

THE UNIVERSITY OF ZAMBIA

**Regional mineral value chains: implications for Zambia's copper sector
industrialization-oriented beneficiation**

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Abstract

Copper, as Zambia's economic mainstay, is a mineral whose value chain stretches beyond the country's Copperbelt Province and the recently acclaimed "New Copperbelt" Northwestern Province. The Copperbelt Province as the mining hub has several industries benefiting from both upward and downward linkages in the Sub-Saharan African market and other regions globally. Despite the challenges associated with mining and mining economies being real, Zambia needs to learn from countries within the Southern African region such as South Africa and those in other continents such as Chile in order to have a formidable escape strategy from the "natural resource-curse phenomenon". With such a strategy, stronger industrial linkages at home as well as improved contribution to regional industrialization are possible. Ultimately, this can strengthen economic growth and usher the country into a stage where beneficiation from the mines go beyond the local value chain debate but the entire nation as people see the tangible fruits of economic growth positively impacting human development indicators. The reality in the economic indicators would then truly reflect the reality on the ground among ordinary Zambians as is the case in Chile. The paper draws upon both primary and secondary data. In terms of the structure, the paper begins with background information, and then proceeds to presenting the methods of data collection and analysis. Zambia's mining sector linkages in a regional context are examined before finally looking at the main copper exports market for Zambia.

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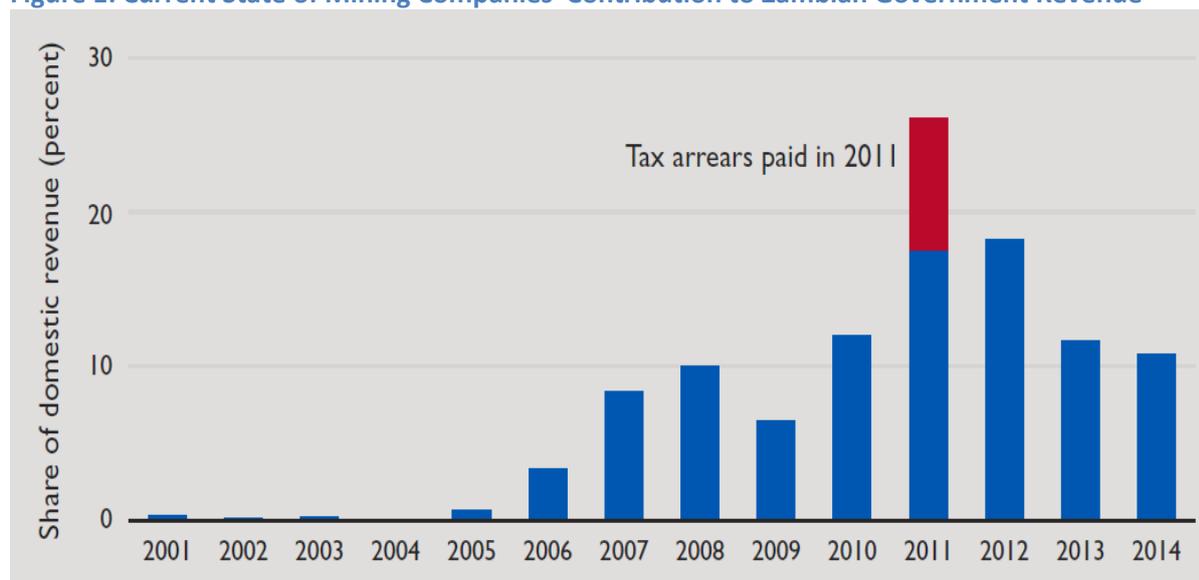
1.0 Background

1.1 Recent Performance of the Copper Sector

Zambia is known to be endowed with substantial and diverse mineral resources. Copper has been the major mineral exploited for nearly a century since the establishment of the first commercial copper mine in 1928 by Roan Antelope Mine in Luanshya in the country's Copperbelt province. This means Zambia has mining history stretching nearly 50 years into her pre-independence experience having gained her independence in 1964 (Fessehaie 2012a; Fraser et al. 2010; Lungu 2008; Simutanyi 2008; World Bank 2014a; World Bank 2014b).

Therefore, since 1964, the mining industry has been and still is a major contributor to the country's GDP and foreign exchange earner. As at end of 2014 for instance, copper exports averaged 66% of Zambia's total exports for four consecutive years. As an industry, mining has contributed 11% of GDP whereas taxes and other revenues government has collected from mining companies have averaged 16% in the same period. Most important therefore is the effect of the growth in revenue collected from the mining sector has had on linkages development within the sector as well as beyond. For instance, mining companies' procurement of diverse goods and services from firms in the manufacturing sector and other sectors as well as some extent of downstream minerals processing implies a significant contribution to the economy. Such contribution from mineral processing would further mean a strengthening of the taxes and royalties which mining companies contribute to government treasury. As Figure 1 shows, mining taxes and royalties currently account for a large share of government revenue. Additionally, mining companies make large payments of PAYE, VAT, company tax, employment tax and others (World Bank 2015). All these taxes could play a significant role in the beneficiation of local supply linkages in Zambia's mining sector.

Figure 1: Current State of Mining Companies' Contribution to Zambian Government Revenue



Source: Lokanc (2015); World Bank (2015)

Copper as an export commodity is internationally known by its harmonized system (HS)¹ two-digit code of “74” denoting “copper and articles thereof”. In terms of the extent of minerals processing, Zambia exports copper not just at two-digit level but also in more than 12 forms which are denoted by the four-digit codes in Table 1. In recent years, Zambia is not just exporting her copper in a raw form but, as Table 1 shows, increasingly processes it into different forms except those having the four-digit codes of 7410 and 7414.

Table 1: Zambia's “copper and articles thereof” exports

HS Code	Product label	2010	2011	2012	2013	2014
'7403	Refined copper and copper alloys, unwrought	4575356	6174023	5936157	6607430	7135981
'7408	Copper wire	151026	178505	150261	127658	84708
'7409	Copper plates, sheets and strips, of a thickness exceeding 0.15mm	681758	387783	276035	79020	11142
'7413	Copper stranded wire, cables, plaited bands, not elect insulated	2685	4968	5117	7662	8947
'7407	Copper bars, rods and profiles	928	674	1357	61804	2213
'7402	Unrefined copper; copper anodes for	349	22350	3366	189	283

¹ The HS codes help to classify all types of goods produced and traded around the world. With HS codes, it becomes easier for customs officials to assign the correct tariff or tax whenever goods are imported. That is, the HS code standardizes products, and this facilitates the manner in which trade occurs. For any product one is interested in, the respective HS code can be retrieved from: <https://www.foreign-trade.com/reference/hscodet.htm>; or the World Customs Organization (WCO) website: <http://www.wcoomd.org/>; the WCO is responsible for developing and periodically revising the HS codes and nomenclature of products based on changes in global trade.

	electrolytic refining					
'7415	Nail, tack, etc of copper or iron, with head of copper	463	0	6	290	30
'7411	Copper tubes and pipes	7	0	0	1	25
'7418	Copper table, kitchen, household articles	4	0	0	6	17
'7419	Articles of copper	573	354	193	4628	7
'7412	Copper tube or pipe fittings	0	29	8	11	0
'7414	Cloth, grill and netting, of copper wire expanded metal of copper	0	0	0	0	0
'7401	Copper mattes; cement copper (precipitated copper)	151	6	0	0	0
'7410	Copper foil of a thickness not exceeding 0.15mm	0	0	0	0	0
'7404	Copper waste and scrap	844	956	1	207	0
'7405	Master alloys of copper	3210	13	0	347	0
'7406	Copper powders and flakes	153	0	436	851	0

Source: Authors' adaptation from ITC (2015) Data based on UN COMTRADE

In general, the mining industry has shaped the economic and social backbone of the country since her existence. During the country's post-independence, a wide spectrum of mineral resources has been discovered in the country. Although the exploitation of minerals has been limited mainly to the Copperbelt province until in recent years, the minerals presence in the country clearly demonstrates the considerable opportunities for further exploration to further promote linkages in the minerals value chain.

