

SOUTH AFRICA'S INDUSTRIAL OUTREACH IN AFRICA

Infrastructure, Industrialisation and Community Development

A report by the Institute for African Alternatives (IFAA)

Compiled for the Development Bank of Southern Africa (DBSA)

FULL DRAFT

2017

By Prof. Ben Turok

and Michael N. Smith

with Zunaid Moola

We acknowledge the assistance of Katherine Davidson, Rekang Jankie and Christine Leibach, IFAA staff and interns.

Table of Contents

Executive Summary.....	3
Introduction: Africa’s Industrialisation and the Infrastructure Agenda.....	6
1. Chapter One: Infrastructure Landscapes and South African Industrial Presence in a Selection of African Countries.....	14
1.1. Zambia.....	14
1.2. Zimbabwe.....	17
1.3. Mozambique.....	20
1.4. Ghana.....	23
1.5. Tanzania.....	26
1.6. Democratic Republic of Congo.....	29
2. Chapter Two: South African Business Perspectives on Industrial Outreach in Africa.....	33
2.1. South African Mining in Africa.....	33
2.2. South African Construction in Africa.....	38
2.3. South African Logistics in Africa.....	40
2.4. Obstacles to operating in Africa.....	41
2.5. South African Competitiveness.....	42
2.6. South African Firms and Localisation in Africa.....	43
3. Chapter Three: Minerals Based Industrialisation in Africa: The Role of Mining Related Infrastructure.....	46
3.1. The Imperative of Minerals Based Industrialisation.....	46
3.2. The African Vision: Much Left Undone.....	48
3.3. Infrastructure for Minerals Based Industrialisation.....	52
3.4. From “Enclave” to “Shared-Use”.....	53
4. Chapter Four: Mining Infrastructure for Industrialisation and Community Development.....	58
4.1. The Historical Context.....	58
4.2. The Role of the State in Infrastructure Provision.....	59
4.3. Can States in Africa follow these examples?.....	60
4.4. The Prevailing Model of Mining and Community Development.....	61
4.5. A Critical Look at the Current Model.....	64
4.6. Mining Companies, Industrialisation and Community Development.....	65
5. Chapter Five: Findings, Conclusions and Recommendations.....	67
5.1. Findings and Conclusions.....	67
5.2. Recommendations.....	68
Appendix.....	76

EXECUTIVE SUMMARY

Recent accounts of Africa's economic prospects point towards future prosperity. According to the World Bank, growth in Sub-Saharan Africa is predicted to reach 2.6% in 2017. Economic fortunes are predicted to improve into 2018 and 2019. These positive signals, however, do not constitute a major assault on the continent's endemic issues of poverty, inequality and joblessness. African economies are still striving to develop in an inclusive manner and achieve jobs-rich growth and rising living standards for their populations.

In order to meet the challenge of realising rapid development, the main institutions of the African continent, the African Union (AU), the United Nations Economic Commission for Africa (UNECA) and the African Development Bank (AfDB), have all emphasized importance of leapfrogging out of underdevelopment by moving up the global chain to higher value-added products and achieving diversification. Industrialisation, in short, is the path to development.

The Africa Mining Vision (AMV), published in 2009, adopted by all three of the bodies mentioned above, set out the case for industrialisation clearly. It called for the structural transformation of economies to eradicate poverty and underpin sustainable growth across the continent. It stressed that the continent needs workable industrialisation strategies based on its unique strengths, rather than emulating others elsewhere. This implied a resource-based industrialisation agenda and development strategy rooted in the exploitation of Africa's mineral wealth for broader economic and social gains

The AMV notes that Africa faces challenges far more severe than countries who have achieved minerals based industrialisation in the past. Not least of which is its need to overcome severe infrastructure constraints. Indeed, a recent "*Africa Pulse*" report places Sub-Saharan Africa at the bottom of all developing regions in virtually all dimensions of infrastructure performance (Africa Pulse, 2017).

In a previous report for UNECA, it was noted that "Sub-Saharan Africa's infrastructure is inadequate, fragmented and expensive, even compared with that in other low-income regions (Turok et al, 2016). These infrastructure shortages frustrate broader economic development and the industrialisation agenda.

Although addressing Africa's infrastructure constraints has been a high priority for states and regional economic bodies for several decades, solutions have yet to be found. Financing remains a key obstacle. It has been estimated that Sub-Saharan Africa requires US\$93 billion annual investment over the next decade to meet infrastructural deficiencies (Deloitte, 2016). The continent is far from securing these levels of funding.

Due to a lack of fiscal manoeuvring space by local governments and private sector reticence, development finance institutions (DFIs) are becoming integral to realising Africa's infrastructural ambitions. Currently, African regional banks represent the smallest share of infrastructure funding, but the importance of this share cannot be overestimated (The Economist, 2015). The Development Bank of Southern Africa (DBSA) is one of these important role players in delivering solutions to Africa's infrastructure deficiencies.

Infrastructure is key to leveraging the mining sector for broader economic transformation. Crucial, however, is to ensure that infrastructure related to the mining industry operates on an "open access" or "shared-use" platform in which other stakeholders in the economy benefit. This multi-use and multi-purpose infrastructure can facilitate spatial linkages from the mining operation as well as facilitate downstream and upstream linkages too. This will be a major theme of this research report

The South African government notes that intra-African trade and investment is crucial for the future of both South Africa and Africa at large. The Department of Trade and Industry's (DTI) *Medium Term Strategic Framework 2014-2019* aims to work with other African states to "take forward a regional industrialisation agenda to ensure Africa becomes a manufacturing and industrial power" (DTI, 2017).

South Africa can be a catalyst of minerals based industrialisation and broader industrialisation in the region. It could feasibly lead the way in developing infrastructure for broader economic transformation in SADC and beyond. Yet in order for this to be successful, the South African government and its development institutions, need to have a firm grasp of economic conditions on the continent, infrastructural deficiencies, South African firms commercial strategies and priorities, and a model of infrastructure provision that is informed by a developmental agenda.

This research aims to provide all of the above. It includes a presentation of the presents the economic outlook and prospects for a selection of African countries, with a particular focus on infrastructural

deficiencies. These countries include Zimbabwe, Zambia, the DRC, Ghana, Mozambique and Tanzania. South African mining and related infrastructure firms presence and activities in these countries is outlined. Our report includes a summary of interviews conducted with South African industrial firms in mining, logistics and construction operating in these countries. This research is conducted within the minerals based industrialisation agenda and provides the rationale for investing in infrastructure for broader social and economic transformation in Africa. The concept of “shared-use” mining infrastructure is promoted to that end. After arguing for the value of supporting mining-related infrastructure initiatives, we finally highlight the importance of considering mining operations impact on community development industrialisation.

INTRODUCTION

AFRICA'S INDUSTRIALISATION ASPIRATIONS AND THE INFRASTRUCTURE

AGENDA

Recent accounts of Africa's economic prospects point towards future prosperity. According to the World Bank, growth in Sub-Saharan Africa is predicted to reach 2.6% in 2017. Economic fortunes are predicted to improve into 2018 and 2019. The commodity market recovery driving this economic upturn is also supported by an expected increase in global growth and an improvement in domestic political and social conditions (World Bank Africa Pulse, 2017)¹.

These positive signals, however, do not constitute a major assault on the continent's endemic issues of poverty, inequality and joblessness. Future per capita income growth is measured well below Gross Domestic Product (GDP) growth, highlighting the uneven and skewed nature of Africa's growth path. Per capita GDP is expected to decline by 0.1% in 2017. It is predicted to rise by less than 1% in 2018 and 2019. Many African governments continue to suffer from significant public debts, high levels of poverty and there remains a significant shortage of capacity and capabilities, both at the level of policy implementation and formulation, and within the labour force as a whole (World Bank; Africa Pulse, 2017). African economies are still striving to develop in an inclusive manner and achieve jobs-rich growth and rising living standards for their populations.

In order to meet the challenge of realising rapid development, the main institutions of the African continent, the African Union (AU), the United Nations Economic Commission for Africa (UNECA) and the African Development Bank (AfDB), have all emphasized importance of leapfrogging out of underdevelopment by moving up the global chain to higher value-added products and achieving diversification. Industrialisation, in short, is the path to development. As the ambitious "*SADC Industrialisation Strategy and Roadmap 2015-2063*" notes, the continent needs to shed its reliance on commodity exports and the extractive industry. Failing to do this and halt the slide towards deindustrialisation in the region² will mean that Africa remains locked to an unstable and non-inclusive growth trajectory.

¹ See also McKinsey (2016) for positive projections about Africa's economic future.

² Manufacturing as a share of GDP in SADC declined from 15.9% in 2004 to 11.3% in 2011 (SADC, 2017: 3).

The Africa Mining Vision (AMV), published in 2009, adopted by all three of the bodies mentioned above, set out the case for industrialisation clearly. It called for the structural transformation of economies to eradicate poverty and underpin sustainable growth across the continent. It stressed that the continent needs workable industrialisation strategies based on its unique strengths, rather than emulating others elsewhere. This implied a resource-based industrialisation agenda and development strategy rooted in the exploitation of Africa's mineral wealth for broader economic and social gains (AMV, 2009).

The AMV noted that minerals based industrialisation was not a new concept. However, it has been conceived as unrealistic in the past. Mining was thought to be inherently "enclave," capital intensive and dependent on foreign inputs. Previous attempts to realise minerals based industrialisation collapsed (AMV, 2009). Yet this has not persuaded development economists and economic institutions to abandon the concept.³ Indeed, resource based industrialisation has occurred in the Nordic countries, Canada and Australia. Success was based on a shared strategic vision between all stakeholders in the economy (business, government, labour and communities), spearheaded by deliberate and proactive government-led collective action. The AMV demands that African countries seek to imitate this experience.

The infrastructural challenge

The AMV notes that Africa faces challenges far more severe than countries who have achieved minerals based industrialisation in the past. Not least of which is its need to overcome severe infrastructure constraints. Indeed, a recent "*Africa Pulse*" report places Sub-Saharan Africa at the bottom of all developing regions in virtually all dimensions of infrastructure performance (Africa Pulse, 2017). While there have been improvements in terms of access to water and telecommunications, the power sector has not improved in 20 years. 50% of the population of 24 countries in Sub-Saharan Africa do not have access to electricity (Economist, 2015). Transport infrastructure is also dilapidated and showing little evidence of development (Africa Pulse, 2017). The AMV noted that logistics costs are about 250% of global average. In a previous report for UNECA, it was noted that "Sub-Saharan Africa's infrastructure is inadequate, fragmented and expensive, even compared with that in other low-income regions (Turok et al, 2016). These infrastructure shortages frustrate broader economic development and the industrialisation agenda.

³ For example, the "*Action Plan for SADC Industrialisation Strategy and Roadmap*" highlights "mineral beneficiation and downstream processing" as one of the three central pillars that would kick start regional industrialisation.

It is for these reasons that “*Agenda 2063*”, the vision launched by the AU in 2014, gives much emphasis to infrastructure development, particularly in relation to its potential to catalyse regional integration and industrialisation (AU, 2014). The AfDB and the New Partnership for Africa’s Development (NEPAD), in particular through the Programme for Infrastructure Development in Africa (PIDA), are also committed to addressing the continent’s infrastructure gap and see the importance of deepening regional integration as both a solution and a reward. A number of other regional economic bodies and institutes have focused mandates geared towards alleviating Africa’s infrastructural problems. For example, the Infrastructure Consortium for Africa was constructed in 2005 and is mandated to build quality infrastructure for Africa (ICA, 2016).

Although addressing Africa’s infrastructure constraints has been a high priority for states and regional economic bodies for several decades, solutions have yet to be found. Financing remains a key obstacle. It has been estimated that Sub-Saharan Africa requires US\$93 billion annual investment over the next decade to meet infrastructural deficiencies (Deloitte, 2016). The continent is far from securing these levels of funding.

Currently, sources of funds for African countries are increasingly dominated by Asian investors (state and private), with China playing a growing and dominant role. China’s Exim bank is believed to be responsible for 75% of what will be directed to infrastructure development in Africa in the coming years and it is expected that cumulative Chinese investment in Africa will amount to US\$1 trillion in Africa in the next decade (Economist, 2015). Japan is also increasing its footprint on the continent and is involved in at least three infrastructure related activities. These include the G7 Ise-Shima Principles of Promoting Quality Infrastructure Investment, Partnership for Quality Infrastructure and the Enhanced Private Sector Assistance (EPSA) (ICA, 2016).

Public capital spending levels in Africa are too low to address infrastructure needs (World Bank Africa Pulse, 2017)⁴. Moreover, public-private partnerships have not become a significant part of the market in Africa. South Africa, Nigeria, Kenya and Uganda take up 48% of all of these arrangements in

⁴ Annual public spending on infrastructure in the region was 2% of GDP between 2009-2015. Two thirds of this spending was devoted to roads, and about 1/6th was devoted to electricity, water and sanitation each (Africa Pulse, 2017).

infrastructure in the past 25 years (World Bank Africa Pulse, 2017). African governments cannot seem to attract private investment for infrastructure projects. This is largely due to its unstable regulatory frameworks. African states currently perform below the global average in regulatory frameworks for procurement in public-private partnerships (Africa Pulse, 2017).

Due to a lack of fiscal manoeuvring space by local governments and private sector reticence, development finance institutions (DFIs) are becoming integral to realising Africa's infrastructural ambitions. Currently, African regional banks represent the smallest share of infrastructure funding, but the importance of this share cannot be overestimated (The Economist, 2015). The Development Bank of Southern Africa (DBSA) is one of these important role players in delivering solutions to Africa's infrastructure deficiencies. Through its programmes, such as the recently agreed deal with United States Trade Development Agency (USTDA), which prioritises provision of power, transport and information technology projects, it acts as an integral part of realising the continent's broader economic development aspirations. The research conducted in this report is geared at assisting this organisation in achieving both its narrow and broad vision(s).

Infrastructure for linkages

The World Bank suggests that economic growth in the region would increase by over 2% per annum if appropriate infrastructure were put in place. Yet the character of that growth path needs to be interrogated if the true developmental impact of infrastructural investment is to be assessed. In short, the latter must be geared towards achieving structural transformation and industrialisation. Towards this end, this report considers how addressing infrastructural issues are located within the broader minerals based industrialisation agenda.

Infrastructure spending in relation to power, rail and water will naturally have a significant impact on the mining sector in Africa. Yet until fairly recently mining companies have not been interested in thinking about their infrastructural needs can be integrated into the broader development plans of the economies in which they operate. In colonial times, infrastructure, especially rail, was built with a single purpose in mind: to get the minerals to a port. Mining has since followed this extractive and enclave model with little pressure from local government or market forces to adapt business practice.

However, today there is significant pressure for mining to abandon its colonial profile and stimulate linkages in the local economy. Government policy is slowly embracing the minerals based industrialisation agenda and thus forcing mining companies to adapt to the demand to integrate with the local economy and to be of service to local communities.

Infrastructure is key to leveraging the mining sector for broader economic transformation. Crucial, however, is to ensure that infrastructure related to the mining industry operates on an “open access” or “shared-use” platform in which other stakeholders in the economy benefit. This multi-use and multi-purpose infrastructure can facilitate spatial linkages from the mining operation as well as facilitate downstream and upstream linkages too. This will be a major theme of this research report.

Considerable amount of work has been done on linkages. For instance, UNECA’s *Economic Report for Africa* (ERA) 2013 calls for African countries to make the most of their commodities by adding value through linkage development. For this to move forward “it is critical for governments to develop prioritised country specific, industrial-policy roadmaps for value addition, working closely with stakeholders” (UNECA, 2013).

Another report for UNECA conducted by Turok et al in 2016 continued the focus on industrialisation and considered how domestic linkages -downstream, side stream and upstream- might be enhanced. It noted that “side-stream linkages into infrastructure (power, logistics, communications, water)” ...is crucial to realising the minerals based industrialisation ambition (Turok et al, 2016). It also points out that “infrastructure constraints have limited the degree to which South Africa has benefitted from the commodities boom since 2012 for materials depending on rail or energy intensive processes.” It notes that the “main constraints have been transport (rail) and energy infrastructure...” (Turok et al, 2016). The report finally calls for “the provision of open, excellent and fully integrated infrastructure inclusive of rail and road transport, power provision and network as well as trans-frontier agreements. A clear plan for the utilization of resources and for beneficiation should be shared by all stakeholders (Turok et al, 2016).

