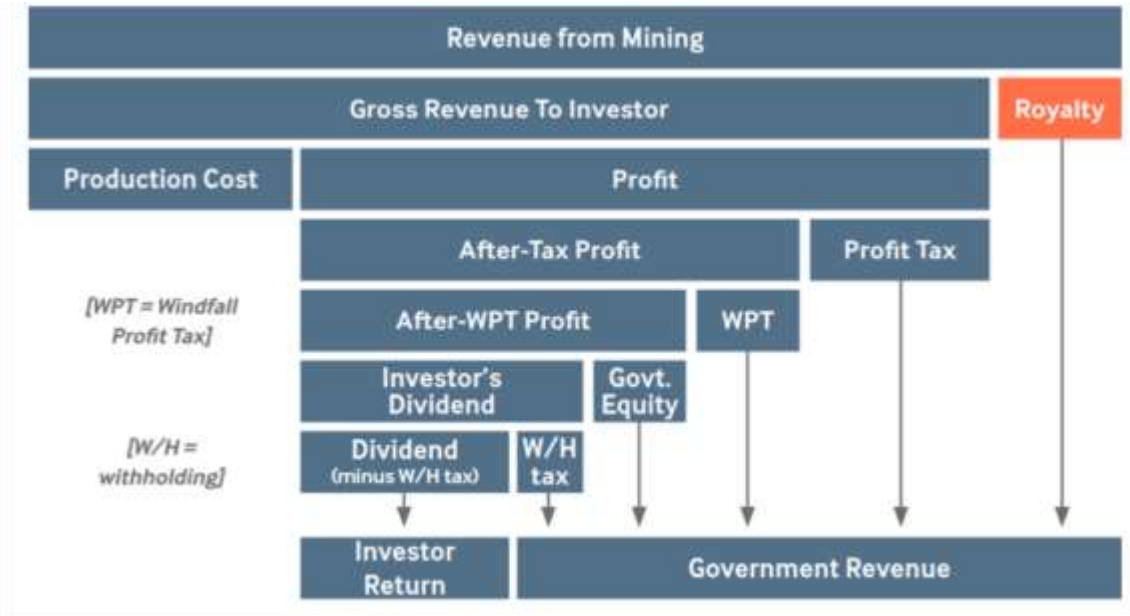

Figure 2.7: The distribution of revenue under a royalty-tax system
(NRGI, 2015)

Otto et al. (2006) identified the tax types and their classifications (categorised into *in rem* or *in personam*) which policymakers involved in designing the tax system should be aware of in terms of the cumulative effects the taxes can have on mine economics and the potential levels of future investment.

According to Otto and Cordes (2002), mineral taxation (Table 2.3) are grouped into three collections namely:

- *in rem* taxes are charges divided into two groups: taxes that affect the variable costs of the project and taxes that affect the fixed costs of the project;
- *in personam* taxes which are charges against some definition of net revenues, that is, revenues less qualifying costs; and
- *indirect or quasi-taxes* which include a variety of costs imposed on companies that influence operations and profitability.

2.2.8.1 Corporate income tax (CIT)

Kumar (1991) stated that corporate income tax is a tax on profits (more directly related to the mineral price cycle) and is normally paid by every corporate entity, though there is a tendency for significant mineral producers to apply different rates for mining when

compared to normal corporate rates. Otto (2000) mentioned that in the early part of the 20th century, the main way governments taxed mines was to impose some type of royalty tax on production. Today almost all nations instead rely primarily on profit (income) based taxes.

Table 2.3: Types of taxes levied on the mining industry
(Otto and Cordes, 2002)

In rem taxes (involve appropriation assessed against the mineral deposit or the inputs and actions needed to exploit it)	
Taxes that impact the project's variable costs	Taxes that impact the project's fixed costs
specific or unit royalties	certain types of property taxes
ad valorem royalties	import duties
sales taxes	application or registration fees
export duties	land usage or rental fees
In personam taxes (involve appropriations against defined net revenues)	
proportional income taxes	
progressive or additional profits taxes	
resource rent taxes	
withholding taxes	
Indirect or quasi taxes (include a variety of costs imposed on companies that impact operations and profitability. Some are common, while others reflect conditions in only a few nations. These taxes include:	
foreign exchange	
government equity acquired on concessional terms	
performance bonds and other requirements intended to ensure good environmental practices and adequate mine reclamation funding	
land owner compensation or special provisions for involving local communities in project discussions and outcomes	

When designing an income tax system there are two key elements considered - the *tax rate*, and the *tax base* that the rate is applied to. Otto (2000) described that in most nations, tax policy is mainly implemented through manipulation of the tax base rather than through the tax rate. The tax rate is commonly uniform for all tax-payers, or for all tax payers at a given level of profit. Many nations impose a flat rate on all commercial

taxpayers, a few have a progressive tax scheme that imposes higher tax rates on taxpayers with higher levels of profit.

Nakhle (2010) noted that the overall level of corporate income tax rates varies considerably from country to country. In many countries, the level is typically between 25 and 35 percent. Most countries provide an incentive for exploration and development by allowing exploration costs to be recovered immediately and allowing accelerated recovery of development costs (tax depreciation). Accelerated depreciation brings forward payback for the investor and reduces the latter's cumulative cash exposure. In addition to cost deductions, in many cases interest expenses and losses carried forward and/or back are commonly allowed in the computation of the tax liability. All forms of income tax allow relief for capital expenditure (at a varying pace), but extra reliefs are sometimes given to provide incentives to develop high cost "marginal" projects (*ibid.*).

2.2.8.2 Mineral royalties

Royalties have historically been the most common method used by governments to gain revenue from the exploitation of the nation's mineral endowment (Tordo, 2007). In most countries, the mining royalty rates vary by type of mineral (PricewaterhouseCoopers, 2012). The main reason for royalty collection as indicated by Otto et al. (2006) is that it is a payment to the owner of the mineral resource in return for the removal of the minerals from the land.

A royalty is any type of tax that exhibits one or more of the following attributes (Otto et al., 2006):

- the law creating the tax calls that tax a royalty;
- the intent of the tax is to make a payment to the owner of the mineral as compensation for transferring to the taxpayer the ownership of that mineral or the right to sell that mineral;
- the intent of the tax is to charge the producer of the mineral for the right to mine the minerals produced; and
- the tax is special to mines and is not imposed on other industries.

Although mining royalties make mining operations stand out from other types of economic activities in the same jurisdiction, the royalty rate needs to be considered in the context of overall level of taxation and the base against which the royalty rate is applied (*ibid.*). Guj et al. (2013) asserted that royalties may take one of the following forms; specific or unit-based (volume or weight-based), value-based (ad-valorem), profit-based, economic rent-based, production sharing contracts (PSC), and hybrid.

(a) Specific or unit-based royalties

This type of royalty (Guj et al.,2013; Tordo, 2007) has a fixed monetary amount applied to a physical measure of the volume or weight of the mineral produced and sold-for example, dollars per tonne or dollars per cubic meter. It generates stable revenue and is administratively efficient and easy to audit. Otto et al. (2006) equally indicated that a unit-based royalty is most often applied to minerals that are more or less homogeneous, such as industrial minerals (sand, gravel, cobbles, limestone, dimensional stone) or sold in bulk (coal, iron ore, salt, phosphate, potash, sulfur). The most prevalent forms of unit-based royalty are based on making the measurement (weight or volume) at the mine mouth, before significant treatment or processing takes place. However, the concept can be applied at any stage of the mineral preparation process.

Furthermore, Guj et al. (2013) indicated that the unit-based royalties are not as easily applied to non-homogeneous mineral products. For example, a typical copper concentrate from a massive sulphide deposit may contain marketable copper, but also zinc, lead, gold, and platinum, each of which has a very different intrinsic value. A unit-based royalty based on copper content alone would not recognise the value potential of by-products or co-products. Otto et al. (2006) noted that unit based royalty are well suited to discriminate between scales of operation, and it is common to see a sliding-scale approach. Smaller operations that tend to be less efficient than larger operations may be assessed at a lower rate than large operations. Therefore, sliding-scale unit-based royalty schemes recognise that too high a royalty may keep small, economically marginal projects from ever developing and that too low a royalty may not adequately compensate the owner of a deposit that is being exploited at a high profit.

(b) Value-based (ad-valorem) royalties

This type of royalty applies a percentage rate to the value of the product sold. It basically consists of a uniform percentage (the rate) of the value (the base) of the mineral(s) in the products sold by the miner. The key policy and administrative issues (Guj et al., 2013) in determining the amount of royalty to be levied are:

- determining the valuation or taxing point (ideally as close as possible to the point of extraction) and the method to be used to estimate the value of minerals at this point; and
- determining the percentage rate to be applied.

Mining is integrative with a diversity of products and the varying extent to which they are processed or transformed prior to sale. This situation as reported by Guj et al. (2013) gives challenges to develop a uniform policy on the valuation approach that should be used, to provide equity among various mineral producers. Ad-valorem royalty systems make use of a generic valuation basis on which a single royalty rate is applied across the industry as a whole. As a consequence, the royalty paid by high-grade mines of valuable minerals close to market represents a lower proportion of the profit than that of lower-grade remote mines extracting less valuable minerals (*ibid.*).

Otto et al. (2006) specified that the most common way in which governments assess a value-based royalty is to calculate the product of a royalty rate times the value of the mineral. In certain circumstances, the royalty rate may be uniform for all sales of that mineral or may vary according to a sliding scale based on the volume or cumulative value of material sold. However, value can be determined in many ways, with the most common being the value of the mineral in the following circumstances:

- contained in the ore at the mine mouth;
- contained in the first product sold (such as a concentrate);
- recoverable;
- determined by the gross revenues derived from sales;
- determined by the gross revenues derived from sales less certain allowable costs, such as transportation, insurance, and handling; and

- as reflected in a net smelter return (adjusted for smelter and refining charges).

The value-based royalties are also payable irrespective of whether the mine is making a profit or losing money. However, unlike unit-based royalties, value-based royalties tend to fluctuate following commodity prices. Thus, when prices are high, the government will enjoy more revenue than when prices are low (Otto et al., 2006).

Value based royalties are often not easy to calculate as the degree of complexity will depend largely on how value is defined. Straightforward calculation defines value as revenue received from a sale (gross value, invoice value, billed value). However, there are incidences as given by Otto et al. (2006) where some governments are concerned that the value received from a sale may be less than the market value. This suspicion may arise from experiences with "transfer pricing" tax avoidance situations, sales to vertically integrated affiliates at abnormally low prices, poor guessing with regard to futures contracts, long-term sales agreements where prices are out of sync with the market, and so forth. Companies on the other hand, may argue that invoice value does not reflect market value, because market value would take into account certain expenses, for example, transportation, insurance, and handling to the point of export.

Further, Otto et al. (2006) specified that the picture becomes even more complicated when the value begins to be adjusted to subtract specified costs, usually not directly related to mineral extraction or beneficiation. The most common adjustment is to deduct from the sales value all costs such as transportation, insurance, and handling that are incurred from the mine site to the point of sale[6]. Further, as a way to get around problems related to value, Otto et al. (2006) explained that governments define market value in a number of ways. For instance, value may be calculated by first determining the amount of the physical mineral contained in the product and then applying a reference price to that amount. Reference prices, such as a London Metals Exchange daily quotation for copper cathode, are available for some but not all minerals. An

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[6] *Another common value is net smelter return, in which the taxable amount takes into account the return to the producer after smelting and refining charges and penalties are taken out.*

inherent problem with reference price systems is that quite often what is being sold, such as a concentrate, is not the same product as is being referenced, such as cathode.

Guj et al. (2013) revealed that mining companies object to royalties based on the gross value of sales that do not allow the deduction of costs incurred beyond the mine gate, as the royalty then applies to costs incurred by the company that are not part of the mineral value. Most countries recognise the validity of this argument and allow some deductions from gross sale proceeds to arrive at the royalty valuation base to which an appropriate royalty rate is applied. In some jurisdictions, different royalty rates may apply to different minerals or a group of minerals to recognise their different potential profitability and ability to pay. Guj et al. (2013) indicated that rates are typically limited to between 2 and 10 percent, with most rates in developing countries ranging between 2.5 and 5 percent. In some jurisdictions like Western Australia, decreasing royalty rates are applied to progressively more refined mineral products such as ore, concentrates, and metal to provide an incentive for investment in domestic downstream processing capacity.

(c) Profit-based royalties

Profit-based royalty applies a percentage rate to an accounting concept of net income or profit (Guj et al., 2013). Most investors favour taxation systems that are based on the ability to pay, that is, some measure of profitability or adjusted income (Otto et al., 2006; Tordo, 2007). Unit-based and value-based royalties do not take into account the relative profitability of an operation because they simply look at the quantity of mineral produced or at some measure of the value of mineral produced or sold. Distinct from unit-based and ad-valorem approaches are a variety of methods that in some way include deducting a broader set of costs, including production and capital costs, in the royalty calculation.

Many nations have applied to royalty assessment the concept of taxation based on the ability to pay. The approaches vary but are grounded in the concept that both the value of the mineral produced and certain allowable costs (such as capital costs, production costs, marketing costs, transportation costs, handling costs, insurance costs) should be

taken into account (Otto et al., 2006). Profit-based royalty is more economically efficient than both a specific and an ad valorem royalty, but is more complex for both companies and government to administer. In addition, revenue is variable and royalty may not be paid for some years after the mine start-up while significant capital costs are recovered (Guj et al., 2013). This royalty maybe a source of differences in interpretation between the mining company and government based on the original intention of the profit based royalty legislation. Hence, a profit-based royalty system requires clear and transparent legislative provisions so that both industry and government understand how and when the system is to apply (*ibid.*).

(d) Economic rent-based

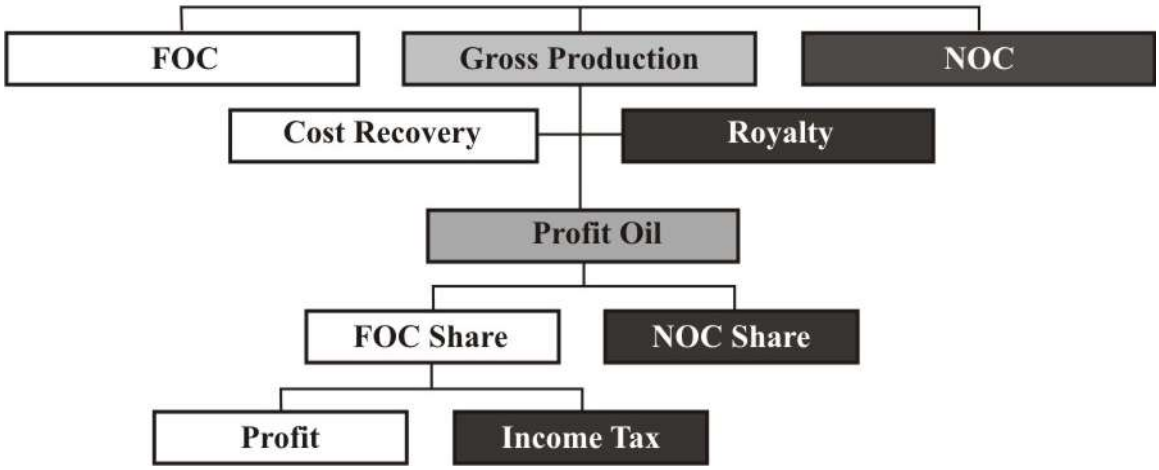
Guj (2012) reported that this type of tax consists in the application of a percentage tax rate on the economic rent produced by a project. The concept is relatively simple but its practical implementation may be complex, often misunderstood and can potentially lead to significant compliance costs and disputes. This is a more reason why it is not adopted in spite of its very high level of economic allocative efficiency. It is widely used in the petroleum industry.

(e) Production sharing contracts (PSC)

PSC is effectively a contract between a state and the resource extraction company defining how much of the resource extracted from the country each of them will receive (Guj et al., 2013). The company bears the technical and financial risk of exploration and developing any discoveries. Most PSCs in the petroleum industry allow the company first to recover from the initial sales revenue the costs of exploration and development. After the initial capital is recovered, revenue is split between the state and the company according to agreed proportions. Production Sharing Agreements (PSAs) come in a variety of styles (Bindemann, 1999) and Figure 2.8 shows a very basic form.

PSCs are not as simple to administer and consequently, their use is largely restricted to some oil and gas producing countries and only rarely to minerals (Guj et al., 2013). As designated by Otto et al. (2006), detailed accounting rules, as are required for profit-or income-based taxes, are familiar to oil-producing governments that use production-

sharing agreements (PSAs). Such agreements usually contain lengthy descriptions of which costs are allowed and which are not allowed for calculating the basis for the government share.



where FOC = Foreign Oil Company, NOC = National Oil Company

Figure 2.8: Production sharing agreement
(Bindemann, 1999)

(f) Hybrid types

Hybrid royalty is a type of royalty or tax that incorporates a minimum specific or ad-valorem royalty component generally in a profit-based or economic rent based tax to limit the risk that government may collect no revenue if in any year there is no taxable profit or rent (Guj, 2012). This is meant to ensure that there is a degree of revenue stability. These types of royalties are relatively economically efficient and progressively share in increasing profits but they are complex to administer. They are also more revenue stable than straight profit systems (*ibid.*).

Each country has a unique tax structure with respect to royalty diversity. Otto et al. (2006) admitted that every country is unique, with its own legal system, history, political institutions, interest groups, levels of economic development, and dependence on mineral production. Indication by Guj (2012) is that all the forms of royalties set out above are alternative ways for governments to appropriate economic rents unique to

mining and are applied in addition to the general corporate income tax and other forms of taxation that cover all sectors of an economy.

2.2.8.3 Variable profit tax and other progressive taxes

The recent rises in global demand and prices for minerals and metals revived interest in excess profit taxes often referred to as "Additional-Profits Tax (APT)" or "Resource-Rent Tax (RRT)". An excess profit tax is in principle one of the best ways to capture higher profits, because this is a progressive tax instrument. However, this tax is more difficult to assess and administer than for example a value-based royalty (ICMM, 2009).

As implied by the Natural Resource Charter (2014), progressive tax instruments are designed to maximise, to the furthest extent possible, state capture of resource rents or windfall profits by adjusting automatically to some measure of expected or actually achieved profitability. Progressive fiscal instruments are intended to increase government's share of project profits or rents as underlying profitability increases. While the actual names of these taxes differ from country-to-country, they are usually expressed as:

- sliding royalty scales (royalty rates escalating as a function of price, sometimes production, or mine size, and often with location);
- payments linked to sliding production scales (escalating in government's favour with cumulative or daily production, as in production sharing); or
- additional/windfall profits or rent taxes (linked to absolute profit levels or profitability indicators).

The emphasis and political motivation in introducing progressive tax instruments has been on:

- capturing upside revenue or profit potential; and
- bringing fiscal flexibility or robustness to the overall fiscal regime, i.e. automatic adjustment to changing circumstances - low government take when profitability is low, high take when profitability is high (*ibid.*).

Natural Resource Charter (2014) further reported that the effectiveness of progressive tax instruments depends on their detailed specification. The difficulty with most mechanisms is that the proxy for profitability to which the additional tax or payment is linked is faulty or incomplete and, as a result, the intended objective is not achieved. For example, prices are incomplete indicators of profitability because they ignore the influence of production and costs, production ignores prices and costs, and both miss the impact of timing on profitability.

2.2.8.4 Other imposts

Other imposts forming the fiscal regime include tax treaties, withholding taxes, import and export duties and ring fencing.

(a)Tax treaties/double taxation agreements (DTA)

ECA (2004a) indicated that with the globalisation of mining finance, it has become important for investors to avoid being taxed twice on the same income. This could happen if the host country (in which the mine is situated) taxes an investor's income and the same income is taxed again when profits are remitted to the country of origin. This kind of double taxation is minimised when the two countries usually enter into a tax treaty. The most common way of entering tax treaties is to grant tax credits in order to allow income taxes payable in countries of operation as credits in calculating the taxable income in the home country. These credits are normally confined to income (corporate) taxes and withholding (dividend) taxes.

(b) Withholding taxes

Hogan and Goldsworthy (2010) mentioned that these are taxes on dividends, interest and foreign-provided services. Withholding taxes are now commonly used both to provide revenue and to counteract tax avoidance and evasion through, for example, use of related party debt and payment of contractors at non-market prices.

(c) Import and export duties

Customs and excise duties, sales taxes and, more recently, value added taxes were introduced, although many countries now provide exemptions to encourage investment

and to ease the administrative burden from having mining companies in large VAT refund situations due to the zero rating on their exports (Hogan and Goldsworthy, 2010).

(d) Ring-fencing

Baunsgaard (2001) reported that mining and petroleum projects can be ring-fenced. In practice this means that a firm operating one project while developing a new project cannot reduce that taxable income from the former with losses from the latter. Ring fencing is introduced to protect present tax revenue, which could otherwise be postponed through continuous deductions.

ECA (2004a) noted that investors are not comfortable with this practice because of the high likelihood of project failure at exploration stage. Some states introduce a country ring fence to allow resident mining companies to deduct all exploration expenditure incurred inside that country from mining profits. However, countrywide ring fencing requires strict monitoring to ensure that companies do not hide behind dubious exploration spending to avoid paying taxes.

2.2.9 Advantages and disadvantages of the key tax instruments

Various authors (Barma et al., 2012; Guj et al., 2013; Kumar, 1991; Otto et al., 2006; Tordo, 2007) have presented the advantages and disadvantages of various key fiscal instruments applied in the extractive sectors. The African Development Bank (AfDB) (2008) revealed that the actual fiscal regimes or "government take" for fossil fuels and minerals in Africa are by no means uniform. A multitude of royalties, taxes, resource rents, incentives, and state equity have been developed to foster interests in exploration and investment on the one hand, and capture some benefits for the state and the public, on the other hand.

2.2.9.1 Royalties

Royalties involve both costs and benefits, a trade-off which must be managed. Royalties ensure that the government directly captures the value of its resource endowments throughout the extraction profile. They also ensure some minimum flow of revenue according to production and price levels (Natural Resource Charter, 2014). In some

countries, the mining royalty rate is not one fixed tax rate according to type of mineral but instead the rate increases when the operating profit increases. In general, royalties are typically deductible in most countries for purposes of determining profits for corporate income taxes (PricewaterhouseCoopers, 2012).

Royalties have three significant advantages over profit instruments (Natural Resource Charter, 2014):

- a properly designed royalty system, based on readily observed elements (price, production) is relatively easy to monitor and administer;
- revenue flow will come quite early in the lifetime of an investment (as soon as production takes place), rather than being postponed, as in profit systems, until capital charges or loss allowances are met; and
- the royalty payments are more stable in response to revenue fluctuations than payments resulting from profit taxes.

However, royalties have some disadvantages which include:

- being insensitive to profits which entails greater financial risk for the company as the royalty payments are made even when the operation is making a loss; and
- inducing inefficient investment, depletion and operation strategies. For example, a high royalty rate linked to output, may cause premature suspension or abandonment of production as a result of its insensitivity to the declining profit margins typical late in the life of an oil field or mine.

Otto et al. (2006) examined the impact of royalties on the possible cash-flow stream from the government perspective and indicated that the imposition of a royalty can influence decisions relating to interrelated production parameters such as cut-off grade, mine life, and reserves. Government policymakers for taxation need to be aware of the impacts that royalties can have on companies' decisions to optimise mines. In particular, it is important to understand that if a royalty method and rate imposed is too high a burden, overall tax take may be diminished as the cut-off grade is shifted to a higher value or the mine life is shortened.

2.2.9.2 Profit taxes

Profits taxes are typical of almost all petroleum and mining fiscal regimes. They may be specific to the resource sectors, but in most countries, they are taxes of general application and provide the background to other aspects of the resource sector fiscal regime (Natural Resource Charter, 2014). The principal advantage of profits taxes over revenue-based taxes like royalties is that they allow cost deductions. This gives profit taxes two advantages:

- a company only pays tax when it is earning profits; and
- a profits tax always provides an incentive for the company to increase their profits by either increasing its production, reducing its costs or a mixture of the two.

The profits tax might have some disadvantages (*ibid.*):

- from the government perspective, the possibly increased complexity of their administration relative to royalties, largely due to the need to monitor taxpayer costs. This is especially for countries with less developed systems and less experience in dealing with large international investors;
- the increased government revenue volatility associated with profits taxes is also seen by governments as an additional disadvantage of this fiscal instrument;
- although not an inherent characteristic, profit taxes, in practice, are often accompanied by capital cost allowances. This has the potential to defer government revenues while upfront costs are recovered by the investor; and
- at normal corporate levels, e.g., generally applicable corporate income tax rates, which for most regimes fall in the range of 30 to 35 percent, profits taxes may leave a significant portion of resource rents with the investor. This is the more reason why some jurisdictions apply a higher than generally applicable profits tax e.g., in Angola and Nigeria where the company profits tax on oil is 50 percent.

2.2.10 Impacts of mineral taxes on projects

Smith (2013) reported that the fiscal regime touches many aspects of an investor's plan of exploitation, including the scope of exploration and discovery, the timing and scale of initial development, the rate of production and decline, the timing and scale of enhanced recovery operations, the overall resource recovery factor, and the timing of final abandonment. The pervasive impacts of the fiscal system, on the investor as well as the government, magnify the importance of designing and implementing a sound fiscal regime. Table 2.4 gives examples of fiscal instruments and their effects on host governments and investors.

2.2.11 Interest of stakeholders (government and investors)

Various benefits stakeholders expect to get from mining are reported (Land, 2009; Otto and Cordes, 2002; Tordo, 2007). In many developing countries, there is a huge imbalance in the bargaining power of companies and governments. This is probably why the view persists that mining companies do not pay a fair "rent" on the value of the mineral resources they extract (ECA, 2004a).

According to ECA (2004a), from a company's perspective, a good mining tax policy should:

- enable a fair return on investment, consistent with the risk profile of the investment;
- be transparent, predictable, stable and defendable under the rule of law;
- not impose restrictions on repatriation of dividends and profits;
- be based on profits and not turnover;
- enable early payback of invested capital; and
- encourage further investment in exploration and other mining-related ventures.

The government, on the other hand (Otto and Cordes, 2002; ECA, 2004a) is concerned about:

- efficient extraction which maximises the NPV of mining investment;
- minimising environmental damage;

Table 2.4: Fiscal tools and impacts on host governments and investors (AfDB, 2008)

Type	How it works	Advantages/Disadvantages	
		Host Government (HG)	**Investors**
Royalties	Based on volume or value of production or export	-Early revenue -Reasonably predictable -Easy to administer -Distort investment decision	-Might distort level of recovery -Reduces the economic life of a project -May deter investment
Ring- Fencing	Delineation of taxable entities	-Protects level of current tax revenues -Levels the playing field	-Does not incentivise exploration and investment activities
Corporate Income Tax (CIT)	Taxes are payable when annual revenues exceed a certain measure of costs and allowances. Standard rate or higher than other industries	-Part of the normal tax system -Maybe paid by HG/NOC on behalf of investor (home nation tax treatment of foreign earnings)	Fixed rate relatively regressive: burdens remain the same at different levels of profitability
Progressive Income Tax	Uses stepped tax rates linked to prices, volumes, value, etc. These are add-ons to conventional CIT	-Allows HG to partake in project upsides -Enhances the volatility of HC Revenue	-Parameters are not necessary linked to return on investment (neutrality issue)
Resource Rent Tax	Ties taxation more directly to project's profitability (R-factor or rate of return)	-Provides income to HG only when target return or target payback is reached -Key issue: defining an efficient target rate	-Relatively neutral to investment decisions
Government Participation	Includes range of options: from carried interest to full equity	-Non-economic reasons -Rent capture vs. efficient taxation -Increases administrative complexity and risk	-If on concessional terms: reduces cash flow and increases investment risk -May lead to suboptimal investment decisions

- maximising the retained value to the national economy through the creation of useful linkages with other sectors of the economy, such as employment, value addition, local businesses, technology transfer; and

- sensitivity to social and cultural value systems, including the social and economic viability of communities' post-mining operations.

2.2.12 Investment incentives and taxation

The tax incentives have been an important policy tool that the governments have used to attract the attention of potential mining sector investors and increase foreign direct investment (FDI) in the country[7]. Curtis (2011) reported that up to now, African governments have failed to collect the additional rents generated by mining companies before and during the price boom (2003-2008), partly because mining companies operating in Africa are granted too many tax subsidies and concessions. This partly explains the high prevalence of low-income indicators in mineral-endowed African countries and communities in mining areas.

Otto (2000) classified typical mining sector incentives and reasons why governments offer them. According to UNCTAD (2000), tax incentives are any incentives that reduce the tax burden of enterprises in order to induce them to invest in particular projects or sectors. They are exceptions to the general tax regime. Tax incentives would include, for example, reduced tax rates on profits, tax holidays, accounting rules that allow accelerated depreciation and loss carry forwards for tax purposes, and reduced tariffs on imported equipment, components, and raw materials, or increased tariffs to protect the domestic market for import substituting investment projects.

Additionally, ICMM (2010) noted that countries use special provisions as incentives to attract investment and to accommodate the specific characteristics of the sector, or particular projects. Based on observations by Nathan-MSI Group (2004), the tax incentives need to be analysed in terms of "effectiveness" meaning the extent to which tax incentives stimulate additional productive investment, and "impact" which refers to

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[7] *Policy Brief 1:2012 Revenue losses owing to tax incentives in the mining sector, policy recommendations. On: http://www.policyforum-tz.org/sites/default/files/rtbbriefonmining_0.pdf (11/05/2015)*

the broader effects on revenue, tax administration, economic efficiency, social equity, and, ultimately, prospects for economic growth.

In understanding key issues dealing with base erosion, OECD (2014) noted that developing countries often face acute pressure to attract investment through offering tax incentives, which may create base erosion and profit shifting (BEPS) [8]. Furthermore, OECD (2014) reported that the damage to the revenue base that erodes the resources for the real drivers of investment decisions - infrastructure, education and security - is compounded by the lack of transparency and clarity in the provision, administration, and governance of tax incentives in developing countries. Tax incentives can create unintended tax-planning opportunities leading to revenue leakages.

In order to attract investment and accommodate the unique characteristics of mining activities, UNCTAD (2010) indicated that most governments have set up a series of incentives to modify the magnitude or the timing of revenue appropriations. Otto (2000) reaffirmed that some countries have chosen to treat the mining sector identically to how they treat other economic sectors, while most nations still opt to provide some sort of mining tax incentives.

Otto et al. (2000) gave some of the mining tax incentives (Table 2.5). Some incentives such as exploration expense carry forward, loss carry-forward and accelerated capital cost allowance involve the adjustment of the tax base. Others involve reduction of the rates, or even exemption of certain types of taxes during a given period. All these measures allow investors to obtain an earlier payback or gain a larger net cash flow (UNCTAD 2010). Some governments agree to postpone taxes to later years or sacrifice part of the revenue in return for a larger investment flow in the mining sector.

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[8] *According to the OECD (2013), base erosion and profit shifting (BEPS) refers to tax planning strategies that exploit gaps and mismatches in tax rules to make profits "disappear" for tax purposes or to shift profits to tax jurisdictions where there are little or no real activity but the taxes are low resulting in little or no overall tax being paid.*

Table 2.5: Selected mining tax incentives
(Otto et al., 2000)

Tax incentive	Description
Exploration expense carry-forward	Exploration costs to be accumulated and carried-forward to a time when the mine is in production and enjoying income
Accelerated depreciation	Allowing the tax payer to claim larger depreciation deductions in the early years of the project
Loss carry-forward	Allowing tax payers carry forward losses from one year to offset taxable income in future years; one of the most common tax incentives
Loss carry-back	Allowing current losses to be carried back in time to offset taxable income; administratively complex; very developing countries allow it
General or reinvestment tax credits	Subsidies that directly reduce calculated taxes by a specified amount; designed to increase local exploration or local reinvestment of earnings
Interest deduction rules	Scheduled debt service considered as part of operating expenses; policymakers often apply "thin capitalisation" provisions to limit debt/equity ratios
Tax holidays	A limited period of time during which a generally applicable tax needs not be paid.

The Nathan - MSI Group (2004) argued that there is a challenge to understand the conditions and the policy design features that determine whether tax incentives in the SADC region are likely to deliver substantial and sustainable net benefits in a particular context. Their study presented arguments in favour and against investment tax incentives as summarised in Table 2.6.

2.2.13 Equity participation

ECA (2004b) reported that ownership of equity interest in mining projects by the state, local mining, community or individual citizens of the host nation is one vehicle for participating in the benefits of mining. This could be by way of free equity interest in mineral operations, in which case it has to be considered as part of the overall fiscal package; it would be a minority interest in the shareholding of the project company. However, the degree or extent of state involvement in any project is an area of concern for most private investors.

It is reported that some SADC countries insist on state co-ownership of mines and mineral development companies. Although this does not necessarily deter FDI, such ownership should be kept as low as possible and should not affect the business of mining (ECA, 2004b).

Table 2.6: Arguments in favor of and against tax incentives
(Nathan - MSI Group, 2004)

Arguments	In favor of tax incentives	Against tax incentives
1	Clearly enhance returns to investment	The actual revenue cost can be high if the investments would have been viable or tax-favored investors take business away from taxable producers.
2	Justified by positive externalities stemming from investments	Abusive tax avoidance schemes, made possible by tax preferences, further erode the revenue base
3	Relatively easy to target and fine tune	Tax incentives also divert administrative resources from revenue collection
4	Signal openness to private investment	Revenue losses require painful fiscal adjustments in the form of higher taxes on other entities, cuts in expenditure, or greater dependence on other costly forms of financing
5	Useful in a world of capital mobility	Tax differentials can introduce serious economic distortions that reduce efficiency and productivity
6	Necessary for responding to tax competition from other jurisdictions	Tax preferences create inequities by favoring some taxpayers over others. This can undermine general compliance.
7	They compensate for other deficiencies in the investment climate	As a development tool, tax incentives score poorly in terms of transparency and accountability
8	Enhance revenue by stimulating investments that generate other taxable income via employment and linkage effects	The cash value of tax incentives stimulates political manipulation and corrupt practices.
9	Offer political advantages over direct expenditure programs to stimulate investment	Alternative instruments for promoting investment can have much more favorable and lasting effects on productivity, growth, and development.
10	Have been successfully used in well known cases	International experience shows that tax incentives most often do not deliver favorable results

Modes of equity participation in resource countries by governments depending on their objectives, their circumstances and issues encountered have been highlighted (Baunsgaard, 2001; Calder, 2014; McPherson, 2010). State participation comprises a range of options from 100 percent equity participation, through partial or carried equity arrangements, to equity participation without financial obligation (McPherson, 2010). State equity is used by many countries to secure additional government take (beyond tax revenue) from profitable projects (Cottarelli, 2012). Equally, Collier (2010) noted that some states believe that their equity participation provides a return in excess of what can be extracted by the tax system alone.

UNCTAD (2010) indicated that government equity sharing is common in developing countries. Based on these, most African countries, for example, have included in their mining codes the possibility for the state to acquire a share of the operating company without payment. However, equity sharing also means that governments are bound by financial obligations and expose themselves to risks. Table 2.7 illustrates the incidence of state participation in some minerals-rich developing countries.

Table 2.7: Extent of state participation in mineral rich countries (McPherson, 2010)

Country	**State Participation**	**Country**	**State Participation**
Botswana	Diamond negotiable WI other minerals	Mongolia	10% Local /50% Govt.
Chile	100% - SMC in copper	Namibia	Diamonds – negotiable. New SMC
DRC	5% F/Negotiated equity shares 15 - 51 %	Papua New Guinea	30% WI/ (Not all mines)
Ghana	10% F/20% WI	Peru	None
Guinea	15% F	Sierra Leone	10% F/30% WI
Kyrgyz Republic	Variable WI 15% -66%	South Africa	15% Black Ownership
Liberia	15% F /Mittal only Law specifies 10%	Zambia	Minority Interests

CI: carried interest; WI: working or paying interest; F: “free” equity

Baunsgaard (2001) related that equity participation often becomes a costly option when consideration is taken into account of the cash-calls arising from equity participation. There are also possible conflicts of interest arising from the government's role as regulator overseeing the environmental and social impacts of the project which may differ from its objectives as an equity shareholder.

2.2.13.1 Forms of equity participation

McPherson (2010) noted that governments embrace state participation in their natural resource sectors in a variety of forms, depending on their objectives, their circumstances and issues encountered. Under all forms of state participation, except the "free" equity form, the most common vehicle for state participation is the State Mineral Company (SMC). Baunsgaard (2001) similarly gave the various forms of equity participation common in resource industry which include:

- paid-up equity on commercial terms, which places the government on a similar footing as a private investor;
- paid-up equity on concessional terms, where the government acquires its equity share at a below-market price;
- a carried interest, where the government pays for its equity share out of production proceeds, including an interest charge;
- tax swapped for equity, where the government's equity share is offset against a reduced tax liability;
- equity in exchange for a non-cash contribution, for example by the government providing infrastructure facilities; and
- "free" equity, which is a bit misleading since even the non-cash provision of equity usually results in some, more or less transparent, offsetting reduction in other taxes.

2.2.13.2 Benefits of equity participation

Proponents of government ownership of shares, or equity stakes, cite three principal benefits namely (NRGI, 2015):

- capacity building - where a government holds equity through a national company, and that company can become a domestic expert in commercial management of oil, gas or mining. Over time, this can promote broader industrial development and reduce dependence on foreign partners;
- improved monitoring - where by having a seat at the table as a shareholder in an oil, gas or mining venture, officials in many governments expect to enhance their ability to monitor the activities of private partners; and
- direct financial benefits - where in some countries, an equity ownership stake entitles the state to a share of the resource produced, which the state or a state-owned company might sell itself, or which might be monetised via cash payments from the private company to the state. In other cases, equity participation entitles the state to some form of dividend payment if a project is profitable.

2.2.14 Government institutional capacities

Capabilities of institutions in enhancing optimal capturing of rent are very important in resource rich nations. Calder (2014) reported that natural resources are often found in developing countries and often dominate those countries' economies and such countries commonly suffer from weak general administrative capacity and governance, which are exposed to huge additional pressures by the scale and complexity of resource taxation. Calder (2014) noted lack of transparency and confidentiality of certain tax clauses, sometimes kept secret even from the tax department, as issues making tax administration difficult.

Equally, Alba (2009) observed that efficient and effective regulation and monitoring of extractive industry (EI) projects requires that responsibilities of the various government entities are clearly defined and that these entities' authority, institutional capacity and available resources are commensurate with their responsibilities. It also requires that sufficient capacity for monitoring regulatory compliance is built. Efficient collection of taxes and royalties from the extractive industry should ensure that there is:

- adequate administrative and audit capacity of the relevant institutions;

- adherence to internationally accepted accounting and reporting standards and procedures; and
- regular public reporting through disclosure mechanisms like the EITI (*ibid.*).

Different arrangements of successive monitoring through establishing a capable and strong regulatory capacity are used in different countries, depending on policy objectives and capacity constraints (Alba, 2009). Some countries have established independent agencies to regulate EI operations and monitor regulatory compliance while others rely on technical units within the relevant sector ministries (mines, petroleum, environment, or finance).

Extractive industry regulations normally incorporate internationally recognised technical, environmental, accounting, and auditing standards as well as good industry practice. The accounting rules and procedures for EI operations and regular audits that meet international standards are also critical, in particular to assess production and export volumes, prices, and capital and operating costs, as well as to monitor compliance with procurement procedures, local content obligations, and social compensation requirements (Alba, 2009). In terms of understanding government institutions, Guj et al. (2013) discussed that a typical allocation of the functional responsibilities and duties associated with the mining industry might have:

a) Ministry of Mines dealing with, *inter alia*, mining policy, monitoring of mine production and mines administration;
b) Ministry of Finance dealing with, among others, fiscal policy, revenue assessment and collection functions, and duties and excise functions.

Barma et al. (2012) argued that despite the fact that natural resources provide an abundant rent stream for governments to invest in improving their administrative capabilities, many low-income, resource-dependent countries exhibit notably low capacity and poor governance in revenue administration. The typical problems noted in revenue administration are:

- inadequate organisational structuring;

- low human resource capacity;
- perverse incentive systems for revenue collection and taxpayer service;
- cumbersome processes; and
- lack of information technologies and logistical support.

Barma et al. (2012) further discussed different forms of sector organisation that serve as mechanisms to resolve the competing priorities of governments and investors. These include:

(i) legal and regulatory framework which provide stable and predictable policy environment;

(ii) models of ownership in the extractive industries determined by the attractiveness and stability of regulatory and fiscal regimes;

(iii) allocation of rights for exploration and production or extraction (minerals) that should be transparent without secrecy and revolving-door policies; and

(iv) capacity of government agencies tasked with regulating and monitoring the sector to avoid problems in regulatory institutions.

2.2.15 Corporate social responsibility and local content

CSR and local content are some of the non-fiscal benefits mining companies can additionally employ to stimulate the local economies of the country without depending on the traditional resource taxation.

2.2.15.1 Corporate social responsibility (CSR)

Debates surrounding CSR in the mining industry have gained considerable attention within the academic community. Different authors have analysed the CSR strategies adopted in the mining sector globally. For instance, Jenkins (2004) outlined reasons why CSR is important for mining and Azapagic (2004) identified the relevant stakeholders and their interests in economic, environmental and social issues of sustainable development in the mines and minerals industry.

Jenkins (2004) stated that for the mining industry, ‘CSR is about balancing the diverse demands of communities and the imperative to protect the environment with the ever-

present need to make a profit.' Equally, Carroll (1991) used four different categories of CSR, which included businesses' fulfillment of economic, legal, ethical and discretionary/philanthropic responsibilities. This four-part definition of CSR has been stated as follows:

'*The social responsibility of business encompasses the economic, legal, ethical, and discretionary [later referred to as philanthropic] expectations that society has of organisations at a given point in time.'*

Carroll (1991) presented his CSR model as a pyramid (Figure 2.9), based on the four-part definition of CSR identifying the four categories of responsibilities.

Figure 2.9: The pyramid model of CSR
(Carroll, 1991)

These four responsibilities are the expectations placed on the corporation by corporate stakeholders and society as a whole and the concise details of the responsibilities are:

- economic responsibilities - this is 'to produce goods and services that society desires and to sell them at a profit.' All other business roles are predicated on this fundamental assumption;

- legal responsibilities - this refers to the positive and negative obligations put on businesses by the laws and regulations of the society where it operates;
- ethical responsibilities - these embody those standards, norms, or expectations that reflect a concern of what stakeholders regard as fair, just, or in keeping with the respect or protection of shareholders' moral rights; and
- philanthropic (or volitional) responsibilities - these encompass those corporate actions that are in response to society's expectations that businesses be good corporate citizens.

Community is a key stakeholder for all mining companies and some authors (Jenkins and Obara, 2008; Sigam and Garcia, 2012) have explained the various social impacts and the financial benefits extractive industries create on the local communities. MMSD (2002) indicated that mining has a huge impact on local communities. Positive effects include the creation of new communities and wealth, income from export revenues and royalties, technology transfer, skilled employment and training for local populations and improvements in infrastructure such as roads, schools and health clinics.

Calder (2014) also stated that natural resource companies may be required to meet community service and infrastructure obligations, such as providing training or building public works, in return for license rights. Such obligations are a form of in-kind public revenue (in the nature of a one-off fee rather than a royalty or profit tax), but would not generally be described as a tax. Transparent administration of such obligations - establishing their value and ensuring that this value is actually delivered on time does not fall within the usual competency of a tax department (*ibid.*).

CSR has implications on the fiscal regimes. Otto (2009) reported that certain jurisdictions encourage CSR by ensuring that expenses incurred with respect to local community development in terms of investment in community infrastructure may be expensed as incurred and carried forward if related to mining operations. ICMM (2009) also recounted that in many countries, the tax treatment of social investments and community spending by mining companies is covered under general tax legislation covering company spending for charitable purposes. Such legislation is often imprecise,

meaning that there is an annual negotiation between tax authorities and mining companies over which expenditures can be considered to be tax deductible.

2.2.15.2 Local content development

Beyond generating taxes and royalties, the extractive industry make substantial contributions to a country's economic development by supporting local employment and supply chains. Between 40 and 80 percent of the revenue created in oil and gas and in mining is spent on the procurement of goods and services, often exceeding tax and royalty payments in some cases. Increasing the proportion of goods and services that are procured locally ("local content") is often a key goal for policymakers in resource-driven countries (Dobbs et al., 2013). In their studies Riesco et al. (2005) also observed that in addition to gaining hard currency from taxes and royalties, benefits from mineral development should include employment, infrastructure such as roads and hospitals, linkages upstream to industries that supply goods and services or downstream to industries that process mineral outputs, and technology transfer.

Tuffour et al. (2015) indicated that local content means securing direct and indirect opportunities for employment and procurement of local goods and services, while at the same time fostering the development of local skills, technology transfer, and the use of local manpower and local manufacturing. They further explained that local content and value addition strategy is one of the methods resource-rich countries are adopting to increase the benefits from resource extraction to their economies, beyond securing optimal rents (royalties, taxes, shares, and other revenues). The goal is to promote linkages with other sectors of the economy through four main pillars:

- local employment opportunities;
- in-country spending and procurement of local goods and services;
- technology and skills transfer; and
- local participation through equity and management.

Ado (2013) stated that resource rich developing countries are faced with theories of resource curse (Ross, 1999) and the paradox of plenty (Karl, 1997). In order to avoid the

resource curse, many of these countries adopt "Local Content Development Policy" strategies. An example of the countries that used or are still using and benefitting from the local content policy is given in Table 2.8.

Table 2.8: Countries with local content policy in their resource sector (Ado, 2013)

Country	Legislation/Policy	Year enacted	Focus
UK	Policy	1970	In-country procurement
Norway	Local content Law (Article 54 of the Royal Decree of 1952)	1972	Indigenous participation
Malaysia	Petroleum Development Act	1974	Licensing
Brazil	Local Content Legislation	2003	Oil concession
Trinidad & Tobago	Local Content & Local Participation Framework	2004	In-country fabrication
Kazakhstan	Law of the Republic of Kazakhstan 223-IV	2009	Procurement & services
Indonesia	Local Content Rules	2009	Procurement of domestic inputs
Nigeria	Local Content Act	2010	Indigenous participation and domiciliation of oil and gas activities

Sigam and Garcia (2012) in their studies on development of local content strategies identified the main challenges which countries must address to generate the conditions to improve local content. These are grouped into four categories namely:

- lack of human capacity and education skill;
- poor infrastructure;
- weak industrial base; and
- poor governance and inadequate business environment.

2.2.16 Foreign direct investment (FDI) and taxation

Taxation is only one of the factors mining companies consider in making investment and operating decisions. However, it is often the most important policy ingredient in these decisions (Otto and Cordes, 2002). In assessing the attraction of FDI in mining, UNCTAD (2011) reported that profitability is a key goal of FDI in mining projects. A

range of economic and policy factors determine the level of profits that Transnational Corporations (TNCs) expect to derive from any new extractive project. These factors will influence the decision to invest, whether it is for a new or an existing project.

Using the ideas from studies by Otto (1992) on determinants of mining investments, UNCTAD (2011) further identified two sets of factors shaping profitability namely the geological potential, and policy and institutional factors. The important supply-side factors that determine whether a given deposit can be profitably exploited include:

(a) infrastructure, such as transportation, water and electricity, all of which are important to the mineral production process; and
(b) availability of skilled labour, such as mining technicians, engineers and managers.

The determinants of profitability (*ibid.*) in mining investment related to policy and institutional factors included:

(i) political stability and quality of governance, including the likelihood of unexpected policy and regulatory changes, and the clarity and enforcement of regulations;
(ii) FDI legislation and policy, including protection and treatment of foreign investors, as well as the ability to repatriate profits;
(iii) the nature and security of mining concessions or titles;
(iv) the level of taxation, but also its structure; and
(v) the level and clarity of environmental and social regulatory obligations.

Naito et al. (1998) in trying to understand the rise of considerable minerals potential and exploration investment in the Asian region based on enactment of codes and fiscal system indicated that the fiscal regime is the significant determinants of corporate mineral investment in a country. The fiscal regime considerations included stability and/or predictability of fiscal regimes, ability to repatriate profits, level of tax liability, reasonable foreign exchange regulations, and permitted external accounts.

Mitchell (2009) argued that the key factor determining investment decisions is the geological potential of a site, but it is strongly offset by fiscal and socio-political considerations, with the former including tax rates and the latter the stability of the tax system. Most of the factors are reportedly tax dependent and tax related.

2.3 Literature on Zambian mineral taxation system

Zambia is well endowed with mineral resources and the country derives most of its foreign earnings from the export of minerals. The mining industry dominated by copper and a few other minerals, namely; zinc, silver, gold and cobalt, has been the most important driving force of economic development in Zambia for over 70 years (OECD, 2003). Zambia's mining sector has evolved from the early 1930 of mining activity with ownership structure changing necessitating different government roles and varied expectations from the sector over the period.

2.3.1 Historical perspective - nationalisation and privatisation

The period spanning 1920-1970 placed the sector under private ownership, a colonial rule, where all mines were owned and operated by foreign-owned private enterprises. The first commercial copper mine opened at Roan Antelope (now Luanshya) in 1928 and since then, copper mining has dominated Zambia's economy (Fraser and Lungu, 2007). Two private companies, the Roan Selection Trust and the Anglo-American Corporation owned the mines.

Although the industry was private, mining companies provided a large number of public goods and services to communities surrounding their operations and effectively took on government service provision roles (ICMM, 2014). Companies often provided good-quality infrastructure, such as housing and schools, and attended directly to the social needs of these communities, including the provision of health care. However, as reported by Fraser and Lungu (2007), under the then British colonial rule, Northern Rhodesia (now Zambia) was understood by the authorities principally as a source of mineral wealth to support much more significant industrial, social, educational and governmental infrastructure in Southern Rhodesia (now Zimbabwe). In the years immediately prior to independence, foreign private companies reduced their investments, perhaps anticipating

the nationalisation agendum of the new government (Simpasa et al., 2013). In 1964, Zambia attained independence and there was rapid growth of the copper industry, driven by favorable world prices through the late 1960s and early 1970s. This made the country become the third-largest producer of copper globally, and Copperbelt Province started to develop into a dynamic urban and industrial region (ICMM, 2014).

When Zambia attained independence in 1964, copper accounted for 40 percent of GDP, 93 percent of exports, 68 percent of public revenue and 15 percent of employment (UNECA, 2011). In 1968, President Kenneth Kaunda raised concerns that, from independence, the two companies that owned the mines had put in little new money. The companies claimed that the royalty system by which they were taxed dissuaded investment (Fraser and Lungu, 2007). In 1969, the Government responded by announcing the nationalisation of the mines.

The period 1970-2000 characterised the mining sector to be under state ownership (Mwambwa et al., 2010). Zambia nationalised its mining sector in the early 1970s as part of the Mulungushi Reforms. The *Mines Acquisition (Special Provisions) Act* of 1970 facilitated the acquisition by the Republic of 51 percent interest in each of the Zambian main copper mining companies. The *Mines and Minerals Act* of *1972* regulated the newly nationalised industry. ICMM (2014) reported that ongoing process of nationalisation eventually led to the merging of the two nationalised mines in 1982 to create Zambia Consolidated Copper Mines (ZCCM), the state-owned mining company. ZCCM was tasked with running the sector and was also responsible for the provision of social services and public goods for mineworkers and their communities. The nationalisation period of the mines in Zambia was regrettably scheduled. This, as noted by ICMM (2014), had copper prices enter a protracted slump in the 1970s and 1980s. Higher oil prices during the 1970s made imported equipment (necessary to maintain mining production) more expensive. Furthermore, an unwritten rule was that companies were internationally required to slap a minimum of 30 percent above standard prices on equipment and supplies sold to Zambia, following nationalisation. ICMM (2014) additionally stated that the combination of higher costs and lower prices, together with

the many social responsibilities that ZCCM had been tasked with, led to it making large losses. Lack of capital to invest in maintaining the mines led to falling production. During the period of nationalisation, production fell to less than 40 percent of the amount of copper produced at the start of the period.

With the global recession of the 1970s, copper incomes fell dramatically. The government was initially not willing to adjust, but borrowed large amounts of money to maintain the copper mines and the public sector, in the process building up a large debt (Bigsten and Kayizzi-Mugerwa, 2000). President Kaunda's government needed to borrow heavily in order to compensate for the shortfalls in government revenue, and by the late 1990s, Zambia was one of the most heavily indebted countries in the world (ICMM, 2014).

The phase 2000 - 2015 put the copper mining sector under private ownership again. In 1991, a newly formed political party, the Movement for Multiparty Democracy (MMD), won power on a reform platform. The new government undertook an extensive macroeconomic and market liberalisation programme (Bigsten and Kayizzi-Mugerwa, 2000). In 1995, the MMD government passed a new Mining Act of 1995 that lay the groundwork for the privatisation of the mines, a process that was conducted rapidly between 1997 and 2000 (Mwambwa et al., 2010).

At the end of 1999, an agreement for the privatisation of ZCCM assets was reached, which ironically meant that the bulk of the mining assets would revert to the original owner, the Anglo-American Corporation (Bigsten and Kayizzi-Mugerwa, 2000). Privatisation meant concession was to private enterprises, owned by foreign shareholders, with ZCCM holding minority shares (ICMM, 2014). A combination of factors, including the decline in the international copper price, ZCCM's bad financial performance, and the pressure exercised by the World Bank and the IMF pushed the Zambian government to privatise ZCCM. The long and complicated privatisation process went from 1996 to 2000, when the last portion of ZCCM was sold to Anglo American Corporation (Simpasa et al., 2013). After privatisation, commodity prices experienced an almost unprecedented boom in the five years to mid-2008 (Figure 2.10),

following which the financial crisis and recession provoked a deep slump. In the period 1997-2002 after privatisation, the copper mining sector expanded significantly, in tandem with rising international prices (Haglund, 2010).

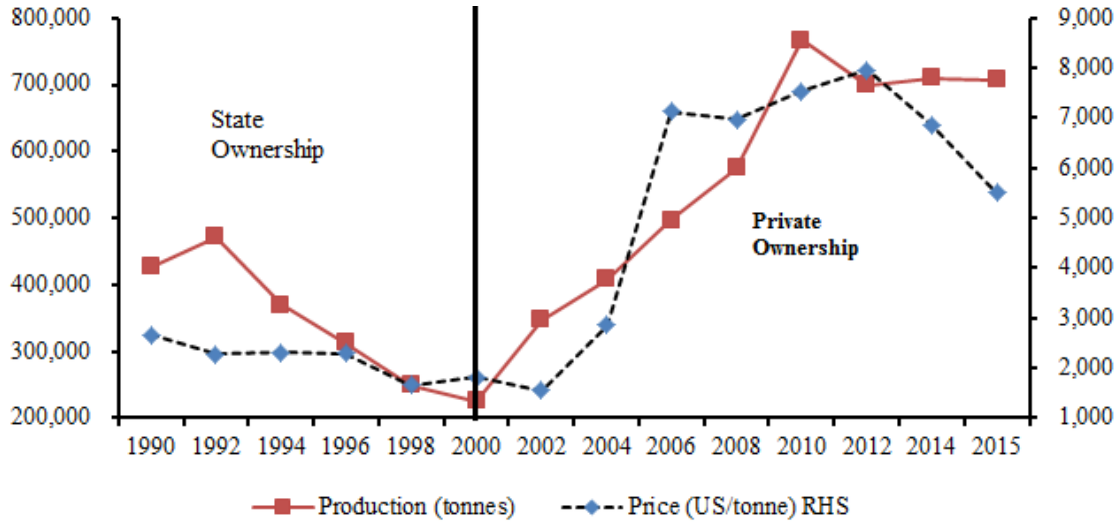

Figure 2.10: Copper production and price movements
(BGS, 1995 - 2016; IMF, 2015a)

2.3.2 Players in the copper mining sector

This subsection looks at some of the players influencing the mining industry in Zambia. The key players which have shaped the investment outlook of the Zambian copper mining sector involve government agencies, other institutions and private mine investors. These are explained below.

(a) Mining companies

Zambia contains the largest known reserves of copper in Africa, holding 6 percent of known copper reserves in the world. Resources available to existing mines in Zambia are estimated at 2.8 billion tonnes of copper ores ranging between 0.6 and 4 percent copper. Copper is generally mined together with cobalt (ZDA, 2013). Zambia's mining sector is integrated with different mining companies (Table 2.9) involved in the production of varied products in the value chain. Companies produce copper ore, intermediate products (concentrates, blister copper), copper anodes and copper cathodes.

Table 2.9: Copper mining companies and ownership structures (KPMG, 2013)

	Mine	Location	Ownership structure	Commodity
1	Baluba Central Copper mine	Luanshya	China Non-ferrous Mining Corp Ltd (80%); ZCCM Investments Holdings PLC (20%)	Copper, cobalt
2	Chambishi Copper Operation	Kitwe/ Kalulushi	China Non-ferrous Mining Corp Ltd (85%); ZCCM Investments Holdings PLC (15%)	Copper, cobalt
3	Chibuluma South Copper-Cobalt mine	Kalulushi	Metorex Pty Ltd (85%); ZCCM Investments Holdings PLC (15%)	Copper, cobalt
4	Kansanshi Copper/Gold mine	Solwezi	First Quantum Minerals Ltd (80%); ZCCM Investments Holdings PLC (20%)	Copper, gold
5	Kasempa Copper mine	Kasempa	H and S Mining Ltd (100%)	Copper
6	Konkola Copper Mines operation	Chingola	Vedanta Resources PLC (79%); ZCCM Investment Holdings PLC (21%)	Copper, cobalt
7	Lubambe Copper Mine	Chililabombwe	Vale S.A. (40%); African Rainbow Minerals (40%); Zambia Consolidated Copper Mines Investment Holdings (20%)	Copper, cobalt
8	Lumwana Copper Mine	Solwezi	Barrick Gold Corporation (100%)	Copper, cobalt, uranium, gold
9	Mopani Copper Mines	Kitwe/Mufulira	Glencore Xstrata PLC (73%); First Quantum Minerals Ltd (17%); ZCCM Investments Holdings PLC (10%)	Copper, cobalt
10	Muliashi Copper Mines	Luanshya	China Non-ferrous Mining Corp Ltd (80%); ZCCM Investments Holdings PLC (20%)	Copper, cobalt

(b) Chamber of Mines

The Chamber of Mines was re-established in 2000 after the privatisation of the mining assets were completed.

The objectives for which the Chamber of Mines of Zambia was established are detailed in the Constitution[9] . These are stated as follows:

'*The Chamber is established for the purposes of promoting the interests of its members, and encouraging, protecting and fostering the Mining Industry of Zambia and doing everything necessary and advisable for the advancement /achievement of those objectives.'*

(c) Zambia Extractive Industry Transparency Initiative (ZEITI)

Zambia became an EITI candidate country in May 2009 and became fully compliant on 19 September 2012 (ZEITI, 2014a). ZEITI main objective was for mining companies to disclose their revenue from their operations and for governments to give account of what has been received, using this money for the benefit of citizens**.**

(d) Ministry of Mines and Minerals Development (MMMD)

This is responsible for the mining sector. Within this ministry, three directors are responsible for administering the provisions of the Mines and Minerals Development Acts. The agencies under the ministry in charge of administering the mining sector are Geological Survey Department, the Mines and Minerals Development Department, and the Mines Safety Department.

(e) Zambia Revenue Authority (ZRA)

ZRA was established on 1st April 1994 as a corporate body, under the Zambia Revenue Authority Act, Chapter 321 of the Laws of Zambia enacted in 1993. Pursuant to this Act, ZRA is charged with the responsibility of collecting revenue on behalf of the Government of the Republic of Zambia (GRZ) under the supervision of the Minister of Finance (ZRA, 2014). Therefore, ZRA receives most of the funds from mining companies and has two operating divisions which are Customs Services Division and Domestic Taxes Division; with both collecting over 98 percent of all Zambia's taxes from the mining sector.

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[9] *Zambia Chamber of Mines. Available on http://mines.org.zm*

The Mining Tax Unit (MTU) within the Large Taxpayer Office (LTO) of ZRA was established in 2008, with an initial establishment of 12 officers drawn from within the LTO. The creation of the MTU reflects the need for special focus on effective ways to improve and increase tax compliance and revenue collection from the mining sector, and is an important step in the process of mining tax reform (Fjeldstad and Heggstad, 2011). Even with these efforts of establishing the MTU, it is likely that it will take some time before Zambia's lack of capacity stops being a constraint on its fiscal choices (Manley, 2012).

(f) ZCCM - Investments Holding (ZCCM-IH) Plc

ZCCM-IH Plc is an investment holding company quoted on the Lusaka, London and Euronext Stock Exchanges. The majority of its investments are held in other Zambian mining companies in the copper mining sector. The company's shareholders are GRZ with 87.6 percent shareholding while private investors cumulate shareholdings of 12.4 percent (ZEITI, 2014a).

Though Zambian copper mining is essentially a private industry, the government has retained a sizeable shareholding (ranging from 4.4 to 20 percent of the shares of the privatised mines) through ZCCM-IH. Such an arrangement is not unprecedented in the copper mining industry (World Bank, 2011). The principal activities of the Company include managing the Zambian government's stake in the mining sector. The Company is also charged with the responsibility of environmental restoration arising out of the past operations of ZCCM Ltd (ZCCM-IH, 2009). Other activities, *inter alia*, include:

- undertaking investment analysis and aligning company operations towards maximising returns to shareholders;
- establishing and securing joint venture partnerships for projects assessed to be viable; and
- promoting Zambian ownership and management in mining assets.

The company's main functions, among others, are as follows (ZCCM-IH, 2013):

- to continue monitoring production and cost levels in the associate companies. In addition, to ensure collection of price participation payments due; and
- to liaise with prospective greenfield investors in the mining and minerals industry who will enter into agreements with the Government.

(g) Bank of Zambia (BOZ)

The Bank of Zambia operates under the Act of 1965 and its subsequent amendments which charges the institution with the usual central bank responsibilities such as being banker to government, issuer of currency, manager of foreign exchange reserves, controller of commercial banks' liquidity and with responsibilities for the formulation and implementation of monetary policy.

(h) Zambia Development Agency (ZDA)

The Zambia Development Agency (ZDA) was established in 2006 by an Act of Parliament and became operational in January 2007 after the amalgamation of five statutory bodies that hitherto operated independently to foster economic growth and development by promoting trade and investment through an efficient, effective and coordinated private sector led economic development strategy (ZDA, 2015). The Act gives powers to ZDA in key areas of trade development, investment promotion, enterprise restructuring, development of greenfield projects, small and enterprise development, trade and industry fund management, and contributing to skills training development. The Zambia Development Agency (ZDA) Act of 2006 offers a wide range of incentives in the form of allowances, exemptions & concessions for companies. Investment in most types of mineral operations are covered by the Zambia Development Agency Act of 2006, although minerals produced for the construction industry, such as clay, sand, and most types of stone, are excluded (ZEITI, 2015a).

(i) Industrial Development Corporation (IDC)

The Industrial Development Corporation of Zambia is an investment company wholly owned by the Zambian government, incorporated in early 2014. IDC's mandate is to play a catalytic role in deepening and supporting Zambia's industrialisation capacity to promote job creation and domestic wealth formation across key economic sectors. The

IDC plays its role through evaluation, pricing and lowering the investment risk profile by serving as co-investor alongside private sector investors.

The IDC facilitates provision and raising of long-term finance for projects and serves as an investment holding company for state-owned enterprises (SOEs) and new investments that ultimately generate earnings for the proposed Zambia Sovereign Wealth Fund. The IDC is an active shareholder and investor focused on a broad spectrum of sectors including agriculture, forestry, manufacturing, financial services, mining, energy, telecommunications, logistics, medical, education, tourism, real estate and media[10] Currently, the portfolio of mining companies for IDC include; Kagem Minerals, Kariba Minerals and ZCCM-IH Plc. In 2015, the Government had transferred all its shares held in ZCCM-IH and Kagem Mining Limited and all other Government owned enterprises to Industrial Development Corporation (ZEITI, 2015a).

2.3.3 Macroeconomic contribution of the mining sector

The section reviews the macroeconomic contribution of the copper mining industry to Zambia focusing on production, export values, GDP, FDI and investment outlay, government revenues and employment generation. The country is endowed with a lot of mineral resources and yet only copper mining contributes a large portion to total export values, flow of investment in the country and generation of foreign exchanges. ZEITI (2014b) reported that during 2013, the mining sector remained the country's major productive industry with very high contribution in exports and investment, but progressively lower contribution in government revenues, GDP and employment.

2.3.3.1 Production

In 2014, copper production was 708,259 (754,918 mt in 2013) metric tonnes of copper and nil (6,957 mt in 2013) metric tonnes of cobalt. The four largest mining companies in Zambia, Konkola Copper Mines and Mopani Copper Mines from the Copperbelt Province and Kansanshi and Lumwana from North-Western Province (Figure 2.11) account for over 85 percent of copper production in the country (ZEITI, 2015a).

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[10] *Industrial Development Corporation. Available on: http://www.idc.co.zm/about-idc*

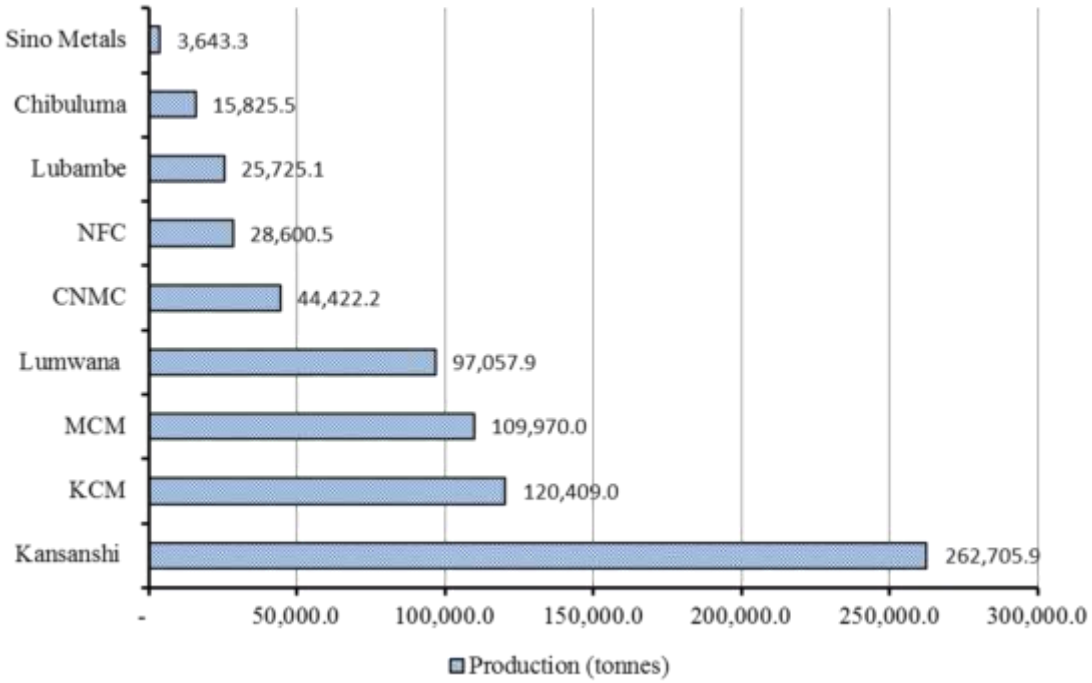

Figure 2.11: Copper production in 2014
(ZEITI, 2015a)

The 2016 Budget presentation by the Minister of Finance[11] stated that copper production was up by 8.2 percent to 575,780 metric tonnes in the first nine months of 2016, from 531,163 metric tonnes produced in the corresponding period in 2015.

2.3.3.2 Export value

Despite being the main provider of foreign exchange for the economy, the mining sector in Zambia is also a significant user of foreign exchange because it imports many of its inputs. ICMM (2014) indicated that the large foreign exchange contributions in Zambia coming from metal export earnings are offset in three main ways:

- payments to foreign providers of the ores (e.g. from the DRC) and other imported inputs that are used in various aspects of Zambian mining;
- imports of capital equipment (capex); and
- profit repatriation and debt service.

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[11] *The 2017 Budget Speech highlights available on: https://www.lusakatimes.com/wp-content/uploads/2016/11/2017-Budget-Speech.pdf. (26/11/2016).*

The Zambian value of metal exports (copper and cobalt) since 2000 continued to increase up to 2008 when a value of US$4,164 million was attained. A drop in 2009 to a value of US$ 3,338 million was recorded and then metal exports rose in 2011 to a value of US$6,969 million (Figure 2.12). The general improvement in the value of metal exports was due to increased investment in the sector following privatisation. The average percent of metal export values to total exports for the period 2000-2015 was 74.5 percent.