1.2 Foundations for Recent and Current Mining Sector performance

Zambia's history, as earlier highlighted, is not too long since it is basically half a century having gained independence in 1964. Almost each decade has had its watershed moments which have shaped the trajectory of the minerals sector with periods of booms and bursts; and their nexus to socio-economic indicators for the country. These occurrences have not spared (whether in a positive or negative sense) the way industrial linkages in the country unfold and how in turn the country contributes to or navigates through regional and global linkages. Some scholars have summarized Zambia's growth trajectory in general since independence and specifically as it relates to private sector or enterprise development as follows:

The fortunes of Zambian businesses have ebbed and flowed with the political and economic policies of the country, and with changes in the world copper market. Key events include independence from Britain in 1964, widespread nationalization in the late 1960s and early 1970s, and market liberalization in the early 1990s...Many of the large conglomerates have evolved from small-scale family businesses, often started by entrepreneurs of foreign origin— mainly Indian and

European – who have since become Zambian citizens (Sutton & Langmead 2013, p.13).

Sutton and Langmead's (2013) summary of Zambia's social, political and economic situation points to a number of factors which can be said to be the basis upon which the recent and current growth the mining sector is experiencing. These factors include institutional change; multinational corporations (MNCs) and foreign direct investments (FDIs); and global copper production levels, demand and prices among others.

1.2.1 Institutional Change

1.2.1.1 Conceptual Framework

Institutional change during Zambia's 51 post-independence years has been evident and equally its impact on firms or private sector development has been visible. The firm, as the main unit of analysis in this paper, has internal factors with which it is possible to optimize costs and maximize the opportunities in its external environment such as the prevailing economic conditions. The external environment is essentially composed of institutions and the associated institutional change impacting the firm in varied and diverse ways. The factors within a firm can also be institutions, as is consistent with the literature that since "institutions are rules of the game", they can be generated and natured within a firm whereby they influence, for instance, the code of conduct the firm develops for itself. Such would then influence how the firm is structured and conducts its business to achieve its goals hailing from its mission statement. In this regard, the leadership role the entrepreneur and/or management team play to assemble competent and versatile teams for specific tasks is crucially significant (North 1991; Ostrom et al. 2005; Hatch & Cuncliffe 2006; Lusthaus et al. 2002; DfID 2003).

As a whole, the firm is impacted by the diverse laws, rules and regulations which key actors such as government and the mining houses develop and/or impose on them (Scott 2001). Sometimes impact on the local suppliers to the mines can result from government sanctions directly on the firms or indirectly through the mining houses. For instance, due to government regulation to increase royalty tax for open-cast mining in Zambia from about 5% to 20% effective January 2015 (which has since been reversed and revised to 9%), Lumwana Mine indicated its intention to put the mine on care and maintenance thereby possibly threatening the local supplier firms' business with possible negative impacts on minerals value chain in the country and even in the region. In either way, such exogenous factors are crucial to the

firms' survival and performance even if it is difficult for the firms to determine how and/or when such sanctions are met.

Institutions and institutional change can also be related to the accreditation and regulatory requirements authorities such as the Engineering Institution of Zambia (EIZ) and National Council for Construction (NCC) expect the firms to meet failure to which their licenses are revoked and operations halted. All these factors emanating from government, regulatory and accreditation and indeed the mining MNCs determine the common beliefs the firms share about the ease (or lack of it) of securing contracts to supply to the mines so that they have an opportunity to grow and improve performance. They also determine the shared logics of action such as where a mining MNC prefers to procure services and products from a foreign firm to a local Zambian supplier firm on the perception that the former is technologically, financially and professionally more capable than the latter.

When institutional ethos or “rules of the game” establishing an environment either enabling or inhibiting to economic activities combine with the firm's internal factors, it is possible to culminate into the development (or lack of it) of the private sector such as that in Zambia's mining sector (Lusthaus et al. 2002). Ultimately therefore, institutional change in this paper implies changes in the rules, regulations and procedures in the economy and specifically in the mining sector having effects (positive and negative) on the composition; development and operations of the private sector in the sector under study – mining. In this regard, the political changes and government changes of the fiscal, policy and legal framework governing the mining sector and related sectors such as manufacturing and construction are all part of the definitions of institutional change. These factors constituting institutional change can all play a role in the country's industrial linkages, promotion of translation of benefits from mining-centred economic growth to the common man as hallmark of beneficence as a concept.

In the context of this paper therefore, linkages entail commercial interactions between different profit-oriented enterprises that develop naturally in a well-functioning market economy. Linkages seek the most efficient way of sourcing the skills, materials and services firms need to produce commercial output through the various forms they manifest such as their being created through supply chains that comprise procurement, out-sourcing and sub-contracting of products and activities between large and smaller firms. On one hand, upstream linkages rest on vertical, horizontal and technological demand–supply interactions

among producer firms, specialized manufacturers, input providers, agents and distributors as well as service suppliers that evolve over the life of a mining operation. On the other hand, downstream linkages trace the interconnectedness of a sector to other sectors in the regional economy that consume its output in the production process.

1.2.1.2 Institutional Change Implications

From 1964 for 27 years, the United National Independence Party (UNIP) with Kenneth Kaunda as party President was at the helm of the country's governance. Fredrick Chiluba of the Movement for Multi-party Democracy (MMD) became Republican President in 1991 and presided over the country's affairs for a decade then Levy Mwanawasa of the same party took over and served for seven (7) years until his demise in office. For three more years, there was a continuation of the MMD being in power until 2011 when Michael Sata of the Patriotic Front (PF) political party defeated the incumbent President – Rupiah Banda. Despite Sata's death in 2014, the PF has continued in power with Edgar Lungu as Republican President (Burnell 1995; Burnell 2001; Burnell 2010; Diakonia & Associates 2013).

Understanding this political history is important in that it provides hindsight, insight and foresight in explaining the economic conditions associated to mining, copper exports and linkages development in a number of ways. The changes in political parties and individuals taking charge of government affairs undoubtedly shape policy and influence the direction of performance in key economic sectors, especially mining. The World Bank and DfID express this interconnectivity as follows: “the performance of the Zambian economy has followed the fortunes of copper mining closely. The decline of copper output after the 1970s set the stage for a period of low economic growth with falling per capita GDP. The revival of copper output has helped the economy to grow more rapidly, averaging growth of over 6 percent a year during the 2000s” (World Bank & DfID 2011, p.13). Moreover, Kaunda's socialist-oriented political philosophy of “humanism” Zambia espoused a few years after independence to depart from economic liberalism the colonial masters left led to the nationalization of mines from the late 1960s to about mid-1970s (Lungu 2008).

Humanism and the nationalization (also called “Zambianization”) policy in the post-independence era are arguably major factors that led to the country's socio-economic deterioration (Lungu 2008; Simutanyi 2008). Of course there are many external factors such as the oil and debt crises coupled with declining copper prices on the international market

during the 1970s and 1980s which also are to blame (Caritas International & CIDSE, 2015; IMF, 2000). Based on Zambia’s Central Statistical Office (CSO) data for instance, some scholars reported that in 1980, the country’s economic performance stood at a GDP of -0.03 whereas during the 1981 – 1990 period it averaged 1.08 (Ndulo & Mudenda n.d.). It therefore took Chiluba’s re-introduction of market liberalization after the re-birth of a multi-party democratic dispensation in 1991 to embark on the reviving process of mining and socio-economic progress (Sutton & Langmead 2013).

Therefore, 1991 becomes the main genesis of what we now see in the mining sector today as analyzed throughout this paper. The World Bank summarizes the institutional change oriented to the mining sector since Zambia’s return to economic liberalization as follows:

Figure 2: Summary of Key Institutional Changes in Zambia's Mining Sector since the 1990s

Mining fiscal regime	Key features
Development agreements negotiated with individual mines during privatization (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: it set the company income tax rate 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)	In response to the mining companies’ concerns about the revocation of the development agreements, 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)	The government made further reforms to the mining tax regime in its 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.