Of major importance and emphasis in both reports is the need for Africa to stimulate regional markets. Growth corridors-Maputo Development Corridor, the Lamu Port, South Sudan and Ethiopia transport corridor and others- and growth poles are integral to this. Regional economic integration along a

corridor, for example, can be advanced through the development of linkages. However, regional integration and industrialisation will only happen if African countries shift from a national focus to integrating the continent into its national development plans (Turok et al 2016; Fessehaie et al, 2016).

South African Industrial Outreach in Africa

It is being increasingly understood that South Africa's economic fortunes are considerably tied with the fortunes of Africa as a whole. For this reason, both the state and private sector have turned towards the African market. South Africa's exports and investment to the rest of Africa have increased considerably since 1994, albeit with a strong Southern African Development Community (SADC) proportion. Mining has been a key growth industry. Exports of mineral related machinery and equipment from South Africa to SADC quadrupled between 2003 and 2013, the years of the commodity boom (Fessehaie et al, 2016). Imports from the continent have also increased. However, there is much room for improvement in relations with the rest of the continent.

The South African government notes that intra-African trade and investment is crucial for the future of both South Africa and Africa at large. "*Trade Invest Africa*" is a recently developed programme spearheaded by government to support business in trading with and investing on the African continent. Moreover, and as part of the drive to increase regional industrialisation, South Africa is eager to support the minerals based industrialisation agenda in Africa. The Department of Trade and Industry's (DTI) *Medium Term Strategic Framework 2014-2019* aims to work with other African states to "take forward a regional industrialisation agenda to ensure Africa becomes a manufacturing and industrial power" (DTI, 2017).

Along with industrial development and regional integration, infrastructure is one of the major pillars of the DTI's Africa strategy. The Industrial Development Corporation (IDC) is also increasing its footprint on the continent and is actively looking to provide funding for a number of infrastructure projects related to mining in the region (Creamer Media, 2016).

South Africa can therefore be a catalyst of minerals based industrialisation and broader industrialisation in the region. It could feasibly lead the way in developing infrastructure for broader economic transformation in SADC and beyond. Yet in order for this to be successful, the South African government

and its development institutions, need to have a firm grasp of economic conditions on the continent, infrastructural deficiencies, South African firms commercial strategies and priorities, and a model of infrastructure provision that is informed by a developmental agenda.

Given the almost universal acceptance that the economic destiny of South Africa is bound to be linked with developments across the rest of the continent (Games, 2017), it is surprising how little literature is devoted to economic developments and South Africa's economic role across the continent. Our report, therefore, looks to fill in a substantial gap in the knowledge reservoir necessary to spur South African led regional industrialisation. Economic conditions and South African industrial outreach in Zambia, Zimbabwe, Mozambique, the Democratic Republic of Congo (DRC), Tanzania and Ghana are examined. We interviewed a number of chief executive officers and top management from South African mining, construction and logistics firms about their activities in these countries and, where applicable, in Africa as a whole. Academic articles, press releases and firms' annual integrated reports have all been consulted and integrated with our fieldwork to provide a guide to the broader developmental ambitions of the continent and South Africa's place within them.

Structure

This research aims to contribute to development discourse on infrastructure in Africa. It is situated in the broader goal of minerals based industrialisation and the South African governments attempt to spearhead efforts at regional industrialisation. It argues that new innovative approaches to financing infrastructure are needed for Africa.

This report is structured as follows: *Chapter One* presents the economic outlook and prospects for a selection of African countries, with a particular focus on infrastructural deficiencies. How local governments aim to address these deficiencies, and stimulate broader economic development through their national development plans, are also identified. These countries include Zimbabwe, Zambia, the DRC, Ghana, Mozambique and Tanzania. Finally, South African mining and related infrastructure firms presence and activities in these countries are outlined. *Chapter Two* is a summary of interviews conducted with South African industrial firms in mining, logistics and construction. The chapter presents these firms perspectives on operating in our selection of African countries, their short and medium term commercial strategies, the challenges and obstacles they face, and their relationship and support they

would welcome from the South African government. *Chapter Three* discusses the minerals based industrialisation agenda and provides the rationale for investing in infrastructure for broader social and economic transformation in Africa. The concept of “shared-use” mining infrastructure is promoted in this chapter. After arguing for the value of supporting mining-related infrastructure initiatives, *Chapter Four* highlights the importance of considering mining operations impact on community development. It is argued that any financing support for mining-related infrastructure must be cognisant of the responsibility to affected communities. Finally *Chapter Five* presents findings and recommendations.

1. CHAPTER ONE

INFRASTRUCTURE LANDSCAPES AND SOUTH AFRICAN INDUSTRIAL PRESENCE IN A SELECTION OF AFRICAN COUNTRIES

As described in the introduction to this report, infrastructure in Sub-Saharan Africa is insufficient in terms of quantity and quality to drive the continent's development ambitions. Resolving Africa's infrastructure gap thus remains the priority for private companies, governments and development finance institutions alike. If a solution is not found, Africa will fail to realise its development potential. This chapter examines the infrastructure landscape of a selection of African countries. After providing a brief snapshot of economic conditions, we assess infrastructural deficiencies, financing plans and government ambitions. Major South African industrial outreach in each country is also outlined.

1.1. Zambia

Economic environment

Zambia's economy grew by an increase of 3.4% in 2016. Due to its reliance on copper mining, the commodity slump was difficult for the country to endure, leading to 10 000 job losses (Africa Report, 2017). However, the government believes that copper production will double in 2017 due to stabilization of prices (Africa Report, 2017).

Zambia's economy is expected to achieve a 4.1% increase in growth in 2017, jumping to 4.5% in 2018, indicating signs of recovery. Inflation is also declining from unsustainable levels of 20% in 2016 to a manageable 7%. The Kwacha (KMW) is also stabilising. This points to some success in the country's "*Zambia Plus*" recovery plan (World Bank, 2017).

Yet the Zambian economy cannot remain reliant on mining and diversification remains key for sustained economic development. The World Bank has emphasised the need for stimulating the rural economy and agricultural production (World Bank, 2017). In addition, the Zambian government is committed to leveraging the minerals sector for manufacturing, particularly through its direct participation in the mining sector through ZCCM Investment Holdings. However, mining companies remain resistant to

engage in transformative economic practices (World Bank, 2015; Fessehaie, 2016). Initiatives related to minerals based industrialisation will be discussed further in Chapter Three.

Infrastructural landscape

As is the case with other countries surveyed in this report, Zambia's infrastructure is insufficient to meet the country's development ambitions. Zambia is nearly wholly dependent on hydropower (99.7% in its energy mix). This has made the country vulnerable to drought and volatile water flows.

Though the government has noted the importance of energy diversification, fuel substitution remains very expensive. Moreover, ageing infrastructure has hampered the potentials of electricity provision. Only 20% of the population have access to electricity, half the African average. Moreover, the majority of power goes to the mining sector, further undermining domestic consumption (PwC, 2014). Having said this, coal as an energy source is slowly moving into the energy mix (KPMG, 2016). As a recent report from KPMG notes however, if the Zambian government can upgrade transmission and distribution in power provision, it might allow the economy to access the regions hydropower in a manner that will reduce the need for expensive oil and coal power sources (KPMG, 2016).

Financing and government programmes

The relationship between the mining sector and infrastructure development needed for industrialisation is an important one. Infrastructure is a key ingredient to stimulating linkages needed for minerals based industrialisation and the diversification of local economies. Yet infrastructure spending is constrained in times of mining depression. Indeed, as the commodity slump deepened in Zambia, export revenues declined rapidly, leading to a large debt of US\$9 billion in 2016. In response, the government has had to temper spending plans in infrastructure development (Solomons, 2016). Currency volatility has also contributed to a depleted fiscus and spending constraints.

Zambia's government however remains committed to resolving the country's infrastructural issues. Its Seventh National Development Plan, part of the longer term "*Vision 2030*", includes an emphasis on plans to implement improvements in the energy sector. A key aspect to this plan includes the operationalisation of public private partnerships to finance projects involving roads, railways, supporting

infrastructure, airports and energy (Lusaka Times, 2017). Progress on this has been immediate with the state announcing a US\$2.3 billion agreement for the construction of a railway line with “cooperating partners”. This railway line will see the Eastern and Central provinces linked to reduce the pressure on the road infrastructure.

The 2017 Budget introduced Zambia’s economic recovery programme known as *Zambia Plus*. This included increasing spending on road infrastructure by 2017.57 million ZMW to 8644.50 million ZMW. This is to continue the implementation of the Zambia 8000, the Lusaka 400 and the Copperbelt 400 programmes. The budget also calls for an increase of 108.06 million ZMW on water supply and sanitation. In terms of skills development, the 2017 budget introduced Skills Development Fund which would be allocated 233.50 million ZMW. This fund would be to see improvements in vocational and technical skills (KPMG, 2017). The government is also currently in the development phase of two transmission projects namely the Zambia-Tanzania-Kenya interconnector project and the ZiziBoNa interconnector project.

Although keeping its ambitious development goals in sight, the government is also committed to seeing its deficits decrease. It is thus decreasing direct government spending on infrastructure. Therefore, much of the real investment on infrastructure is perceived to be sourced by foreign and local private investors who are incentivised to invest by the government. The national government incentivised investment, as set out in the 2017 Budget, specifically to target three sectors relevant to the mining sector. These sectors are the energy generation, fuel and water supply sectors (KPMG, 2017).

South African industrial presence

Zambia is one of South Africa’s top five trading partners in the SADC region and the South African state is keen to increase trade with its Zambian counterpart in the near future (The Citizen, 2017).

A number of South African companies are active in Zambia, particularly in the mining sector and its related supplier industries. African Rainbow Minerals (ARM) operates the Lubambe copper underground mine based in the Copperbelt in a joint venture with Brazilian mining powerhouse Vale. ZCCM Investment Holdings also holds 20% equity in the operation. The mine has struggled in the wake of the commodity slump and both Vale and ARM have placed it under review, the latter willing to sell at the right price (Turok & Smith, 2017).

South African mining supplier and infrastructure firms are particularly dominant in Zambia and exert significant influence on the mineral value chain in Sub-Saharan Africa in general. South Africa is the main source of Zambia's input for mining capital equipment and there is significant potential to develop better working relationships between local and South African firms (Fessehaie, 2015).

Group 5, one of the South African firms active in Zambia, plans to be a dominant force on the continent, planning to be the contractor of choice for the mining industry in Africa as a whole. The company picks up an impressive 60-80% of new construction builds related to mining on the continent and is arguably the largest "structural, mechanical, electrical and piping (SMEP) EPC contractor in Africa" (Turok & Smith, 2017). Murray & Roberts are also active in Zambia, operating out of their Kitwe office as a springboard to the rest of the region as a whole. The company has been engaged in a number of infrastructure related projects in the country, working closely with other South African firms (Turok & Smith, 2017).

1.1. Zimbabwe

Economic environment

The Zimbabwean economy, like the economies of its neighbours, was negatively affected by the recent commodity slump and the El Nino drought. The GDP growth rate dropped by 100% between 2015 and 2016 and the country saw negative per capita income growth in that period (World Bank, 2017). The drought caused agricultural output to decline while pushing the prices of food up, despite government's best efforts to protect its rural economy, home to at least two thirds of the population. The economy has also struggled with a widening fiscal deficit and a shortage of liquidity in the financial sector in recent years. A financial crisis has been brewing since 2015 as the government increased its debt with the private sector, leading to limited credit and consumption in the economy.

Despite this and according to the World Bank, Zimbabwe's "economic fundamentals" are in the right place. In a recent report the bank points to the country's substantial human capital, natural resources and expenditure on education (World Bank, 2017). Indeed, Zimbabwe is showing signs of recovery. Economic growth is expected to increase to 2.8% in 2017, boosted by a buoyant mining sector. Mining

grew by a substantial 8.2% in 2016 and the bank continues to stress that diversification into manufacturing remains reliant on demand coming from the industry. Better weather conditions and increased government support should see agriculture improve in 2017.

A significant number of Zimbabweans live in poverty and for the economy to stimulate development it must follow a more inclusive path. Zimbabweans in extreme poverty increased from 2.3 million in 2014 to 2.8 million in 2016 in the wake of the economic slowdown. Government agricultural intervention in particular ensured a softer impact on the poor and poverty levels should return to its 2014 level as the recovery deepens (World Bank, 2017). However, the government needs to find sustainable solutions to accelerate inclusive growth. Infrastructure provision is crucial for this.

Infrastructural landscape

It is currently estimated that Zimbabwe faces over a billion dollars shortfall in its infrastructure needs (New Zimbabwe, 2017). The country's power sector is in particularly dire straits and is plagued by ageing infrastructure, low quality grid, high transmission and distribution losses as well as theft and vandalism (KPMG, 2016). The economy's power sources thus remain import dependent, particularly on South Africa and Mozambique. The transport sector is also beset with issues. The country's rail network suffers from derailments and breakdowns and companies have to find other ways to transport heavy loads (Mhlanga, 2016).

Government infrastructure programmes and financing

Zimbabwe's 2017 budget affirms the government's commitment to improving its infrastructural landscape. In the power sector, an upgrade of the Bulawayo Thermal Power plant is planned. This will be financed by the Indian Exim Bank who will contribute US\$30 million to the project. India is not the only foreign interest involved in Zimbabwe's power infrastructure. In 2014 China's Sino Hydro added 600MW of capacity to the coal-fired Hwange power station (PwC, 2014).

The Zimbabwean government also plans to extend the electricity grid and has budgeted US\$13.4 million to be allocated to the development of the Alaska-Karoi transmission line (Minister of Finance and Economic Development, 2017). Zimbabwe is also engaged in two regional power projects namely, the

Zimbabwe-Zambia-Botswana-Namibia transmission project and the Mozambique-Zimbabwe-South Africa transmission project (KPMG, 2016).

Transport is a key item on the 2017 budget, the state has allocated US\$215.9 million to transport development with US\$5.7 million of this financed by development partners. Zimbabwe is currently building the dualisation of the 900km Beitbridge-Chirundu high way, a key trunk road in the region. The bridge is expected to cost US\$259 million and is financed by Japan International Cooperation Agency and the AfDB. It is currently facing serious delays (Chronicle, 2017).

Regarding water supply, a total of US\$45.3 million is to be allocated from the 2017 budget and US\$55 million from development partners to projects involving water supply and sanitation. A total of US\$25.8 million is to be allocated toward the maintenance and construction of dams. In order to mitigate the effects of drought, an amount of US\$2 million has been set aside to enable Zimbabwe National Water Authority to repair and maintain some of the 2 000 small dams in communal areas and 680 dams in resettled areas (Minister of Finance and Economic Development, 2017).

Recently, the CEO of the Infrastructure Development Bank of Zimbabwe (IDBZ), complained of the bankability issues that infrastructure projects face in the country. Although the government has committed to meeting its infrastructure shortfall, financing remains hard to come by, postponing the completion of much-needed projects by decades. In response, the IDBZ has launched a US\$2.5 million “Projects Preparation and Development Fund (PPDF) (Mhlanga, 2016). In addition, the Joint Ventures Unit will be launched in 2017 to create faster mechanisms for approving joint ventures to finance government projects (Minister of Finance and Economic Development, 2017).

South African industrial presence in Zimbabwe

South African mining firms are active in Zimbabwe. Anglo-American Platinum owns the Unki mine and Impala Platinum Holdings owns Zimplats, a platinum mining operation in the Great Dyke in Zimbabwe. Production at Unki is currently on the upswing after experiencing some difficult times during the commodity slump. Zimplats is the leading platinum producer in the region and the company recently committed to investing US\$264 million to develop a new underground mine, with a 25 year life span (Seccombe, 2016). Both South African mining firms have committed to abiding by Zimbabwe’s strict and

controversial indigenisation and beneficiation requirements, reporting successful contributions to downstream and upstream linkages and employment.

The South African government is eager to promote Zimbabwe as a destination for South African business as it hopes to increase trade and investment volumes between the two countries. Zimbabwe is also eager to encourage South African investment into the country, particularly in relation to filling Zimbabwe's infrastructure gap. Roads and railways were cited as key investment targets for South African firms and public-private partnerships and joint ventures have been encouraged (Mlilo, 2016). In 2014, Harare Roads Development Company, a joint-venture between South African Neocapital and the Zimbabwean capital, to run a project to upgrade the city's road network. This was worth some R4.3 billion rand and was rejected by Western governments and funding institutions (Tancott, 2014). Signalling progress in this regard, South African logistics group Transnet won a bid to recapitalise the National Railways of Zimbabwe (NRZ) worth US\$400 million in 2017 (Reuters, 2017).