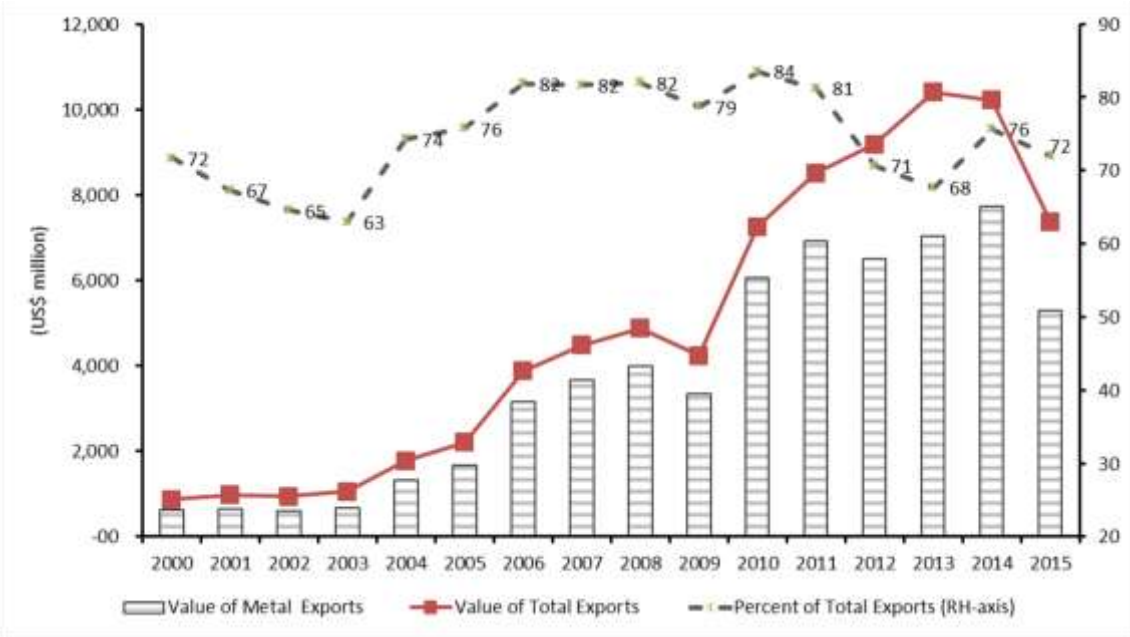

Figure 2.12: Value of metal exports and total exports
(BOZ, 2004 - 2015)

The value of mine tax as a percent of the metal export values has been low during the period of privatisation until the year 2008 when the government collected windfall tax (Figure 2.13). The economic crunch experienced in 2009 led to low mine taxes being collected at 2.83 percent of the export copper values. There was marginal increase in the collected mine taxes as a percent of exported metal value from 2010 (5.83 percent) to 2012 (12.24 percent). These values still remain low compared to 25-40 percent (World Bank, 2011) in the rest of the world.

Zambia's foreign exchange generated by mine product exports could also be partially offset by remunerations of the expatriate staff skilled and qualified for specialised

positions required to support investment in the country. Most of these staff insists being paid in foreign currencies and their emoluments are higher than the equivalent local employees. As stated by ICMM (2014), there are also allegations of additional (illicit) outward payments through transfer mispricing.

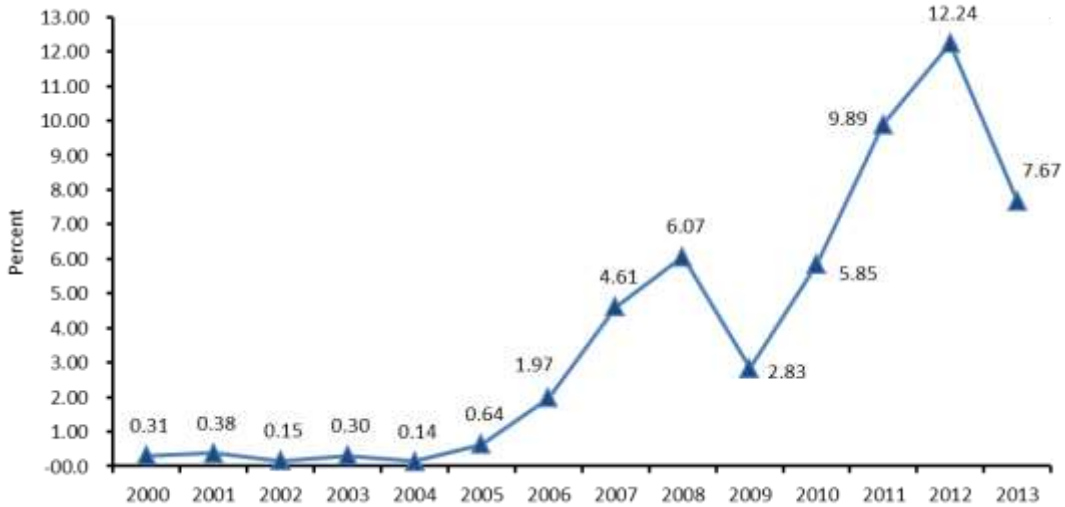

Figure 2.13: Mine tax revenue as percent of metal export value (K' m)
(Data source: Zambia Revenue Authority and CSO)

2.3.3.3 Gross domestic product (GDP)

The contribution of the mining sector to the country's GDP based on data from CSO (2014) in constant price using a 2010 benchmark price has been low with a single-digit from 2000 to 2008. In 2010, double-digit contribution from the sector was registered which continued up to 2013 (Figure 2.14).

It is quite clear that the share of the mining sector in Zambia's GDP[12] has been steadily increasing since privatisation time.

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[12] *In March 2014, Zambian Central Statistical Office (CSO) completed their exercise to adjust the base year for GDP estimates to 2010 instead of 1994. As a result, the total GDP estimate increased by 25 percent and the contribution of mining sector to the country's GDP also increased.*

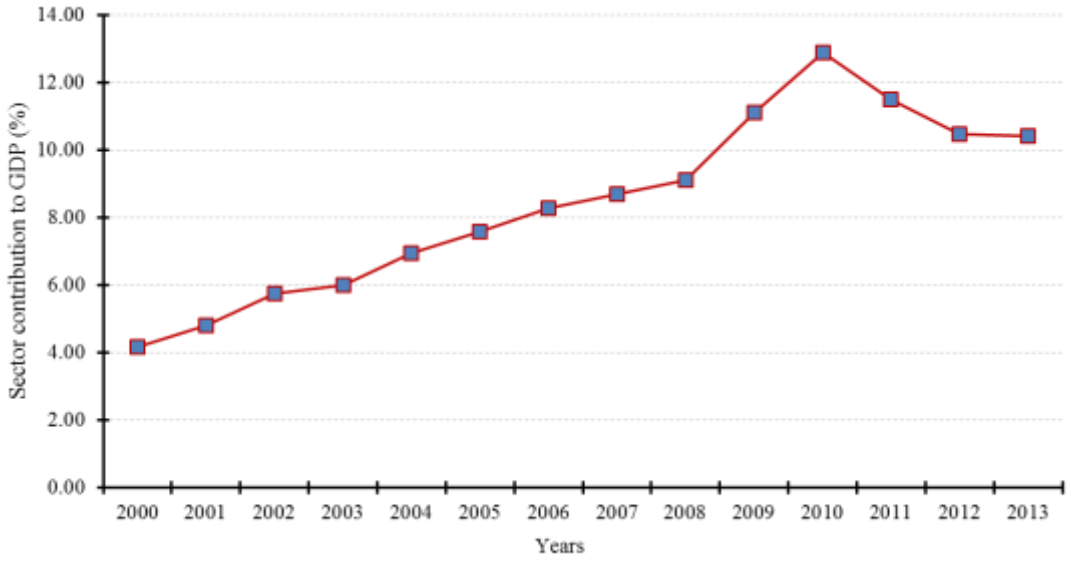

Figure 2.14: Mining sector's contribution to GDP
(CSO, 2014)

2.3.3.4 Government revenue

The mining sector's contribution to Zambia's fiscal revenues is a controversial topic. Challenges include allegations of non-compliance (e.g. via transfer mispricing) and concerns that the system of mineral taxation lacks sufficient checks to ensure that Zambia collects the revenues it is due (ICMM, 2014).

The mining sector generates various revenue streams for government, most significantly royalties, CIT and PAYE. Mining companies also pay other taxes, including local government (property) taxes, withholding taxes, and fees relating to licences and permits. For mining companies with government shareholdings through ZCCM-IH, payments are also made in the form of dividends or price participation arrangements (ICMM, 2014).

In Zambia, the mineral tax revenue (based on key instruments - mineral royalty and CIT) as a percent of GDP has been low (less than 4 percent) for the past one and a half decade (Figure 2.15). In Latin America, mining taxes average a far larger 17.39 percent of GDP. The mineral tax revenue as a percent of total tax revenue has been low from 1996 up to 2006 with a highest recorded in 2012 (Figure 2.15). Since 2007, there have been

improvement due to rise in production and increased commodity prices.This is a period when some mining companies had their loss carry forward periods diminished (Manley, 2012).

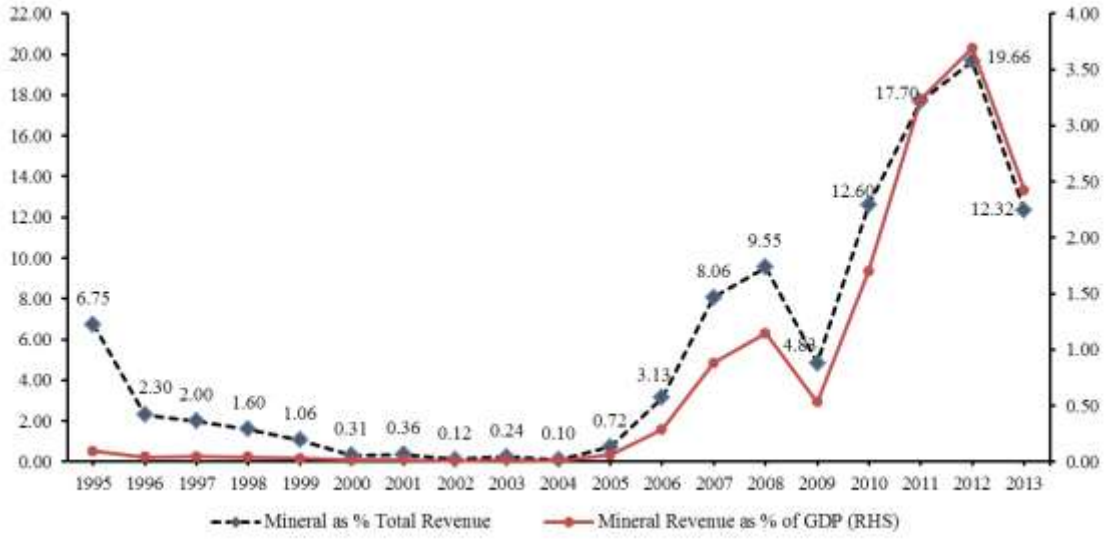

Figure 2.15: Mineral revenue, percent of GDP
(Data source: ZRA and CSO, 2014)

The key tax intruments used for contribution to mineral tax revenues are mineral royaties and corporate income tax (CIT). Pay as you earn (PAYE) is a tax paid by mine employees based on their emoluments. The employers act as an agent for the Government and deduct the tax from the employee emoluments which it remits to ZRA (ZEITI, 2014a). This tax is not considered as being paid by mining companies but employees.

It is reported that close to 40 percent of the taxes mining companies paid in Zambia had been deducted from employee payroll; 50,000 Zambians employed in the formal mining sector carried a tax burden comparable to that of the mining companies themselves (ICMM, 2014). African Progress Report (2013) equally reported that the first EITI report in Zambia indicated that, between 2005 and 2009, half of Zambians employed in the mining sector were carrying a higher tax burden than companies. The low taxes (CIT and royalties) paid from privatisation time increased in 2006 when conditions slightly improved (Figure 2.16). Manley (2013) stated that the increase was attributed to

improved tax administration, favourable tax instrument rates, increased commodity prices and the depletion of mining companies' loss carry forward provisions.

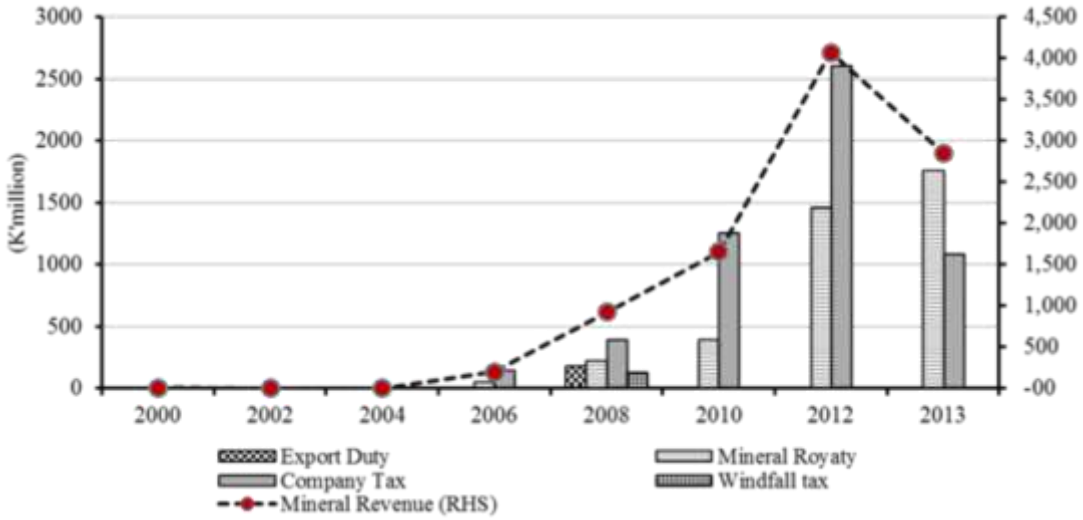

Figure 2.16: Tax instruments' contribution to total mineral revenue
(Data source: Zambia Revenue Authority)

The analysis of Government revenues by companies' contribution indicated that five companies (Kansanshi Mining Plc, Mopani Copper Mines Plc, First Quantum Mining and Operations Limited, Konkola Copper Mines Plc and Kalumbila Minerals Limited) contributed approximately 70 percent of the total Government revenues in 2014. Kansanshi Mining Plc accounts for almost 32.86 percent of the total extractive revenues for the year (ZEITI, 2015a).

2.3.3.5 Foreign direct investment (FDI) and investment outlay

Mining in Zambia is a source of major FDI. Since the early 2000s, the mining sector has attracted investment in excess of US$8 billion creating over 80,000 jobs by the year 2013 up from 27,000 jobs in the year 2000 (ZDA, 2014). The ZEITI (2015b) report indicated that to date, the mining sector has attracted investment in excess of USD 13.13 billion. Compared to other countries, mining makes an unusually large contribution to total national investment and to total FDI. As reported by ZEITI (2015a), in 2012 FDI into mining accounted for 61.7 percent of the total FDI. This contribution declined significantly to 1.06 percent in 2015 (Figure 2.17).

Zambia's FDI performance is strongly based on the performance of its mining industry, for which FDI has been a vital source of capital, technical inputs and managerial know-how (UNCTAD, 2006). FDI in the mining sector, historically, was not attracted by fiscal incentives but by the potential high rents that it offered.

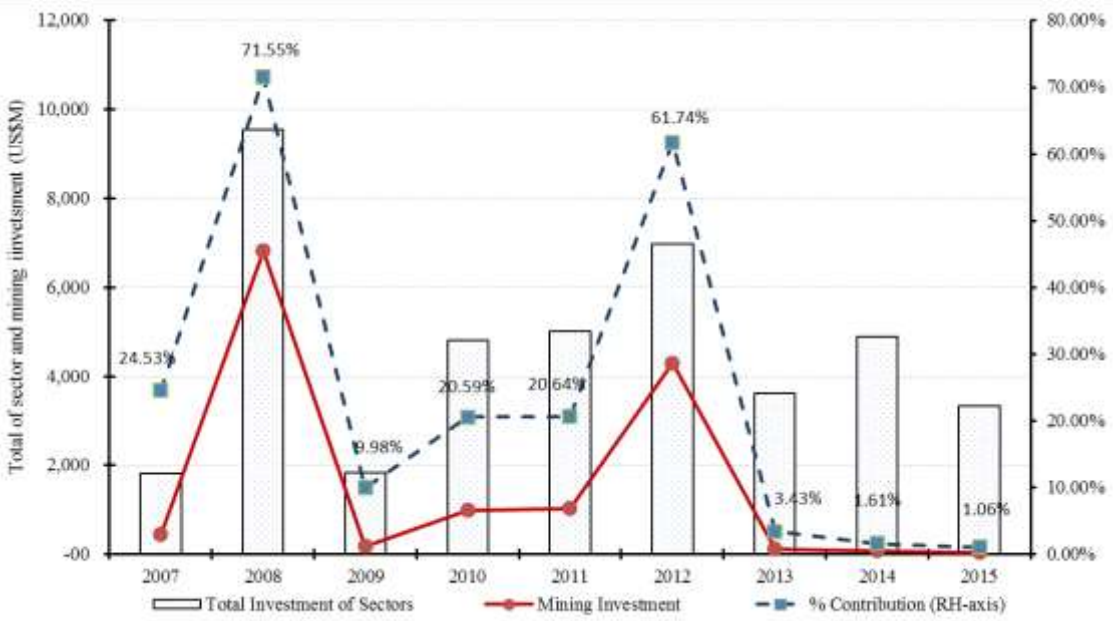

Figure 2.17: Foreign direct investment (FDI) in the mining sector (BOZ, 2007-2015)

Fitch Ratings (2012) reported that copper and cobalt production have more than doubled over the past decade, since the privatisation of the state-owned mining company ZCCM in 2002 as well as the rise of base metal prices, which has encouraged significant foreign investment in the sector.

2.3.3.6 Employment

Mining companies contribute to local economic development by creating direct, indirect and induced employment (ICMM, 2014). Mining is the largest source of employment in the Copperbelt and contributes significantly to the economy of Zambia's important region. During the period following the privatisation of the mines in Zambia, employment in the industry has increased from 25,000 to above 60,000, according to GRZ estimates (Lundstøl et al., 2013).

ICMM (2014) recounted that the employment contribution of mining is the smallest of the direct macro-contributions but still large in absolute terms. The absolute numbers of jobs in mining have increased substantially in response to higher levels of investment and production. The overall employment impact (Twerefou, 2009; UNCTAD, 2006) is limited compared to other sectors such as industry, services and agriculture due mainly to the capital-intensive nature of mining operations with low labour-intensity of this sector. However, there have been spill over and indirect employment creation for suppliers of goods and services to the mining sector. ZEITI (2015a) report indicated that in 2014, the contributions of the mining sector to employment from the Copperbelt and Northwestern Province jobs was about 20,300 direct mine employment workers while the total sector contributed about 147,700 jobs both directly and indirectly.

2.3.3.7 Foreign exchange

The mining industry continues to be the main supplier of foreign exchange in Zambia (Figure 2.18). However, in 2015 supply declined by 46.0 percent to US $2,116.4 million from US $3,914.1 million supplied in 2014 (BOZ, 2009; 2015).

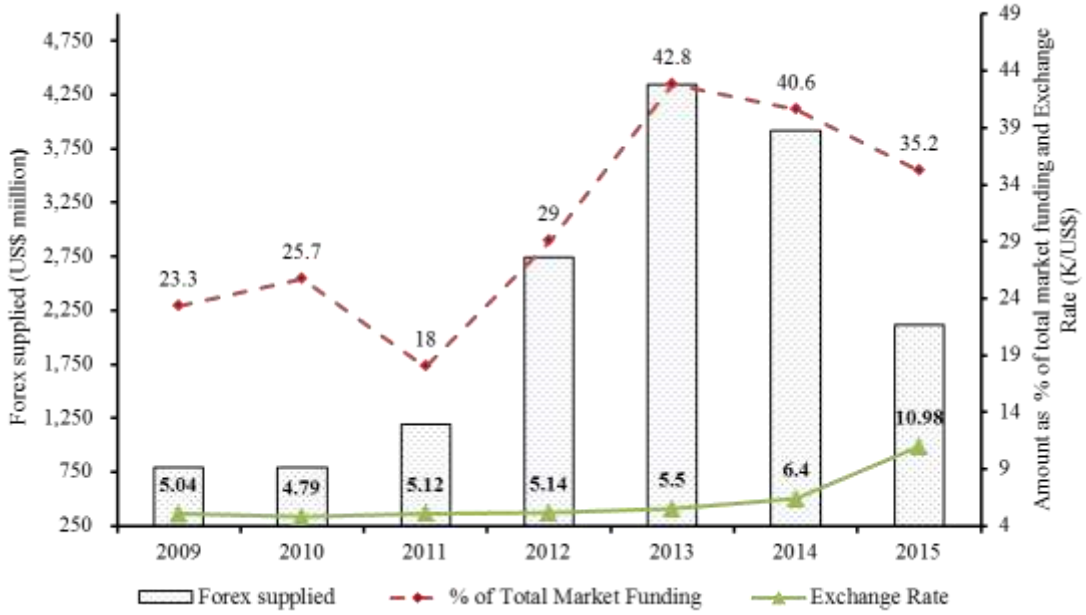

Figure 2.18: Foreign exchange supply by mining industry
(BOZ, 2009-2015)

Theories of "*Dutch Disease"* and resource curse (Davis and Tilton, 2002; MMSD, 2002; Sachs and Warner, 1995) explained how the mineral rich sectors can create domestic wage rates rise as the booming mineral sector is forced to offer workers higher salaries to attract the labor it needs. In addition, rising mineral exports cause the domestic currency to appreciate. However, this is unlikely to be the case for Zambia to have an improved Real Exchange Rate (RER). ICMM (2014) reported this fact that the prevailing opinion of the Bank of Zambia (BOZ) seems to be that the nominal exchange rate has not appreciated as much as might have been expected given a long period of high copper prices through 2008.

Since most of the copper mining companies in Zambia are multinationals, they enjoy the 100 percent profit repatriation incentives. In addition, low commodity prices have also a potential to depreciate the local currency. The IMF (2015b) team's discussions for the 2015 Article IV Consultation indicated that Zambia's local currency had depreciated sharply against the US dollar since the beginning of that year, reflecting the general strength of the dollar and low copper prices.

In Zambia, there is also excessive demand of other sectors of the economy on mining to produce foreign exchange which results in the depreciation of the foreign exchange rates.

2.3.4 Mine taxation regime

Mining activities in Zambia are enforced with a different tax treatment compared to other economic activities. Mining exploration and exploitation operations are subject to their own tax regimes, and these are separately tabulated at each annual budget speech (ZEITI, 2014b). However, ICMM (2014) argued that the mineral sector policy, and the regulatory framework within which investments are made, have both been increasingly unpredictable.

2.3.4.1 Mine tax regime changes

Mining taxation regime in Zambia has evolved in important ways since the government's privatisation of the mines (Table 2.10). The authorities have changed

elements of the regime in response to changing market conditions, evolving public policy needs, and as the authorities have developed experience with regulating private businesses after the years of state ownership (World Bank, 2015a).

Table 2.10: Evolving Zambia's fiscal regime since 1997
(ZEITI, 2014b; World Bank, 2015a)

Mining fiscal Regime	Key Features
Development agreements negotiated with individual mines during privatisation (1997 to March 2008)	Agreements were made between the Zambian government and each company that bought the assets of the former national company ZCCM. Each development agreement contained a fiscal stability clause.
The "2008 regime" (April 2008–March 2009)	The 2008 reforms passed as part of the 2008 Mines and Minerals Act ruled that the government should not enter into any special agreements for the development of large-scale mining licenses. The reforms also annulled the development agreements. The Act introduced a new tax regime with a higher tax burden where the company income tax rate was set at 30 percent, it introduced a variable income tax and raised the mineral royalty rate to 3 percent from 0.6 percent, and it set the withholding tax on services at 15 percent and introduced a windfall tax.
The "2009 regime" (April 2009–March 2012)	This was in response to the mining companies' concerns about the revocation of the development agreements, where the government reversed the lower capital depreciation allowance and some other 2008 tax measures such as the windfall tax in its 2009 budget.
The "2014 regime" (April 2012–December 2014)	Further reforms were made to the mining tax regime in the 2012 budget. The two main changes for the mining industry were the increase of the mineral royalty rates for copper and cobalt to 6 percent, and separate treatment of hedging and operating income for income tax purposes.
The "January 2015 regime" (January 2015–June 2015)	Corporate income and profits tax rates descended to zero. The government also set the mineral royalty rate at 20 percent for output from open-pit mines and at 8 percent for output from underground mines.
The "July 2015 regime" (announced in April 2015)	The government set the corporate income and profits tax rates at 30 percent and the mineral royalty rate at 9 percent for output from all mines.

The changes introduced to the mining tax regime have largely been in response to perceptions that the sector's contributions to government revenue have been too low (ICMM, 2014). The World Bank (2015a) further indicated that in trying to strike an optimal and equitable deal between mining companies, the government's fiscal take, and

job creation, the government of Zambia has adjusted the mining fiscal regime several times since it privatised the mines.

These changes have implications on the costs of operations. ICMM (2014) maintained that the changes of government to the present time characterised by further top-down changes in the rules under which the mining companies need to operate created considerable uncertainty for the industry. Top-down changes have included several alterations in key tax and royalty rates, while new taxes have been introduced and then subsequently dropped. Several new statutory instruments introduced have added further to the costs of operating in an already high-cost environment. The tax rates from the various fiscal regimes in Zambia relevant to mining companies with a brief on the changes introduced in each tax regime since privatisation are presented in Table 2.11.

2.3.4.2 Taxation policy

Manley (2013) affirmed that the principle objective of mining policy should be to maximise government revenue from the mining sector over time while identifying the important sector characteristics[13] posing challenges for fiscal regime design and the principal benefits the sector contributes to Zambia. Furthermore, Manley (2013) presented broad guidelines to mining tax policy that are relevant to Zambia which policymakers need to consider, as outlined below:

- compensate the state for a loss of wealth through depletion of the non-renewable mineral resources;
- be reasonably attractive to investors for risking capital in the business of mineral extraction;

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[13] *These include variables, as noted by Natural Resource Charter (2014), like the existence of substantial "rents," exhaustibility of resource deposits, asymmetry of information between the government and potential investors, high upfront cost and challenging accounting and audit environment for fiscal control.*

Table 2.11: Details of the five fiscal regime changes in Zambia
(World Bank, 2015a; ZIPAR, 2013; ZEITI, 2014b)

	2007 (DA Regime)	**2008**	**2009**	**2012**	**2015**
Royalty	0.6%	3%	3%	6%	9% on all outputs for both underground and open cast operations
Corporate Income Tax	25 %	30 %	30 %	30 %	30 %
Variable Income Tax in effect	No	Yes (if *taxable profits / sale revenue > 8 %)*	Yes (if *taxable profits / sale revenue > 8 %)*	Yes (if *taxable profits / sale revenue > 8 %)*	Yes (if *taxable profits / sale revenue > 8 %)*
Hedging activity considered as part of mining business	Yes	No	Yes	No	No
Windfall Tax	No	Yes	No	No	No
Capital Expenditure Allowance (percent of annual capital expenditure)	100 %	100 % for prospecting and exploratory work, 25 percent for other capital expenditures	100 %	25 %*	25 %
Loss carry forward	10 years	10 years	10 years	10 years	10 years
Customs Duty	Exempt and zero rated in most cases	15 % for unprocessed copper	15 % for unprocessed copper	15 % for unprocessed copper	10 % for unprocessed copper
Export Duty	No	15% (but with some waivers)	15% (but with some waivers)	10% (but with some waivers)	10% (but with some waivers)
Withholding Profit tax:					
On foreign contractors and interest.	0 %	15%	15%	15%	15%
On dividends and payments to residents	0 %	0%	0%	0%	0%
Allowed debt to equity ratio	2:1	3:1	2:1	3:1	3:1

*Entered into force from 1st January 2013.

- be flexible to changes in profitability termed as progressivity. 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; and
- be administratively feasible not to create complexity for the tax authority to administer which can make mining companies to avoid paying it.

Mining tax policy should also be internationally competitive since mining and petroleum companies operate on a global scale and compare fiscal terms in deciding where to invest (Tordo, 2007).

The costs of production in Zambian copper mines are high from an international perspective causing competitiveness challenges faced by the sector. The principal "cash" operating costs in the Zambian context include the high transport costs, labour costs, purchased input costs and energy costs (ICMM, 2014). The World Bank (2011) also noted 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.

2.3.5 Zambia's royalty-tax system

Zambia's mine tax regime is a variant of a traditional royalty-tax regime in which the government charges a royalty and then imposes the generally applicable tax regime, with perhaps special provisions for mining (Conrad, 2012). Zambia's mineral fiscal regime contained four key elements, namely mineral royalty, the generally applicable corporate tax (including some withholding taxes on remittances to non-residents), a variable profits tax and equity participation.

The performance of any fiscal regime in a country depends on the combination of all the tax instruments that it contains (Natural Resource Charter, 2014). The royalty-tax arrangement is widely used in many jurisdictions for mineral industry. The individual tax instruments pose a number of implementation challenges in the regulatory framework of the Zambia's mine fiscal regime.

2.3.5.1 Mineral royalties

In Zambia, under the Income Tax Act, the mineral royalty payable or paid is an admissible deduction in arriving at the gains and profits of a person carrying on mining operations. In these cases, royalty payments can be said to be "deductible" against taxable profits.

Ad valorem global royalty rates for copper vary, generally ranging between 0 and 8 percent (Conrad, 2012). Zambia's mineral royalty rate in the January 2015 fiscal regime of 8 percent for underground mines and 20 percent for open cast mines were extremely above international norms. However, as indicated by Conrad (2012), the rates may be misleading because the base to which the royalty rate is applied also varies across countries.

2.3.5.2 Corporate income tax (CIT)

All extractive companies are taxed on their taxable income which is determined in line with the Zambian Income Tax Act. Income in this case relates to revenue less all tax allowable expenditure. The tax is applied as a fixed percentage of a company's profits during a particular period, usually one year. The company tax rates are 30 percent for mining incomes and 35 percent for hedging incomes. The 30 percent CIT rate is similar to the rates in most other mining countries, where typically the rate is between 20-30 percent (Conrad 2012). Despite its widespread use, CIT can be a complex tax. Manley (2013) consented that this is because the taxable profits which is 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.

The concerns affecting the performance of the profit-based tax in Zambia include:

- high production and operations costs used as allowable expenses that have a potential to reduce the profitability of the country's copper mining sector;
- fixed rates applied for corporate taxes are relatively regressive, as their burden in percentage terms remains the same at different levels of profitability;

- past fiscal incentives (tax holidays, 100 percent profit repatriation, and accelerated depreciation) granted by the government under the non-transparent Development Agreements to attract investment can reduce taxable incomes;
- huge capital cost allowances that are permissible for immediate expensing; and
- extended loss-carry forward provisions.

2.3.5.3 Variable profits tax (VPT)

Variable profit tax is a tax on company profits charged under the Income Tax Act. The company tax rate is 30 percent. Variable profit tax rate is applied to profits that go above 8 percent of the gross sales. ZRA had a formula to calculate the variable profit above the threshold. Variable profit tax can go up to a maximum of 45 percent (ZETI, 2014).

Lundstøl et al. (2013) reported that from 2008 to date, Zambia introduced an excess profit tax (the variable income tax), which had not produced much revenue either. This tax instrument faced the same basic challenges as CIT in effectively securing a reasonable government share and had so far not been very effective. Therefore, excess profit taxes may use a similar tax base to CIT and hence the issue of adjustments to the tax base is also relevant in this case.

The implementation challenges for Zambia to capture revenue from this tax instrument were because it allowed deductions to taxable profits just like CIT. These deductions as argued by Manley (2013) included the depreciation allowances and loss carry forward provisions and since mining operations typically incur large costs upfront, these deductions could ensure that taxable profits are zero for many years.

Since the introduction of the VPT in Zambia during the 2008 fiscal regime, no revenue has been captured under this tax instrument to contribute to the treasury. This tax strongly behaves to some extent like CIT and companies not in the position to pay CIT cannot pay the VPT.

2.3.5.4 Equity participation

State or government equity participation is the share of the state in the distributed profits of a company. Zambia has retained an equity interest in mines that were privatised

through a holding company (ZCCM-IH) for the state's equity interest in the private enterprises (Conrad, 2012). Potential financial gains include dividends from shares and capital gains. Lundstøl et al. (2013) argued that the government in Zambia still has in their regulation and legislation the ambition to participate with minority free or carried ownership interests in the mining sector. The government retains a share of between 5-20 percent carried ownership interests in several of the privatised mines, managed through the state-dominated holding company, ZCCM-IH.

Equity participation varies by mine and there appears to be a form of price participation. ZCCM-IH, as part of the Development Agreements, is responsible for managing the State's shares in the mining companies and receives payments via price participation agreements and dividends. There are concerns (Conrad, 2012; Manley, 2012) that the details of participation agreements and contractual relationship between the ZCCM-IH and the companies in which it holds equity are generally none available. Based on the ZCCM-IH (2014) annual reports, the companies that declared dividends in 2014 were Kansanshi Mines and Chibuluma Mines. Other companies claim that they were in no position to declare dividends. The copper and cobalt price participation to ZCCM-IH due in 2014 from Konkola Copper Mines (KCM) amounted to K552.7 million. The ZEITI (2014b, 2015a) presented payments (ZMW) made to ZCCM-IH by extractive companies based on the revenue stream of dividends and other investment (price participation fees) for the period 2013/2014 (Table 2.12).

Zambia still faces some challenges to benefit from its mineral wealth based on the current equity participation arrangement because:

- certain mining companies do not pay dividends to the minority share holding company ZCCM-IH because they claim to have loss carry forwards and also being in a position of not making profits;
- mining companies assert to carry the financial risk based on the current "free carried" interest arrangement where ZCCM-IH does not contribute funds to capital structure in most privatised firms and yet maintains the equity stake; and

- there could be a conflict of interest between the government as equity holder and its role as regulator overseeing the environmental and social impact of a project.

Table 2.12: Payments (ZMW) of mining companies
(ZEITI, 2014b; 2015a)

Company	Revenue Stream	Amounts received (2013)	Amounts received (2014)
Kansanshi Mining Plc	Dividends	154,145,194	710,783,760
NFC Africa Mining Plc	Dividends	-	9,582,708
Chibuluma Mines Plc	Dividends	-	10,158,385
Konkola Copper Mines Plc	Dividend	17,174,000	16,545,000
Konkola Copper Mines Plc	Price Participation fee	85,595,105	-
	Revenue from ZCCM-IH shareholding sale	-	-
	Revenue from ZCCM-IH mining rights transfer	-	-
Total		**248,914,299**	**747,069,851**

For Tanzania and Zambia, it seems the experience with government ownership interest in mining is fairly negative at the moment. It would be preferable now to focus on a more effective tax regime with a high level of investment in technical and financial audit and control capacity to protect the tax base and collect higher tax from the mining sector (Lundstøl et al., 2013). Equally, Conrad (2012) argued that taking equity position in mine operations for some countries, including Zambia, is not costless. Since the government as a minority shareholder maybe adversely affected by decisions made by those with majority positions, particularly in countries where transparent corporate governance is lacking and shareholder protection is weak.

2.3.5.5 Other imposts

Apart from the traditional tax instruments applied under the royalty-tax system, there are other taxes before and now used in the mining fiscal system for Zambia.

(a) Windfall tax

This tax had a bearing on the revenue from the mining sector. In Zambia, this tax (ZEITI, 2015b) was levied against extractive industries triggered by favourable global

economic conditions which allowed these industries to experience above average commodity prices. This tax was introduced by the Mines and Minerals Act 2008 and abolished on 1st April 2009. After discussion with the Government, the mining companies agreed to pay their tax arrears arising from the changes that were introduced in 2008. The windfall arrears were re-assessed at 25 percent only to ensure that the assessed total liability does not exceed the 47 percent effective tax rate intended by the Government.

This investors' reaction was in defiant to the original proposal as indicated by Manley (2012) that the Windfall Tax would be applicable alongside the Variable Profit Tax (VPT) and would not be deductible against the CIT. This would have resulted in a very high effective tax rate when prices were high enough to trigger the top 75 percent rate of the Windfall Tax. ZEITI (2014a) reported that the amount received to the treasury from windfall tax following the 2008 fiscal regime changes in Zambia amounted to ZMW 421,187,110.

(b) Value added tax (VAT)

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 (Manley, 2013). In Zambia, the VAT of 16 percent applies to both goods and services, of domestic production and those that are imported. ZRA administers VAT by collecting tax on sales (output VAT) and then refunding tax paid on purchased inputs (input VAT). COXI (2015) argued that relief for EI sector products when exported must come instead from refunds paid by domestic tax authorities. Given the heavy upfront costs and long lead times characteristic of the EI sectors (including the delays experienced in obtaining refunds), this can pose a serious problem.

In Zambia, there is still a dispute between mining companies and ZRA over VAT refunds. The mining companies claimed they were owed over $600 million in VAT refunds while the Zambian government claimed the mining companies have been unable to provide the necessary documentation to support their claims.

(c) Customs and import duty

Customs/import duty is a tax levied on ZRA specified goods imported into Zambia. These are levied as import duties, although export duties may also be levied (e.g. levies of export duty on exports of copper concentrate from Zambia). Manley (2012) equally discussed that customs duty has two main functions for governments:

- it is a good source of revenues, particularly in developing countries where other forms of taxation are harder for authorities to administer; and
- it is also used as a tool of economic engineering, most often to protect domestic industries from foreign competition or to encourage certain activities.

There are three categories for import duties in Zambia: 25 percent mainly for finished products, 15 percent for intermediate goods and 0 to 5 percent for raw materials and capital goods (ZDA, 2012).

(d) Withholding tax (WHT)

Withholding taxes are generally imposed on payments to non-residents who are sourced in the country imposing the tax (Conrad, 2012). This is a tax where any person or company making certain payments is required to deduct from such payments and remit to ZRA. The payments that attract WHT include management and consultancy fees, commissions, rent dividends and payments to non-resident contractors. The WHT rate in Zambia is 15 percent (PricewaterhouseCoopers, 2017). The applicable WHT for dividends for companies carrying on mining operations in Zambia is 0 percent (ZDA, 2012).

(e) Fixed fees

Mining companies are also required to pay other administrative fees to various government departments. These are payments to the government independent of the level and timing of extraction. These are front-end tax burdens imposed prior to the start of commercial production. ZEITI (2015a) reported that the flow of fees from extractive companies to MMEWD include application fees, licence fees, area charges, valuation fees, annual operating permits, and Environmental Protection Funds (EPFs). The Ministry of Lands (MoL) also receives the ground rents, consideration fees, registration

fees and preparation fees. During 2014, the MoL and MMEWD collected government revenues (in ZMW) amounting to 13,671,606 and 31,671,606 respectively.

2.3.6 Effective tax rate (ETR)

The World Bank (2011) reported that under the regime instituted in 2009, the Zambian government was expected to see a substantial increase in the tax take from mining. This comprised a royalty payment of 3 percent, a company tax levied at the 30 percent rate, a withholding tax levied at 15 percent and a variable profits tax at 8 percent, making the stated ETR of 47 percent. Across the world, the ETR is usually 40-50 percent. The 2009 new regime in Zambia, which did not have a windfall tax, would have suggested an ETR of 47 percent. This is within the normal range and not dissimilar to neighboring countries such as Tanzania and South Africa.

World Bank (2015a) estimated ETRs for the period 2014 for different mining companies in Zambia under the controlling parent companies of FQM, Vedanta, CNMC, Glencore and Barrick Gold varied between 44 and 66 percent (Table 2.13). It further made average estimation of the ETR for the period 2014-2019 for the mining companies which ranged from 34-100 percent. This is based on models developed which are believed to contain the best publicly available estimates of costs, financing structures, and production. The different cost components varying from mine to mine have implications for profits tax collection under different rules about which costs can and cannot be deducted. Zambia's government faces gaps in terms of tax amounts paid based on the ETRs and the actual amounts received.

Table 2.13: Summary of estimated ETRs in Zambia
(World Bank, 2015a)

Mine operations	Kansanshi, Sentinel Projects	Konkola Copper Mines	Chambishi, Luanshya Mines	Mopani Copper Mines	Lumwana Mines
Estimated ETR 2014	66 %	57 %	44 %	52 %	47 %
Average (2014-2019)	71 %	64 %	34 %	76 %	100 %

2.3.7 Regulatory system

The mining sector is regulated primarily by Act No. 7 of 2008 (in the Mines and Mineral Development Act of 2008). The Income Tax Act (Chapter 323 of the Laws of Zambia), the Income Tax (Amendment) Act of 2008, the Income Tax (Amendment) Act No. 27 of 2009, and the Mines and Minerals Development Act of 2008 address capital allowances, mineral royalties, mining development agreements, the variable profits tax, and the windfall tax.

The government policy does not participate in exploration or other mining activities, or in any shareholding activity other than in a regulatory and promotional role. The right to explore or produce minerals is authorised by a license granted under the Mines and Minerals Act.

2.3.7.1 Mines and Minerals Development Act (Act No 7 of 2008)

In line with its stated Mining Policy, the Government of Zambia enacted a new legislation - the Mines and Minerals Act (1995) - which greatly simplified licensing procedures, placed minimum reasonable constraints on prospecting and mining activities, and created a very favourable investor-biased environment, whilst allowing for international arbitration to be written into development agreements, should this be deemed necessary. The mining industry in Zambia is now governed by the Mines and Minerals Development Act (Act No.7 of 2008). This provides the legislation covering exploration, mining and processing of minerals. Other legislation in the sector includes the Explosive Act No 10 of 1974 and its subsidiary legislation, Gold Traders Act and relevant subsidiary legislation. These laws and regulations need to be reviewed or updated (MRDP, 2013).

The Mines and Minerals Development Act, 2015 (No. 11 of 2015) was enacted by the Parliament of Zambia. This was done to revise the law relating to the exploration for, mining and processing of, minerals; provide for safety, health and environmental protection in mining operations; provide for the establishment of the Mining Appeals Tribunal; and repeal and replace the Mines and Minerals Development Act, 2008.

2.3.7.2 Mineral policy 1995

The Government adopted a pragmatic mineral policy published in 1995 designed to enhance investment in the mining industry and to ensure the development of a self-sustaining minerals-based industry. The 1995 mineral policy aimed in particular at encouraging private investment in exploration and in the development of new mines. In addition to returning the major copper mines to the private sector, thus encouraging cost-effective management and greater exploitation of the enormous copper resources, the policy sought to direct attention to the exploitation of the very diverse range of metalliferous deposits, industrial minerals, gemstones and energy resources that are present throughout Zambia.

As indicated by MRDP (2013), the implementation of the Policy was expected to yield the following outcomes; development of new mines, increased Government revenue, increased generation of foreign exchange earnings, industrial growth, employment opportunities, and development of infrastructure and social services.

The 1995 policy created a conducive environment for private investment in the mining sector, and the consequent resurgence of mining and exploration activities in the country. However, its tax contribution to the treasury was very low at 1.1 percent of GDP because of the incentives granted to large-scale mining companies through the Development Agreements between 1995 and 2008 (MRDP, 2013). Thus, the potential of the sector to contribute to economic development was not fully realised.

The 1995 Mineral Policy notwithstanding the success scored in attracting investors, had a number of outstanding challenges as noted by MRDP that, among others, include:

- inefficiency in the administration of mining rights;
- skills inadequacy, gender imbalances, inadequate innovation and lack of Research and Development facilities;
- low revenues from the mining sector to the treasury;
- poor infrastructure development in mining areas;
- inadequate investment in downstream processing and value addition; and

- low levels of ownership and participation by Zambians in mining companies and the associated business of supply of inputs, sub-contracting and other support services.

2.3.7.3 Mineral resources development policy (MRDP) 2013

The noted minimal contribution of the mining sector to the treasury despite high metal prices and increasing production was one of the major challenges the MRDP (2013) sought to address. As indicated in the MRDP, the challenge is to achieve a strategic re-positioning of the mining sector in order to arrive at a balance that will create a competitive, thriving and sustainable mining industry that benefits Zambians while concurrently rewarding the investors.

The formulation of the MRDP was meant to contribute to the creation of a sustainable and orderly mining industry contributing to the economic development of the country by:

- attracting both local and foreign investment in the sector for the orderly and sustainable exploration and exploitation of mineral resources;
- integrating the mining sector in the domestic economy; and
- ensuring acceptable standards of health, safety and environmental protection.

2.3.8 Investment incentives

Tax incentives are special provisions that allow for exclusions, credits, preferential tax rates, or deferral of tax liability. Tax incentives can take many forms: tax holidays for a limited duration, current deductibility for certain types of expenditures, or reduced import tariffs or customs duties (Zolt, 2015). Tax incentives given by the government to companies, especially in the mining sector, are another cause of Zambia's lost revenues.

The Zambian mineral policy is designed to enhance investment in the mining industry and to ensure the development of a self-sustaining minerals-based industry. In line with this objective, Zambia's mining tax regime was strongly focused on attracting foreign investment through low rates and an assortment of incentives. However, this needs to be balanced with the urgent need to raise more revenue from mining in order to invest in

infrastructure and the country's economic development (Mwambwa et al., 2010). The optimal balance between these two objectives has not yet been struck

The Zambian government offers an array of tax incentives to domestic and foreign companies (War on Want, 2015). The government welcomes investors across sectors and the laws relating to investment have provided for incentives aimed specifically at increased levels of investment and international trade, as well as increased domestic economic growth (ZDA, 2012).

The JCTR (2011) carried out studies on taxation system in Zambia and offered arguments in support of and against tax incentives. The principle rationale for tax incentives is to strengthen economic growth by encouraging worthwhile investment while arguments against tax incentives insist that they may not be the most cost effective way to attract investment. The study maintained that most literature argues that incentives often go against the core principles of efficiency, equity and simplicity. Further, in countries with developing tax authorities, tax incentives can often pose a major problem for tax administration leading to tax revenue leakage. The poorly designed tax incentive structures create opportunities for revenue leakages and can also create inequality (*ibid.*).

The key issue related to incentives which had a major influence on the performance of the Zambian mining sector was the Development Agreements (DAs). These were offered to incentivise investment, and included stabilization clauses and various fiscal and operating incentives. This led to a boom in new investment, enabling mineral production to rebound to levels last seen in the early 1970s (ICMM, 2014). Development Agreements were made between the Zambian government and each company without being made publicly available by the Zambian government (Manley, 2013). Some authors (Dymond, 2007; Lungu, 2009; Simpasa et al., 2013) have described the various conditions and generous incentives in the Development Agreements.

In 2008, the government after enacting the 2008 Mines and Minerals Act, made the Development Agreements null and void. Manley (2013) stated the government broke the

fiscal stability clauses contained in the DAs and imposed a new tax regime with a higher tax burden. Tax regimes often include measures that allow companies to adjust a tax base, usually taxable profits. The governments can use these measures to fine-tune the characteristics of a tax regime to meet certain objectives (Manley, 2013). The tax incentives in use for the Zambian Mining industry as provided by ZRA are presented in Table 2.14. In Zambia, measures to adjust tax bases are provided for in form of investment incentives, among others, and include the following.

2.3.8.1 Depreciation allowances

In Zambia, 25 percent capital allowances on mining equipment and related expenditure when assets are brought into use is employed. The rate implies that only a quarter of the value of a company's capital expenditure (investment) could be charged to depreciation each year. This meant that tax payments would be brought forward and it would take longer for companies to recoup investment expenditure. However, the mining companies' ability to offset against their taxable income the full costs of their expenditure on capital equipment has led to perpetual declaration of tax losses, and thus non-payment of corporate income tax.

2.3.8.2 Loss-carry forward provisions

ZEITI (2014b) reported that mining companies are allowed to carry forward losses arising from prospecting and exploration in prior periods to offset against future periods to maximum of 5 years, and to losses arising from operations in prior periods to a maximum of 10 years (with exception of Konkola Copper Mines Plc - 20 years).

2.3.8.3 Ring-fencing

Ring-fencing is the separation of a company's operations for the purposes of calculating taxes. Ring-fencing is used to limit the ability of companies using costs from one operation to offset taxable profits in another (Manley, 2013).

Table 2.14: Major tax incentives in force for the mining sector

	Incentive/tax type	Rate (percent)	Comments on applicability
1	Loss carry forward	10 years	For mining and energy companies (5 years for exploration and prospecting expenditures).
2	Tax Credits	N/A	
3	Tax Stabilisation	N/A	
4	Tax Holiday	5 years	On approved priority sector activities (e.g. Manufacturing and Tourism) and approved investment under the ZDA Act.
5	Capital Allowance Provisions	25%	The regime has now changed. Those processing minerals will claim at 50% while mining operations claim 25% of annual capital expenditures.
6	Accelerated depreciation	As in (5)	
7	Ring fencing	Yes	
8	Profit repatriation (remission)	100 %	Dividends taxed at 0 %
9	Debt-equity requirements (thin capitalisation)	Yes	Ratio of 3 to 1
10	Interest rate ceiling on debt	As in (9)	
11	Double taxation	Yes	
12	Withholding taxes on: Interest Contractors Dividends payment	Yes	General rates: Interest 15 % Contractors 20 %t Dividends 0 % Where a tax treaty exists, the applicable rates shall be as per the tax treaty
13	Variable Profit Tax	Yes (prior to 2016)	When taxable profits /sales revenue >8 %t
14	Hedging activities	35%	Effective 2012, Income from hedging treated as separate source
15	Export duty	10%	On copper and cobalt concentrates (but with some waivers)
16	Customs duty	10%	With some rebates

2.3.8.4 Tax holidays

Makano and Imakando (2015) indicated that during the period (2006-2012), K10.4 million was foregone in revenue due to income tax incentives from all firms registered as operating in priority sectors defined under the ZDA Act. This loss of revenue is

because of the zero percent income tax rate given for the first 5 years, granted in the form of tax holidays to all companies operating in priority sectors, Multi Facility Economic Zones (MFEZs) and developers of Industrial Parks.

2.3.9 Government institutional capacities

Kabamba (2014) noted that there is a genuine lack of capacity within government administrations to manage the sector. Many countries in SADC are facing administrative challenges in terms of the necessary qualified staff, infrastructure, information technology and financial resources to manage properly the sector. The issues of governance in the Zambian mining industry have been attributed to weak institutional capacities dealing with policy formulation and regulatory framework (ICMM, 2014). Therefore, this section on institutional capacities aims to discuss the governance challenges faced by Zambia in the managing of the country's mineral wealth meant to enhance its capturing of rent. These governance challenges are discussed under the following areas;

- tax administration challenges,
- mineral policy and regulation challenges, and
- inter-agency coordination challenges crossing the above two challenges.

2.3.9.1 Tax administration and sector characteristics influencing taxation

In Zambia, the Ministry of Finance is responsible for tax policy formulation and ZRA is responsible for collecting taxes. There are general tax administration problems and weaknesses affecting Zambian mining industry. Haglund (2013) equally maintained that, although Zambia's tax regime broadly follows international practice, the capacity of the different government agencies involved in enforcing and administering revenue mobilisation from the sector has remained weak.

A number of characteristics associated with the mining industry complicate the task of taxation. JCTR (2011) reported that mineral extraction has many unique characteristics that set it aside from other industries. This means that a standard tax system that applies to the rest of the economy may not necessarily be appropriate for the mining industry.

Resource sector characteristics which should be accommodated when designing fiscal regimes have been identified (Calder, 2014; Otto et al., 2006). However, for the current Zambian mining situation, there are unique features that have implications for mineral fiscal regimes, which include; potential for generation of mining forex, need to stimulate industrialization, demands to develop economic diversification, handling incidences of information asymmetry, dealing with huge investment flows, managing market cyclicality; and handling deposits of poly-metallic nature.

(a) Domination of foreign exchange generation

UNCTAD (2006) reported that Zambia's mining sector has the potential to generate foreign exchange earnings that are required for the acquisition of capital goods and advanced technology. Mining dominates Zambia's exports (usually contributing around 75 percent) and it is the main provider of foreign exchange for the economy (Manley, 2013). The country, up to now, has high dependence on mining foreign exchange since most of the other sectors have not been adequately developed to generate foreign exchange for their needs. Based on the importance of this feature to generate forex, Zambian tax environment should be designed to promote stability and preservation of the mining sector.

(b) Low industrialisation

Chileshe (2013) argued and calculated that lack of industrialisation in Zambia handicaps the country and the industry in terms of abstraction of greater resources from mining via the value addition chain, forcing the country to focus on taxation.

Through industrialisation, jobs could be created with value addition to the numerous materials that Zambia exports in raw form. Metal Fabricators of Zambia (ZAMEFA) has been the only enterprise undertaking further beneficiation of the copper produced in Zambia. Poor industrialisation results in low taxation benefits for Zambia and revenues get affected because of price volatility.

(c) Need for economic diversification

Economic diversification to reduce the dependence of the economy for foreign exchange earnings and income on a single commodity, copper, has been a long-term objective of subsequent Zambian governments (UNCTAD, 2006). This concept is based on the falling copper prices and reduction in demand for the commodity from the external markets which have impacts on the economy.

Reducing the challenge of overdependence on copper will require investing more in other sectors such as agriculture and tourism as a means to encourage diversification. The mining industry also needs to be supported in creating revenue bases during periods of growing commodity prices which can be invested later on in other sectors to achieve diversification. Davis and Tilton (2002) reported that governments can mitigate the fluctuations in government revenues and export earnings by putting some of their commodity revenues into a stabilisation fund when mineral markets are booming. Then, when the markets are depressed, they can withdraw the accumulated revenues to support government programmes that they would otherwise be forced to curtail.

The fiscal regime will determine how price volatility risks and associated fluctuations in profit are shared between investors and their host governments (Natural Resource Charter, 2014). Price volatility has implications for taxation and the Zambian government needs to put in place fiscal regimes with functioning progressive tax instruments. Such taxation tools if well implemented can increase revenues with a corresponding increase in commodity prices thereby cushioning the impacts occasioned by volatility in commodity prices.

(d) Information asymmetry

Investors, in many countries, are better informed with respect to geological and technical risks than their government counterparts who usually do not even engage local expertise in such matters. They also possess greater analytical capacity and negotiating skills (Natural Resource Charter, 2014). Asymmetric information occurs when TNCs with platoons of lawyers, accountants and other experts arrive in a country to negotiate the tax regime under which they will operate. In the extractive industries, such experts will

in many cases know far more about the value of the resources under discussion than the government selling them, and have long experience of devising hugely complicated tax formulas to their advantage (Christian Aid, 2008). This is exacerbated by poor investment in developing local expertise and/or, where they exist, avoidance to engage local expertise in negotiations and exploration operations. Resource taxation has some problems associated with information asymmetry and Boadway and Keen (2010) reported that royalties are deployed as part of response to problems of asymmetric information.

Zambia like many other developing countries is faced with some challenges associated with information asymmetry since most of the production and financial accounting information, the basis upon which mining companies currently argue for specific tax regimes, is not in the public domain, and in most cases, remains unverifiable.

(e) Size of investment

Since the early 2000s to date, the mining sector has attracted investment in excess of US$ 13.1 billion (ZEITI, 2015b). The amounts spent on major investment projects are given in Figure 2.19.

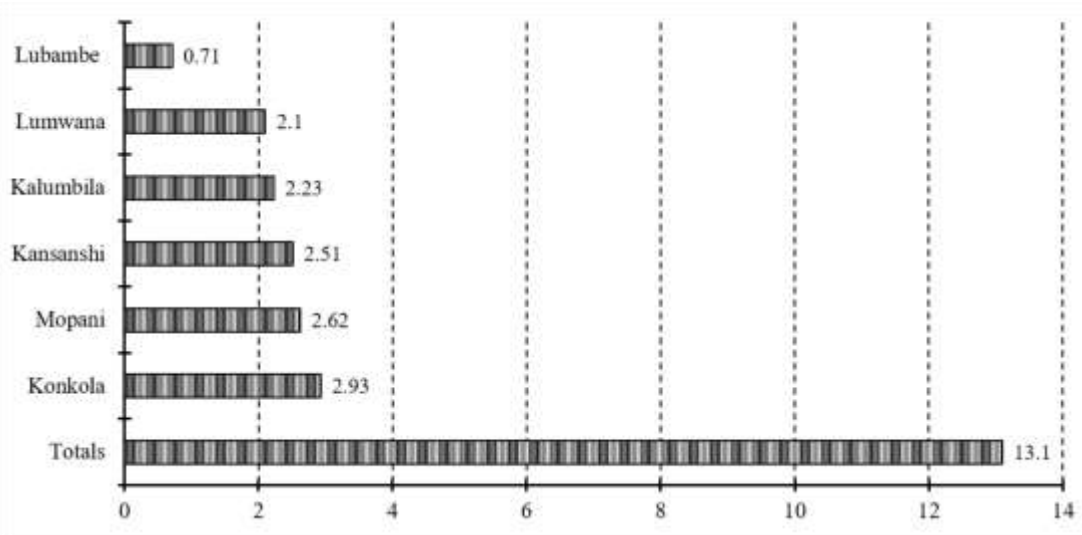

Figure 2.19: Amounts (US$ billion) spent on projects in Zambia (ZEITI, 2015b)

Mining companies spend huge absolute values on "cash costs" involved in their operations, which represent potential benefits that can most easily be captured by local stakeholders who provide labour and supplies (ICMM, 2012). Zambia needs to develop efforts particularly aimed at optimising local procurement strategies by ensuring that local supplier initiatives are well matched with government policy of empowering citizens. Such characteristics of huge investment outlay resulting in high "cash costs" of mining operations if dealt with can result in converting the potential income and other benefits from huge "cash costs" into actual local benefits for Zambian nationals.

Apart from the need for stability, Natural Resource Charter (2014) reported that investors will be attracted to fiscal regimes that provide for early payback of the up-front costs to meet their target rates of returns. Most companies generally prefer profit-based taxes which serve to delay their tax payments until up-front costs have been partly or fully recovered and so they also reduce companies' financial risks (ICMM, 2009).

The profits-based taxes create taxation challenges for countries like Zambia as they often lead to a situation where government receives very little revenues for a number of years due to provisions included in the fiscal terms like loss carry forward or capital allowances, which contribute to difficulties in tax administration. Fjeldstad et al. (2016) discussed that the administrative challenges of taxing profits in extractive industries and the relatively low revenue yield from corporate income tax (CIT), led the Zambian government to make the unprecedented step in 2014 to abolish CIT and increase the royalty rates substantially.

(f) Market cyclicality

Price volatility affects performance of certain regimes if they are not robust and fail to respond to the uncertainty in the market environment. Fiscal regimes without excess profit tax instruments will attract public opinions if increase in commodity prices is registered.

Zambia's mining sector's contribution to the economy and its development is very dependent on the movements in the world prices of copper and cobalt as well as

exchange rates (UNCTAD, 2011). The country's mine tax regime including the 2014 fiscal regime still faces taxation challenges on account of the criticism ascribed to mine investors indicating that the regime is not robust to incorporate changes in the external environment involving international commodity price movements. On several occasions, unstable commodity prices have created major problems for Zambia that depend on copper exports for foreign exchange. When commodity prices are low, the foreign exchange earnings and tax revenues also decline causing acrimony in the local mining sector with some mining companies reacting by threatening to reduce labour force.

(g) Poly-metallic nature of deposits

Most of the deposits worked in the country are poly-metallic with inherent additional minerals which are not well monitored. Manley (2013) noted that often, multiple minerals are found within the same ore body. Mines report to the tax authority that the value of their production is less than its actual market value. This is done in a number of ways, as follows; mines may under-report the volume of production or the grade of the mineral, or they may fail to report by-products contained in the ore. Mobbs (2014), for example, reported that Lumwana Mining started production from the Chimiwungo open pit, while the remainder of the ore mined at the Lumwana mine came from the Malundwe pit. The ore contained cobalt, copper, gold, and uranium mineralisation. However, there is no mention of accounting for cobalt and gold in these deposits.

Lundstøl et al. (2013) in studying low revenues from the Zambian extractive industry identified several incidences of under-reporting of production volumes, grade and by-products because of limited capacity and ability to carry out regular minimum technical audits of operations. Lundstøl et al. (2013) further reported that Zambia produces cobalt as a by-product in many of the copper mines over time and yet still, the officially reported volumes of cobalt are fairly moderate, and the associated value of this by-product even more so. A calculation undertaken in 2007 based on visits to several of the major copper mines and smelters in Zambia showed that the estimated value of cobalt production most likely was above USD 1 billion, compared to a much lower official number (*ibid.*).

Table 2.15 presents a summary of taxation challenges based on the identified unique characteristics of the industry for Zambia.

Table 2.15: Summary of taxation challenges based on sector characteristics

Sector Characteristics	**Challenges Facing Mining taxation**
Domination of foreign exchange generation	Granting of tax concessions and relief to encourage performance and preservation of the mining sector. Need for tax stability to guarantee foreign exchange generation from the sector. Transparency in the fiscal regime.
Low industrialisation	Transparency in the fiscal agreements. Granting of tax concession and reliefs to companies. Lack of/inadequate local content policy
Need for economic diversification	Progressive tax system moving with prices Volatility in commodity prices affect tax revenues Competitive fiscal regime to support sector growth Taxation policy to support creation of stabilisation funds Lack of/inadequate local content policy.
Presence of information asymmetry	Stability in the fiscal regime needed. Transparency and wide stakeholder consultation during fiscal regime formulation. Lack of investment in developing local expertise by host governments Avoidance to engage local expertise by host governments
Size of investments	Fiscal stability required Profit-based tax instruments affect revenue for the state
Market cyclicality	Regime fails to impose robust and fair taxes to respond to dynamism in the market environment (price movement)
Poly-metallic nature of deposits	Modest valuation of inherent commercial minerals and by-products with no reference prices impact on enhanced revenue capturing Challenges to address under reporting of production volumes, grades and by-products.

2.3.9.2 Policy and governance issues impacting mineral taxation

Policy failures can have impacts on maximising revenues from the sector needed for socio-economic development of the country. There are specific policy challenges that cause problems for tax administration in Zambia. These relate to transfer pricing, thin capitalisation, policy incoherence and institutional capabilities.

(a) Transfer pricing

Zambia has faced problems of tax evasion as reported by five (5) NGOs; Sherpa (France), Berne Declaration (Switzerland), CTPD (Zambia), *L'Entraide Missionnaire* (Canada) and Mining Watch (Canada) which filed an OECD complaint against Glencore International AG and First Quantum Minerals for violation of OECD[14] guidelines. The cause for the complaint lay in the financial and accounting manipulations performed by the two companies' subsidiary, Mopani Copper Mines Plc (MCM), in order to evade taxation in Zambia. According to Sherpa (2011), the conclusion from the audit indicated that:

'It appears quite clearly that the company (Mopani) is resorting to various techniques of accounting manipulations in order to conceal its profits and to reduce its tax base. It also appears that transfer pricing between Mopani and its distribution partner (Glencore) fails to comply with the OECD's arm's length principle, which stipulates that the prices used for transactions between associate companies should be the same as the prices that would be used on the market between non-associate companies.'

There are still other taxation challenges where companies disregard the reference prices for the products sold to parent companies and also general practice of inflating the realisation charges.

(b) Thin capitalisation

Thin capitalisation refers to the situation in which a company is financed through a relatively high level of debt compared to equity.[15] Debt plays a prominent role in the taxation of resource projects. Since interest payments on debt are deductible for tax purposes, unlike dividends on equity, the resource company has an incentive to increase the amount of debt it carries relative to equity (Natural Resource Charter, 2014).

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[14] *Tax Evasion in Zambia available on http://oecdwatch.org/news-en/tax-evasion-in-zambia (28/03/2015)*

[15] *http://www.oecd.org/ctp/tax-global/5.%20thin_capitalization_background.pdf (30/04/2015).*

Thin capitalisation is distortionary especially where multinational companies are involved. The two traditional ways to deal with it are:

- establish a maximum debt-to-equity ratio (three parts debt to one part equity is common); and
- where borrowing from affiliates is involved, limit the interest rate either by comparing with third-party loans or perhaps at the interest rates being paid by the affiliate lender to third parties (*ibid.*).

Zambia like most African countries initiated Transfer Pricing regulations to fight against tax avoidance. This requires that transactions between associated persons/companies be at arm's length terms. The country has several provisions in the Income Tax Act designed to prevent various forms of tax avoidance. The debt-equity ratio has been reduced from 2:1 to 3:1 to encourage further investment in the mining sector. For example, interest in excess of that arising from a debt-to-equity ratio of 3:1 is disallowed for mining companies.

However, challenges of dealing with intercompany loans between subsidiary and parent companies in tax haven regions still exist. Since Zambia has no manufacturing base for machinery used in the mining industry, this allows the mining companies to rely on equipment imports and sometimes through arrangements with their parent companies. This equipment might be supplied to subsidiary companies by means of loan agreements which attract interest charges for inflated values of such equipment. As interest is an allowable expense for taxation, it will reduce the taxable income for subsidiaries upon which taxation is argued in the country.

(c) Policy incoherence and instability

Governments with effective institutions and a reputation for acting reasonably are more likely to attract investment and should be able to extract more value from their resources. This is not to say that the regime should be absolutely fixed. Both fiscal and contractual regimes need to be subject to modification and have built-in flexibility to reflect changing and uncertain circumstances (Natural Resource Charter, 2014).

Actions by the government based on increasing taxes can result in uncertainty, delays, and limitations on investment. Sachs et al. (2012) noted that there is a challenge in balancing the needs of the government with the stability and assurance that the investors need to undertake risky investments. For the investors undertaking the extraction, the profitability of the project is directly correlated with its long-term stability and the potential revenues for the government depend on the stability of the project as well.

Based on this, the Zambian government is still struggling with establishing a balance that should create a win-win situation for both key stakeholders (Government and investors). Considering the many uncontrollable factors affecting the investment and its potential profitability for both companies and governments, there are still challenges for Zambia to design a predictable, durable, and equitable legal framework proficient enough to lay the foundation for a stable natural resource sector. Manley (2013) stated that the current mine fiscal regime for Zambia does not have provisions for stability clauses unlike during the Development Agreement (DA) periods.

(d) Tax avoidance in Zambia

According to War on Want (2015), the multinationals are able to dodge paying their fair share of tax. The report recounted a total of $3 billion being lost to the Zambian exchequer. Based on three companies looked at with operations in Zambia; Glencore, Vedanta, and Associated British Foods, details of such tax avoidance including the use of complex corporate structures and mispricing were examined. In 2012 it was calculated that the amount avoided by companies in Zambia was around US$2 billion a year - representing 10 percent of Zambia's GDP, US$264 million in form of illegal tax evasion and US$752 million lost in tax incentives agreed by the government. Further, War on Want (2015) indicated that companies seeking to avoid paying tax in Zambia use a number of different strategies.

To clamp down on tax avoidances, Zambian officials face problems with four key tax avoidance strategies (also reported by Manley, 2013) namely:

- transfer pricing abuse;
- under-reporting of production value;

- interest payment on debt; and
- hedging activities (insurance against the fall in copper price).

Conrad (2012) stated that a fiscal regime that is susceptible to tax avoidance is likely to be less responsive to price changes, as mining companies seek to reduce their tax burden. Based on this, Conrad (2012) analysed the fiscal regimes in Zambia with regard to the susceptibility to tax avoidance. A summary of four elements of the tax structure that decreased the risk of tax avoidance is given (Table 2.16). The subsequent regimes had tax avoidance protection included except for the DAs regime which was devoid of all these measures which could have allowed mining companies to reduce their tax payables.

Table 2.16: Tax avoidance protection
(Conrad, 2012)

Type of protection	How it works
Royalty base uses LME price	Avoids relying on realised prices provided by mining company
Related party transactions use LME price	Avoids relying on realised prices provided by mining company
Hedging tax base separate from operational tax base	Prevents reduction of taxable profits through various derivative trading strategies
Ring-fencing	Avoids new investment projects reducing profits of older projects.

2.3.9.3 Mineral policy and regulation challenges

Various government agencies in terms of management of the sector are tasked with holding mining companies to account in performing their duties as well as granting them rights. However, while these agencies have mandates that reflect best practice, they often suffer from weak technical capabilities and the resources needed to effectively oversee a rapidly expanding mining sector (ICMM, 2014).

Monitoring mining companies requires highly trained experts and robust administration and information systems. Few developing country governments have the resources or misplaced priorities to hire, train and retain experts, or install and maintain good

systems. This imbalance between the competence of government institutions and that of mining companies is one of the biggest problems in mineral policy (Manley, 2012).