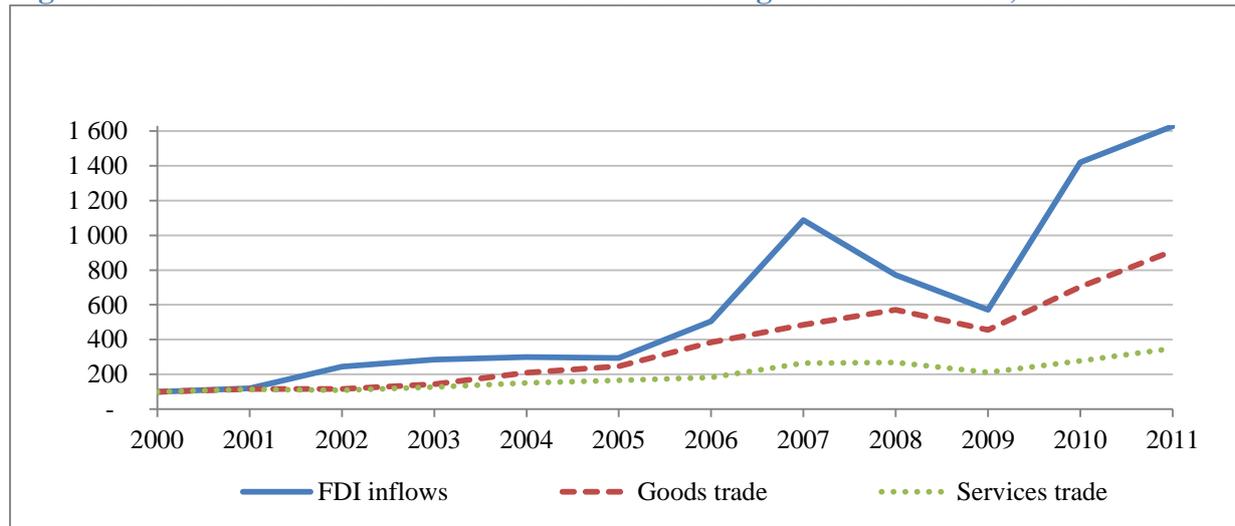
Source: World Bank (2015)

1.2.2 Foreign Direct Investment flows

The 1991 political regime change was a watershed moment for the country’s economic realignment. Subsequently, legal and institutional reforms were undertaken to necessitate privatization of malfunctioning state-run companies such as the mines under ZCCM and open the country to foreign direct investment (FDIs) flows. Ultimately in 1997, the first privatization of a mining company was effected (Lungu 2008). Since that milestone, FDIs flows through multinational corporations (MNCs) investing in different sectors of the

economy, especially mining have constantly increased such that Zambia recorded an increase in such flows from USD 2 billion in the 2002 – 2006 period to USD 6.7 billion during the 2007 – 2011 period (World Bank 2014b). This remarkable performance in attracting FDI has been a contributing factor to the generally strong GDP growth Zambia witnessed since the turn of the new millennium in 2000. The FDI inflow as well as goods and services trade trends are shown in the next graph.

Figure 3: Growth in value of FDI inflows and trade in goods and services, 2000-2011



Source: COMTRADE/WITS (goods) and UNCTADStat (FDI, services) as compiled in World Bank (2014b)

Following the commencement of privatization of mines in 1997, as Figure 4 illustrates, FDI flows into Zambia started rising though quite at a slow rate until 2005 when a sharp rise started to occur. This means despite President Chiluba restoring economic liberalization in 1991, the effects thereof started manifesting in the mining sector way beyond 1997 when the first mine was privatized. Furthermore, as it is argued that “one thing leads to another” (Morris et al. 2012), President Mwanawasa is credited for having stabilized the macro-economic landscape during his 7 years reign starting in 2001. It is during his tenure of office that government prioritized the creation and strengthening of linkages between the mining houses and local supply chain to ensure private sector growth and sustained economic growth. Consequently, the Transitional Development Plan (TNDP) and the Fifth National Development Plan (FNDP) were developed in 2002 and 2006 respectively to provide a framework through which sustained economic growth and development would be pursued (GRZ 2006).

Since 2002, Zambia has continued to develop such five-year plans to provide policy direction on key macro-economic indicators and sectors. The challenge however, has been the lack of consistency and adherence to such good policies overtime partly due to change of governments whose leaders did not prioritize the same key sectors and concerns as previous leaders. Consequently some of these inconsistencies as Figure 2 earlier summarized have led to the revision of the Mines and Minerals Development Act as well as the fiscal regime governing a number of taxes the mining companies have to pay to government. In as much as the decline in FDI flows in 2009 is not attributable to policy inconsistencies but to the 2008/2009 global economic crisis, going forward, concern is expressed that there is a likelihood of reduced FDI inflows into the mining sector. Lack of re-investments into the mining sector in the short to medium term would have future ramifications on the country's GDP and many other socio-economic indicators. Copper production levels and the respective export earnings would slow down (Lokanc 2015; World Bank 2015).

1.2.3 Copper Production levels versus regional and global demand and prices

Zambia's copper production and exports have witnessed rises and declines during different political regimes the country has had since independence as Figure 5 shows. At independence the economy was vibrant as well as the mining sector. This trend continued until by the end of the 1960s when the nationalization process commenced to induce the country to a downward copper production and economic growth trend for about 20 consecutive years into the 1990s (Lungu 2008). Currently, copper production levels have considerably improved despite Zambia's ranking as Africa's number one copper producer having been reversed at the end of 2013 when Congo DR overtook the country.

Figure 4: Zambia's Copper Production Shares (1963-2011) versus Mine Ownership Type and Global Production

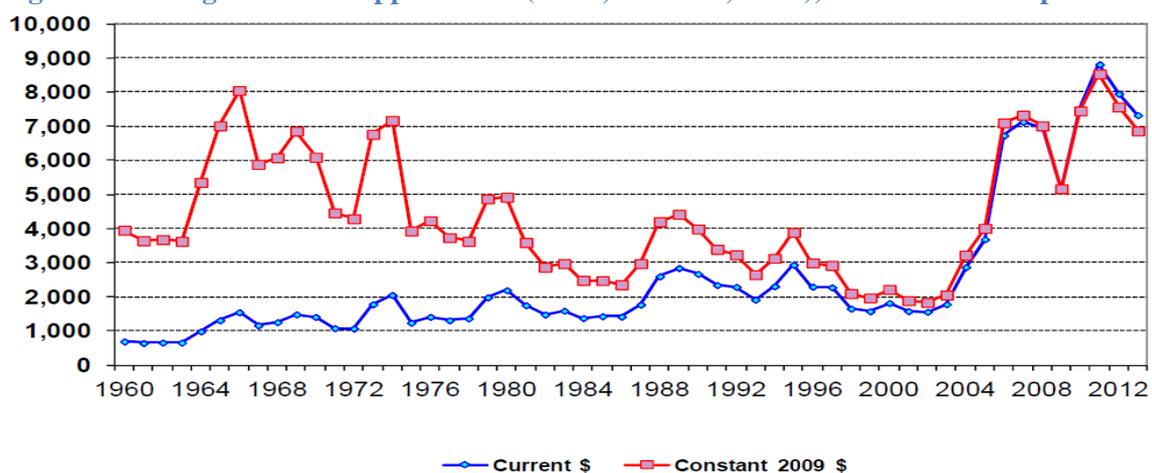


Source: International Copper Study Group (ICSG) from 1996 onwards (*Copper Bulletin* March 2012 and April 2013; *Yearbook* 2006; *Statistical Yearbook* 2008), US Geological Survey annual mineral reports 1963-95.

Source: (C. of M. of Z. ICMM 2014; C. of M. Z. and ICMM 2014)

Overall, the soaring copper prices have been the main reason behind the strong growth of Zambian goods exports in recent years. It is reported that copper prices during the 2003 – 2011 period multiplied five times to reach an all-time high of about USD10, 000 per ton in early 2011 but later declined to about USD 8,000 per ton. With an increase in copper production and the generally favourable commodity prices on the global market shown in Figure 5, Zambia's exports grew at an annual average rate of 12% during the 2003-2011 period (World Bank 2014b).