1.2. Mozambique

Economic environment

Despite years of strong growth, Mozambique remains one of the world's poorest populations. Growth averaged 7.5% per annum between 2000 and 2015, outperforming global and regional growth (Deloitte, 2016). However, only 2.6% of the population is part of the global middle class (PwC, 2013).

Mozambique's growth trajectory has thus failed to translate into development impact for the majority of the population.

The country's economic activity is still largely underpinned by aid flows. After conflict subsided in the mid-2000s, aid rushed into the economy and accounted for an unsustainable 40% of GDP (Deloitte, 2016). In addition to a reliance on aid, the local economy is also tied to oil and gas. In 2012 one third of the world's oil and gas was found in the country (PwC, 2013).

Growth projections for 2016 declined from 7% to 4.5%, the lowest in 15 years. This decline has been caused by depressed government expenditure, the commodity slump, a drop in inward investment and the El Nino drought (Deloitte, 2016). In 2017, growth is expected to increase to 4.6% as recovery occurs

in the coal, aluminium, agricultural and gas sectors (Reuters, 2017). The latter offers significant economic opportunity with the International Monetary Fund (IMF) predicting that growth will rise to 6.8% by 2021 as the country begins to export liquefied natural gas. In addition, gas projects scheduled for implementation in 2023 will see the country's growth hit double digit figures thereafter (Deloitte, 2016).

Infrastructure landscape

Opportunities arising in oil and gas, and indeed in other sectors of the economy, however remain reliant on the provision of infrastructure. The country currently needs significant investment in infrastructure if it is to keep up with coal production alone. Security however continues to frustrate developments. For example, in 2014 dissidents threatened to derail train shipments from coal producers and succeeded in forcing delays (PwC, 2013).

In transport, road networks are mostly undeveloped and unpaved. Transport infrastructure is general is in "disarray" and will stall growth if not dealt with in near future (PwC, 2013). In energy, the country will struggle to keep up with an expected increase of 8% electricity demand per annum without large investment into the sector. Currently, access to electricity sits at only 34%, further undermining the ability of Mozambique to take advantage of its large resource potential. Transmission capacity is poor and due to low connectivity much of Mozambique's power capacity is exported to South Africa and then imported back at higher prices (KPMG, 2016).

Government infrastructure programmes and financing

Since the turn of the decade, the Mozambique government has been committed to addressing the country's infrastructure shortfall. This commitment became all the more urgent in the wake of coal and gas discoveries. Between 2000 and 2014, the country spent an average of 18% of GDP on construction and infrastructure projects. Currently, gross fixed capital formation is larger than Nigeria's. Moreover, infrastructure spend, as a portion of GDP, grew more than double as fast as South Africa between 2010 and 2014. Mozambique is expected to perform better in terms of gross fixed capital formation than South Africa from 2016 and beyond (Deloitte, 2016).

Despite government commitments, the infrastructure-funding gap remains large. In 2013, the government set out to fill the US\$12 billion windfall in the energy sector. In transport, projects worth US\$17 billion were being pushed through to increase rail links and port capacities for export (PwC, 2013). Financing remains a pressing issue, but the country's significant resource deposits have attracted significant interest from the private sector hailing from a wide array of countries including Japan, Italy, America, Brazil, Thailand and India (PwC, 2014).

In the coal industry, the Brazilian giant Vale has spent US\$4.5 billion developing the Nacala 912km railway corridor (PwC, 2013). Vale also completed a new coal terminal in the north of Mozambique with an additional US\$300 loan from the AfDB. The Chinese are negotiating to finance the construction of a deepwater port at Nacala (PwC, 2014). The Japanese government is particularly active in the country as well. Japan invested a significant US\$255 million in railway capacity and port renovations to connect exploration fields and facilitate mineral export. In 2012, the Japanese government established the Nacala Corridor Economic Development Strategies project, due to complete in 2020 (Deloitte, 2016).

South African industrial presence in Mozambique

South Africa accounts for 24% of Mozambique's bilateral trade, valued at US\$3.2 billion. This makes South Africa Mozambique's largest trading partner. As part of the South African government's drive to increase regional integration, the DTI is eager to promote South African activities in Mozambique and stimulate investment in the agricultural, infrastructure, steel and mining sectors (Frey, 2017). The DTI supports South African firms in Mozambique through its Export Marketing and Investment (EMIA) scheme and is focused on increasing exports of manufacturing goods to the country (AllAfrica, 2017).

Currently, over 100 South African companies are active in Mozambique. Most significant of these is South32, a South African aluminium mining company, the country's largest industrial employer. Mozal Aluminium, made up of a smelter and transport infrastructure, is also owned by the IDC (24%), Mitsubishi Corporation Metals Holding GmbH (25%), and the Mozambique Government (3.9%) (South32, 2017). The operation produces some half a million tonnes of aluminium each year and production is forecast to increase in the near future due to the planned US\$38 million AP3XLE energy-efficiency project (Breytenbach, 2017). South32 is now benefiting 10% of Mozal's primary aluminium at a local factory in Maputo (Creamer, 2017).

In terms of infrastructural development, Capital Projects, a South African construction firm, has recently agreed to invest US\$780 million to fund a highway linking Inhambane and South Africa. This is part of an effort to increase tourism between the two countries (Frey, 2017). In another project, South African, Mozambique and Chinese firms have committed to cooperate on the building of an oil pipeline that would benefit all surrounding countries in the SADC region. The pipeline is being constructed to take advantage of the massive gas reserves lying dormant in Mozambique. SacOil Holdings Limited is the South African firm involved in the construction of this US\$6billion project (Macauhub, 2016). Currently, it is estimated that Mozambique needs US\$4billion to meet its infrastructural needs in relation to the productive sector. A further US\$20 billion is needed to revive railways and ports. South African firms have been encouraged by the Mozambique government to invest in the country's infrastructure sector (Frey, 2017).

1.3. Ghana

Economic environment

After some years of economic decline, culminating in the acceptance of a US\$918 million IMF loan in 2016, the Ghanaian economy looks to be on a more stable footing. Ghana's real growth rate for 2016 was 4.5% and is expected to rise to 6.3% in 2025 based on current trends (KPMG, 2016). The past year saw an improving external balance, a declining current account deficit and increase in foreign reserves. Inflation has stabilised, dropping from 19% in 2016 to 13% at the start of 2017 (World Bank, 2017; Africa Pulse, 2016).

The World Bank expects growth in Ghana to strengthen in 2017 as increased oil production boosts exports (World Bank, 2017: African Pulse 2018). The services sector is also projected to remain robust and a commodity price recovery to predicted to increase export revenues (World Bank Ghana Overview, 2017). Social and political stability also points to a promising future with PwC naming the country an "ideal point of arrival" for new investors in Africa (PwC, 2013).

However, challenges related to electricity provision, government debt⁵, an uncertain commodity market remain. These all frustrate Ghana's ability to achieve inclusive growth. Current growth rates are insufficient to generate levels of employment needed to improve livelihoods of ordinary Ghanaians. Much of this is due to the country's continued reliance on the minerals sector and inability to spur industrialisation (Turok & Smith, 2017).

Infrastructure landscape

A lack of sufficient infrastructure can be cited as one of the prime culprits hindering Ghana's economic development. Power is the sector of most concern. The country suffers from a lack of electricity and its current reliance on hydropower means that it is increasingly reliant on expensive oil sources (PwC, 2013). Hydropower makes up 73% of Ghana's energy mix (KPMG, 2016). The government is hoping to generate power from natural gas in the future (KPMG, 2016). It is also eager to explore and initiate renewable energy initiatives (PwC, 2013).

Although Ghana's logistics capabilities have improved in recent years, there is room for improvement (PwC, 2013). Ports at Tema and Takoradi are well equipped but a surge in demand will stretch capacity. Ghana's roads are relatively well preserved. Between 2008 and 2012, Ghana was the best performing country in Sub-Saharan Africa in terms of road density (World Bank, 2017)⁶. Roadways make up 95% of passenger and 98% of freight transport in the country. Rural connectivity and urban congestion remain issues. Ghana's railways have however been largely neglected, accounting for only 2% of freight and passenger traffic in the country. This is a large problem for the country's mining sector as Ghana's national railway company is unable to carry the country's mineral wealth (PwC, 2013). Ghana's internet infrastructure is also remarkably poor and significantly below the international norm that is predicted for its level of economic development (World Bank, 2017).

⁵ Ghana's 2017 budget shows an easing of fiscal consolidation (World Bank, 2017: African Pulse 17). Although the government has pledged to decrease the fiscal deficit, the latter increased from 6.3% of GDP in 2015 to 10.2% of GDP in 2016 (World Bank Overview Ghana, 2017).

⁶ South Africa has no data for this period.

Government infrastructure programmes and financing

Ghana's National Infrastructure Plan, part of the broader National Development Plan (2018-2057), presents a comprehensive national infrastructure development and maintenance agenda. Transport infrastructure is high on the list of priorities with the construction of a National Railway Network going through every regional capital touted as a flagship programme. This initiative is geared at supporting the minerals sector and reducing transport costs in general within the country. In addition, the government plans to construct ten urban railway networks in the ten year medium term plan (National Development Planning Commission, 2017).

Spending plans might have to be tempered in the short-term. Currency depreciation experienced over the course of the last few years has seen an increase in prices of infrastructure projects in the country. Many large-scale infrastructure projects have been delayed or suspended (Deloitte, 2016). Yet the 2017 budget has flagged some priorities, particularly in energy which takes up 33% of the total budget. The government plans to increase electrification by increasing installed generation capacity, the completion of a solar hybrid project and the implementation of a project with China's International Water and Electric Corporation (CWE) project (PwC, 2017). The government is also planning to rehabilitate road networks and construct the Western railway line to facilitate the haulage of commodities in the region, particularly manganese (Citifmonline, 2017). Other smaller railway lines are also planned for construction.

In terms of financing sources, the government was obliged to issue a Eurobond of US\$1 billion to fund infrastructure in 2013 (PwC, 2016). Yet this was in conditions of economic decline. The government hopes to secure revenues from oil and other commodities in the near future as the basis for infrastructure development. It is also actively seeking out private public partnerships (PwC, 2013: 46).

The energy sector has seen a high level of participation from the private sector, with the government reducing its allocation of the 2017 budget to the sector in response (PwC, 2017). In transport, Chinese presence in Ghana is significant. China's Civil Engineering construction company (CCECC) was awarded a US\$1.49 billion contract to build the Lagos-Ibadan railway (PwC, 2014). The Chinese have indeed funded much of transport infrastructure in Ghana even while growing anti-Chinese sentiment grows (PwC, 2013).

South African industrial presence in Ghana

Trade between Ghana and South Africa has increased steadily since 1994. Ghana lies behind Nigeria as South Africa's second largest trade partner in Sub-Saharan Africa (PwC, 2013: 44). The South African government is committed to deepening integration and trade flows between the two countries. During 2010-2014, trade grew by an annual growth rate of 74% and South Africa has offered Ghana to use the industrial development zone (IDZ) at Saldahna to service oil and gas rigs. Currently, Ghana's exports to South Africa outstrips the latter's exports the other way. The South African government is thus eager to promote South African presence in the Ghanaian economy. South African foreign direct investment (FDI) into the Ghanaian economy is already substantial, representing R102.5 billion between 2003 and 2014 and creating 6,766 jobs (DTI, 2015).

A number of South African industrial firms are active in Ghana. AngloGold Ashanti owns two mines, Iduapriem and Obuasi and actively seeks to localise its operations in Ghana by stimulating linkages in the local economy. Group 5 runs a regional office in Ghana and picks up a significant number of mining related infrastructure work. Other South African industrial firms with experience operating in Ghana include Aveng and Imperial Logistics (Turok & Smith, 2017).

1.4. Tanzania

Economic environment

Tanzania is one of the fastest growing countries in Sub-Saharan Africa, with growth rates averaging between 5% and 7% over the last decade (Eunomix, 2015). The country achieved a real GDP growth rate of 6% in 2015 and this is anticipated to rise to 6.8% by 2025 (KPMG, 2016). Both the World Bank and IMF are optimistic about the country's economic future with the Bank identifying Tanzania as one of the top five performing Sub-Saharan economies (World Bank, 2017).

Tanzania's export profile is quite broad, including coffee, cashew nuts, manufactured goods and cotton (PwC, 2013). However, gold is its principal driver of the country's FDI flows (Eunomix, 2015). Tanzania is the world's third largest gold producer and the sector contributed US\$1.4 billion to exports in 2016

(Turok & Smith, 2017). Tanzania also has significant deposits of platinum, silver, copper and other minerals.

Infrastructure landscape

Power demand currently outstrips energy generation capacity in Tanzania. Although the country has experienced significant growth, the energy sector has failed to keep up. Only 20% of the population have access to electricity, with rural areas suffering from a severe lack of electricity (KPMG, 2016). Tanzania's energy mix is dominated by hydropower. This made the country vulnerable to the effects of the recent drought in the region (KPMG, 2016). Access to water in the country has been on a consistent decline since the early 2000s. Dams in the country thus need to be more effectively managed in the future (PwC, 2014).

Tanzania's road networks and infrastructure is robust. However, rail networks are undeveloped. Rail requires significant investment in order to unlock the countries mineral potential. Road connectivity to rural areas could also be improved to facilitate mineral exports (PwC, 2013 and 2014).

Government infrastructure programs and financing

The IMF predicts future economic prosperity to emerge from the government's ambitious infrastructure development plans, linked to the mining sector in particular (Africa Report, 2017). These infrastructure plans are crucial to realising the government's second Five Year Development Plan 2016/17-2021 (FYDP). Tanzania's primary goal is rapid industrialisation and economic diversification to become a middle class income country by 2025 (AllAfrica, 2016)

In the energy sector, the government is eager to diversify its energy mix. It plans to increase gas-fired plant capacity to 50% of total generation capacity and is also exploring the possibility of the development of renewable energy options (KPMG, 2016). Concerning the latter, the country has significant geothermal potential and benefits from high levels of solar energy. In the short term, the government plans to maintain and better manage hydropower and water supply in rural areas and cities (Deloitte, 2017).

A number of transport and utilities infrastructure projects are in the pipeline. The port of Dar es Salaam is due for expansion (PwC, 2013). The government is hoping to ensure its ports become the preferred choice when transporting goods to neighbouring land-locked countries. The port at Dar es Salaam will need to become more cost effective and overcome capacity constraints and congestion. The construction of a Dar es Salaam – Mwanza – Kigoma Standard Gauge Railway is planned to be completed in the next few years (Deloitte, 2017). Other rail projects worth US\$14 billion are in the pipeline and are at various stages of development and seeking funding (PwC, 2013).

Infrastructure projects are to be financed by a number of sources including donors, government and foreign sources. The Chinese are particularly active in infrastructure provision in the country. The Chinese are funding railway rehabilitation projects and recently signed a US\$42 million agreement with the Tanzanian-Zambia Railway authority (Tazara) that will enable Chinese companies to rehabilitate this important regional transport network (PwC, 2013). The Tanzanian government also has a formal Public-Private partnership policy in place to attract private sector infrastructure investment (PwC, 2014). However, this is hampered by poor property rights, corruption and lack of state efficiency. Tanzania's unskilled workforce also frustrates investment opportunities (PwC, 2013).

South African industrial presence in Tanzania

South African trade with Tanzania is growing as both countries seek deeper relations. Tanzania's 2014 Investment Report already showed that South Africa is second only to Canada in FDI inflows into Tanzania and in terms of stock FDI is the lead investor (Kibuuka, 2017). South African firms are prominent in a range of industries. In industry, AngloGold Ashanti owns and operates the Geita gold mine and is a crucial source of employment and revenue for the Tanzanian government. South African mining suppliers are also prominent in the country (Turok & Smith, 2017).

The South African government is particularly eager to encourage South African firms to participate in infrastructural development in Tanzania related to roads, rail and ports. Deepening links with Tanzania would also lead to the penetration of its land-locked neighbours, including Rwanda, DRC and Burundi. The expansion of the port at Dar es Salaam should be a prime focus of South African infrastructure firms. In addition, opportunities related to the discovery of gas off-shore must be explored (South African Government News Agency, 2016).

Interest in deeper collaboration between the two countries goes both ways. Recently, the director of Tanzania's Private Sector Foundation called on South African firms to invest in the infrastructural gap in the country. South Africa's DTI has responded by calling on South African firms to pursue joint-ventures in Tanzania (Dludla, 2015).