Zambia's policy environment is not considered favorable (World Bank, 2011). In terms of regulatory environment, the World Bank (2011) gave suggestions required for the copper mining industry to achieve its potential which included:

- putting in place a new regulatory and tax regime that balanced the interests of the industry and the country to create a "win-win" situation;
- adopting a more predictable regulatory environment that increases stability and reduces risks for investors; and
- ensuring that responsibility for the delivery of social services is transferred to the government and supported by appropriate tax contributions from mines.

(a) Public financial management (PFM)

In Zambia, apprehensions still exist about revenue captured from the mining sector not being used to enhance economic development. If the country had put in regulations to ring-fence the revenue from the mineral resource sector, it would have ensured that the amounts of monies captured are dedicated to specific sustainable development projects.

Effective PFM and expenditure management (ICMM, 2014; ZEITI, 2015a) are critical to transforming revenue from natural resources into broad-based sustainable economic and social development - infrastructure and education. The country, however, is obliged, as indicated by ZEITI (2015a), by the Public Finance Act of 2004 of the Republic of Zambia were it is stated that a Consolidated Fund be established into which all general revenues and other public moneys accruing to the Treasury shall be credited. The contributions by mining companies therefore lose their identity once they are deposited into the consolidated fund. Their use cannot be tracked to public investment/expenditure or to expenditure units/cost centers or project (*ibid*.).

(b) Inter-agency coordination challenges

There are various ministries and agencies involved in the management of the mineral industry in Zambia. However, ICMM (2014) argued that while these agencies have

mandates that reflect best practice, they often suffer from weak technical capabilities and the resources needed to effectively oversee a rapidly expanding mining sector. Barma et al. (2012) noted problems of overlapping institutional mandates responsible for problems of regulating the sector.

ICMM (2014) identified that major discrepancies in Zambia have arisen in statistics provided by mining companies to the MMMD, ZRA and Bank of Zambia. The lack of authoritative and definitive domestic data on production reflects a broader problem of capacity weaknesses. This creates a challenge of inadequate capacity to monitor production and quality of minerals produced. This suggests that there is a major source of many of the damaging and highly publicised conclusions about mining's contributions to the economy. Further, ICMM (2014) discussed the complexity of different types of copper output, with some output being used as intermediate inputs to other production processes further along the value chain, which leads to a strong possibility that there may be some double counting in the existing estimates of copper production.

The problems of inter-agency coordination are observed by comparison of the finished copper production figures reported by various government institutions showing some level of inconsistencies (Table 2.17).

The CSO takes its figures from the mining company's declarations, while the BOZ uses its own formulas to estimate production and export volumes. This confirms that there is no clarity within Zambia on the actual levels of production or export of metal.

Table 2.17: Comparison of copper production figures (tonnes)
(Data source: CSO, MMMD, and BOZ, 2010-2013)

	2010	**2011**	**2012**	**2013**
CSO	767,008	739,759	719,732	763,805
MMMD	676,198	667,604	697,911	747,729
BOZ	819,159	833,450	824,977	997,823

Equally, Das and Ross (2014) with reference to KCM argued that there is no monitoring of production volumes at the mines, or exports at ports of exit. Instead, all figures come from the company's own reporting, which historical cases show is often deliberately distorted. The export values for copper and cobalt as reported by figures provided by CSO and BOZ (2011-2013) are equally different as shown in Table 2.18.

Table 2.18: Export volumes and values for metal exports
(Data source, CSO; BOZ, 2011-2013)

Agency	**2011**	**2012**	**2013**
BOZ (Export volume, in tonnes)	832,216	882,097	976,308
BOZ (Metal export values in $million)	6,915.7	6,497.6	7,049.3
CSO (Metal export values in $million)	6,969.1	6,504.5	6,977.0

Differences are further noticed in the revenue streams as provided by ZRA and ZEITI (2014b) (Table 2.19).

Table 2.19: Amounts of tax revenue received in 2013 (K'million)
(Data source: ZRA; ZEITI, 2014b)

Revenue Stream	**ZRA**	**ZEITI**
Company Tax	1,084.72	1,309.24
Mineral Royalty	1,760.73	1,710.79
Export duty	8.21	21.99
PAYE	1,440.4	1,402.16
Withholding Tax (WHT)	32.64	145.89
Import VAT	2,179.66	2,227.04
Customs Duty	386.88	428.01
Excise Duty	22.54	21.99
Total based on given revenue streams	**6,915.78**	**7,267.11**

The problems of inter-agency coordination in terms of reported discrepancies in the statistics are still not rare. Lundstøl et al. (2013) noted that many governments of major mining developing countries have little or no capacity or funding to carry out basic technical audits of production and export data, in order to verify independently the production and export data provided by the mining companies. As a result, there is widespread under-reporting both of the main products and the by-products.

On the poor regulatory capacity and poor reporting of production data from KCM, Das and Ross (2014) indicated that there are no independent data on the volumes of copper or other minerals being produced or exported, or where it is going. On top of this, weak laws (negotiated by the World Bank and IMF programmes), and ill-resourced regulatory bodies mean that tax evasion, fraud, illegal mining, environmental damage and human rights abuses are rarely penalised even if they are known.

2.3.10 Local content and CSR - additional benefits to optimise rents

Non-fiscal benefits in form of local content development and improved social investment are additional benefits to optimise benefits or rent from the Zambia's mineral wealth. This section discusses the impacts of mining on local economic development and social investment in order to assess the sector contribution in terms of economic benefits from a non-fiscal perspective.

2.3.10.1 Local content development

Local Content Requirements (LCRs) are policy tools used by governments to generate economic benefits for the local economy, beyond fiscal benefits (Isabelle, 2015). In Zambia, Fessehaie (2012) discussed that local content measures were put in place when the mines were privatised, but these were hardly implemented. The government, through ZCCM-IH, is a shareholder in most mining companies, but this has not translated into more leverage to support local content. In July 2012, the Chamber of Mines of Zambia and the Zambia Association of Manufacturers, working closely with government, mining companies, and other key stakeholders, started the Zambian Mining Local Content Initiative (ZMLCI), which was officially launched in May 2013. The World Bank and IFC are providing facilitation support to the ZMLCI and the Focal Group. ZMLCI aims to identify actions to enhance local content.

It is important that the Zambian mining industry gets integrated in the local economy. Manley (2013) stated that the mining industry links with other sectors in the economy by buying an array of inputs. This boosts aggregate demand and increases economic growth. There are also secondary effects as mining demand increases employment in other industries. However, in most countries, mining is considered an "*enclave*

industry": in other words, it is not well integrated into the local economies. Manley (2013) gave an example where most mining machinery is too sophisticated to be produced in the local economy and therefore, has to be imported.

ICMM (2014) discussed that during the ZCCM period until 1997, a policy on local procurement existed which led to the establishment of a significant manufacturing sector and a relatively diversified local economy. However, of late the country still imports inputs, even the most basic ones, to support the sector. This practice is responsible for Zambia's failure to benefit as much as it should have from its mineral resources. Mining companies spend a large percent on imported goods with a low percentage on local content. Zambia now has a limited manufacturing base to supply the mining sector. As a result, most of the material inputs are imported (often through local agents) and have to be transported long distances. According to the mining companies, equipment suppliers also charge higher prices in Africa, in general, and in Zambia, in particular, than elsewhere. Extrapolating from data from the four mining companies, the total industry procurement of goods is likely to be around US$1.75 billion annually, of which 5 percent (or US$87 million) represents locally manufactured goods (*ibid.*).

The Zambian mining industry is vertically integrated with both forward and backward linkages. There are challenges for local content development both in the forward and backward linkages. ICMM (2014) reported that studies have found that backward linkages offer considerably more scope for generation of income and employment, and can be strengthened more easily, than forward linkages. The efforts needed to strengthen backward linkages require challenges to be addressed through collaborative efforts that involve industry, government and development partners.

3.32.1.1 Challenges faced by Zambian entrepreneurs in local content

Zambian SMEs seeking to enter the mining sector supply chain are precluded by a range of cost and non-cost competitiveness challenges. ICMM (2014) narrated that with respect to cost competitiveness, Zambian suppliers of inputs and equipment face high production costs relative to competing foreign suppliers, eliminating most or all of their locational advantage. The cost challenges, among others, include:

- foreign exchange issues;
- the CITs (30 -35 percent) are higher in Zambia than in neighbouring countries;
- difficulties in accessing credit because of higher interest rates reflected the higher risks for banks for lending to these businesses;
- the high costs of credit, where the typical cost of credit for a manufacturing enterprise is 30-40 percent;
- high costs and limited supply of skilled labour; and
- high costs of power.

Many local suppliers are also unable to meet the strict requirements of modern supply chain management practices, including requirements relating to quality, flexibility, reliability and speed of delivery (ICMM, 2014).

3.32.1.2 Involvement of mining companies in local content development

ICMM (2014) reported that although mining companies were slow to engage with suppliers following privatisation, many have now initiated supplier support and upgrading programs that attempt to address the capability gaps of local businesses by providing management skills, access to finance, enhanced computer literacy, and an understanding of the mine's procurement processes and requirements. Involvements of specific companies (*ibid.*) include the following:

- Kansanshi formalised its policy on supplier development in 2011. The company focuses on training (in tendering, cost estimation, contract management and construction site quality control) for potential suppliers, some of which is done with the North-Western Chamber of Commerce and Industry (NWCCI);
- Mopani provides *ad hoc* training for SMEs through workshops and employs a staff member who helps suppliers with tendering and marketing;
- KCM set up a "local economic development unit" in early 2012, to build on its existing manufacturing support program. The mine assesses possible suppliers and plans to target several businesses that are believed to have potential and to supply them with long-term contracts; and

- Lumwana is in the early stages of piloting a systematic approach to supplier development through its local content development (LCD) program, which aims to provide financial and technical assistance to potential suppliers.

2.3.10.2 Corporate social responsibility (CSR)

Developing countries like Zambia with rich mineral resources deserve solid CSR strategies for the people to begin to see tangible benefits from the exploitation of their countries' mineral wealth. CSR once well-organised may significantly transfer resources to various stakeholders outside the normal mineral taxes. Resources spent on various activities like training, business development in forging linkages and support to local communities may effectively transfer tax resources from mining to other sectors.

Some mining companies in Zambia make large contributions towards social investments. While communities acknowledge some of the positive contributions that these have made, perceptions of the mines remain largely negative. This is partly because positive contributions are offset by concerns over the negative impacts of mining on surrounding communities, such as pollution and resettlement (ICMM, 2014).

ICMM (2014) benchmarked mining companies' social investment contributions in North-Western and Copperbelt Provinces in comparison to other countries in which the toolkit has been carried out. The contributions from Copperbelt mining companies are reported to be significantly larger - between 10 and 16 percent of pre-tax profits (Table 2.20).

Table 2.20: Social investment benchmark as a percentage of pre-tax profits (2012) (ICMM, 2014)

		Zambian Mines	
	Other toolkit countries	**North-Western**	**Copperbelt**
Social investments as percent of pre-tax profits.	1-2 %	1-2 %	10-16 %

The social investments consist of all contributions made by extractive companies to promote local development and to finance social projects. ZEITI (2014b) stated that these contributions can be made in cash or in kind:

- CSR in cash category relate to contributions made by extractive companies in the local development. Flows covered in this category include cash payments made by extractive companies to support actions of local communities including compensation other than those granted directly for the individuals; and
- CSR in kind category includes, *inter alia*, health infrastructure, school infrastructure, road infrastructure, market gardening infrastructure, projects related to the promotion of the agriculture and the grants provided to the population.

Social investments made by mining companies are voluntary aside from some legacy obligations for Copperbelt mines as the Minerals and Mining Development Act of 2008 does not set out requirements for mandatory investments (ICMM, 2014). The social payments and transfers made during 2015 as reported by ZEITI (2015b) are given in Table 2.21. This also includes non-copper mining companies.

Table 2.21: Social payments and transfers made in 2015 (ZMW)
(ZEITI, 2015b)

Company	Corporate Social Responsibility in Kind payments	Corporate Social Responsibility cash payments	Total
Copper Mines	328,901,294	44, 004,208	372, 905,502
Non - Copper Mines	8,907,790	4,601,355	13,509,145
Total	**337,809,084**	**48,605,563**	**386, 414,647**

The social payments as a percent of the government receipts from extractive sector for the period 2012 - 2015 are as presented in Figure 2.20.

UNECA (2011) argued that the treatment of environmental and social expenses-particularly those for current environmental management, disaster mitigation and funding for mine closure-requires careful consideration. For example, the creation of

environmental or social funds into which companies contribute has become common in mining regimes, but whether expenditure on these activities should be permitted as a deduction from gross income has become an issue.

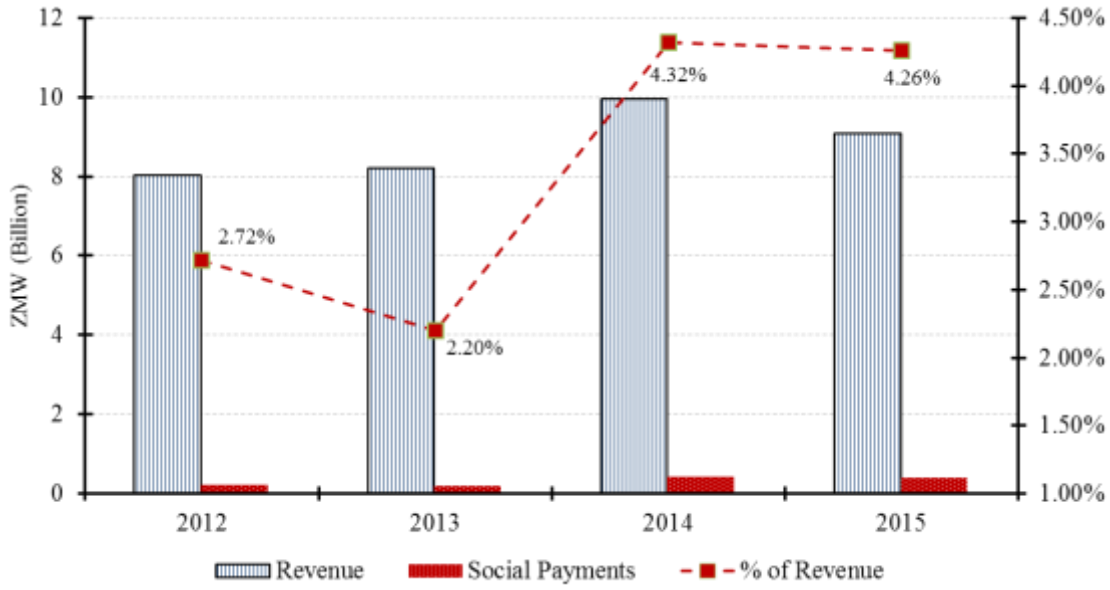


Figure 2.20: Social payments as percent of the revenues
(ZEITI, 2014b; 2015a; 2015b)

ZEITI (2014a) indicated that Zambia enacted the Mines and Minerals Development Act of 2008, which stipulates that an Environmental Protection Fund (EPF) should be set up. This legislation provides for contributions to EPF by mine operators in form of cash as well as lodgment of other forms of security.

The objectives of EPF are to:

- provide assurance to the Director of the MSD that the developer shall execute environmental and social impact statements in accordance with the Mines and Minerals (Environmental) Regulations, 1997; and
- provide protection to the Government against the risk of having the obligation to undertake the rehabilitation of mining areas where the mining licence holder fails to do so.

Generally, some jurisdictions offer incentives where environmental and closure costs, community and public infrastructure costs are treated as deductibles for taxation purposes.

2.4 Summary

The section on general mining principles of base metal taxation gave a review of the salient features influencing resources taxation. Mineral-rich governments need to appreciate these attributes in their design and formulation of taxation system to help them appropriate a fair share of mineral rent.

The section on mineral taxation system in Zambia offered a review of the sector's historical perspective in terms of ownership structures, key agencies and mine investors involved in the operations of the mining industry, and the overall macroeconomic contribution of the mining sector to Zambia's economy.

A number of concerns on mineral taxation were revealed involving regime changes since the sector privatisation, taxation policy intended to ensure the country's competitive position, and the analysis of pertinent tax instruments applied under the royalty-tax system. The Chapter also reviewed the legislation and regulatory systems used to realise optimal benefits from the sector.

The investment incentives granted to increase investment in the sector highlighting the influence of Development Agreements and the current incentives on the mining sector are reviewed. Additionally, the Chapter reviewed the role of government institutional capacities to enhance tax administration and governance concerns. Significant domains related to sector uniqueness, tax policy formulation affecting tax administration and regulations challenges have been analysed. The concepts of appropriating additional non-fiscal benefits from the Zambian mining sector through local content development and social investment were assessed.

CHAPTER 3

RESEARCH METHODOLOGY

The aim of this Chapter is to give a discussion on the methodology and methods employed in the study. To achieve this objective, the Chapter is divided into six sections. Section 3.1 discusses the research philosophy explaining the major paradigms and the assumption governing research philosophy dealing with ontology, epistemology, axiology and approach. Section 3.2 and 3.3 respectively discusses research design and research approach. Section 3.4 deals with research methods focusing on population of study, sampling and sample techniques, and methods of data collection for the study. Sections 3.5 reviews data analysis by discussing codification of responses, inferential statistics and results, selected computer statistical packages, and demographic analysis of data collection tools. Section 3.6 gives a summary to the Chapter.

3.1 Research philosophy

The research philosophy can influence the methodology adopted for the research project. Saunders et al. (2009) referred to research philosophy as the overarching term that relates to the development of knowledge and the nature of that knowledge. The research philosophy adopted contains important assumptions about the way in which the researcher views the world. These assumptions will underpin the research strategy and the methods chosen as part of that strategy.

Two popular paradigms today among social science researchers are positivism and post-positivism (Bhattacherjee, 2012). In understanding research philosophy, McGregor and Murnane (2010) used the term paradigm to refer to two overarching world-views or traditions shaping research, namely positivism and post-positivism. For positivism, it is assumed that the only way people can be positive that the knowledge is true is if it was created using the scientific method. Hence, it encompasses the empirical methodology, meaning data is derived from experiment and observation. As for post-positivism, it is assumed there are many ways of knowing aside from using the scientific method. Ary et al. (2010) argued that positivism is often considered the traditional scientific method,

which involves hypothesis testing and objective data gathering to arrive at findings that are systematic, generalisable, and open to replication by other investigators. On the other hand, a phenomenological study is designed to describe and interpret an experience by determining the meaning of the experience as perceived by the people who have participated in it (*ibid.*).

Cohen et al. (2000) indicated that positivist and interpretive paradigms are essentially concerned with understanding phenomena through two different lenses. Positivism strives for objectivity, measurability, predictability, controllability, patterning, the construction of laws and rules of behaviour, and the ascription of causality while the interpretive paradigms strive to understand and interpret the world in terms of its actors. In the former, observed phenomena are important; in the latter, meanings and interpretations are paramount. The features of the main two research philosophies or paradigms - positivism and phenomenology (Saunders et al., 2009; Hussey and Hussey, 1997) are given in Table 3.1.

Table 3.1: Features of the two main research paradigms
(Collis and Hussey, 2003)

Positivistic	Phenomenological
Tends to produce quantitative data	Tends to be qualitative data
Uses large samples	Uses small samples
Concerned with hypothesis testing	Concerned with generating theories
Data is highly specific and precise	Data is rich and subjective
The location is artificial	The location is natural
Reliability is high	Reliability is low
Validity is low	Validity is high
Generalises from sample population	Generalises from one setting to another

Saunders et al. (2009) gave the key assumptions on research philosophy which include ontology (nature of reality) epistemology (nature of knowledge) and axiology (study of judgment about value).

Ontology is concerned with the nature of reality and what there is to know about the world. Key ontological questions concern whether or not there is a social reality that

exists independently of human conceptions and interpretations and, closely related to this, whether there is a shared social reality or only multiple, context-specific ones. Epistemology is concerned with ways of knowing and learning about the world and focuses on issues such as how we can learn about reality and what forms the basis of our knowledge (Ritchie and Lewis, 2003). This relates to the way in which knowledge is best acquired. One view holds that knowledge is based on induction and other view is on deductive process. Saunders et al. (2009) on axiology indicated that the role that your own values play in all stages of the research process is of great importance if you wish your research results to be credible. Ihuah and Eaton (2013) summarised the standpoint of the researcher with regard to the research philosophy assumptions dealing with ontology, epistemology and axiology as presented in Table 3.2.

Table 3.2: Comparison of research viewpoints in social sciences research (Ihuah and Eaton, 2013)

Assumption	Interpretative (Phenomenology)	Positivism
Ontology	Things are socially constructed leading to subjective reasoning which may change with multiple realities	Emphasises that researcher is external, objective and independent of that study
Epistemology	Toward subjective meanings of social phenomena, looking at details and realities behind it with motivating actions	Things are observed to prove credibility to facts, focusing on causality and law generalisations thereby reducing phenomena to simplest elements
Axiology	The research is value bound; such that the researcher is part of what is being studied, not isolated from the studied and will be subjective	The research is value free, hence independent of the data and objective in the analysis of the data
Approach	Qualitative	Quantitative but can still use qualitative

A new methodology in which the same study uses both quantitative and qualitative approaches is called mixed methods research. The end result of mixed methods research is findings that may be more dependable and provide a more complete explanation of the research problem than either method alone could provide (Ary et al., 2010). Further mixed methods as argued by David et al. (2007) can provide pragmatic advantages when exploring complex research questions. The qualitative data provide a deep understanding

of survey responses, and statistical analysis can provide detailed assessment of patterns of responses.

For this study, phenomenological research philosophy was undertaken based on a qualitative paradigm centred on interpretivism (Sale et al., 2002) which can be used to find out the opinions of people on a subject (Kothari, 2004). However, both qualitative and quantitative data collection procedures where employed. The quantitative data collection provided empirical data through the questionnaires while qualitative data collection used the semi-structured interview to obtain in depth information.

3.2 Research design

This study used the exploratory descriptive design to identify, analyse and describe factors that can help in understanding how the country can optimise its capturing of rent (revenue) from its mineral wealth. This was used to find out what is happening, to seek new insights, to ask questions and to assess phenomena in a new light (Robson, 2002). As recommended by Saunders et al. (2009) and Ary et al. (2010), three principal ways of conducting exploratory research, namely; a search of the literature, interviewing "experts" in the subject, and conducting focus group interviews were used. In particular, surveys permitted this author to summarise the characteristics of different groups or to measure their attitudes and opinions toward taxation and related issues.

3.3 Research approach

Theory development in research is important as it guides the design of the research project. Research approach needs to be classified in terms of whether it is inductive or deductive (Table 3.3). As opposed to deductive research approach which starts with theory and hypothesis which are then tested through research (Saunders et al., 2009), this author used inductive approach where data was first gathered and analsyed, and a theory then developed based on results of the analysis. The inductive approach helped to understand the attitudes of various stakeholder groups on the optimal capturing of revenues (rents) from the mining industry. This is in order to try and develop a concept Zambia can consider adopting.

3.4 Research methods

Research methods are grouped into three categories, namely those methods which are concerned with the collection of data, statistical techniques which are used for establishing relationships between the data and the unknowns, and methods which are used to evaluate the accuracy of the results obtained (Adams et al., 2007). The researcher must decide what research method they wish to employ either singularly or in combination (Bhattacherjee, 2012).

Table 3.3: Differences between deductive and inductive approaches (Saunders et al., 2009)

Deduction Approach	Induction Approach
scientific principles	gaining an understanding of the meanings humans attach to events
moving from theory to data	a close understanding of the research content
the need to explain causal relationships between variables	the collection of qualitative data
the collection of quantitative data	a more flexible structure to permit changes of research emphasis as the research progresses
the application of controls to ensure validity of data	a realisation that the researcher is part of the research process
the operationalisation of concepts to ensure clarity of definition	less concern with the need to generalise
a highly-structured approach where researcher is independent of what is being researched	
the necessity to select samples of sufficient size in order to generalise conclusions	

The quantitative paradigm is based on positivism while the qualitative paradigm is based on interpretivism (Sale et al., 2002). The purpose of quantitative studies is for the researcher to project his or her findings based on the sample onto the larger population through an objective process (Borrego et al., 2009).

Qualitative methods are concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind. It investigates attitude or opinion research designed to find out how people feel or what they think about a particular subject or institution (Kothari, 2004).

Qualitative and quantitative research should not be seen as competing and contradictory, but should instead be viewed as complementary strategies appropriate to different types of research questions or issues, and may both be applied to investigate the same research question (Ritchie and Lewis, 2003). The differences in the emphasis are presented in Table 3.4.

Table 3.4: The difference in emphasis in qualitative versus quantitative methods (Ghauri et al., 1995)

Qualitative methods	**Quantitative methods**
Emphasis on understanding	Emphasis on testing and verification
Focus on understanding from respondent's/informant's point of view	Focus on facts and/or reasons of social events
Interpretation and rational approach	Logical and critical approach
Observations and measurements in natural setting	Controlled measurement
Subjective "insider view" and closeness to data	Objective "outsider view" distant from data
Explorative orientation	Hypothetical-deductive: focus on hypothesis testing
Process oriented	Result oriented
Holistic perspective	Particularistic and analytical
Generalisation by comparison of properties and contexts of individual organisms	Generalisation by population membership

In this study, a qualitative research approach was mainly employed as noted by Cohen et al. (2000) to target those groups in institutions or clusters of participants who were able to be approached to participate in the research. However, to capture the strength of each tool to strengthen the study (Ary et al. 2010), the quantitative tool was also used where appropriate.

3.4.1 Population of study

The mining industry in Zambia is made up of many stakeholders involving government agencies, private mining companies and other related institutions as described in Section 2.23.2 of this thesis. These different stakeholder groups formed part of a population from which a sample was taken.

Although choosing a sample from the sampling frame using a well-defined sampling technique is important, for this study, assigning numbers to the population elements of each group was not possible, as most of the elements from the groups were not fully represented depending on the various circumstances of the groups in the mining industry. A subjective method of selecting the sample from the different stakeholder groups was instead undertaken considering the levels of different goals and objectives that the "experts" from the groups have in the mining industry.

Phenomenological approaches were embraced for this research since the population is not well defined and consisted only 15 stakeholder groups of respondents where no database for the number of elements could clearly be established in each group for sampling. The groups from which these "experts" were drawn included Mining Companies; Ministry of Mines; Zambia Revenue Authority, Zambia Development Agency, Zambia Institute for Policy Analysis and Research, Academia (from UNZA, CBU and Catholic University), Chamber of Mines, Zambia Extractive Industry Transparency Initiative, Mine Suppliers, Consultants, Action Aid, Jesuit Centre for Theological Reflections, Mine Workers Union, Zambia Consolidated Copper Mines - Investments Holding, and Economics Association of Zambia.

3.4.2 Sampling and sample techniques

In this study, non-probability (non-parametric) purposive sampling methods were applied for generating a sample for the questionnaire from the participants drawn from the different groups. With this method, the sampling procedure does not afford any basis for estimating the probability that each item in the population has of being included in the sample. The sample units are selected on the basis of personal judgment (Adams et al., 2007; Cooper and Schnidler, 2014; Kothari, 2004). Several types of non-probability samples; convenience sampling, quota sampling, dimensional sampling, purposive sampling and snowball sampling are noted. Each type of sample seeks only to represent itself or instances of itself in a similar population, rather than attempting to represent the whole, undifferentiated population (Cohen et al., 2000).

Applying purposive (judgment) sampling, respondents were handpicked for inclusion in the sample based on their typicality. In this way, a sample satisfactory to the specific needs of this study was built (Cohen et al., 2000). This involved identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with the subject of mine taxation issues (Cresswell and Plano, 2011).

In terms of sample size determination, Cohen et al. (2000) indicated that there is no clear-cut answer. The correct sample size depends on the purpose of the study and the nature of the population under scrutiny. A sample size of thirty (30) is held by many to be the minimum number of cases if researchers plan to use some form of statistical analysis on their data. However, Ary et al. (2010) argued that the most important characteristic of a sample is its representativeness and not its size.

For this study, 82 respondents from different stakeholder groups representing the mining industry returned the questionnaires from the 120 distributed questionnaires while 13 respondents from mining industry stakeholder groups participated in the semi-structured interview process.

3.4.3 Data collection methods

Data collected was in form of primary and secondary data (Dina, 2012). Primary data was that which was collected using questionnaires and interviews with the experts in mine tax issues. Secondary data was that which was collected from internal publications provided by participants to this research and publicly available data which was found relevant to this study (Kumar, 2011).

Primary data acquisition in Zambia involved questionnaire administration to key personnel forming the stakeholder groups; namely Government and its various institutions, mining companies and diverse civil society groups. Interviews were also conducted with professionals who had reasonable years of experience to comprehend mineral taxation issues in Zambia.

Secondary data was sourced through wide and extensive literature reviews on matters dealing with resource taxation. Sources of information comprised a number of

institutions within the sub-region and different regional groupings (UNECA and SADC). Global institutions (UNCTAD, World Bank, ICMM, IMF, IM4DC, OECD) were also referred to. In Zambia, secondary information sources included various government ministries and institutions. For this study, permission was sought from the different stakeholder groups in order to access the institutions to get data.

(a) Semi-structured interviews

Through interviews, the study obtained greater depth of information and personal perspectives of the respondent were provided, including meanings and feelings which were quite detailed. The research was able to provide clarification of questions, and the study had the opportunity to probe what participants were saying by asking for clarifications and/or examples. The study investigated ideas and beliefs of participants further and gathered data which could not be obtained through questionnaire (Cohen et al., 2000).

The semi-structured interview used in this study was designed to help with making comparisons with information from the literature as well as improve on research validity through triangulation. Most of respondents contacted were not comfortable with being interviewed on this emotive topic. Therefore, questionnaires were mostly used in line with what Sivo et al. (2006) noted that questionnaire respondents may feel more comfortable providing private or sensitive answers than when being interviewed by phone or face-to-face.

A total of 13 “experts” representing different stakeholder groups using non-probability purposive sampling in the mining industry were interviewed for this study. These were selected based on knowledge possessed on the subject as recommended by research and corporate affairs officers in the various institutions. They were drawn from; Mining companies, Tax Authority (ZRA), Ministry of Mines, Government Agencies, Suppliers, Academia, Consultants, and Civil Society Organisations.

The research questions in the semi-structured interview had also a number of related items which were evaluated (studied) as presented in the next Chapter on data analysis. The study questions used are as follows:

1) Is Zambia capturing optimal revenues (rents) from the copper mining sector? Give reasons for your response.
2) Are the given items on the capturing of revenues from the copper mining sector justifiable?
3) Do you consent with the offered reasons as being responsible for the failure by the government to capture equitable (rents) revenues?
4) Is the current mine taxation system in Zambia ideal to optimise the capturing of rents? Give reasons for your response.
5) Is the current mine taxation system idea for the promotion of sustainable investment in the copper mining industry? Provide details for your response.
6) Which given attributes of taxation objectives best describe the mine taxation system for Zambia?
7) Give reasons on whether the applied taxation instruments in Zambia are well structured to optimise the capturing of reasonable rents.
8) Is the current Zambian mine taxation system comparable to other jurisdictions? Provide reasons for your response.
9) Which of the used investment incentives in Zambia make the mine taxation system fail to generate optimal (rents) revenues?
10) Provide reasons about the impacts or performance of the granted incentives in the copper mining industry.
11) Which of the provided study items have generally affected the acquisition of equitable rents in the Zambian copper mining industry?
12) Which of the given items on modes of government participation do you agree with for the Zambian government to adopt in order to improve on equity participation?
13) Which of the offered items should the Zambian government employ in order to enhance local content participation by local suppliers?

14) Should corporate social responsibility (CSR) in Zambia be government driven/ legislated for the copper mining industry? Explain your response.

The format of the semi-structured interview is presented in Appendix A.

(b) Questionnaire design

As one of the most widely used data collection techniques within the survey strategy, a questionnaire was used in this study, because each person (respondent) is asked to respond to the same set of questions, and thus provides an efficient way of collecting responses from a large sample prior to quantitative analysis (Saunders et al., 2009).

Both open and closed ended questionnaires were used. Open-ended questions allowed respondents to give answers in their own way while closed questions provided a number of alternative answers from which the respondent was instructed to choose (Saunders et al., 2009). One of the primary reasons for using open-ended questions as stated by Cooper and Schnidler (2014) was to avoid as much as possible to limit information provided by respondents and to encourage natural modes of expression. On the other hand, a closed-ended questionnaire was used in order to, among others; expedite the interview for both interviewer and respondent, expedite later processing of data, convey more exact meaning by defining the range of appropriate responses, and improve reliability (Dey, 1993).

Except for information on demographics, the closed ended questions were rating questions which used the Likert-style rating scale. Cooper and Schindler (2014) reported that Likert scale, developed by Rensis Likert is the most frequently used variation of the summated rating scale. Summated rating scales consist of statements that express either a favorable or an unfavorable attitude towards the object of interest. The participant is asked to agree or disagree with each statement. Each response is given a numerical score to reflect its degree of attitudinal favorableness, and the scores may be summed to measure the participant's overall attitude (*ibid.*).

Five-point Likert Scale was developed for this study with a value of 1 indicating that the respondent strongly agrees with the item while the highest number 5 indicates that the

respondent strongly disagrees with that item being asked in the constructs (i.e. 1=strongly agree, 2=agree, 3=neutral, 4=disagree, and 5=strongly disagree). The structure of the questionnaire is in line with research questions which were formulated for this study. Each research question was processed using a number of applicable items (statements) which were analysed in the next Chapter in order to attain the study objectives presented in Chapter one under Section 1.5.

The first study objective dealing with fiscal objectives of the taxation system had eight items (tax attributes) for evaluation as given in Section 2.2.7. The employed research question is given as follows:
Is the mine taxation system in Zambia responsive to the given attributes of a "good tax" criteria?

The second study objective aimed at assessing the international competitiveness of the Zambian taxation system based on the evaluation of the selected Zambian tax instruments (Section 2.3.5). The specific study questions for this objective were as follows:

(a) To what extent do you agree with each of the used tax instruments in Zambia to optimise rent capturing?
(b) Are the used Zambian fiscal tools comparable to practices in other jurisdictions?
(c) Does the Zambian mine taxation system perform well based on the given statements to meet the required "government take"?

These preceding research questions on this study objective were also complemented with the following study questions:

- Is the Zambian mine taxation system responsive to changing market conditions?
- Should the Zambian mine taxation system be based on production rather than profitability?
- Is the overall Zambian mine taxation system competitive? Provide reasons.

The third study objective dealing with evaluation of the given tax incentives (Section 2.3.8) in Zambia had the following study questions:

(i) Do the used tax incentives in Zambia result in increased flow of rents (revenues) to the state?

(ii) Based on the given study items, have the tax incentives constituting the mine fiscal regime in Zambia performed to expectation?

The fourth study objective dealing with the performance of equity participation in the country evaluated a number of items under the following study questions:

- How has equity participation performed in relations to the given study items in the Zambian copper mining sector?
- What mode of equity stake could be adopted/appropriate for Zambia?
- Has the current Zambian equity participation based on the given study statements performed to expectations?

In order to attain the fifth study objective dealing with institutional capacities (Section 2.3.9), several study statements were analysed under the research questions expressed as follows:

(a) Which of the given institutional challenges do you agree with as being responsible for the state's failure to optimise the capturing of rents?

(b) Which of the given challenges do you consent with as being responsible for the taxing authority's (ZRA) failure to capture optimal rents?

(c) What challenges affect the mine regulators (Ministry of Mines) in their functions to appropriate mineral rents for the Zambia?

The sixth and seventh study objectives on non-fiscal benefits respectively dealing with corporate social responsibility (CSR) and local content as additional benefits to mine taxation (Section 2.3.10) had various statements (items) evaluated based on the following study questions:

(i) Has the performance of CSR as an additional benefit to mineral taxation been sub-optimal in Zambia?

(ii) Do mining companies show commitments towards CSR in the Zambian copper mining industry?

(iii) Has local content performance been sub-optimal in the Zambian copper mining industry?

(iv) Do mining companies show interest in local content development?

The questionnaire was designed to contain simple but straightforward directions for the respondents so that they may not feel any difficulty in answering the questions (Kothari, 2004). Before being distributed, the questionnaire was refined with the help of the supervisor in line with the research questions. The questionnaire had a letter of introduction in which the purpose of the research and all matters related to upholding confidentiality were made clear. In addition, the questionnaire had all the instructions needed to complete the survey (Appendix B).

(c) Pilot study

In this study, a pilot study was conducted at University of Zambia with postgraduate students in the Economic Policy Management (EPM) programme to determine whether the data collection plan for the main study was an appropriate procedure (Adams et al., 2007). Thus, a small-scale pre-test study was meant to provide an advance opportunity for this study to check the data collection form to minimise errors due to improper design elements, such as question wording or sequence. Six questionnaires were given out to solicit for comments, suggestions and any recommendations regarding the questionnaire content. Five questionnaires were returned with inputs and all the disclosed concerns on the wording and layout of the questionnaire were addressed. For the semi-structured interview, two participants were used for pilot testing-one tax expert from the mines and one from the university. These assisted in refining the questions to help with assessment for the reliability of the data to be collected.

(d) Reliability and validity

There are threats which exist to data reliability and Saunders et al. (2009) identified four which include; subject error, subject bias, observer error, and observer bias. Subject (participant) error indicates the stance respondents take during the time of receiving data collection tools. If the questionnaire is distributed to respondents during unsuitable

times, then unreliable responses might be given which can affect the reliability of the research.

In order to minimize pressure based on allocated time for responses and subsequently avoid participant error, the subjects in this study were allowed a reasonable period of three to four weeks to complete the questionnaires. In other situations, where participants were identified individually by the researcher, there was a likely chance that they would give desirable responses that could cause subject bias. Therefore, every effort was made to distribute the questionnaires through responsible officers to uphold the anonymity of the respondents. This approach meant that the threat to reliability because of participant error was reduced.

Observer error can occur depending on the manner in which questions are asked from the tools of data capturing. This study employed questionnaires which were structured and standardised making the questions to be interpreted by respondents in a consistent and similar manner. Equally, closed ended questions in the semi-structured interviews were structured to ensure that observer error was reduced and this meant the interview was used as part of mixed methods research as a means to validate findings from questionnaires. Finally, observer bias can arise in situations where the observer seeks to gather information that seeks to satisfy the observer's standpoint. For this study, observer bias was controlled by ensuring that the researcher remained neutral and not emotional in the way data was gathered and analysed.

Pallant (2005) asserted that internal consistency of scale is the degree to which the items that make up the scale "hang together", that is, are they all measuring the same underlying construct? One of the most commonly used indicators of internal consistency is Cronbach's alpha coefficient. Zikmund et al. (2009) indicated that coefficient alpha should be at least 0.6 for a scale to be considered as acceptably reliable. For the current study, no re-test method was used because of time constraint. The Cronbach's alpha coefficients determined for various constructs in the questionnaire were all above 0.6 giving an acceptable consistency (Table 3.5).

Table 3.5: Internal consistency tests using Cronbach's alpha coefficient

No	Questionnaire Construct	Likert Items Deleted	No. of Likert Items	Cronbach's Alpha
1	***Attributes of "Good Tax" Criteria***	0	8	0.673
2	***Tax Competitiveness and fiscal Instruments used***			
	Ability to capture rents and competiveness of the tax instruments	0	10	0.712
	Performance of the tax system	0	4	0.813
3	***Investment Incentives***			
	Type of incentives and enhancement to increase flow of revenue to the government	0	6	0.881
	Concerns about the current tax incentives in Zambia	0	6	0.759
4	***Equity Participation***			
	Performance of equity participation and likely option to review equity participation in Zambia	0	8	0.739
	Expected benefits from the current equity participation for Zambia	0	8	0.950
5	***Institutional Capabilities***			
	Concerns on institutions' failure to enhance rent capturing needed for socio-economic development	0	6	0.692
	Challenges faced by the taxing authority	0	10	0.895
	Challenges faced by regulators (mineral authority)	0	8	0.826
6	***Corporate Social Responsibilities (CSR) and Local Content Development***			
	Performance of CSR as an additional benefit to mineral taxation	0	7	0.820
	Mining companies' interest shown in CSR in Zambia	0	6	0.883
	Performance of local content as an additional benefit to mineral taxation	2	6	0.635
	Interest shown by mining companies in local content development	0	6	0.833

Validity (construct validity) is the extent to which a measure adequately represents the underlying construct that it is supposed to measure (Bhattacherjee, 2012). A valid study should demonstrate what actually exists and a valid instrument or measure should actually measure what it is supposed to measure. One of the key factors affecting validity is error with sources categorized as the researcher, the subjects participating in

the project, the situation or social context, and the methods of data collection and analysis (Brink, 1993).

The researcher is part of the data gathering instrument in phenomenological approach. To reduce on researcher error, the observer remained objective and impartial by not taking sides with respondents from the various groups under study in the population. As the subjects participating in the study may influence the validity of data, such a threat was reduced by selecting the respondents carefully through purposively judging the contrasting cases. The threat was also eliminated by standardising the structure of questions in the questionnaire and semi-structured interview to give respondents an opportunity to interpret the questions in a similar way. This measure was done to remove the data collection bias.

The social context under which the data are gathered is an important consideration in establishing validity of data. Privacy in terms of interview was sought by asking the respondents if they were comfortable to be interviewed in their designated places and most of them had no apprehensions with the environments. Questionnaires were also distributed and respondents were given ample time to respond to questions in their own convenient environments.

To check convergence of information collected from multiple and different sources in this study, triangulation was applied (Cresswell and Miller 2000). Data triangulation involved the use of different sources of information from the different stakeholder groups in the mining industry. Outcomes on perspectives from interviewed representatives of the groups where in many respects agreed upon by stakeholders of different groups. Questionnaire outcomes were also not varied from representatives of the other stakeholder groups. Methodological triangulation used interviews and questionnaires, as also noted by Guion et al. (2011). The findings from both methods gave some similar conclusions, indicating some establishments of validity in the findings.

(e) Questionnaire administration and interviewing

The questionnaires were personally delivered to the sampled population while some where sent by email. Most of the sampled population was located in Lusaka and on the Copperbelt province. The mining companies in Northwestern Province have their link offices in Lusaka and it was easier to deliver questionnaires to key staff who later distributed to their appropriate staff. In some institutions, the researcher met with officers in charge of research, training and corporate affairs who assisted with identifying key personnel to distribute questionnaires. Some of the questionnaires were returned within a week, while others took as long as two months. A series of reminders through telephone calls, emails and personal visitation to persons in institutions who received the questionnaires were made. This was done in order to enhance the response rate.

Considering that mine taxation topic is treated as a sensitive subject of discussion in Zambia, most of the persons contacted for interviewing were not willing for fear of loss of jobs. However, after repeated assurances of the confidentiality concerns given to the study with frequent appeals, interview appointments were made sometimes with the help of the officers in charge in institutions. In most situations, a schedule of the interview was left with the interviewee or sent by email to secure an interview appointment on a later date. This gave ample time for the interviewee to comprehend the questions being asked. Certain interviewees felt that they had comprehensive understanding of the topic and agreed to be interviewed without availing to them the schedule prior to the interview.

3.5 Data analysis methods

Based on the designed questionnaire for this study, Likert-type items and Likert scale data were generated. Likert-type items are single questions that use some aspect of the original Likert response alternatives, while a Likert scale is composed of a series of four or more Likert-type items that are combined into a single composite score/variable during the data analysis process (Boone and Boone 2012). Combined, the items are used to provide a quantitative measure of a character or personality trait. Typically, the

researcher is only interested in the composite score that represents the character/personality trait.

3.5.1 Codification of responses

Data coding means translating information into values suitable for computer entry and statistical analysis (Cooper and Schnidler, 2014). For this study, data organisation and coding prior to the input stage of data analysis was performed. The questionnaire responses were coded (Table 3.6) with categorical data given a number to represent them.

Table 3.6: Codification of questionnaire response

Variable	Codification
Occupation	1 =Accountant, 2=Lawyers, 3= Economists, 4 =Lecturer, 5 = Engineer/Scientist, 6 = Business, 7= Others
Type of organisation	1 = ZRA, 2= MMEWD, 3= Copper Mines. 4= ZIPAR, 5 = Academia, 6 = Consultants, 7 = Suppliers, 8 = ZCCM-IH, 9 = Others (NGO, Civil Society Groups, Government Agencies, EITI, EAZ, Banks)
Years of professional experience	1 = 1-5 years, 2 = 6-10 years, 3 = 11=15 years, 4 = 16-20 years, 5 = 21-25 years, 6 = Above 26 years
Item in the construct	1= Strongly Agree (SA), 2 = Agree (A), 3 = Neutral (N), 4 = Disagree (D), 5 = Strongly Disagree (SD)

Demographic attributes dealing with category of organisation, type of occupation and years of profession experience from the questionnaire were given numbers to represent specific measurements. The ordinal data measuring respondents' attitudes on each item in the construct based on the level of agreements were also coded.

3.5.2 Inferential statistics and results' discussions

After codification of responses for input onto the computer, the data analysis consideration for this study involved only descriptive statistical analysis. Statistical inference is 'a procedure by means of which you estimate parameters (characteristics of populations) from statistics (characteristics of samples).' Such estimations are based on the laws of probability and are best estimates rather than absolute facts (Ary et al., 2010). Research questions are the questions for which answers are being sought,

whereas research hypotheses can be used to express what the researcher expects the results of the investigation to be (Mackey and Gass, 2005).

For this study, however, inferential statistics were not conducted because; non-random sampling was applied, the types of research questions designed were not expressed as exploration of relationship between variables, and no research hypotheses were developed which are predictive statements about the relationship between variables.

Leech et al. (2005) indicated that research questions can be divided into three categories, namely difference, associational, and descriptive. Both the difference and associational questions or hypotheses are similar in that they explore the relationships between variables in agreement with all common parametric inferential statistics. Descriptive research questions, therefore, are not answered with inferential statistics and merely describe or summarise data, without trying to generalise to a larger population of individuals. As noted by Bernard (2006), descriptive analysis involves understanding data through graphic displays, through tables, and through summary statistics and is about the data you have in hand.

For this study, the descriptive statistics for categorical data used were mode, median, cross-tabulation, and frequency distribution. These were employed to analyse the demographic characteristics of respondents from both the questionnaires and semi-structured interviews and to explain the respondents' opinions on the various Likert - items from the constructs in the questionnaire. The summary of the findings from the descriptive analysis were used as the basis for making conclusions and recommendation for the study.

3.5.3 Statistical packages used

Software packages are readily available for the various simple and complicated analytical and quantitative techniques of which researchers generally make use of (Kothari, 2004).

For the purpose of this study, after the process of coding data, entry into the computer system was undertaken by using Microsoft Excel and IBM Statistical Package for Social

Sciences (SPSS), Statistics 20. The SPSS was chosen because it is a powerful and user-friendly software package for the manipulation and statistical analysis of data (Everitt and Landau, 2004).

3.5.4 Demographic analysis of data collection tools

The demographics of respondents from both semi-structured interviews and questionnaire survey are presented in this section.

3.5.4.1 Semi-structured Interviews

Issues dealing with mine taxation remain a source of emotive discussions in Zambia. This made most of the respondents to feel uncomfortable discussing them openly for fear of being quoted and losing their jobs. This also created a risk of getting responses that did not reflect the interviewee's actual views. To make the respondents comfortable, they were assured confidentiality and anonymity by encouraging them that the research was purely for academic studies. This created an open atmosphere for discussion.

The 13 interviewees were drawn from various institutions making up the mining industry in Zambia as presented in Figure 3.1.

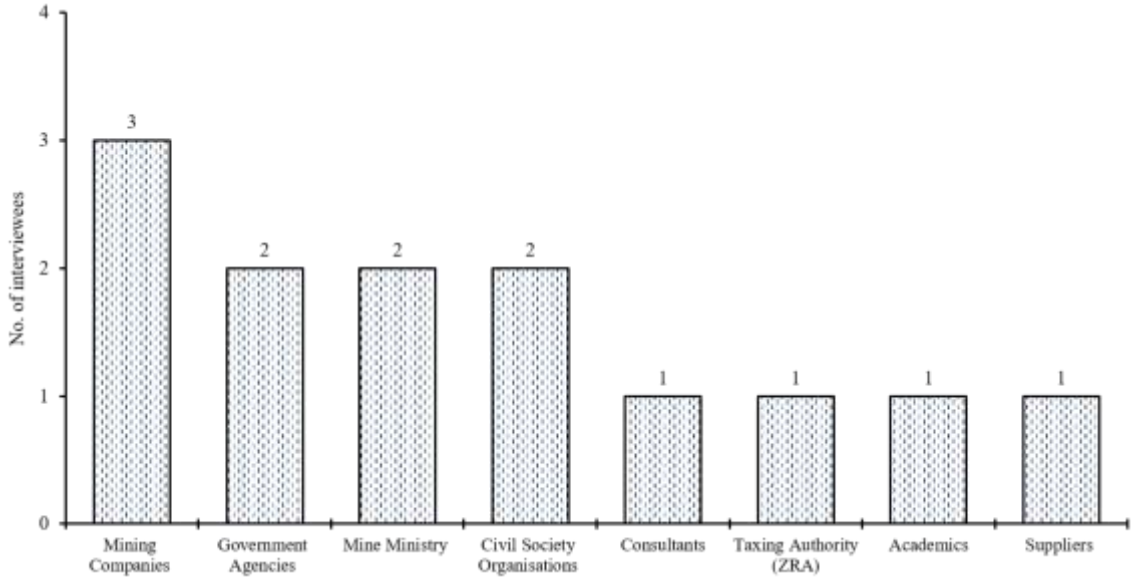


Figure 3.1: Number of interviewees based on represented organisations

As indicated in Section 3.4.1, 15 groups in the copper mining industry were identified and eight groups [Section 3.4.3 (a)] participated in the interview survey. In each institution, non-probability purposive sampling was employed with the help of officers in charge of research (or corporate affairs) who identified one or two representatives as key personnel knowledgeable enough to be interviewed in order to provide conversant insights on the subject matter. The mining companies are the main stakeholders involved in the mineral extraction activities. Taxing authority (ZRA) is concerned with tax administration matters while the Ministry of Mines regulates the industry. Government agencies ZDA and ZEITI are respectively concerned with investment promotion and transparency in revenue reporting in the industry. Civil Society Organisations (ZIPAR and Action Aid) provide research and advocacy on various issues affecting the mining industry. Analysis of general information of the respondents showed that the majority of interviewees had more than 10 years of experience (Figure 3.2) giving adequate experiences in their profession to comprehend taxation issues in the mining sector.

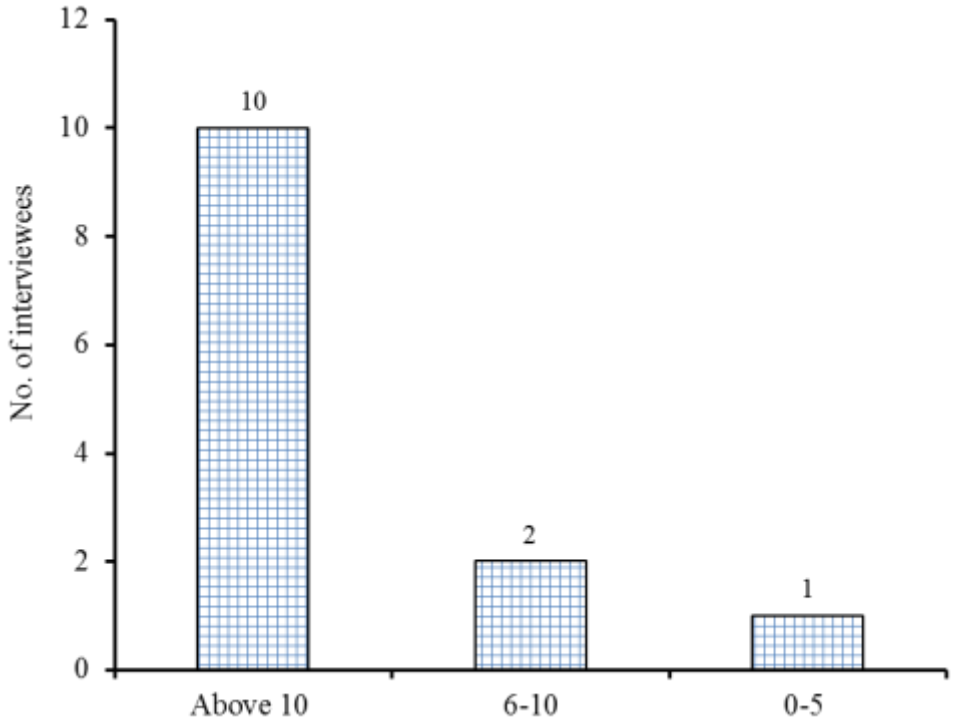


Figure 3.2: Number of interviewees based on years of experience

3.5.4.2 Questionnaire survey

The questionnaire was designed based on the literature review and discussions held with a number of stakeholders in the mining industry. It was meant to investigate the various constructs [given in Section 3.4.3(b)] forming the study objects as presented in Chapter one under Section 1.5.

The demographic attributes surveyed for the respondents include employer organisations, occupation, and number of years (experience) in the profession. The results are as presented in Figures 3.3 to 3.5.

A total of 122 questionnaires were administered to various groups of respondents in the industry and 84 of them were returned (Table 3.7). Of the returned questionnaires, two were excluded because they were not completed as required by the given instructions. After exclusion, 82 questionnaires remained giving a response rate of 67 percent.

Table 3.7: Questionnaires administered to groups of respondents

Stakeholder Group		Issued Questionnaire	Returned	Rejected
1	Mining Companies	52	26	2
2	Ministry of Mines	10	9	
3	Academia	10	10	
4	Zambia Revenue Authority	8	4	
5	ZCCM - IH	6	4	
6	Consultants	10	9	
7	Suppliers	10	7	
8	ZIPAR	4	2	
8	Others	12	11	
	Totals	122	82	2

Walonick (1997) noted that response rates vary widely from one questionnaire to another (10-90 percent), however, well-designed studies consistently produce high response rates. For this study, questionnaire administration had both fairly small number of “unit non-responses” and refusals.

(a) Organisations respondents belonged

The types of organisations which respondents belonged to are shown in Figure 3.3. These units form part of the stakeholders in mining industry with matters of mine taxation implications. Some organisations failed to respond to questionnaires (Bank of Zambia, World Bank, and Ministry of Finance) with no specific reasons given. This gave the "unit-non-responses" which could not be included in the data analysis.

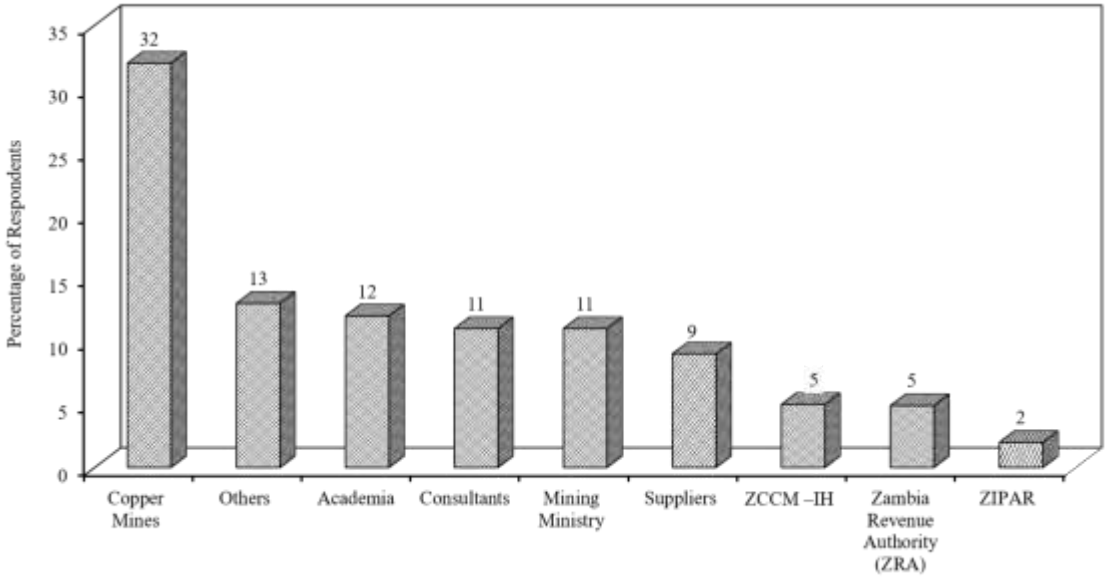


Figure 3.3: Organisations which respondents belonged to

(b) Profession of respondents

Various professions responded to the administered questionnaires and these were as shown in Figure 3.4.

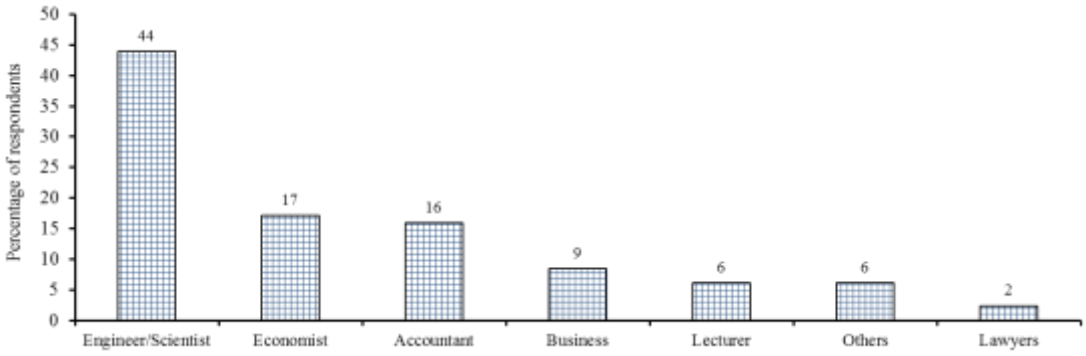


Figure 3.4: Profession of respondents

(c) Experience of respondents

The number of years served by respondents at the time of the study in the mining industry is as shown in Figure 3.5.

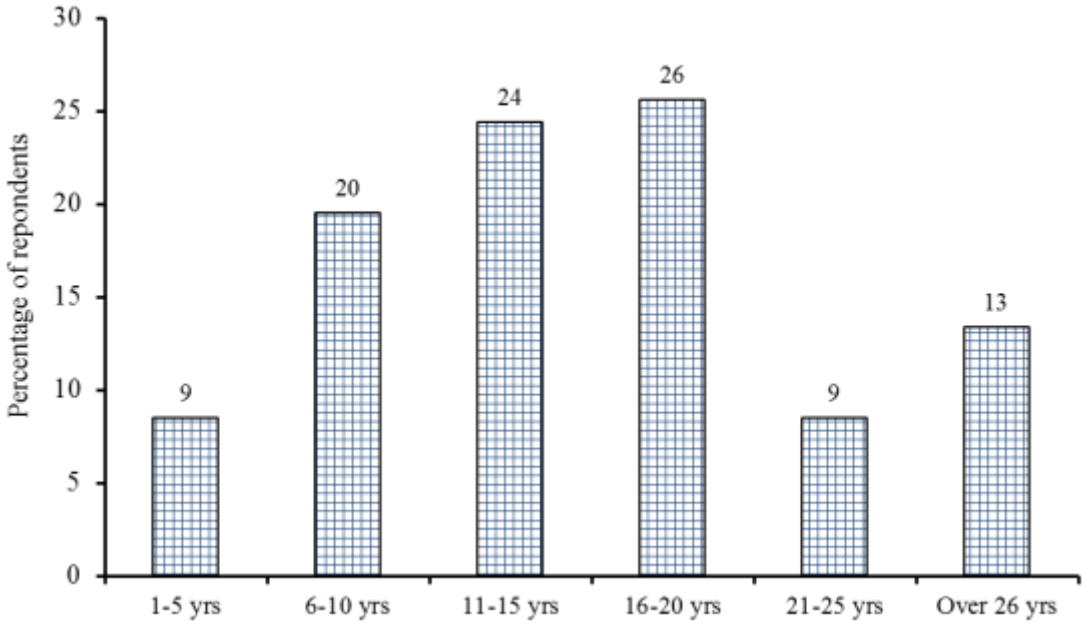


Figure 3.5: Years of experience of the respondents

A combined total of 91 percent of the respondents had more than six years of experience in their various occupations in the industry. This indicates that the majority of the respondents had adequate experience to comprehend issues encompassing mine taxation in the mining industry.

The general demographic information presented above clearly indicated that most of the respondents were sufficiently experienced in their professional dispositions to appreciate and articulate mine taxation issues which can be relied upon. A response rate of 67 percent also indicated that most of the respondents contacted from the stakeholder groups in the mining industry responded to the questionnaire.

3.6 Summary

This Chapter discussed some aspects of literature reviews on research methodology and methods of the study which served as a basis to select the research design, research

methods, population, sampling, data-collection instruments and aspects of data analysis. The research design adopted an exploratory descriptive approach where both questionnaire and semi-structured interviews were used in collecting the data which were analysed by using the SPSS computer statistical package software.

CHAPTER 4

DATA ANALYSIS AND RESULTS

This Chapter presents the findings following the data collected from semi-structured interviews and questionnaire surveys. As a means to achieve this, the Chapter is divided into Sections 4.1 dealing with analysis of survey data from semi-structured interviews while Sections 4.2 - 4.9 present data analysis (findings) based on the various constructs from the questionnaire. Section 4.10 presents a synthesis of results with a summary given in Section 4.11.

4.1 Findings from the semi-structured interview

The collected information from the semi-structured interview was in line with research questions and the gathered literature reviews. Most of the interviews took about one hour. The generated sample included diverse "experts" drawn from the different stakeholder groups in the mining industry. Individual semi-structured interviews were conducted from different stakeholder groups in the mining industry. The findings are presented in Section 4.1.1 - 4.1.13.

4.1.1 Finding one on capturing of optimal rents

Interviewees were asked for opinions on whether Zambia is capturing optimal revenues (rents) from the mining industry. The majority of the interviewees disagreed that the country captures optimal revenues from the copper mining industry.

Nine out of 13 interviewees who agreed to the concept that the country fails to capture optimal rents revealed that;

- institutional capacities for tax administration are weak,
- there is generally poor tax administration and monitoring in the industry,
- incorrect and under declared production statistics exist (mining companies are left to declare production on their own without government's approval or checking),
- there is manipulation of the taxation system by mining companies taking advantage of the existing information asymmetry,

- no optimal taxation value exists to be used as an effective benchmark for negotiations on matters of taxation, and
- regular changes made to the fiscal regimes indicate that the country is still searching for an equitable tax regime to optimise revenue capturing.

On the contrary, four interviewees who consented that the country captures optimal revenues felt that;

(i) government would have nationalised the mines if it had not been capturing optimal rent, and

(ii) the state is economical with the truth on revenue captured by failing to disclose full benefits realised from the industry.

4.1.2 Finding two on concerns for failures to capture equitable rents

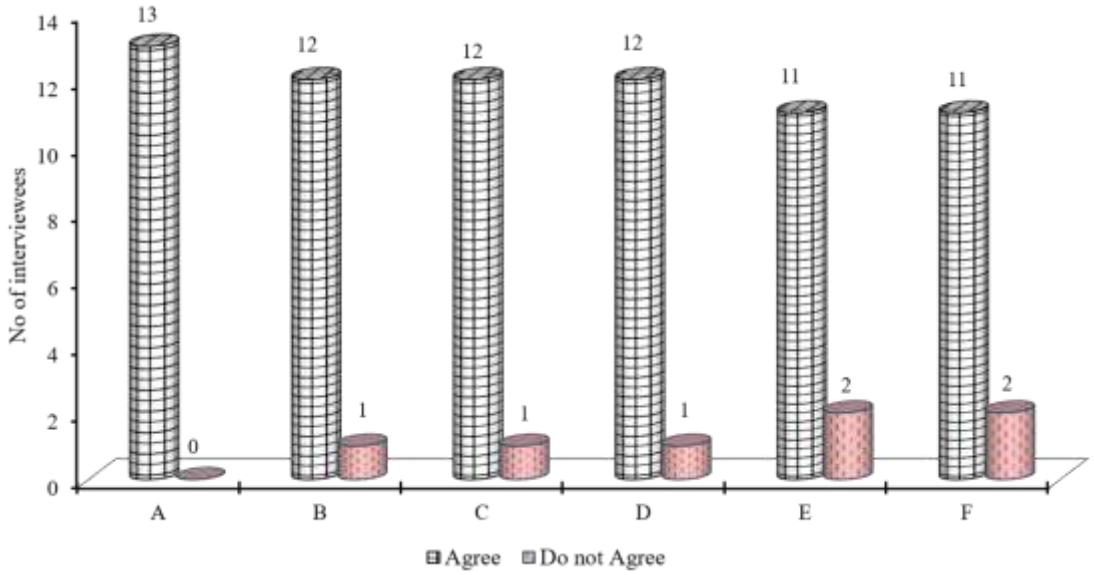
Most of the interviewees consented that it was difficult to justify whether the country captures equitable revenues (rent) from the mining industry because of;

- misleading public opinions on mine taxation,
- revenues not being ring-fenced to develop tangible social and economic projects,
- weak accountability on revenues captured from the mining industry,
- misleading political pronouncements,
- the government being economical with the truth on revenues appropriated, and
- poor transparency about revenues captured from the mines.

Figure 4.1 shows the frequency and sentiments on government's failure to capture equitable revenues.

Some interviewees argued that it is not true that government fails to capture equitable revenues from the mining industry because;

- the mines are audited by ZRA and there is no justification for lack of information from the mines,
- the government is not truthful with what it gets from the mines, and
- some mines are not making huge profits, as indicated by the state, due to high taxes, excessive energy costs and huge input procurement costs.



A - Misleading public opinions on mine revenue **B** - Revenues not ring fenced for sustainable projects
C - Weak accountability of mine revenues **D** - Misleading political pronouncement
E- Government economical with truth on mine revenues **F**- Poor transparency on revenue captured

Figure 4.1: Sentiments on failure to capture equitable revenues

On the other hand, some interviewees felt that the concerns about government's failure to capture equitable revenues can be attributed to;

- incomprehensive reporting by ZEITI which fails to capture all revenue sources and fails to disclose agreements which exist between the government and the investors,
- numerous public pronouncements in Zambia about poor rent capturing,
- a lot of mistrust or poor relationship (no consultative processes) existing between government and investors over taxation matters, and
- generally weak institutional capacities needed for improved tax administration.

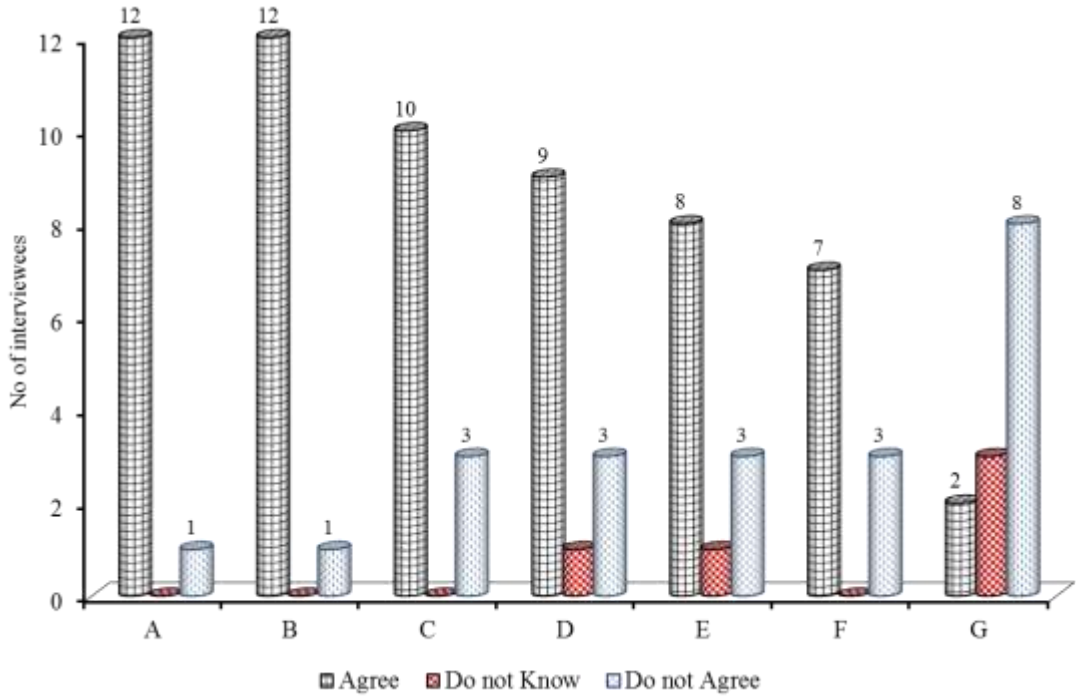
4.1.3 Finding three on reasons for poor rent capturing

The interviewees were asked to affirm reasons responsible for government's poor capturing of equitable revenues from the Zambian mining industry. Majority of the interviewees agreed to the following reasons:

- weak institutional capacities required for tax administration and regulation;

- poor consultation between the mine investors and the government;
- tax avoidance incidences;
- non-equitable equity (stake) participation;
- generous incentives granted; and
- non-competitive tax instruments applied affecting improved tax administration.