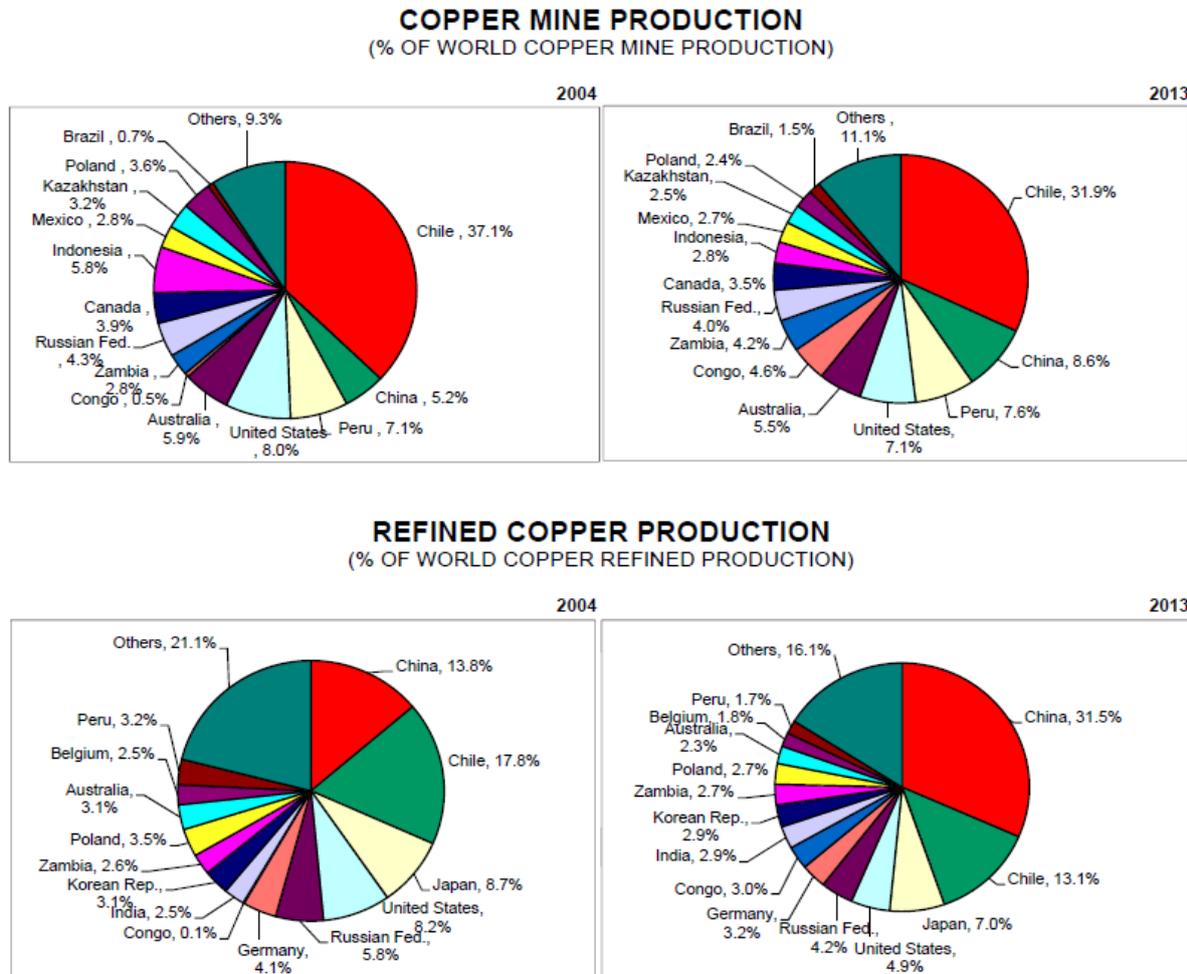
Figure 5: Average Annual Copper Prices (LME, Grade A, Cash), 1960-2013: USD per tonne



Source: ICSG (2014)

Despite Zambia's copper production levels currently being generally on an upward trend, the country's contribution to global copper production at 4.2% in 2013 still remains lower today than it was in the 1970s when the country compared favourably to Chile which is now the largest copper producer at almost 40% in 2013.

Figure 6: Zambia's contribution to Global Copper Production



Source: ICSG (2014a, p.14)

As the pie charts in Figure 6 show, Zambia's contribution to the global copper value chain has been quite negligible during the 2004- 2013 period despite increased FDI flows into the country. The country contributed 2.8% versus 4.2% of unrefined copper in 2004 and 2013 respectively; and 2.6% and 2.7% of refined copper in 2004 and 2013 respectively. Zambia needs to learn how for instance Congo DR has managed to increase her copper production during the same period from 0.5% to 4.6%. It is such lessons which could help Zambia develop stronger linkages at home and in Sub-Saharan Africa and beyond. Currently, it is possible for Zambia to increase her copper production because some of the mining companies

feature among the top 20 copper mines globally in terms of capacity. In 2014 for instance, Kansanshi Mine in North Western province was ranked 13th whereas Konkola Copper Mine was ranked 20th as in figure 7:

Figure 7: Zambia's 2014 Mines' Ranking among the Top 20 Mines Globally by Production Capacity

Rank	Mine	Country	Owner(s)	Source	Capacity
1	Escondida	Chile	BHP Billiton (57.5%), Rio Tinto Corp. (30%), Japan Escondida (12.5%)	Concs & SX-EW	1,050
2	Grasberg	Indonesia	P.T. Freeport Indonesia Co. (PT-FI), Rio Tinto	Concentrates	790
3	Collahuasi	Chile	Anglo American (44%), Glencore plc (44%), Mitsui + Nippon (12%)	Concs & SX-EW	520
4	Los Bronces	Chile	Anglo American 75.5%, Mitsubishi Corp. 24.5%	Concs & SX-EW	490
5	Codelco Norte	Chile	Codelco	Concs & SX-EW	450
6	Antamina	Peru	BHP Billiton (33.75%), Teck (22.5%), Glencore plc (33.75%), Mitsubishi Corp. (10%)	Concentrates	450
7	Morenci	United States	Freeport-McMoRan Inc 85%, 15% affiliates of Sumitomo Corporation	Concs & SX-EW	450
8	El Teniente	Chile	Codelco	Concs & SX-EW	443
9	Taimyr Peninsula (Norilsk/ Talnakh Mills)	Russia	Norilsk Nickel	Concentrates	430
10	Los Pelambres	Chile	Antofagasta Plc (60%), Nippon Mining (25%), Mitsubishi Materials (15%)	Concentrates	400
11	Radomiro Tomic	Chile	Codelco	SX-EW	400
12	Andina	Chile	Codelco	Concentrates	300
13	Kansanshi	Zambia	First Quantum Minerals Ltd (80%), ZCCM (20%)	Concs & SX-EW	285
14	Bingham Canyon	United States	Kennecott	Concentrates	280
15	Batu Hijau	Indonesia	Pt Newmont Nusa Tenggara (PT Pukuafu 20%, Newmont 41.5%, Sumitomo)	Concentrates	250
16	Sarcheshmeh	Iran	National Iranian Copper Industry Co.	Concs & SX-EW	249
17	Cerro Verde II (Sulphide)	Peru	Freeport-McMoRan Copper & Gold Inc. 53.5%, Compañía de Minas Buenaventura 18.5%, Sumitomo 21%	Concentrates	240
18	Olympic Dam	Australia	BHP Billiton	Concs & SX-EW	225
19	Cuajone	Peru	Grupo Mexico (54.1%), Marmon Corp. (15%), Freeport-McMoRan Copper &	Concs & SX-EW	212
20	Konkola	Zambia	Konkola Copper Mines (Vedanta 79.4%, ZCCM 20.6%)	Concentrates	200

Source: ICSG (2014a)

2.0 Methodology

This paper combines desk review with data collected during fieldwork for a case study focusing on the regional value chain for capital equipment to the mining sector. This was part of the 2014 regional industrialization project by the University of Johannesburg with research collaboration on the Zambian side by The University of Zambia's (UNZA) Department of Geography and Environmental Studies with the authors of this paper as the researchers. During fieldwork, the successful interviews with 33 supply firms in mainly Kitwe in the Copperbelt province were interviewed; and five (5) institutions based in Lusaka. Despite several efforts made, interviewing mining houses proved to be difficult.

For trade data which amplified the analysis of the subject matter, the authors mainly relied on Trade Map of the International Trade Centre's (ITC) Market Analysis Tools (ITC, 2015). This was secondary trade data retrieved from ITC databases and software. This source of secondary data was purposively chosen given its elaborate and better summarized data sets which addressed the needs of the subject matter and the paper. ITC trade data is accurate as it

is compiled from credible organizations including national bureaus of statistics such as Zambia's Central Statistical Office (CSO), Export Board of Zambia (EBZ) and the Bank of Zambia (BoZ).

From the ITC data, the Harmonized System (HS) Code for copper and articles thereof at two-digit level is 74. This code then necessitated data retrieval through the Trade Map. Data processing and analysis was done using Microsoft Excel which enabled the better organization of data and the computation of necessary statistics and graphs to show different export trends. The limitation Market Analysis Tools have, however, is that they only have data from 2001 to date. Despite this constraint however, the analysis made in this paper is still valid and the data provides useful trends for over a decade thus anchoring the recommendations.