1.5. Democratic Republic of Congo

Economic environment

The DRC economy suffered sharp decline during the recent commodity market slump and has largely failed to recover. GDP growth fell to 2.5% in 2016, down from 6.9% in 2015, as production in mineral resources declined. The DRC is also plagued by social and political conflict and instability. In addition, the country is beset with large levels of corruption, with between US\$10 billion and US\$15 billion lost in 2015 alone (Africa Report, 2017).

Despite these issues, the World Bank believes that the DRC has the potential to become one of the richest economies in Africa. This is due to vast areas of arable land and the country's significant mineral wealth (World Bank, 2017). The country is home to over 1 100 precious minerals, the richest in Africa, and has been called the "future centre of gravity for global mining" (KPMG, 2016; MACIG, 2015). Much of the country's wealth remains undeveloped even as it overtook Zambia as the world's largest copper producer. Tapping into the opportunities in mining remains the country's best short-term source of economic growth. It is predicted that if commodity prices continue to rise, particularly in copper, then growth might recover to 4% in 2017, rising to 5.2% in 2018 (Dabire et al, 2017).

However, a mineral dependent economy is no panacea for sustained economic development, unless the mineral wealth is used for empowering local economy and communities. Indeed, the boom growth years did not translate into improved living standards for the majority of the population. The DRC remains one of the poorest countries in the world, with real GDP per capita as low as \$272 in 2013 (PwC, 2013). Economic diversification must remain high on the government's agenda. Mining currently constitutes 90% of the exports, engendering unsustainable levels of resource dependency (PwC, 2013).

Infrastructure landscape

Social and political unrest and uncertain commodity prices are exacerbated by the country's lack of supportive infrastructure. This undermines the ability to exploit mineral wealth in copper, cobalt, diamonds and gold (PwC, 2013). According to the World Bank, the infrastructural investment needs are among the highest in the world, maintaining that it might take over a century to deal with the country's infrastructural deficit (PwC, 2013).

In the energy sector, electricity shortages and power blockages have been particularly damaging to the mining industry. Less than 10% of the population have access to electricity (PwC, 2013). A significant portion of firms have resorted to operating backstop generators in response (PwC, 2013). Hydropower dominates the energy mix, sitting at 99% (KPMG, 2016).

Road and rail infrastructure in the country is dilapidated with the latter falling into near disuse (PwC, 2013). Only 1.8% of the roads are tarred (PwC, 2013), poor connections to the sea and insignificant port infrastructure means that the DRC is effectively a landlocked country (PwC, 2013). High transport costs have seen trade of copper needing to go through South Africa or Tanzania before reaching end-markets (PwC, 2013). These issues are compounded by a natural landscape that is unfriendly to building road and rail networks along with tunnels and bridges (PwC, 2013).

Government infrastructure programmes and financing

The provision of infrastructure is key to unlocking development; however, the government's spending capabilities are tied to the minerals sector. Thus, in recent years the government has struggled to finance its fiscal deficit and had to pull back on borrowing from international markets for infrastructure development plans (Turok & Smith, 2017).

Nevertheless, significant infrastructural plans are in the pipeline, particularly in relation to the energy sector. There is significant potential on developing hydroelectric power facilities in the DRC (KPMG, 2016). The Grand Inga Dam project is one of the mega projects in the region. It has the potential to generate 40GW of power if completed and will be largest hydroelectric power generating facility in the world (KPMG, 2016). Financing for this project is largely reliant on foreign private investors. The

government is also planning an increase in water supply related to power generation, rehabilitation of power lines and construction of new power lines in 2018 (Ministère du Budget, 2016).

In the transport sector, US\$798 million has been budgeted to secure improvements in both rail and road infrastructure. The government's priorities include the restoration of the internal road transport route and the rehabilitation of networks connecting regional corridors. In addition, the state plans to begin reconstruction of the state railway and projects related to urban rail in Kinshasa (Railways Africa, 2017).

These projects are modest when compared with the country's vast infrastructural gap and the government is currently struggling to meet demands due to a lack of financing (KPMG, 2016). Corruption and political instability hampers private investment flows, yet the government has struck a relationship with its Chinese counterpart. China is playing an increasingly prominent role as a source of trade, foreign direct investment and financing for major infrastructure projects. An infrastructure-for-minerals deal has been signed between the DRC and Chinese government (PwC, 2013). China has committed US\$3 billion for road and infrastructure development projects in the country (PwC, 2013). In addition, a deal was recently struck with the Chinese Railway Group for the construction of a dam at Busanga to supply power to China's mining interests in the DRC (Africa Report, 2017).

South African industrial presence in DRC

South Africa and the DRC have a long history of economic interaction and cooperation. South Africa has historically been a major supplier of mining in the DRC and most of the latter's mineral wealth has travelled out of Africa via Johannesburg and Durban (Besharati & Mthembu-Salter, 2016: 38). AngloGold Ashanti, a South African mining firm, has operated in the DRC since the mid-1990s and hopes to see the Kibali mine grow to one of the largest gold mines on the continent (AngloGold, 2016). Group 5 and DRA mineral projects are some of the South African industrial firms active in the DRC, with most of their work linked to the mining industry (Turok & Smith, 2017). Both PPC and Barnet Group, construction firms, have recently agreed to invest significant sums into the development of infrastructure (Besharati & Mthembu-Salter, 2016).

South Africa is now the leading exporter of manufactured goods and services to the DRC (Besharati & Mthembu-Salter, 2016). However, South Africa risks losing its geographical advantage due to poor

bureaucratic relations and the high cost of doing business. European and Asian investors are becoming increasingly prominent in the country and can often overwhelm South African competition. A number of South African mining firms have been bought out by Chinese, Indian, American and European counterparts who are able to access the vast amounts of capital needed to weather the DRC's logistical frailties. It is thus imperative that South African governments seek to support local firms outreach in a more systematic and productive way (Besharati & Mtembu-Salter, 2016).

It is encouraging that relations between the two countries have improved and have taken on strategic importance in terms of exploring the DRC's hydro-electrical potential. The Grand Inga Dam project presents significant opportunities for South African infrastructure firms and the DRC government is eager to source investment for infrastructure initiatives related to this project. The South African and the DRC agreed to begin work on phase 1 of the project and Eskom has planned to build transmission lines from the Inga site to South Africa. However, the project is currently suffering from political, technical and bureaucratic delays. Moreover, it is also suffering from a lack of finance. Both the DBSA and IDC lack the funding capacity needed for the project. A funding proposal has been submitted to the new BRICS development bank (Besharati & Mtembu-Salter, 2016)

The above chapter has provided the economic context and infrastructural landscape of six countries in Sub-Saharan Africa in which South Africa has strong industrial presence. We have shown that all countries suffer from a lack of supportive economic infrastructure. However, despite limited fiscal space, governments have place infrastructural development as a priority. There are indeed numerous opportunities in the sector, particularly in power and transport.

Due to these African economies continued reliance on the minerals sector, infrastructural spend will be related to commodity extraction. But in order for this spending to be developmental, it must be geared towards transforming the mining industry from extractive to productive. The next chapters consider how that might be achieved.

2. CHAPTER TWO

SOUTH AFRICAN BUSINESS PERSPECTIVES ON INDUSTRIAL OUTREACH IN AFRICA

This chapter is based on information supplied by South African companies in mining, construction and logistics, operating in the rest of Africa. Detailed interviews were held with senior executives, in some cases CEOs. These interviews gathered information on mining operations, construction associated with mining, and the infrastructure problems that arise, including the degree that the infrastructure supports the integration of these operations in the broader host economy and how they affect local communities. Questions were asked about how these operations related to regional development and industrialisation and on South African firms operating in the six focus countries.

We have engaged with enough executives to draw some provisional conclusions that are reported below. All the companies canvassed have high expectations about the African market for their business. It is noted that the majority of the firms slowed down their involvement in Africa due to the fall in mineral commodity prices that have seriously affected economies in Africa and even impacted good governance and stability. This indicates once more the centrality of the mining sector to South Africa's industrial outreach into the continent and Africa's economic prospects more generally. Indeed, as far as infrastructure is concerned, our interviews demonstrate that mining plays a major role in infrastructural development. It is clear that construction and logistics firms tend to serve the needs of mining, with their fortunes somewhat tied to the fortunes of the mining economy.

2.1. South African Mining in Africa

We start with an account of the operations of one of South Africa's largest mining companies. For this company, Africa has always been and remains an important part of their operations. Despite challenges of political risk, corruption and security of tenure, expansion of African operations remains a priority. Currently a number of projects have had to be placed on hold due to political and economic risk, but this is thought to be only a short-term obstacle.

Lack of infrastructure, however, is one of the key obstacles for further growth. For example, in Zambia, the firm has made resolving transport issues a priority, yet cannot implement practical solutions, often due to government inefficiencies. To move copper from Zambia to Durban is a major problem for their business. There are railways for this route, but we were told that the South African and Zambian governments have not enabled copper to move across their countries without obstacles. In order to resolve the issue, the company uses hundreds of 32-ton trucks. However, logistic costs are double the production cost of the copper. This has led our respondent to argue that their experience shows that regional integration in SADC is not functioning.⁷

The firm has great hopes about its future in the DRC where the minerals are abundant, but also complains about the quality of infrastructure available. For example, it was noted that Guinea has the best bauxite deposits in the world, which can be transported to the DRC for processing. Yet the DRC government seems unable to harness its immense hydroelectric potential. The DRC experience has led to the view that Africa as whole should prioritise fixing the existing infrastructure before new projects are built. However, it was noted that such problems are seemingly overcome by Chinese firms, heavily supported by the Chinese government, who are heavily engaged in infrastructure rehabilitation and building.

In Mozambique, the company invested US\$2.2 million in Mozal. This investment, partnered by the Mozambican government, has been very profitable. Generally, the firm has experienced a cooperative local government in Mozambique but complain about the slow pace of decision-making. Infrastructure is once more the primary obstacle to business in the country. Ports, and the supply of water and power, were identified as problematic areas.

Having said this, the firm is contemplating growing its presence in Africa. Further investments in Namibia and Botswana are being considered. However, the company is wary of African countries in which foreign competition has a strong relationship, often lubricated at state-level, with local government. For example, the firm had a bad experience in a Francophone country where a large investment in a mining operation was frustrated by collusion between government officials and French companies. This

⁷ The respondent did note that shipping is competitive and that the company is able to reach foreign markets effectively.

collusion led to the South African company's exclusion. It was said that is this is a common experience for South African mining firms operating in Africa.

In terms of where the DBSA might assist in their operations, we were told that the bank should look to be involved in projects that integrate mining into local economies more effectively. In short, projects which stimulate linkage development- spatial, upstream and downstream. The firm, however, will not take the lead in such a process but would be responsive to an initiative led by local government and development partners. Moreover, it will not take primary responsibility for such projects because it creates a dependency. They prefer a model of interdependency leading finally to total independence where others carry the liabilities of the infrastructure development. The firm does participate in Public-Private Partnerships⁸, but, for infrastructure provision, are concerned about financial integrity of such an arrangement, especially if the firm becomes responsible for a project that fails.

On the role of communities, the firm is committed to proper engagement with any communities affected by a mine. According to the firm, the "licence" to operate comes ultimately from the community, without which there is no security or certainty for operations. The firm is of the view that public commitment to communities need to be made for a project to have a long-term future. In terms of what benefit can accrue to locals, it was noted that communities must see benefits in terms of jobs – this firm aims to have 95% local employees in its Africa operations within a few years. Local procurement is also important. The firm first attempts to source inputs from the nearest city and then, where possible, plan to assist in the emergence of local suppliers in the communities near the mine. In one case, the firm built an industrial park next to a smelter with small firms. The firm also encourages a transformational approach with supplier development, which includes community tenders. In some cases this requires a transfer of project management skills.

Another mining company interviewed operates gold mining projects in Ghana and Tanzania (with another project in Mali). About 40% of the company's gold production comes from their African mines and any plan for expansion would be in these countries. However, future investments will largely be

⁸ Examples of their involvement in private-public partnerships include a railway in Gabon which was funded by the World Bank and a harbor in Mozambique. The latter was supported by this firm and the government, while the electricity system was supported by a consortium of government, business and the IDC.

determined by political risk calculations. This varies from country to country in Africa but is a crucial trend for business.

In terms of their operations in Ghana, the firm has faced serious problems related to mining occupations. In 2016, some 12 000 illegal artisanal miners occupied a mine for nine months. They have since been removed and the company is now doing feasibility studies for further development. According to the respondent, the firm faces minimal infrastructure constraints in Ghana, though in 2014 there was a problem with electricity provision. In other countries like Tanzania, the company contributes to infrastructure development such as roads and water with the government. For example, the company funded pipelines from Lake Victoria to Keita town while the government provided the articulation in the town.

It was stated that infrastructure projects have not interfered with business operations adversely since these projects form part of the firm's planning. It was suggested, however, that the goal of integrating infrastructure projects for broader social and economic benefit should be clearly articulated in national development plans. Moreover, the conceptualisation and final responsibility of execution should belong to the local government and not private business. Funding should be sourced and channelled via the state. This particular firm would consider playing a facilitating role in such projects, but insisted that these must fall under the umbrella of the public sector. This is consistent with the views of the previous mining company mentioned above in this report.

The above firm noted that regulatory frameworks in Africa are improving. It also confirmed a growing tendency on the part of national governments to introduce social and community issues in these frameworks. In general, the company accepts the need for creating shared value through social socioeconomic development, including income-generating projects. The company has a business sustainability strategy that recognizes that the company is an integral part of society and is concerned with how to contribute to realising the sustainability development goals of the United Nations. The way international competitiveness works is also changing and sustainability performance is now becoming a big factor in investment decision. The company argues that there is a sound business case for a sustainability approach.

Sustainability covers a number of critical factors, including better security for its personnel as well as that of host communities that are a source of labour but also a potential source of disruption to operations and protection of equipment and supplies. Where there is acute poverty and unemployment there is bound to be an unfavourable environment, including illegal mining. These issues are dealt with at length in a detailed report that the company has authored on sustainable development, including what seems to be a new approach to accepting legitimate artisanal and small-scale mining.

The company is eager to report its compliance and even overenthusiasm with implementing its sustainability initiatives. Although the company has access to high and medium level skilled personnel in Tanzania and Ghana, the company policy is to build local capabilities. This meant, for example, that during the Ebola epidemic in Guinea the expatriates were evacuated but mining operations were able to continue with local personnel. The company also believes that local procurement and local supply development is vital. They are very concerned to promote upstream development.

The company has also engaged in a number of other development projects, including small business development programmes and health care initiatives. Concerning the latter, the company is engaged in a malaria control project, which includes a number of local Non Governmental Organisations (NGOs). The company is also involved in a rice farming initiative in Zambia with support from the Zambian government. It is in initiatives like the latter where the company has advocated for the DBSA to play a greater role in terms of both funding and capacity building. The respondent believed that DFIs could play a crucial role in supporting the commercial viability of mining sponsored community business projects. At times, the company provides electricity to communities free but this creates a long-term dependency that is not desirable. The firm supports a collaborative approach with NGOs, DFIs and government on sustainability initiatives.

Ultimately, the respondent emphasised that both government and community voices are becoming so loud that mining companies can ill afford to continue to neglect their developmental and social responsibility. This is a commercial as much as a moral imperative. For example, in Peru a community was successfully able to block a proposed mining project. In Columbia, the challenge to business operations is evident and growing. This approach is not about philanthropy. Rather, it is about how you conduct your business.

2.2. South African Construction in Africa

South African construction companies operating in Africa are often dependent on mining companies that may be based in South Africa or abroad. Where a mine needs a road, building or clearing a construction company is brought in to do this. We interviewed one such company. Though this company's profile is highly diversified, a substantial amount of their work in Africa is linked to the mining sector.

A decade ago, caught up in the general mood of "rising Africa," the company moved seriously into Africa. Much of their work since has been related to opencast mining. The company has been involved in mining projects in Zambia and Ghana (it also has been involved in Burkina Faso, Mali and Guinea). The company has worked for South African mining, has had good relationships with the latter, and continue to do so.

Five years ago, 70% of their mining related work was in the rest of Africa, with 30% in South Africa. The commodity slump on the continent however, saw their mining relating work decline sharply up until 2016. Today, the ratio of mining related work between South Africa and Africa has reversed. Nevertheless, the company sees huge opportunities on the horizon for their African business in the long-term. This is despite the usual barriers to business in Africa, which include political risk, the non-observance of economic agreements, a lack of local legal expertise and corruption.