Figure 4.2 shows interviewees' perceptions about the poor revenue capturing in Zambian mining industry.



A-Weak institutions for tax administration and regulation **B**- Poor consultation between the investors and government **C**- Tax avoidance incidents **D**- Non-equitable equity (stake) participation **E**- Generous incentives granted **F**- Tax instruments used are not competitive **G**- Failure to institute wind fall tax

Figure 4.2: Reasons for failure to capture optimal revenue (rent)

Most of the interviewees when asked to state why the government failed to optimise the capturing of revenue (rent) indicated that:

- some mines were making losses and could not pay taxes on account of failure to undertake exploration and development;

- the state fails to balance objectives of the investors and government in their policy formulations;
- mineral production and sales values in Zambia are underestimated while costs are overestimated;
- there was poor harmonisation of figures for production and tax collection;
- lack of institutional capacity building needed for production monitoring and tax administration exists;
- government uses wrong information to formulate mine taxes in the sector (case of January 2015 mine fiscal regime);
- secrecy in government agreements which could be acts of corruption; and
- mineral taxation issues are not clearly enshrined in the Zambian constitution.

4.1.4 Finding four on mine taxation failure to optimise rent capturing

When asked to state whether the Zambian mine taxation systems were ideal to optimise rent capturing, 12 out of 13 interviewees disagreed. The following were their responses given:

(a) the Zambian mine tax system suffers from manipulation (tax evasion/avoidance) which government fails to handle;

(b) the mine fiscal regimes have generally failed to balance the competing objectives of the investor and government;

(c) capacity building is lacking both for human resource development and institutions;

(d) the Zambian tax systems yield low contribution from the mining sector compared to other jurisdictions;

(e) weaknesses in institutional capacities lead to challenges in tax administration and regulation of the industry resulting in the failure of the mine tax system to optimise revenue capturing;

(f) the tax regime is punitive (discourages investment) with high revenue based instruments (royalties) making mining companies face hardships to pay taxes;

(g) the mine tax regime is extreme with effective tax rate (ETR) at 50 percent in the 2014 regime and more than 50 percent in the January 2015 regime;
(h) no appropriate technical auditing of the integrated mining investment is done to generate reliable information for arguing the mine taxation matters;
(i) technical attributes like metallurgical recoveries and grades are not well comprehended by the government causing the tax system to remain manipulated and fail to optimise revenues; and
(j) the regime has no stabilisation clauses to protect the government and ensure reasonable flow of tax revenue based on the long investment periods for mining

4.1.5 Finding five on taxation system and sustainable investment promotion

Designing a taxation policy usually requires trading off various government objectives which may include attracting investment, maximising government revenues, and enhancing the developmental impact of mining (ICMM, 2009). In this regard, interviewees were asked to state whether the mine taxation systems in Zambia were ideal for promotion of sustainable investment in the sector. Nine of the 13 respondents agreed to the statement.

The interviewees who concurred with the concept that mine taxation system promoted sustainable investment in the industry gave the following reasons:

(a) notable greenfield projects and continued investment in exploration and development are indications that mining companies are getting expected returns on their investments based on the tax system employed;
(b) there are challenges (gaps) in the taxation system like granted incentives that makes it lopsided and work to the advantage of mining companies;
(c) the existing tax regime is not deterrent as investment in the industry is continuously increasing; and
(d) companies embrace profit maximisation objectives and if losses were made, they would have left for low cost jurisdictions. Their operations are on-going despite the numerous complaints advanced.

The interviewees who disagreed that the mine taxation system promoted sustainable investment in the sector claimed that:

(i) there is no protection of investment in the mining industry because of lack of stabilisation in the taxation regime;

(ii) Zambian mine investment region is high cost (taxes, energy costs and procurement costs); and

(iii) the fiscal regimes are badly structured with no consultation done with various stakeholders.

4.1.6 Finding six on responsiveness of the tax system to "good tax" criteria

Interviewees were asked to indicate whether the mine fiscal regime is responsive to elements of "good tax" criteria. Figure 4.3 shows responses of the interviewees with respect to some of the attributes of the taxation principles.

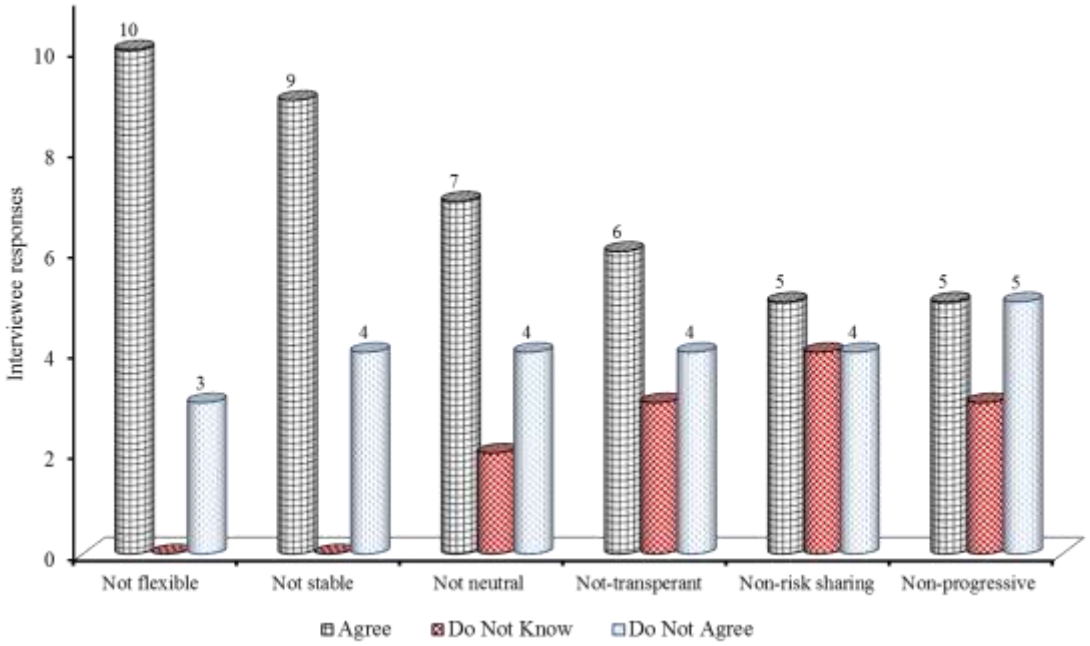


Figure 4.3: Responsiveness of the tax system to "good tax" criteria

Most of the interviewees agreed that the Zambian mine taxation regime is not flexible, stable, neutral, transparent, risk sharing, and progressive.

Interviewees were asked to indicate what could be done to make the taxation system become responsive to the attributes of "good tax" criteria. Most of them gave arguments that the government should design the fiscal regime which:

(a) must be efficient to allow the government institutions to enforce, carry out tax administration duties and audit the mines;
(b) is stable and certain to give confidence to investors;
(c) needs to be well modeled to strike a balance between the investor and the government (overhaul the taxation system);
(d) has fiscal tools that have rates comparable to international norms;
(e) should be guided by policy consistencies to match with the long term mine investment requirement;
(f) meets the objectives of the government and the investors because government places more emphasis on regressive revenue based fiscal tools; and
(g) premised on wide consultation to remove mistrust on matters of rent appropriation between the government and the investors.

Generally, participants expressed concerns related to weak institutional capacities affecting the roles of policy formulation, enhanced tax administration and appropriate regulation of the mining sector.

4.1.7 Finding seven on tax instruments and optimal rent capturing

Interviewees were asked to state how the taxation tools performed in terms of enhancing the optimal capturing of revenue (rents) for Zambia. Figure 4.4 gives responses based on some of the common fiscal instruments employed in the mining industry in Zambia. Equity participation, corporate income tax (CIT), and variable profits tax (VPT) were not considered ideal for optimal capturing of revenues in Zambia while mineral royalty was immaculately considered.

The suggestions and reasons given for failures to optimise the capturing of revenue (rents) by employing these key fiscal tools were:

(a) some mining companies were loss making operations resulting in failure to pay CIT;

(b) unjustifiable high rates of royalties;

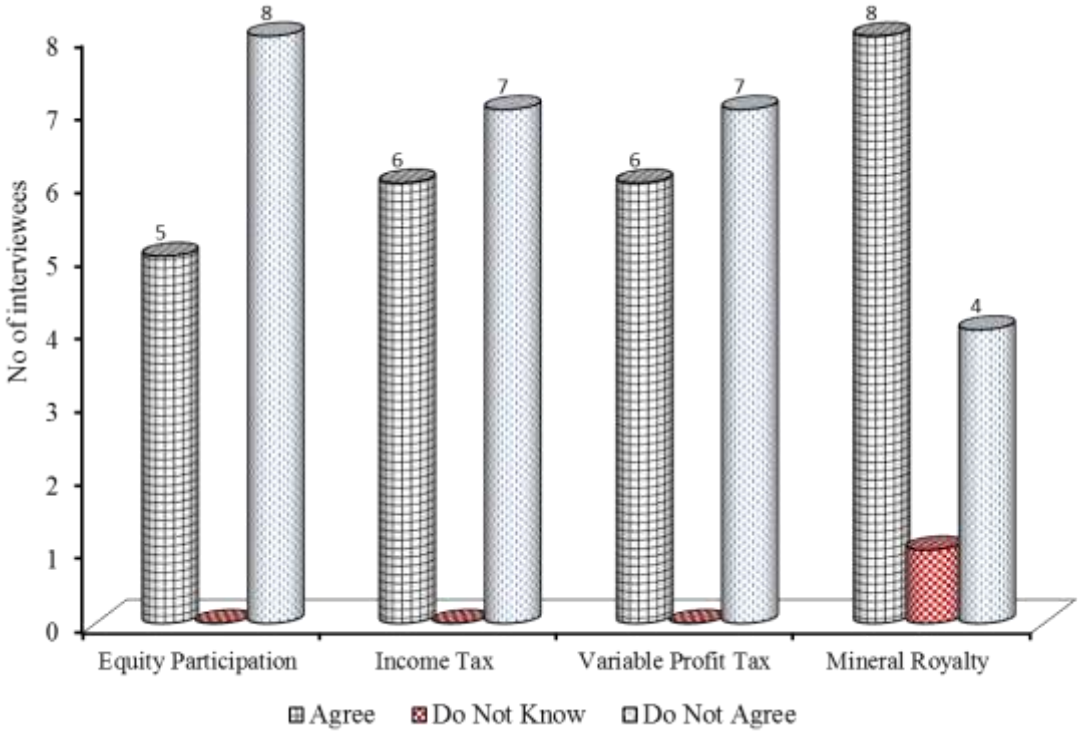


Figure 4.4: Performance of tax instruments in rent capture

(c) CIT and VPT are subject to a lot of falsification (manipulation) due to technical attributes related to mine recoveries, mineralogy, type of ore mined and input costs;

(d) windfall profits tax (WPT) should be implemented as an instrument for taxing surpluses (rents) and the current tax instruments employed are difficult to realise what would be called a proper optimal tax combination;

(e) the current tax instruments are not properly designed to take into account costs (various costs make the mines fail to make profits) and rates of return to capture rents;

(f) use of profit based taxes is difficult to realise reasonable revenues due to hidden costs employed and declared by mining companies; and

(g) the government still has challenges to properly monitor the production volumes needed for taxing the sector using mineral royalty.

Some respondents, however, agreed that mineral royalty tax as a fiscal tool:

- was ideal to capture revenue considering the numerous failures by government to capture revenue using CIT and the non- triggering VPT;
- has lower administrative costs if well structured; and
- should be enhanced with a sliding mechanism (price based) provided CIT is preserved.

4.1.8 Finding eight on competitiveness of the taxation systems

Interviewees were asked to state if the mine taxation system in Zambia is comparable to practices in other jurisdictions. Eight out of 13 interviewees indicated that the fiscal regime is not comparable giving the following reasons:

(i) existence of poor institutional capacities to ensure government captures optimal revenues in Zambia through appropriate tax administration and sector monitoring;

(ii) modern global taxes encourage employment and local content which is lacking in Zambia;

(iii) there is uncertainty and lack of stability making the tax system not competitive thereby affecting exploration spending. Low mineral royalties (like 2 percent in DRC) encourage FDI while countries like Chile support loss making mines; and

(iv) the government changes the taxation system regularly (no stability) without considering the long-term nature of mining investment.

The interviewees who agreed that the mine tax system is comparable to other jurisdictions felt that:

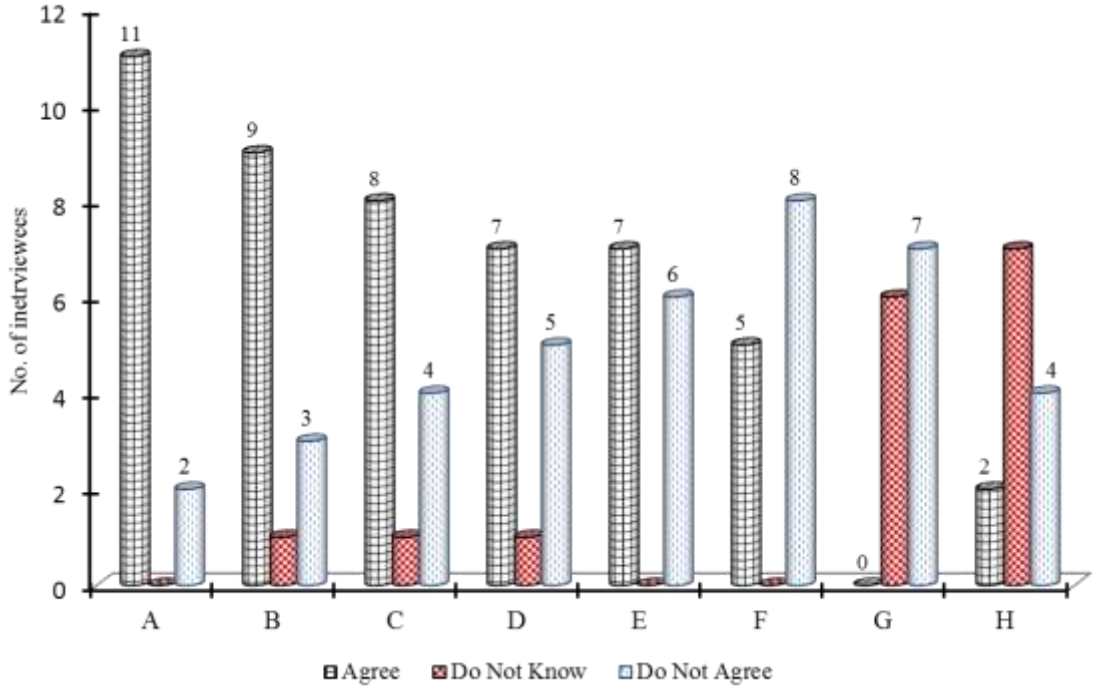
(i) the regimes only lack proper tax administration and monitoring system that need to be improved through institutional capacity building;

(ii) there is no “best practice” in taxation and the fiscal regime is comparable in the sub-region while globally it varies and not comparable; and

(iii) most of the instruments applied are in line with global practices although tax administration challenges still exist in Zambia.

4.1.9 Finding nine on investment incentives and generation of rents

Interviewees were asked to state which investment incentives might make the tax system fail to generate optimal revenue for Zambia from the mining industry. Figure 4.5 shows responses based on the various incentives that are likely to influence the generation of revenue.



A- Employing Tax holidays **B**- No ceilings on profit repatriation **C**- Capital or depreciation allowances used **D**- MFEZ concessions granted **E**- Imposed loss carry forward periods **F**- Imposing stabilisation clauses **G** -Hedging provisions imposed **H**- Imposed ring-fencing

Figure 4.5: Tax incentives affecting flow of rents to Zambia

Respondents agreed that incentives dealing with tax holidays, no ceilings on profit repatriation, capital depreciation allowances, special concessions granted to companies in the Multi-Facility Economic Zones (MFEZs), and loss carry forward provisions led to the taxation systems fail to generate optimal revenues from the industry. The other incentives concerned with imposition of stabilisation clauses, hedging provisions, and ring-fencing provisions were generally considered not to significantly affect the generation of optimal revenue from the mining industry.

On the modest flow of revenue to Zambia because of the granted investment incentives, interviewees felt that:

(a) incentives granted in form of stabilisation clauses are very subjective and can either work successfully for the government or can affect the revenue flow to the government;

(b) MFEZs can enhance economic development in the designated areas but are short of delivering the intended pledges of manufacturing mining inputs and fostering value addition to copper despite the granted tax concessions. This consequently affects the amounts of revenue flowing in form of taxes to the government;

(c) incentives have been lopsided in the mining sector for the benefit of the investors;

(d) there is need to have a leveled playing field for incentives offered in the mining industry as some mining companies enjoy benefits enshrined in the concessions, which are not enjoyed by others, and yet they are not meeting the intended pledges under the granted concessions;

(e) incentives applied should have utmost commitments to develop the provinces and areas where mining occurs;

(f) the country needs to perform critical cost-benefit analysis on the offered incentives and discharge non-performing incentives; and

(g) some incentives by mining companies need to be reviewed as ZDA incentives are only restricted to value addition and job creation which are not fully attaining the intended purposes.

4.1.10 Finding 10 on factors affecting equitable acquisition of rents

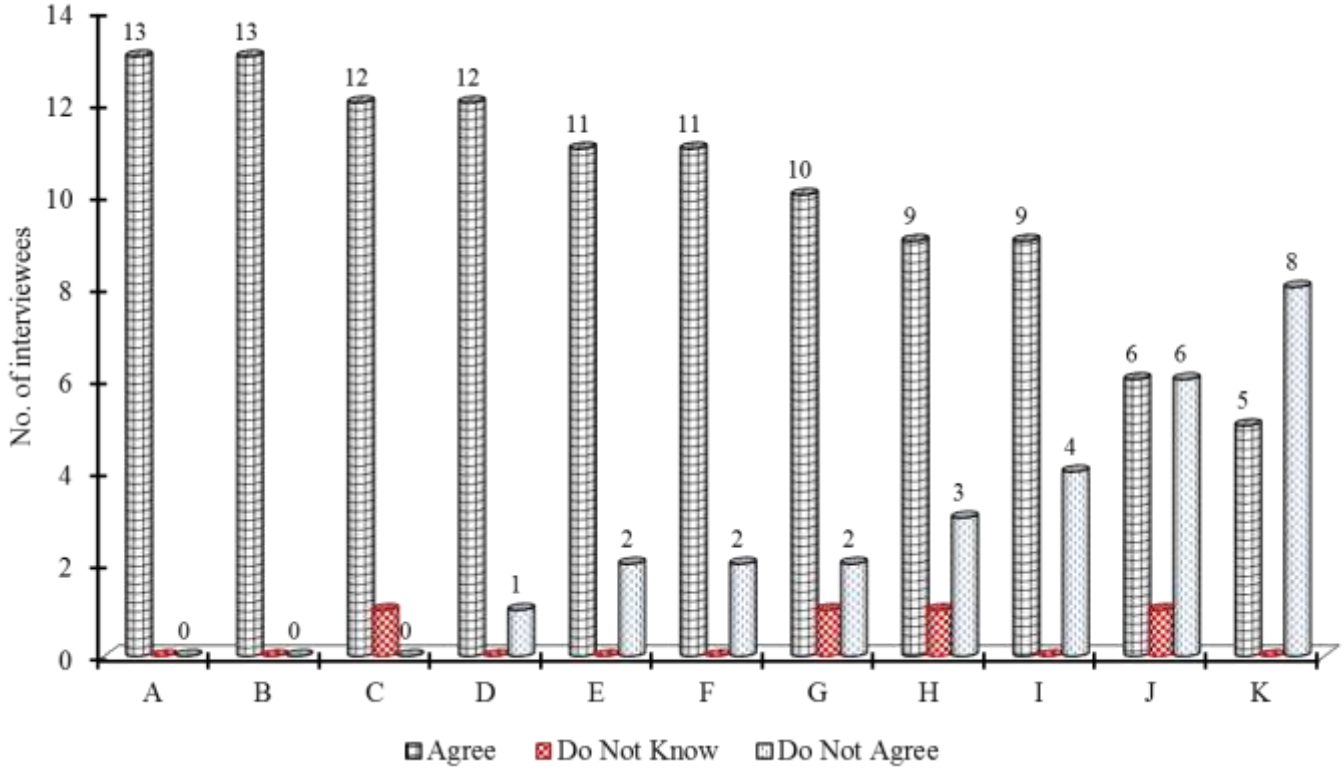
Most of the interviewees agreed that factors affecting the country's optimal capturing of equitable rents from the sector were because of:

- constrained sector monitoring;
- poor valuation of mine products;
- policy inconsistencies;
- poor tax administration and collection;

- information asymmetry; mistrust between investors and the government; and
- tax planning schemes.

Perceptions about no rents (surpluses) being generated from the mining sector in Zambia were dismissed. Figure 4.6 shows the frequency and reasons the country fails to acquire equitable revenues based on responses from interviewees. Interviewees were asked to give reasons on the factors generally affecting the acquisition of equitable rents in Zambia. The interviewees stated that:

(a) lack of strong institutional capacities to assess contained copper and analysis of certificates of exports exist;
(b) no enhanced penalties exist for tax evasion;
(c) there is strong accusation of transfer pricing and excessive general political influence which affect revenue appropriation;
(d) weak legal framework exists which fails to compel mining companies to pay appropriate taxes;
(e) poor coordination between key government agencies leading to gaps or poor flow of important information;
(f) taxation should not be the only consideration to appropriate benefits from the mining industry;
(g) not all mining companies are involved in tax planning since some have compelling issues to deal with sustainable development matters and are exceptionally sensitive to international public opinions on the activities they conduct;
(h) mining companies are economical with information given to the government and most of the information used for taxation arguments is mostly provided by mining companies and it remains unverified;
(i) unit costs of production are not well determined for Zambia and there is no proper means to determine the rent or surpluses from the mining sector;
(j) mining firms are concerned about policy inconsistency by the state which creates uncertainty;



A - Constrained monitoring capacities of the sector
B - Poor valuation of production volumes and mineral grades
C - Policy inconsistencies
D - Poor tax administration and collection
E - Adverse information asymmetry
F - Mistrust between investors and the Government
G - Transfer pricing schemes
H - General tax planning strategies
I - Manipulation of cost data
J - High Effective Tax Rates
K - No rents (surpluses) generated from the sector

Figure 4.6: Opinions on country's failure to appropriate equitable rents

(k) high effective tax rates (ETRs) reported by mines are not commensurate with revenues actually appropriated; and

(l) concerns on tax planning schemes still exist and the taxation system needs to be overhauled if the country has to reap meaningful benefits from its mineral wealth.

4.1.11 Finding 11 on the ideal equity participation model

Interviewees were asked to state whether the current equity stake existing in Zambian mining industry was ideal for optimal capturing of rent. Eleven of the 13 interviewees disagreed. When asked to indicate the form of mechanism government should adopt to enhance the current equity participation, majority of interviewees disagreed with government on the following; nationalising the mines, assuming state-owned enterprise (SOE) approach, allowing total private ownership, taking up paid equity on commercial terms, and increasing shareholding stake from the current status.

However, interviewees agreed that government should maintain "free carried" equity interest and adopt jointly owned shareholding structure (at 50 percent each shareholding). The modes government can adopt to improve on its equity participation in the mining industry based on responses from interviewees are shown (Figure 4.7).

When asked to give reasons needed to improve equity stake in the Zambian mining industry, interviewees gave the following perceptions:

(a) government does not pay capital requirements in some mining projects based on the current equity participation system which creates skewed financial risks for mining companies;

(b) there are still no benefits realised to the fullest under the current equity stake in Zambia and the government as the owner of mineral resources can negotiate for a workable equity stake;

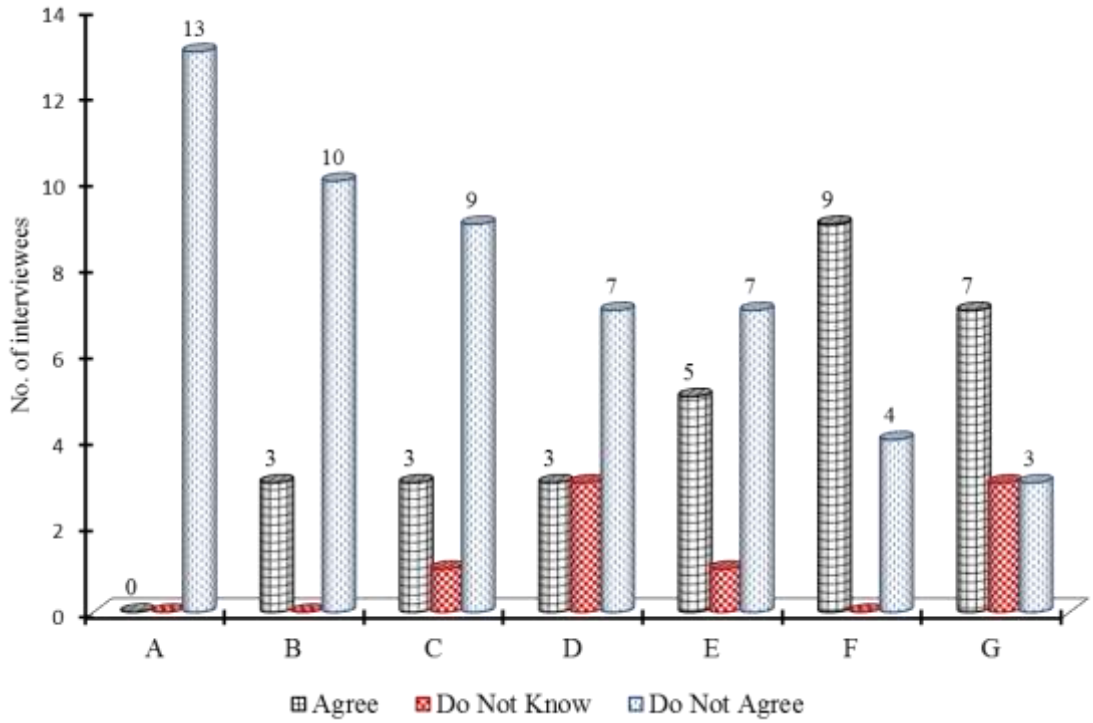
(c) the government can uphold current equity stake but needs to improve on institutional capacities for proper monitoring of the sector;

(d) government should check with other jurisdiction (i.e. Chile and Botswana) on how the best practices on equity stake have worked;

(e) ZCCM-IH fails to publish price participation agreements (PPA) existing with some mining companies and it is difficult to reconcile capital structure when

ZCCM-IH does not contribute funds towards capital requirements in the privatised mines;

(f) the current equity stake does not provide the government with equitable representation needed to influence shareholding decision-making in the mining industry;



A- Adopt nationalisation **B**- Assume state-owned enterprise (SOE) mode **C**- Allow total private investment **D**- Take paid up equity on commercial terms **E**- Increase shareholding stake **F**- Maintain free - carried equity interest **G**- Adopt jointly owned (equal shareholding) stake

Figure 4.7: Measures government should adopt to enhance its equity stake

(g) government should renegotiate its equity stake in the privatised mines since ZCCM-IH was formed on an experimental basis during the privatisation process without putting in place the likely measures to fully benefit from the equity participation;

(h) share of government stake in the mines is low. Equity stake above 35 percent would be ideal for Zambia than the current of up to 20 percent which gives low participation and low government take; and

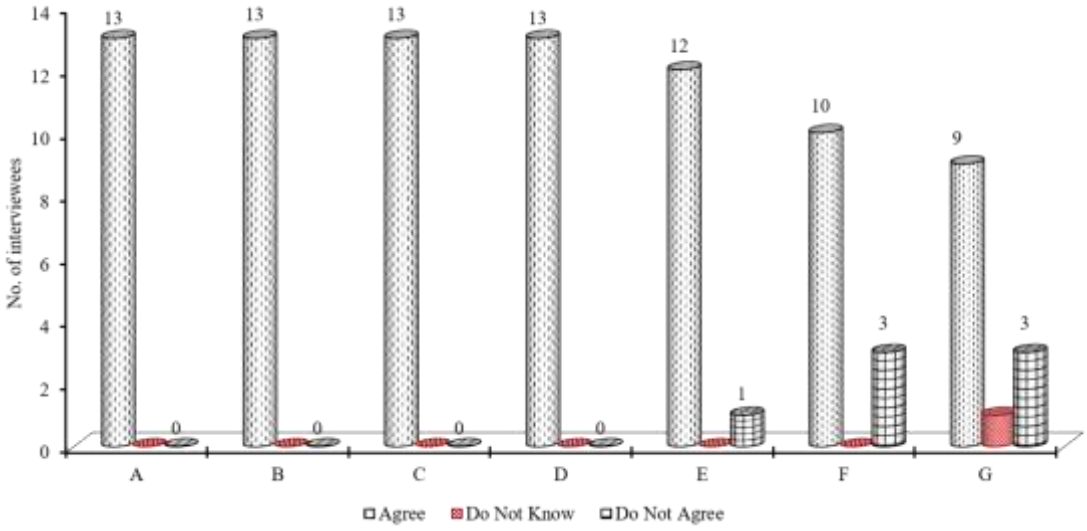
(h) government policy on equity participation in the mining industry is restrictive for new mining projects and other processing mining companies as it precludes the

state to take up “free” interest thereby allowing total private interest. This creates a lost opportunity to benefit from dividends from new profit-making mining projects

4.1.12 Finding 12 on local content as an additional benefit to mine taxation

Interviewees were asked to state how measures to boost local content participation by local entrepreneurs could be enhanced. Figure 4.8 presents responses on enhancing local content participation by local suppliers. All interviewees agreed that there should be:

- enactment of policies to create local industrial base;
- development of business environment to create linkages;
- improvement in line of credit (LOC);
- local preferential procurement plans; and
- legislate value addition.



A - Develop policy to create local industrial base **B** - Improve business environment to enhance linkages **C** - Strengthen legal, institutional and regulatory framework on local content **D** - Improve line of credit available to suppliers **E**- Reduce cost of borrowing to make capital available **F** - Adopt local preferential procurement strategies **G** - Legislate to encourage value addition

Figure 4.8: Measures to improve local content in Zambia

Interviewees were requested to give any further reasons for enhancing local content development in Zambia. Most of them felt that:

(a) local original equipment manufacturers (OEM) for most products are lacking in the Zambian copper mining industry and local content legislation need to be enhanced to promote integrated participation by local suppliers;

(b) there should be preferred local procurement of labour (employment);

(c) the quality of local products from indigenous suppliers need to be improved if they are to meet the standards required by the mines;

(d) there is substantial dependence on foreign imported consumables and other inputs used in the mining industry. Government should offer incentives to local entrepreneurs to enhance local content as a means to create employment;

(e) government should enhance value addition activities in the industry so as to embrace other copper products (manufacturing products) beyond copper cathodes;

(f) the system of local preferential procurement as applied in government in terms of supplied goods and services should be considered for enactment in the mining industry;

(g) government should analyse capacities of local suppliers and if they exist, then it should provide mechanism for preferential supplying;

(h) the state needs to resolve the problems were mine owners discriminate against the local suppliers claiming that the quality and standards of goods local entrepreneurs supply are poor. Government should fully implement the provision in the MMMD Act on local content;

(i) there is a limit to which local supplies can satisfy the mines as goods are supplied based on technology and specifications by the mines. Zambia is neither industrially nor technologically advanced country to create standard products needed for the mines;

(j) some local entrepreneurs are not competent to supply on account of compromised quality of the products, failure to meet obligations, and high costs of doing business; and

(k) local industrial base through industrialisation needs to be developed in the country to produce standard and competing products for the mining industry.

4.1.13 Finding 13 on government driven corporate social responsibility (CSR)

In order to improve non-fiscal benefits from the mining sector, interviewees were asked to state whether CSR should be government driven or legislated. Eleven out of 13 interviewees disagreed that CSR should be legislated. The following were reasons given by the interviewees:

(a) companies perform CSR out of goodwill run on a voluntary basis and legislation might introduce taxation concerns;

(b) CSR benefits from the sector are discrete from the strenuous mine taxation settlements;

(c) government needs to design ways of properly undertaking workable environmental regulations as a component in CSR;

(d) CSR is voluntary and meant to pass goodwill to communities. There is lack of reinvestment by the government in communities where mining occurs. Therefore, CSR should be administered and driven by local communities or local governments to ensure that benefits get equitably distributed to areas where mining occurs;

(e) mining companies in Zambia employ workers based on activities and cannot be dictated to have a specified number of employees for CSR needs. CSR runs on a voluntary basis and global trends are that CSR is driven by the desire of the company; and

(f) legislation of CSR might attract full expensing of its costs for taxation purposes. This has potential to create taxation challenges and put strain on government institutions which already have some challenges to undertake reasonable tax administration roles in the mining industry.

Interviewees in support of legislating CSR as an additional benefit to mine taxation recounted that;

- taxation rates and amounts in policy pronouncement to support local communities through CSR should be agreed,
- local governments (councils) should be given roles to coordinate CSR in the mining areas, and

- once it is legislated, CSR would become mandatory provided the government enhances institutional capacities to check the mine costs likely to tamper with taxable income.

4.2 Findings from the questionnaire survey

The analysis of results from questionnaire survey using descriptive statistics is presented in Section 4.3 - 4.11. These is done in response to research questions as means to meet the study objectives.

4.3 Finding 14 on mine taxation responsiveness to "good tax" criteria

This construct in the questionnaire survey aimed at establishing whether the mine taxation system in Zambia is responsive to the attributes of "good tax" criteria. From the received questionnaires, only 23 percent of the respondents agreed to the statement while 14 percent remained neutral and 63 percent disagreed. The results by respondents on the responsiveness of the Zambian mine taxation system to "good tax" criteria made up of eight studied items are as presented in Figure 4.9.

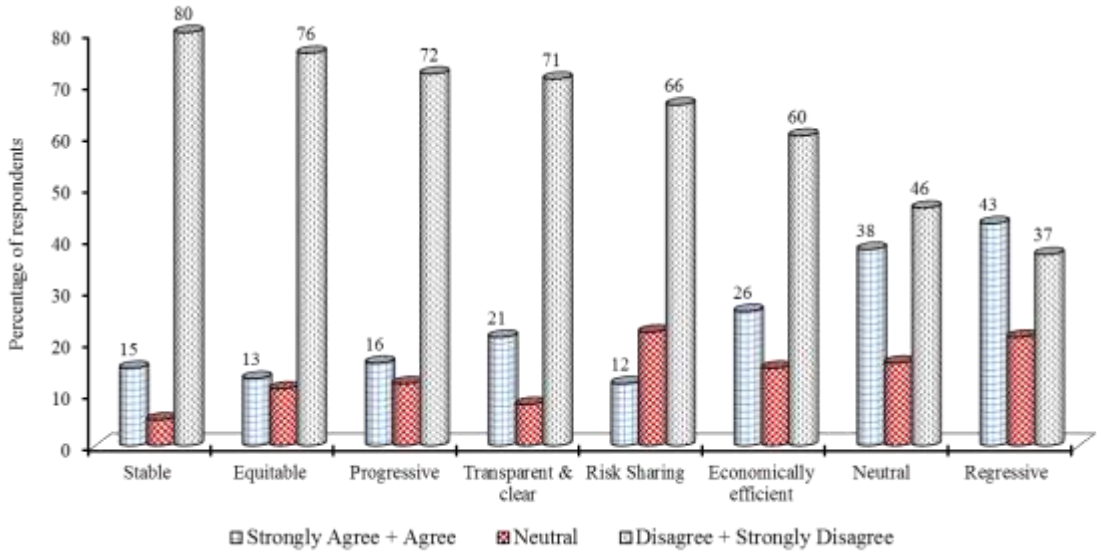


Figure 4.9: Responsiveness of the taxation system to "good tax" criteria

(a) Stability

Only 15 percent of the respondents agreed that the mine taxation regime in Zambia is stable while 80 percent disagreed with five percent being neutral. The median and modal response for this statement is "disagree".

(b) Equity

Only 13 percent of the respondents agreed to the statement that the mine fiscal regime in Zambia is equitable. Seventy-six percent of respondents had a combined score of "strongly disagree" and "disagree" with a median response of "disagree" while 11 percent were neutral.

(c) Progressive

Only 16 percent of respondents had a combined score of "strongly agree" and "agree" to the statement that the fiscal regime in Zambia is progressive. Seventy-two percent of respondents disagreed with 12 percent being "neutral".

(d) Transparency and clarity

Seventy one percent of the respondents had a combined score of "strongly disagree" and "disagree" to the assertion that the mine fiscal regime in Zambia is transparent and clear. Only 21 percent agreed and eight percent were neutral.

(e) Risk sharing

Only 12 percent of respondents had a combined score of "strongly agree" and "agree" to the claim that the Zambian mine tax regime allows risk sharing fairly between the government and investors. Majority of the respondents (66 percent) disagreed while 22 percent were neutral.

(f) Economic efficiency

Only 26 percent of respondents agreed to the statement that the fiscal regime in Zambia is economically efficient. Sixty percent of the respondents had a combined score of "strongly disagree" and "disagree" with a median response of "disagree" while 14 percent were neutral.

(g) Neutrality

Only 38 percent of respondents agreed to the statement that the mine fiscal regime in Zambia is neutral. Forty-six percent of the respondents had a combined score of "strongly disagree" and "disagree". The median response was neutral with 16 percent remaining neutral.

(g) Regressive

Forty-three percent of respondents had a combined score of "strongly agree" and "agree" with a median response of "neutral" to the assertion that the mine taxation system was regressive. The response for disagree was 37 percent while 20 percent of them were neutral.

4.4 Fiscal instruments used and regime competitiveness

This construct was designed to get respondents' perception on whether the key tax instruments used in the Zambian mine fiscal regimes were well structured to optimise the capturing of revenue while remaining globally competitive.

4.4.1 Finding 15 on fiscal tools and optimal rent capturing

From the received questionnaires, only 34 percent of the respondents agreed that the current key fiscal tools employed in the mine taxation regime in Zambia were satisfactorily structured to optimise the capturing of rents while 53 percent disagreed and 13 percent remained neutral. The results about the respondents' perceptions on each of the fiscal instrument studied are as shown in Figure 4.10.

(a) Equity participation

Only 20 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that the current equity participation in the fiscal regime in Zambia is economically efficient for optimal rent capturing. Sixty-seven percent of the respondents had a combined score of "strongly disagree" and "disagree" while 13 percent were "neutral". The modal response was "strongly disagree".

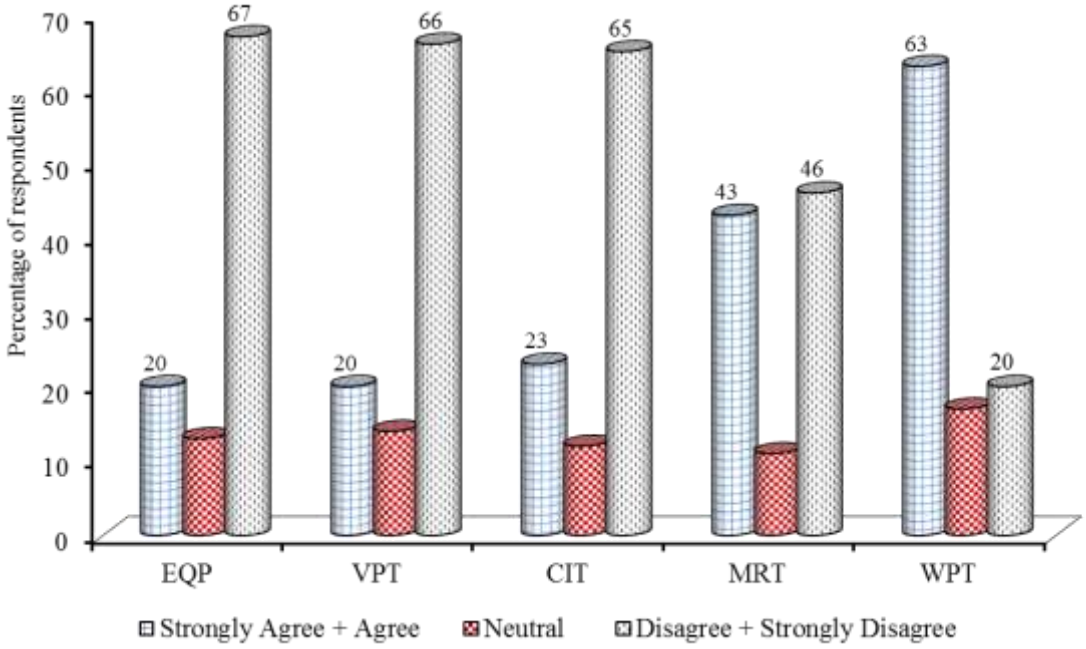
(b) Variable profits Tax

Only 20 percent of respondents had combined score of "strongly agree" and "agree" to the statement that variable profit tax is efficiently designed to capture optimal rents in Zambia. Sixty-six percent had a combined score of "disagree" and "strongly disagree" while 14 percent remained neutral.

(c) Corporate income tax

The statement that CIT is administratively efficient to capture revenues had a combined score for "agree" and "strongly agree" at only 23 percent. Sixty-five percent had a

combined score of “disagree” and “strongly disagree” with 12 percent for “neutral”. The modal response was “disagree” for this statement.



EQP – Equity participation is ideal for rent (revenue) capture, **VPT** – Variable profits tax is efficiently designed to capture rents, **CIT** – Corporate income tax is administratively efficient to capture rents (revenues), **MRT**- Mineral royalty tax is well designed to capture rents (revenues), and **WPT** – Windfall profit tax is ideal to capture rents

Figure 4.10: Tax instruments design and the capture of rents

(d) Mineral royalty tax

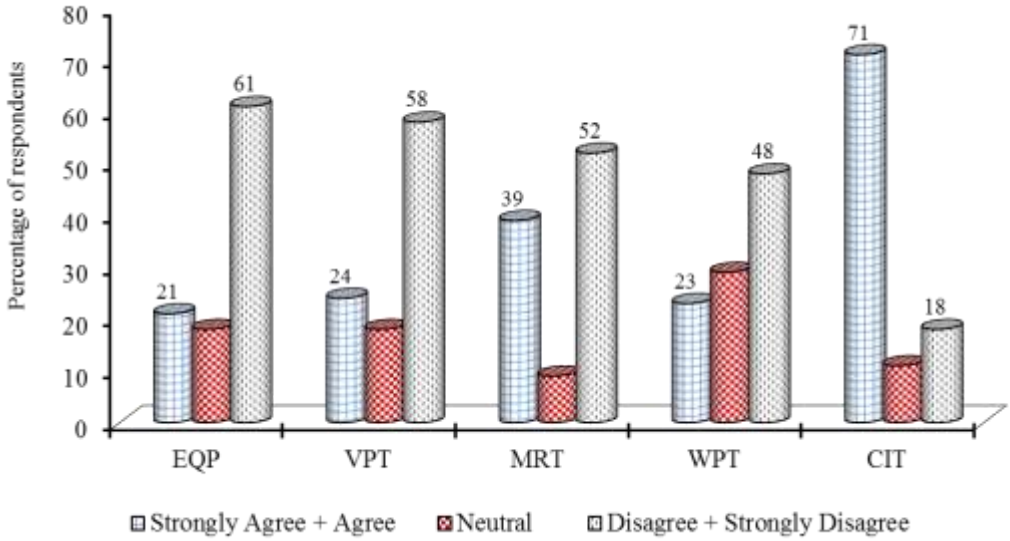
Forty-six percent of respondents in this study had a combined score of “disagree” and “strongly disagree” to the statement that mineral royalty tax is well structured to capture rents (revenues) in Zambia while 43 percent had a combined score of “agree” and “disagree” with 11 percent being neutral. The modal score for the statement was “disagree”.

(e) Windfall profits tax (WPT)

The statement that windfall profits tax (WPT) if re-introduced could be administratively efficient to capture rents in Zambia had a combined score for “agree” and “strongly agree” at 63 percent of the respondents. The score for “disagree” and “strongly disagree” was at 20 percent with 17 percent being “neutral”.

4.4.2 Finding 16 on competitiveness of the fiscal tools

This part of the construct aimed at assessing the extent to which key tax instruments used were comparable to practices in other jurisdictions. The overall indication from the questionnaires was that only 36 percent of respondents agreed to tax instruments being comparable to practices in other jurisdictions while 47 percent disagreed with 17 percent being neutral. Figure 4.11 shows the results of the respondents' perceptions on the competitiveness of the key fiscal tools.



EQP- Equity participation in line with global practice **VPT**- Variable profit tax competitive with global practice **MRT-** Mineral royalty tax structured in line with global norms **WPT**- Windfall profit tax if applied is consistent with global practices **CIT-** Corporate income tax is competitive and matched with global practice

Figure 4.11: Competitiveness of the fiscal tools

(a) Equity participation

On the statement that the practice of Zambia's equity (stake) participation in the mining industry is in line with global practice, only 21 percent of the respondents had a combined score of "agree" and "strongly agree" while 61 percent had a combined score of "disagree" and "strongly disagree". Eighteen percent were neutral and the statement had both the modal and median response of "disagree".

(b) Variable profits tax

Only 24 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that variable profits tax in Zambia operates in line with the global practices. Fifty-eight percent had a combined score of "disagree" and "strongly disagree" while 18 percent were "neutral". The modal response score was "strongly disagree".

(c) Mineral royalty tax

Asked to state whether the mineral royalty is structured in line with global norms, 52 percent of the respondents had a combined score of "disagree" and "strongly disagree" to the statement, while 39 percent had a combined score of "agree" and "strongly agree" with 19 percent being "neutral".

(d) Windfall profits tax

Only 23 percent of respondents in this study had a combined score of "agree" and "strongly agree" to the statement that windfall profits tax if applied in Zambia is in line with global practices to capture rents. Forty-eight percent had a combined score of "disagree" and "strongly disagree" with 29 percent being neutral. The median and modal response for the statement was "neutral".

(e) Corporate income tax

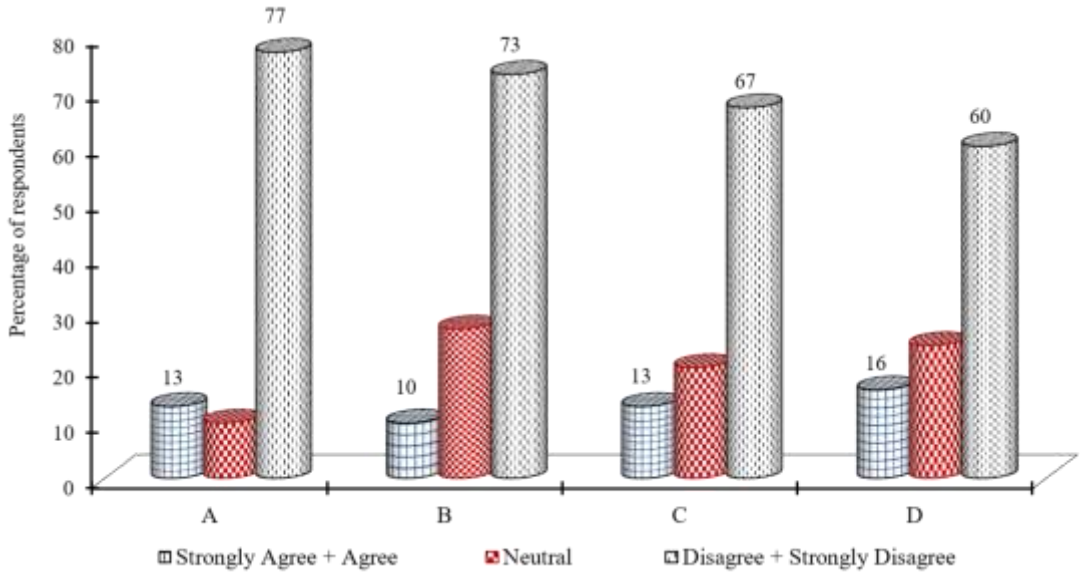
On the statement that CIT in Zambia is competitive with global practices, 71 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement, while 18 percent had a combined score of "disagree" and "strongly disagree" with 11 percent being "neutral". The median and modal response for the statement was "agree".

4.4.3 Finding 17 on taxation system and expected "government take"

The intention for this part of the construct was to ascertain whether the Zambian mine tax system has performed well to meet the "government take" with regard to;

- capturing reasonable share of rent,
- revenue collection being commensurate with effective tax rate (ETR),
- creation of rent available for equitable sharing, and
- consistent determination of ETR.

The combined score of the attributes showed that only 13 percent of the respondents agreed to the view of good performance of Zambia's fiscal regime, while 69 percent disagreed and 18 percent were neutral. Figure 4.12 presents the results of the respondents' perception on the attributes concerning the performance of the mine fiscal regimes in Zambia.



A - Captures reasonable share of rents **B** - Collection of revenue in line with ETR
C - Creation of equitable rents **D** - ETR well determined

Figure 4.12: Performance of the taxation system

(a) State's capture of reasonable share of rents

Only 13 percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that the country captures reasonable share of rents under its mine taxation systems. Seventy-seven percent of the respondents had a combined score of "disagree" and "strongly disagree" while 10 percent were neutral.

(b) Collection of revenue consistent with ETR

On the statement that the country collects revenue commensurate with ETR, only 10 percent of respondents had a combined score of "agree" and "strongly agree". Seventy-three percent of the respondents had a combined score of "disagree" and "strongly disagree" while 17 percent had a "neutral" score.

(c) Creation of equitable rent

Just 13 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that the taxation system generates equitable rents to be shared between the government and investors. Sixty-seven percent of the respondents had a combined score of "disagree" and "strongly disagree" while 20 percent were neutral.

(d) Determination of ETR

For the statement that ETR is well determined in the Zambian mining industry, only 16 percent of the respondents had a combined score of "agree" and "strongly agree" while 60 percent had a combined score of "disagree" and "strongly disagree" and 24 percent were neutral.

From the study, majority (69 percent) of the respondents felt that the performance of the mine taxation system in Zambia has not met the expected government take in terms of capturing of reasonable share of rent, collection of revenue in line with ETR, creation of equitable rents, and reliable determination of ETR.

4.5 Market condition responsiveness and production-based taxes

This component of the construct is aimed at understanding whether the taxation system in Zambia (i) is responsive to changing market conditions and costs, and (ii) should be based on production than profitability. The results of the data analysis are explained below.

4.5.1 Finding 18 on mine taxation response to changing market conditions

Based on the statement that Zambia's fiscal regime does not flexibly respond to global changes in market prices and costs, 72 percent of respondents agreed to the statement while 17 percent disagreed with 11 percent being neutral. The statement had a median and modal response of agree.

4.5.2 Finding 19 on taxation focusing on production than instead of profitability

For the statement that the taxation system in Zambia should be focused on production rather than profitability, 82 percent of the respondents agreed. Ten percent were neutral while 8 percent disagreed. The modal response for the statement is "strongly agree".

4.5.3 Finding 20 on competitiveness of the Zambian mine taxation system

Respondents were asked to state whether the Zambian mine taxation system is comparable to what is practiced in other jurisdictions. Eighty-four percent of respondents indicated that the tax regimes are not comparable to international practices while only 16 percent agreed. Respondents who indicated that the regimes are not comparable to international practice were asked to explain why and how the tax systems can be modified to generate reasonable flow of the share of rents consistent with performances in other jurisdictions. Figure 4.13 shows the coded responses of the respondents.

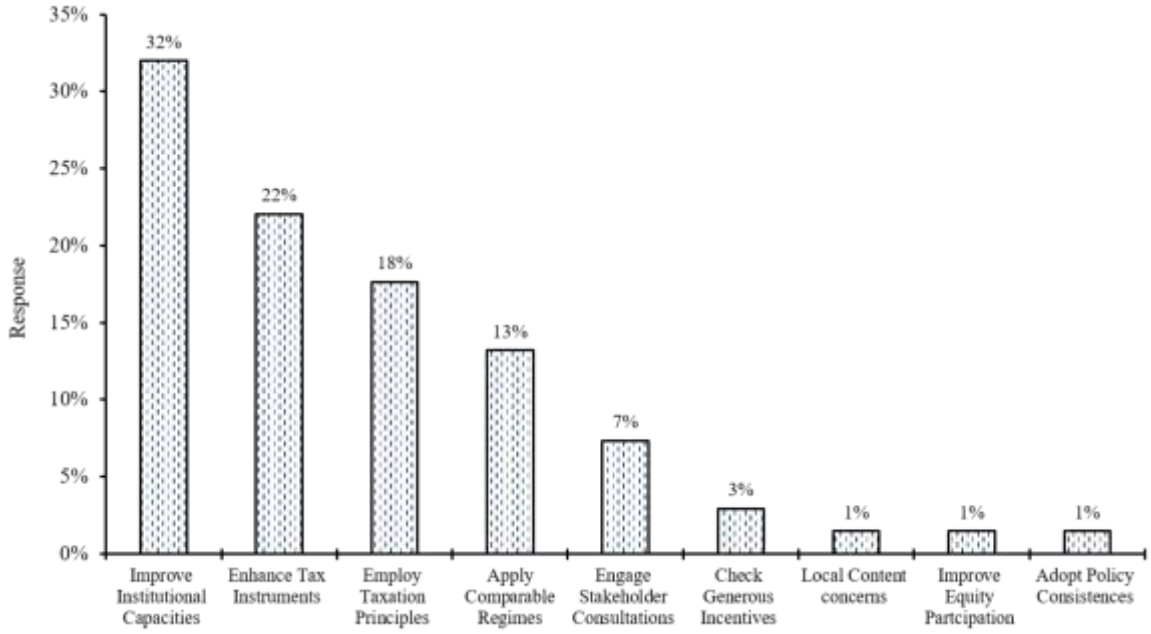


Figure 4.13: Respondents' coded responses on improving the tax system

These respondents felt that mine taxation regime in Zambia need to:

(a) have improved institutional capacities (required for tax administration, checking tax planning practices, monitoring production and auditing, and improved agency coordination to allow free flow of information between related government institutions);

(b) have improved fiscal tools (using sliding fiscal instruments and reintroduce windfall tax);

(c) be responsive to "good tax" criteria dealing with stability, transparency, predictability and neutrality;
(d) remain competitive in terms of tax rates, bases and type of royalty-tax instruments applied;
(e) allow wide stakeholder consultations during mineral taxation policy formulation;
(f) improve and employ clear investment incentives;
(g) review equity participation to allow optimal benefits to be accrued as applied in other jurisdictions (Botswana and Chile);
(h) be guided by consistency in the manner government policies are discharged; and
(i) be enshrined in the republican constitution and that Zambia should legislate and not negotiate mine taxation issues.

Sixteen percent of the respondents who agreed to the statement about the fiscal regime being competitive were asked to give reasons why Zambia fails to generate reasonable flow of revenues from the industry. Figure 4.14 shows the coded perceptions as presented by the respondents. The respondents who were agreeable indicated that there were taxation challenges relating to:

(a) weak institutional capacities dealing with matters of tax administration, production and audit monitoring;
(b) failures by the tax system to meet the criteria of economic perspectives;
(c) letdowns in improving fiscal tools (use of windfall tax needed);
(d) unclear and non-transparent granted incentives affecting government take; and
(e) mistrust existing between government and the mining companies (information asymmetry).

There were also arguments that NGOs in Zambia influence government decisions on mine taxation matters by putting pressure on the state to regularly review the taxation regimes.

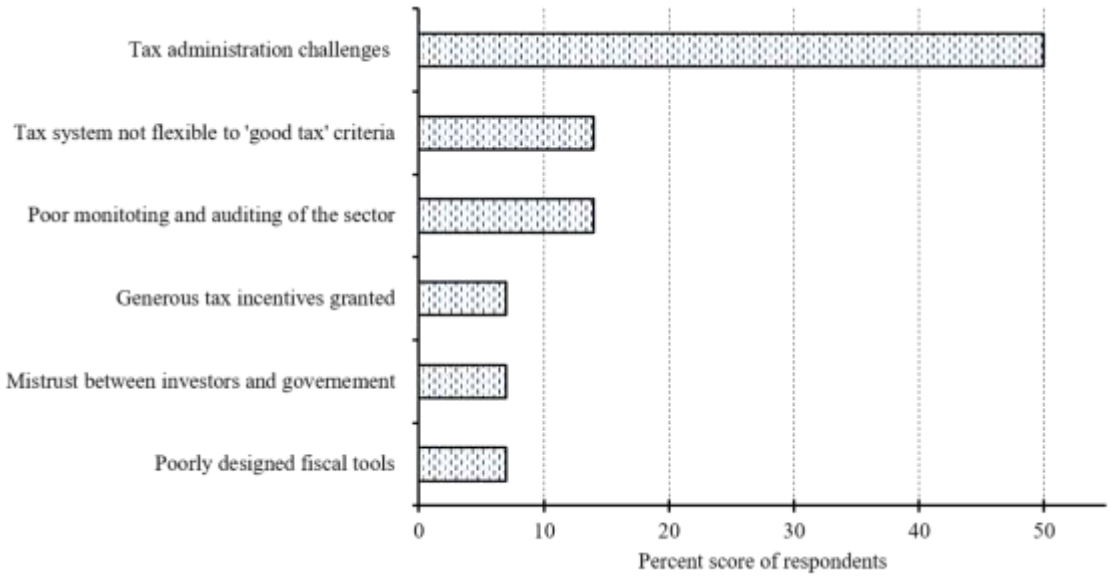


Figure 4.14: Reasons for failure to generate realistic rents

4.6 Investment tax incentives

4.6.1 Finding 21 on incentives and flow of revenue to the state

In terms of understanding whether the specific tax incentives increased the flow of revenue (rents) to the government, only 25 percent of the respondents agreed while 57 percent disagreed with 18 percent being neutral.

The results from the respondents' perception on the studied incentives were as shown in Figure 4.15.

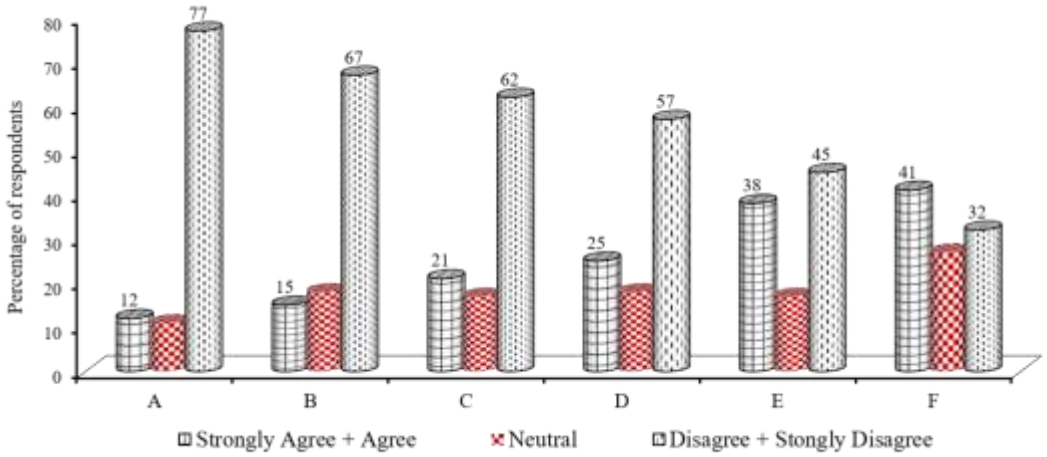
(a) Profit externalisation

Only 12 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that profit externalisation incentive leads to flow of revenue to the country. Majority, (77 percent) had a combined score of "disagree" and "strongly disagree" with 11 percent remaining neutral. The modal response score for this statement was "strongly disagree".

(b) Tax holidays

Merely 15 percent of the respondents had a combined score of "agree" and "strongly agree" to the assertion that tax holidays lead to flow of revenue to the country. Sixty-

seven percent had a combined score of “disagree” and “strongly disagree” while 18 percent were neutral. The statement had a “strongly disagree” modal response score.



A - Profit externalisation **B** - Tax holidays **C** - Loss carry forward
D - Accelerated depreciation **E** - Capital allowances provisions **F** - Stabilisation clauses

Figure 4.15: Incentives resulting in flow of rent to government

(c) Loss-carry forward periods

Just 21 percent of the respondents had a combined score of “agree” and “strongly agree” to the statement that loss carry forward periods lead to flow of revenue to the country. Sixty-two percent had a combined score of “disagree” and “strongly disagree” with 17 percent remaining neutral. The modal response score for this statement was “strongly disagree”.

(d) Accelerated depreciation

Twenty-five percent of the respondents agreed to the statement that accelerated depreciation leads to improved government take while 57 percent disagreed and 18 percent were neutral. The modal and median response for this statement was “disagree”.

(e) Capital allowance provisions

Forty-five percent of the respondents disagreed to the statement that capital allowance provisions enhance increased flow of revenue to the government while only 38 percent agreed and 17 percent were neutral.

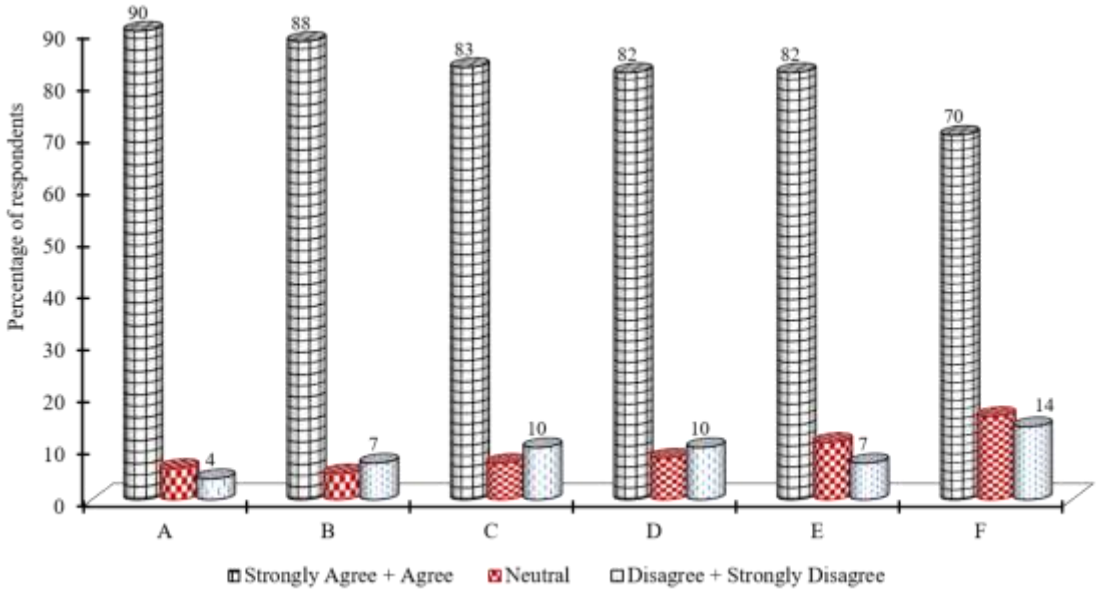
(f) Stabilisation clauses

Forty-one percent of the respondents agreed to the statement that stabilisation clauses in the fiscal regimes enhanced the flow of rents (revenue) to the government while 32 percent disagreed and 27 percent were neutral.

From the analysis, it was established that most (57 percent) of the respondents disagreed that the tax incentives increased "government take" or the flow of rent to the state based on the studied statements.

4.6.2 Finding 22 on incentives and tax system performance

This part of the construct was directed at evaluating the performance of the mine fiscal regime based on the items dealing with investment incentives in the Zambian mining industry. A total score of 82 percent of respondents agreed that the tax system has not performed well based on the various features linked with granted tax incentive while nine percent remained neutral and the other nine percent disagreed. The results from the respondents' perception on the various aspects of the tax incentives are as shown in Figure 4.16.



A - Need to review the tax incentives **B -** Lack of transparency & accountability in granting incentives **C** - Cost benefit analysis of incentives not determined **D** - Zambia still offers generous incentives to attract investment **E** - Incentives favour investors more than Government needs **F** - Rents captured are influenced by tax incentives

Figure 4.16: Concerns on mine tax incentives in Zambia

(a) Need to review the tax incentives

Ninety percent of the respondents agreed to the statement that investment tax incentives in Zambia need to be reviewed while six percent were neutral and four percent had a combined score of “disagree” and “strongly disagree”.

(b) Transparency in granting tax incentives

Eighty-eight percent of the respondents agreed to the statement that there is lack of transparency and accountability in the way tax incentives are granted in Zambia. Seven percent had a combined score of “disagree” and “strongly disagree” and five percent were neutral.

(c) Cost-benefit analysis for tax incentives

Eighty-three percent of the respondents agreed to the statement that government fails to perform cost-benefit analysis for the granted tax incentives while 10 percent disagreed with seven percent being neutral.

(d) Generous incentives still offered in Zambia

Respondents were asked to state whether the government still offers generous incentives to attract investment in the industry. Eighty-two percent of the respondents agreed to the statement while 10 percent disagreed and eight percent were neutral.

(e) Lopsided tax incentives

Eighty-two percent of the respondents had a combined score of “agree” and “strongly agree” to the statement that most of the incentives granted favour investors more than government needs in the industry while 11 percent were neutral and seven percent recorded a combined score of “disagree” and “strongly disagree”.

(f) Rents captured influenced by incentives

Respondents were asked to state whether the amounts of government revenue (rent) captured get negatively or positively influenced by the granted incentives in the industry. Seventy percent of the respondents had a combined score of “agree” and “strongly agree” to the statement while 16 percent were neutral and 14 percent had a combined score of “disagree” and “strongly disagree”.

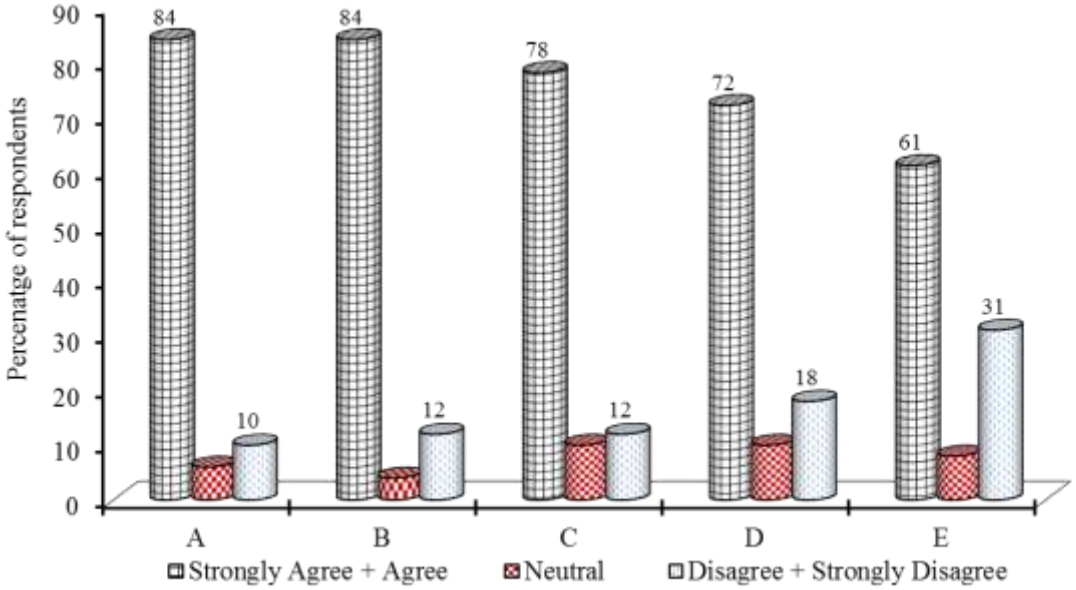
From the responses on this part of the construct dealing with statements on tax incentives, most (82 percent) of the respondents agreed that the Zambian mine tax system has not performed well based on the various features related to the granted tax incentive.

4.7 Equity participation

Results for the construct on equity participation aimed to assess (i) how the current equity stake has performed for Zambia in privatised mines, (ii) the modes to be assumed to review the current equity stake, and (iii) the extent to which equity stake has met specific expectations in the mining industry are presented below.