3.0 Zambia's mining sector linkages in the regional context

3.1 General overview

Zambia's mining sector is generally described as one having a relatively bigger supply cluster than several other countries in Southern Africa. However, the bigger the cluster is, the shallower it is as one characterized by a widespread decline in the supply of locally value-added content. This phenomenon emanates from the privatization of mines in the 1990s where the country deviated from the development of linkages which was a major component of Zambia's industrialization strategy during the nationalization era of the late 1960s. Consequently, since the economic and fiscal re-alignment anchored on multiparty democratization and economic liberalization in the 1990s, a phenomenon of the so called ad hoc traders also known as "briefcase businessmen" has emerged and strengthened (Fessehaie 2012b; Fessehaie 2012a; Kaiser Associates Economic Development Practice 2011).

The nature and definition of "local supply" or rather "local suppliers" seems to determine the extent and trajectory of linkages existent in the mining sector. In some of the literature such as that by the World Bank, local suppliers are determined by their registration locally with the Patents and Companies Registration Agency (PACRA); and are categorized based on the

ownership, products range, size of the firm, and business model employed. As such, four categories are more pronounced as follows:

Table 2: Conventional Categorization of Local Suppliers in Zambia's Mining Sector

Categorization	Characteristics/Description
Agents and Distributors	<ul style="list-style-type: none"> - Usually small-medium sized - Zambian owned businesses - Suppliers of a wide range of products whose initial capital requirements are generally lower than average - Tend to possess good knowledge about the market.
Briefcase Businessmen	<ul style="list-style-type: none"> - Usually a large group of businesses estimated at 5, 000 individuals constituting 80% of the vendors' list some mining houses in 2008. - Key strength of such a cluster of firms is lobbying capacity to affect public policy and mining houses' procurement systems. - Suppliers of low or no value-added goods - Cheaply import their goods or source locally from OEMs as well as local manufacturers and fabricators - Main business characteristics are the low barriers to entry, low risk and high profits
OEM Subsidiaries	<ul style="list-style-type: none"> - Direct suppliers of capital equipment and after-sales services to the mining houses - Big companies usually hailing from Europe, the US and South Africa
Specialized Firms	<ul style="list-style-type: none"> - Not big in number - Skill-intensive electrical, mechanical and chemical engineering firms - Usually face challenges in their attempt to enter supply links characterized by high capital requirements and more advanced and highly specialized services e.g. pneumatic and hydraulic equipment installation.
General Services Suppliers and Manufacturers	<ul style="list-style-type: none"> - Suppliers of basic services e.g. cleaning, building maintenance, security - Local manufacturers composed of suppliers of metallurgical, plastic, rubber products, engineering products and paints, all which go into processes at different stages of the copper value chain

Source: Authors' adaptation from World Bank (2014a)

All suppliers in the different categories have a role in the promotion of linkages in the region whether they import or export products, or indeed undertake some value-adding activities thus contribute to industrial development. However, even if the World Bank's definition of local suppliers is conventional, it tends to negate the "beneficiation debate" where some firms in Zambia's mining sector complain about the dominance of foreign firms (registered locally) in the mining value chain. The foreign firms such as those from South Africa, China, and those OEMs from industrialized countries tend to exert immense competition on Zambian firms. Even if such foreign firms are significant to the country's minerals value chain, they tend to have better capabilities whose establishment and anchor is non-resident locally (Kaleng'a 2013). Therefore, in the context of this paper, "localness" of suppliers to the mines is associated to natural persons who are Zambian citizens whether they are indigenous or of

foreign origin. As such, a local firm needs to be fully or majority owned by natural persons who are Zambian citizens.

3.2 World Trade Organization basic principles application to Trade in Zambia’s Minerals Value chain

Zambia is a member of WTO, since 1 January 1995, together with currently 160 other countries around the globe. The institutional and legal framework establishing the WTO on 1st January 1995 is the Marrakesh Agreement of 1994. This is a multilateral trade framework. The Marrakesh Agreement has four pillars – Annex I to IV – anchoring the WTO; the first three being obligatory for all member countries whereas Annex 4 is optional as detailed below:

Table 3: Summary of Marrakesh Agreement Establishing the WTO

Nature of WTO Pillar	Type of Annex	Composition
<i>Obligatory</i>	Annex I	Annex IA: Multilateral Agreements on Trade in Goods (GATT – General Agreement on Tariffs and Trade)
		Annex IB: General Agreement on Trade in Services (GATS)
		Annex IC: Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)
	Annex II	Understanding on Rules and Procedures Governing the Settlement of Disputes
	Annex III	Trade Policy Review Mechanism
<i>Optional</i>	Annex IV	Plurilateral Trade Agreements

Source: Authors’ adaptations from WTO (2002)

From the WTO pillars arise key principles guiding member countries on for instance how to treat goods, services and intellectual property (IP) from other WTO member countries. These main principles include the non-discrimination principle which is sub-divided into two: Most Favoured Nation (MFN) principle; and National Treatment principle. MFN stipulates that if a WTO member country favours one other WTO member country (or its products thereof), the same treatment should be extended to all other WTO member countries which are trading with the respective country. This therefore implies that there is the upholding of non-discrimination among member countries. Similarly, National Treatment principle of the WTO demands that a WTO member country should not discriminate against like goods/services/IP from other WTO member countries in preference for domestically produced ones. Failure to

adhere to such principles therefore entails the possibility of a trade dispute between member countries (WTO 2002).

Based on WTO main principles such as non-discrimination, it becomes difficult for Zambia to favour local suppliers of goods and services against foreign ones either resident in Zambia or operating from their country of origin provided their country is a WTO member. This means WTO principles are basically for the advancement of trade liberalization where local suppliers and foreign ones alike compete to supply to the mining houses in Zambia and the rest of the Southern African region. This means free trade therefore anchors on the existence of gains from trade and those trade gains associated to trade liberalization have effects on rising real GDP. It is argued that trade liberalization increases a country's GDP because of the associated efficiency in resource allocation. This efficiency is attainable through for instance, specialization in the production of goods and services that can produce more cheaply; broadening the size of the market available to the firm or indeed the country; and trade's selection of the most productive firms in a respective market (WTO 2014, p.60).

However conventionally trade liberalization can be propagated, a developing country like Zambia is allowed to apply exceptions when especially dealing with developed countries. The challenge in implementing exceptions still remains that overall, foreign firms are better endowed with capabilities to supply to the MNCs-owned mining houses in Zambia than local firms. As such, based on the WTO argument in the 2014 World Trade Report, foreign firms are the most productive firms which ideally deserve to be selected by the mining MNCs. Therefore, the multilateral trade framework weaved around WTO's non-discrimination principle empowers South Africa to foster regional linkages in the minerals value chains for instance through trade in capital equipment conducted by her OEMs and other corporate entities. Zambia therefore needs to explore the WTO exceptions which can help stimulate local supplier firms' growth as well as empower such firms to develop adequate capabilities with which they can favourably compete with any other types of firms. It is this which equally enhances the beneficiation of both the firms and the economy from the MNCs investments in the copper sector.

3.3 South Africa's role in Zambia's Copper Value Chain

It is obvious that South Africa naturally exerts influence on the minerals' value chains in many countries in Sub-Saharan Africa (SSA) such as Zambia due to the fact that it is the largest economy in the region. South Africa therefore becomes the nearest (and sometimes the cheapest) source of products Zambia needs as inputs into her mining sector at different stages of the production process. Table 2 is about bilateral trade between the Republic of South Africa (RSA) and the Government Republic of Zambia (GRZ). It shows some of the goods Zambia imported from RSA during the 2012 – 2014 period. Some of these products directly feed into Zambia's copper production processes whereas others have an indirect relationship.