The company therefore wants to continue working in Africa, partly because payment is in American dollars. It now concentrates on SADC, where it has a 20-year history. Botswana was noted as a key market because "things work". In Zambia, business prospects are uneven. For example, the company had a problem with removing their equipment when a project was completed with spurious claims by the Zambian government about no tax payment. It took great effort to remove the equipment thereafter. The company also suffered major loses in Nigeria and Angola and so have retreated from these countries. In both cases, they were working for national governments but their contracts were not sound. To receive payment the company had to go to court where there was also inadequate protection of commercial interests.

In terms of localisation, the company claims to be committed to realising social benefit. The company attempts to employ local and use only a few South African experts in their operations in Africa. It also

engages in substantial training programmes, the latter being even more effective on the continent than in South Africa. In Mali, the entire management of the operation was trained and local. As such, the company believes it has left a legacy in that country. In Mozambique, the company built a railway using local labour that they trained. They also trained maintenance technicians to work after they left. In terms of local procurement, we were told that the company would want local partners who provide connections and market intelligence. Yet we were not given any concrete examples of initiatives underway to lubricate this process by local governments or the construction firm itself.

In terms of community work, the firm once more affirmed its commitment to community development. Communities are crucial as source of labour. Good relations are important to avoid disruptions and even theft of equipment. However, we were told that in mining operations construction companies' community work was subordinate to the plans of the mining company.

The company believes that that cooperation with the host government is crucial.⁹ This is borne out of their experience and their appraisal of their competitors. There is substantial competition in Africa where China is a dominant force, but the European Union is also increasingly competitive. The Chinese have huge advantages as they work "government to government", have banking facilities and superior technical knowhow. They "come to the party with complete packages". The company therefore feels that South African business should engage with government. Without support, it is feared that they will not remain competitive.

Unfortunately, the firm has an unproductive relationship with South African government, which might frustrate this imperative. The construction industry as a whole has battled after the Competition Commission fined it for collusion. Yet government and industry are building bridges and have slowly become organized. In 2016, there was an agreement between the industry and the South African government. However, at this stage, there has been no commitment to support South African construction projects in Africa.

⁹ Regional Agreements are not significant except insofar as they have to comply with certain regulations.

2.3. South African Logistics in Africa

A crucial factor in considering infrastructure needs is the role of logistics companies. One of the large South African companies interviewed for this research owns ships, railways, ports and trucking services across Africa. They have operated in Mozambique (where they have an administrative presence) Zimbabwe, Zambia, Tanzania and other SADC countries. The firm also has experience working in West Africa.

Like the construction industry, the firm's operations are closely linked to mining where they move minerals and equipment. Due to the commodity downturn, the firm has had to scale back its work in Africa. Presently these operations are not always profitable. However, as has been affirmed by other firms interviewed for this research, they believe Africa's economic prospects are on the rise. The company believes that future work on the continent will be "extremely profitable".

The company has a long-term sustainability policy that includes support for communities. They have to be sensitive to local laws and regulations and where there is uncertainty, they engage local lawyers. Local government cooperation is said to be uneven. The firm believes that there are serious delays in regional integration due to political infighting.

In some cases, the firm seeks out local partners. This has been the case in Mozambique, Zambia and Tanzania. In these cases, the firm has been able to build trust with local entities who may become shareholders in a subsidiary of a separate entity. Corruption, however, is a problem and undermines efforts to substantially increase local partners.

The company believes that it is important to try to source inputs from the host country to support local industry. In terms of skills development, they have a phased approach to training staff, with both on the job training and course work, and aim to have less than 5% expatriate staff who may come from South Africa or another African country.

Ultimately, the firm believes that it is competitive on logistics, and is well placed for expanding their operations in Africa. They believe that part of this is due to the fact that African countries are now more "open minded" about South African companies. However, in Francophone countries there are significant problems. This is due to government ties to French companies and even well connected family ties to

French families. Currently the firm has some funding from the DBSA, but in general receives very little assistance from the South African government for their outreach into Africa.

2.4. Obstacles to operating in Africa

Perhaps the most frequently identified problems around infrastructure development are those relating to the host government. Indecision and ineffectiveness are often mentioned, not only within the host government administration but also in the supporting legal institutions. Since all foreign infrastructure, building companies are necessarily dependent on licenses, and permission to operate dealing with a slow bureaucracy can be a major disincentive.

Some companies resort to using local legal firms to negotiate on their behalf and to provide insight into legislation and regulations, but this requires a high level of trust which is not always present. On the other hand a willingness to engage with a local institution of any kind is looked upon favourably by the host government and is likely to speed up permissions.

This kind of assistance becomes particularly important where a licence has certain conditionalities attached as is becoming increasingly common. As oil revenues decline and commodity prices fall so governments become more dependent on royalties and taxes on foreign companies. In addition, there is certainly a much higher consciousness about harnessing more of the benefits from Africa's natural resources and that leads to new conditionalities. This will be the topic of focus for the following chapter. There is also the problem of corruption. This issue is dealt with great reticence by interviewees. Generally, all firms affirm the bold statement "we will have nothing to do with corrupt people or governments". Yet nuances emerge indicating that some concessions are made to get a project approved. Nevertheless, it is clear that corruption is widespread in African governments and constitutes a major obstacle to development.

Another major obstacle is transport. Even where a rail network exists, as in many SADC countries, companies prefer to use trucks which are much more expensive. It appears that governments are unable or unwilling to make the necessary concessions or adjustments to facilitate the movement of goods across the continent. Form filling is insisted upon at each border and often payment of a fee and/or bribe. It is extraordinary how many companies prefer to ship goods from one place to another rather than use land transport. If South African companies hope to significantly increase access across Africa it

will need a major effort to open up transport routes. This could have an immediate and very substantial effect.

A great deal of international attention is being given to enhancing energy provision across the continent. Hydroelectric power is an obvious candidate, but all forms of energy need major attention.

The lack of skills across the continent is an obvious obstacle to developing infrastructure. On the other hand, it is interesting that companies readily find solutions by providing in-house training or by providing scholarships for higher level staff. Countries like Ghana are producing a surplus of trained personnel who work as “expatriates” in other African countries. Many of the companies interviewed are extremely proud of their achievements in replacing South African engineers with locally trained staff. There seems to be a target of 5% South African and the rest local staff. Paradoxically many claim that it is easier to train staff in other countries across the continent than within South Africa itself. Given the acknowledged importance of creating a substantial skills base in any country aspiring for development, there seems to be ample room for substantial upskilling and training across Africa.

2.5. South African Competitiveness

South African firms believe that in many instances they are intrinsically competitive. They have the advantage of local knowledge, familiarity with conditions on the continent based on many years’ experience, and being in relatively close proximity for servicing compared with firms from other continents. They also have much experience in training unskilled personnel speedily and are therefore able to create a workforce for a particular project from adjacent communities and local labour. These companies also have a core group of experienced managers and engineers who are familiar with conditions in Africa and are willing to be seconded to projects anywhere in Africa.

However, South African firms often find competition from many foreign firms overwhelming. In the case of firms from China, these are often government-backed and are able to negotiate on a “government to government” basis. Furthermore, they offer a full package, including bank funding, technical knowhow, labour, and all the design and planning needed. For a host country, this is very attractive since the Chinese firm offers to deliver a complete project often at a reduced cost. It was put to us however, that the Chinese are poor in terms of localisation. The Chinese do not train locals to the same degree as South African firms, resist using local resources and procurement, and much of their work creates

maintenance problems that may arise after completion. European firms, moreover, have a similar advantage. This is also due to home governments providing a range of financial support, insurance guarantees and other services that enable them to offer favourable terms. In some cases they too are able to offer a “total package” for a project.

All the firms canvassed in our research, without exception, complained about the lack of South African government support for their operations in Africa. We understand that the DTI do have an insurance scheme, but this is not known by the firms canvassed. Yet it is common practice around the world for governments to provide backing of various kinds for exporters since they contribute to the national economy. This requires urgent attention from the South African government and its developmental institutions.

2.6. South African firms and localisation in Africa

Employment and skills development

The issue of localisation of personnel was raised during our interviews. While all the respondents were positives, the practices are very uneven. Clearly unskilled labour is recruited close to a particular project and basic training is the norm. These firms have learned how to do this within South Africa and it poses no difficulty. Even semi-skilled jobs provide no serious challenges and the firms have their own training core staff who can handle this. The core staff appears to be keen to work in Africa and are happy to be seconded to these projects. What is more, if the company has won the acquiescence of local communities there is generally no shortage of people seeking. For middle level staff, there may be courses at the project, or at the South African base of the company. For senior level, there may be bursaries for university training for technical personnel or management.

Most firms seem to have a target of 95% localisation of staff that may only be reached after some years. In Mozambique, one firm introduced a training programme for staff who would be responsible for maintenance once the project would be completed.

Procurement

As previously indicated this study is based on considerations of how value chains operate across Africa. We have previously identified as key elements downstream, upstream, and sidestream linkages in value chains and this applies particularly to the three categories in this study of mining, construction and logistics.

Apart from the procurement of labour, which is common practice, other kinds of local procurement are quite problematic. The Chinese companies are notorious for procuring locally as little as possible. On a site visit by the writer to a Chinese television assembly plant in South Africa it was evident that nothing was purchased locally, not even packaging material.

European mining and construction firms are also known to prefer bringing in all the necessary personnel and supplies rather than procure locally. They tend to set up whole communities for a project which then departs en masse when the project is completed. They argue that they have networks of expertise at home that are familiar with their requirements and can fit in as needed. Yet host countries are anxious that local goods and services are used by foreign firms as much as possible.

We have argued on previous occasions that every African country should study the nature of value chains so that local human and material resources can be used when possible. There is a great deal of scope for detailed analytical work to break down a value chain into its component parts to see where local resources could fit in. Foreign firms should not be allowed to ignore local capabilities and supplies whether these be secretarial services or skilled personnel, or local products. South African firms canvassed in this report presented positive appraisals of their business performance in this regard. Yet this will require detailed research to verify.

Community Participation and Development

In Chapter Four we deal extensively with the issue of communities and their involvement in projects. Suffice it to say here that all the mining companies canvassed reported that they were dependent on the goodwill of local communities. These communities are suppliers of labour, they help to protect company property against theft or damage, and they create an atmosphere of security and stability for the mine. In return the mine has to return the goodwill by consulting the community, by ensuring that there are no harmful consequences and that are material benefits for the community.

Construction companies have different obligations since they are subordinate to the mining company and have no independent role vis-à-vis the community. Nevertheless, whether or not some infrastructure such as a road or railway is planned without taking into account community needs is a serious matter.

Many new studies are required for these purposes and some of these are of great economic interest to communities. An example is artisanal and small-scale mining in countries like Ghana. Gone are the days when the thousands of artisanal workers could be ignored. They insist on being protected and not driven out by mining companies and this is gaining belated recognition. South Africa has similar problems with “illegal mining” which will have to be taken into account.

In our discussion with mining company executives, it has emerged that these companies are extremely sensitive about their relations with communities. Some have launched substantial projects with communities and local government, others have supported the emergence of small enterprises and there are other variations. This is a matter too important to be left to chance. There is surely scope for serious planning and engagement by policy makers on this important topic.

3. CHAPTER THREE

MINERALS BASED INDUSTRIALISATION IN AFRICA: THE ROLE OF MINING RELATED INFRASTRUCTURE

Infrastructure spending across the continent is linked to the mining and extractive industries. However, traditionally this spending has not translated into broad economic development. It is now commonly accepted that African government's need to use all available resources to diversify their economies and achieve rapid industrialisation. This chapter outlines the rationale for minerals based industrialisation, assesses state and firm progress in realising this initiative and considers how infrastructure spend related to the extractive industry needs to be reshaped in accordance with developmental ambitions.

3.1. The imperative of minerals based industrialisation

Mining based economies

Mining has historically sat at the heart of Africa's economy. In 2015, Africa hosted 30% of the world's mineral reserves (Lane, Guzec & Antwerpen, 2015). Recent statistics show that mining contributes in excess of 10% of GDP in Zimbabwe, Botswana, Namibia and Tanzania. The sector is significantly embedded in local economies, contributing to export revenues, employment and downstream and upstream industry (Turok & Smith, 2017). Yet there is a significant literature that bemoans the continent's mineral wealth as a curse rather than a blessing.

According to a recent report by McKinsey, almost 80% of countries whose economic prosperity has been tied to resources have below average levels of per capita income. In addition, more than half of these countries are not "catching-up" with their developed counterparts. Historically, this has been explained by the "resource curse". A lack of technological capacity in local economies, poor local capabilities, the Dutch Disease effect, insurmountable infrastructure challenges and the extractive and disruptive nature of multinational mining firms, means that mining is an inherently "enclave" industry, cut off from other productive sectors of the economy, doing possibly more harm than good. Those holding the latter

perspectives have argued that mining cannot serve as a platform for inclusive growth and development (for a discussion on this see Morris et al, 2012 and Fessehaie et al, 2016).

The Minerals based industrialisation agenda

However, in defiance of the above, the continent's major economic institutions and development economists have embraced the developmental potential of the mining industry (see Morris et al, 2012). They argue that a predicted upswing in commodity markets should be leveraged for economic diversification and the creation of a strong and competitive industrial base. Africa's major economic organisations have increasingly championed the prospect of a "minerals-based" industrialisation path for Africa's resource rich economies. The AU has singled out the mining sector as a catalyst for broad-based growth and development. Its *African Mining Vision* (AMV), prepared in collaboration with the AfDB, United Nations Conference on Trade and Development (UNCTAD) and United Nations Industrial Development Organization (UNIDO), calls for the "formulation and implementation of workable industrialisation strategies based on our continent's unique strengths" (AU, 2009)¹⁰.

Economic historians seem to support this enthusiasm. Resource-based industrialisation policies have worked in the past, experiences in Canada, the USA, Norway and Australia demonstrates this (Fessehaie et al, 2016). Economic historians have argued that technology; skills, knowledge systems and proper policies are instrumental in leveraging natural resources for inclusive growth (Fessehaie et al, 2016). The latter is particularly worthy of emphasis. The development and implementation of policies to stimulate backward, forward and horizontal linkages from the mining sector, is crucial to achieving diversification from mineral extraction. A "free-market" approach will only further entrench and feed the resource curse. Policies that should be promoted include local content promotion, skills development support for upstream and downstream industry, export taxes and incentives to processing industries (Morris et al, 2012). As a recent IFAA report stated:

¹⁰ In the years after the publication of the AMV, the AU, AfDB and UNECA have all promoted minerals-based industrialisation. In 2011, the "Action Plan for Implementing the AMV was published." In 2013, UNECA published "Making the most of Africa's Commodities," calling for the creation of an integrated mining system on the continent. The AfDB also considers the mining industry as a priority. In its recent report, the AfDB called on national governments to implement policies that would move Africa up the global value chain and away from a condition in which the continent is "effectively exporting wealth and jobs (AfDB, 2016)."

“Africa’s states should seek autonomy against the narrow interests of specific actors, acquire support of all stakeholders in society, from labour, capital to civil society, and organize its mineral regime around a developmental vision” (IFAA, 2016).

What progress has been made in realizing this vision? We consider this question in relation to our selection of countries below.

3.2. The African Mining Vision: Much left undone

Government progress

Overall, the performance of African states on policy formulation and implementation in relation to minerals based industrialisation has been poor. Due to government inaction, most states in Africa continue to carry colonial economic profiles. Governments have not intervened in mineral regimes as the AMV would have hoped (Turok & Smith, 2017). This could be explained because of a lack of political will or insufficient policy capabilities. Yet in some cases it is clear that many states view mining as merely a source of royalties and taxes, something that could lead to unproductive rent-seeking (Morris et al, 2012). In other cases, the issue is ideological in nature. Certain states have embraced “free-market” or neoliberal policy frameworks and so avoid pursuing aggressive government intervention in industry (Jourdan, 2012). We will briefly outline minerals policy and progress in achieving minerals based industrialisation in each of the focus countries.

The Zambian government has made diversification a priority and has formally championed minerals based industrialisation. It hopes to achieve this through participating directly in the mining industry through ZCCM Investment Holdings and enforcing local procurement and other localisation requirements consistent with its “*Mines and Minerals Development Policy*” of 2013. However, Zambia has failed to reap the benefits of joint participation as the government seems to prioritize tax increases and fiscal linkages (Eunomix, 2015). Moreover, the state has an inconsistent local content policy and is slow to enforce its own rules on export transparency, a method to encourage local beneficiation (Fessehaie et al, 2016; Eunomix, 2015). Fessehaie et al note that organised manufacturing interests have had to take the lead in advancing their own interests due to government’s inability to confront entrenched mining interests in the economy (Fessehaie et al, 2016).