4.7.1 Finding 23 on performance of equity participation

An enquiry was made to find out the experts' perceptions on equity stake performance in the Zambian mine industry. Seventy-six percent of the respondents consented that equity participation in the mining industry has not performed as expected while 16 percent disagreed and eight percent were neutral. The results of the respondents' opinions are as shown in Figure 4.17.



A-Equity stake to be reviewed **B-** Fails to generate optimal benefits
C-There are no appropriate revenues received **D-** Country not well represented
E- No clear policy guidelines exist in new projects

Figure 4.17: Current equity stake performance in Zambia

(a) Need to review equity stake

Based on the perceived frail performance of equity stake, 84 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that equity stake in the mining industry needs to be reviewed towards achieving optimal capturing of the share of rents. Ten percent had a combined score of "disagree" and "strongly disagree" with six percent remaining neutral.

(b) Equity participation fails to generate optimal benefits

Respondents were asked to indicate whether the current equity stake does not generate optimal benefits. Eighty-four percent of the respondents had combined score of "agree" and "strongly agree" to the assertion while 12 percent disagreed and four percent remained neutral.

(c) No appropriate revenues received under the current equity stake

Asked whether the government has not been receiving optimal and proportional revenues under the current equity stake, 78 percent of the respondents gave a combined score of "agree" and "strongly agree" to the statement while 12 percent disagreed and 10 percent were neutral.

(d) Poor government representation

From the data analysis, 72 percent of respondents agreed to the statement that government is not well represented under the current equity stake while 18 percent disagreed with 10 percent being neutral. The modal response for the statement was "agree".

(e) No clear policy guidelines on equity stake in new projects

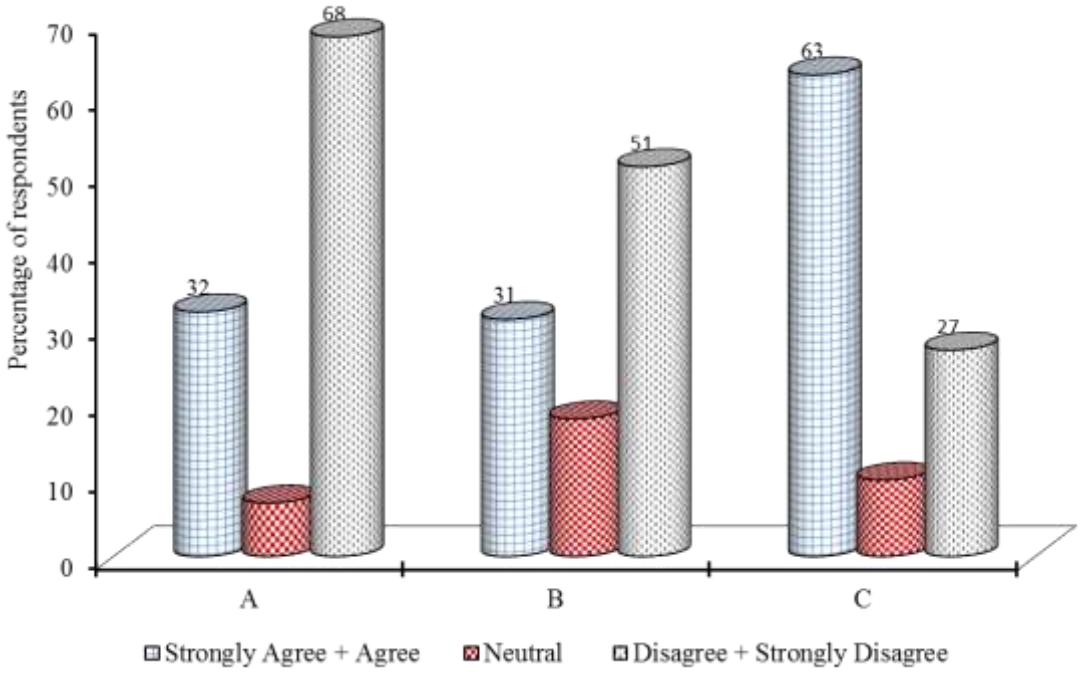
When asked if there were no distinct policy guidelines on equity stake in new projects, 61 percent of the respondents had a combined score of "agree" and "strongly agree" to the statement and 31 percent had a combined score of "disagree" and "strongly disagree" with eight percent being neutral.

From data analysis on this construct, most (76 percent) of the respondents assented that the current equity (stake) participation in the Zambian copper mining industry has not performed to expectations. This was based on the various given attributes dealing with;

- the need to review equity stake to optimise share of rents,
- generation of optimal benefits from the sector,
- receiving of appropriate revenues,
- proper representation in terms of government interests, and
- unclear policy guidelines on equity stake in new mineral projects.

4.7.2 Finding 24 on mode for reviewing equity participation

This part of an enquiry needed to establish the mode of equity stake that could be adopted (or appropriate) for Zambia. Fifty percent of the respondents disagreed to reviewing the equity stake based on the given modes of adoption while 39 percent agreed and 11 percent were neutral. Results are as presented in Figure 4.18.



A- Government need not get involved as an equity partner **B**- Government adopts State-owned Enterprise model **C**- Increasing its carried interest in the projects

Figure 4.18: Mode of adoption for reviewing equity stake

(a) Government need not get involved as equity partner

Only 25 percent of the respondents agreed to the statement that government should not get involved as an equity partner in the mining sector. Sixty-eight percent had a

combined score of “disagree” and “strongly disagree” with seven percent remaining neutral.

(b) Government adopts the state-owned enterprise model

On the statement that government adopts the state-owned enterprise (SOE) model in the copper mining industry, only 31 percent of the respondents had a combined score of “agree” and “strongly agree” while 51 percent recorded “disagree” and “strongly disagree” leaving 18 percent neutral.

(c) Government to increase its interest in the projects

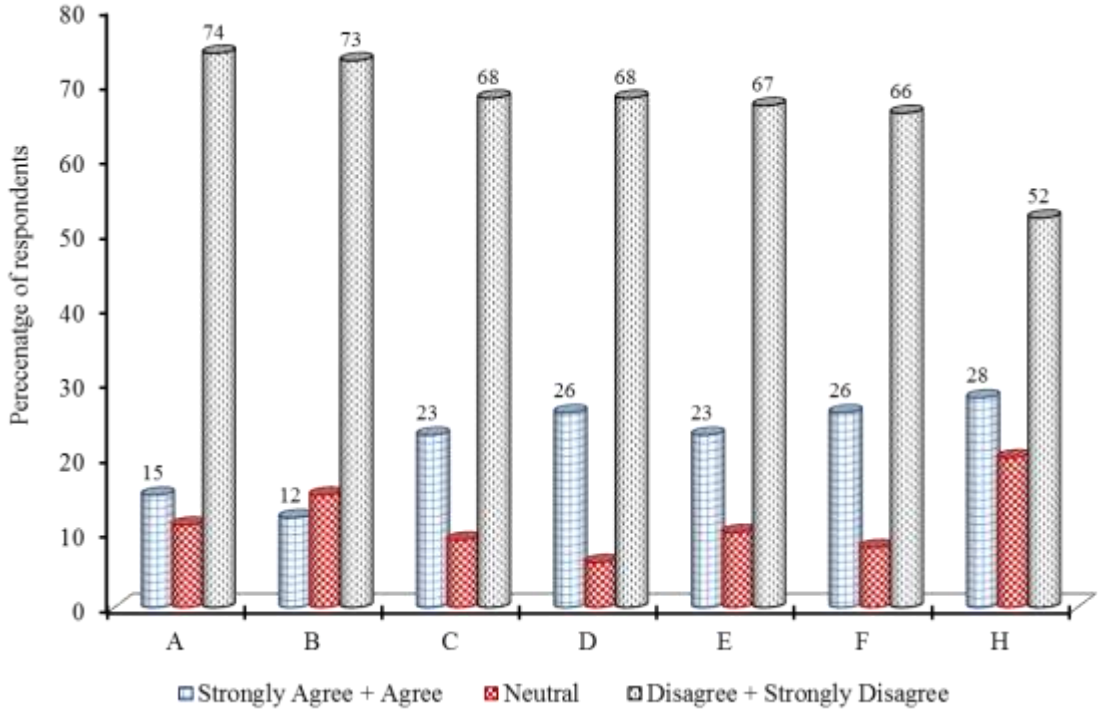
Sixty-three percent of the respondents had a combined score of “agree” and “strongly agree” to the statement that government should increase its “free” interest in the mining projects while 27 percent disagreed and 10 percent were neutral. Concerns about government increasing its interest in the mining projects were embraced because of poor benefits accruing to the state under the current equity stake arrangement where even the dividend payments to government after privatisation have been very erratic.

From the data analyses, most of the respondents opposed the idea of government not being involved as an equity partner and the adoption of the system of state-owned enterprise in the industry. However, most (63 percent) of the respondents agreed that government should increase its “free” participation interest in the mining projects as a means to secure reasonable share of the mineral rents.

4.7.3 Finding 25 on expectations from the current equity stake performance

Respondents were requested to indicate their perceptions from the current equity stake performance in the Zambian mining industry based on the statements analysed. Sixty-seven percent of the respondents disagreed with the statement that equity stake has performed to expectations while 22 percent agreed and 11 percent were neutral.

Figure 4.19 shows the position of respondents with regard to performance based on the various attributes related to current equity participation in the industry.



A- Direct operational & development control **B** - Operates well with increased state ownership
C- Provides transparency in the mining industry **D**- Empowers government to curb information asymmetry **E**- Government empowered to curb malpractices **F**- Transfer of technology and technical know-how **G**- Allows better industry regulation **H**- Shareholder protection and good corporate governance

Figure 4.19: Expectations from equity stake performance

(a) Equity participation offers direct operational and development control

Only 15 percent of the respondents agreed that the current equity stake offers government with direct operational and development control. Seventy-four percent of the respondents disagreed while 11 percent were neutral.

(b) Equity stake operates well with increased sense of state ownership

On the statement that the current equity stake operates well by providing government with increased ownership, just 12 percent of the respondents agreed while 73 percent disagreed with 15 percent being neutral.

(c) Equity participation offers the required transparency in the industry

Respondents were asked to state whether the current equity stake provides the required transparency in the mining industry. Only 23 percent of the respondents agreed while 68 percent disagreed and 9 percent were neutral.

(d) Equity stake empowers government to overcome information asymmetry

Only 26 percent of the respondents agreed to the statement that the current equity stake empowers government to curb information asymmetry in the industry. Sixty-eight percent had a combined score of "disagree" and "strongly disagree" with six percent remaining neutral.

(e) Equity stake grants government authority to check malpractices

Respondents were asked to state whether the current equity stake provides government with power to check malpractices in the industry. Only 23 percent of the respondents agreed and 67 percent disagreed with 10 percent being neutral.

(f) Equity participation allows transfer of technology and technical know-how

Only 26 percent of the respondents agreed that the current equity stake facilitates the transfer of technology and technical know-how in the industry. Sixty-six percent had a combined score of "disagree" and "strongly disagree" with eight percent being neutral.

(g) Current equity stake permits government to better regulate the industry

Based on the statement that current equity stake in Zambian copper mining industry allows government to better regulate the industry, just 26 percent of the respondents agreed while 63 percent of the respondents disagreed and 11 percent were neutral.

(h) Equity stake provides shareholder protection /good governance

Respondents were asked to state whether the current equity stake delivers shareholder protection/good governance to the state. Only 28 percent of the respondents agreed while 52 percent disagreed and 20 percent were neutral.

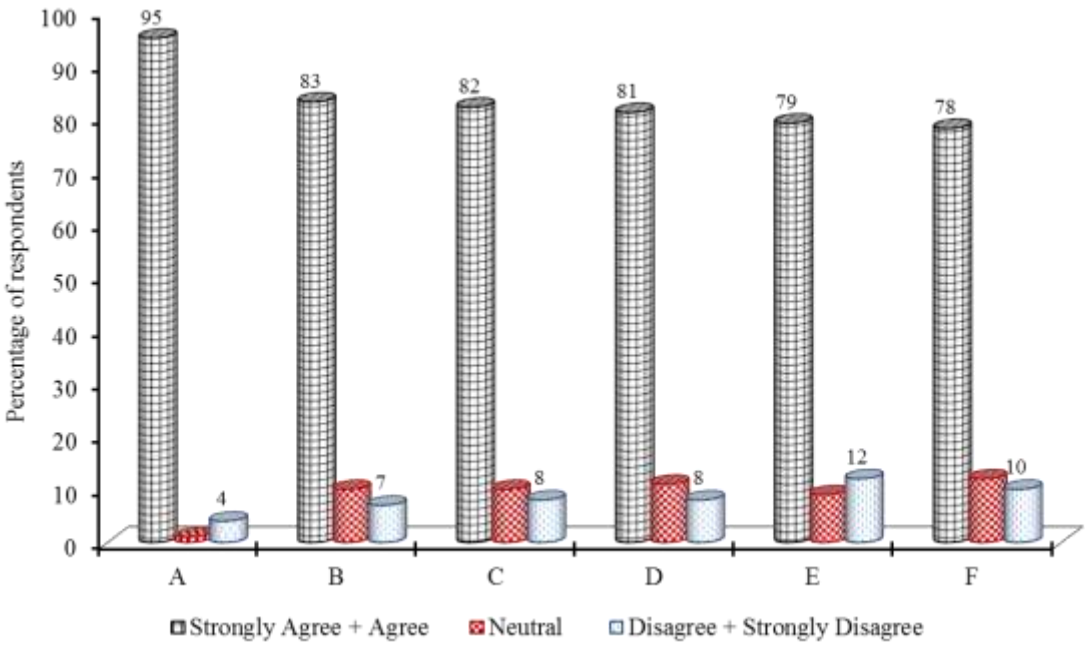
The data analysis showed that most (67 percent) of the respondents disputed the idea that the current equity stake in Zambian copper mining industry had performed to expectation based on the analsyed statements dealing with gaining operational control, increasing ownership interest, curbing information asymmetry and malpractices, transfer of technical know-how, enhanced industry regulation, and provision of good governance.

4.8 Institutional capacities

The construct on institutional capacities intended to assess (i) how institutional capacity challenges influence the optimal capturing of rent, (ii) tax administration challenges faced by the taxing authority, and (iii) challenges faced by the mining authority (ministry) in Zambia.

4.8.1 Finding 26 on challenges facing government institutions

This part of the study needed to appraise the challenges government institutions faced to enhance the optimal capturing of rents in the Zambian copper mining industry. Eighty-three percent of respondents agreed that government institutions had capacity limitations while nine percent were neutral and eight percent disagreed. The perceptions of respondents with respect to institutional capacity challenges on optimal capturing of rent in Zambia are as shown in Figure 4.20.



A - Poor coordination among government agencies **B** - No political will in rent capturing **C** - Political influence **D** - Deficiencies in technology **E** - Budgetary constraints **F** - Staffing challenges

Figure 4.20: Institutional capacity challenges

(a) Poor coordination among government agencies

Ninety-five percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that poor inter-agency coordination exist in the key institutions in the industry while four percent had a combined score of "disagree" and "strongly disagree". The modal and median score for this statement was "strongly agree".

(b) Lack of political commitment to enhance rent capturing

Respondents were asked whether there is no political will to enhance rent capturing in the industry. Eighty-three percent of the respondents had a combined score of "agree" and "strongly agree" while 10 percent were neutral and seven percent had a combined score of "disagree" and "strongly disagree".

(c) Political influence

Eighty-two percent of the respondents had a combined score of "agree" and "strongly agree" to the statement that political influence existed in institutions rendering them to lose autonomy. Ten percent of the respondents were neutral and eight percent had a combined score of "disagree" and "strongly disagree".

(d) Deficiencies in technology

Eighty-one percent of the respondents agreed to the statement that government institutions lacked technological resources to effectively undertake their assignments in the copper mining industry. Eleven percent of the respondents were neutral and eight percent disagreed.

(e) Budgetary constraints

Respondents were requested to affirm the statement that budgetary constraints existed in institutions thereby affecting the enhancement of optimal rent capturing. Seventy-nine percent of the respondents agreed to the statement while 12 percent disagreed and nine percent were neutral.

(f) Staffing challenges

Seventy-eight percent of the respondents agreed to the statement that institutions had staffing challenges affecting their effective operations while 12 percent were neutral and 10 percent disagreed.

Data analysis showed that most (83 percent) of the respondents consented that government institutions in Zambia had capacity weaknesses affecting the optimal capturing of rent from the copper mining industry. The limitations included poor inter-agency coordination, lack of political will, political clout, technical know-how deficiencies, financing constraints, and staffing challenges.

4.8.2 Finding 27 on tax administration challenges

The enquiry was made to understand whether the taxing authority in Zambia had tax administration challenges likely to impact on optimal capturing of rents in the industry. A score of 85 percent of respondents based on the various analysed challenges agreed that the taxing authority (ZRA) faced numerous tax administration challenges while nine percent were neutral and six percent disagreed. Figure 4.21 shows the ordered perceptions of respondents with respect to some challenges being faced by the taxing authority.

(a) Monitoring production, costs and sales data

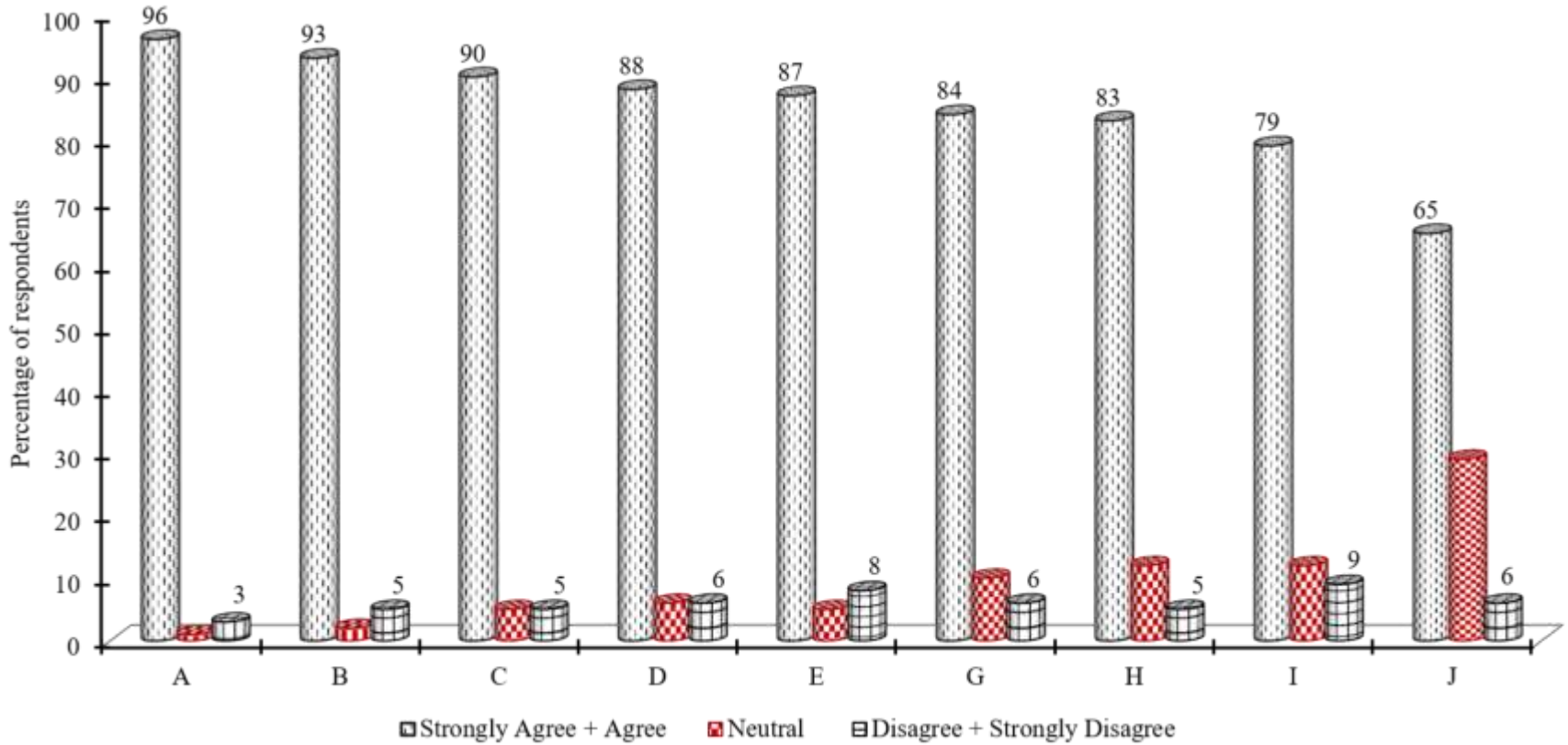
Ninety-six percent of the respondents had a combined score of “agree” and “strongly agree” to the statement that taxation authority had challenges to monitor production, costs and sales data. Only three percent had a combined score of “disagree” and “strongly disagree”. The modal and median response was “agree”.

(b) Tax avoidances

Respondents were asked to state whether the tax authority faced tax avoidance challenges in tax administration in the industry. Ninety-three percent of the respondents agreed to the statement while five percent disagreed with two percent being neutral. The statement had modal response of “agree”.

(c) Poor valuation of intermediate products

Ninety percent of the respondents had a combined score of “agree” and “strongly agree” to the statement that tax authority faces challenges to value intermediate products during tax administration. Five percent had a combined score of “disagree” and “strongly disagree” while the other five percent remained neutral.



A - Monitoring production, costs and sales data **B** -Tax Avoidances **C** - Valuation of intermediate products (payables)
D - Transfer pricing abuses **E** - Information Asymmetry (data misreporting) **F**- Creative accounting increasing deductible expenses
G - None reporting of by-product credits **H** - Tax evasions **I** - Generous granted incentives **J** - Debt-equity imbalances (Thin Capitalisation)

Figure 4.21: Challenges facing taxing authority

(d) Transfer pricing

Respondents were requested to state whether the taxing authority was faced with challenges of transfer pricing abuses during tax administration in Zambia. The modal and median response was “strongly agree” for this statement. Eighty-eight percent of the respondents agreed to the statement while six percent were neutral and the other six percent disagreed.

(e) Information asymmetry (data misreporting)

Eighty-seven percent of the respondents agreed to the statement that tax authority faces challenges related to information asymmetry during tax administration while eight percent disagreed. The response for “neutral” was five percent. The modal and median score for the statement was “strongly agree”.

(f) Creative accounting practices

The modal and median response for the statement that creative accounting is practiced by mining firms which affects tax administration was “strongly agree”. The combined score of “strongly agree” and “agree” was 85 percent while nine percent of the respondents were neutral. The combined score of the statement for “disagree” and “strongly disagree” was six percent.

(g) Non-reporting of by-product credits

The modal and median response for this statement was “agree”. The combined score for this statement for “strongly agree” and “agree” was 84 percent. The neutral score was 10 percent while the combined score for “disagree” and “strongly disagree” was six percent.

(h) Tax evasions

The statement that taxing authority faces challenges of tax evasion had a combined score for “strongly agree” and “agree” at 83 percent. The neutral score was 12 percent while a combined score for “disagree” and “strongly disagree” was five percent. The modal and median response was “agree”.

(i) Generous incentives granted

The statement that incentives granted create challenges for the taxing authority to appropriately carry out tax administration had a modal and median response of "agree". The combined score for "strongly agree" and "agree" was 79 percent. The "neutral" score was 12 percent and a combined score for "disagree" and "strongly disagree" was nine percent.

(j) Debt - equity imbalance

Sixty-five percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that the tax authority faces challenges related to debt-equity imbalances during tax administration while the "neutral" score was 29 percent. The combined score of "disagree" and "strongly disagree" was only six percent. The response for modal and median score for this statement was "agree".

From data analysis on this concept dealing with tax administration challenges, it was observed that most (85 percent) of the respondent in the study concurred that the taxing authority (ZRA) faces a number of challenges linked to tax administration in Zambia. This result reveals that capacity building is strongly required to improve tax administration for the country.

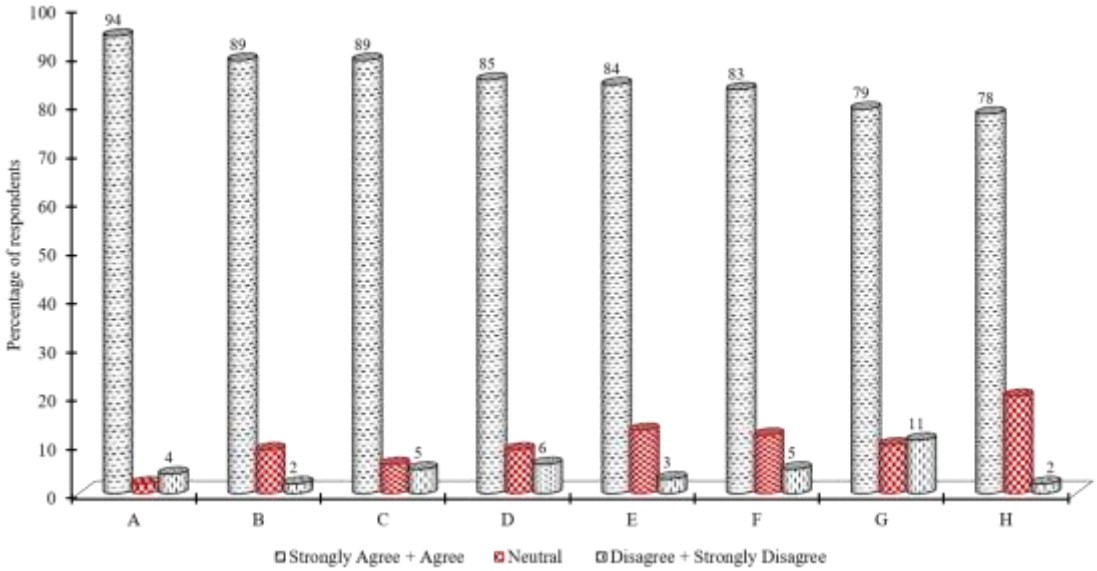
4.8.3 Finding 28 on monitoring and regulation challenges

This component on institutional capacities needed to assess the challenges mine regulators (Ministry of Mines) faced in their monitoring of the industry. A total of 85 percent of the respondents based on the various listed statements agreed that Ministry of Mines faced some regulatory challenges while 10 percent were neutral and five percent disagreed. Figure 4.22 shows the position of respondents with regard to institutional monitoring challenges in enhancing optimal rent capturing in the industry.

(a) Capacity to monitor production and quality of minerals produced

The statement that there is no adequate capacity to monitor production and quality of minerals produced had a combined score of "strongly agree" and "agree" at 94 percent by respondents while four percent was a combined score of "disagree" and "strongly

disagree". The "neutral" score was two percent. The modal score for the statement was "strongly agree".



A - Capacity to monitor production and quality of minerals produced **B** - Technological systems to monitor aspects in value chain **C** - Acquisition of relevant production data in the MVC **D** - Non-disclosure of by-product credits **E** - Inadequate enforcement of laws **F** - Valuation of intermediate products
G - Declaration of grades for ores and concentrates produced **H** - Policies not synchronised with current situation in the mining sector

Figure 4.22: Mineral authority monitoring challenges

(b) Technological systems for monitoring activities in mineral value chain

Eighty-nine percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that there is lack of adequate technological systems to monitor mining activities in the mineral value chain. The "neutral" score was nine percent while two percent disagreed. The response for modal and median score for this statement was "agree".

(c) Acquisition of relevant production data in the mineral value chain

Eighty-nine percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that there is poor acquisition of relevant production data in the mineral value chain while six percent were neutral. Five percent of respondents had a combined score of "disagree" and "strongly disagree". The modal response for this statement was "strongly agree".

(d) Non-disclosure of by-product credits

Based on the statement that mine regulation faces challenges related to non-disclosure of by-products by mining firms, 85 percent of respondents had a combined score of "strongly agree" and "agree" while nine percent were neutral. The combined score of "disagree" and "strongly disagree" was six percent. The response for modal and median score for this statement was "agree".

(e) Inadequate enforcement of laws

Eighty-four percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that there is inadequate enforcement of laws in mine regulations while 13 percent were neutral. Only three percent of respondents had a combined score of "disagree" and "strongly disagree". The modal and median response for this statement was "agree".

(f) Poor valuation of intermediate products

The modal and median response for this statement was "agree". The combined score for this statement for "strongly agree" and "agree" was 83 percent while "neutral" score was 12 percent and the combined score for "disagree" and "strongly disagree" was five percent.

(g) Under-declaration of grades for ores and concentrates produced

The statement that there is under-declaration of grades for ores and concentrates produced by mining firms had a combined score for "strongly agree" and "agree" at 79 percent with a combined score for "disagree" and "strongly disagree" at 11 percent. The neutral score for the statement was 10 percent while a modal response was "agree".

(h) Policies not in synch with situation in the industry

The statement that policies are uncoordinated with current situation in the mining industry had a combined score for "strongly agree" and "agree" at 78 percent. The "neutral" score was 20 percent and a combined score for "disagree" and "strongly disagree" was two percent. The statement had a combined modal and median response of "agree".

From data analysis on the concept dealing with mine regulation challenges, it was revealed that most (85 percent) of the respondents agreed that the institutions (Ministry of Mines) dedicated to monitor the mines are faced with regulatory challenges affecting optimal capturing of rent in the industry. The regulatory inadequacies included poor monitoring of production/quality of mineral products, lack of technological systems for monitoring, poor data acquisition, non-disclosure of by-products, weak enactment of laws, poor valuation of intermediate products and under declaration of products, and unsynchronised policies with industry situations.

4.9 Corporate social responsibility (CSR) and local content development

The benefits generated by the industry extend beyond revenue generation to include employment, backward and forward linkages and skills generation (Ostensson et al., 2014). This constructs on CSR and local content aimed to assess how CSR in Zambia has performed as an additional benefit to mineral taxation, the commitment mining companies have shown towards CSR, the performance of local content as an additional benefit to mineral taxation, and the interest mining companies have exhibited in fostering local content development in the mining industry.

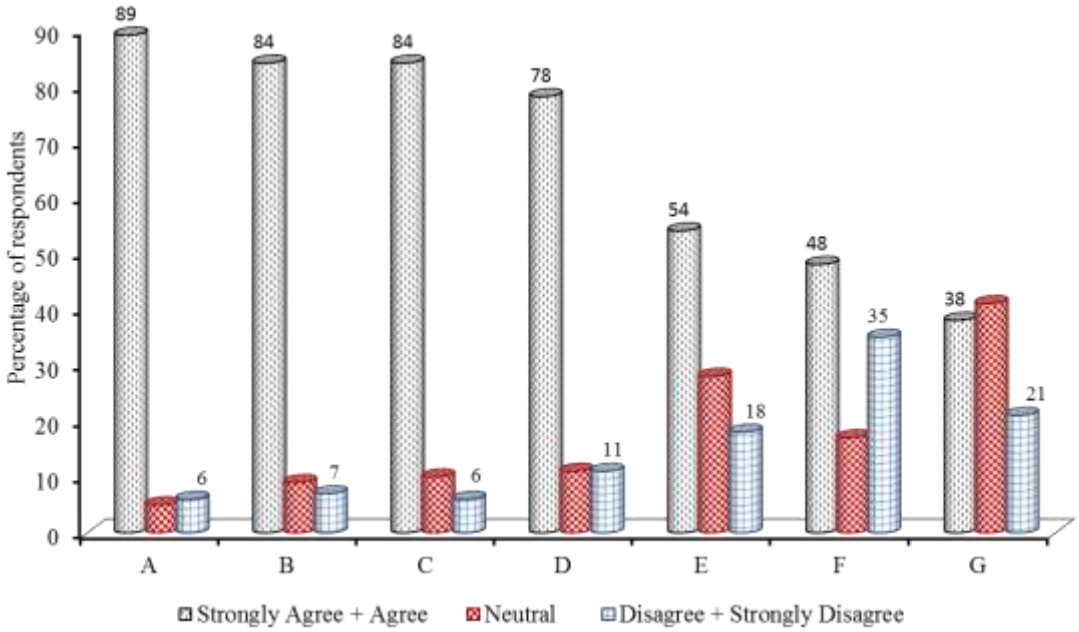
4.9.1 Finding 29 on performance of CSR

This segment of the construct sought to establish optimality of the performance of CSR in Zambia as an additional benefit to mineral taxation. This is in line with the arguments by Otto et al. (2006) that 'any mining or oil and gas project has other important benefit streams. Many of these touch people's lives and well-being directly and hence are of greater relevance to them than the taxes paid by the companies.' From the received questionnaires, a total score of 67 percent of the respondents based on the given statements on this concept agreed to sub-optimal performance of CSR while 17 percent remained neutral and 16 percent disagreed. The results were as shown in Figure 4.23.

(a) CSR performs on a voluntary basis

Eighty-nine percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that CSR in Zambia is performed by mining companies on a voluntary basis while six percent had a combined score of "disagree" and "strongly

disagree" and five percent were neutral. The median and modal response for this statement is "strongly agree".



A - Mining firms perform CSR on a voluntary basis **B** - CSR performance affected by lack of policy guidelines **C** - Government lacks a driving will for CSR **D** - No implementation and regulation of CSR policy guidelines **E** - No community involvement to spearhead CSR **F** - No integration of CSR in mining houses' business models **G** - No NGOs' initiative to help with spearheading CSR

Figure 4.23: Performance of CSR as an additional benefit to taxation

(b) Lack of policy guidelines

The statement that CSR in Zambia is performed without policy guidelines had a combined score of "strongly agree" and "agree" from respondents at 84 percent. The "neutral" score was nine percent while a combined score of "disagree" and "strongly disagree" was at seven percent. The modal and median response for the statement was "agree".

(c) Lack of government commitment to CSR

The modal and median score for the statement that no government driving will exist for CSR was "agree". Eighty-four percent of the respondents had a combined score of "strongly agree" and "agree" while 10 percent where neutral and six percent had a combined score of "disagree" and "strongly disagree".

(d) No Implementation and regulation of CSR policy

Seventy-eight percent of the respondents had a combined score of “strongly agree” and “agree” to the statement that there is no implementation or full regulation of CSR in Zambia while 11 percent had a combined score of “disagree” and “strongly disagree” with 11 percent being neutral. The modal and median response for this statement was “agree”.

(e) No community involvement to spearhead CSR

The statement that there is no community involvement to spearhead CSR in Zambia had a combined score of “strongly agree” and “agree” from respondents at 54 percent while 28 percent were neutral and 18 percent had a combined score of “disagree” and “strongly disagree”. The median and modal response for this statement was “agree”.

(f) Lack of integration of CSR in mining houses' business models

The modal score for this statement was “agree” while 48 percent of the respondents had a combined score of “strongly agree” and “agree”. Thirty-five percent of the respondents had a combined score of “disagree” and “strongly disagree” and 17 percent were neutral.

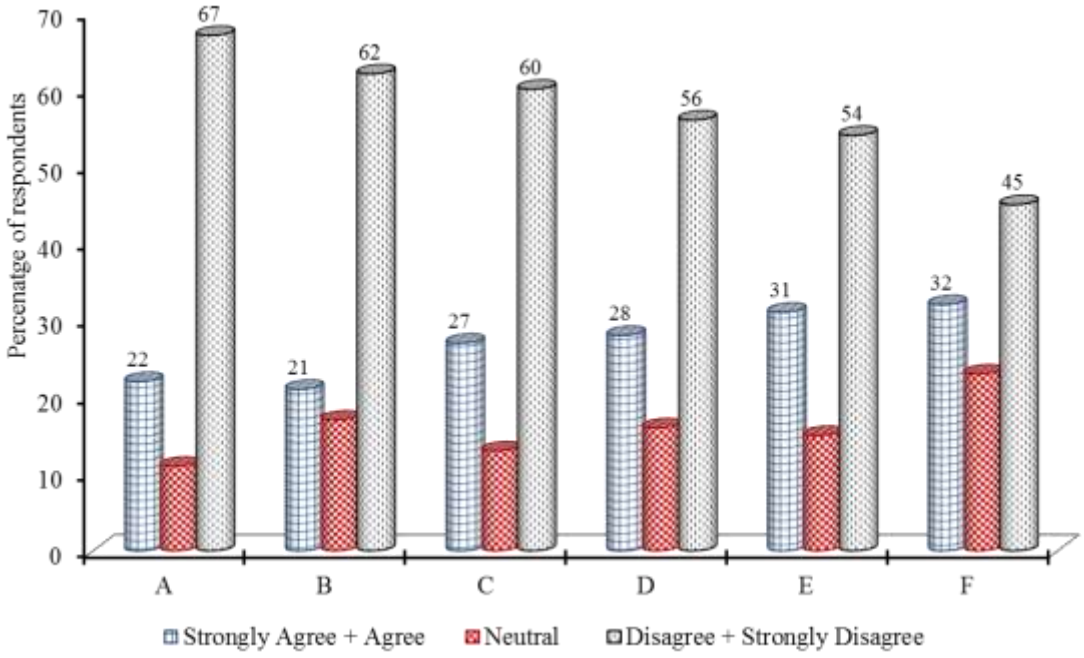
(g) No NGOs' initiatives to help in spearheading CSR

Forty-one percent of the respondents were neutral to the statement while only 38 percent had a combined score of “strongly agree” and “agree” and 21 percent had a combined score of “disagree” and “strongly disagree”. The median and modal response for this statement was “neutral”.

Data analysis showed that most (68 percent) of the respondents agreed with the perception that CSR performance in Zambia as an additional benefit to mineral taxation was sub-optimal.

4.9.2 Finding 30 on interest shown by mining companies in CSR

This construct also desired to assess whether mining companies had shown commitment or interest towards CSR in the mining sector from the perception of the “experts”. Fifty-seven percent of the respondents disagreed while 27 percent agreed and 16 percent were neutral. Figure 4.24 shows the results of the opinions of the “experts”.



A - Environmental protection and care **B** - Creation of new communities and wealth **C**-Providing skilled and local population training **D** - Community & sustainable livelihood projects **E** - Provision of employment **F** - Infrastructure improvement like community health services provision

Figure 4.24: Mining firms' interests in CSR

(a) Environmental protection and care

The statement that mining companies embrace CSR by showing interest in environmental protection and care had 67 percent of respondents with a combined score of "disagree" and "strongly disagree". Only 22 percent had a combined score of "strongly agree" and "agree" and 11 percent were neutral. The modal response for this statement was "strongly disagree".

(b) Creation of new communities and wealth

Sixty-two percent of the respondents had a combined score of "disagree" and "strongly disagree" on the statement that mining companies embrace CSR by creation of new communities and wealth while 21 percent had a combined score of "strongly agree" and "agree" to the statement. The "neutral" response was 17 percent while the median and modal score was "disagree".

(c) Providing skilled and local population training

Sixty percent of respondents had a combined score of "disagree" and "strongly disagree" to the statement that mining companies embrace CSR by providing skilled and local population training. Twenty-seven percent had a combined score of "strongly agree" and "agree" to the statement and 13 percent were neutral. The median and modal score was "disagree".

(d) Community investment & sustainable livelihood projects

Based on the statement that mining companies have embraced CSR by providing community investment and sustainable livelihood projects, only 28 percent of the respondents agreed while 56 percent disagreed with 16 percent being neutral. The median and modal score was "disagree".

(e) Providing employment to communities in mining areas

The modal and median score for this statement was "agree". Thirty-one percent of the respondents agreed while 54 percent disagreed and 15 percent were neutral.

(f) Social infrastructure improvement

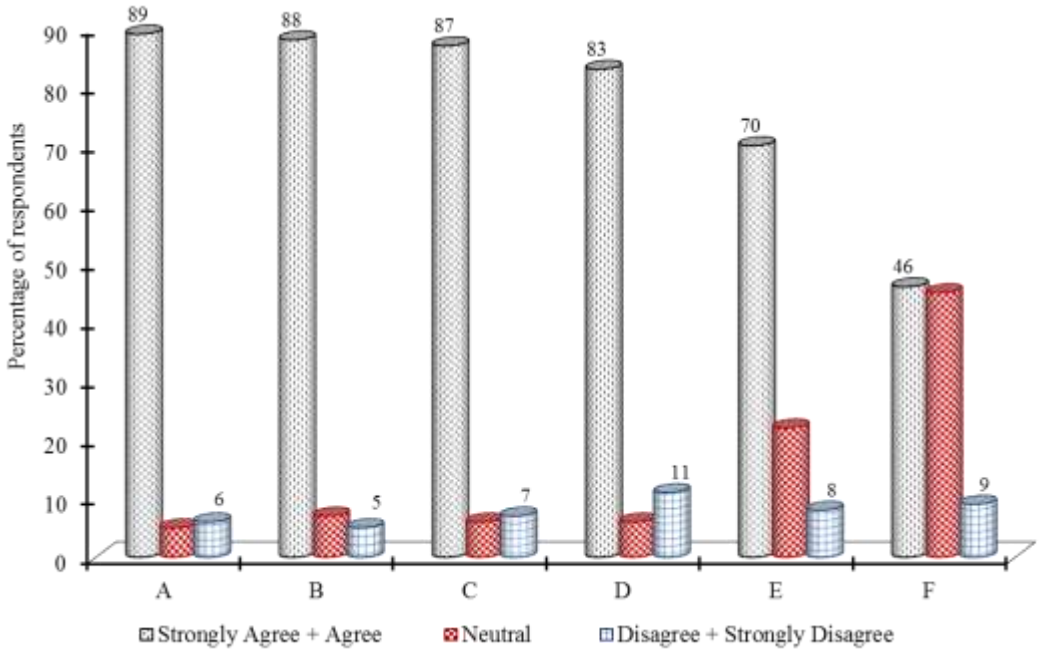
Only 32 percent of respondents agreed to the statement that mining companies embrace CSR by providing social infrastructure improvement. Forty-five percent disagreed while 23 percent were neutral with a "disagree" modal score.

Data analysis showed that 57 percent of the respondents did not accept that mining companies had shown commitment or interest towards CSR activities in the mining industry of Zambia. The areas of concerns for dissent included poor protection and care for the environment, marginal creation of new communities and wealth, lack of skills provision and training, absence of community investment and sustainable livelihood projects, low provision of employment to locals, and deficiency in social infrastructure improvement at community levels.

4.9.3 Finding 31 on local content performance

This part of the construct intended to establish whether performance of local content in Zambia has been sub-optimal as an additional benefit to mineral taxation in the mineral

industry. A score of 77 percent of respondents based on the arguments presented in the questionnaire agreed and 15 percent remained neutral while eight percent disagreed. The results from the respondents based on the given opinions are as shown in Figure 4.25.



A - Uncompetitive local firms with poor production quality and reliability **B** - No clear and stable policy guidelines **C** - Lack of manufacturing base to support the mining sector **D** - Substantial importation of equipment and expertise at the expense of local supply **E** - Government not fully committed to develop local content **F** - Abuse of tax incentives granted for local content development in designated zones

Figure 4.25: Perceptions on local content performance

(a) Uncompetitive local firms

The modal response for this statement is "strongly agree". Eighty-nine percent of the respondents had a combined response of "strongly agree" and "agree" while six percent had a combined response of "disagree" and "strongly disagree". Five percent of the respondents were neutral.

(b) No clear and stable policy guidelines on local content

Eighty-eight percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that there is no clear and stable policy guideline on local content and seven percent were neutral. Only five percent of the respondents had a combined

score of “disagree” and “strongly disagree”. The modal and median response for this statement was “agree”.

(c) Lack of manufacturing base to support the mining sector

Based on this statement, 87 percent of the respondents had a combined score of “strongly agree” and “agree” while seven percent had a combined score of “disagree” and “strongly disagree”. The “neutral” score was six percent with “strongly agree” as a modal and median response for the statement.

(d) Substantial importation of equipment and expertise

Eighty-three percent of the respondents had a combined score of “strongly agree” and “agree” to the statement that there was substantial importation of equipment and expertise in the industry at the expense of local supply. Eleven percent had a combined score of “disagree” and “strongly disagree” and six percent were neutral. The median and modal response for this statement is “strongly agree”.

(e) Government not fully committed to develop local content

The statement that government is not fully committed to develop local content in Zambia had a combined score of “strongly agree” and “agree” from respondents at 70 percent while 22 percent were neutral and eight percent had a combined score of “disagree” and “strongly disagree”. The median and modal response for this statement is “agree”.

(f) Abuse of tax incentives granted for local content development

Forty-six percent of the respondents had a combined score of “strongly agree” and “agree” to the statement that there was abuse of tax incentives granted for local content development and 45 percent were neutral. Only nine percent had a combined score of “disagree” and “strongly disagree”. The median and modal response for this statement was “neutral”.

The analysis of data revealed that most (77 percent) of the respondents agreed that local content performance as an additional benefit to mining taxation in Zambia is sub-optimal. This was based on the features related to;

- uncompetitive local firms,
- unclear and non-stable policy guidelines,
- lack of manufacturing base to support the mining sector,
- substantial importation of inputs and expertise,
- limited government commitment to develop local content, and
- abuse of granted tax incentives to foster local content development.

4.9.4 Finding 32 on interest by mining companies in local content

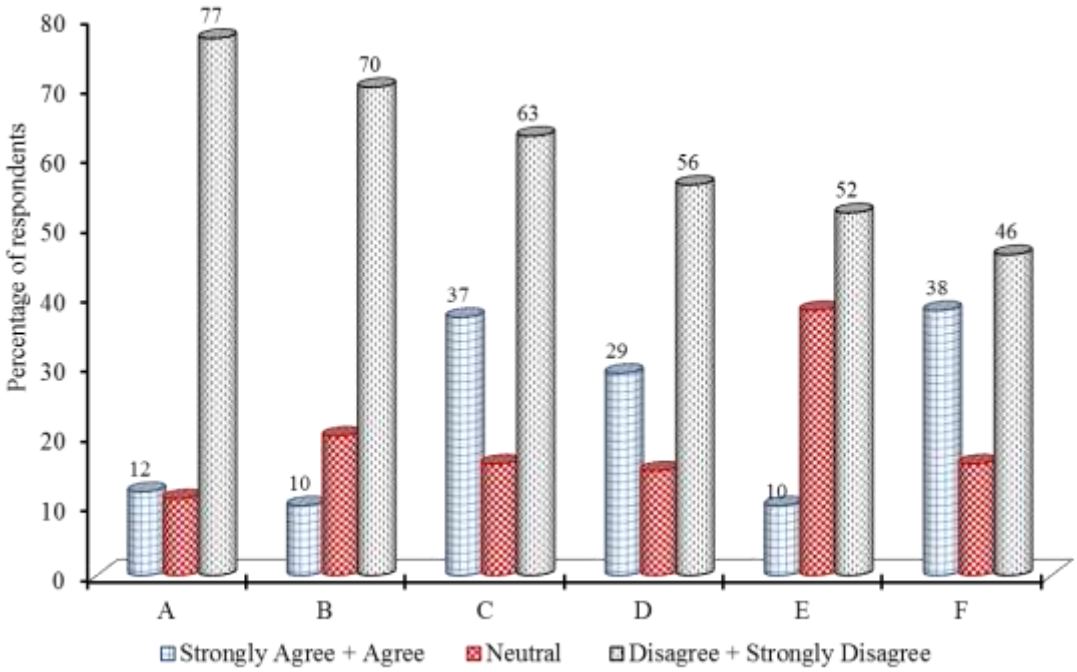
Private companies play an essential role in the development of local content in numerous cases not only to comply with local content regulation but also to improve their cost competitiveness (Dobbs et al., 2013). This construct sought to assess whether mining companies had shown commitment or interest in local content development in the Zambian mining industry. Only 20 percent of the respondents agreed and 61 percent disagreed with 19 percent being neutral. The results of the respondents' opinions are as shown in Figure 4.26.

(a) Preferential local procurement strategies

Only 12 percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that mining companies have preferential local procurement strategies while 77 percent had a combined score of "disagree" and "strongly disagree". Eleven percent were neutral while the median and modal response for this statement was "disagree".

(b) Promotion of value addition investment

For the assertion that mining companies support training and promotion of value addition investment, only 10 percent of the respondents had a combined score of "strongly agree" and "agree" while 70 percent had a combined score of "disagree" and "strongly disagree". The "neutral" score was 20 percent while the median and modal response for this statement was "disagree".



A - Preferential local procurement strategies **B** - Promotion of value addition **C** - Creating expenditures in the local economy **D** - Mentoring and supporting local business development (SME) **E** - Cluster development and appropriate use of MFEZs **F** - Generation of employment levels to communities.

Figure 4.26: Mining firms' interests in local content development

(c) Creating expenditures in the local economy

The modal and median response for this statement is "disagree". Just 21 percent of the respondents had a combined response of "agree" and "strongly agree" to the statement that mining companies create expenditure in the local economy. Sixty-three (63) percent had a combined response of "strongly disagree" and "disagree" with 16 percent remaining neutral.

(d) Mentoring and supporting local business development (SME)

Based on the statement that mining companies mentor and support local business development, only 29 percent of the respondents had a combined score of "agree" and "strongly agree" while 56 percent had a combined score of "strongly disagree" and "disagree". The "neutral" score was 15 percent while the modal and median response was "disagree".

(e) Cluster development and appropriate use of MFEZs

Just 10 percent of the respondents had a combined score of "strongly agree" and "agree" to the statement that mining companies develop clusters and appropriately use the MFEZs. Fifty-two percent had a combined score of "disagree" and "strongly disagree" while 38 percent were neutral. The modal response for this statement was "neutral".

(f) Generation of employment levels for communities

The modal response for this statement was "disagree". Forty-six percent of the respondents had a combined response of "disagree" and "strongly disagree" while 38 percent had a combined response of "strongly agree" and "agree". Only 16 percent were neutral.

Data analysis revealed that most (61 percent) of the respondents disagreed that mining companies showed interest towards fostering of local content development in the Zambian mining industry. The basics for disagreement include lack of preferential local procurement strategies, absence of investment to promote value addition, failures to create expenditures in the local economy, deficiencies in mentoring and supporting local entrepreneurs, no proper cluster development and appropriate use of MFEZs, and low generation of employment to communities.

4.10 Synthesis of study results

This Chapter gave results from the study 'Towards an optimal capturing of rent for Zambia's large scale copper mining industry.' The approach employed was the use of semi-structured interviews and questionnaire survey as a process to gather perceptions on the study topic from various "experts" forming the stakeholder groups in the mining industry. The findings gathered will in the next chapter on discussion be compared with other experiences gathered through literature on economic rent and optimal taxation in order to draw some conclusions.

Further, the findings in this chapter are supplemented with a competitiveness evaluation of the Zambian fiscal regime using international comparative analysis and quantitatively employing a stylised financial copper model as presented in Chapter seven. The hypothetical copper model was created based on justifications by Laporte and

Quatrebarbes (2015) that actual rent sharing is very difficult to ascertain between African governments and investors in a standardised manner. This is because the economic data on projects are either not widely available or difficult for researchers to use, which forces them to create hypothetical mine projects. This stylised model was employed in order to complement on making decision on what could be an appropriate share for Zambia from its rent appropriation.

4.11 Summary

This Chapter presented findings based on the semi-structured interview and questionnaire survey. Findings on various constructs were obtained and showed that;

- the Zambian taxation system does not adequately respond to attributes of "good tax" criteria,
- implementation of profit-based taxes than royalty taxes creates challenges for Zambia because of specific provisions (incentives) granted in the income-based tax system,
- institutional capacity challenges were found to affect reliability of tax administration and sector monitoring,
- the basic fiscal tools and rates employed in Zambia are competitive while the current equity (stake) participation in the industry has not realised meaningful benefits for Zambia, and
- additional benefits to mine taxation dealing with CSR and local content are not fully realised because of lack of policy on the subject.

CHAPTER 5

ASSESSMENTS OF CONSTRUCTS ON OPTIMAL RENT CAPTURE

This Chapter assesses the constructs on optimal rent capturing from the semi-structured interview and questionnaire survey. This is based on various applicable statements (items) in the research questions in order to attain the overall research objectives set for this study. The Chapter is divided into Section 5.1- 5.9 dealing with evaluation of the study constructs on optimal capturing of rent while the Chapter summary is given in Section 5.10.

5.1 Optimal rent capture and promotion of sustainable mine investment

The concerns by interviewees that Zambia fails to capture optimal rents are consistent with agreements by Otto et al. (2006) who indicated that determining the optimal level of taxation poses a challenge for governments, which may need to look to empirical evidence of investor perceptions and behavior for guidance.

The interviewees consented that the Zambian mine taxation system is ideal for promotion of sustainable investment in the sector. This was in line with observation by Mwambwa et al. (2010) who indicated that 'the specific level of taxation that would deter investment is not at all clear in Zambia since the government appears too reliant on the word of mining companies on this.'

5.2 Concept of "good tax" criteria

The eight elements forming the "good tax" criteria were assessed. The respondents' perception about the Zambian mine taxation system not being stable is consistent with Manley (2013) who reported the lack of stability clauses, unlike the Development Agreement regime. Cawood (2011) equally noted that states can achieve stability by introducing either sliding-scale instruments or fiscal stability agreements (FSAs). They can also achieve stability by defining the rates in law but the law-making process is too slow to respond satisfactorily to rapidly changing market conditions. Zambia should consider introducing stability in the fiscal regime in line with observation by Barma et

al. (2012) who noted that stability clauses are the most commonly used instruments to assure companies that their investments are secure and that contracts will be honoured.

The response by respondents that the mine taxation system in the country is not equitable was in harmony with the Zambian government stance to introduce a Mineral Royalty-Tax regime of January 2015 based on operational differentiation. The government's aim was to achieve vertical equity which Harman and Guj (2013) argued that miners who generate different amount of economic rent should be treated differently in the amount of tax they pay.

Indications by respondents that the mine taxation regime is not progressive was consistent with Zambia's positon of imposing two progressive taxes in 2008 - Windfall Tax and Variable Profits Tax (VPT) to capture windfall profits (Manley, 2013). Their aim was to be progressive - as some measure of a company's profitability increases, so does the tax burden. However, the country failed to capture profits from the VPT since it allows deductions to taxable profits just like corporate income tax (CIT). These deductions as indicated by Manley (2012) include the depreciation allowances and loss carry forward provisions and since mining operations typically incur large costs upfront, these deductions can ensure that taxable profits are zero for many years.

Respondents indicated that the taxation system in Zambia is not transparent and clear. For the Zambian mine taxation regimes, challenges based on lack of transparency have been discussed. Das and Ross (2014) reported that Konkola Copper Mines (KCM) still has concessions legalised in Vedanta's secret Development Agreements negotiated by Clifford Chance with the Zambian Government which are fixed until 2018. The deal guarantees them a royalty rate of only 0.6 percent, and allows them to deduct 100 percent of capital allowance from their investments.

Majority of respondents disagreed that the mine taxation regime in Zambia allows risk sharing. Otto et al. (2006) indicated that a corporate profits tax and royalties based on profitability tend to distribute the risk of mining evenly between the state and companies. Zambia applies a mineral royalty tax based on revenue (sales) tax base which makes it non-risk sharing as taxes are paid even when profitability is not

registered. While CIT in Zambia is applied as a tax instrument meant to share risk by nature, the challenge is that this profit-based tax is constructed to allow for loss carry forwards and huge capital deductions claimed for cost recoveries which lead to low taxable incomes and sometimes zero profits.

The majority response for a non-efficient tax system in Zambia is in support with Manley (2013) who noted that taxation system should be administratively feasible because if it is too complex for the tax authority to administer, mining companies can avoid paying it.

The costs of administering and enforcing a tax should be minimal when designing a fiscal regime. However, in Zambia, there is still a standoff between the government and mining companies over the withheld VAT refunds.

Respondents disagreed that the Zambian mine taxation system is neutral. Taxes applied on profits (CIT) are neutral to progressive. However, these are more favoured by investors than resource owners since they are allowed for deductions and loss carry forward provisions which reduce the taxable incomes. CIT as a taxation tool has not been considered neutral in Zambia. The Finance Minister[16] during his justification for the mine fiscal regime change in 2015 indicated that 'the tax structure was simply illusory because only two mining companies were paying CIT under the previous regime.' Higher royalty rates (more especially those imposed in the January 2015 Zambian tax regime) are also distortionary (non-neutral) and can discourage investment and production in the mining sector.

Respondents agreed that the mine taxation system was *regressive* in Zambia. Regressive tax occurs when the level of government take falls rather than rise as a function of profitability. Royalties are an imposition on production and constitute a regressive form of taxation (Land, 2009). High taxes applied on revenues (royalties) and other front-loaded taxes are regressive.

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[16] *Times of Zambia (2015) 'Copper benefits still elusive.' Business Times, Volume # 17,111, dated March 4th, 2015.*

From the overall results on the construct dealing with "good tax" criteria, it was observed that the Zambian tax system has not properly met the attributes of "good tax" criteria based on the perceptions of most (63 percent) of the respondents. These results show that the country needs to incorporate these principles in the formulations of tax policies to make the mine fiscal regime become adequately responsive to attributes of "good tax" criteria.

5.3 Fiscal tools used and regime competitiveness

5.3.1 Fiscal tools and optimal revenue capture

For this construct, there was disagreement that the fiscal tools used in the mine taxation system are adequately designed to optimise rent capturing in Zambia. The assessments on the employed fiscal instruments are given.

Respondents disagreed that equity participation is reasonably structured to optimise rent capturing. According to ZCCM-IH (2015), some mines in Zambia do not declare dividends claiming not to be making profits. In this context, ECA (2004a) observed that host government's shareholding in mining companies, even if free, does not offer significant benefit where dividends are not regularly declared. In evaluating fiscal instruments, Kumar (1991) indicated that equity participation does not satisfy government objectives in terms of neutrality and "government take" in early years and it may or may not satisfy government objectives, depending on circumstances with respect to stability of revenue generation and progressiveness with regard to profitability.

The response for disagree on variable profits tax (VPT) to optimise rent capturing is in support of the observations by Mwambwa et al. (2010) who noted that 'no revenue from variable profit tax has yet been collected because the mining companies claim not to have hit the profitability threshold at which it comes applicable.' Similarly, Lundstøl et al. (2013) consented that this excess profit-tax has not generated much revenue for the government. Therefore, the challenge for Zambia to capture profits from this tax instrument is because it allowed deductions to taxable profits just like corporate income tax.

On the statement that corporate income tax (CIT) is administratively capable to capture rents in Zambia, respondents disagreed. Taxes under CIT are only due when annual revenue exceeds some measure of costs and allowances. The disagreement is in step with the observation by Mwambwa et al. (2010) that calculating profits could be difficult for governments to do when faced with the sophisticated accounting practices of mining companies.

On mineral royalty tax, respondents indicated that it is not satisfactorily structured to optimise rent capturing in Zambia. The attractiveness of governments using royalties in the fiscal regime implementation have been explained (Tordo, 2007; Otto et al., 2006) since royalties ensure an up-front revenue stream as soon as production starts, are attached to production or sales thereby being estimated with a reasonable degree of predictability, and are comparatively easy to calculate, collect, and monitor.

However, royalties are a regressive form of tax since high levels of royalties distort investment decisions and may encourage uneconomic choices. The results from respondents can be explained by Zambian government's implementation challenges of inconsistencies in fixing a royalty rate that can be considered equitable to both parties as evidenced by the changes made to the 2015 fiscal regime within a shortest period.

With the arguments on windfall profits tax (WPT), respondents agreed that if re-introduced, this fiscal tool could result in efficient capture of rents for Zambia. This was supported because Zambia introduced a windfall tax designed to capture windfall profits in 2008 which Manley (2012) stated that by changing the tax rate as the copper price changed, the tax attempted to capture some of the windfall profits as its tax base was sales revenue of the company. The WPT did not include costs in the tax base and this made it easier to administer, but could potentially tax too great a slice of profits for companies (*ibid.*).

From the responses on the key fiscal tools examined in the mine fiscal regime of the country, it is established that profit-based taxes give challenges for tax administration in Zambia while, except for varying rates, royalty tax is well structured to capture revenues

for Zambia. The respondents also felt that VPT and equity stake have not granted many benefits to the country.

5.3.2 Competitiveness of the fiscal tools

For this part of the construct, respondents' indications were that tax instruments were not comparable to practices in other jurisdictions. The perceptions were in line with the proposition by Otto et al. (2006) who indicated that the overall tax system should be equitable to both the nation and the investor and be globally competitive. However, Smith (2013) noted that no two countries tax extractive resources in quite the same way-which leaves researchers to ponder which type of regime is best.

Respondents disagreed that the practice of equity participation in Zambian copper mining industry was comparable to global practice. Zambia uses a minority interest equity participation in the privatised mines and the incidences of state participation in most mineral-rich countries differ depending upon a number of drivers. Dobbs et al. (2013) indicated that in Australia, Canada and elsewhere, the state does not have direct involvement in the industry but receives taxes, royalties, or both. In their analysis, they suggested that no single model of government participation works best in all countries. However, some countries have secured a high share of the realised resource rent for their people through either government taxation or ownership interest. Equally, Lundstøl et al. (2013) reported that Chile and Botswana have both relied heavily on government ownership interest to rise above the average performance of other countries.

Respondents' indication was that variable profits tax in Zambia does not consistently operate with global practices. Not all countries employ the variable profits tax and Conrad (2012) observed that only Zambia, Kazakhstan, Mongolia and Australia used excess profits tax and all had different definition of the base for taxation.

On mineral royalty tax, respondents disagreed that this tax instrument in Zambia is structured in line with global norms. Comparing royalty systems between jurisdictions is difficult due to large variations and the complexity of fiscal regimes (Western Australia Government, 2015). In Zambia, the fiscal regime had been changed regularly with royalty rates being adjusted. PricewaterhouseCoopers (1998) reported the gross average

royalty rates of between 2-5 percent. Ostensson et al. (2014) related that there is a rule of thumb that a 2-3 percent gross revenue royalty, a 3-4 percent net smelter return (NSR) royalty, and a 10 percent net profits income (NPI) royalty have roughly the same impact on project IRR and government royalty receipts. However, Zambia's mineral royalty rates at 6-9 percent of gross revenue could be regarded slightly above the gross average of between 2-5 percent. Conrad (2012) recounted that the rates, however, maybe misleading because the base to which the royalty rate is applied also varies across countries.

Respondents disagreed that if applied in Zambia, windfall profits tax was in line with global practices. Countries differ in the way they use variable tax instruments which can be interpreted as "excess profits" tax. Ostensson et al. (2014) reported that the argument in favour of "windfall profits" or "excess profits" taxes is that they are levied only on the resource rent part of taxable income. However, experience shows that windfall taxes can be a major obstacle to attracting investment, particularly when they are applied without regard to whether it is rent that is taxed or not.

On corporate income tax (CIT) in Zambia being competitive with global practices, most of the respondents agreed. Zambia's corporate income tax rate on mining is 30 percent and is comparable to global values noted by Mintz et al. (2016) as varying between 26-40 percent. However, for Zambia, despite CIT rate being consistent with international practices, the country has challenges with institutional capacities needed to capture revenue from such fiscal instrument during tax administration and monitoring of the sector.

Even though 58 percent of the respondents from the study disagreed to the overall competitiveness of the taxation system, 71 percent agreed that CIT is comparable to international practice while only 38 percent agreed to mineral royalty being competitive. The challenge for Zambia to capture reasonable revenue from the sector using such fiscal tools is attributed to delicate government institutional capacities which affect effective tax administration, collection and a proper system to monitor the industry.

5.3.3 Taxation system and expected "government take"

Under this construct, respondents disagreed that the Zambian mine tax system has performed well to meet the "government take" with respect to the statements discussed below.

Most of the respondents disagreed to the item that Zambia captures reasonable share of rents under its mine taxation systems. Resource rent is required to be captured through appropriate taxes. Sachs et al. (2012) reported that, the rate of return is hard to define and varies based on project costs of capital and the company's risk diversification strategy. This, therefore, makes it difficult for governments to anticipate an acceptable rate of return for the investor, especially for those countries inexperienced with extractives and exploration. Such failures of economic rent determination will lead to investors appropriating all the economic rent at the expense of government.

Respondents also disagreed to the statement that Zambia collects revenue consistent with effective tax rate (ETR). This is consistent with observations by Tadros and Svensson (2010) who noted the existence of gaps in terms of tax amounts paid based on the ETRs and the actual amounts received in many countries.

Most of the respondents disagreed to the assertion in the construct that the taxation system in Zambia generates equitable rents to be shared between the state and investors. This is in line with indications by Andrews-Speed (1996) who denoted that governments have challenges to design a fiscal regime which takes a large share of the economic rent without exceeding the amount of available rent.

For the statement that effective tax rate (ETR) is well determined in the copper mining industry, most of the respondents disagreed. This is because there are various assumptions on the determination of the ETR as reported by Daniel et al. (2010) which include geology, capacities, mine life, costs (operating and capital), price forecasts, financing structures and hurdle rates. These create information asymmetry and lack of transparency that can affect proper determination of ETR.

5.4 Market condition responsiveness and production-based taxes

5.4.1 Response of taxation system to changing market conditions

Respondents agreed to the statement that the fiscal regime does not flexibly respond to global market conditions. The affirmative response is consistent with the Natural Resource Charter (2014) which made suggestions that both fiscal and contractual regimes need to be subject to modification and have built-in flexibility to reflect changing and uncertain circumstances. In Zambia, price volatility always has major influences on the restructuring of the mine fiscal regime considering the lack of safeguards against market volatilities in the fiscal regime.

5.4.2 Taxation focusing on production than instead of profitability

Respondents indicated that the Zambian taxation system should focus on production rather than profitability. This positive response is consistent with Manley (2012) who argued that:

'*A lack of diversification in government revenue and poor administrative capacity within the government lend support for quantity or revenue-based taxes such as royalties, which provide a more reliable source of revenue than profits taxes and are easier to calculate.'*

For governments, corporate income tax is much more difficult to compute because profits have to be assessed (Stürmer, 2010) while the World Bank (2015a) noted that the attempt to rely solely on the mineral royalty in the Zambian January 2015 regime reflected concerns that profits-based taxes are too difficult to implement effectively. However, SDSN (2013) reported that whether profits or gross revenue are the main objective of taxation depends on the capacity of the tax authority to scrutinise what companies are reporting.

5.5 Investment tax incentives

5.5.1 Incentives and flow of revenue

Respondents disagreed to this part of the construct that specific tax incentives increased the flow of rents to the government. This is consistent with observations by Makano and Imakando (2015) who revealed that tax incentives are not a key factor in attracting FDIs,

and should therefore be abolished or serious consideration should be given to review the modalities. Equally, JCTR (2011) identified some problems created by tax incentives that include revenue losses, opportunity for revenue leakages and inequality. Africa Mining Vison (2009) also noted that special incentives offered to mining companies arguably reduce the share of rent on which African governments depend to fund their social and development programmes.

For this part of the construct, the assessments below provide an understanding on the flow of rent to the government based on the applied specific incentives.

Respondents disagreed that profit externalisation incentive yields revenue flow to the country. This disagreement is in line with Twerefou (2009) who argued that 'contribution of mining companies in net terms might not be that significant given the generous incentives offered especially in an attempt to retain part of sales earnings from mineral products in foreign accounts.'

Equally, respondents disagreed to the statement that tax holidays lead to flow of revenues to the state. This is in support with arguments by OXFAM (2011) that tax holiday is one of the most damaging tax incentives since firms under this incentive may be exempted from various tax liabilities.

Respondents did not fully agree to the statement that loss carry forward provisions result in the flow of revenue to the Zambian government. This is reinforced by Christian Aid (2014) who mentioned that due to generous tax incentives, companies in Zambia have avoided paying a good deal of corporate tax by carrying forward losses and taking advantage of the capital allowances rules.

Respondents also disagreed that accelerated depreciation leads to improved "government take". This is in harmony with Stürmer (2010) who reported that; 'mining companies did not need to pay corporate income tax (CIT) owing to favourable rules on capital allowances, such as the accelerated depreciation of buildings and plants, the carrying forward of losses for up to five years and other deductible expenses.' These incentives

can reduce the flow of revenue to government since companies cannot pay profit taxes until after cost recoveries and specific periods.

Respondents' perception was that capital allowance provisions failed to enhance increased flow of revenue to the government. This is consistent with the Natural Resources Charter (2014) observation that profit taxes, in practice, are often accompanied by capital cost allowances. This has the potential to defer revenues while up-front costs are recovered by the investor.