During the 2012 – 2014 period, it is clear from Table 2 that machinery, nuclear reactors and boilers among others were Zambia's main imports from RSA. Using 2014 statistics for instance, out of a total of USD 1,489, 070 (thousand) Zambia spent on machinery, nuclear reactors and boilers imports from all over the world, South Africa accounted for almost half the amount at USD 617, 610 (thousand). Many other products with direct relevance to mining also have a similar trend. It is also clear that South Africa has Zambia as one of her major markets for iron and steel which is a core input in many products local and foreign firms in Zambia manufacture, fabricate and supply to the different mining houses. In this regard, South Africa's 2014 iron and steel exports to the world market totaled USD 6, 956, 073 (thousands) out of which USD 152, 238 (thousands) went to Zambia. In the same year, Zambia's total iron and steel imports from the world were valued at USD 201, 978 (thousands) out of which South Africa accounted for more than half with only USD 49, 740 (thousands) for the rest of the world (ITC 2015).

Zambia hosts some of South Africa's major companies supplying to the mining sector. BSI Steel is a case in point which most respondents referred to during fieldwork on the Regional Industrialization project as their major local source of steel. One of the Zambian firms (Girder Engineering) interviewed noted that its main competitors in steel supply are BSI Steel, Discount Steel and Mac Steel. Whereas Girder Engineering is a big firm with a good turnover of USD20million in 2013, the company complains about stiff competition from South African companies in its core business areas such as the supply of steel. As such,

Girder Engineering thinks it does not have cost competitiveness over South African steel suppliers. The only advantage the company says it has is being able to provide Zambia Bureau of Standards (ZABS) approved steel which is not re-rolled unlike that which is supplied by most South African companies. Girder Engineering is an agent of Trident Steel. The later came to see the former's operations, and being satisfied, Trident Steel appointed Girder Engineering as its agent (Field Interviews, 2014).

South Africa also plays her leadership role in promoting regional value chains in the mining sector through companies such as Weir Minerals whose details are in text-box 1. It is key to note that companies such as these foster regional linkages along the copper value chain by for instance having the office in Kitwe service Zambia as well as serve as a hub through which operations and business in Congo DR are viable. Despite Weir Minerals' presence being a strong competing force to local firms such as Meltcast Engineering and Powerflex Engineering, there are strong beneficiation effects on Zambia's economy. This occurs through employment creation and the different taxes such as corporate tax the company pays to the government thus contributing to the national treasury.

Textbox 1: Weir Minerals: South African Company Supplying to Mining Houses in Zambia

The company was established in Zambia in 2002 and is currently the official agent of Warman. Initially, Weir Minerals and Warman existed separately in Zambia, but after the merger, they formed a local subsidiary. The current relation between the parent company in South Africa and the Zambian subsidiary therefore is such that there is a typical supplier-customer relationship. The Zambia office is fully self-sufficient and enjoys the autonomy of making most day to day operational decisions. However, being a listed company in South Africa, major capital intensive decisions have to be made there. Decisions that involve Zambia, for instance, moving to bigger facilities which in on the cards, have to be motivated for by the Zambian office for the office in South Africa to approve. If there are modifications to products, such are done in South Africa after feedback and motivation by the Zambian office. The company's core business is in minerals processing and supply and repair of pumps. The company also supplies wear resistant (rubber) materials to the mines. The company seems to undertake many explorations and feasibility studies. Whether these materialise into actual projects also depends on government policy and the resultant business environment.

Weir Minerals acknowledges the significance of having a local presence in Zambia to offer a range of services to clients given that some products are more technical. Weir Zambia claims that some products are more technical. Weir minerals stresses that it would not have seen such growth had it not established its physical presence in Kitwe town in the Copperbelt Province. The parent company in South Africa therefore currently assists the Zambian subsidiary in a number of ways such as in-house training on subjects such as health and safety. Sometimes an expert from South Africa may be brought to train staff on new operating systems among other topics. Employees at Weir Minerals Zambia also are periodically sent for training in South Africa and beyond. At the time of the interview in 2014, the company was also sponsoring the studies of 4-5 people either on UK correspondence courses or enrolled at Copperbelt University in Kitwe. The company is basically open to supporting

any business-related course. The company is currently looking at expanding by setting up a branch in Solwezi in the North Western province of Zambia – the “New Copperbelt Province”. Moreover, a sister company was in the Congo DR, but there has been some reluctance in getting it off the ground. It was envisaged to have stockholding and staff like the Kitwe office. However, a decision was subsequently taken that Zambia should be the central hub into the DRC. Staff will go to the DRC to serve mines, and stock for DRC will be held in Kitwe. In terms of the turnover for 2013, Weir Minerals Zambia had USD25 million; and anticipated a total turnover of USD33 million if the 2014 projects were to be successfully concluded.

Source: Authors’ based on Fieldwork Interviews (2014)

Moreover, some of the original equipment manufacturers (OEMs) such as Atlas CorpcO have their regional hubs in South Africa where they undertake some level of research and development (R&D) oriented to the mining sector in the region. Atlas CorpcO Zambia annually sends employees to this regional hub in South Africa for training. When the trained staff return to Zambia they in turn transfer the new skills to the rest of the local branch thus complementing an in-house training programme. Atlas CorpcO was established in Zambia in 1948 - way before the country’s independence. This makes this OEM one of the oldest in the country’s mining sector. When discussing the institutional and political changes Zambia has experienced during her 50 years of post-independence, Atlas CorpcO has equally rich story to tell. The company’s ability and resilience to navigate through changing policy, institutional and market dynamics is remarkable. It has seen Zambia’s nationalization and privatization processes in the mining sector, and has adapted well throughout. Atlas CorpcO’s four core business areas include marketing and distributing compressors, mining and rock excavation, tools and construction services. The company distributes its own product range.

Table 4: Summary of Bilateral Trade Between South Africa and Zambia (USD "000"): 2012-2014

Some Selected Product labels	Zambia's imports from South Africa			South Africa's exports to world			Zambia's imports from world		
	2012	2013	2014	2012	2013	2014	2012	2013	2014
<i>All products</i>	2970248	3082135	3103768	98872228	95111531	90612104	8805153	10161843	9585323
Machinery, nuclear reactors, boilers, etc	587530	617610	563942	7250138	6728895	6636205	1509129	1815180	1489070
Articles of iron or steel	189350	290390	292459	1728338	1554669	1531192	350526	562499	542032
Electrical, electronic equipment	180984	231040	246570	2325491	2253638	2489376	496942	624653	708102
Plastics and articles thereof	158360	162905	172395	1593193	1480859	1585148	261619	280136	266424
Mineral fuels, oils, distillation products, etc	138234	134438	169610	11333974	10139913	9536316	933905	1082472	1429203
Iron and steel	160161	181819	152238	7029063	6416448	6956073	218782	238111	201978
Salt, sulphur, earth, stone, plaster, lime and cement	49343	31010	62539	562943	461401	516840	134815	113942	142691
Miscellaneous chemical products	100677	71865	60645	1038037	915370	1062044	202646	184529	144458
Rubber and articles thereof	69437	66822	59281	694477	621427	576313	173108	210237	159591
Aluminium and articles thereof	9048	11524	12801	1809095	1932808	1905551	23088	60060	66958
Railway, tramway locomotives, rolling stock, equipment	6963	5713	11140	301242	349729	293727	11375	8740	17414
Copper and articles thereof	12651	4310	6942	700970	671892	502187	127744	58731	19294
Pearls, precious stones, metals, coins, etc	702	692	2296	19073067	17538153	14055116	1413	1523	3118
Other base metals, cermets, articles thereof	329	385	397	137269	167255	142929	1315	736	1371
Zinc and articles thereof	340	3	12	20754	22100	11969	2398	2133	1645
Nickel and articles thereof	41	77	11	241323	471922	433575	1031	156	50
<i>sub total</i>	1664150	1810603	1813278	55839374	51726479	48234561	4449836	5243838	5193399
<i>Rest of the products</i>	1306098	1271532	1290490	43032854	43385052	42377543	4355317	4918005	4391924

Source: Authors' adaptation from ITC (2015) Data based on UN COMTRADE

3.4 Natural Resource-Curse Escape Strategy for Zambia

Overall, Zambia's upstream and downstream linkages show potential for growth if the country collaborates with the key stakeholders within the country as well as with other countries in the region and beyond. As such, the South African economy is crucial for the possible unleashing of sustained economic diversification. However, the real transition from a primary-commodity exporter to a high-technology, knowledge-intensive industrial leader, requires developing the more dynamic linkages at each stage of the mineral value chain to offer greater commercial rewards to constitute beneficiation for industrial development.