In Zimbabwe, where the World Bank has flagged mining as central to growing local manufacturing and industrialisation, minerals beneficiation and value addition constitutes one of the four pillars of the country's "*Agenda for Sustainable Socio-Economic Transformation*" (Fessehaie et al, 2016; The Herald, 2014). Although the government has prioritized the mining sector in its developmental ambitions, it remains inappropriately focused on indigenization through direct state ownership, has failed to coordinate its minerals policy with broader trade and industrial policy. It also insufficiently targets backward linkages and the formulation and enforcing of local content policies (Turok & Smith, 2017).

Ghana's Minerals and Mining Act of 2006 (Act 703), amended in 2015, governs mining in the country and calls for the promotion of localisation and economic linkages. The government takes 10% in mining operations, reserves small scale mining for Ghanaians, enforces preferential treatment legislation and skills development requirements, and targets increased local employment in the industry (Morris et al, 2011). Ghanaian suppliers are prominent in the mining value chain with the country's gold mines showing impressive local content stock and spend; in 2015 this stood at 28% of total revenue. However, little refining of gold takes place in Ghana. The government has a number of policies geared towards minerals industrialisation but suffers from lack of finance and severe implementation incapacities (Turok & Smith, 2017).

Tanzania's "*Development Vision 2025*" foresees mining to contribute 10% of GDP in 2025, whilst also contributing to economic diversification and industrialisation (The Citizen, 2017). However, the government has been slow to develop consistent legislation on local content and seems to be focused on fiscal benefits (Morris et al, 2011). The introduction of new legislation in 2017 shows some progress with emphasis placed on local content provisions, environmental and community protections, increasing royalties and demanding state equity at 16% of mining operation (Woodroffe et al, 2017).

The DRC is predicted to be the "mining colossus" of Africa in the coming decades and is already the continent's largest copper producer. Yet minerals policy in the DRC suffers from incoherence and inconsistency, with the state seemingly unable to draft and implement a last minerals agenda. The mining industry, as we shall discuss further in the following chapter, is also implicated in corruption with government officials (Turok & Smith, 2017). A recently developed Mining Code is hoped to bring some improvement in DRC's regulatory regime (Oxford Policy Management, 2013).

Finally, in Mozambique, where mining constitutes the majority of export revenues, the government adopted the *African Mining Vision* in 2009 and is committed to leveraging the mining industry for industrialisation and development.

Overall, African states have failed to live up to AMV. This has allowed mining companies to continue in former extractive ways.

Mining companies and extraction

Mining and other industrial companies' performance in relation to the vision of the African Mining Vision has been disappointing. The mining industry remains dominated by parasitic multi-national corporations whose interest lies primarily in extraction. These firms do provide much needed employment, revenues and other local linkages, but enriching embeddedness in local economies is not a priority. Morris et al have argued that "lead firms" are interested in outsourcing some of their functions, yet there seems to be precious evidence of this. Beneficiation is often resisted by mining chambers (as is the case in the South African context) and inputs for mining production still largely come from abroad. Moreover, the relationship between local stakeholders is conducted on exploitative terms (Turok & Smith, 2017). Outside of Corporate Social Responsibility (CSR) drives, mining companies are not motivated to contribute to socioeconomic development. As we shall see in the next chapter, mining is often wholly destructive to the eco-systems of entire communities.

McKinsey's works with extractive companies have led them to draw up some concerning findings that support the assertions above. According to McKinsey, extractive companies prioritise activities that do not match interests of local stakeholders, including host government. This is because firms' development or community programmes are often decided without proper consultation with government and done either in an ad-hoc manner or in simple bad faith. Companies are also not seeing the long-term benefit to contributing to economic development of host country. Instead, short-termism dominates (Lenero and Thompson, 2014).

The behaviour of mining companies in Zambia presents an example of this. Foreign companies that have systematically moved away from local procurement in a context of liberalization dominate Zambia's mining industry. Chinese and Indian companies have been flagged as the main culprits, yet this is an

industry wide trend (Fessehaie et al, 2016). Mining in Zambia has drawn the ire of the World Bank, which has called on companies to turn away from fighting tax increases and play their part in environmental management and local content initiatives (World Bank, 2015)

Although mining companies overall have resisted localisation, it is important to point out some positive examples. As mentioned above, Ghana has managed to report good relationships between state and business, leading to increasing higher local content spend in the mining over the course of the past few years. South African mining and industrial firms boast that they comply with and participate in Zimbabwe's indigenization and other localisation requirements. The South African firms interviewed for this research claim that localisation and value addition is a priority for their work across the continent.

In DRC, Hanlin (2011) has identified BANRO Corporation's operation at Twangiza as a blueprint for mining local content. Hanlin notes that BANRO has made serious efforts to source products from local markets. OCP, a Moroccan phosphate company, has followed a similar model. OCP has made it a company priority to boost its local content spend, developed a portfolio of targeted sectors and judged their spend in terms of its potential contribution to local GDP. The company also how best to localize content and engaged with joint ventures with international firms to ensure their suppliers in local economy gained requisite skills, developed special economic zones and assisted their suppliers with volume guarantees. OCP has set up a dedicated office responsible for supporting its local content policy (Lenero & Thompson, 2014). South African firms need to follow these examples if the proposed South African Inc. approach to the continent is to be rooted in the requirements of local stakeholders.

The experiences of the above firms show that mining and related companies are able to adjust business practice to facilitate socioeconomic benefit and industrialisation. Ultimately, whether or not this adjustment is pursued will depend on the local state's ability to steer economic activities towards developmental ends. This highlights the imperative for the creation of a capable developmental state on the continent, able to balance and even shape commercial interests in tune socioeconomic priorities. The provision of infrastructure and the development of spatial linkages from the mining sector, a crucial means to leverage the sector for industrialisation, hinges on this. We discuss mining-related infrastructure and how it can be leveraged for minerals based industrialisation in the following section.

3.3. Infrastructure for minerals based industrialisation

Mining set to recover

As has been emphasised throughout this report, the recent commodity slump led to marked economic decline across the continent. Mining operations fell by 28% between 2012 and 2013, and dipped by 12% in 2014, a year of heightened price volatility (Thompson, 2014). Prices finally reached the lowest points in early 2016 (World Bank, 2016). In 2017, prices have stabilised and mining is entering a period of recovery which will send positive ripple effects throughout African economies. US\$18 billion in investment is planned for the development of a number of new mines in copper, gold, diamond, platinum, uranium and coal. Coal is the commodity generating the most commercial interest with large investments planned in Zambia's Copper Belt and in the DRC (Turok & Smith, 2017).

The World Bank predicts African mining output to grow at an even pace over the next few years. Ethiopia, Mozambique, Rwanda and Tanzania have been flagged as sights of rich mining growth (World Bank, 2016). Indeed, as global mining recovers, it is predicted that the majority of share in resource investment will remain in poorer countries, particularly in Africa. However, these countries present familiar challenges to the mining industry, not least of which are substantial infrastructure shortfalls (Lenero & Thompson, 2014).

Infrastructure is the central obstacle to mining development in Africa. The costs associated with rail, road and port infrastructure remain a significant hurdle to growth and investment in the industry. Transport has been flagged as a key industry to unlock mining projects in the region. Yet rail and port facilities to support the extraction of large mineral deposits, often hundreds of km from the sea, currently do not exist (Ireland, 2013). According to Deutsche Bank, US\$50 billion is needed for railways to unlock Africa's iron ore deposits alone (Ireland, 2013).

Spending in Africa has traditionally, and will in the near future, be tied to the mining industry. This is due to mining's overwhelming presence in domestic economies, determining the size of the fiscus and the spending capabilities of local governments according to the vagaries of the industry's performance. Funding for major infrastructure projects in Africa, both related and unrelated to mining, was restricted during the depressed commodity environment, causing delays and abandonment of new projects (Thomashausen & Ireland, 2015). As mining enters into a period of recovery, uncertainty remains as to

how financing should be secured and who should construct own, operate and have the right to use mining related infrastructure (Ireland, 2013). Below we consider these questions from a developmental perspective, in the framework of the African Mining Vision.

Recovery for industrialisation not extraction

If the coming commodity recovery is to be leveraged for industrialisation than infrastructure spend cannot be focused on mining development alone. Rather, developmentalists need to consider mining related infrastructure's impact on the economy as a whole. Infrastructure related to mining should provide spatial linkages to the rest of the domestic and regional economy. This can be achieved if the infrastructure is constructed and managed in a manner that leads to wide social and economic development (Columbia Center for Sustainable Investment, 2016). There are two ways to ensure this namely, by investing fiscal revenues in long-term infrastructure assets (fiscal linkages) and/or requiring shared use of resource-related infrastructure (spatial linkages) (Columbia Center for Sustainable Investment, 2016). Unfortunately, historical experience with mining infrastructure projects shows little evidence of the latter being achieved to any significant degree.

3.4. From “enclave” to “shared-use”

In the developed world, mining related infrastructure is embedded in local economies in a manner that ensures wide social and economic benefit. Mining in Sub-Saharan Africa however still reveals patterns of extraction akin to the colonial era. Mining companies in the region have traditionally adopted the “integrated” or “enclave” infrastructure approach and have sought to control, own, operate and have exclusive right to use infrastructure related to their mining. This approach has meant that large-scale investments in infrastructure in the industry have been out-of-sync with national development plans of host countries and have been largely de-linked from broader economic activity (Thomashausen & Ireland, 2015).

However, since the launch of the AMV, African countries have increasingly pushed for infrastructure related to mining to operate on an “open-access” or “shared-use” basis. This would mean that other industries (agribusiness, manufacturers and others) can use rail, ports and other facilities constructed for mining, thereby providing spatial linkages to the rest of the economy. Sharing infrastructure in this way

can also stimulate local downstream and upstream linkages to the mine if local suppliers and markets can access mines more efficiently than before. “Shared use” is thus a crucial concept for the minerals based industrialisation agenda (Ireland, 2013; Columbia Center for Sustainable Investment, 2016).

Shared use-infrastructure might involve railway corridors and port facilities facilitating large-scale investments in agriculture and forestry by providing reliable access to foreign markets. It could also involve a power plant constructed for a mine being used to supply low-cost electricity to local communities or the nation’s grid (Thomashausen & Ireland, 2015). An example of “shared use” in Africa is the Nacala corridor (NRGI, 2015). Vale, the government of Mozambique and Malawi have agreed to build a railway from Vale’s coal mine in Nacala Mozambique through part of Malawi. Local businesses will be able to use the railway once complete. Nacala presents a model for other projects to follow.

McKinsey has predicted that US\$2 trillion can be generated from shared-use infrastructure investments related to the mining sector in Africa. It also suggests that 70% of infrastructure investment on the continent can be made to be multi-use and 30% multi-purpose (NRGI, 2015). Mining companies, meanwhile, have begun to consider whether the traditional “enclave” model is sustainable. Rising costs of infrastructure provision, shareholder activism that is demanding lower capital expenditure, pressure from national governments and at the continental level for mining to contribute to development goals, and the increase in infrastructure for minerals deals pioneered by the Chinese State Owned Enterprises (SOEs) operating in Africa, have opened up space for a new mining infrastructure agenda (Ireland, 2013).

Challenges to the “shared-use” agenda

Unfortunately, little progress has been made on the provision of shared-use infrastructure in Sub-Saharan Africa. Thomashausen and Ireland note that something akin to shared-use can be seen in Liberia, Cameroon and Mozambique. Encouraging examples can also be found in the Simandaou project in Republic of Guinea, the Nacala (shift from above) and the Katanga Copper project in DRC, but these are few and far between (Thomashausen & Ireland, 2015; Columbia Center for Sustainable Investment, 2016)¹¹. The reasons for the lack of progress are varied and are discussed in turn below.

¹¹ The Simandaou project has suffered delays and there is currently little appetite for the massive capital investment needed to complete it. The project involves the construction of a railway line and associated port that will be used primarily for export of iron ore but will also be available for use by other mining and non-mining users,

First, although under more pressure to change their business practice, mining companies remain locked into an “enclave” mentality. In terms of infrastructure provision, this approach will remain more commercially attractive for mining firms until “shared-use” funding models are coordinated at a cheaper cost (NRGI, 2015).

Second and related, governments in Africa, as has been mentioned above, are not regulating the mining industry in a developmental manner. There are too many cases of national governments being caught in unproductive rent-seeking patterns and corruption related to mining. Yet unless governments act decisively, enclave infrastructure developments will continue to dominate the industry (NRGI, 2015). Once governments commit to a developmental programme there are still significant obstacles in the way. Getting shared-use to operate effectively requires serious and diligent development planning and governments may lack the skills to integrate “shared-use” mining priorities into their developmental infrastructure plans. It is of no value to build a railway for “shared-use” only for more traffic to arrive at an ill-equipped port (NRFI, 2015). Moreover, different types of commodities will require different types of infrastructure development priorities and so different opportunities for shared use or open access with varying cost profiles. Thus, it is very important for government to have a clear understanding of their commodity endowment and conduct careful cost-benefit analysis on shared-infrastructure projects based on this (Columbia Center for Sustainable Investment, 2016). The Columbia Center for Sustainable Investment (2016) suggests governments construct a master infrastructure plan across all sectors and their intersection with the extractive industry (Columbia Center for Sustainable Investment, 2016) McKinsey predicts that mining companies alone are likely to spend close to US\$2 trillion on infrastructure by 2030. Local governments should thus also look to partner in these projects in order to ensure that the infrastructure is for shared-use and not merely extractive (Lenero & Thompson, 2014). This will require rigorous planning and promotion of public private partnerships.

Finally, and perhaps most significantly, a lack of financing is a major impediment to realising “shared-use” infrastructure projects in Africa. In the developed world, where mining infrastructure operates on

including passengers and agribusiness (Thomashaussen & Ireland, 2015). The Katanga Copper mining power requirements have been leveraged to improve the power system in the DRC, highlighting the benefits of private-public partnerships and cooperation between government and private sector (Glencore is the private company involved in this case) (Columbia Center for Sustainable Investment, 2016).

an “open access” platform, funds for infrastructure come largely from public coffers. This is not possible in Sub-Saharan Africa. As one report concluded: “...the financial commitment of one project could overwhelm a country’s entire budget equilibrium” (Ireland, 2013). If “shared-use” is to become a reality on the continent, then new and innovative financing models are required. Currently, financing sources in the region have not adapted to the different lending model.

The Columbia Center for Sustainable Investment (2016) notes that financing for shared railway infrastructure is difficult to execute. Shared railway infrastructure can render a project less “bankable” if multi-use leads to inefficiencies. This suggests the need for a strong regulator governing the infrastructure operations (Columbia Center for Sustainable Investment, 2016).

Ireland (2013) has promoted a private special purpose vehicle (SPV) that would operate in a structure similar to a private-public partnership. This model would balance the needs of mining company and government’s developmental ambitions by allowing new users, gaining political input from government, and granting of founder rights to first mover mining client (Ireland, 2013). If adopted, this structure would allow for more sources of capital to mining infrastructure and unlock funding from development banks and other capital providers that are unable to invest in integrated mining projects (Ireland, 2013). It would also lower the cost of capital for mining company, lower political risk through the establishment of linkages in the local economy and thereby gaining trust from local government. It could also facilitate cooperation between mining rivals in a particular region (Ireland, 2013). Although there are a number of challenges to successfully rolling out SPV, like cross border complications, regulatory inconsistent by local government, and private company resistance, it is a concept worthy of promotion.

The majority of Africa’s economies remain reliant on the minerals sector. This is certainly the case for all the countries surveyed in this report. Mining is predicted to recover from the recent commodity slump over the course of the next decade. Indeed, the industry plans to make significant investments in both old and new projects. The predicted upswing in mining must be seen as another opportunity to realise the African Mining Vision and to learn from experience. Unless Africa’s economies diversify and move up the global value chain, mining related booms and busts will continue to determine the economic fortunes of the continent.

Infrastructure provision is crucial in sustaining mineral development on the continent. It could provide the spatial linkages that would enhance minerals based industrialisation and broader economic

development. African governments and development institutions need to ensure that the extractive and enclave nature of mining related infrastructure projects ends. Developmentalists need to champion a “shared-use” or “open-access” agenda for infrastructure provision on the continent. Although it has traditionally been the case that infrastructure DFIs have steered clear of mining industry, it is argued here that significant developmental impact can be made in joining the minerals based industrialisation agenda with Africa’s infrastructural plans.