Respondents agreed to the statement that stabilisation clauses in the taxation regimes enhanced the flow of rents to the government. However, there are concerns as indicated by Conrad (2012) that any stabilisation provision should provide stabilisation for both parties and should not be one sided. Some mineral operations benefit from stabilisation, but others do not. Otto et al. (2006) indicated that for both companies and governments, tax regime stability is hard to guarantee. The reasons being the difficulty of binding future governments to the current promises and agreements and also the shift in bargaining power that occurs over the life of a mineral project. This was equally noted by Daniel and Sunley (2010) that a fiscal stability assurance might not be a hedge against change if the contract becomes economically or politically untenable.

5.5.2 Incentives and taxation system performance

For this part of the construct on incentives, respondents' indications were that tax system has not performed well based on the various statement dealing with granted incentives. The evaluations are given below.

Respondents agreed to the statement that tax incentives in Zambia need to be reviewed. The consent response is in line with Nalishebo and Halwampa (2014) who indicated that tax incentives should be reviewed continuously to ensure those which no longer serve or have served their purpose are phased out.

Respondents approved the lack of transparency and accountability in the way incentives are granted. This creates problems as indicated by Calitz et al. (2013) that the non-

transparent character of incentives facilitates tax evasion, complicates tax administration and encourages rent-seeking behaviour and corruption.

The respondents' perceptions were that government fails to conduct cost-benefit analysis for the granted tax incentives. This is consistent with Makano and Imakando (2015) who implied that there is no evidence that cost-benefit analyses are carried out to inform policy decisions on whether granting of tax incentives is beneficial to Zambia. Equally, IMF (2015c) stated that tax incentives in Zambia should be subject to legislative process, consolidated under the tax law, and their fiscal costs reviewed annually as part of a tax-expenditure review.

Further, respondents' opinions were that government still offers generous tax incentives as a means to attract investment in the copper mining industry. This is consistent with UNCTAD (2000) which observed that when the value of tax incentives to the investor exceeds the benefits accruing to the economy, they become a windfall for the investor. However, calculating how far investors should be compensated is not simple and straightforward. This lack of certainty may lead a government to grant overly generous incentives. Twerefou (2009) equally noted the perception that government revenue from mining in many African countries is not fully optimised because of the generous fiscal incentives.

Based on the statement that incentives granted in Zambia are uneven and favouring investors more than government, respondents agreed. African Progress Report (2013) is in support of this response specifying that several countries provide tax concessions that might be considered highly favourable to investors under normal market conditions.

Furthermore, respondents agreed to the statement that the amounts of revenues captured are influenced by the granted incentives in Zambia. This is consistent with observations by Makano and Imakando (2015) who argued that tax incentives are a cost to government; not only do they impose an administrative cost but they also greatly contribute to tax loss through foregone tax revenues. During the early years of mines privatisation, FIAS (2004) argued that because of the relatively low tax rates and

significant incentives, the mining sector enjoyed a marginal effective tax rate (METR) of around 0 percent.

5.6 Equity participation

5.6.1 Performance of equity participation

On this part of the construct on equity participation, respondents' perceptions were that the current equity stake in the Zambian copper mining industry has not performed as expected based on the used statements which are presented below.

Respondents' opinions were that the current equity stake needs to be reviewed. In Zambia, equity stake held by government in former ZCCM mining companies varies between 5 and 20 percent based on a minority ownership. The basis for these variations in ownership stake was not clear and was mostly a subject driven by negotiation during the processes of privatisation. The government would benefit from reviewing equity participation now based on the experiences from the performance of the current equity stake.

Respondents also agreed to the statement that the current equity stake does not generate optimal benefits. In Zambia, not all copper mining companies declare and pay the required dividends to contribute to optimal benefits from the industry. This is consistent with arguments by Ostensson et al. (2014) that government already participates in the project through income tax, royalty, and other tax collections, and it is unlikely that any additional revenue is collected because of state ownership.

Equally, respondents agreed to the related statement that there are no appropriate and optimal revenues realised by the state from the current equity stake. This is consistent with NRGI (2015) which specified that equity participation entitles the state to some form of dividend payment if a project is profitable. However, dividends are paid only after a project has recovered all up-front costs, meaning that they are often awarded years after the projects start, leading to disappointing dividends for states.

In Zambia, some copper mining companies have not been paying appropriate revenues (dividends and price participation fees) to the state through the holding company -

ZCCM-IH resulting in conflicts. The fact corresponds with observation by Ostensson et al. (2014) who indicated that government equity participation could result in conflict between the investor and the government - e.g. regarding dividend payment policy.

The perceptions of the respondents were that there is poor government representation under the current equity stake. The Zambian government retains shares in the privatised copper mines managed through the state-controlled holding company, ZCCM-IH. Lundstøl et al. (2013) reported that minority ownership interests managed through quasi-commercial entities without the financial, technical and managerial capacity does not make much sense to continue with. Equally, SDSN (2013) argued that minority equity stake confers very weak rights. Anything that can be achieved through a minority equity can be done through tax instruments, but not vice versa.

Respondents also agreed that no distinct policy guidelines on equity participation exist in new mine projects. In Zambia, the 1995 mineral policy had the main objective of attracting private investment in exploration and development of the new mines. However, by not securing equity positions in the new mining projects, the government is not getting additional benefits in terms of dividends from the new and viable projects in the country given the taxation problems the country is faced with to appropriate equitable rents through key tax instruments (CIT and mineral royalties).

5.6.2 Mode of adoption for equity stake review

Respondents disagreed to reviewing the equity stake for Zambia based on the three modes of adoption offered below.

Respondents disagreed to the item that government should not get involved as an equity partner in the copper mining industry. This is in line with observation by Baunsgaard (2001) who gave non-economic reasons motivating a government to acquire equity which included a desire to increase the sense of ownership, to facilitate transfer of technical know-how or to provide more direct control over project development.

Respondents also disagreed that government adopts the state-owned enterprise in the running of the copper mining industry. This refusal is consistent with Lundstøl et al.

(2013) who noted that there is well-known poor performance of many state-owned enterprises in Sub-Saharan Africa and other parts of the developing world, often following processes of nationalisation.

Additionally, respondents' perceptions were that government should increase its "free" equity in the copper mining projects. This is consistent with arguments by Lundstøl et al. (2013) that this situation fits into an overall emerging impression that minority government ownership interests in the mining sector are not an efficient way to secure and collect a significant share of the economic rent and profits.

Based on the responses, a proper mode of increasing equity participation needs to be established for Zambia. This is because Ostensson et al. (2014) noted that since 10 percent equity participation has emerged as the international norm, any percentage participation above 10 percent would likely come under severe scrutiny by the investment community, and could send a strongly negative signal that the government is not serious about wanting to attract investment.

5.6.3 Expectations from the current equity performance

Respondents disagreed to this part of the construct on equity stake which indicated that the current equity stake in Zambia has performed to expectations. The assessments based on the different studied statements are given below.

The perceptions of the respondents were that equity participation in Zambia has failed to offer government with direct operational and development control. This position is consistent with NRGI (2015) which consented that state ownership through state-owned companies have failed to build capacity in terms of expert development needed for commercial management of oil, gas or mining.

Respondents also opposed the statement that the current equity stake provides the government with increased ownership. 'The current equity stake can only allow an

increase of government shareholding in the mining industry if good negotiations are held with the mining companies varied from what occurred during the privatisation period.'[17]

There was dissent by respondents that the current equity take provides the required transparency in the copper mining industry. This is consistent with observations by NRGI (2015) which conducted studies and reported that 33 of the 45 state-owned enterprises assessed by the 2013 Resource Governance Index were deemed to have unsatisfactory transparency and accountability practices. Equally, IMF (2015c) specified that transparency is necessary to facilitate accountability and reduce opportunities for rent seeking and corruption.

Respondents indicated that the current equity stake fails to empower government to curb information asymmetry. This is consistent with arguments by Stevens et al. (2013) that large extractive companies often have more technical know-how, managerial capacity and financial resources at their disposal than their host government. This situation can pose challenges to effective regulation.

In Zambia, state participation in the sector still requires strong institutional capacities and resources to regulate the multinational corporation. Respondents consented that the current equity stake in the country fails to grant government authority to check malpractices. As indicated by NRGI (2015), by having a seat at the table in an oil or mining venture, many governments expect to enhance their ability to monitor the activities of private partners. However, there have been mixed experiences as most government shareholders remain excluded from major decisions.

On the statement that equity participation allows transfer of technology and technical expertise in Zambia, most of the respondents disagreed. However, this can also depend on the items agreed upon in the equity agreements. The disagreement response is at variance with McPherson (2010) who indicated that the objective of state participation

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[17] *Views expressed by an "expert" from the Ministry of Mines.*

was to build national capacity in the resource sector through the transfer of managerial and technical skills and information from the private sector.

Equally, respondents disagreed that the current equity stake has positioned government to better regulate the mining industry. This could also depend on the items agreed upon in the equity agreements. However, this dissent view is divergent to McPherson (2010) who pointed out that state participation was expected to regulate, or rein in, the behavior of private sector investors in the national interest. CRU (2014) also specified that it is probably now a consensus view, that the various objectives of state ownership can be achieved by an appropriate mix of other policy measures - including regulation and taxation.

Equity stake in Zambia has failed to provide shareholder protection to state. This disagreement by respondents is consistent with NRGI (2015) which observed that holding equity through a state-owned company can exacerbate governance problems and lead to sizable losses of revenues for the state.

5.7 Institutional capacities

5.7.1 Government institutions face challenges in rent capturing

Respondents agreed that government institutions faced challenges to enhance optimal rent capturing. These perceptions are consistent with Haglund (2013) who observed that, although Zambia's tax regime broadly follows international practice, the capacity of the different government agencies involved in enforcing and administering revenue mobilisation from the sector has remained weak. The evaluations on institutional capacity challenges are given below.

In Zambia, there is poor coordination among related agencies in the copper mining industry. This perception by respondents is in harmony with observations by ICMM (2014) which noted the presence of capacity weaknesses in various Zambian government departments and agencies. Halland et al. (2015) also mentioned that inter-ministerial coordination is critical to prevent overlapping or conflicting roles and to avoid gaps in regulatory responsibility.

Lack of political commitment to enhance rent capturing was observed by respondents. This was in line with Calder (2014) who pointed out that 'integrated natural resource revenue administration requires cooperation from agencies outside the finance minister's control, and this may not be forthcoming. Therefore, integration requires political commitment at a very high level.'

Political interference was also noticed as a challenge faced by government institutions. This is attuned with observation made by Fjeldstad and Heggstad (2011) that, 'although President Chiluba (1991-2001) supported the ZRA's autonomous operation as exemplified by the authority's merit orientation, there are indications that it was difficult for the ZRA management to maintain the autonomy of operation and to prevent political interference.' Equally, Barma et al. (2012) mentioned that political interference throughout the natural resource management value chain is pervasive in resource-dependent developing countries. Even in countries where an independent regulatory agency is clearly empowered on paper, its functions are often hampered by political interference.

Respondents agreed that there was absence of technological resources needed to carry out mandates in institutions. This is supported by Manley (2013) who indicated that 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.

Further, respondents consented that budgetary constraints exist in institutions. The Africa Progress Report (2013) affirmed that African governments lack the human, financial and technical resources needed to secure tax compliance, and the commercial market intelligence needed to assess company tax liabilities. As a result, they are losing significant revenue streams.

The final consent by respondents was that staffing challenges affect institutional operations. This is consistent with observation by Barma et al. (2012) that sector agencies face severe problems in attracting, training, and retaining specialised personnel. Equally, NRGI (2015) noted that if not effectively staffed or supervised, state-owned

companies could slow project development, decrease the revenue accruing to the state and exacerbate corruption.

5.7.2 Tax administration challenges

Respondents assented that the taxing authority (ZRA) faced different challenges affecting optimal rent capturing. The various statements analysed are presented below.

It agreed that there is absence of proper monitoring of production, costs and sales data. This is in accordance with the Natural Resource Charter (2014) which observed that it is critical for government to have the capacity, either directly or through agents, to independently measure output. The determination of production should not be left to the sole discretion of the producers. Production needs monitoring and verification by government.

Respondents' perception were that tax avoidances existed in the tax administration functions. This is matched with the argument by Lundstøl et al. (2013) that a major problem and reason why countries have low collection of mining revenue is related to the erosion of the tax base through both legal and illegal tax practices. Often, it is difficult or almost impossible to stop this and/or to prove that something illegal or against the rules of laws of taxation has taken place. In assenting, Lundstøl et al. (2013) reported that the Deputy Minister of Finance in Zambia stated in November 2012 that Zambia loses between US$ 1.5-2 billion every year due to tax evasion and avoidance, mainly in the copper mining sector.

Respondents agreed to poor valuation of intermediate products. This is in agreement with Calder (2014) who reported that benchmark prices are published mainly for refined minerals and not unrefined mining output. This situation makes it difficult to design a general valuation rule for minerals that reasonably approximates market prices.

There were indications of transfer pricing occurrences in the taxing authority. The respondents' perceptions are in agreement with Manley (2013) who indicated that because most mining companies are multinationals, there is scope for transfer pricing abuse. Christian Aid (2014) supported this result and noted that the cause of revenue loss

to governments is multinational companies' ability to use trade mispricing to artificially reduce the revenue they declare in the production country.

The tax authority is faced with challenges of information asymmetry. The respondents' views are consistent with observations by Christian Aid (2008) that mining companies have experts who in many cases know far more about the value of the resources under discussion than the government selling them, and have long experience of devising hugely complicated tax formulas to their advantage.

Respondents had perceptions about creative accounting practices affecting tax administration. Gregow and Hermele (2011) observed that companies deprive African governments of millions of dollars in revenue through mining tax subsidies and tax avoidances via complicated corporate structures and "creative" accounting mechanisms. Equally, Stürmer (2010) remarked that most Sub-Saharan African tax authorities lack the skills needed to audit the complex accounts of mining companies. These result in failures to check statements on depreciation and the carrying forward of losses from other concessions.

Challenges of non-reporting of by-products affect tax administration. In Zambia, ore deposits have inherent mineral constituents with commercial values and there are still possible non-disclosures of recoverable valuable metals during the processes of beneficiation from the mineral ores and concentrates. Manley (2013) observed that there are a number of ways mines report value of their production less than its actual market value which may include failure to report by-products contained in the ore.

Respondents were agreeable to the existence of tax evasions in the mining industry. This is in unison with observation by Christian Aid (2008) that there are illegal ways transnational corporations (TNCs) have to get around paying tax by manipulation of profits and revenues through tax havens, where little or no tax is required to be paid on monies held there.

Generous tax incentives affect tax administration. The respondents' views are consistent with observations by Christian Aid (2014) that tax incentives to companies simply

amount to revenue losses for poor countries and it is a mechanism which supports the excessive concentration of wealth in few - often foreign-owned - hands.

Perceptions of respondents were that debt-equity imbalances exist during tax administration. Mining companies in Zambia are subsidiaries that have parent companies abroad which are responsible for making-up the financing arrangement to these subsidiaries by means of debt financing instead of equity payment. The approval for the statement is in line with Calder (2014) who stated that companies may avoid tax by charging excessive financing costs through costs being excessive relative to the level of borrowing (interest rates or guarantee or facilitation fees at higher than usual market rates) and where the level of borrowing may be excessive (generally described as "thin capitalisation").

5.7.3 Mine regulation challenges

Based on this component dealing with institutional capacity challenges, respondents consented that the Ministry of Mines faced some monitoring challenges based on the studied statements. The result is consistent with Stevens et al. (2013) who reported that a lack of both experience and technical capability in managing extractive industries creates specific challenges and the potential for tensions between sub-national groups and companies. The assessments based on the used statements are given below.

Views of the respondents were that the ministry has no adequate capacity to monitor production and quality of produced minerals. This approval perception is consistent with thoughts by Lundstøl et al. (2013) who narrated instances of under-reporting of volumes, grade and by-products in Zambian copper mines.

Respondents equally agreed that there is absence of adequate technology to monitor mining activities in the entire mineral value chain. The Zambian copper mining industry is fully integrated with mineral beneficiation carried out by separate or allied companies. This can have tax implications in terms of eroding or transferring the tax base.

Respondents consented that there is poor acquisition of relevant production data in the mineral value chain. Capacity challenges exist in institutions affecting independent

verification of the mining production figures and various mining operations upon which informed decisions can be made. The government relies on information provided by mining companies. Lundstøl et al. (2013) affirmed this concern due to government's lack of capacity to conduct technical audits.

Respondents agreed to the statement that mine regulators face challenges of non-disclosure of by-products by mining companies. Zambia's mineral deposit contain other minerals of commercial value like gold, silver, cobalt, and uranium which in most cases are not even accounted for, despite their massive constitution of the mineral mix during the order of formation. The values indicated by mines to the taxing authority may have under-reported volume of production or the grade of the mineral, or they may not fully report by-products contained in the ore. Lundstøl et al. (2013) recounted issues of widespread under-reporting both of the main products and the by-products in Zambia.
Respondents' views were that mine regulators fail to enforce the laws adequately. Understaffing at the ministry of mines and lack of strengthened institutions or capacity building affects the adequate enforcement of the laws in the copper mining industry.

Respondents indicated that challenges to value properly the intermediate products exist in the copper mining industry. Zambia still has challenges to realise benefits from inherent minerals of commercial quantities which are not disclosed and yet are suitable for recovery or can report as by-products of copper mining and beneficiation processes especially in the process of exporting of intermediate products (concentrate and blister copper) by some mining companies. These concerns are consistent with Manley (2013) who stated that checking the quality and content of all production-not just in mines, but also in smelters and refineries - poses significant problems for governments.

Respondents consented that there is under-declaration of ores and concentrates produced in the mining sector. Uncertainties or gaps in the flow of information on the reporting and declaration of production values from the Zambian mining industry still exist. Simpasa et al. (2013) indicated that the Bank of Zambia (Balance of Payments) Regulation enacted Statutory Instrument No. 55 (SI 55), requiring mining companies to

declare the quantity and grade of minerals being exported. This was aimed at accurately capturing the value of mineral exports.

Respondents' perceptions were that policies are uncoordinated with what is currently obtaining in the mining industry. This statement is in agreement with claims by ICMM (2014) that issues of governance in Zambian mining industry have been attributed to weak institutional capacities dealing with policy formulation and regulatory framework.

5.8 Performance of corporate social responsibility (CSR)

Perceptions of respondents were that CSR performance in Zambia has been sub-optimal. This is based on the analysed statements which are offered below.

Respondents' indications were that mining companies carry out CSR on a voluntary basis. These concerns are consistent with ICMM (2014) observations for Zambia that 'social investment made by mining companies are voluntary - aside from some legacy obligations for Copperbelt mines as the Minerals and Mining Development Act of 2008 does not set out requirements for mandatory investment.'

Zambia lacks policy guidelines on CSR. At present, it is argued that there is no clear legislative framework needed to govern CSR and consequently no tangible procedures exist for mining firms on how to implement CSR in mining industry. The contribution of mining to activities of CSR is based mostly on company goodwill and not legislation.

Respondents agreed that there is absence of government commitments to CSR. Government resolve to enhancing CSR actions to mining communities in Zambia is moderated and the state seems to submit such responsibilities, which are not legislated and only operate on a voluntary basis, to mining companies.

It was agreed by respondents that Zambia has no full regulation of CSR. This is because CSR in Zambia operates on a voluntary basis without clear legislative frameworks governing it resulting in discreet guidelines to be followed by mining companies to successfully implement it.

Respondents also indicated that there is negligible community involvement to spearhead CSR. Communities in Zambia have marginal participation in matters of getting involved in advancing and implementation of some CSR projects which mostly is exclusively practised by mining companies.

In Zambia, there is lack of integration of CSR in mining houses' business models. Not all mining companies have demonstrated strong ability to contribute to local community in terms of employment provision, training and preferred procurement of goods and services because of their commercial activities. Some mining companies disclose neither their CSR budgets nor the intended beneficiaries of such programmes as there is no legislation compelling them to do so.

Respondents were neutral on the statement of NGOs absence to help spearhead CSR. Despite this response, OXFAM (2006) reported that organisations (NGOs) have an important role to play in the CSR field. They must communicate and sensitise the society (communities, companies and state included) on the importance of the subject.

Generally, CSR performance in Zambia is sub-optimal because it is done on a voluntary basis and mining companies are not obligated to undertake it.

5.8.1 Interest shown by companies in CSR

Respondents indicated that some mining companies had shown little commitments towards CSR in the copper mining industry. The evaluations based on the studied statements for this part of the construct are given below.

Respondents' opinions were that mining companies have not embraced CSR through protection and care of the environment. In Zambia, there are still gaps in environmental protection activities given that some mining companies do not comply with the environmental laws and regulations in terms of protecting the physical environment. African Mining Vision (2009) observed that local costs (environmental impacts and social and cultural disruptions) associated with mining especially to local communities were not being adequately compensated for. Similarly, Twerefou (2009) reported that in Africa, the mining sector is generally thought to be the second largest source of pollution

after agriculture. The sector is resource-intensive and generates high concentrations of waste and effluents.

Regarding absence of embracing CSR by creation of new communities and wealth, MMSD (2002) noted the key challenges facing the minerals sector which included, among others, local communities and mines where the social upheaval and inequitable distribution of benefits and costs within communities that can also create social tension. In Zambia, not all mining companies are involved in wealth creation for the communities.

Respondents agreed to mining firms' failure to provide skills and local population training. In line with observations by MMSD (2002), 'one way projects can contribute to sustainable development is by building human capital through direct training and education of the work force. As the industry has moved to smaller and more specialised labour forces, there are concerns that opportunities for a large number of semi-skilled jobs may further decrease, with yet fewer employment opportunities for local people.' This has the potential to affect the training needs for local population.

Perceptions by respondents that mining companies have not embraced CSR by providing community investment and sustainable livelihood projects, MMSD (2002) noted that when private companies take over state-owned companies, they frequently do not want to be responsible for the broader social support that the company previously provided.

Experts agreed that mining companies in Zambia have not fully provided employment to communities in mining areas. Mining companies contribute to local economic development by creating direct, indirect and induced employment (ICMM, 2014). However, CAFOD (2006) noted that globally, the number of people employed in formal mining is falling as changes in technology and increased productivity mean that fewer employees are needed. Ostensson et al. (2014) supported this fact indicating that most jurisdictions do not have any legislation relating to total employment in mining operations. This is so mainly because governments tend to accept that the total number of employed people is determined by technology and deposit characteristics and cannot be influenced without jeopardising the viability of the mining operation.

There was a disagreement by "experts" that mining companies embrace CSR in Zambia by providing social infrastructural improvement. There are no codes requiring mining companies to carry out certain social infrastructure projects. CAFOD (2006) reported that companies are no longer obliged to do this and social development projects are purely voluntary. Equally, MMSD (2002) argued that 'for different reasons, including the recent trend towards streamlining of mining operations to improve efficiency, and the recognition that companies could not provide long-term funding - there has been a tendency to move away from providing services such as housing, schools, and health care for mineworkers and their families, except in remote regions.'

5.9 Performance of local content

For this part of the construct, "experts" agreed that local content performance in Zambia has been sub-optimal based on the various statements discussed below. This is contrary to the objectives MRDP (2013) for the Zambian mining sector which, *inter alia*, aimed at promoting the development of a mining sector that is integrated in the domestic economy and which promotes local entrepreneurship, increasing demand for local goods and services, and creating employment for Zambians and promoting value addition.

Respondents' opinions were that Zambia has uncompetitive local firms. The products from local suppliers should be enhanced to satisfy the requirements of the mining companies. World Bank (2011) supported this position stating that 'to overcome competitiveness gaps and take the copper mining industry closer to reaching its potential, more competitive, locally-produced goods and services should be achieved.'

Built on experts' perceptions, Zambia has no clear and stable policy guidelines on local content. Ostensson et al. (2014) reported that some countries use legislation to express a general preference for local content, but without mandating specific requirements. In Zambia, despite being enshrined in the MRDP of 2013, the concerns dealing with local content in the mining industry are still not implemented.

Respondents asserted that there is an absence of significant local manufacturing base for the consumables needed in the copper mining industry of Zambia. This is consistent with the observation in the MRDP (2013) which signified that the 1995 Mineral Policy

in Zambia had outstanding challenges of dealing with low levels of ownership and participation by Zambians in mining companies and the associated business of supply of inputs, subcontracting and other support services.

Experts agreed to substantial importation of equipment and expertise in Zambia. Absence of competitive local suppliers and contractors to provide specialised inputs and services needed in the mining industry leads to international entrepreneurs being considered for supply of inputs in the sector. This has created a situation where most of the expenditure is spent outside Zambia. This is consistent with arguments by Esteves et al. (2013) that the impact on the local economy is limited when goods supplied to oil, gas and mining companies are merely imported, repackaged and resold by local firms. This scenario is in agreement with World Bank (2015a) observation that since mining in Zambia is capital and technology intensive, the industry is likely to remain an "enclave" in the short term where mines will continue to rely heavily on imports of capital goods and other inputs.

Experts agreed that the Zambian government is not fully committed to develop local content. This is supported by Dobbs et al. (2013) who indicated that more than two-thirds of the countries in their database showed that there is no structural government support for resource companies to achieve local-content targets through providing training centres, or financing for local suppliers to help them build up their businesses. Equally, the African Progress Report (2013) observed that Zambia also suffers from a dearth of practical measures aimed at encouraging the development of local firms.

Respondents approved that there is abuse of tax incentives granted for local content in Zambia. Special economic zone areas entitle companies operating there to additional special incentives meant to promote activities related to trade and manufacturing. However, Mullins (2010) indicated that the tax incentives granted tend to be abused.

For Zambia, there are companies operating under the MFEZs concession meant to develop value addition activities in addition to enhancing manufacturing undertakings for which the investment pledges are still not realised.

5.9.1 Interest of mining companies in local content

Respondents indicated that some mining companies had shown little interest in local content in the copper mining industry. The assessments established on the analysed items for this part of the construct are given below.

"Experts" consented that mining companies have no preferential local procurement strategies. This is contrary to observations by MMSD (2002) that a number of companies have adopted preferential procurement policies towards local suppliers and distributors. Many of these are increasingly enforced through provisions in national policies and legislation concerning foreign direct investment through, for example, joint ventures, partnerships, and outsourcing as a way of localising multiplier effects. Equally, Christian Aid (2007) noted that since privatisation, a number of local businesses have found that the new mine owners are less interested in buying from Zambian firms.

In Zambia, respondents indicated that there is no promotion of value addition investment. This is consistent with MRDP (2013) which indicated that the Zambian 1995 Mineral Policy had a number of outstanding challenges which, *inter alia*, included inadequate investment in downstream processing and value addition. World Bank (2015a) equally noted for Zambia that the scope for local value addition beyond smelting and refining is limited, and mines will continue to sell the bulk of their output to foreign buyers.

Experts' opinions were that mining companies do not create expenditures in the local economy. The result is consistent with Pedro (2004) who observed that in most countries, linkages between the natural resources sector and other sectors of the economy are still weak. This gap still exists in Zambia as the MRDP (2013) was formulated to contribute to the creation of a sustainable and orderly mining industry contributing to the economic development of the country by, among others, integrating the mining sector in the domestic economy.

Respondents indicated that Zambian mining companies are not fully engaged in mentoring and supporting local business development. MMSD (2002) reported that 'supporting local businesses provides an important means of benefiting communities and

building human and financial resources.' In Zambia, policies towards supporting local businesses by mining firms are not adequately followed.

Experts disproved the statement that mining companies develop clusters and appropriately utilise the Multi Facility Economic Zones (MFEZs). Sigam and Garcia (2012) noted that creation of industry clusters - grouping of enterprises that are interrelated and that depend on each other - is an effective instrument for business interaction and for coordinating productive resources in the sector. However, PREM (2007) observed that resources dependent countries are faced with "resource curse" with Copperbelt in Zambia as a case in point. This means that there is little in terms of cluster development and value addition to the raw materials produced, thereby accelerating deindustrialisation.

In Zambia, the MFEZs were set up to develop manufacturing of mining inputs and value addition to copper and other related products by companies operating in the zones. However, the use of prescribed MFEZ conditions has not yielded most of the intended objectives for which they were established.

In Zambian copper mining industry, "experts" indicated that there is no generation of adequate employment levels to local communities. This is matched with Twerefou (2009) who observed that in the mining sector, employment impact is limited compared to other sectors such as industry, services and agriculture due mainly to the capital-intensive nature of mining operations. Christian Aid (2007) also noted that companies are reaping huge profits from extracting valuable and finite resources from developing countries. However, host community benefits from resource extraction, such as employment, are negligible. Equally, Mwambwa et al. (2010) supported this and observed that in Zambia, tax revenues are by far the largest benefit from mining while employment generation is quite small.

5.10 Summary

The Chapter gave an assessment on various statements from the constructs or research questions influencing the optimal capturing of rent for Zambia. The items covered issues dealing with economic perspectives of taxation, fiscal tools and regime competitiveness,

investment tax incentives, equity participation, institutional capacities and non-fiscal benefits from CSR and local content.

CHAPTER 6

TAX COMPETITIVENESS EVALUATION AND GUIDE PROPOSAL

The aim of this Chapter is to assess the competitiveness of the Zambian mine fiscal regime and propose an appropriate structure for optimal rent capturing for the country. This is achieved through Section 6.1 which deals with (i) appraisal of the Zambian fiscal regime focusing on the Word Bank (2008a) international best practices, (ii) international comparison of the fiscal regime using headline tax rates, and (iii) comparison of mineral policy indices using the authoritative Fraser Institute Survey of mining companies (Taylor and Green, 2016) report. Section 6.2 employs the hypothetical copper model to assess the competitiveness of the mine fiscal regime for Zambia using economic measures of profitability and "government take". This was done by using the input sensitivity to the stylised copper model to offer some suggestions for Zambia. The proposal for the appropriate outline on optimal rent capturing for Zambia is given in Section 6.3 with Chapter summary presented in Section 6.4.

6.1 Comparison of Zambian fiscal regime to other jurisdictions

Taxation systems are compared among countries as a means to assess the competitiveness of the developed taxation system in a country. Based on the Zambian mineral policy, attractiveness of key tax instruments as applied in SADC region (Botswana, Namibia, Congo DR, South Africa and Tanzania) and other non-African countries (Norway, Chile, Peru, Canada, Russia and Australia) were evaluated.

Otto et al. (2000) carried global mining taxation evaluation with further work (Otto 2002, 2007, 2009) presented on comparative studies in countries like Peru, Mongolia, and Romania using hypothetical mine models to determine if the systems are internationally competitive. The results indicated that for Peru, the taxation system was globally competitive with 12 percent as internal rate of return (IRR) meeting the financial investment profitability. For Mongolia, the taxation system was found not to be internationally competitive because of low IRR at 8 percent giving a low profitability. In Romania, the study established that the tax system was unattractive and not

internationally competitive because of high effective tax rate (ETR) at 72 percent resulting in a low profitability measure for the mine projects.

In this study, Zambia is compared to 12 jurisdictions based on mine policy performance. The countries selected for comparison are Russia, Ghana, South Africa, Peru, Tanzania, Namibia, Botswana, Chile, Western Australia, Congo DR, Canada (Ontario) and Norway. These countries have different attributes in terms of mineral policies. Six of the countries (Chile, Peru, Australia, Canada, Russia and Congo DR (DRC) are ranked among the top 10 copper producing countries, some of which have escaped the "resource curse" in terms of the mineral policies followed. Amundsen (2012) indicated that the "resource blessed" countries include Norway, Australia, Canada, Chile and Botswana while others like Zambia and DR Congo are "resource cursed". Coutinho (2011) pointed out that both Botswana and Chile are developing countries with success stories. Botswana conducts prudent revenue management policies while Chile achieved sustainability with the use of fiscal constraints and by fostering private investment through market liberalisation. The other country, Norway as an industrial country is reported to have managed natural resource revenues through a national revenue fund managed by the state.

Zambia, Namibia, DRC, Botswana and Tanzania are part of the Southern African Development Community (SADC), which in 2004 started the process of harmonising mineral policy and regulatory framework. The aim of harmonisation was to reduce differences in the operating environment between the member countries of the region (Mtegha and Oshokoya, 2011). Nine thematic areas for harmonisation were considered for the SADC region, but mineral fiscal regime was singled out in the region as one of the key issues of interest to potential investors as well as the host states (*ibid.*). Taxation is only one aspect of mineral policy but it attracts significant attention when assessing country competitiveness (Trench et al., 2015).

The GMP Securities (2013), in analysing taxation trends in the mining industry, reviewed that Zambia, Ghana, South Africa, Namibia and Congo DR are high-risk countries due to tax changes. Table 6.1 gives a summary of the criteria used to select

countries under review. Work by Taylor and Green (2016) attempted to evaluate how mineral endowments and public policy factors such as taxation and regulatory uncertainty affect exploration investment. Compared with their study, the performance of the fiscal regime for Zambia's mining sector, centered on the 2015 Fraser Institute Survey of mining and exploration companies, is given.

Table 6.1: Summary of the selection criteria for the used countries

Country	Criteria for selection
Botswana	Resource blessed SADC member
Canada	Resource blessed Copper producer
Chile	Resource blessed Copper producer
Congo DR	Resource cursed Copper producer SADC member High risk due to tax changes
Ghana	High risk due to tax changes
Namibia	SADC member High risk due to tax changes
Norway	Resource blessed
Peru	Copper producer
Russia	Copper producer
South Africa	SADC member High risk due to tax changes
Tanzania	SADC member
Western Australia	Copper producer Resource blessed
Zambia	Resource cursed Copper producer SADC member High risk due to tax changes

6.1.1 International best practice

The World Bank (2008b) benchmarked the settings for the policy regime of 2008 which is applied to mineral exploration and mining around the world. The key policy settings

were standardised against international best practice and are set out in Table 6.2. These have been conferred with for the Zambian practice. The fiscal packages in the current Zambian fiscal regime are not at huge variance with the 2008 international World Bank benchmark practice. At 30 percent CIT rate, Zambia is comparable to global norms. The mineral royalty rates (4-6 percent for the June 2016 regime) are considered slightly above the best practice of 2- 4 percent but slightly within the global average noted by PricewaterhouseCoopers (1998) falling between 2-5 percent and within the IMF estimate of between 5-10 percent (Adam and Simpasa, 2009) for developing countries.

Table 6.2: Best Practice 2008 Policy Setting compared with Zambia (World Bank, 2008b)

Taxation Policy Provision	**Best Practice Policy Settings**	**Zambian Practices***
Corporate income tax rate	25% to 30%	30%
Withholding tax rate on dividends	15%	15% on management fees and 0% on dividends.
Mining royalty rate (ad valorem basis)	2% to 4%	4-6 % for the June 2016 regime.
Tax on windfall profits	None	Nil (15% VPT until 2016)
Import duty on mining plant & equipment	None	None
Export duty on mineral commodities	None	15% on concentrates
Value-added tax	Refundable	Zero rated on exports and refundable
Depreciation of mining plant & equipment	Accelerated & pooled depreciation	25% Capital allowance
Ring fencing of tax liability of nominated activities from the rest	None	Yes
Treatment of mineral exploration expenses	Amortised over 5 years	Expensed
Treatment of environmental expenses	Expensed	None
Treatment of mine closure & rehabilitation expenses	Tax deductible contributions into sinking fund	Environmental Project Funds (EPF) are set.
Tax holidays	None	None (for designated economic zone projects)
Carry forward of tax losses	Unlimited or Available for up to 7 years	10 years for mining projects and 5 years for prospecting and exploration projects.

**Zambia from various authorities.*

World Bank (2015a) reported that Zambia's mineral royalty rates have in recent years tended to exceed the global norm, even before the rate jumped temporarily to 20 percent on open-pit mines in 2015. Most major mineral producers charge less than 6 percent.

6.1.2 International comparative analysis based on key fiscal instruments

Different countries apply different headline tax rates for sharing the portions of rent from their mineral wealth as indicated in Table 6.3.

Table 6.3: Country comparison of headline tax instruments
(Conrad, 2012; IMF, 2015c)

Country	Royalty Rate	CIT Rate
Botswana	Diamonds 10%, gold and precious metal 5% and copper/nickel 3%	30%
Congo DR	Ferrous 0.5%, non- ferrous 2%, precious 2.5%	30% for mining companies
Ghana	Copper, gold, iron ore and coal all at 5%	35% for mining companies
Namibia	Diamonds/precious stones 10%, uranium 6%, dimension stones 5%, gold (copper)/base metals 3% and others 2%	32% for mining companies
South Africa	Copper 0.5-7%, gold 0.5-5%, coal 0.5-7% and iron ore 0.5-7%	28% income tax
Tanzania	Copper 4%, gold 4%, iron ore 3% and coal 3%.	30% or 25% for companies registered under DSM Stock Exchange
Zambia	Open pit mines and underground taxed at 9% (4- 6% sliding royalty for June 2016)	30%
Chile	0-14 % based on operating level and production margin.	20% first category tax + Global complementary + Additional Tax on non- residents
Peru	1% - 12% on operational profit or net basis	30%, 8% employee profit sharing
Canada (Ontario)	2-16% on profit or net basis (10%)	18% Federal rate varies for different provinces (15%)
Australia	10% of mine head value of extracted resources, 2.5% to metals, 5 % to concentrate, and 7.5% to crushed and screened products.	30% Flat rate
Russia	8% based on value of mineral resources	20%
Norway	Nil	28% Income Tax and Special Resource Rent Tax 50%

6.1.3 Comparison of mineral policy indices

Zambia's mineral sector performance in the context of the global perspective was matched with the results of the Fraser Institute's 2015 Annual Survey of Mining and Exploration Companies produced by Taylor and Green (2016). Zambia ranked 73rd on Policy/Mineral Potential among the 109 countries covered. Its score in terms of the key policy indices for the period 2011-2015 is given in Figure 6.1.

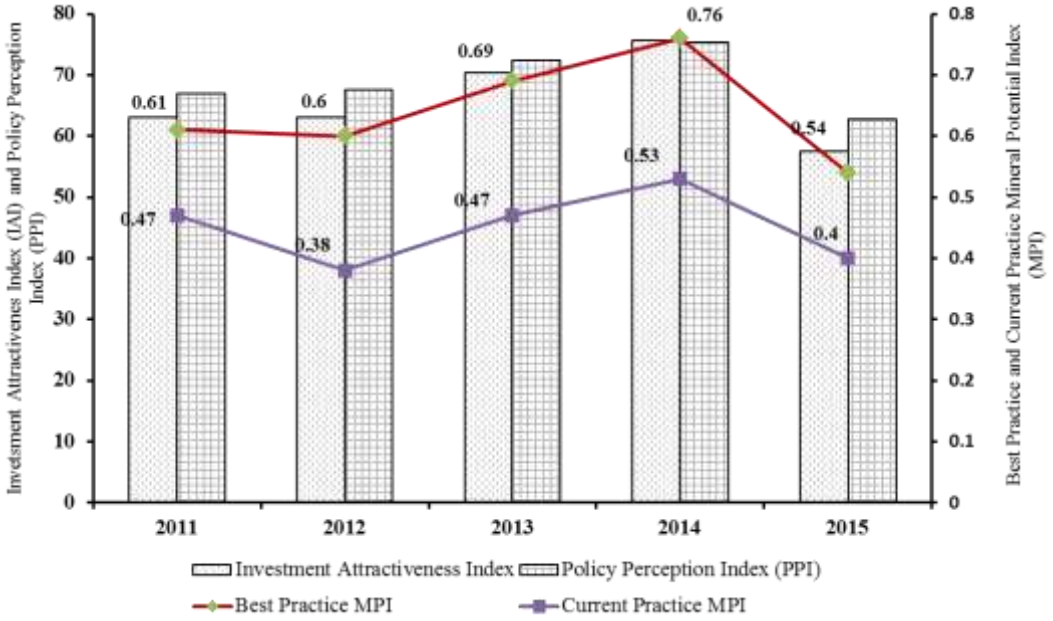

Figure 6.1: Zambia's scores, Fraser Institute's Survey of Mining Companies 2015 (Taylor and Green, 2016)

These have been showing improvements since 2012 until 2015 when there was a fall of more than 10 points for each of the indices. This was partly due to uncertainty in terms of drastic fiscal regime changes Zambia made to mineral royalty tax variations in January of 2015. These royalty rates do not take into consideration a project's profitability.

(a) Investment Attractiveness Index (IAI)

Taylor and Green (2016) indicated that an overall *Investment Attractiveness Index* is a composite index that combines both the Policy Perception Index and results from the Best Practices Mineral Potential Index, which rates regions based on their geologic attractiveness. A best practice environment is one that contains a world-class regulatory

environment, highly competitive taxation, no political risk or uncertainty, and a fully stable mining regime. The Policy Perception Index is a composite index that measures the effects of government policy on attitudes regarding exploration investment. For the countries used for comparison, Taylor and Green (2016) ranked them with respective scores as presented in Figure 6.2.

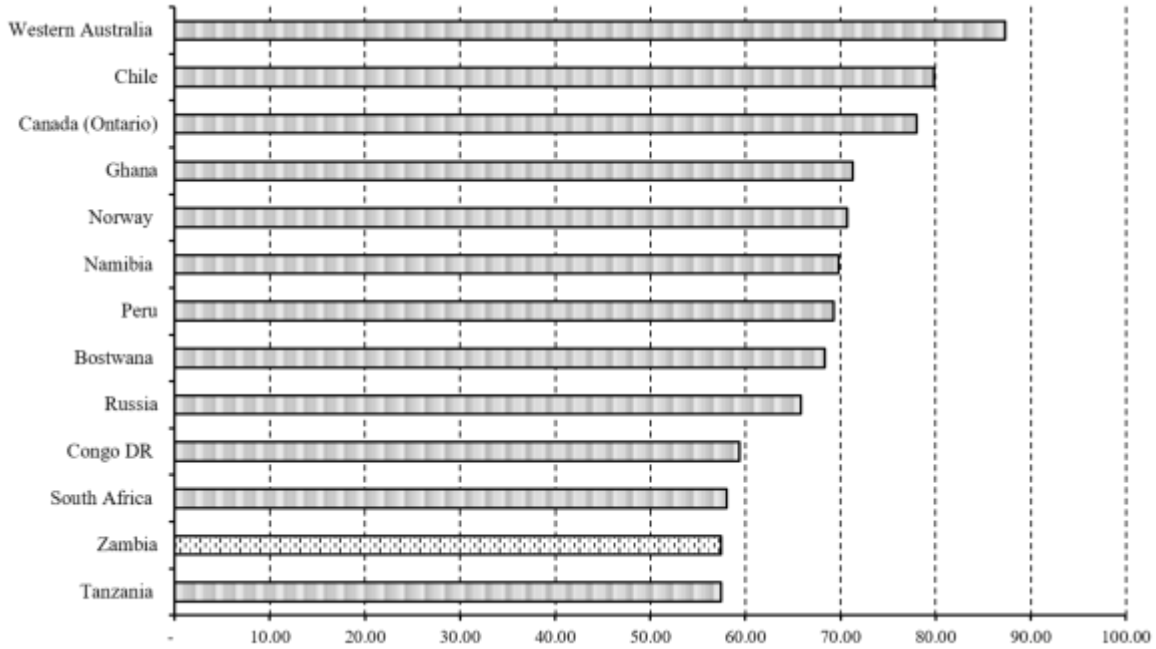

Figure 6.2: Investment Attractiveness Index
(Taylor and Green, 2016)

Only Western Australia, Chile and Canada rank in the top quartile for investment attractiveness. Most of the countries (Ghana, Norway, Namibia, Peru, Botswana, Russia and Congo DR) fall in the second quartile while South Africa, Zambia and Tanzania are in the third quartile.

The average score for African countries surveyed under Taylor and Green (2016) is 58.7 indicating that Zambia's investment attractiveness at 57.48 can be considered comparable in the region and higher than the average of 51.9 registered in the Latin American region. However, based on the studied countries, its attractiveness is less competitive.

(b) Policy Perception Index (PPI)

The PPI provides a comprehensive assessment of the attractiveness of mining policies in a jurisdiction, and can serve as a report card to governments on how attractive their policies are from the point of view of an exploration manager (Taylor and Green, 2016). The countries used for comparisons based on Taylor and Green (2016) were ranked as shown in Figure 6.3.

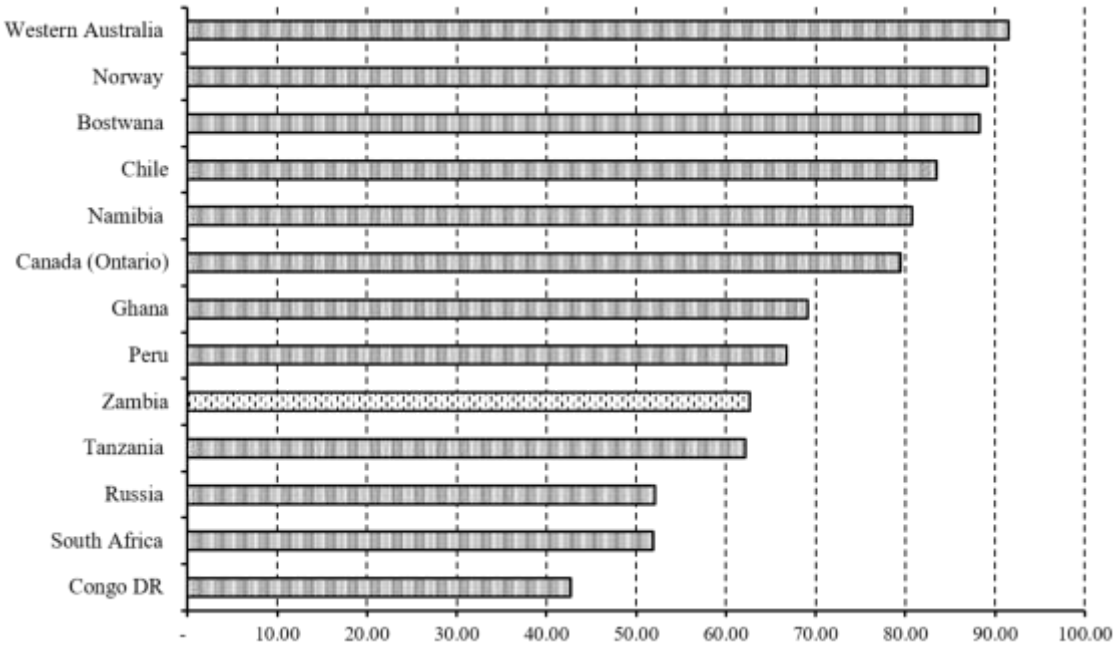

Figure 6.3: Policy Perception Index
(Taylor and Green, 2016)

Western Australia, Norway and Botswana rank in the top quartile for policy perception index while Chile, Namibia, Canada, Ghana, Peru, Zambia and Tanzania are in the second quartile. Russia, South Africa and Congo DR rank in the third quartile.

The PPI score for Zambia at 62.69 is comparable to the region's score for Africa at 61.5 and above that for Latin America at 55.2. This indicates that Zambia's mineral policy in the eyes of investors is attractive for investment in the African region and also based on the studied peer countries.

(c) Best Practice Mineral Potential Index (BPMPI)

The geological prospectivity of a jurisdiction centered on the report by Taylor and Green (2016) is explained through the "Best Practice Mineral Potential" index. This ranks the jurisdictions based on which region's geology "encourages exploration investment" or is "not a deterrent to investment." The term "best practices" encompasses world-class regulatory environment, highly competitive taxation, no political risk or uncertainty, and a fully stable mining regime. The ranking of the peer countries using Taylor and Green (2016) were as presented in Figure 6.4.

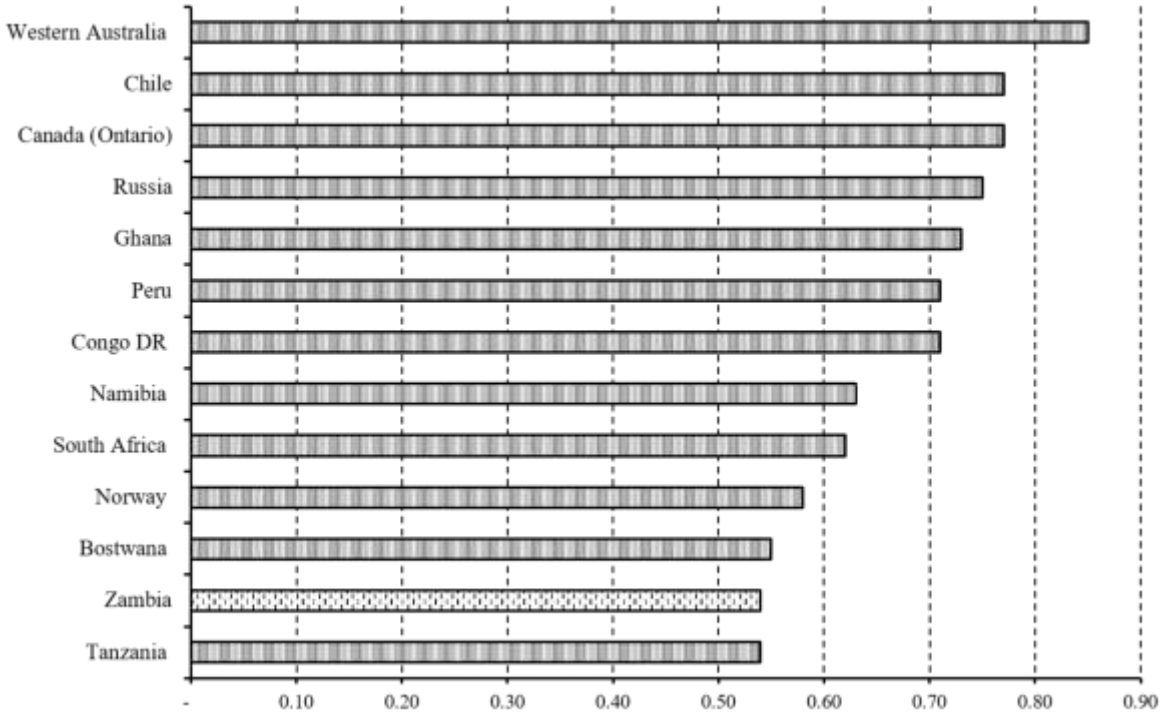

Figure 6.4: Best Practice Mineral Potential Index
(Taylor and Green, 2016)

The top quartile for mineral potential is occupied by Western Australia, Chile and Canada while most of the countries (Russia, Ghana, Peru, Congo DR, Namibia, South Africa and Norway) are grouped in the second quartile. The three African countries Botswana, Tanzania and Zambia are in the third quartile indicating that their performance in terms of geological attractiveness remains below the region's average at 0.59.

(d) Current Practice Mineral Potential Index (CPMPI)

Based on Taylor and Green (2016) report, the CPMPI, is built on respondents' answers to a question about whether or not a jurisdiction's mineral potential under the current policy environment (i.e., regulations, land use restrictions, taxation, political risk, and uncertainty) encourages or discourages exploration. For the countries considered here, the ranking based on Taylor and Green (2016) is presented in Figure 6.5.

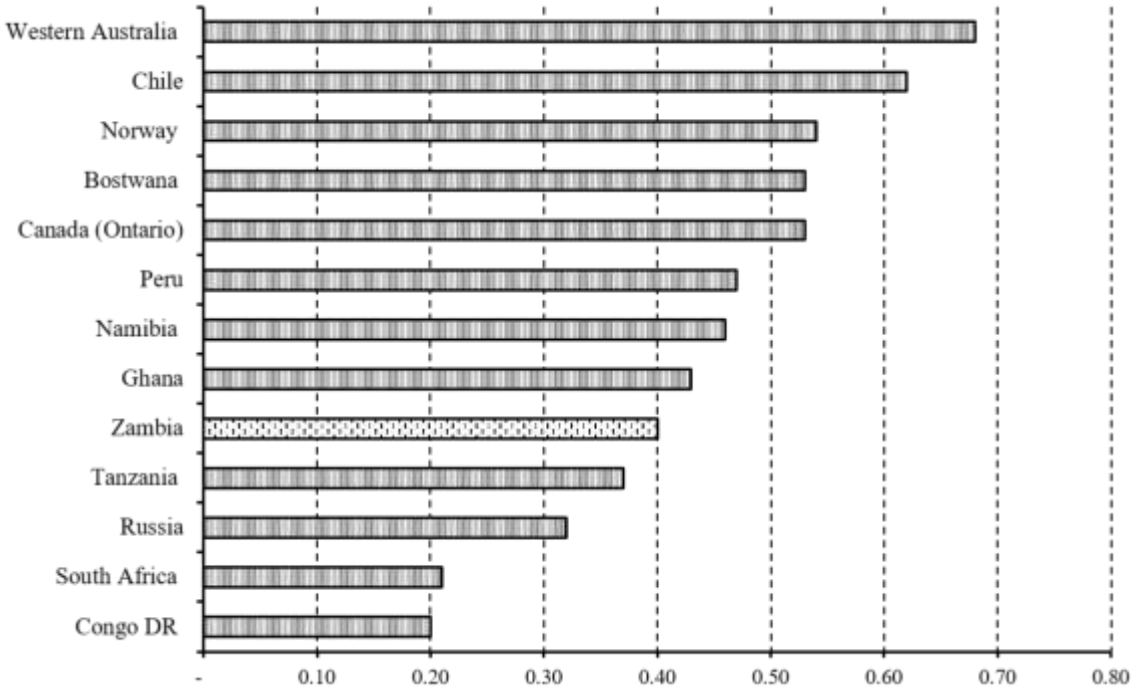

Figure 6.5: Current Practice Mineral Potential Index
(Taylor and Green, 2016)

The countries in the first quartile are Western Australia, Chile and Norway while Canada, Botswana, Peru, Namibia, Ghana, Zambia and Tanzania are clustered in the second. Russia, South Africa and Congo DR are in the third quartile in terms of the current policy encouraging exploration.

At a score of 0.40, Zambia's current policy environment can be considered to be above the region's average score of 0.36 in terms of encouraging exploration and well above the policy environment in Latin American at 0.28. It is also considered competitive in terms of its current mineral potential founded on the used peer countries.

(e) Taxation regime

Taylor and Green (2016) assessed how mineral endowments and public policy factors such as taxation and regulation affect exploration investment. The taxation regime includes personal, corporate, payroll, capital, and other taxes, and complexity of tax compliance. The scores for the countries studied for this index which sums the percentage of respondents' perceptions on the taxation regime to either "encourage investment" or "not a deterrent to investment" are presented in Figure 6.6.

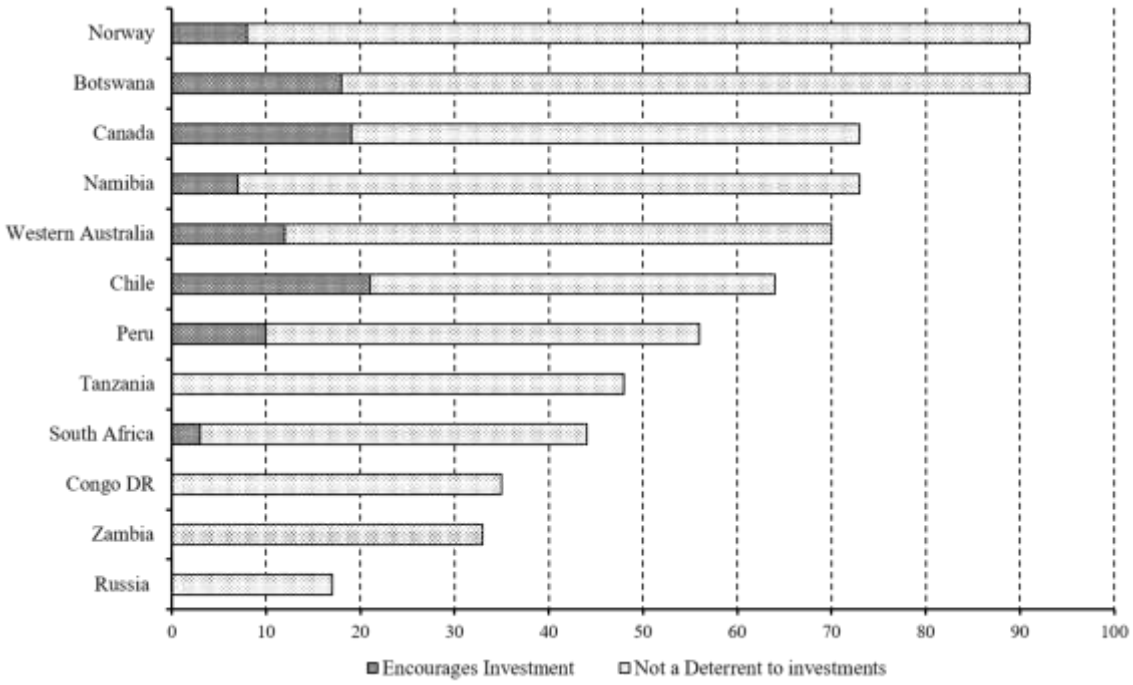

Figure 6.6: Taxation regime
(Taylor and Green, 2016)

Congo DR, Zambia and Russia fall in the first quartile with lowest scores while the majority of the countries (Western Australia, Chile, Ghana, Peru, Tanzania and South Africa) are clustered in the second quartile. Countries with highest scores in the third quartile are Norway, Botswana, Canada and Namibia.

Zambia's poor score at 33 percent in 2015 was because of the changes made to the taxation regime which created a lot of uncertainty for investment.

6.2 Fiscal regime evaluation using hypothetical copper model

Financial mine models are used extensively in the mining industry. These are used as an aid in understanding a project's economic potential and can be used for a wide variety of applications including the optimisation of mine design, profitability assessment, financing, and a host of other applications including tax system analysis (Otto, 2009).

Haglund (2013) recounted that researchers and professional services firms may apply the different fiscal terms of different countries on a hypothetical mining operation and on this basis, calculate an "effective tax rate". However, Haglund (2013) argued that, although such initiatives are useful in comparing different configurations of tax regimes within a country, there are challenges with applying such analysis cross-country. Mainly this is because such an exercise compares fiscal terms as if the same type of geological conditions and the same cost structure would apply in all the countries and to all mine operations, respectively. In reality, such conditions vary widely between mining jurisdictions. Hence, if a mining company assesses alternative investment opportunities it will assess fiscal terms in the context of many other factors, including the costliness of getting materials out of the ground (including ore grades and costliness of logistics/infrastructure).

The conception of the model is to place the stylised Zambian mine in other jurisdictions and try to measure the returns to the investor and to the government resulting from the difference in fiscal regimes. This is a pre-feasibility type mine model developed as a means to evaluate the Zambian mine tax system in comparison to fiscal regimes in different jurisdictions. The model was created with characteristics that are representative of mining activity based on Zambia's geological features and it was used to calculate some economic measures centered on the direct cash flows to assess the distribution of tax burden between investors and the government.

The hypothetical models are intended to produce results that are indicative of the impact of various fiscal regimes on project economics so that a government can assess in broad terms international competitiveness of a fiscal regime (Luca and Puyo, 2016). The

model holds revenues and costs constant for each country, so that the only variable is the country's tax regime.

6.2.1 Assumptions

The hypothetical copper model is not unrealistic but a representative of the types of mining projects currently operating in the Zambian jurisdiction. The model has several assumptions (Table 6.4) made on economic and technical factors to simplify the economic evaluation. The parameters forming model assumptions were incorporated in a Microsoft Excel spreadsheet to compute the economic measures. The variables used in the assumptions are explained.

Table 6.4: Hypothetical copper model assumptions

Variable	Value
Mineral Reserve Base	780,000,000 tonnes
Copper ore production per year	28.0 million tonnes
Pre-production period	2 years
Mine Life	20 years
Base Capital Expenditure	US$1,300 million
Annual operating cost	US$3,500/tonne
Copper selling price	US$6,640/tonne
Escalation: Price Costs	 0.45% per annum 2.0% per annum
Average Copper grade	0.70%
Combined recovery	80%
Corporate Income Tax	30%
Mineral Royalty	3%
Discount rate	12%

(a) Prices

For most mineral commodities, prices are set in international markets based on the laws of demand and supply. Mining companies, in most cases, for specific products have little or no influence in determining the price of the commodities that they produce and remain as price takers. Commodity prices in mineral project evaluations are important and sensitive input variables for techno-economic assumptions. Estimations by GFMS

(2016) indicated that capital costs and industry cash costs generated an incentive price for new copper projects for 2015 at $6,921/tonne.

For this model, the copper price assumption is for the period 2014 to 2023 (Figure 6.7) giving an average of $6,640/tonne. This is drawn from the January 2015 World Bank (2015b) commodity price forecast showing an annual increase of $30/tonne per annum from 2015 resulting in 0.45 percent average annual growth rate in nominal price terms. The model provides sensitivity of the mine tax system to variations in commodity prices.

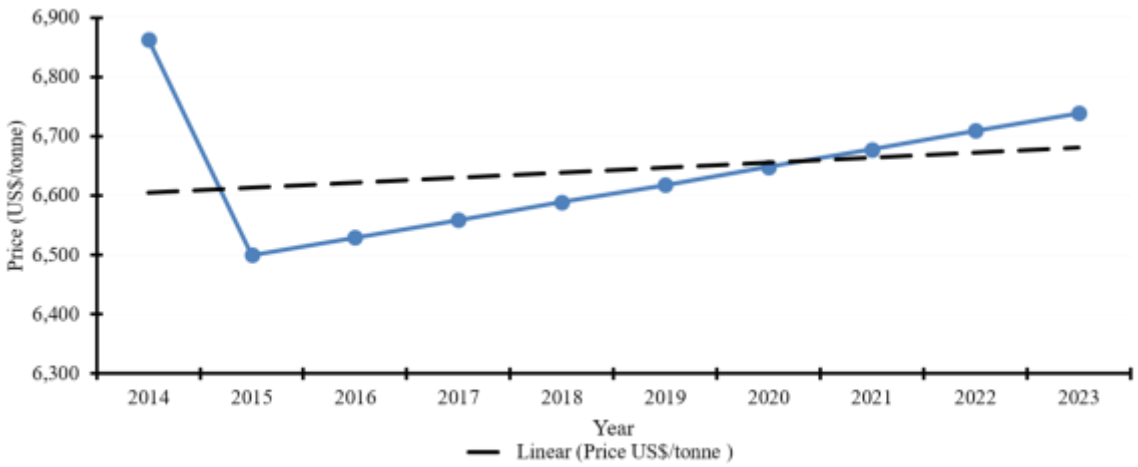

Figure 6.7: Copper price forecast
(World Bank, 2015b)

(b) Costs

Costs other than tax requirements determine the feasibility and return on projects (Korinek, 2013). The costs associated with a mine will have an effect on that mine's tax liability (Otto, 2002). Certain levels of costs are allowed to be deducted for calculating the taxable income. Deductions that are most specific for mineral companies allowed for calculating net taxable income are feasibility study costs, pre-production exploration costs, development costs, and post-production explorations costs (Sarma and Naresh, 2001). All these special deductions have different methods of expensing allowed in different jurisdictions.

Production costs can differ significantly between mines, depending on the type of mine and nature of the deposit. A mine's cost of production is a function of the nature of the

resource (the quality of the ore, its depth, etc.) and the extent to which the most accessible resources have been exploited. The overall business environment in which the mine operates also affects costs (World Bank, 2011). The estimated unit production cash cost of copper in Africa for the period 2011-2012 averaged $1.83/lb (GFMS, 2013). Approximation of new project economics made by GFMS (2013) showed that a new project with a 20-year mine life and a required rate of return of 15 percent would require a long-term copper price or "incentive price" of $7,101/tonne (322c/lb). This assumes a project with a global average cash operating cost of $3,570/tonne (160c/lb) plus additional indirect cost and sustaining capital requirements of $881/tonne (40c/lb). World Bank (2015a) estimations of C_1 costs in different Zambian copper mines varied from mine to mine ranging from $1.6 - $2.90/lb.

For this study, based on discussions with mining company "experts", the costs of production are due to energy costs, high input cost, dewatering challenges and cost linked to project development. Based on various discussions held, the hypothetical model used a base case operating cost of $1.60/lb and provided sensitivity of the tax system to unit operating cost changes to cater for any range of production costs in the mines. The model assumed operating costs fully deductible against revenues in the year incurred and it employed the nominal dollars with the operations, capital and capital allowance costs escalated.

(c) Depreciation and capital allowance

These deductions are based on a project's actual capital expenses and they represent non-cash expenses for the calculation of taxes as prescribed by a country's fiscal codes and are applied to profit to reduce taxes paid and encourage further investment in the country (Torries, 1998). In many countries, the costs of acquiring equipment and plant may be used to reduce the income or profits tax liability through the means of depreciation and amortisation deductions (Otto, 2007). This model assumed a base case of capital allowance at 25 percent of the capital expenditure with the existing loss carry forward period of 10 years for mining activities as applied in Zambia.

(d) Deposit size and reserve - capacity relationship

Geologic reserves and cut-off grades of a mineral deposit are functions not only of geology but of extraction technology, costs and prices. Changes in any of these variables will change the values of economical reserves and cut-off grades (Torries, 1998). The size of a deposit will lend some guidance to defining the size (annual capacity) and life of the project and given the same deposit, different companies would view the optimal extraction rate and mine life differently (Otto, 2007). The basis of any mineral development is the existence of an ore reserve (Baurens, 2010). There are approximate ways to determine the optimal production rate or mine life of an ore deposit. De la Vergne (2003) reported that one of the important functions of a feasibility study is the determination of a scale of operations to maximise return on investment. Production capacity may be determined by applying one or more rule of thumb formulae, which includes Taylor's Law (Equation 6.1) which has proven surprisingly accurate for both open pit and underground application.

$$\textit{The optimum extraction rate} = \frac{5 \cdot (\text{expected reserves})^{\frac{3}{4}}}{(\text{days per year})} \qquad [6.1]$$

The production rates for a wide range of mines were within 20 percent of the "rule" figure (Allen, 1986).

Zambia's mineral resource projects are poly-metallic meaning that they can produce multiple commercial minerals from the same deposit. This hypothetical model makes the assumption of a single primary commodity produced making up a low-copper grade deposit found in the Central African metallogenic province and is not unrealistic. Such a deposit has volume-guided technologies which employ economies of scale to extract copper ore.

(e) Financing

Most large-scale mines use a combination of debt and equity capital finance. Luca and Puyo (2016) noted that it is common for exploration costs to be fully financed with equity, while development costs are financed with a combination of debt and equity. However, for debt financed development costs, thin capitalisation rules must be

considered. Otto (2009) indicated that the extent to which a mine is financed through debt rather than equity capital can have a measurable impact on the amount of taxes it pays. This is because in many jurisdictions, some or all interest payments on loans may be used as deduction when calculating the amount of income subject to a profits or income tax.

Estimation by GFMS (2013) showed that a new project in Zambia scheduled to be commissioned in the year 2015 had an estimated capital expenditure of $1,700 million with additional production of 290,000 tonnes of copper concentrate per year. This stylised copper model employs a base case for capital expenditure of $1,300 million. For simplicity, the project was considered fully integrated with a non-leveraged or "ungeared" project finance assumed at 100 percent equity finance. This was done to avoid making variations to discount rates as stated by AusIMM (2012) that financial theory requires that the discount rate be adjusted if debt is introduced. For this stylised copper model, the overall capital expenditure was considered to be injected at the inception of project development with no breakdown of capital expenditure for exploration costs needed for reserve identification, construction and development costs for the resource. All the operating costs requirement were considered to be realised from the project cash inflows.

(f) Project operation

The project is operated from a perspective of foreign investment. This is a common practice noted in many resource-rich developing countries depending on foreign investment to develop their resource industries.

Large multinational firms often undertake mining operations. In the headquarters of these firms, investment decisions regarding operations in their different subsidiaries are based on a comparative assessment of the availability and quality of the ore, future production costs, various risk factors, and the regulatory environment, of which the tax system is one element (Korinek, 2013). For this stylised model, there are no bilateral or other tax treaties considered which can significantly affect a foreign company's fiscal obligation.

(g) Package of government receipts

Total package of government receipts under the fiscal regime could be derived from royalties, corporate income tax (CIT), rent and other profit-related taxes, flows associated with any state participation, and withholdings on dividend payments to non-residents (Keen et al., 2014). This hypothetical copper model employed only two conventional instruments (royalties and CIT) for fiscal evaluation. This makes the stylised copper model's estimate of total taxes paid to government to reduce the value of government's fiscal receipts.

(h) Discount rate

The discount rate is that rate used to discount the value of future benefits and costs to its present value (Torries, 1998). This takes into account the time value of money. The discount rate often known as the opportunity cost of capital is the return that is being given up by investing in the project (Brealey et al., 2001). The cost of capital for the company reflects the cost of rewarding the owners (cost of equity) and the lenders (cost of debt) for their investment in the company (Crundwell, 2008). If a project is certain and without risks, the discount rate is the opportunity cost of the capital. If cash flow is uncertain and risky, the discount rate is made up of the opportunity cost of the capital and the premium that compensates the risk assumed by the investor. This risk may be project-specific and/or country-specific (Laporte and Quatrebarbes, 2015).