For most developing countries, there is a pervasive argument that mineral resources are a curse and that, in general, growth in mineral-rich and dependent regions have been worse than in less natural resource-endowed which are mostly advanced economies. Accordingly, mining as a growth engine in most mining regions in developing countries is questioned on the fact that the mineral value chain is characterized by capital-intensive operations, usually foreign-owned, operated largely by expatriates, and uses inputs purchased abroad. Additionally, output, income and employment multipliers in the value chain are usually lower than in other economic sectors, particularly manufacturing. Consequently, benefits of the mineral value chain tend to be skewed towards more advanced economies (Sachs & Warner 2001; Kaplinsky et al. 2011; Morris et al. 2012; UNCTAD 2007).

Zambia therefore needs to learn from countries within the Southern African region such as South Africa and those in other continents such as Chile in order to have a formidable escape strategy from the "natural resource-curse phenomenon". With such a strategy, stronger industrial linkages at home as well as improved contribution to regional industrialization are possible. Ultimately, this can strengthen economic growth and usher the country into a stage where beneficiation from the mines go beyond the local supply chain but the entire nation as people see the fruits of economic growth positively impacting human development indicators. The reality in the economic indicators would then truly reflect the reality on the ground among ordinary Zambians as the case is in Chile.

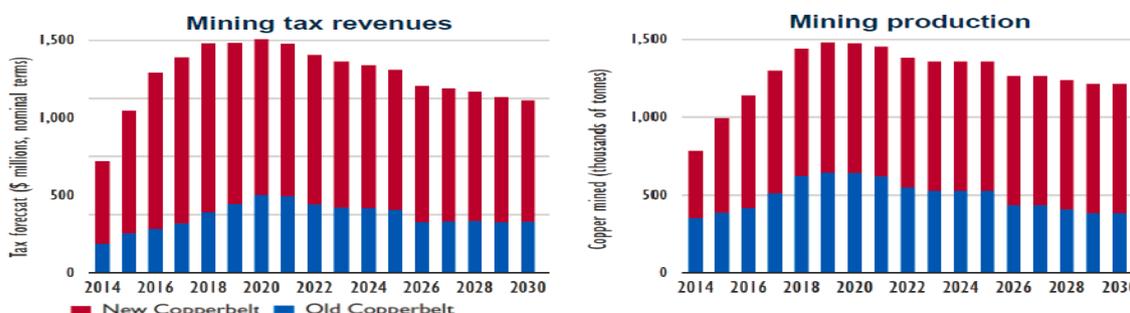
The Chilean experience is a remarkable one when compared to Zambia as well as many other countries which suffer from natural resources endowment yet they remain poorer. The World

Bank Group correctly paints the Chilean experience and compares it to that of Zambia for the later's serious consideration and action. Zambia has a land area of 753, 000 square kilometres similar to that of Chile at 756, 000 square kilometres. In terms of population, Zambia currently has about 14.5 million versus 17 million people in Chile. GDP and copper production as earlier highlighted are incomparable. In 1970 the two countries were almost producing the same quantity of copper at about 684, 000 tons for Zambia whereas Chile had 686, 000 tons. In 2011, Chile's copper production had remarkably increased to 5.4 million tons whereas Zambia's had inversely grown to 675, 000 tons. GDP in 2011 for Chile stood at US\$ 249 billion more than 13 times that of Zambia at US\$ 19 billion. It is here that we see the beneficiation from minerals and a clear natural resource curse exit strategy in action. Whereas in 2013, Zambia had approximately 61% of its population below the poverty line with a life expectancy at birth of 49 years, Chile only had 15% of her population below the poverty line coupled with a significant life expectancy at birth of 79 years. Infant mortality and child malnutrition are no longer an issue for Chile whereas Zambia still faces such a problem to a greater extent. For infant mortality, Zambia had 53 per 1, 000 live births with child malnutrition at 15% in 2013 versus Chile's enviable record of 8 and 1% respectively (Kaleng'a 2014; World Bank 2013).

Currently in Zambia, amidst the high revenue government is collecting from the mining companies through different taxes and royalties, poverty levels among communities surrounding the mines are high. This sharp contrast translates into infrastructure such as roads. For instance, the country's current mining hub is Solwezi in North Western Province which has seen over USD 10 billion investments in the copper sector in recent years; and contributes to the national treasury more than the old Copperbelt province as in figure However, North Western Province particularly Solwezi lacks the basic road infrastructure to facilitate trade within and without the mining sector. The only major road (Chingola-Solwezi road) between the provinces which trucks hauling copper ore to the nearest smelter in Chingola is totally damaged due to lack of government's effort to periodically conduct reconstruction and maintenance works. This is an economically viable road where ordinary it would be a two-hour drive stretch but currently trucks hauling copper take roughly eight hours. It is factors such as these which in future (as well as currently) will impede trade, copper production and the development of backward linkages in the economy.

Figure 8: Comparison of Zambia's "New" and "Old" Copperbelts' contributions to production and revenue

The “New” and “Old” Copperbelts create two unique growth stories and types of opportunities for Zambia.



5



Source: Lokanc (2015); World Bank (2015)

North Western province has undoubtedly become the epicenter of copper production and government revenue collection in recent years. It is deliberate government effort in appropriate policies, programmes and projects that would yield benefits for the province as well as the rest of the country to escape from the natural resource curse. This would also be a defense, peace and security viable plan which would help the country avert possible conflict arising from “poverty fatigue” among ordinary Zambians amidst economic vibrancy similar to the recent xenophobic attacks.

4.0 Zambia’s Main Copper Exports Market

With the increase in copper production Zambia has seen in recent years, the character of her export market has been changing. As of 2014, Zambia had exported copper and articles thereof to 17 countries around the world. However, during the 2001 – 2014 period for which data were available as summarized in Table 5, the total number of countries Zambia exported to fluctuated significantly.

Table 5: Descriptive Percentage Statistics for Zambia's Copper Export Markets: indicative years

Importers	2001	2005	2008	2011	2014
WORLD TOTAL	100	100	100	100	100

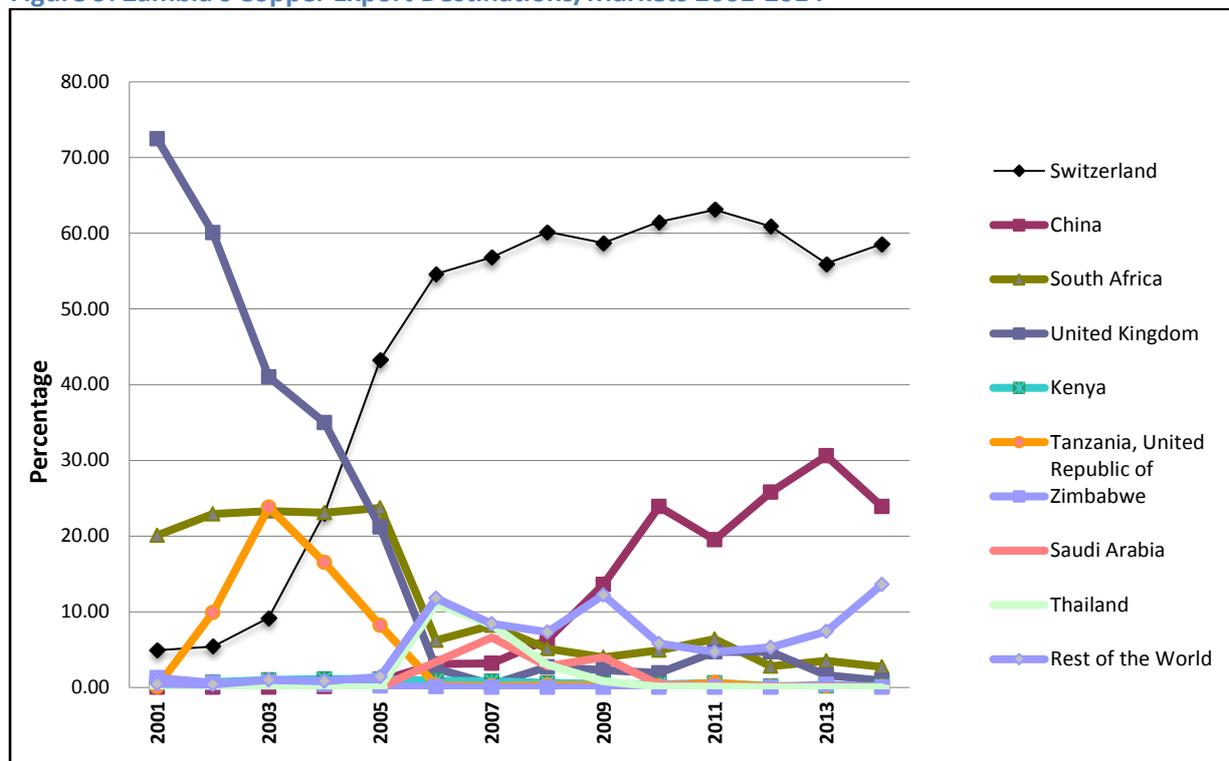
Switzerland	4,90	43,30	60,20	63,10	58,60
China	0	0,9	6,3	19,5	23,9
South Africa	20,1	23,7	5,1	6,4	2,7
United Kingdom	72,5	21,2	2,7	4,7	0,9
Kenya	0,6	1,1	0,6	0,6	0,2
Tanzania, United Republic of	0,1	8,2	0,3	0,6	0,1
Zimbabwe	1,3	0,2	0	0	0
Saudi Arabia	0	0	2,8	0,2	0
Thailand	0	0	3	0,1	0
Egypt	0	0	11,7	0,1	0
SUB TOTAL	99,50	98,60	92,70	95,30	86,40
Rest of the World	0,50	1,40	7,30	4,70	13,60