4. CHAPTER FOUR

MINING INFRASTRUCTURE FOR INDUSTRIALISATION AND COMMUNITY DEVELOPMENT

The story is all too familiar: a mining company arrives, creates a mining town, there is euphoria as people get jobs and small businesses are created. A few years later the company leaves and the town's economy collapses. Unemployment grows, many residents migrate and as economic conditions degenerate, despair sets in. The story can be told for highly industrialised and non-industrialised countries alike. In the latter, however, the situation is considerably worse. Poor or non-existent infrastructure, a lack of state support and no resources to repair the damage done to the environment, leads to conditions of misery and degradation.

For mining companies the paramount issue is access to a resource which they can exchange for a profit. If, in the course of this, they do some social good, it reflects well in their annual reports and their commitment to corporate social responsibility. If they leave the situation the same as when they arrived - or make it much worse - there is often no accountability. Can this scenario be changed such that there is a bit of a happy ending even after the mining company has left? Is a mutually beneficial relationship between the companies and local communities possible?

4.1. The Historical Context

African countries remain predominantly suppliers of primary products and importers of manufactured goods. The much hoped for industrialisation that should have followed the end of the colonial period has not come to pass. This has limited growth and arrested development with painful consequences for all except a small section of well-off urban residents. The colonial legacy, of course, has much to do with this. Roads and railways were built mainly for transporting raw products to harbours or other points for export to the metropolitan countries. There were also military and security decisions that influenced what should be built and where.

This historical context partly explains the low level of infrastructure development in Africa. How this further affected economies and social development is worth considering. Colonial plunder seriously

distorted the development trajectory of the continent in so far as indigenously led industrialisation was not allowed to take root. Neither capital markets nor skills formation, both of which are so essential to early industrialisation, have grown beyond the infant stage. The merchant class, on whose shoulders the industrialists stand and rise, are noticeably absent in the pre and post-colonial periods in Africa. These roles have generally been filled by the trickle of immigrants from either the Middle East, Asia or Europe, none of whom have ever advocated a grand vision for the continent. By extension, the structure of trade between Africa and other parts of the world bear the hallmarks of these historical factors. South Africa is the notable exception in this regard. So far, there is no indication that the onset of globalisation will bring about a fundamental shift in the terms of trade in the short term.

4.2. The Role of the State in Infrastructure Provision

In the highly industrialised countries, roads and railways, harbours and airports, sewerage systems and water supply, have for decades been provided by the state. As technology advanced, energy and telecommunications were added, with the state still playing a dominant role. The privatisation of infrastructure is a recent phenomenon (about three decades old) with the United States of America something of a hybrid that stretches back to the early part of the 20th century. Together, such infrastructure development contributed significantly to economic growth and human development. Here we should also note the vital role of soft infrastructure (schools, universities, technical colleges and other institutions) that make possible the pool of skills essential to the development process. Since antiquity it was the state (however we imagine its form) that constructed most of the infrastructure we see today. The aqueducts in Ancient Rome, the canals in the Netherlands, the bridges in Turkey, were all undertaken by the political authorities of the day.

Several states in Asia demonstrate that the state's role in the development of soft and hard infrastructure is vital in countries with low levels of economic development. They were able to sustain high rates of growth over three decades through strategic interventions in the economy, the provision of infrastructure being a central plank in their approach.

4.3. Can states in Africa follow these examples?

Why a number of other states in the Global South have not performed similarly is a complex issue. The most common explanations are history, capital and skills (as explained above), globalisation and authoritarian rulers who either enter into agreements with private enterprises or maintain the status quo for reasons of self-interest. To this latter factor, we can add the upper echelons of the military that, for a share of the profits, provide security arrangements to mining companies in particular. Poor governance, including restricting the space for political and civil institutions that demand accountability, ensure checks and balances, and carry out oversight functions, negatively affect the regulatory capacity of a modern state with respect to corporate activity.

It is in this context that we consider the role of mining companies, specifically as it relates to infrastructure. Naturally, a question that arises here is why mining companies and why should we identify them specifically to take on this role? There are several reasons that we offer:

Firstly, mining companies, by virtue of their activities, affect communities in ways that are sometimes irreversible. Displacement, chronic illnesses, exposure to hazardous conditions are but some of the ways in which the lives of communities are disrupted. Mining has also been at the centre of violent conflicts in several countries.

Secondly, minerals are subject to fluctuations on commodity markets. In the event of a huge drop in prices, workers face job losses. If prices do not recover in the short term, unemployment could be permanent. The effects of this on livelihoods can be severe, with communities being plunged into poverty in relatively short periods of time.

Thirdly, the impact of mining on the natural environment leaves little prospect for alternative uses. When mineral extraction is exhausted neither agriculture nor human settlement are feasible options. Depending on location, other economic activities are also usually adversely affected, e.g. tourism. Looking at this from a holistic accounting perspective of benefits and costs, extractive industries leave countries suffering a net deficit that reflect much higher costs than benefits.

Fourthly, mining companies are invariably domiciled in foreign countries. With the repatriation of profits that this entails, there is little reinvestment in the host country after the initial capital investment is

made. This spells a loss of income from taxes, both personal and corporate, as executive's pay is generally pegged to profits.

While some of the above points are applicable to other corporate entities, the overall impact of mining on countries in general and communities in particular has not been favourable. What then is the way forward?

Given the enormous mineral endowments of African countries, extractive industries are bound to dominate economic activity for some decades to come. Can mining companies assume a new mandate that will see them making a greater contribution to the elimination of poverty and national development?

4.4. The Prevailing Model of Mining and Community Development

Mining companies do not have a glowing record of community development. The stories of indigenous people in several countries are replete with the slave like conditions under which they toiled and perished. In his acclaimed book, *Open Veins of Latin America*, Eduardo Galiano eloquently catalogues the misery wrought by the Spanish conquistadores as they emptied the bowels of the earth in South America. Adam Hochschild meticulously leafed through volumes of historical records and personal accounts to show us the brutal dehumanization of the Congolese people by the Belgians in *King Leopold's Ghost*. In South Africa, the story was no different as the British subjected Africans to labour in the hot, damp and dark underground to bring tons of gold to the surface as their shanty towns mushroomed on the periphery of Johannesburg.

The growing protests and community activism in many parts of the world against inhuman working conditions in mines and, more recently, the surge in movements to halt environmental degradation have led some mining companies to respond to the concerns expressed by unions, communities and civil society organisations. Accordingly, brochures extol the virtues of "Green Mining" with annual reports depicting engagement with communities as part of the corporate social responsibility programmes of companies. Sustainable development and inclusive economic models are a big part of the vocabulary in these publications. AngloGold Ashanti (AGA) has a Social, Ethics and Sustainability Committee and its President of Sustainable Development, David Noko, articulates the new corporate ethos as follows:

“We also recognize that there is economic value accruing to our business through our sustainable development performance such as in improved safety performance and harmonious relationships with communities and other stakeholders. Our approach will guarantee us multiple benefits that are very significant in modern society where corporate consciousness, values and ethical conduct are considered positive elements for long term business success”
(AngloGoldAshanti, Sustainable Development Report, 2016).

This marks a departure from the conventional shareholder value movement which has been the defining feature of corporate philosophy and behaviour for several decades. Now sustainable development is tied to the objectives of improving cash flow and returns and host communities are seen as their most important constituency. Spelling this out, the report says the company continues to make progress in the area of creating shared value through local socio-economic development, focusing on small income generating projects and creating the potential for alternative industries. The company also recognizes the need to coexist with artisanal and small-scale mining. In the area of security, AGA provides manned guards and extends to physical infrastructure, crisis planning, technology and training.

Exxaro, a coal mining company in South Africa, also demonstrates its role in community development through its Assessment of Social Return on Investment (SROI) conducted by KPMG. Exxaro spends about R50 million on community development each year which is channelled through the Exxaro Foundation and the Chairman’s Fund. The Assessment covers 21 community development initiatives across the company’s operations. The SROI measures social and economic outcomes and values them in monetary terms against the investment made. The community development activities are made up of six main themes: Enterprise Development; Infrastructure Development; Skills Development; Education; Agriculture and Environment. The results of the SROI assessment show that Exxaro achieved an overall weighted average Social Return on Investment of R1.32, showing a return generated by the projects as more than the initial investment.

This shift in perspective appears to be part of a change eddying through the mining fraternity. It reflects the broad acceptance (or endorsement) of the triple bottom line thinking that emerged in the mid-1990s. It is a set of performance measures that seeks to strike a balance between corporate profits, social responsibility and environmental sustainability. This perspective is best exemplified by a publication of the World Bank. In 2012, the World Bank Oil, Gas and Mining Unit published its *Source*

Book on Mining Community Development Agreements (CDAs). The document lays out in some detail the approach mining companies can take towards establishing structures and processes that contribute positively to long-term local development. The CDAs were developed to facilitate this. It is described as “a tool to enhance community participation and consultation, manage expectations of involved parties, and ultimately maximize pro-poor benefits to impacted communities while helping to establish “social license to operate” for government and industry.”

Since the document has become something of a primer for governments and private sector operators in extractive industries, it is useful to describe the purpose of CDAs and list some of the core principles on which its development is based.

The Source Book lists three of the most common reasons for why CDAs should be developed:

“Where government regulations specifically require developers to enter into a formal agreement.

Where indigenous lands are present and there is a legal requirement to negotiate the conditions of access/use with the traditional landowners.

Where there have been conflicts between a developer and local communities, and the developer has voluntarily negotiated an agreement in an effort to resolve these conflicts.”

It is worth noting that the reasons given are of a legal or juridical nature and not developmental though in a subsequent section it is stated that one of the fundamental points that should be included in an agreement is “*How the project will contribute to community and socioeconomic development and sustainability, and how it will assist in the development of self-sustaining, income-generating activities*”.

The Core Principles for CDA Development are stated as follows:

- Long lasting (multi-generational)
- Based on actual community needs
- Sustainable with available income
- Well planned, monitored and evaluated
- Long term benefits and prepares beneficiaries for closure
- Complements existing government – led programmes and planning (does not replace)

On the Roles and Responsibilities of Stakeholders, the Source Book has this to say:

“With respect to community development and the provision of infrastructure and services, the line of responsibility between government and developers is often blurred. Normally government is responsible for the delivery of core services such as health, education, social resources, law and order, physical infrastructure such as roads, airports, community water and sanitary workings and environmental protection. In practice, however, these roles have been taken on by some developers in response to a lack of local government capacity (or on-the-ground-action) to provide these basic services. In addition, companies often take on additional roles in terms of financial, material and technical support, monitoring and evaluation, coordination, and training and skills development.”

4.5.A Critical Look at the Current Model

While the practices of mining companies to promote community development are a welcome change from decades of neglect, there are strong reasons to believe that these are not sufficient and that more can be done.

Following from the steps outlined in the Source Book, the process of going through CDAs is comprehensive. Reaching agreements with multiple stakeholders is a feat and is crucial to the implementation phases of projects. It does not, however, go beyond the approach to raising standards of living and stimulating small scale economic activity.

There is acknowledgement by some companies that this is the direction in which they should be moving. They correctly identify the key stakeholders in the process – companies, government, labour and communities as well as civil society organisations. They also see a shared community vision flowing from local village committees, the Local Economic Development strategy (LED) and the National Development Plan (NDP). In the model sketched by Exxaro, for example, a Community Development Forum is formed, made up of local community representatives, local government, companies and civil society organisations, with the role of each clearly spelled out. Exxaro also recognizes that such a model is intended to address “ . . . the now widely noted need for the mining industry in South Africa to undergo a broad structural transformation based on the current economic scenario and the needs of the people.”

The current portfolio of corporate social responsibility programmes of mining companies cover several areas that have a direct bearing on the survival of communities and, for that, they should be commended. There is, however, no strong indication that they will bring about the structural transformation that Exxaro speaks of.

For this to happen, we believe mining companies need to cast themselves into a new mould, namely, positioning themselves as drivers of industrialisation.

4.6. Mining Companies, Industrialisation and Community Development

The promise of infrastructure lies in the way it transforms our physical environment to facilitate improvement in our material and social conditions. In relatively short periods of time, infrastructure helps to bring about dramatic changes in several areas of life. Infrastructure provides new impetus for the movement of goods and people, for production and trade, for the exchange of information and knowledge, for advancing health and education.

By taking on a lead role in industrialisation, mining companies can be instrumental in creating a developmental platform. By this we mean that the factors critical to a process of successful, broad based growth in incomes and skills, and improvements in human development, are incorporated into a framework that facilitates a planned and coordinated effort with other parties to end poverty. We are of the view that there is considerable potential in mining companies that is not being used and which could make a substantial impact in long term economic development. We suggest further that South African mining companies, in particular, are well placed to assume this role. Consider the following:

- The market capitalisation of the Top 10 JSE-listed mining companies in 2016 was R478 billion (2016).
- Anglo Platinum's market capitalisation was at R337 billion in 2013, and has clawed its way back to a level of R248 billion in 2017.
- Basic resources companies contribute 18% (R2.1 trillion) of the overall JSE market cap of R11.5 trillion.

Add to this the considerable expertise in each mining company in diverse areas of the industry from excavation to energy generation and we have the makings of a powerhouse of infrastructure delivery. If

these companies were to adopt the vision of a major structural transformation by specialising in four basic infrastructural undertakings – bulk (such as storm water drainage), roads, energy generation and water supply – the foundation for a phase of industrial take-off will have been set. The CDAs composed by the World Bank, and referred to above, will be indispensable in this process as partnerships are formed with town planners and land registry offices of local and/or regional governments.

South Africa is probably unique in demonstrating how mining can play a leading role in industrialization. It is through mining that the country created the fourth largest electric utility in the world. Known in the literature as the Minerals-Energy Complex (MEC), gold mining demanded the intensive development of energy which was then extensively applied, catapulting South Africa from an agricultural based economy into the industrial age. While this is not a model to be emulated because of the huge distortions it created for the rest of the economy (and, it must be added, aiding and abetting the enforced system of racial segregation), it nevertheless showed the potential inherent in its activities to effect a transformation. With the right political stewardship, this potential must be actualised.

In value terms, roads and bulk infrastructure, such as sewerage and storm water drains, have a lifespan of some 20 years and the accretion of value – social and economic – over this period is substantial compared to the returns on small (but valuable) projects. In the event of natural disasters communities would still be able to function if these are installed. When the costs of lives lost through Hurricanes Harvey and Irma were estimated in September 2017, America was said to have lost 15 times more people than Cuba. The explanation offered is that Cuba has customized its infrastructure to withstand the destructive power of hurricanes because they have to deal with them so frequently. The point here is that when poor communities face a natural disaster it takes a generation to recover from the losses suffered. Haiti is perhaps the most poignant example of this.

Africa is widely acknowledged as having the richest mineral deposits in the world but also has 10 of the world's poorest countries. It is estimated that some US\$100 billion leave the continent in illicit outflows every year. In this regard, the principle of ownership and control of the mining and processing of its minerals should be paramount, by national governments but also local communities. The latter, who are ultimately the main subjects of this study, will benefit enormously from participating in a process in which they articulate their needs, express the kind and pace of transformation they want and their role in the development of what is in principle their resources.

CHAPTER FIVE

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1. Findings and Conclusions

- I. The infrastructure gap in Africa is large, yet filling it is crucial to economic development. Infrastructural needs vary from country to country and we have highlighted conditions in Zambia, Zimbabwe, Tanzania, Mozambique, Ghana and the DRC. All of the countries canvassed suffer from power, transport and soft infrastructural deficiencies.
- II. Mining remains an integral part of the African economy, with infrastructural spend tied to the industry either directly or indirectly.
- III. All countries surveyed in this report suffer from relative commodity dependence and an undiversified economy. This has led to a skewed and volatile growth path.
- IV. Minerals based industrialisation is a norm being championed by all of Africa's economic institutions and a number of its progressive economists.
- V. A lack of coherence and clear policy objectives related to mining and industrial development in the region poses difficulties to realising minerals based industrialisation.
- VI. Infrastructure build related to mining has traditionally been enclave and non-developmental. Yet there is growing recognition of the importance of facilitating spatial linkages through the promotion of "shared-use" or "open access".
- VII. Although mining can play a transformative role in Africa's economy, the industry continues to be devastating to local communities. There is growing acceptance by both the private sector and government, with pressure from local and international NGOs that mining needs to acquire its license from the community. This means that the concept of "infrastructure for community development" needs to be added to "infrastructure for industrialisation" in order for the industry to play a developmental role.
- VIII. South African industrial firms have growing presence in Africa in general and within the countries surveyed in this research. Both the private sector and South African and African governments have welcomed deeper trade and investment relations. The latter is particularly the case in infrastructural development, with African countries calling on South Africa to participate in filling the infrastructure gap.