Torries (1998) reported that there are many rates that are commonly used as discount rates, such as the weighted average cost of capital (WACC), hurdle rates, social discount rates, and safe and risk adjusted rates. The combination of the cost of equity and the cost of debt is the weighted average cost of capital (WACC) weighted by the proportion of equity and debt utilised (Crundwell, 2008). The WACC is given by:

$$WACC = \left(\frac{E}{E+D}\right) R_E + \left(\frac{\mathrm{D}}{\mathrm{E}+\mathrm{D}}\right)(1-\mathrm{T})\, R_{DBT} \qquad [6.2]$$

where; E is the amount of equity,

D is the amount of debt,

R_E is the cost of equity,

R_{DBT} is the before-tax cost of debt, and

T is the tax rate.

The value of the discount rate is calculated using the WACC which takes into account the debt and equity contribution and the effect of interest on the tax. As indicated in section 6.3.1(e), this model employs an all equity financing mechanism which has not considered gearing in the capital structure.

The discount rate is used to calculate indicators responsible for computing the effects of the fiscal regime on the investor's perception about the investment with respect to net present value (NPV) and internal rate of return (IRR). Luca and Puyo (2016) reported that this discount rate must reflect geological, political, and economic risks associated with the development of the resource project and can be proxied by the investor's cost of capital. A number of factors making the discount rate vary from company to company (Otto et al., 2006)

A discount factor figure of 10-15 percent is common in the hard rock mining industry (De la Vergne, 2003). For this hypothetical copper model, a discount rate of 12 percent was used following discussions made with "experts" from the Zambian mining companies. Most of them indicated that viability evaluations for the mining projects in Zambia employ discount rates of 10%, 12% and 15%. Chileshe (2013) reported that based on nominal values used, the Zambian discount rates range from 10 to 20 percent.

(i) Reclamation cost expenditure

The mining projects, in most cases towards the end of a project, might have large clean-up costs which can create negative future cash flows. However, for this model, capital expenditures associated with reclamation cost needed for closure plans were not taken into account.

6.2.2. Economic measures

The cash flows generated from the model copper project were considered to be at the pre-feasibility study stage of project analysis. The aim of the model is to demonstrate the

likely impacts fiscal tools will have on the project's cash flow. The economic measures used are the "government take" (effective tax rate - ETR), the project's viability measure (net present value - NPV), investor's measure of profitability (Internal Rate of Return - IRR), and investor's indication of tax system neutrality (marginal effective tax rate - METR and breakeven price). The direct net cash flow (NCF) (Appendix D) used is of the form:

$$NCF = RV - MRT - OPC - DEP - CIT + DEP - CE \qquad [6.3]$$

where; RV is the annual revenue,

MRT is the mineral royalty tax,

OPC being the annual total operating cash costs,

DEP is the annual depreciation charge,

CIT is the income tax calculated as a percent of the taxable income, and

CE is the annual capital expenditure.

(a) Effective tax rate (ETR)

ETR is a useful measure for understanding the division of net revenues between the government and the investors over the life of the mine. ETR can be calculated either taking the time value of money into account (discounted cash flow analysis) or not (undiscounted) (Otto, 2009). ETR is defined as the undiscounted value of all amounts paid to the government, divided by the undiscounted value of before-tax cash flow of the project (Otto et al. 2000) which is calculated using the following equation:

$$ETR = \frac{\sum_{n=0}^{n} T_n}{\sum_{n=0}^{n} R_n - OC_n - K_n} \qquad [6.4]$$

where:

R_n = the expected annual gross revenue from the sale of each product, determined using the expected product price taken times the expected tonnage, grade, and appropriate recovery factors necessary for the metallurgy employed.

OC_n = the expected annual operating costs associated with the sale of product produced and sold.

Note that private royalties are included as an operating cost but government royalties can be included either as an "operating cost" or as a "tax" depending on custom (AusIMM, 2012). For calculation of pre-tax income, revenue based royalties were treated as operating cost for the firm in the model.

T_n = the expected annual taxes from all sources (for this study, taxes include royalties, and income taxes). Implicit in the calculation is the assumption that all allowable capitalised deductions are included in the taxable income figure.

K_n = capital expenditures required for exploration, development, mine equipment, processing equipment, and related infrastructure.

(b) Average effective tax rate (AETR)

The AETR is the ratio of the present value of government receipts over the lifetime of a project to the present value of pre-tax cash flows, both calculated at some common discount rate. It is thus a precise indicator of what it is often loosely referred to as "government take" (Keen et al., 2014). A project is attractive to the investor at any AETR less than 100 percent and in this sense, economic principle is quiet as to what is an "appropriate" AETR. So long as taxes paid do not exceed the pre-tax rent on a project, investors will receive more than the minimum they require and so will have an incentive to proceed. Within that range, the AETR thus simply determines how rents are shared between government and the investor (*ibid.*).

Luca and Puyo (2016) reported that a rate of 10 percent may not be unrealistic for the government discount rate in some developing countries and foreign investors usually argue for discount rates higher than the government's.

(c) Internal rate of return (IRR)

This IRR also called the rate of return (ROR) and the discounted cash flow rate of return (DCFROR) is the value of the discount rate at which NPV is zero (Crundwell, 2008). This can be expressed mathematically as:

$$0 = \sum_{t=0}^{n} \frac{CFt}{(1 + IRR)t} \qquad [6.5]$$

where; *CFt* is the cash flow anticipated at year *t*, and

n is the life of investment of the mining project.

When a project's IRR is greater than the investor's minimum rate of return, or discount rate, the project adds value to the investor's portfolio as reflected by the NPV (Otto et al., 2006). The higher the IRR, the more profitable the project is in terms of return on invested capital (Torries, 1998). The investor's discounted IRR is a commonly used measure of profitability. By looking at both the before tax and after tax IRRs, an investor can compare how the various methods of taxation can affect this economic measure of profitability (Otto, 2007).

The type and level of taxes that are imposed on mining enterprises have a direct bearing on their rate of return on capital. As a general rule of thumb, the minimum return on investment sought by mining project investors is 15 to 18 percent, depending on country risk and other factors (World Bank, 2004). Companies would hesitate to invest in any project not yielding an IRR of at least 12 percent (Otto, 2007).

(e) Net present value (NPV)

This is the present value of all benefits less the present value of all costs, including initial capital cost (Torries, 1998) or the present value of cash flows minus initial investment (Brealey et al., 2001). The NPV can be formulated (Crundwell, 2008) in the following manner:

$$\text{NPV} = \sum_{t=0}^{n} \frac{CFt}{(1+k)t} \qquad [6.6]$$

where; *CFt* is the cash flow at year *t*,

n is the life of the investment of the project, and

k is the discount rate.

Many private and public sector mining companies to determine the economic viability of a proposed mining operation use NPV and IRR. They are integral to optimising the design of a mine and to setting basic interrelated parameters such as mine life, reserves, cutoff grade, and extraction profile (Otto et al., 2006). The annual production of the mineral, the capital costs and operating costs for each stage of the project, its lifetime, the sale price and the associated discount rate must be known when calculating NPV (Laporte and Quatrebarbes, 2015).

(e) Marginal effective tax rate (METR)

The METR measures the difference between the pre- and post-tax rate of return at the margin, where the return on the last dollar invested just covers its cost of capital (IMF, 2015c). Computation of METR (Luca and Puyo, 2016) is given in equation 6.7.

$$\text{METR} = (\text{Pre-tax IRR} - \text{Post-tax IRR})/\text{Pre-tax IRR} \qquad [6.7]$$

METR may be regarded as an indicator of tax system neutrality (Laporte and Quatrebarbes, 2015). This gives the extent to which the tax system reduces the rate of return on capital. The higher the METR, the lower the investment, and vice versa, making METR a good indicator of how taxes affect investment (Mintz, 2015). Determination of the METR was done using the hypothetical copper model to get a fair picture of how alternative tax instruments (CIT and MRT) affect the decision to invest in specific jurisdictions.

(f) Breakeven price

The breakeven price is a resource price at which a particular project will generate a post-tax IRR that will just induce investment (Daniel et al., 2010) or required to achieve a target rate of return. The breakeven price is determined by the model through iterations and then compared with the initial user price assumption. A price above the user price implies that the project is economically unviable post-tax (Luca and Puyo, 2016). Equally, the breakeven price is used as a measure of tax neutrality (Laporte and Quatrabarbes, 2015).

6.2.3 Model's comparative analysis

Hypothetical mine models are useful to analyse the competitiveness of the taxation system in different taxation jurisdictions. Although analysis of the fiscal regime as a whole in different jurisdictions is required, it is not a very straightforward undertaking. One way of comparing fiscal systems as noted by Otto (2000) is to calculate the total effect of all tax types on a typical mine in a selection of countries that compete for mining investment.

World Bank (2008a) reported that nations that have enjoyed high levels of mineral sector investment obtain a "fair share" of fiscally derived revenues with a total undiscounted ETR of between 40 and 70 percent. Ostensson et al. (2014) also noted that today a new project in a country with relatively low country risk would need a minimum of 17 percent IRR to attract financing. Rates below this mean that little or no investment will take place and the resources may remain unexploited, generating no revenue for government.

Under this study, variations in the headline corporate income tax (CIT) and mineral royalty tax (MRT) were made using the application of fiscal system in 13 different jurisdictions. CIT and MRT are fiscal tools that constitute the largest components of the proceeds for most governments used as a measure of the government take. Modeling results are given in Table 6.5 and Figure 6.8.

These results indicated that the government share of pre-tax project cash flow on undiscounted basis ranges from 28.7 percent to 55.9 percent, depending on the country where the project could be located - on average, 43.2 percent. The results signify that in comparison with other jurisdictions, the current tax system in Zambia could be viewed globally competitive for this type of copper project. As earlier noted (Section 2.3.6), World Bank (2015a) made estimation of the ETRs, for the period 2014, for the major Zambian copper mining companies which ranged from 44 - 66 percent. For this study, using the June 2016 fiscal regime, the undiscounted ETR for Zambia determined at 54.5 percent fell within the range based on the used project assumptions.

Table 6.5: Hypothetical Model's Comparative Economic Measures

Country	Undiscounted ETR (%)	Post tax -IRR (%)	AETR (10%)
Norway	27.7	19.3	32.2
Canada	28.7	18.9	38.6
Western Australia	38.7	18.0	47.5
Congo DR	38.7	18.0	47.5
Botswana	40.7	17.8	50.5
Namibia	42.7	17.6	52.9
Chile	40.4	17.7	56.0
Tanzania	44.9	17.4	57.0
South Africa	47.5	17.2	61.9
Peru	46.8	17.0	62.1
Ghana	54.4	16.4	70.3
Zambia (2016 Regime)	**54.5**	**16.6**	**72.4**
Russia	55.9	16.7	79.3
Average	**43.2**	**17.6**	**56.0**

For these 13 taxing peer jurisdictions reviewed, Norway, Canada, Western Australia and Congo DR are in the first taxing quartile while Chile, Botswana, Namibia, Peru, Tanzania and South Africa are in the second quartile. The countries in the third taxing quartile are Zambia, Ghana and Russia.

Except for Norway and Canada with ETR respectively at 27.7 percent and 28.7 percent (Figure 6.8), all countries reviewed based on the assumptions employed have the values for undiscounted ETR which are close and in line with the World Bank (2008a) indication falling between 40 and 60 percent for base metal mines.

However, it is important to note as indicated by CERA (2010) that "government take" does not provide any measure of the attractiveness of a fiscal regime. A company is more likely to invest in a country with a fiscal regime that provides a 90 percent "government take" while allowing a rate of return of 20 percent than a fiscal regime that provides a 50 percent government take while permitting only a 10 percent rate of return.

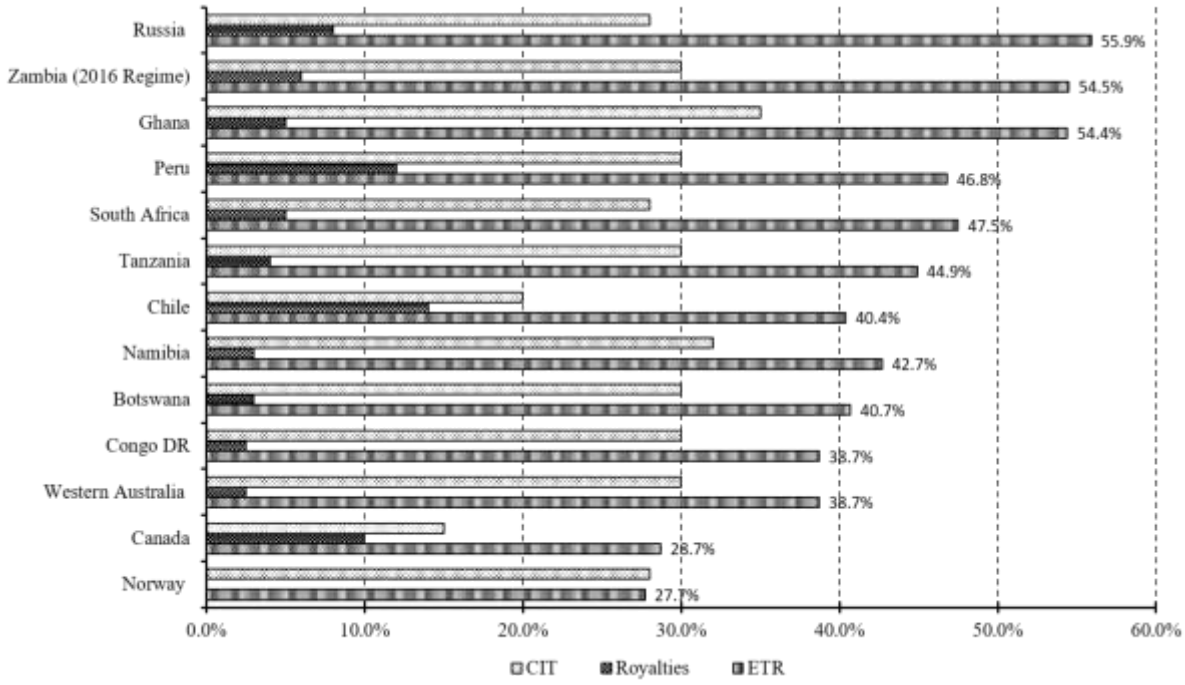

Figure 6.8: ETR based on CIT and MRT for different jurisdiction

Combination of fiscal tools were used to test the competitiveness of the Zambia's fiscal regime using neutrality test in relation to the peer jurisdictions used in the study (Figure 6.9).

Zambia, Namibia and Ghana have METRs between 14.5 - 17.2 percent occurring in the third quartile and resulting in low neutrality yielding fiscal mixes that can affect investment decision making. Canada, Chile and Russia have low METRs (7 - 9 percent) occurring in the first quartile with high investment attractiveness.

6.2.4 Relationship between ETR and rates of headline tax instruments

The relationship between the taxation rates and the equitable nature of the fiscal regimes are analysed. Studies by Trench et al. (2015) showed that the headline corporate income tax rate and royalty levels are identified as poor indicators for the total government share. This is because at project level, the quantitative financial analysis shows that there is no clear relationship between individual taxation rates, taken in isolation, and the overall ETR paid by the project over its life.

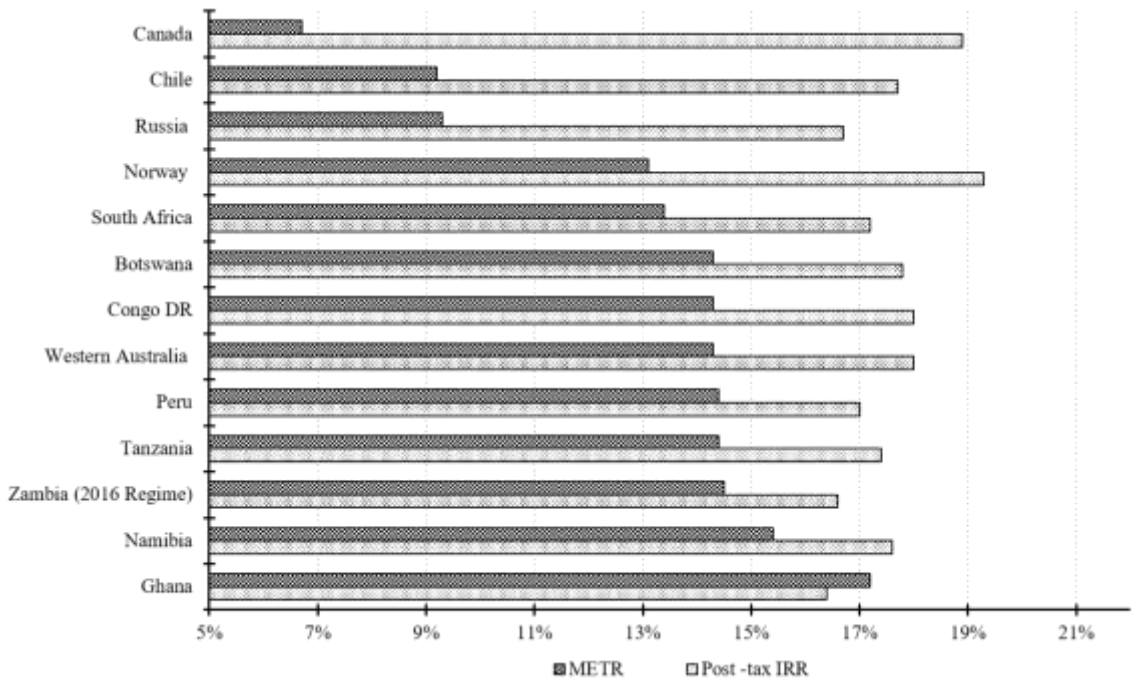

Figure 6.9: Combination of fiscal tools and neutrality

From the 13 taxation jurisdictions in this study, the analysis of the hypothetical copper model showed that there is no significant correlation existing between overall ETR for the life of mine project and headline corporate income tax (Figure 6.10), or the mineral royalty tax (Figure 6.11) for different jurisdictions.

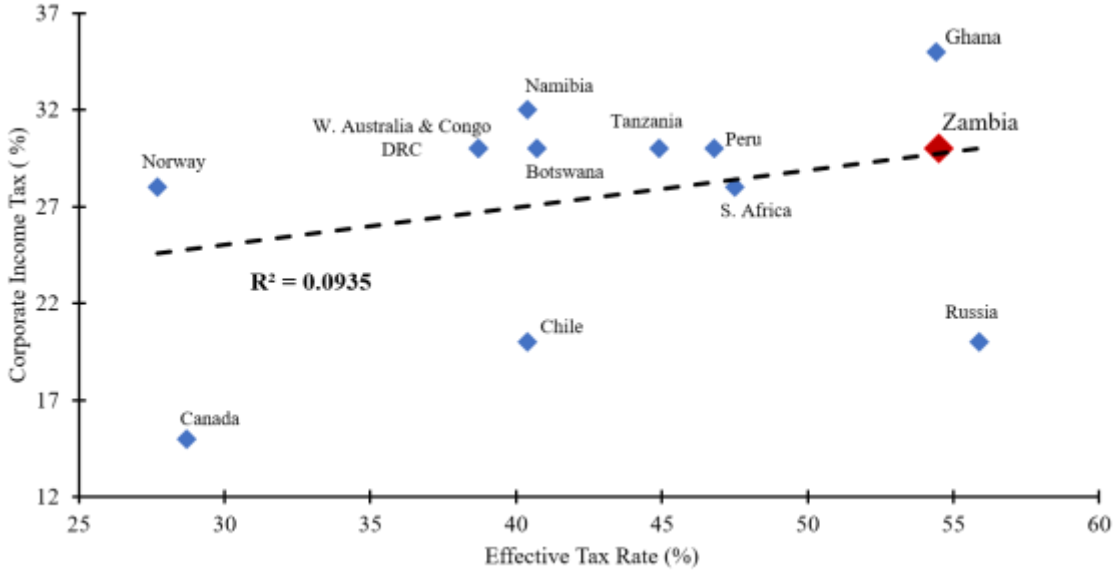

Figure 6.10: Plot of ETR for each country against equivalent CIT

This established that there are other parameters in the fiscal regimes needed to be comprehended in order to establish any meaningful relationship between the key CIT or MRT rates and the "government take" for a country.

Even more reliance on specific taxes than others needs proper evaluation to ensure that the taxation regime stays equitable. When formulating and designing mine fiscal regimes, policymakers in governments need not to focus only on the rates for the individual taxes as these do not provide complete information on the equitable capturing of the required rents.

These results imply that, even though taxation is an important criterion that overseas investors evaluate when considering destinations for investment, other various combinations of parameters making up the mineral taxation policies in different countries will determine the overall "government take" from the mineral project than just rates of key fiscal tools used.

This observation is in line with Ostensson et al. (2014) who indicated that the overall "tax package" of a country is more important than individual taxes as together these determine the IRR faced by investors.

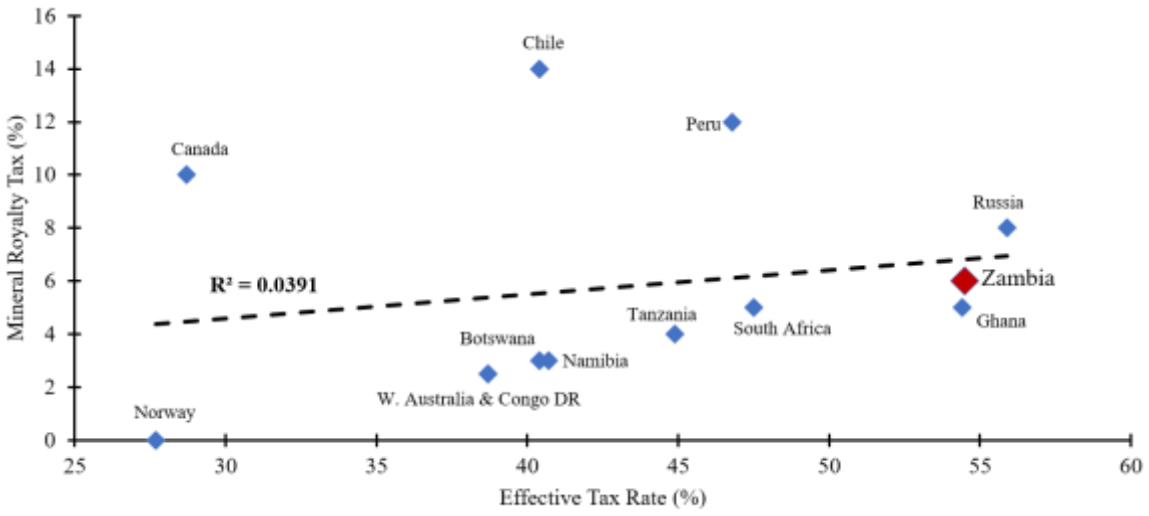

Figure 6.11: Plot of ETR for each country against equivalent MRT

6.2.5 Comparisons of ETR to policy indices

The Fraser Institute Survey of Mining Companies (Taylor and Green, 2016) report gives various indices of the world's mineral policies for about 109 countries. For the selected countries in this study, policy indices have been used to assess the relationships of such measurements with the calculated ETR. This was meant to assess whether investors' perception on the key policy indicators can be correlated with the taxation regimes ("government take") in different jurisdictions in order to evaluate how Zambia compares with other countries in terms of investor perception on fiscal regime concerns.

6.2.5.1 ETR and investment attractiveness

The overall investment attractiveness ranking from Taylor and Green (2016) report shows no meaningful correlation with the ETR (Figure 6.12) for the studied jurisdictions. The investment attractiveness index (IAI) is a combination of other factors with a bearing on mineral policy and mineral potential attractiveness of the jurisdictions. For example, a country like Congo DR with same rates for headline fiscal tools partially responsible for ETR as Western Australia has different mineral policy ranking for mineral potential attractiveness when compared to Western Australia. Countries like Zambia, Ghana and Russia have ETRs ranging 54-56 percent but have different rankings based on investment attractiveness.

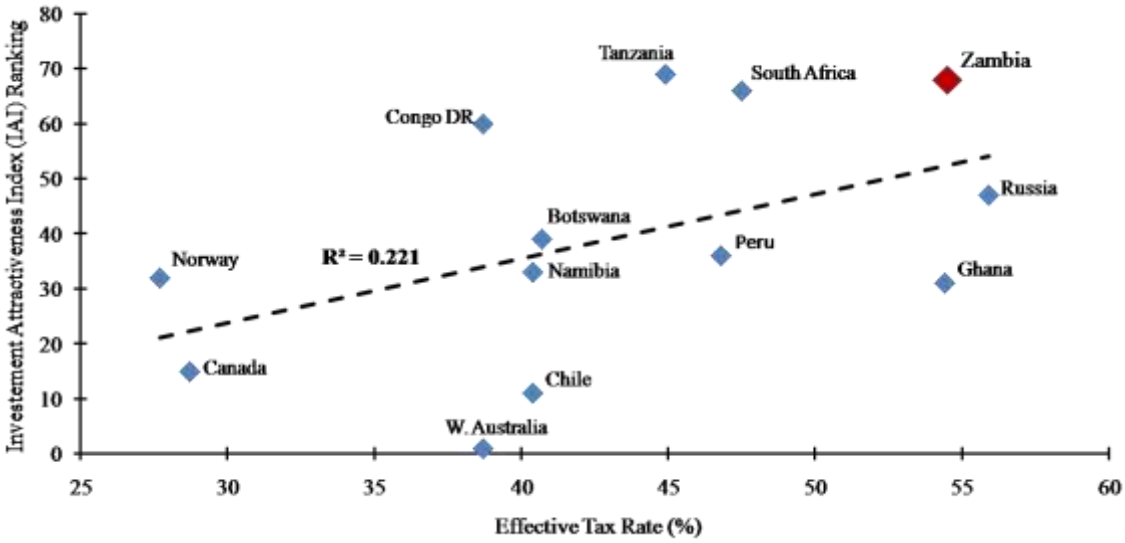

Figure 6.12: Investment Attractiveness Index ranking for 2015 vs. ETR

6.2.5.2 ETR and Policy Perception Index (PPI)

The PPI from Taylor and Green (2016) report was compared with effective tax rate (ETR) for different reviewed jurisdictions. A weak correlation exists for the countries in the study between the PPI and ETR (Figure 6.13).

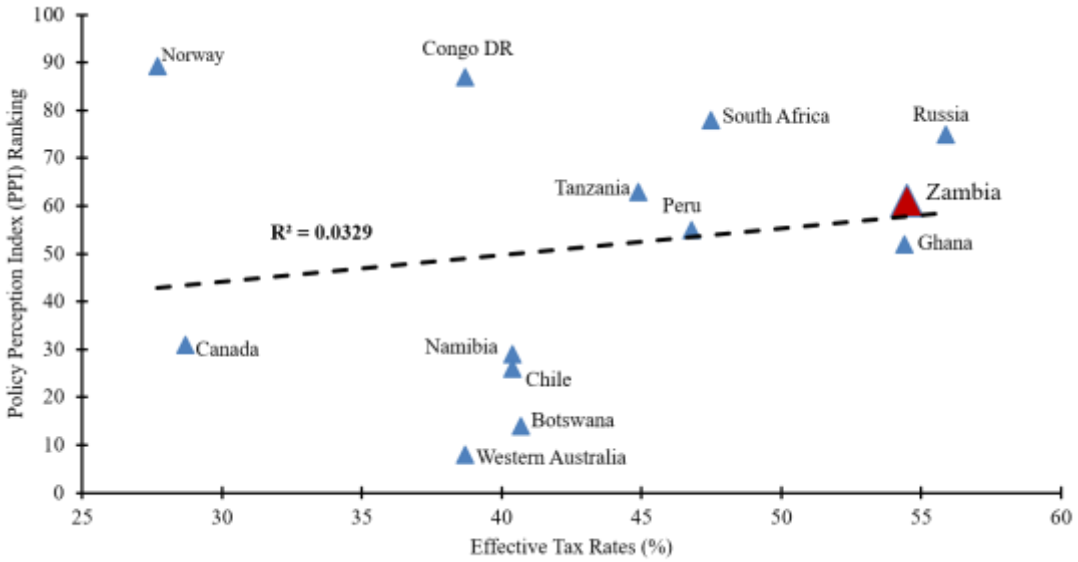

Figure 6.13: Policy Perception Index ranking for 2015 vs. ETR

Countries like Western Australia, Norway and Botswana are ranked high in terms of PPI than their ETR. This showed that other factors beyond levels of headline taxation rates could have a critical influence in terms of investors' perception on the mineral policy of a jurisdiction.

6.2.5.3 ETR and Best Practice Mineral Potential Index (BPMPI)

Geological potential rankings as BPMPI (Taylor and Green, 2016) for different jurisdictions were compared to the computed ETR. The results (Figure 6.14) showed that there is no significant relation between the geological potential and the ETR.

Zambia, Tanzania and Botswana are ranked in the third quartile in terms of geological potential and yet their ETRs are varying and competitive. It can be established that geological prospectivity is not directly linked to taxation in terms of investors' perceptions.

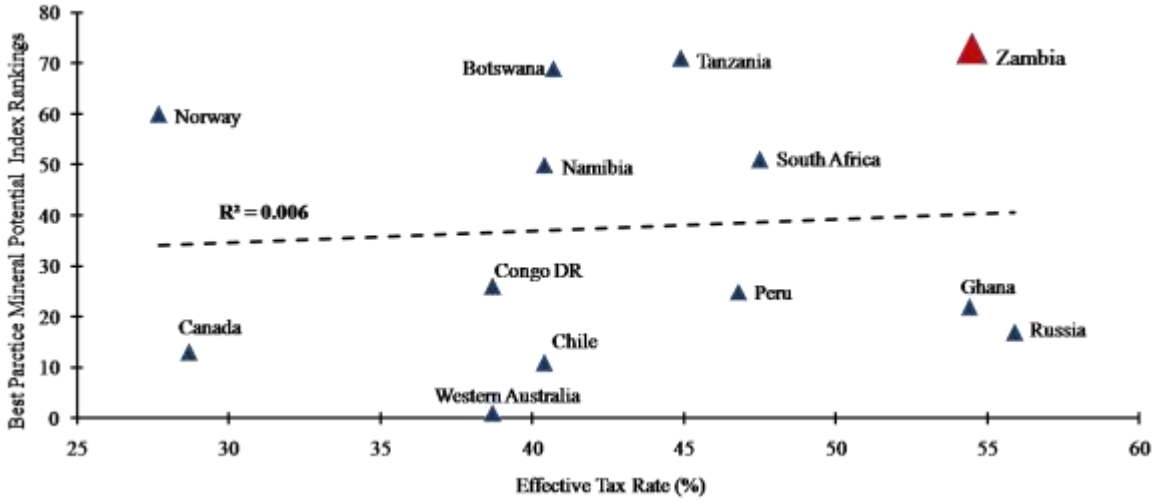

Figure 6.14: Best Practice Mineral Potential Index Ranking vs. ETR

6.2.5.4 ETR to Current Practice Mineral Potential (CPMPI)

The extent to which the current policy environment encourages exploration investment based on the report by Taylor and Green (2016) is compared with the ETR for the selected jurisdictions. The results (Figure 6.15) show that there is no significant correlation between ETRs and the current policy environment in different countries.

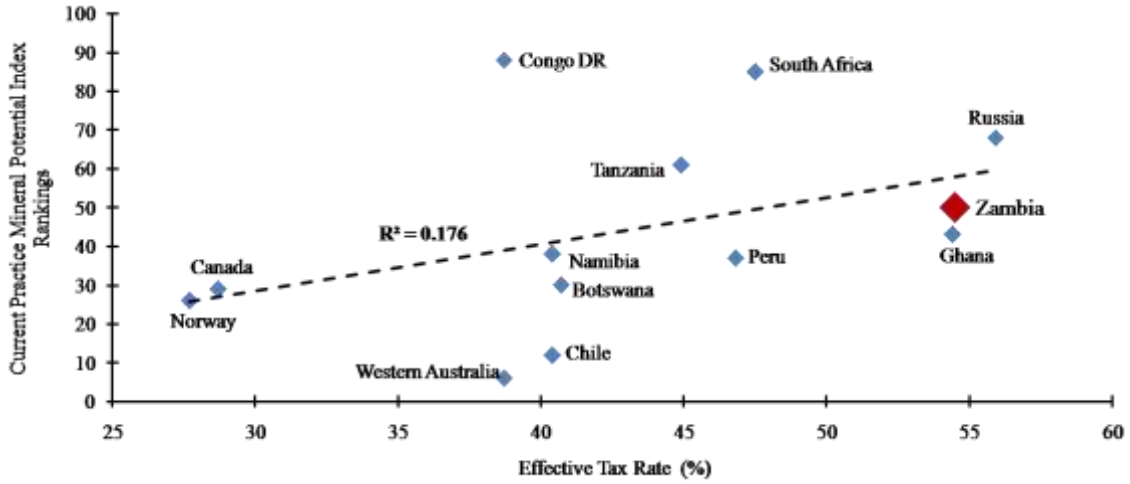

Figure 6.15: Current Practice Mineral Potential Index Ranking vs. ETR

This indicates that the current policy environment is not only centered on taxation but includes other factors considered important for investors' decision-making. Zambia and

Ghana have ETR close to 55 percent but they are competitively ranked in terms of current policy environment when compared to Tanzania, South Africa and Congo DR which have lower ETRs but lowly ranked on current policy environment.

6.2.5.5 ETR to taxation regime perception

The taxation regime index as reported in the Fraser Institute report (Taylor and Green (2016) compared to the ETRs (for key fiscal tools) was used to understand if the countries' taxation regimes have strong impacts on foreigners' investment decisions making. A fair relationship materialises (Figure 6.16) which indicated that higher ranking in perception of taxation regime corresponds with lower ETR.

This means that the ETR could have a just bearing on the majority of the investors' perception on the taxation regime of the jurisdiction. Norway, Botswana, Canada and Namibia are ranked high on taxation regime perception with low ETRs (Norway and Canada) while Zambia and Russia are ranked low on taxation regime perception with relatively high ETRs.

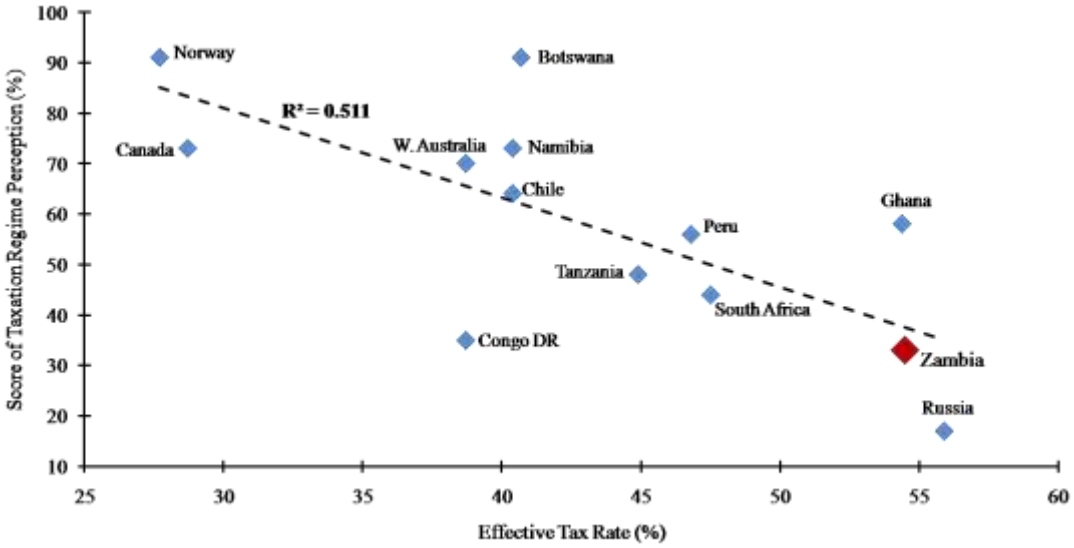

Figure 6.16: Taxation Regime Perception vs. ETR

6.2.6 Sensitivity analysis

Sensitivity analysis is an evaluation method by which input factor values such as costs and prices are changed, individually to determine how variations in such inputs affect

the project's value (Torries, 1998). The copper model under this study applied sensitivity analysis to assess the impact tax system has on ETR, NPV and IRR based on variations in commodity price, operating and capital costs, royalties, CIT and other significant parameters like discount rates and technical variables (tonnage, grade and recoveries).

The impacts of a taxation system on a project vary according to a measure of profitability (IRR). Progressivity of the tax system is indicated if the ETR increases as profitability escalates. However, if profitability goes up as the overall ETR decreases, the taxation system is considered regressive. Progressive tax systems satisfy the condition of vertical equity. Otto (2002) indicated that progressive tax systems tax more profitable mines at a higher effective rate than lower profit mines. Most economists agree that neutral or slightly progressive tax systems are better than regressive systems.
The Zambian mine taxation system was used in the copper model to assess the ETR in terms of progressivity, neutrality and regressiveness. The base case parameters were held constant while the parameter being tested was varied at a time.

6.2.6.1 Commodity price

Commodity price is a principal determinant of revenue, but it is also the factor with which the greatest level of financial risk is associated (Baurens, 2010). Variations made to price for the Zambian tax system as applied to the copper model indicated that the tax system is regressive with regard to price (Figure 6.17) movements.

Based on the given assumptions, an increase in the price of copper is accompanied by a reduction of ETR and an increase in pre-tax NPV. This observation indicates that for Zambia's fiscal regime, the more profitable the project, the smaller the government's share measured by ETR. This is because of there being no excess profit tax embedded in the taxation regime. Periods of low prices will result in the copper mine to operate under economic constraints.

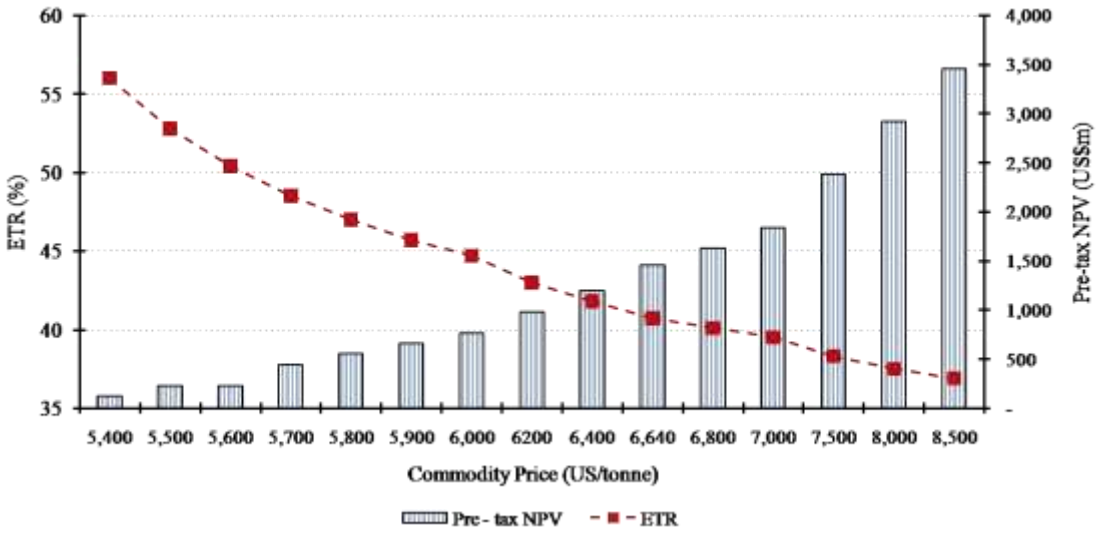

Figure 6.17: Tax system sensitivity to price

(a) Suggestions on commodity price

The fundamentals of supply and demand have a bearing on the fluctuations of the commodity prices. In times of high prices, government needs to collect additional revenues using a variety of methods like, as noted by World Bank (2008a), forms of resource rent tax, a graduated royalty which increases with commodity price increase, and a graduated income tax. The following suggestions based on the analysis of the copper model considering price variations are made:

(i) Government needs to adopt more progressive taxation mechanisms considering that the extractive sector operates in an environment faced with more volatile commodity price behavior; and

(ii) Zambia should consider reintroducing the *excess profits* tax indexed to price movements to make the current regressive fiscal regime progressive.

(b) Breakeven price

The breakeven price (price required for hurdle rate) for Zambia based on the assumed production and cost profiles was estimated at US$5,970/tonne falling in the range US$5,590-US$6,000 per tonne depending on the specific regime. This resulted in a METR at 12 percent hurdle rate of 15.4 percent (Figure 6.18). This breakeven price is

below the current long-term projections of US$6,640/tonne indicating that the stylised investment project is economically viable post tax.

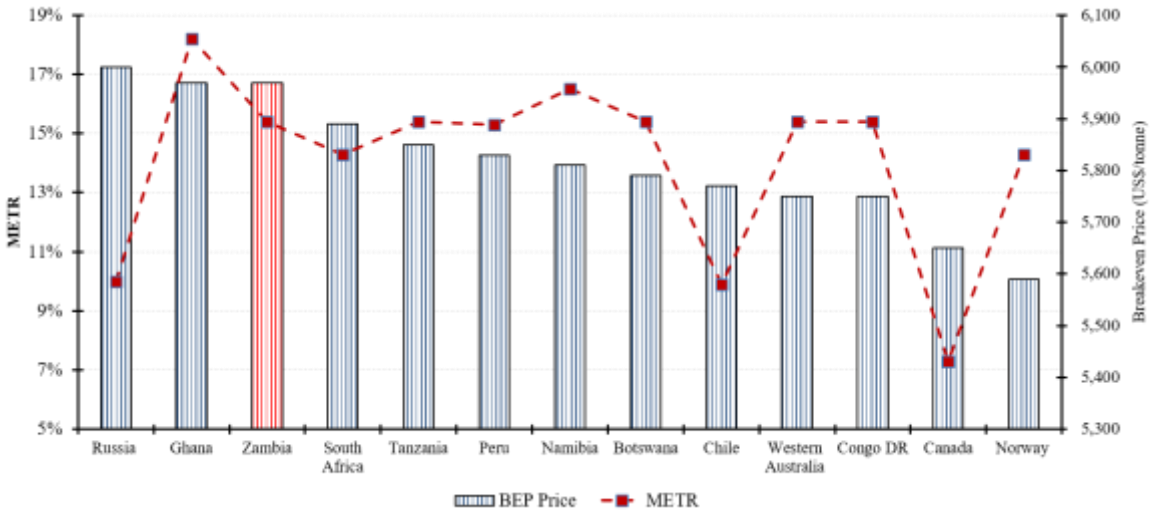

Figure 6.18: Minimum sales price and METR

6.2.6.2 Operating costs

Operating costs were varied for the hypothetical copper model and the Zambian mine taxation system was found to be regressive with respect to operating cost movements (Figure 6.19). This partially reflects the levels of revenue based taxes like mineral royalty which are not related to profits. In situations of high operating costs, a copper mine would be under economic pressure.

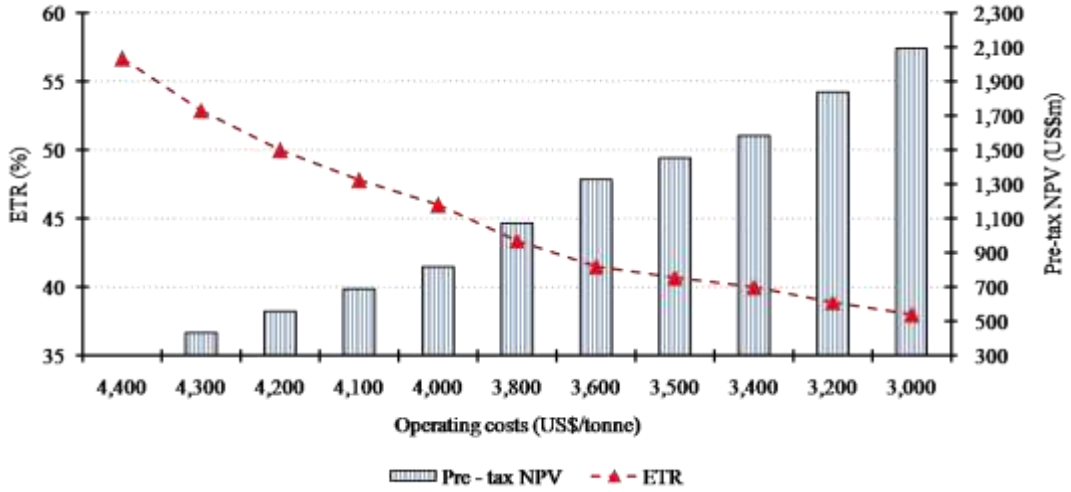

Figure 6.19: Operating cost sensitivity

(a) Suggestions on operating cost

- The unit costs of operations have remained a secret for mining companies which puts government at a disadvantage when arguing taxation matters. Transparency and good appreciation of the elements of production cost data should be enhanced to assist policy-makers to formulate improved taxation regimes appropriate for both parties from an informed position.
- Vertical equity (ability to pay taxes) in the taxation system needs to be embraced provided the government works on existing concerns of information asymmetry affecting the Zambian mining industry.

6.2.6.3 Capital expenditures

Mine investment is capital intensive. Variations to capital costs for the copper model showed that the fiscal regime for Zambia is fairly neutral with respect to capital expenditures (Figure 6.20). Considering the applied assumptions, variations of capital expenditures from US$800-US$2,200 million, nevertheless, generated profitability levels above the minimum cost of capital (12 percent) with the ETR falling in the optimal ranges between 40 and 43 percent. The METR varies between 14.0 and 15.5 percent showing minor variations in terms of neutrality impacts of the regime with respect to capital expenditures.

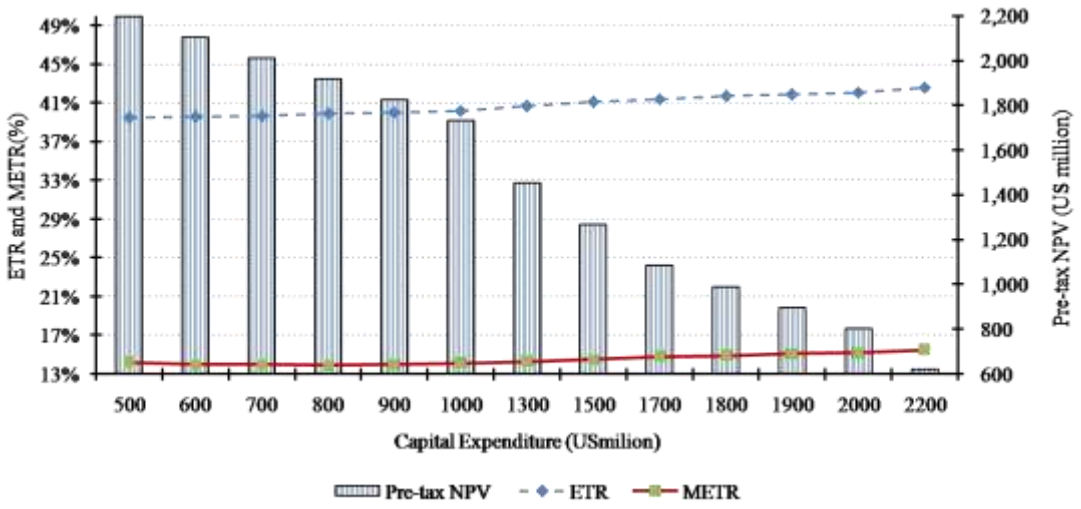

Figure 6.20: Capital expenditure sensitivity

(a) Suggestions on capital expenditure

Recommendations on capital expenditures from the stylised copper model are given as follows:

(i) the model indicated that the Zambian mine fiscal regime with respect to capital expenditures is fairly neutral. Due to information asymmetry, disclosure of capital cost data could be affected. Since government offers incentives on capital flows through provisions of capital allowances and loss carry forward periods, it is important that capital outlays for the mineral projects are well comprehended in order for the state to formulate equitable taxation systems;

(ii) given that capital expenditure costs are claimed through complicated capital allowance provision to mining companies, the government should ensure that such costs are treated as capital expenditures and not as operating costs in the mine cash flows. This practice if not well monitored has a huge potential to affect the amounts of taxation revenue the government captures; and

(iii) as a safety mechanism, the state should consider introducing capital gains tax for huge capital investment projects, with mineral reserves, sold within the Zambian jurisdiction. The country stands to benefit in form of taxes from such sales transactions. Le et al. (2016) noted that most developed countries tax capital gains at the full corporate income tax rate but a few countries exempt capital gains if reinvested in business.

6.2.6.4 Mineral royalty tax (MRT)

The government imposes a royalty tax using a base of sales value of the final base metal mineral product. Variations of royalty rates made on the stylised copper model indicate that the current Zambian mine taxation system is regressive with mineral royalty rates (Figure 6.21).

Land (2009) reported that although excessive reliance on royalties may lead to inefficient operations and the discouragement of investment, many governments prefer an assurance that some revenue can be raised, irrespective of profitability. Therefore, the fact that royalty tax provides guaranteed revenues for the government regardless of profitability, higher gross royalty rates are distortionary for investment.

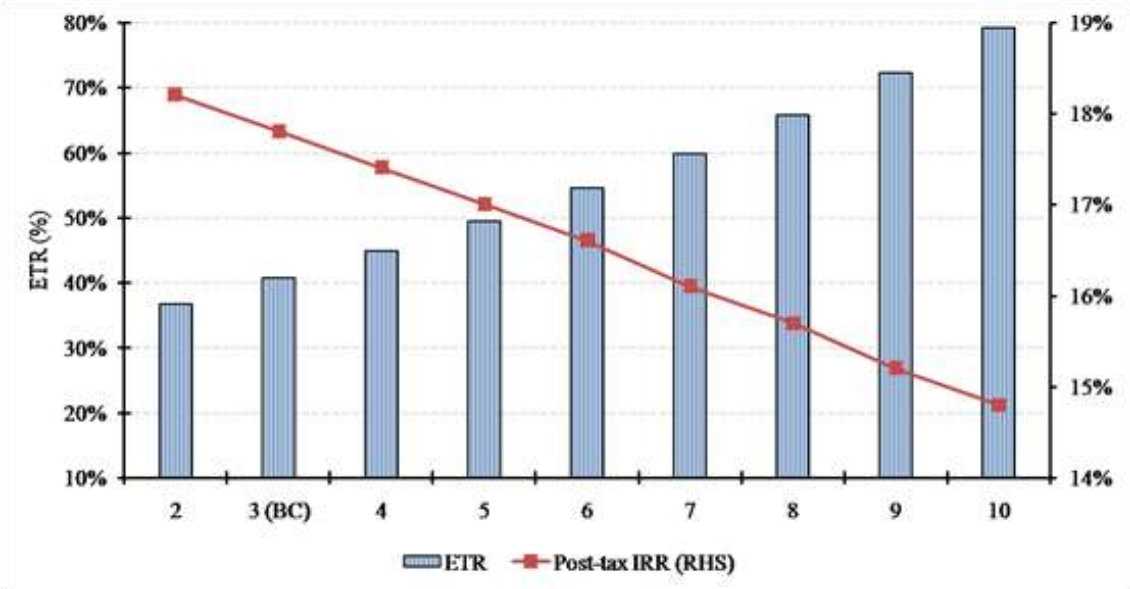

Figure 6.21: Mineral royalty tax sensitivity

(a) Suggestions on mineral royalty

Based on variations created to the mineral royalty tax rates in the hypothetical copper model, the following recommendations are made:

(i) rates close to international norms should be followed when designing mineral royalty taxes, since higher than global gross average rates (like 20 percent mineral royalty tax introduced in January 2015) are distortionary, problematic and can cause tax avoidance and underinvestment. This is consistent with Le et al. (2016) who noted that the royalty rate should be moderate since high rates of royalty may cause high grading, such that extraction of low grade ores and minerals may become uneconomical leading to closure of low grade mines and loss of government revenues;

(ii) variations to gross royalty rates have been modeled in the stylised copper model. Based on the used assumptions, a range of 3-8 percent for mineral royalty rates was found to be equitable, non-distortionary, and a non-threat to investment viability which can be applied for Zambia;

(iii) the sliding royalty system with rates of 4-6 percent announced in June 2016 by the government needs to be satisfactorily managed since it has a potential to improve

stability in the fiscal regime as the royalty rates are indexed to the prevailing market copper prices;

(iv) the model showed that the Zambian tax system is regressive with royalty sensitivity. The current upper threshold rate of 6 percent in the sliding royalty system under the 2016 fiscal regime needs to be revised upward because when fixed at 6 percent, it will still make the taxation system regressive with price streams higher than $6000/ tonne; and

(v) graduated royalties (sliding-scale royalties) need to be maintained because these are best options in situations where companies exaggerate true costs due to information asymmetry. Such royalties, if well structured, rather than the fixed rates can capture part of the share of economic rent required for the government.

6.2.6.5 Corporate income tax (CIT)

Income taxes are designed based on two elements – income tax rate and the base that the tax rate is applied to (Otto, 2007). Many nations have CIT rates between 25 and 35 percent. The variations of the income rates made on the copper model show a fairly neutral tax system that meets the competing expectations of the government and investors (Figure 6.22). Zambia has put in place a competitive rate of CIT at 30 percent which needs to be supported through improved tax administration if full benefits are to be achieved.

(a) Suggestions on CIT

Recommendations based on variations made to CIT rates given the assumptions applied in the hypothetical copper model are as follows:

(i) government should retain the rate of corporate income tax (CIT) at 30 percent since this is typical of the competitive rates applied by many countries globally;

(ii) the range of 28 - 40 percent CIT is not distortionary to mine investment. Since mining companies seek predictability and stability of fiscal regime, the government can guarantee fiscal stabilisation as an incentive in the fiscal regime by indexing a percent premium on CIT for specific tax stability. This is in line with the observation by Otto et al. (2006) who indicated that given the risk-return trade-off for firms, the greater the perception of stability, the lower the expected return

investing firms require. Premiums of 1-10 percent on the 30 percent CIT can be applied in Zambia in order to offer tax stability incentives to companies in need of fiscal stabilisation to reduce on fiscal uncertainty. From Figure 6.22, it can be noted that levels of premium from 1-10 percent on the used 30 percent CIT result in a 1.2 percent reduction of the post- investor's rate of return; and

(iii) the state should strengthen capacities in institutions (e.g. ZRA) dealing with complicated tax administration to ensure that maximum revenues from CIT are captured from, especially, the multinational operated mining projects. Le et al. (2016) noted that CIT on multinationals is always a concern as they have greater avenues for profit-shifting, transfer pricing and tax avoidance.

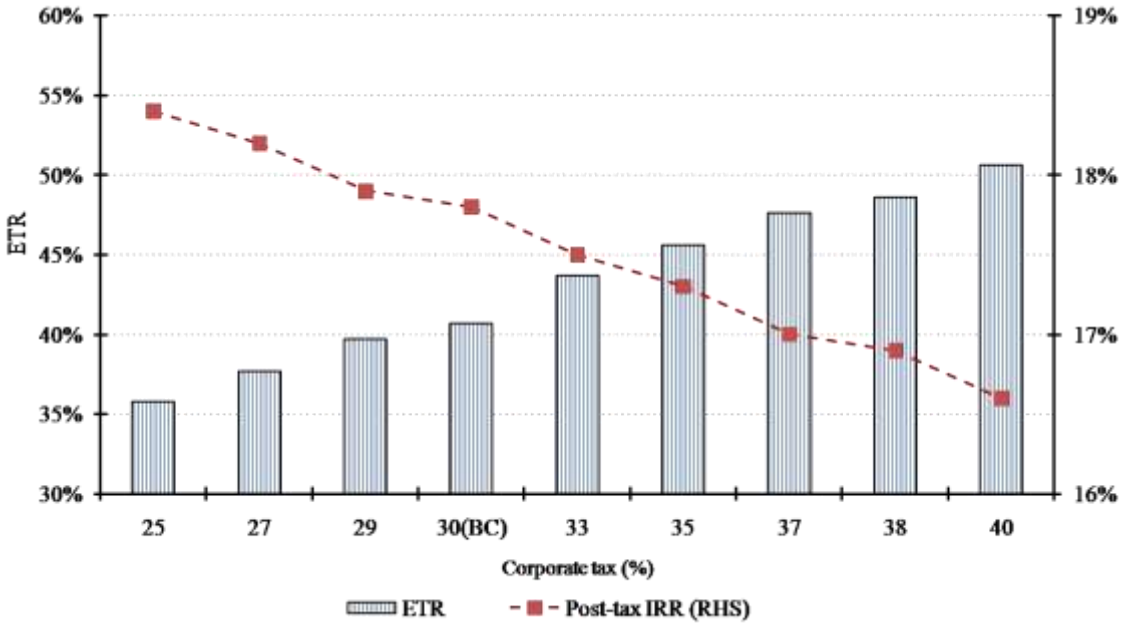

Figure 6.22: Corporate income tax sensitivity

6.2.6.6 Discount rate

Discount rates created by minimum rates of returns have impacts on the project economics. The discount rate will vary from company to company and depends on a number of factors which investors use to assess the project economics. The variations in discount rates are based on information mostly employed by mine investors than the governments. This is because mining companies choose risk factors instilled in the cost

of capital in the future and the perceived risks which are assigned to the project by the investor.

Variations of discount rates in the hypothetical copper mine give an impact on the viability of the project measured through the NPV. It is recommended that for any used discount rates, full disclosure of information applied in mine investment analysis should be well-outlined by investors to enable the policymakers devise equitable mineral taxation that is non-asymmetric.

6.2.6.7 Technical attributes (grade, tonnage and recoveries)

Profit is typically more sensitive to changes in revenue than it is to changes in cost due to the high fixed cost nature of the business. The principle factors which need to be estimated in providing input to a discounting cash flow (DCF) analysis are tonnage and grade of the mineable reserve, revenue (volume x price), and production cost (Baurens, 2010). In most resource-rich countries, Stürmer (2010) reported that government officials often lack information about the value of the resource, the cost of extraction and other factors, making it impossible for them to check the information provided by the company resulting in asymmetry of information at the negotiations. These factors may lead to a low implicit tax rate.

The Zambian tax system based on the assumptions in the hypothetical copper mine is fairly-neutral with regard to technical attributes dealing with grade, recovery and ore tonnages giving ETR varying between 40 and 45 percent.

(a) Suggestions on technical attributes

Technical attributes (grades, recoveries and mined tonnages) for mineral deposits affect project viability and profitability while offering a fairly-neutral fiscal regime in terms of "government take". To balance the competing needs, the government needs to work towards reducing the existing information asymmetry between mining companies and the state to ensure that secrets of mine investors on various key technical attributes (efficiency of firms and quality/quantity of reserves) in mine projects are made clear and understood. It is only unreserved full disclosure of technical information on the part of the mining companies that will assist policymakers in ensuring that mineral taxation

concerns are argued from an informed position to allow policy consistency in fiscal regime design.

6.2.6.8 Periods of capital allowance

Capital allowance are allowed in the calculation of income tax through acceleration of depreciation deductions for mine equipment and plant. This concept allows the taxpayer to deduct the full cost of capital over a period (World Bank, 2008a). Based on the used model, the sensitivity of the fiscal regime to periods of capital allowance is neutral with ETR varying between 40.2 and 40.9 percent. There is, however, delayed flow of revenue (CIT) to the state, if accelerated depreciation or higher rates i.e. higher than 20 percent allowed deductions are used (Table 6.23).

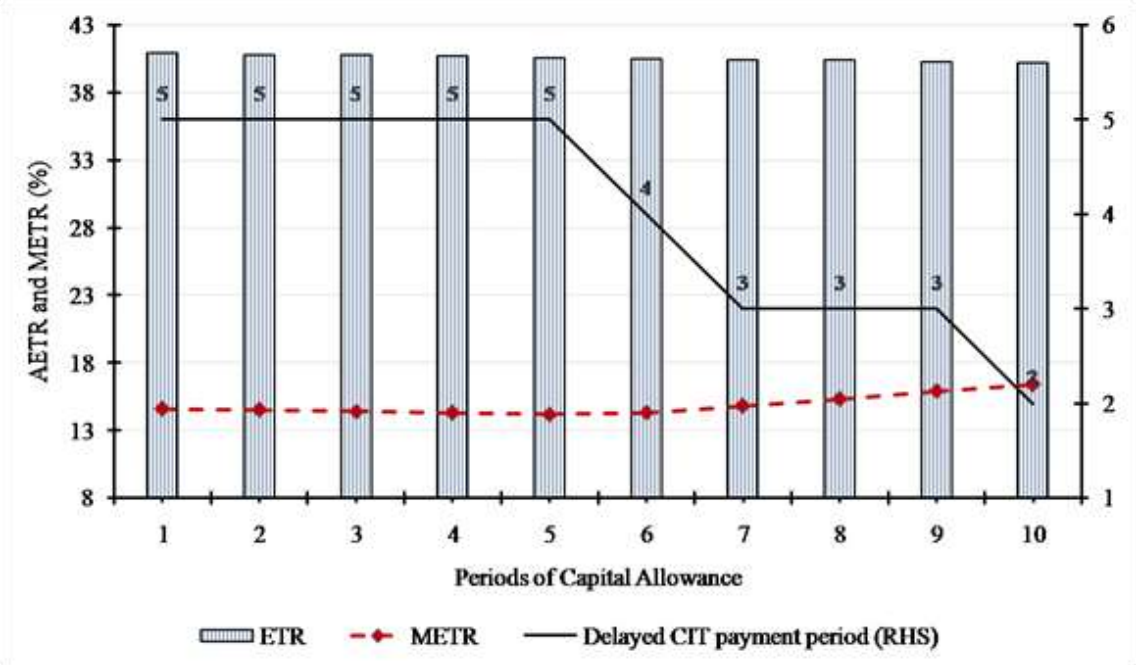

Figure 6.23: Capital allowance period sensitivity

The suggestions on periods of capital deductions are given as follows:

(i) government must uphold 25 percent capital allowance since the tax system is non-distortionary and does not impact negatively on the profitability of the investment at that rate based on the used assumptions;

(ii) the taxpayers (mines) claim the costs of their capital expenditures based on the capital allowance provisions. However, government should ensure that these

claims are restricted to projects which have been commissioned and have proof of benefits registered from such projects; and

(iii) in addition to capital allowance provisions, the Zambian government offers loss carry forward limit of 10 years for mining projects to offset taxable income in the future years. Both provisions for capital allowance and loss carry forward can postpone taxes to later years. Applying loss carry forward incentive for short-lived mines is erroneous. Government must ensure that it improves on comprehending the full technical information on mineral projects so that loss carry forward provisions for specific projects are well matched with the established lives of the mine projects.

6.2.6.9 Impacts of key input variations on project's viability

Sensitivity analysis was performed to investigate how each of the independent variables affects the Net Present Value (NPV) using the hypothetical copper model. The model inputs were varied for -30% to + 30% of the base, and the effects of the change on the NPV of the project are determined as presented in Figure 6.24.

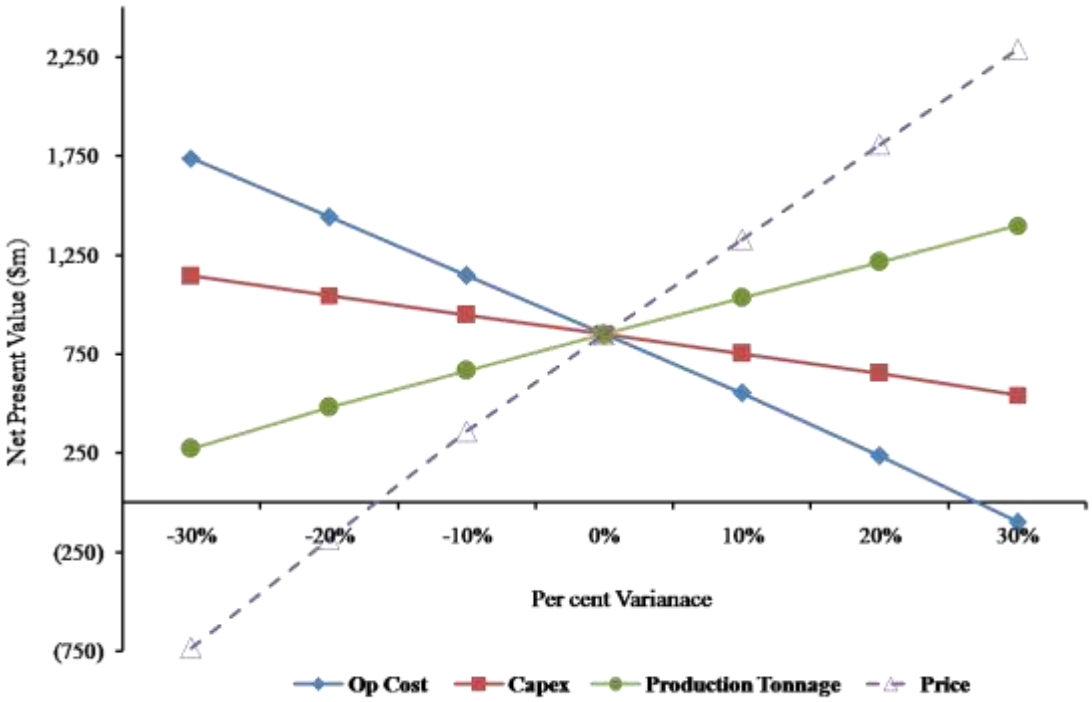

Figure 6.24: Sensitivity analysis of the key inputs

The sensitivity plot indicated that the model's financials are most sensitive to price and the production tonnages because mineral prices, together with production levels, are major determinants of revenues from mining. The other inputs (operating costs and capital expenditure) have negative sensitivity. The sensitivity diagram provides insights for the government to closely examine and verify the accuracy and reliability of variable inputs for price, operating costs and production tonnages in mineral taxation formulation more than capital costs which tend to make the fiscal regime fairly-neutral.

(a) Suggestions on inputs to viability measures of the mineral project

The following recommendations on input parameters for viability measures are presented:

- for the Zambian fiscal regime, taxation instruments indexed to price movements need to be introduced for the government to collect its share of rents;
- accurate and reliable determination of production data from the mines which constitute a major input to revenue estimation needs to be improved with realistic measure of expectedness. This is because gross based mineral royalties used in Zambia employ sales value as a taxation base which is derived from volumes of production and commodity prices; and
- operating costs give a strong effect on the viability of the project and the government needs to investigate and ascertain accurately the key unit production cost data claimed by mining companies in order to devise equitable mine taxation systems.

6.3 Guide for Zambia's appropriate optimal capturing of rent

Proposing a framework to optimise capturing of rent for Zambia is done by integrating various factors from a wide range of primary and secondary sources of data. The mode of analysis used for establishing the appropriate share for the government is inductive. Thomas (2006) explained induction as approaches that primarily use detailed readings of raw data to derive concepts, themes, or a model through interpretations made from the raw data by an evaluator or researcher. According to Tissot (2010), some countries have been very successful at increasing their hydrocarbon reserves, capturing a high rent for

the government, attracting a strong level of investment, and offering an attractive rate of return to investors. While copying the fiscal models of successful countries would be tempting, a successful model must first reflect the political, social, and economic characteristics of the host country.

Challenges in the design of optimal fiscal system exist based on the competing needs and objectives for both the government and investors. Many authors (Keen et al., 2014; Kumar, 1991; Land, 2009; Otto et al., 2006; Tordo, 2007) have explained these diverging objectives. Tissot (2010) argued that it is, nevertheless, possible to develop a list of best practices that governments should consider when designing fiscal models.

In this study, based on results of the literature reviews, interviews, questionnaire surveys and the stylised copper model, proposals for the appropriate mechanism with attributes to optimise rent capturing for Zambia are recommended. These encompass considerations of some of the key features in the fiscal regime dealing with;

- economic perspectives or taxation principles,
- competitiveness of the fiscal instruments used,
- equity participation (stake) models,
- institutional capacities needed for tax administration and industry monitoring,
- granted incentives in the fiscal regime, and
- non-fiscal benefits realised from the mining sector.

This proposal for appropriate mechanism for Zambia in the capturing of rent is aimed at providing the policymakers in government with a framework using key recommendations to guide the establishment of technically and economically efficient optimal rent capturing from the country's mineral resources. It is also hoped, to some extent, that the competing objectives of the government and investors would be partially met.