Source: Authors' Extraction and Adaptation from ITC (2015) Data

Zambia's copper was not only imported by countries outside the African continent but also some within Southern Africa such as South Africa. The character of Zambia's export market is an interesting one. The statistics in Table 5 and the graph in Figure 9 points to this interesting copper market picture. Before further details in the next paragraphs, it is key to note that the top 10 major importers of Zambia's copper accounted for almost all (99.5%) such exports the country made whereas in 2014 they accounted for about 86%. Out of the several countries around the world who import copper from Zambia, the overall top ten during the 2001-2014 period were Switzerland, China, South Africa, United Kingdom, Kenya, Tanzania, Zimbabwe, Saudi Arabia, Thailand and Egypt (Kaleng'a 2015).

Generally, the country has experienced a shift from having the United Kingdom as her major copper export market in 2001 at over 70% to Switzerland at just under 60% in 2014. Exports to the UK reached their lowest in 2007, with marginal increases in subsequent years ending with negligible trade in 2014. China which was a marginal Zambian copper importer in 2001 is currently the second largest market accounting for over 20%. Exports to South Africa which used to be Zambia's second biggest market at about 20% in 2001 have currently reduced to nearly negligible also as in Figure 9. Here we observe that whereas South Africa strongly influences the copper value chain at production stage through the companies e.g. supplying capital equipment to mining companies in Zambia, her current influence at consumption stage is negligible and constantly declining.

Figure 9: Zambia's Copper Export Destinations/Markets 2001-2014



Source: Kaleng'a (2015) as computed from ITC (2015) Data

To re-iterate, in Figure 9, the United Kingdom (UK) was the largest copper importer accounting for over 70% in 2001. South Africa's record was impressive as the second largest. The rest were negligible hardly importing 10% per country. By 2006, the UK had sharply reduced copper imports to below 10% whereas Switzerland which was importing less than 10% in 2001 had significantly overtaken the UK, importing over 50% in 2006. Up to 2006, exports to China were negligible until 2007 when an upward trend started and strengthened in 2008 and 2009 notwithstanding the global financial crisis. The general picture therefore is that almost all larger export markets for Zambia's copper during the 2001-2006 period had become minor importers in later years up to 2014, and the reverse is also generally true. In 2013 when Switzerland as the biggest copper importer slightly declined, copper exports to China were at their peak. Trends of copper exports to the rest of the world also quite closely followed China's path until 2009 when a constantly declining trend begun - 2012 begun a new upward trend for such a market though.

5.0 Conclusion and Policy Implications

It is evident that Zambia's economy has experienced changes in the recent past which have effects on the country's industrialization strides anchored on copper production and exports. Economic, fiscal, political and institutional changes also determine the way and extent to which the country participates in regional linkages. During the 2001-2014 period for instance, such factors affected copper production, exports and composition of the export markets. The 2008/2009 global economic crisis which partially slowed-down copper exports to most of the markets except China is also one such economic change but is externally induced. Overall, the dynamics the copper sector has emanated from the domestic economic reforms anchored on economic and trade liberalization and privatization of mining companies. This was a result of a political shift from Kaunda's one-party rule to Chiluba's multi-party democracy and economic liberalism in 1991. In later years following the privatization of the first mining company in 1997, an increase in FDI flows has re-invigorated the mining sector. Based on copper exports data retrieved from the International Trade Centre's (ITC) Market Analysis Tools, this paper has observed that overall, Zambia's copper production and exports thereof have increased - from 506, 146 (USD thousands) in 2001 to 7,243,353 in 2014 averaging 3,427,265.929 annually (Kaleng'a 2015).

Zambia can promote industrial development through such increase in copper exports and trade in general with other countries within Sub-Saharan African countries and beyond. This entails embracing trade liberalization which ushers into the country not only FDI but other foreign firms such as those supplying goods and services to the mining sector together with local firms. To have a smooth business environment which benefits all, the multilateral trade framework weaved around WTO's non-discrimination principle empowers all countries trading with Zambia such as South Africa to collaborate to foster regional linkages in the minerals value chains for instance through trade in capital equipment conducted by her OEMs and other corporate entities. Zambia, as a policy option therefore, needs to explore the WTO exceptions which can help stimulate local supplier firms' growth as well as empower such firms to develop adequate capabilities with which they can favourably compete with any other type of firms. It is this which equally enhances the beneficiation of both the firms and the economy from the MNCs investments in the copper sector and contributes to the country's industrialization efforts.

Other key challenges for most developing countries like Zambia revolve around the mineral resources curse such that growth in mineral-rich has generally been worse than in less natural resource-endowed ones. This brings the mining sector as a growth engine in most developing countries in the spot light on the fact that the mineral value chain is characterized by capital-intensive operations, usually foreign-owned, operated largely by expatriates, and uses inputs purchased abroad. This implies the backward linkages are further weakened such that industrialization becomes an illusion. Moreover output, income and employment multipliers in the value chain are usually lower in the mining sector given the technological and capital intensity of production and business in such a sector. Consequently, benefits of the mineral value chain tend to be skewed towards more advanced economies.

Despite the challenges associated with mining being real, Zambia therefore needs to learn from countries within the Southern African region such as South Africa and those in other continents such as Chile in order to have a formidable escape strategy from the “natural resource-curse phenomenon”. With such a strategy, stronger industrial linkages at home as well as improved contribution to regional industrialization are possible. Ultimately, this can strengthen economic growth and usher the country into a stage where beneficiation from the mines go beyond the local supply chain but the entire nation as people see the fruits of economic growth positively impacting human development indicators. The reality in the economic indicators would then truly reflect the reality on the ground among ordinary Zambians as the case is in Chile. Chile which produced a similar quantity of copper to that of Zambia in the 1970s is today’s number one global copper producer. Chile’s GDP in 2011 stood at US\$ 249 billion more than 13 times that of Zambia at US\$ 19 billion. It is here that we see the beneficiation from minerals and a clear natural resource curse exit strategy in action. Whereas in 2013, Zambia had approximately 61% of its population below the poverty line with a life expectancy at birth of 49 years, Chile only had 15% of her population below the poverty line coupled with a significant life expectancy at birth of 79 years. Chile currently records impressive scores on all other human development indicators.

Congo DR in 2013 overtook Zambia as the number one copper producer. Zambia's production levels are said to be increasing as well though there have been significant changes in the composition of the traditional market for the country's copper. Further policy direction could be that government investigates why there has been market share loss in its traditional export markets such as the UK. Furthermore, why and how Congo DR has constantly increased her copper production to a point of surpassing Zambia's record is another point of strong government interest. This would provide a basis for helping mining companies increase production during times of copper price booms to grow their markets. Other measures could include improving the mining investments' frameworks and regulations such as mineral royalty tax. Investments in value-addition to make copper and its products more competitive on the global market hence product diversification are also key. Furthermore, Zambia may need to learn from Chile on how that country's copper exports have remarkably risen since the 1960s when the two countries' exports were comparable. From Chile again the single most important lesson for government consideration is promoting copper revenue-based beneficiation that yields economic growth and human development.

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