- IX. South African industrial firms are optimistic about the business operations on the continent, but complain about a lack of South African government support.
- X. South African mining and related firms are in principle committed to localisation, procurement and community development.

5.2. Recommendations

- I. Develop a comprehensive picture of Africa's infrastructural challenges from perspective of business, local governments and communities.
- II. Embrace the minerals based industrialisation agenda and consider funding mining related infrastructure projects. These projects may facilitate much-needed economic diversification and the structural transformation of Africa's economy necessary for inclusive and sustainable growth.
- III. Developmental mining related infrastructure development will require a shift from the "enclave" approach to an "open access" agenda. The DBSA should assist in the conceptualization and development of "shared-use" financing models for mining related infrastructure.
- IV. Promote the acceptance of "shared-use" norms on the continent in relation to infrastructure spend in general, and mining related infrastructure in particular. This can be facilitated through public dialogues and research support. Development finance institutions have not been proactive in promoting shared-use norms in the region.
- V. Assist in capacity building at policy formulation at regional and national level in a manner that would allow governments to develop and enforce "shared-use" infrastructure plans. This would involve sponsoring research activity related to uncovering the regions and countries infrastructural landscape and development of models that would enhance developmental and not extractive infrastructure projects.
- VI. Seek to finance potential "shared-use" projects infrastructure in mining related activities. This will stimulate industrialisation and development.
- VII. Fund monitoring of mining corporate social responsibility initiatives.
- VIII. Target infrastructure building in relation to deepening developmental regional integration
- IX. Seek closer ties with South African industrial business so as to advance a South African Inc. approach to continent that would be mutually beneficial for African counterparts and fall in line with the broader continental industrialisation agenda. This requires having an understanding of

commercial strategy of South African industrial firms in Africa and their experiences and challenges.

- X. However, any support given to South African firm should consider developmental implications. Contribute to the monitoring of South African business in relation to localisation, procurement and community development. Encourage South African mining business to embrace “shared-use” norm in relation to infrastructure.
- XI. In general terms, South African companies should be encouraged to make linkage development part of their normal business procedure

At a broader level, the developmental capable state in Africa needs to be supported by the DBSA. If this does not emerge than Africa’s industrialisation plans will not. The DBSA must assist in developmental norm diffusion through sponsoring research and capacity building projects in African countries, including South Africa.

REFERENCES

African Union. 2009. "African mining vision". Addis Ababa: African Union.

African Union. 2015. "Agenda 2063." African Union Commission: Addis Ababa

African Union (AU), African Development Bank (AfDB), United Nations Economic Commission for Africa (UNECA), 2011. *Draft action plan for implementing the AMV: Building a sustainable future for Africa's extractive industry; from vision to action*. Paper presented at the AU Conference of Ministers Responsible for Mineral Resources Development, Second Ordinary Session, Addis Ababa, 12-16 December 2011.

All Africa. 2016. *Tanzania: Second Five Year Development Plan Unveiled*. Available at: <http://allafrica.com/stories/201604210396.html> [Accessed 21 Sep. 2017].

All Africa. 2017. *South Africa: Trade and Industry on South African Companies Participation in Mozambican International Trade Fair*. Available at: <http://allafrica.com/stories/201708170685.html> [Accessed 21 Sep. 2017].

Besharati, N. and Rawhani, C. 2017. *South Africa and the DRC: Evaluating a South-South Partnership for Peace, Governance and Development*. South African Institute for International Affairs.

Besharati and Mthembu-Salter, 2016. *Eyes on the Prize: South African Business in the DRC*. South African Institute for International Affairs Policy Insights 38. Available: <https://www.saiia.org.za/policy-insights/1135-eyes-on-the-prize-south-african-business-in-the-drc/file>

Breytenbach, M. 2017. *South32 sees upswing in South African, Mozambique aluminium production*. Mining Weekly. Available at: http://www.miningweekly.com/article/south32-sees-upswing-in-south-african-mozambique-aluminium-production-2017-08-24/rep_id:3650 [Accessed 21 Sep. 2017].

Building Quality Infrastructure for Africa's Development. 2016. In: *The 12th Annual Meeting of the Infrastructure Consortium of Africa*. Abidjan: Infrastructure Consortium of Africa.

Columbia Centre on Sustainable Economic Development. 2016. *Linkages to the Resource Sector: The Role of Companies, Government and International Development Cooperation*. Deutsche Gesellschaft für Internationale Zusammenarbeit

Cremer Media. 2017. Right conditions will unlock shared value for all South Africans – South32. *Mining Weekly*. Available at: <http://www.miningweekly.com/article/right-conditions-will-unlock-shared-value-for-all-south-africans-south32-2017-02-06> [Accessed 21 Sep. 2017].

Dabire, J., Bamou, E. and MUTUMBI KALONGANIA, J. 2017. Democratic Republic of Congo. African Economic Outlook.

Deloitte. 2016. *Mozambique's Economic Outlook Governance challenges holding back economic potential*. Deloitte Touche Tohmatsu Limited.

Deloitte Touche Tohmatsu Limited. 2017. *Tanzania Economic Outlook 2017*. Deloitte Touche Tohmatsu Limited.

Dludla, S. 2015. *Tanzania open for business*. SME South Africa. Available at: <http://www.smesouthafrica.co.za/Tanzania-open-for-business/> [Accessed 21 Sep. 2017].

Fessahie, J. 2015. The Regional Value Chain for Mining Capital Equipment: Linkages and Firm Upgrading in South Africa and Zambia. TIPS ANNUAL FORUM 2015 Regional Industrialisation and Regional Integration, Johannesburg, South Africa 14-15 July 2015.

Fessahie, J., Kaziboni, L. and Rustomjee, Z. 2016. Can mining promote industrialization? A comparative analysis of policy frameworks in three Southern African countries. *Wider Working Paper 2016/83*.

Frey, A. 2017. Mozambique seeks \$4 billion for infrastructure development. Club of Mozambique. Available at: <http://clubofmozambique.com/news/mozambique-seeks-4-billion-for-infrastructure-development/> [Accessed 21 Sep. 2017]

Frey, A. 2017. *South African firm to invest \$780m for road construction in Mozambique*. Club of Mozambique. Available at: <http://clubofmozambique.com/news/south-african-firm-to-invest-780m-for-road-construction-in-mozambique/> [Accessed 21 Sep. 2017].

Frey, A. 2017. *South African private sector eyes investments in Mozambique*. Club of Mozambique. Available at: <http://clubofmozambique.com/news/south-african-private-sector-eyes-investments-mozambique/> [Accessed 21 Sep. 2017].

Games, D. 2017. Engagement with Sub-Saharan Africa critical to growth. *Business Day*. 3 March 2017.

Hanlin, C. 2011. *The drive to increase local procurement in the Mining Sector in Africa: Myth or reality*. MMCP Discussion Paper No. 4. Milton Keynes and Cape Town: The Open University and University of Cape Town.

Independent Online. 2017. *Transnet to recapitalise Zimbabwe rail firm with R400 million*. Available at: <https://www.iol.co.za/business-report/companies/transnet-to-recapitalise-zimbabwe-rail-firm-with-R400-million-10719850> [Accessed 21 Sep. 2017].

International Council on Mining and Minerals. 2015. *Mining in Ghana – What future can we expect?*. London: International Council on Mining and Minerals.

Ireland, G. 2013. "Mining Infra-Case for a New Approach." *Project Finance International Middle East and Africa Special Report September 2013*. Available: <https://www.lw.com/thoughtLeadership/new-approach-african-mining-infrastructure> [Accessed 1 August 2017].

Kibuuka, P. 2017. *Deepening Tanzania-South Africa economic, trade relations*. Available at: <http://www.isidorolaw.co.tz/read/deepening-tanzania-south-africa-economic-trade-relations> [Accessed 21 Sep. 2017].

KPMG, 2016. "Sub-Saharan Africa Power Outlook." KPMG Africa. Available: <https://assets.kpmg.com/content/dam/kpmg/pdf/2016/05/kpmg-sub-saharan-africa-power-outlook.pdf> [Accessed 1 September 2017]

KPMG Zambia Limited. 2017. *2017 Budget Highlights*. KPMG Zambia Limited.

Lusaka Times. 2017. *President Lungu Launches the K 342.3 billion 7th National Development Plan*. Available at: <https://www.lusakatimes.com/2017/06/21/president-lungu-launches-k-342-3-billion-7th-national-development-plan/> [Accessed 21 Sep. 2017].

Macauhub. 2017. *Companies from Mozambique, China and South Africa build pipeline in Mozambique*. Available at: <https://macauhub.com.mo/2016/03/02/companies-from-mozambique-china-and-south-africa-build-pipeline-in-mozambique/> [Accessed 21 Sep. 2017].

Maennling, N., Toledano, P. and Thomashausen, S. 2016. *Mine Power: Partnering to Upgrade Energy Infrastructure in the DRC*. National Resource Governance Institute.

McKinsey and Company. 2016. *Lions on the move II: Realizing the Potential of Africa's Economies*. Available: <http://www.mckinsey.com/global-themes/middle-east-and-africa/lions-on-the-move-realizing-the-potential-of-africas-economies> [Accessed 21 September 2017].

Mhlanga, P. 2016. *Poor infrastructure impediment to development*. Financial Gazette. Available: <http://www.financialgazette.co.zw/poor-infrastructure-impediment-to-development/> [Accessed 21 Sep. 2017].

Mlilo, N. 2016. *More Opportunism in Zimbabwe: SA Zim Trade Attaché*. News of the South. Available: <http://newsofthesouth.com/more-opportunities-in-zimbabwe-sa-zim-trade-attache/> [Accessed 21 Sep. 2017].

Morris, M., Kaplinsky, R., Kaplan, D. 2011. *Commodities and Linkages: Industrialisation in Sub-Saharan Africa*. MMCP Discussion Paper No 13, University of Cape Town and Open University, March 2011.

Morris, M., Fessahie, J. 2014. "The industrialization challenge for Africa: Towards a commodities based industrialization path." *Science Direct, Journal of African Trade* 1 (2014): 25-36.

Morris, M., Kaplinsky, R., and David, K. 2012. "One thing leads to another" – *Commodities, linkages and industrial development: A conceptual overview*. MMCP Discussion Paper No. 12. Milton Keynes and Cape Town: The Open University and University of Cape Town

Norton Rose Fulbright. 2014. *Sharing Mining Infrastructure*. Available: <http://www.nortonrosefulbright.com/files/sharing-mining-infrastructure-121562.PDF> [Accessed 18 Sept. 2017]

NRGI. 2015. *Country Strategy Note: Democratic Republic of Congo*. National Resource Governance Institute.

NRGI. 2015. *Extractives-Linked Infrastructure Exploring Options for Shared Use of Infrastructure Projects*. National Resource Governance Institute

Oxford Policy Management. 2013. *The impact of mining in the Democratic Republic of Congo: Performance to date and future challenges*. Oxford Policy Management.

PwC, 2013. "Africa Gearing Up: Future prospects in Africa for transport and logistics industry." PwC. Available: <https://www.pwc.co.za/en/assets/pdf/africa-gearing-up.pdf> [Accessed 1 September 2017]

PwC. 2014. *Capital projects and Infrastructure in East Africa, Southern Africa and West Africa*. PwC Capital Projects and Infrastructure.

Republic of Zambia. 2017. *Vision 2030*. Republic of Zambia. Available: <http://unpan1.un.org/intradoc/groups/public/documents/cpsi/unpan040333.pdf> [Accessed 21 Sep. 2017].

Scott, D., Lindfield, C., Martin, A. and Pitso, P. 2016. *Sub-Saharan Africa Power Outlook*. KPMG.

South African Government News Agency. 2016. *SA companies must explore port opportunities in Tanzania*. Available: <http://www.sanews.gov.za/south-africa/sa-companies-must-explore-port-opportunities-tanzania> [Accessed 21 Sep. 2017].

South32. 2017. *Mozal Aluminium*. Available: <https://www.south32.net/what-we-do/places-we-work/mozal-aluminium> [Accessed 21 Sep. 2017].

Southern African Development Community. 2017. *Action Plan for SADC Industrialisation Strategy and Roadmap*. Lozitha.

Tancott, G. 2014. South African companies to upgrade Zimbabwe infrastructure | Infrastructure news. Infrastructurenews.ws. Available: <http://www.infrastructurenews.ws/2014/03/11/sa-companies-to-upgrade-zimbabwe-infrastructure/> [Accessed 21 Sep. 2017].

The Department of Trade and Industry. 2017. *Outward Selling Mission in the Republic of Ghana*. Available: <https://www.thedti.gov.za/delegationspeechdetail.jsp?id=3457> [Accessed 21 Sep. 2017].

The Economist. 2015. *Spanning Africa's Infrastructure Gap*. The Economist Corporate Network.

Thomashausen, S. and Ireland, G. 2015. *Shared-use mining infrastructure in sub-Saharan Africa: challenges and opportunities*. New York: Vale Columbia Center on Sustainable International Investment.

Thomashausen, S., Toledano, P., Maennling, N. and Shah, A. 2014. *A framework to approach shared use of mining-related infrastructure*. New York: Vale Columbia Center on Sustainable International Investment.

Tsiko, S. and Zinyuke, R. 2017. *Beitbridge-Chirundu highway project delays could cost Zim millions of dollars*. The Chronicle. Available: <http://www.chronicle.co.zw/beitbridge-chirundu-highway-project-delays-could-cost-zim-millions-of-dollars/> [Accessed 21 Sep. 2017].

Turok, B and Smith, MN. 2017. *South Africa's Industrial Outreach in Africa: Mining and related industries*. Report submitted to Trade and Industrial Policy Strategies (TIPS) by the Institute for African Alternatives

Turok, B., Black, A., Khan, M., Levine, R., Callaghan, C., and Pillay, P. 2016. *Minerals are not Forever*. Report submitted to United Nations Commission for Africa by the Institute for African Alternatives.

UNECA. 2013. *Making the Most of Africa's Commodities: Industrializing for Growth, Jobs and Economic Transformation*. Addis Ababa: UNECA. Available:

https://www.uneca.org/sites/default/files/PublicationFiles/unera_report_eng_final_web.pdf [Accessed 12 March 2017]

Woodroffe, N., Genasci, M. and Scurfield, T. 2017. *Tanzania's New Natural Resources Legislation: What Will Change?*. National Resource Governance Institute.

World Bank. 2017. *Democratic Republic of Congo Overview*. World Bank. Available: <http://www.worldbank.org/en/country/drc/overview#1> [Accessed 21 Sep. 2017].

World Bank. 2017. *Zambia Economic Brief: Reaping Richer Returns from Public Expenditures*. The Zambia Economic Brief. World Bank Group

World Bank. 2017. *Zimbabwe Economic Update 2017: The State in the Economy*. The Zimbabwe Economic Update. The World Bank.

World Bank. 2017. *Ghana Overview*. Available:

<http://www.worldbank.org/en/country/ghana/overview#1> [Accessed 1 September 2017]

Appendix 1: Interview Schedule

1. Describe your business operations in other countries in Africa. Where on the continent do you engage
2. How long have you been working in Africa?
3. How profitable are your Africa operations?
4. How important are your African operations to your firm?
5. Do you have a corporate vision for your Africa operations?
6. Do you intend to expand operations in Africa? Do you expect your African operations to continue in the long term?
7. Are your operations significantly impaired by infrastructural constraints?
8. What are the major infrastructural constraints your firm encounters in its operations in Africa?
9. How have you funded previous capital projects in Africa? Have you acquired external private-sector finance and/or government finance?
10. Do you intend to embark on major capital projects in Africa in the next five years? If not, why not?
11. If you do intend to embark on capital projects how will these be funded?
12. What are the major constraints to infrastructure investment in Africa? Corruption? Lack of skills and capacity? Policy uncertainty?
13. What is the potential for public-private partnerships for delivering infrastructure projects?
14. Have you gone over budget on capital projects? If so, why?
15. Have you experienced delays in the completion of capital projects? If so, why?
16. Has local government been supportive or obstructive in your capital projects?
17. How would you go about resolving infrastructural problems in your areas of operation?
18. What role do you think development financial institutions could play in infrastructural development for mining operations in Africa?
19. What can you say about the level of South African government support for your operations in the rest of Africa? How does this compare with your foreign competitors?