6.3.1 Economic perspectives of taxation

The Zambian mine taxation system should be designed with flexibility to respond to the attributes of "good tax" criteria, as practiced in some other jurisdictions, focusing on:

- providing stability through fiscal stability agreements, introducing discretionary rates with a premium on CIT for companies in need of stabilisation (e.g. Peru), and adopting well-managed sliding-scale fiscal tools;
- consolidating neutrality of the fiscal regime by working on the contests dealing with information asymmetry so that technical attributes for mineral projects (which are mostly secrets of the mining companies) that make the fiscal regime fairly-neutral are fully appreciated by the government;
- creating an element of progressivity to the fiscal regime to ensure stability through initiation of taxation tools meant to capture excess profits and resource (economic) rents. Keen et al. (2014) noted that by easing political pressures to raise taxes when pre-tax profitability is high, an element of progressivity can enhance the stability of the fiscal regime;
- attaining transparency through wide stakeholder consultation to ensure predictability of the fiscal regime and empowering the government to overcome challenges of information asymmetry;
- extending vertical equity (an ability to pay taxes) to mining projects with identified poly-metallic deposits, known and verified variations in technical and deposit parameters, and well-defined differential costs of operations and revenue raising potential. This can be achieved if the government is empowered through resilient capacities meant to overcome the confronts of information asymmetry existing in the mining industry. This can result in the realisation of more financial benefits based on the disparities in key information parameters for mine projects; and
- managing volatility of markets where commodity prices tend to be unstable resulting in the government to face large and unpredictable fluctuations in its tax revenues. Managing volatility can be done through:
  (i) government putting in place progressive fiscal tools in the tax regime that can increase revenues with a correspondingly increase in commodity prices. Such measures will cushion the impacts occasioned by volatility in commodity prices;

(ii) government not submitting easily to strong bargaining demands of the mining companies to get reliefs from substantive taxes during periods of low commodity prices as the fiscal regime has loss carry forward provisions which can delay or defer tax payments when loses are made; and

(iii) consideration of the use of stabilisation funds by the Zambian government, a practice applied in other jurisdictions like Canada, Chile, Ghana, Norway and Botswana, as an additional way to manage market volatility.

6.3.2 Fiscal instruments and competitiveness

The government uses fiscal instruments to create the fiscal regimes needed to preside over the mining industry projects. These determine how revenues are apportioned between mining companies and the government. Otto et al. (2006) noted that the overall tax system should also be globally competitive.

(a) Fiscal instruments

Fiscal tools are vehicles through which the government captures fiscal revenues from its mineral resources. To achieve optimal fiscal revenues, Zambia should:

- ensure that the fiscal regimes possess instruments that are simple and responsive to economic perspectives;
- make certain that rate of CIT is retained at a 30 percent which is competitive to international norms, non-distortionary and makes the tax system fairly-neutral;
- properly control and structure gross mineral royalty rates to a range of 3-8 percent which still remains equitable and a non-threat to project viability based on the used assumptions in the hypothetical copper model. Currently, the upper threshold rate (6 percent) in the Zambian sliding royalty system based on the applied copper model gives a regressive tax system with increased commodity price;
- introduce a well-defined excess profit tax (windfall tax) responsive to price movement than profitability as a means to straightforwardly capture reasonable rents for the government during periods of price surges;

- appreciate that excess profit tax linked to an indicator of profitability is quite a difficult taxation tool to implement given the weak tax administration capacities and has since not performed well in the Zambian mine taxation system. Mining companies have been claiming to be in incessant loss making positions even during times of improved commodity prices. In this regard, the variable profit tax (VPT) indexed to profitability has failed to perform for Zambia and should consequently be discharged; and
- recognise that economic rent based taxes have high level of economic allocative efficiency (Guj, 2012) and are ideal and optimal since they are non-distortionary and cannot destroy economic incentives. However, these are project based taxes directed at profits rather than revenues and have various factors (noted by Nakhle, 2004; Andrews-Speed, 2000) contributing to difficulties in estimating economic rent. This makes it complex to design and impose a tax that captures economic rent exactly. Le et al. (2016) noted that resource rent tax, however, has the same problems of collection as the normal CIT. Similarly, Stevens et al. (2013) reported that capturing economic rent is less universal, although sliding royalty rates are becoming common methods of capturing rent.

(b) Regime competitiveness

Most of the respondents expressed concerns about the Zambian fiscal regime not being internationally competitive. The government needs to strengthen its fiscal regime to make it competitive by ensuring that:

- stability is maintained in the fiscal regime. The June 2016 tax system as confirmed by the hypothetical copper model using the underlying assumptions is consistent with global norms in terms of the applied headline tax rates;
- policy consistencies and wide multi-stakeholder consultations during the fiscal regime formulation are engaged for the country to lessen the risk of uncertainty and unpredictability;
- minimal alterations are made to other fiscal instruments (especially royalties) just as it is done with CIT rates and practice, so that the tax system remains in line with practices in other jurisdictions; and

- it appreciates that foreign attractiveness of the tax regime should not be focused merely on headline tax rates but also on other important mineral investment policy attributes. The January 2015 fiscal regime was not appealing for Zambia since it focused solely on tax rates under the mineral royalty tax (MRT).

6.3.3 Investment incentives

Imposed taxation incentives aim to achieve specific objectives (Otto, 2000) in form of attracting investment while some create challenges because of being secret (ICMM, 2009). Unclearly disclosed tax incentives can provide a basis for tax avoidance and corruption by companies which eventually can undermine the flow of tax revenues to the state. In this regard, the proposition for the Zambian government is to:

- ensure that cost-benefit analysis of granted incentives is accurately conducted. Majority of respondent felt that incentives like unrestricted profit repatriation, provided capital allowances, loss carry forward provisions and tax holidays for mine firms in designated economic zones, have failed to generate anticipated revenue flows to the government;
- create a level playing field for companies in the mining industry. There should be equal treatment of companies carrying out similar activities by using the same tax concession in the country; and
- introduce special tax concessions for mining companies to locally beneficiate minerals into finished products instead of producing intermediate products (copper concentrates and blister copper) for exporting. Presently, even though the country has adequate smelting and refinery capacities, some of these unfinished products are exported. The government needs to review such incentives by instituting outright bans on the exports of unprocessed products after conducting detailed cost-benefit analyses of such granted incentives.

6.3.4 Equity participation

State equity participation in extractive industries ensures benefits to the state (NRGI, 2015). The following needs to be considered for Zambia to realise some of the objectives of equity participation:

(i) in some oil producing countries (e.g. Russia and Kazakhstan), state ownership model (NRGI, 2015) involves an equity ownership stake which entitles the state to a share of the resource produced. Zambia needs to look at this option in order to avoid difficulties of appropriating its benefits through the current complicated taxation systems;

(ii) while the majority of respondents thought that Zambia should increase its "free equity" interest to levels of 35 percent in the privatised mines, this needs to be well evaluated by the Zambian government. This is because high rates of participation require financial obligation to be committed in form of cash calls to such investments by the state. Observations by Otto (2007) indicated that private sector mining companies find large state participation percentages as a major disincentive. Equally, World Bank (2008a) noted that countries that require a "free equity" interest adopt a range of 10 percent while those nations that require or retain an option for more than 10 percent equity acquire their equity on a paid basis;

(iii) the government needs to take equity positions in emerging and integrated mine projects including other mineral processing companies to achieve the financial benefits in form of dividends that could be declared from such viable and profitable investments. This is because Zambia has no mandatory state equity participation in new projects. It is not clear the type or amount of equity participation (free, carried or paid up) the country has in new greenfield and other viable investment projects which are profitably operating exclusively as private entities;

(iv) the state should strengthen the capacity of the holding company (ZCCM-IH) to enhance government's access to important information and reasonable option to participate in decision-making processes; and

(v) beyond the non-performing "free equity" existing in the privatised mines, government should work towards exerting a greater level of control over its mineral resources and ensure that it benefits financially from such equity stake.

6.3.5 Institutional capacities

(a) A good taxation system will fail if no strong capacity building exists in related government institutions. Zambia needs to develop strong institutional capacities concerned with taxation policy, governance issues, tax administration and sector monitoring to enhance optimal capturing of rents by:

(i) improving on articulation and coordination in inter-ministerial agencies as a means to acquire same and reliable data needed for formulation of mine taxation system;

(ii) eliminating exerted political interferences on agencies carrying out the tasks of complex tax administration and monitoring of the mining sector; and

(iii) investing in improving information systems, providing adequate budgetary allocation and perfecting the staffing levels.

(b) The taxing authority (ZRA) is cardinal in ensuring that effective tax administration and enforcement contributes to attaining successful efforts of optimal rent capturing. However, ZRA is faced with numerous capacity challenges affecting its mandate. The government needs to ensure that it capacitates ZRA to overcome contests that are responsible for:

(i) poor monitoring and verification of production costs, operations and capital costs, and sales data which form a foundation for profit-based taxes;

(ii) failures to curb tax avoidances and transfer mispricing practices that influence taxable incomes;

(iii) letdowns to check creative accounting which result in hardships for the agency to audit the complex accounts of mining houses; and

(iv) unrestrained information asymmetry where mining companies use most of the knowledge about mining projects to their advantage by creating complicated tax prescriptions and making it difficult for ZRA to administer taxes perfectly.

(c) The appropriate processes of optimal rent capturing for Zambia requires that regulatory institutions (mining ministry) overcome challenges associated with

lack of monitoring and auditing the performance of the mining industry. The key areas of confronts needed to be improved by the regulatory institution involve:

(i) low capacities to monitor production and quality of mineral products;

(ii) poor technological systems for monitoring activities in the mineral value chain (MVC) with difficulties to independently verify production and export data declared by mining companies;

(iii) failures to capture under-reporting of both main products and by-products from the poly-metallic mineral deposits including under-declaration of ores and concentrates produced;

(iv) poor enforcement of regulations leading to policies that are not in harmony with the performance of the mining sector; and

(v) significant problems in valuing sales of intermediate products (blister copper and concentrates) exported which contain inherent commercial minerals that are suitable for local recovery or that can report as by-products of copper mining which qualify for local beneficiation processes.

6.3.6 Integration of non-fiscal benefits into domestic economy

Mining as a business activity needs integration in the local economy by ensuring that it contributes to overall national economy. Areas of social investment and local content development are now being identified as equally more important non-fiscal benefits from the sector in Zambia than merely mine taxes.

6.3.6.1 Corporate social investment

Concerns aimed at enhancing social investment benefits from the mining industry for Zambia are given below:

- countries differ in their treatment of social investment with some mandating certain levels of investment and others leaving this up to investors (Ostensson et al., 2014).
- Respondents indicated that it is not quite distinct how social investment costs are treated with respect to taxation purposes in Zambia. However, majority of the “experts” felt that social investment should not be government driven as doing so

by the state will compel companies to exceptionally claim huge social investment expenditures as allowable deductions for taxation. Such a situation can further create problems in tax enforcements considering the burdened and weak tax administration system existing in Zambia;

- government should take an intermediate position with full evaluations to understand what could be appropriate for Zambia between promoting CSR and other social investments through tax incentives/regulations and making it voluntary with no government interference; and
- the state needs to engage mining companies to build and implement social sustainability plans to generate benefit streams for the communities in mining areas during the lives of the projects. Specific areas of concerns stated by respondents encompassed protection and care for the environment, need for wealth creation, provisions of skills and training, creation of community investment and sustainable livelihood projects, social infrastructure improvement at community levels, and provision of employment to locals.

6.3.6.2 Local content development

Majority of the respondents consented that local content in Zambia has not performed to required expectations because of poor policy implementations. The concerns for poor local content activity and suggestions for improving local content as an additional non-fiscal benefit to mine taxation are given as follows:

- the tax concessions granted to mining companies under the MFEZ as incentives meant to create value addition and promotion of industrial base have not realised the intended investment pledges from the concerned companies. To save the foregone benefits from such granted incentives, the government should consider appropriately revising such tax incentives;
- the government ought to encourage local content through clear, stable and working policy guidelines coupled with reinforced government administration in the mining industry. This could create benefits extending beyond tax revenue generation to include employment, backward and forward linkages and skills generation in the sector;

- the Zambian government needs to empower local entrepreneurs by providing them with incentives to improve participation in associated businesses of supplying, sub-contracting and provision of other services in order to create employment; and
- preferential public procurement practice as practiced in government should be legislated and extended to the extractive sector to compel mining companies to give some preferences to Zambian products through local contracting and service provisions.

A summary of salient attributes needed for review and consideration in establishing an appropriate share of rent to be captured for Zambia are given in Table 6.6.

6.4 Summary

This Chapter presented an analysis of the competitiveness of the Zambian mine fiscal regime and gave various features for the concept proposal for optimal capturing of rent for Zambia based on findings from the literature reviews, interviews and the questionnaire surveys and practices in other jurisdictions. The outcome of the fiscal regime evaluation indicated that Zambia follows the International Best Practice as given by World Bank (2008b). The basic headline tax (MRT and CIT) rates are comparable to peer jurisdictions though the bases for royalty calculations are varying.

Zambia was ranked using the international study groups - Fraser Institute of Mine Survey based on various policy indices. Results indicated a fall in points for Zambia on most of the policy indices for the period 2015, denoting uncertainty in the fiscal regime on account of changes experienced in that year.

The results from the stylised copper model using the economic measures indicated that, in comparison with other jurisdictions, the current tax system in Zambia could be viewed globally competitive and not a distinct threat to investment viability for this style of copper project.

Table 6.6: Summary of key attributes to be reviewed in the framework

Construct	Attribute to review	Justification for reviews
"Good Tax" Criteria	Stability	Sliding-scale royalties need to be introduced since they provide stability and are ideal where information is asymmetric.
	Progressivity	Excess profits tax to be introduced to build a robust and progressive taxation system.
	Transparency and clarity	Consultation during tax formulation should be encouraged to ensure predictability, certainty and transparency of the fiscal regime.
	Risk Sharing	CIT to be retained as it is a risk sharing fiscal tool which also creates a fairly neutral taxation system.
	Vertical equity	Mine projects have abilities to pay taxes and government needs to be empowered with data to ease information asymmetry in order to apply the vertical equity taxation principle.
Fiscal Instruments	Retention of Corporate Income Tax (CIT)	At 30 % rate, CIT is ideal and should be retained for Zambia. The assumed copper model shows a fairly neutral fiscal regime with CIT.
	Mineral Royalty Tax (MRT)	Apply 3-8% gross MRT as it is non-distortionary based on the copper model and the used assumptions.
	Variable Profits Tax (VPT)	VPT must be discharged since it has been problematic and has not generated fiscal benefits for Zambia since its inception.
	Windfall Profits Tax (WPT)	WPT is an ideal excess profit tax than resource rent tax and should be re-introduced to make the current regime progressive based on commodity price movements.
Competitiveness of the fiscal regime and taxation tools	Competitiveness of the overall fiscal regime	Copper model results based on the use of headline MRT and CIT indicated international competitiveness of the Zambian fiscal regime that is not a big threat to investment viability.
		The country's fiscal regime (of June 2016) is comparable to World Bank (2008b) International Best Practices.
	Competitive fiscal instruments	Except for CIT, the Zambian fiscal tools of pre-June 2016 regime (MRT, VPT, WPT and Equity Participation) have not been comparable to many resource-based jurisdictions.
Investment Incentives	Introduce fiscal stability clauses	There is uncertainty due to fiscal regime modifications without flexibility which affect planning for imminent investment and development considering that mining projects are long-term and capital-intensive.
	Uphold 25% Capital allowance	The copper model showed that fiscal regime using capital allowance rates lower than 25% is fairly-neutral and can improve revenue flow to the state in the long run.
	Review loss carry forward limits, 100% profit repatriation and tax holidays to curb revenue losses.	Cost-benefit analyses for incentives dealing with loss carry forward periods, unrestricted profit repatriation and tax holidays for companies in designated free zones need to be evaluated as these lead to low revenue flows to the state.

Table 6.6 conti., summary of key attributes to be reviewed in the framework

Construct	Attribute to review	Justification for reviews
Equity (Stake) Participation	Introduce competitive equity stake in emerging greenfield projects Improve capacity of the holding company (ZCCM-IH)	Current equity stake performance is poor and policy guidelines on equity stake should change and allow participation under free interest in new or greenfield projects and other viable copper processing projects. Higher rates of equity stake (>20%) have a possibility to attract cash calls for the Zambian government. The current equity stake held does not empower government through ZCCM-IH to; have freedom of curbing malpractices; have access to significant financial, operational and development data; and realise some degree of transparency in the sector.
Institutional capacities	Overcome challenges in related institutions Strengthen institutional capacities needed for tax administration Build capacity for sector monitoring	Institutions face problems of inter-agency coordination, political interferences, poor information systems, inadequate funding and lack of skilled personnel and political will. Problems by ZRA to effectively curb tax avoidances, monitor and verify sales, production, operations and capital costs data which form a foundation for profit-based taxes still exist in Zambia. There is lack of strong monitoring and auditing of the mining industry performance by the Ministry of Mines.
Corporate Social Responsibility	CSR to be investor driven	Most of the respondents objected to CSR being government driven claiming it has a potential to complicate the current deprived taxation administration since companies can treat social investment costs as deductible allowances for taxation. CSR is a voluntary investment still enshrined in the MMD Act of 2008 without providing requirements for mandatory investment.
Local Content Development	Enhance working and stable policy framework. Improve industrial base and local participation Review or revoke tax incentives granted in designated economic zones	Government policy on local content is not well-defined and has poor structural support for local businesses. Mining companies rely very much on external imports for inputs leading to high loss of revenues due to high offshore transactions. Low participation of Zambians exists in the mines and related businesses of supply of inputs and other services. Granted tax concessions to mining companies with investment pledges to create value addition and promotion of industrial base have not generated these intended benefits from the concerned companies. Export of intermediate products based on granted tax concessions should be reviewed.

The policy indices were also compared with the "government take" (effective tax rate - ETR). Insignificant relationships followed indicating that a total package of a taxation regime is importantly viewed for investment decisions than individual fiscal instruments.

A proposal for an appropriate guide on optimal capturing of rent was given as a recommendation built on various attributes from literature reviews and surveys aimed to serve as a framework for mineral tax formulation by policymakers.

CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

This Chapter presents conclusions from the research study and is segmented into the following Sections; Section 7.1 presents the conclusions that emerged from the theoretical and empirical examinations aligned with the research objectives. Section 7.2 deals with implication of research while Section 7.3 describes plausible recommendations for considerations for further research. Limitations and suggestions for future studies are given in Section 7.4.

7.1 Conclusions

To offer conclusions on the optimal capturing of rent in line with research objectives, this research responds to research questions based on literature reviewed and analyses of data from interviewees and respondents from the questionnaire surveys. Generally, it is established that Zambia's mineral taxation is not adequately structured to optimise rent capturing in line with the interests of both government and investors. The following are conclusions made from the study objectives.

7.1.1 Responsiveness of the tax system to attributes of "good tax" criteria

It is concluded that the current mine taxation system in Zambia fails to respond adequately to attributes of "good tax" criteria. This is because stability, progressivity and transparency are not properly integrated in the design of the mine taxation systems. The country needs to incorporate principles of "good tax" system in the formulation of the mineral taxation policy through wide multi-stakeholder consultations during tax formulations and employing workable progressive tax instruments indexed to price movement than profitability.

7.1.2 International competitiveness of the fiscal tools and tax system

The thesis concludes that the fiscal tools in the mine taxation system for Zambia are not competitive in terms of performances relative to other jurisdictions. The key fiscal instruments [corporate income tax (CIT), mineral royalty, variable profit tax and equity participation] used in Zambia were in line with what other jurisdictions employ globally

although these are not adequately structured to optimise the capturing of rents except for windfall profits tax (WPT) which was considered an ideal taxation tool for capturing of economic rents if applied.

Furthermore, the study concluded that the Zambian fiscal tools namely equity stake, mineral royalty tax and VPT were not competitive to international standards centered on the used rates and taxable bases. However, only CIT was considered comparable to global practices in many respects.

The study also concluded that the tax system in Zambia is not comparable to practices in other jurisdiction because of instability, poor institutional capacities and lack of policy consistencies resulting in uncertainty of the investment climate for the country.

7.1.3 Investment incentives

The thesis makes a conclusion that granting investment incentives do not generate reasonable flow of revenues (share of rent) to the state. Most of the applied fiscal incentives in Zambia influence the taxable incomes resulting in low revenue flows to the state.

Additionally, the study concludes that the mine tax system in Zambia has not performed well with regard to granted incentives. This is because the conditions under which these incentives are approved remain non-transparent and suffer from poor cost-benefit analysis.

7.1.4 Institutional capacities

The thesis makes conclusions that Zambia has institutional capacity challenges in the mining sector affecting reliable tax policy formulation, consented tax administration and sector monitoring needed for optimal capturing of rent. Due to this, Zambia needs to improve its governance systems and amalgamate decision-making on investment from related government institution and ministries as a means to avoid contradictions, duplications, discrepancies and mandatory overlaps.

Furthermore, conclusions are made that government institutions dealing with tax administration and sector monitoring (ZRA and Ministry of Mines respectively) need to improve on the various faced challenges. Considerable among them, is the monitoring and determination of the quality and quantities of mineral production, cost data and sales values. These are critical areas which form the basis upon which ascertaining of profit/production based taxes is used to appropriate mineral rents from Zambia's copper mining industry.

7.1.5 Performance of equity participation

The research concludes that the current state equity participation in the Zambian copper mining industry has not realised the meaningful benefits in terms of the needed objectives. This is because of erratic flow of revenues (dividends and price participation) to the state from the privatised mines because of asymmetry of information on the profitability of certain mine projects. Additionally, it is concluded that Zambia should review its equity participation in the copper mining industry since the current minority equity stake participation has not granted ZCCM-IH a strong strategic position for decision-making in the operational and development control needed for managing the privatised entities.

In addition, conclusion is made that the current equity participation has not performed to expectation in Zambia because of trust deficits and lack of transparency between shareholders. This has created difficulties for the government to effectively regulate and monitor the private mining companies in national interest. The government should consider local community participation in the running of the mines for Zambia and it should improve its institutional capacities so that the benefits achieved through ownership in extractive projects can be achieved through the regulatory process or policy and fiscal instruments.

7.1.6 Competitiveness evaluation and use of the stylised copper model

The study established that the fiscal regime for Zambia is not varied from the International Best Practice as designed by World Bank (2008b). Further, the thesis concludes that the basic headline tax rates for gross mineral royalty tax and corporate

income tax (CIT) for the Zambian 2016 fiscal regime are comparable to peer jurisdictions although the bases for royalty calculations and rates for profit-based royalties are varying. Additionally, the study concludes that the competitiveness performance for Zambia was weak in terms of mineral policy indices under the current 2016 authoritative Fraser Institute of Mine Survey report which revealed a fall on most of the policy indices for the period 2015. This was because of uncertainty and instability in the fiscal regime for Zambia.

Furthermore, conclusions are made that the current mineral tax system (2016 fiscal regime) for Zambia based on headline taxes could be viewed globally competitive and not a threat to investment viability in comparison with other jurisdictions in terms of tax burden and split of rent. The economic measures comprising effective tax rate (ETR) and post-tax internal rate of return (IRR) gave undiscounted ETR for Zambia at 54.5 percent falling within the World Bank (2008a) indication of optimal ETR for base metal mines while the post-tax IRR was above the applied expected rate of return. The research also concludes that taxation (and solitary use of rates of key fiscal tools) should not be regarded as a criterion that overseas investors evaluate when considering competitiveness of the destinations for investment. This was founded on financial modelling results which gave insignificant correlation figures between various policy indices and "government take" for different jurisdictions.

7.1.7 Non-fiscal benefits performance in the mining sector

The thesis makes conclusion that corporate social responsibility (CSR) as an additional benefit to mineral taxation has not performed well in Zambia because mining firms are not obligated and conduct CSR on a voluntary basis. Zambia has no CSR policy guidelines and communities are not fully engaged on matters of specific social investment importance except for the periods of consultations during the Environmental Impact Assessment (EIA) processes.

In addition, conclusion is made in this thesis that some mining companies have not fully shown commitment or interest towards CSR due to noted incidences of poor protection

and care for the quality of the environment in some mining areas coupled with low social infrastructure improvement at community levels.

Similarly, conclusion is made from the study that local content performance as an additional benefit to mineral taxation in Zambian copper mines has been sub-optimal. This is because of the country having no clear policy guidelines and milestones on local content in the copper mining industry. There is also substantial expenditure for inputs done outside Zambia due to absence of strong domestic manufacturing sector in the country to supply locally produced goods and services needed by the mining sector. Similarly, value addition in Zambia is absent and efforts by the government to foster local content through offering of tax concessions in designated economic zones has equally not yielded the intended purposes.

Furthermore, the study makes a conclusion that most mining companies have shown diminutive interest and commitment to local content. This is because of companies not being obligated to deal with local suppliers (firms) and preferring to import inputs sometimes from their affiliate foreign companies. This causes reduced expenditures in the Zambian domestic economy and acts as a way to exacerbate transfer pricing.

7.1.8 Appropriate rent capturing mechanism for Zambia

It is concluded that no fiscal system is considered ideal in all respects and countries globally have diverse objectives and practices directed at benefiting from mineral resources based on differences in costs, mineral endowments, mineral policies and social perspectives. These differences significantly result in countries to design taxation regimes in ways that are consistent and attractive to foreign investment firms.

Based on the aforementioned, it is further concluded that there is no “best taxation” model existing and that Zambia has no optimal tax value (mix) to be used as a robust and effective benchmark for negotiations on taxation matters. However, Zambian government should consider designing a robust tax system that incorporates contingencies such as variations in global commodity prices. Furthermore, the country should apply a mixed range of potential tax instruments which are preferred as a means to capture value given the uncertainties.

7.2 Implication of research

The study on optimal capturing of rent in the large-scale copper mining industry has implications for policy and investment in the sector. The concepts of optimal capturing of rent demand further development of the theory or mechanism appropriate for government share. Over the period, mineral taxation in Zambia has been used as a major vehicle through which rents are appropriated from the mineral resources. However, as established from this study, a good configuration of the taxation system and consideration of various other factors including a focus on non-fiscal benefits from the sector constitute the attributes to optimise rent capture. Therefore, this study highlighted various aspects which could provide a step towards an appropriate mechanism on optimal capturing of rent in the Zambian large-scale copper mining industry.

7.3 Future research recommendations

The previous Section on conclusions offers some indications that appeal for further research as an extension to the current study on optimal capturing of rent. The following constitute the recommendations emanating from this study:

(a) The present study focused on competitiveness and tax burden created by the fiscal regime in Zambia. While this approach is ideal for the purpose of this research, it might be difficult to establish how the appropriated mineral rents get distributed to various key stakeholders made up of government, multinational corporations and communities. The research recommends that future studies into equitable sharing of benefits (rent distribution) from the country's mineral wealth and possibilities of fiscal devolution be undertaken. This has a potential to create national policies that can address dissent in public opinion on concerns dealing with distribution challenges.

(b) The current research based on results from the interviews and questionnaire surveys indicated that government institutions in Zambia dealing with governance issues, policy formulation, tax administration (ZRA) and sector monitoring (Ministry of Mines) were neither operating as effective institutions nor as coordinated inter-agencies based on numerous problems. This has affected the optimal capturing of rent. The research recommends that further studies in the

governance performance of these related government institutions should be undertaken to enhance optimal capturing of rent.

(c) The mining industry needs to be integrated in the local economy beyond the traditional fiscal benefits. Most of the respondents were of the view that the sector operates as an "enclave industry" with insufficient domestic demand for inputs and services to be used in the sector. The research recommends that proper determination of possible linkages between non-fiscal benefits (CSR and local content) and taxation be explored in order to enhance strong integration of the sector into the local economies.

(d) A number of changes to mine taxation system have been made in Zambia since the time of privatisation. Arguments for fiscal regime amendments by the government is that most of the rent from the mining companies gets diverted by mining companies while the same companies claim that Zambia is a high cost copper producing country. To date, these apprehensions from the two key stakeholders still affect the optimal capturing of rent for Zambia. Challenges arising from the difficulties in establishing true total operation costs in the Zambian mining sector result in degrees of tax administrative complexity. This research recommends that future studies towards consented appreciation of cost structures in the mining industry be undertaken in order to assist with creating a good platform for debating equitable sharing of rents from the country's mineral wealth.

(e) Most of the respondents indicated that government increases its current equity stake in the mineral projects. Their arguments were that the minority equity stake needed to capture additional rent beyond the traditional taxation tools is not performing to expectations in Zambia. In modern mining activities, literature shows that there are benefits with equity participation for the hosting state in mineral resources, but increased equity participation for the state is not devoid of financial obligations (cash calls). For Zambia, the current equity participation for the mining sector is a product of the privatisation process. This research makes recommendation that further studies on equity stake for the government be carried

out with a proper valuation of shares and full assessment of the ideal mode of equity participation for Zambia in both new and privatised mining projects.

(f) Investment incentives have been described as hidden costs of taxation since they influence the amounts of rent captured from mineral wealth due to foregone tax revenues. These granted incentives are sometimes generous as argued by most of the respondents implying that they are not beneficial to Zambia. Empirical evidence suggests that tax incentives are not effective as tools for attracting foreign direct investment (Gurtner, 2008). Therefore, it is recommended that policymakers undertake detailed cost-benefit analysis of these granted investment tax incentives in the copper mining sector.

7.4 Limitations and suggestions for future studies

The subject dealing with mine taxation in Zambia is considered emotive. This made it difficult to have full access to certain respondents targeted in this study in order to have comprehensive participation. The study had various limitations influencing the research findings which were associated with the following:

- Method of sampling used (non-random sampling or purposive sampling) to identify and make a selection of individuals or groups of individuals that are especially knowledgeable about or experienced with the concepts of taxation. This method, however, does not make generalisation about the wider population thereby prohibiting the application of inferential statistics.
- Employing a population of 15 stakeholder groups of respondents where no database for the number of elements in each group could clearly be established for sampling. Based on this, the study tries to explain what is going on in this particular research setting and getting some conclusions which can be exposed to other research settings in any follow-up studies in this area of interest.
- The research questions used for this study were not associational and relational to explore relationships between variables through the application of all common parametric inferential statistics. This is because Zambia has no preferred value in terms of a combination of fiscal tools in the taxation regime to be considered as an optimal tax combination. Based on this, the study used various constructs in

the survey essentially to try and provide a step towards achieving an optimal rent capturing.

- The employed data analysis that used descriptive statistics based on the designed research questions which are not answered with inferential statistics but merely describe or summarise data, without trying to generalise to a larger population of individuals. Descriptive analysis involves understanding data through graphic displays, through tables, and through summary statistics (Section 3.5.2). This approach was used to describe the respondents' opinions on the various items from semi-structured interviews and the constructs in the questionnaire survey.
- Delayed responses from questionnaires and sometimes general failures to respond [Section 3.4.3(e)] because of the topic on mineral taxation being considered emotive in Zambia. However, the challenge was reduced through assurances of confidentiality made to respondents. Equally, reasonable efforts to enhance the response rate where also made by making a series of reminders through telephone calls, emails and personal visitation to persons in institutions who received the questionnaires. These situations can have impacts on the results generated from this study through, for instance, completing a questionnaire while in an irritated mood or rushed time constraint.
- Establishing knowledge of "experts" on this emotional topic for this study. However, this limitation was reduced by selecting the respondents carefully by purposively judging the contrasting cases and "experts" involved. Questionnaires were distributed through responsible officers (in charge of research, training and corporate affairs who assisted with identifying key personnel to distribute questionnaires to) who knew more about the knowledge these "experts" possessed. Snowball sampling efforts were also used with the help of respondents. This helped to remove the data collection bias from respondents. Bias in response was also removed by structuring and standardising the questions so that they could be interpreted by "experts" in a consistent and similar manner. Cross tabulation indicated no major variations of responses from "experts" in different stakeholder groups (Appendix C). Further discussions with "experts"

during interviews and in subsequent times indicated that the findings were not very varied from their expectations on the subject matter.

- Information being considered receptive for public policy studies by individuals handling data in various institutions and mine houses. This eventually leads to concerns on ethical, permission and confidentiality to arise when accessing pertinent information. These situations have impacts on the results for this study. However, all procedures consistent with these requirements were followed.
- Existence of information asymmetry in the Zambian large-scale copper mining sector which created a challenge for this study to elicit information from mining companies (sometimes even by the government itself) and other government agencies.
- Information obtained from proxies, subordinates and emissaries could be substantially different from that obtained from company owners or ultimate company/institutional authorities, over the same subject, depending on the relationship between the two extremes and parties.
- Also, corruption, superiority/inferiority complex between investor and host country distorts the real position on the subject, with the corruptor progressively taking a position of arrogance.

However, it is also worthy to mention that this study was only conducted in Zambia thereby making specifics of results only to the Zambian situation. Based on this, it is suggested that similar study be replicated in other jurisdictions in order to ascertain the international collectiveness of the findings emanating from this study.

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APPENDICES

Appendix A: Questions for Semi-structured Interviews

1.0 General Information

1.1. Indicate your type of organisation from the ones given below:

Type of organisation	*Tick*
Mining Company	
Government Agency	
Consultancy	
Supplier	
Mine Regulator	
Taxation Authority	
Academic	
Other state	

1.2. Years in profession

Years	***Tick***
0-5	
6-10	
Above 10	

2.0 Do you think Zambia is capturing optimal revenue (rents) from the copper mining sector?

Yes ☐ No ☐

3.0 Any reasons to the answer given to **Q2.0** above?

……

……

4.0 Whether government captures revenue (rent), are these concerns about revenue (rent) capturing from the mining sector justifiable? (*Tick*)

	Agree	**Do not know**	**Do not Agree**
Government is economical with truth on mine revenues			
Revenues not ring fenced for social and economic projects			
Misleading public opinions on mine revenue			
Poor transparency on revenue captured from mining			
Weak accountability of mine revenues			
Misleading political pronouncement			
State any other concerns please:			

5.0 Are the following apprehensions responsible for failures to capture equitable revenues (rents)? (*Tick*)

	Agree	Do not know	Do not Agree
Weak institutions for tax administration and regulation			
Non-competitive used tax instruments			
Generous incentives granted			
Equity participation not equitable			
Non application of wind fall tax			
Tax avoidance			
Poor consultation between the investors and government			
State any other concerns please:			

6.0 Do you think the current mine taxation system is ideal to optimise capturing of revenue (rent)

Yes ☐ No ☐

7.0 Any reasons for the answer given in Q6.0 below

……

……

8.0 Is the current mine taxation accurate for the promotion of sustainable investment in the sector?

Yes ☐ No ☐

9.0 Any reasons for the answer in Q8.0

……

……

10.0 Which economic perspectives below, in your view, will best describe the mine taxation system in Zambia (*Tick*)

	Agree	Do not know	Do not Agree
Regime is not stable			
Non- transparent			
Non-risk-sharing			
System not neutral (Distortionary)			
System not robust (fails to responds to price movements)			
Tax system is not progressive			

11.0 Give any reason for your rating on any of the attributes above

……

……

12.0 Are the following tax instruments well-structured to optimise the capturing of reasonable revenues (rents) in Zambia? (*Tick*)

	Agree	Do not know	Do not Agree
Corporate Investment Tax (CIT)			
Mineral Royalty			
Variable Profits Tax (VPT)			

Equity stake			

13.0 Give any reasons for the tax instruments' failures to capture reasonable rents from the mines.
……
……

14.0 Is the current mine tax system comparable to other jurisdictions?

Yes ☐ No ☐

15.0 What reasons can be given for the answers in Q14.0
……..
……

16.0 Which of the investment incentives below might make the tax system fail to generate optimal revenue for Zambia? (Tick)

	Agree	**Do not know**	**Do not Agree**
Imposing stabilisation clauses			
Capital or depreciation allowances used			
Employing Tax holidays			
Imposed ring-fencing			
Imposed loss carry forward periods on investment			
No ceilings on profit repatriation			
Hedging provisions imposed			
Special incentives granted to companies investing in the MFEZ.			

17.0 Give any reasons about the impacts or performance of incentives in the mining industry
……
……

18.0 In your opinion, which of the factors have generally affected the sector's acquisition of equitable revenues (rents)? (*Tick*)

	Agree	**Do not know**	**Do not Agree**
Adverse information asymmetry			
Poor valuation of production volumes and mineral grades			
Policy inconsistences			
Transfer pricing			
Tax planning strategies			
Manipulation of cost data			
Poor tax administration and collection			
Constrained monitoring capacities of the sector			
There are no rents (surpluses) generated from the sector			
Mistrust between investors and the Government			
High Effective Tax Rates			

Specify any other concerns:

19.0 Is the current mode of equity stake (participation) in privatised copper mining projects ideal for the country's optimal capturing of revenue (rents)?

Yes ☐ No ☐

20.0 What in your view can the Government adopt to improve on equity participation? (*Tick*)

	Agree	**Do not know**	**Do not Agree**
Take up paid up equity on commercial terms			
Maintain free - equity interest			
Assume state - owned enterprise (SOE) mode			
Adopt jointly owned shareholding (50 percent each shareholding)			
Nationalisation			
Increase shareholding stake from the current status			
Allow total private investment			
Give any other concerns about equity participation:			

21.0 What measure can government employ to enhance local content participation by local suppliers? (*Tick*)

	Agree	**Do not know**	**Do not Agree**
Adopt preferential procurement strategies for locals as applied in the government			
Legislate to encourage value addition and local content participation			
Develop policy to improve and create local industrial base			
Reduce cost of borrowing (interest rates) for local entrepreneurs			
Improve on line of credit available to suppliers			
Offer financial support by reducing taxes on various inputs not available in the country			
Improve general business environment to enhance linkages			
Strengthen legal, institutional and regulatory framework			
Specify any other reasons needed to enhance local content:			

22.0 Should CSR be government driven or legislated in the mining industry?

Yes ☐ No ☐

22.0 What explanations can be given for the response in Question **21.0**?

……
……

END

Appendix B: Questionnaire Survey

THE UNIVERSITY OF ZAMBIA

SCHOOL OF MINES

DEPARTMENT OF MINING ENGINEERING

05/10/2014

Dear Sir/Madam,

I'm a postgraduate student at the University of Zambia in the School of Mines reading for a postgraduate degree in Mineral Economics. My research is on optimal capturing of mineral rent from the copper mining industry which I hope will make a meaningful contribution from not only an academic perspective, but also the overall national economy, to create some insights in trying to improve the performance of mineral taxation system in Zambia.

The questionnaire I have designed is meant to enable me solicit expressive perceptions from the experts in the industry. I'm very confident of your enormous expertise and perception in this area and your participation would make instrumental contribution to this study area. I would greatly appreciate if you can spare 10-15 minutes of your precious time to fill in the attached questionnaire. In exchange for your courtesy, I will make available to you a copy of the summary report on optimal capturing of rent in Zambia should you desire to see them.

Please kindly know that your participation is honorary and I will uphold strict confidentiality with regard to all the responses to this questionnaire.

For any queries about the survey and procedures, please do not hesitate to contact me on +260955773540, +260977480735 and +260965710405 or kindly using my email addresses: eddie.chisakulo@yahoo.com or cek@cbu.ac.zm.

Thanking you in anticipation for your time and assistance.

Yours faithfully,

EDWARD CHISAKULO

SECTION A

(Demographics)

Indicate your organisation (Mark X or tick where applicable**)**

	Organisation	
1	Zambia Revenue Authority	
2	Mineral Authority (MMEWD)	
4	Chamber of Mines	
5	MoFNP	
6	Copper Mining Companies	
7	ZDA	
8	University	
9	EITI	
10	Consultants	
11	NGOs, Associations, Action Aid international, JCTR, EAZ, KPMG, ZIPAR , Investment Banks	
12	Others specify…	

1) Indicate occupation (*Mark X or tick where applicable*)

Occupation	
Lawyers	
Economist	
Lecturer	
Engineers/Scientist	
Legislator	
Others specify……	

2) Indicate experience or number of years in professional service (*Mark X or tick where applicable***)**

1-5yrs	6-10	11-15	16-20	21-25	>26

SECTION B

Tax System Evaluation in Zambia Based on the "Good tax" Criteria)

For each statement given, please mark **X** or tick in the appropriate box for the level of your agreement based on the following given scale

1= Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree

To what extent do you agree with the mine taxation system in Zambia being consistent with the following objectives of a "good tax" criteria:	**1**	**2**	**3**	**4**	**5**
Current tax regime is ***stable*** meaning it does not change frequently in unpredictable manner to discourage and affect investment.					
The current tax system is ***progressive*** in that it increases government take when there is an increase in the profitability of the mining projects.					
The taxation system is ***neutral*** as it does not discourage business by interfering with investment and operational decision.					
The taxation system allows the ***risks*** to be shared between the government and the investors.					
The tax system is ***equitable*** in that it taxes the mines more in proportional to their ability to pay more.					
The tax system is ***transparent and certain*** in that the tax liabilities are clear and assured for the government and the mines.					
The current tax system is ***regressive*** in that it decreases the government take when there is an increase in profitability of the copper mine projects.					
The taxation system is ***efficient*** because it neither impedes nor reduces the productive capacity (e.g. vat refunds) of the sector, nor does it create distortions in the resource allocation in the industry.					

SECTION C

(Sector Competitiveness and Fiscal Instruments)

Please tick (√) or mark (X) in the respective box based on the level of your agreement using the scale below

1= Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree

(a) To what level do you agree with each of the following tax instruments in terms of optimal capturing of rents (revenues) for Zambia	**1**	**2**	**3**	**4**	**5**
Corporate Income Tax (CIT) is administratively efficient to capture rents					
Mineral royalty is well designed to effectively capture rents					
Variable Profit Tax is effectively designed to capture mineral rents					
Windfall tax based on the volatility of copper prices is an efficient tax instrument to capture mineral rents					
Equity Participation (government stake in projects) is ideal to capture rents					
(b) Indicate if each of the following tax instrument is competitive and in line with global practices	**1**	**2**	**3**	**4**	**5**

Corporate Income Tax (CIT)					
Mineral Royalty					
Variable Profit Tax					
Windfall Tax					
Equity Participation					
(c) Based on the current Zambian mineral tax system, how do you agree in terms of our country's good performance with regard to:	**1**	**2**	**3**	**4**	**5**
Capturing reasonable share of revenues for the government					
Appropriate determination of "government take" or effective tax rate (ETR)					
Creating rents that are equitably shared by the government and the investors					
Collection of the correct revenue in line with the used tax instruments or ETR					
(d)How well do you agree with the notion that the use of taxation instruments in Zambia should be focused on production rather than profits					
(e)To what extent do you agree that the Zambian fiscal system does not robustly and flexibly respond to changes in prices and costs					

(f) Is the current Zambian mineral tax system in line with global practices or comparable to what is practised in other jurisdictions in achieving a win-win situation? **YES** ☐ **NO** ☐

(g) **If yes, w**hat is making apprehensions on the current mineral tax system in Zambia that it is failing to generate reasonable flow of revenue to the country when compared to other jurisdictions?

……

(h) **If no,** how would you propose to modify the mineral tax system in order to generate reasonable flow of the share of mineral rents (revenue) in line with performances in other countries?.....
.....

SECTION D

(Mine Investment Incentives)

Please tick (√) or mark (X) in the respective box indicating your level of agreement using the scale below

1= Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree

(a)Indicate the level of acceptance on whether each incentive given below will enhance increased flow of rents (revenue) to the government	**1**	**2**	**3**	**4**	**5**
Accelerated depreciation					
Loss carry forward provisions					
Investment capital allowances					
Unrestricted (100%) profits, dividends or royalty externalisation for companies					
Stabilisation clauses					
Tax holidays					
(b)Kindly indicate how you agree with the following concerns about the current tax incentives for Zambia's copper mining industry	**1**	**2**	**3**	**4**	**5**

Rents realised for Zambia are strongly influenced by granted tax incentives					
Zambia still has generous tax incentives meant only to attract investment					
The current tax incentives in Zambian mining industry need to be reviewed					
The current tax incentives are lopsided and making the tax system to only attract investment funds at the expense of the need to raise substantial revenues for the country's development of other sectors.					
Zambia's impact analysis on measuring the benefits and costs of tax incentives is not properly done.					
Transparency and accountability in the way incentives are granted is still lacking					

SECTION E

(Equity Participation)

Please tick (√) or mark (X) in the respective box your level of agreement using the scale below
1= Strongly Agree, 2 = Agree, 3 = Neutral (Undecided), 4 = Disagree, 5 = Strongly Disagree

Equity participation performance in Zambia	**1**	**2**	**3**	**4**	**5**
(a)The Zambian government is not well represented in the copper mining sector based on the current equity participation arrangement.					
(b)The current equity stake by the government in copper mining industry is not generating optimal benefits from the mineral resources wealth for the country.					
(c)The government has not been receiving optimal and proportional revenues from the mines (dividends and price participation dues) under the current ownership structure.					
(d)The current equity participation stake in the privatised projects needs to be revised in order to capture optimal revenues from the country's mineral wealth.					
(e)The government's equity participation in new mineral projects is not clear with no policy back up.					
(f)Indicate your level of agreement for the government's option of reviewing the current equity stake in the existing projects:	**1**	**2**	**3**	**4**	**5**
Increasing its current shareholding					
Not getting involved as an equity participant.					
Adopt state mining enterprises as operating companies					
(g) Indicate your degree of agreement whether the government's current equity participation in the copper mining projects is performing to expectation in terms of:	**1**	**2**	**3**	**4**	**5**
The desire to increase the size of ownership					
Providing regulation to the copper mining sector					
Providing more direct control over project development and operations					
Curbing illicit malpractices (e.g. pollution) in the mining projects					
Facilitating the transfer of technology and know-how					
Empowering government with key production, operations and financial information from the projects.					
Providing government's shareholding protection and corporate governance					
Creating transparency in the copper mining sector					

SECTION F

(Institutional Capacities)

Please tick (√) or mark (X) in the respective box the level of your agreement using the scale below

1= Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree

(a)Indicate your extent of agreement about the government's failure to enhance rent capturing needed for socio-economic development based on the following institutional problems:	**1**	**2**	**3**	**4**	**5**
Lack of coordination, linkages and liaison among the relevant government institutions (agencies) and ministries leading to fragmented and inefficient data collection					
Constrained budgetary (funds) allocation to institutions from government					
Lack or absence of reasonable staffing levels					
Deficiencies in technological (ICT) resources required to undertake assignments					
General lack of political will from the state					
Incidences of political influences causing lack of institutions' autonomy					
(b)In terms of optimising the capturing of mineral rents, how do you agree with the following challenges that taxing authority (ZRA) might face related to:	**1**	**2**	**3**	**4**	**5**
Generous investment incentives granted to investors influencing tax administrative capabilities.					
Tax avoidance incidences					
Tax evasion occurrences					
Repayments of debt based on debt to equity imbalance and unclear market determined interest rates applied					
Transfer pricing abuses					
Information asymmetry and non-genuine production performance data (misreporting)					
Challenges to monitor production, costs and sales revenues					
Problems to value intermediate products					
Non reporting of by - product credits					
Creative accounting meant to increase deductible expenses for the firms					
(c) In terms of optimising the capturing of mineral rents, how do you agree with the following challenges that government institutions (mineral authority) might face related to:	**1**	**2**	**3**	**4**	**5**
Challenges to acquire the necessary production data in the mineral value chain					
Poor capacity for monitoring of production and quality of minerals					
Inadequacy in policy/legislation and lack of enforcement					
Under declaration of grades in ores and concentrates produced					
Undefined valuation of intermediate products based on unclear marketing arrangements					
Non-disclosure of by-product credits (selenium, silver, gold and PGE)					
Un synchronised mineral policy with current situation in the sector					
Lack of technological systems needed to monitor key areas in the mineral value chain					

SECTION G

[Corporate Social Responsibility (CSR) and Local Content Development]

Please tick (√) or mark (X) in the respective box the level of your agreement using the scale below (*1= Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree)*

(a) Do you agree to the proposition that Zambia's performance in terms of CSR as an additional benefit to mineral taxation has been sub-optimal on account of:	**1**	**2**	**3**	**4**	**5**
Lack of properly defined policy to enhance CSR performance in Zambia					
Absence of implementation and regulation based on policy guidelines					
Insufficient consented government will to give a driving force to CSR					
Non-existence of community involvement to spearhead CSR					
Little commitment from mining houses to integrate CSR in their business models					
Absence of NGOs' initiatives to help in spearheading CSR					
CSR being performed on a voluntary and un compelling basis by mining firms					
(b) Do you agree that there is evidence to show that mining companies have shown increasing interest in CSR in Zambia with respect to the following:	**1**	**2**	**3**	**4**	**5**
Employment levels provided to communities					
Community investment programmes and sustainable livelihood projects					
Environmental protection and care					
Skilled employment and training of local population					
Improvement in infrastructure and provision of community health initiatives					
Technology transfer and creation of new communities and wealth					
(c) Do you agree with the proposition that Zambia's performance in terms of local content development as an additional benefit to mineral taxation has been sub-optimal on account of:	**1**	**2**	**3**	**4**	**5**
Lack of domestic manufacturing base, fabrication and service capability to support mining sector					
Uncompetitive local firms with poor production quality and reliability					
No clear and stable policy guidelines for local content development in the country					
There is abuse of tax incentives for local content development					
Little or no government commitments					
There is low support and governance issues by mining houses					
Importation of substantial proportion of equipment and expertise at the expense of local suppliers					
Deficiencies in dialogue between government and civil society					
(d) Do you agree that there is evidence to show that mining companies have shown increasing interest in local content initiative in Zambia with respect to the following?	**1**	**2**	**3**	**4**	**5**
Employment levels offered to communities					
Expenditures in local economy					
Mentoring and supporting local business development (SME)					
Preferential local procurement strategies for locals					
Supporting training and promotion of further downstream investment					
Cluster development and use of free zones					

Appendix C: Cross Tabulation Tables

(a) "Good tax" criteria

Organisation	Responsiveness of the tax system to "good tax" criteria			
	SA + A	N	SD + D	Total
ZRA	14 (43.75%)	5 (15.63%)	13 (40.63%)	32 (100%)
MMEWD	20 (27.78%)	10 (13.89%)	42 (58.33%)	72 (100%)
Copper Mining	45 (21.63%)	26 (12.50%)	137 (65.87%)	208 (100%)
ZIPAR	6 (37.50%)	4 (25.00%)	6 (37.50%)	16 (100%)
University	13 (16.25%)	14 (17.50%)	53 (66.25%)	80 (100%)
Consultant	11(15.28%)	9 (12.50%)	52 (72.22%)	72 (100%)
Suppliers	15 (26.79%)	4 (7.14%)	37 (66.07%)	56 (100%)
ZCCM -IH	8 (25.00%)	5 (15.63%)	19 (59.38%)	32 (100%)
Others	18 (20.45%)	13 (14.77%)	57 (64.77%)	88 (100%)
Total	**150**	**90**	**416**	**656**

(b) Fiscal instruments applied and regime competitiveness

Fiscal tools and optimal rent capturing

Organisation	Optimal revenue (rent) capturing by key fiscal tools			
	SA + A	N	SD +D	Total
ZRA	8(40.00%)	3(15.00%)	9(45.00%)	20(100%)
MMEWD	18(40.00%)	5(11.11%)	22(48.89)	45(100%)
Copper Mining	46(35.38%)	26(20.00%)	58(44.62%)	130(100%)
ZIPAR	3(30.00%)	2(20.00%)	5(50.00%)	10(100%)
University	14(28.00%)	6(12.00%)	30(60.00%)	50(100%)
Consultant	13(28.89%)	3(6.67%)	29(64.44%)	45(100%)
Suppliers	7(20.00%)	3(8.57%)	25(71.43%)	35(100%)
ZCCM -IH	7(35.00%)	2(10.00%)	11(55.00%)	20(100%)
Others	22(40.00%)	5(9.09%)	28(50.91%)	55(100%)
Total	**138**	**55**	**217**	**410**

Competitiveness of the fiscal tools

Organisation	Competitiveness of the fiscal tools			
	SA + A	**N**	**SD +D**	**Total**
ZRA	7(35.00%)	1(5.00%)	12(60.00%)	20(100%)
MMEWD	20(44.45%)	5(11.10%)	20(44.45%)	45(100%)
Copper Mining	41(31.54%)	32(24.61%)	57(43.85%)	130(100%)
ZIPAR	59(50.00%)	3(30.00%)	2(20.00%)	10(100%)
University	21(42.00%)	10(20.00%)	19(38.00%)	50(100%)
Consultant	11(24.45%)	6(13.33%)	28(62.22%)	45(100%)
Suppliers	11(31.43%)	3(8.57%)	21(60.00%)	35(100%)
ZCCM -IH	6(30.00%)	5(25.00%)	9(45.00%)	20(100%)
Others	23(41.82%)	6(10.91%)	26(47.27%)	55(100%)
Total	**145**	**71**	**194**	**410**

Performance of the tax system to meet expected "government take"

Organisation	Taxation system performance meets expected government take			
	SA + A	**N**	**SD + D**	**Totals**
ZRA	3(18.75%)	2(12.50%)	11(68.75%)	16(100%)
MMEWD	3(8.33%)	7(19.45%)	26(72.22%)	36(100%)
Copper Mining	22(21.15%)	27(25.96%)	55(52.89%)	104(100%)
ZIPAR	1(12.50%)	0(0.00%)	7(8.75%)	8(100%)
University	8(20.00%)	6(15.00%)	26(65.00%)	40(100%)
Consultant	1(2.78%)	7(19.44%)	28(77.78%)	36(100%)
Suppliers	0(0.00%)	3(10.71%)	25(89.29%)	28(100%)
ZCCM -IH	1(6.25%)	0(0.00%)	15(93.75%)	16(100%)
Others	4(9.09%)	6(13.64%)	34(77.27%)	44(100%)
Total	**43**	**58**	**227**	**328**

(c) Investment incentives

Ability to increase flow of rents to the state

Organisation	Investment incentives increase flow of revenue			
	SA + A	**N**	**SD + D**	**Total**
ZRA	6(25.00%)	3(12.5%)	15(62.50%)	24(100%)
MMEWD	11(20.37%)	6(11.11%)	37(68.52%)	54(100%)
Copper Mining	49(31.41%)	35(22.44%)	72(46.15%)	156(100%)
ZIPAR	8(66.67%)	0(0.00%)	4(33.33%)	12(100%)
University	20(33.33%)	13(21.67%)	27(45.00%)	60(100%)
Consultant	3(5.56%)	12(22.22%)	39(72.22%)	54(100%)
Suppliers	5(11.90%)	7(16.67%)	30(71.43%)	42(100%)
ZCCM -IH	7(29.17%)	5(20.83%)	12(50.00%)	24(100%)
Others	15(22.73%)	8(12.12%)	43(65.15%)	66(100%)
Total	**124**	**89**	**279**	**492**

Tax system performance with regard to incentives

Organisation	Poor tax system performance with regard to features linked with incentives			
	SA + A	**N**	**SD + D**	**Total**
ZRA	22(91.66%)	1(4.17%)	1(4.17%)	24(100%)
MMEWD	44(81.48%)	3(5.56%)	7(12.96%)	54(100%)
Copper Mining	119(76.28%)	22(14.10%)	15(9.62%)	156(100%)
ZIPAR	6(50.00%)	2(16.67%)	4(33.33%)	12(100%)
University	52(86.67%)	3(5.00%)	5(8.33%)	60(100%)
Consultant	49(90.74%)	3(5.56%)	2(3.70%)	54(100%)
Suppliers	42(100.00%)	0(0.00%)	0(0.00%)	42(100%)
ZCCM -IH	17(70.84%)	5(20.83%)	2(8.33%)	24(100%)
Others	54(81.82%)	5(7.57%)	7(10.61%)	66(100%)
Total	**405**	**44**	**43**	**492**

(c) Equity Participation

Performance of equity stake

Organisation	Poor equity participation performance			
	SA + A	N	SD + D	Total
ZRA	16(80.00%)	1(5.00%)	3(15.00%)	20(100%)
MMEWD	39(86.67%)	2(4.44%)	4(8.89%)	45(100%)
Copper Mining	84(64.62%)	16(12.30%)	30(23.08%)	130(100%)
ZIPAR	4(40.00%)	3(30.00%)	3(30.00%)	10(100%)
University	41(82.00%)	2(4.00%)	7(14.00%)	50(100%)
Consultant	38(84.44%)	3(6.67%)	4(8.89%)	45(100%)
Suppliers	31(88.57%)	0(0.00%)	4(11.43%)	35(100%)
ZCCM -IH	15(75.00%)	0(0.00%)	5(25.00%)	20(100%)
Others	43(78.18%)	4(7.27%)	8(14.55%)	55(100%)
Total	**311**	**31**	**68**	**410**

Review of equity stake

Organisation	Need for reviewing the current equity stake			
	SA + A	N	SD +D	Total
ZRA	5(41.67%)	0(0.00%)	7(58.33%)	12(100%)
MMEWD	13(48.15%)	1(3.70%)	13(48.15%)	27(100%)
Copper Mining	26(33.33%)	12(15.39%)	40(51.28%)	78(100%)
ZIPAR	1(16.67%)	1(16.67%)	4(66.66%)	6(100%)
University	13(43.33%)	1(3.33%)	16(53.34%)	30(100%)
Consultant	12(44.44%)	4(14.82%)	11(40.74%)	27(100%)
Suppliers	9(42.86%)	2(9.52%)	10(47.62%)	21(100%)
ZCCM -IH	6(50.00%)	1(8.33%)	5(41.67%)	12(100%)
Others	12(36.36%)	5(15.16%)	16(48.48%)	33(100%)
Total	**97**	**27**	**122**	**246**

Performance of equity stake to expectation

Organisation	Equity stake performance to expectation			
	SA + A	**N**	**SD + D**	**Total**
ZRA	7(21.88%)	2(6.25%)	23(71.87%)	32(100%)
MMEWD	24(33.33%)	13(18.06%)	35(48.61%)	72(100%)
Copper Mining	63(30.29%)	33(15.86%)	112(53.85%)	208(100%)
ZIPAR	6(37.5%)	2(12.5%)	8(50.00%)	16(100%)
University	28(35.00%)	1(1.25%)	51(63.75%)	80(100%)
Consultant	6(8.33%)	2(2.78%)	64(88.89%)	72(100%)
Suppliers	0(0.00%)	2(3.57%)	54(96.43%)	56(100%)
ZCCM -IH	8(25.00%)	2(6.25%)	22(68.75%)	32(100%)
Others	4(4.55%)	16(18.18%)	68(77.27%)	88(100%)
Total	**146**	**73**	**437**	**656**

(d) Institutional Capacities

Challenges faced by institutions

Organisation	Institutional capacity limitations			
	SA + A	**N**	**SD + D**	**Total**
ZRA	22(91.67%)	2(8.33%)	0(0.00%)	24(100%)
MMEWD	47(87.04%)	4(7.41%)	3(5.55%)	54(100%)
Copper Mining	125(80.13%)	17(10.90%)	14(8.97%)	156(100%)
ZIPAR	9(75.00%)	2(16.67%)	1(8.33%)	12(100%)
University	46(76.67%)	6(7.50%)	8(13.33%)	60(100%)
Consultant	50(92.59%)	3(5.56%)	1(1.85%)	54(100%)
Suppliers	36(85.72%)	2(4.76%)	4(9.52%)	42(100%)
ZCCM -IH	19(79.16%)	4(16.67%)	1(4.17%)	24(100%)
Others	54(81.82%)	3(4.54%)	9(13.64%)	66(100%)
Total	**408**	**43**	**41**	**492**

Taxing Authority challenges

Organisation	Tax administration challenges			
	SA + A	N	SD +D	Total
ZRA	39(97.50%)	0(0.00%)	1(2.50%)	40(100%)
MMEWD	77(85.56%)	10(11.11%)	3(3.33%)	90(100%)
Copper Mining	207(79.62%)	34(13.08%)	19(7.30%)	260(100%)
ZIPAR	18(90.00%)	1(5.00%)	1(5.00%)	20(100%)
University	92(92.00%)	7(7.00%)	1(1.00%)	100(100%)
Consultant	81(90.00%)	8(8.89%)	1(1.11%)	90(100%)
Suppliers	70(100.00%)	0(0.00%)	0(0.00%)	70(100%)
ZCCM -IH	30(75.00%)	7(17.50%)	3(7.50%)	40(100%)
Others	81(73.64%)	10(9.09%)	19(17.27%)	110(100%)
Total	**695**	**77**	**48**	**820**

Mine Authority challenges

Organisation	Challenges of monitoring the mining sector			
	SA + A	N	SD + D	Total
ZRA	30(93.76%)	1(3.12%)	1(3.12%)	32(100%)
MMEWD	65(90.28%)	6(8.34%)	1(1.38%)	72(100%)
Copper Mining	167(80.29%)	24(11.54%)	17(8.17%)	208(100%)
ZIPAR	16(100.00%)	0(0.00%)	0(0.00%)	16(100%)
University	70(87.50%)	9(11.25%)	1(1.25%)	80(100%)
Consultant	63(87.50%)	7(9.72%)	2(2.78%)	72(100%)
Suppliers	56(100.00%)	0(0.00%)	0(0.00%)	56(100%)
ZCCM -IH	23(71.88%)	7(21.88%)	2(6.24%)	32(100%)
Others	68(77.27%)	13(14.77%)	7(7.96%)	88(100%)
Total	**558**	**67**	**31**	**656**

(f) CSR and local content development

Sub-optimal performance of CSR in the sector

Organisation	Sub-optimal performance of CSR			
	SA + A	N	SD + D	Total
ZRA	21(75.00%)	4(14.28%)	3(10.72%)	28(100%)
MMEWD	39(61.91%)	18(28.57%)	6(9.52%)	63(100%)
Copper Mining	104(57.14%)	34(18.68%)	44(24.18%)	182(100%)
ZIPAR	10(71.43%)	4(28.57%)	0(0.00%)	14(100%)
University	58(82.86%)	8(11.43%)	4(5.71%)	70(100%)
Consultant	52(82.54%)	9(14.28%)	2(3.18%)	63(100%)
Suppliers	34(69.39%)	11(22.45%)	4(8.16%)	49(100%)
ZCCM -IH	17(60.71%)	2(7.14%)	9(32.14%)	28(100%)
Others	49(63.64%)	10(12.98%)	18(23.38%)	77(100%)
Total	**384**	**100**	**90**	**574**

Interest of mining companies in CSR

Organisation	Interest towards CSR by mining companies			
	SA + A	N	SD + D	Total
ZRA	6(25.00%)	2(8.33%)	16(66.67%)	24(100%)
MMEWD	27(50.00%)	4(7.41%)	23(42.59%)	54(100%)
Copper Mining	58(37.18%)	27(17.31%)	71(45.51%)	156(100%)
ZIPAR	3(25.00%)	2(16.67%)	7(58.33%)	12(100%)
University	8(13.33%)	13(21.67%)	39(65.00%)	60(100%)
Consultant	3(5.56%)	11(20.37%)	40(74.07%)	54(100%)
Suppliers	6(14.29%)	4(9.52%)	32(76.19%)	42(100%)
ZCCM -IH	5(20.83%)	3(12.50%)	16(66.67%)	24(100%)
Others	15(22.73%)	12(18.18%)	39(59.09%)	66(100%)
Total	**131**	**78**	**283**	**492**

Sub - optimal performance of local content

Organisation	Sub-optimal performance of local content			
	SA + A	**N**	**SD + D**	**Total**
ZRA	18(75.00%)	1(4.17%)	5(20.83%)	24(100%)
MMEWD	44(81.48%)	5(9.26%)	5(9.26%)	54(100%)
Copper Mining	110(70.52%)	33(21.15%)	13(8.33%)	156(100%)
ZIPAR	8(66.67%)	3(25.00%)	1(8.33%)	12(100%)
University	48(80.00%)	10(16.67%)	2(3.33%)	60(100%)
Consultant	45(83.33%)	8(14.82%)	1(1.85%)	54(100%)
Suppliers	37(88.10%)	4(9.52%)	1(2.38%)	42(100%)
ZCCM -IH	18(75.00%)	4(16.67%)	2(8.33%)	24(100%)
Others	51(77.27%)	7(10.61%)	8(12.12%)	66(100%)
Total	**379**	**75**	**38**	**492**

Mining companies committed to local content

Organisation	Commitment by mining companies to local content			
	SA + A	**N**	**SD + D**	**Total**
ZRA	6(25.00%)	3(12.50%)	15(62.50%)	24(100%)
MMEWD	14(25.93%)	9(16.67%)	31(57.41%)	54(100%)
Copper Mining	48(30.77%)	27(17.31%)	81(51.92%)	156(100%)
ZIPAR	5(41.67%)	5(41.67%)	2(16.66%)	12(100%)
University	9(15.00%)	11(18.33%)	40(66.67%)	60(100%)
Consultant	4(7.41%)	11(20.37%)	39(72.22%)	54(100%)
Suppliers	3(7.14%)	12(28.57%)	27(64.29%)	42(100%)
ZCCM -IH	2(8.33%)	2(8.33%)	20(83.34%)	24(100%)
Others	8(12.12%)	13(19.70%)	45(68.18%)	66(100%)
Total	**99**	**93**	**300**	**492**

SA + A = Strongly Agree and Agree, **N** = Neutral, **SD + D** = Strongly Disagree and Disagree

Appendix D: Cash Flow Projections

	Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Revenue	Units	Base year										
Copper ore mined	tonnes (m)	28,000,000	-		28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000
Copper grade processed	%	0.7	0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Combined Recovery	%	80	0	0	80	80	80	80	80	80	80	80
Copper produced	tonnes		-	-	156,800	156,800	156,800	156,800	156,800	156,800	156,800	156,800
Price	$/tonne	6,640	6,670	6,700	6,730	6,760	6,791	6,821	6,852	6,883	6,914	6,945
Revenue from copper	$million		-	-	1,055	1,060	1,065	1,070	1,074	1,079	1,084	1,089
Less gross based royalties	$	3%	-	0	31.66	31.80	31.94	32.09	32.23	32.38	32.52	32.67
Cost	$/tonne	3,500	3,570	3,641	3,714	3,789	3,864	3,942	4,020	4,101	4,183	4,266
Less operating costs	$million		-	0	582	594	606	618	630	643	656	669
Operating Margin (Earnings)	$million		-	0	473	466	459	452	444	436	428	420
Less Depreciation			338	345	352	359	0	0	0	0	0	0
Less profit based royalty	0%		0.00	0	0	0	0	0	0	0	0	0
Operating income before tax			-338	-345	89	75	427	419	412	404	396	387
Less CIT	30%		0	0	0	0	0	98	124	121	119	116
Net Income after Tax			-338	-345	89	75	427	321	288	283	277	271
Add Depreciation			338	345	352	359	0	0	0	0	0	0
NOCF			0	0	441	434	427	321	288	283	277	271
Less Capex			-1326									
NCF($M)			**-1326**	**0**	**441**	**434**	**427**	**321**	**288**	**283**	**277**	**271**
Discount Factor		12	0.8929	0.7972	0.7118	0.6355	0.5674	0.5066	0.4523	0.4039	0.3606	0.3220
PV of NCF($M)			(1,184)	0	314	276	242	163	130	114	100	87

Appendix D: Conti., Cash Flow Projections

	Year	11	12	13	14	15	16	17	18	19	20
Revenue	Units										
Copper ore mined	tonnes (m)	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000
Copper grade processed	%	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Combined Recovery	%	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00
Copper produced	tonnes	156,800	156,800	156,800	156,800	156,800	156,800	156,800	156,800	156,800	156,800
Price	$/tonne	6,976	7,008	7,039	7,071	7,103	7,135	7,167	7,199	7,231	7,264
Revenue from copper	$million	1,094	1,099	1,104	1,109	1,114	1,119	1,124	1,129	1,134	1,139
Less gross based royalties	$	32.82	32.96	33.11	33.26	33.41	33.56	33.71	33.86	34.02	34.17
Cost	$/tonne	4,352	4,439	4,528	4,618	4,711	4,805	4,901	4,999	5,099	5,201
Less operating costs	$million	682	696	710	724	739	753	768	784	799	815
Operating Margin (Earnings)	$million	412	403	394	385	375	365	355	345	334	323
Less Depreciation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Less profit based royalty		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operating income before tax	0%	379	370	361	351	342	332	322	311	300	289
Less CIT	30%	114	111	108	105	102	100	96	93	90	87
Net Income after Tax		265	259	252	246	239	232	225	218	210	203
Add Depreciation		0	0	0	0	0	0	0	0	0	0
NOCF		265	259	252	246	239	232	225	218	210	203
Less Capex											
NCF($M)		**265**	**259**	**252**	**246**	**239**	**232**	**225**	**218**	**210**	**203**
Discount Factor		0.29	0.26	0.23	0.20	0.18	0.16	0.15	0.13	0.12	0.10
PV of NCF($M)		76	66	58	50	44	38	33	28	24	21