



Federal Ministry  
for Economic Cooperation  
and Development



# Linkages in the Southern African Mining Sector

Domestic Procurement Challenges and Context

Working Paper

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Image credit: Helmut Schgeiner, VDMA 2015

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## Abbreviations and Acronyms

BEE .....	Black Economic Empowerment	FTA .....	Free Trade Area
CEO .....	Chief Executive Officers	IFC .....	International Finance Corporation
DTI .....	Department of Trade and Industry	ISO .....	International Organisation for Standards
EIA .....	Environmental Impact Assessment	OEM .....	Original Equipment Manufacturers
EPCM .....	Engineering, Procurement and Construction Management	SASDC .....	South African Supplier Diversity Council
		SME .....	Small and Medium Enterprises

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# 1 Introduction

The Resource Curse literature of the 1980s outlined the detrimental impact of commodity dependency on the growth and development of resource intensive countries. The Dutch Disease and the resultant de-industrialization, the effect of volatile commodity prices on fiscal stability, the increased vulnerability to political conflict and violence, and the enclave nature of extractive projects were all drivers that linked commodity dependency to adverse growth and development environments.

Informed by the negative experiences of many resource dependent developing countries in the 1970s and 1980s, when the 2003 commodity price boom started to unfold, the emphasis was squarely on avoiding the resource curse. Improved regulations and legislation were introduced in many countries, transparency of resource rent flows increased, gaining a Social License to Operate for extractive companies became mainstream practice and macro stability measures were introduced by a number of governments.

To ensure the extractive sector did not continue to be an enclave within the larger economy, the development of linkages were encouraged. Forward linkages from the agricultural sector and backward linkages from the mining sector were seen to hold substantial potential for accelerating domestic manufacturing capacity. Fiscal linkages, i.e. resource taxation, could further provide funds for the government to facilitate the creation of an enabling business environment through increased spending on the social and infrastructure sectors.

The development of backward linkages from the mining sector, i.e. the provision of inputs to mine operations, has been explored by a number of companies and countries. These linkages have ranged from very local community focused procurement (such as food and simple clothing items) to more sophisticated high value added items (such as capital machinery and equipment). Case studies for Angola, Botswana, Ghana, South Africa and Zambia<sup>1</sup> have

documented the emergence of linkages from the mining sector and local economies; some actively led by mining companies, others by governments and still others evolving through market forces over a period of time.

To understand the processes through which such backward linkages develop, BGR commissioned a study to gain an understanding of the procurement practices of mining companies and the environment which informs these processes, in the southern African region. The study, conducted during the June to October 2015 period, focused on Madagascar, Mozambique, South Africa and Zambia.

This working paper draws on the findings from this research around the procurement practices of mining companies in the region. By identifying areas of problematic procurement as reported by these firms, the working paper illustrates the issues facing the establishment of meaningful linkages in the region.

## 1.1 Terminology and approach

Southern Africa, within this report refers to the four countries under evaluation. The term regional, refers to the larger geographical region and includes Botswana, Lesotho, Madagascar, Mozambique, Namibia, Swaziland, South Africa, Zambia, Zimbabwe.

The four countries, Madagascar, Mozambique, South Africa and Zambia, represent different levels of maturity within the mining industry; South Africa having a long established mining culture, Zambia has been growing into a mature mining sector, Mozambique has seen intensive investment in its mining sector over the past 15 years and Madagascar is comparatively new, with major mining operations coming on line in the last five years.

Given the size and number of operating mines in the region, the estimated size for annual operating procurement from mining operations is near US\$26 billion for South Africa, US\$3.2 billion for Zambia,

1 <http://www.prism.uct.ac.za/MMCP.aspx>

US\$540 million for Madagascar and US\$379 million for Mozambique<sup>2</sup>.

Mining inputs cover a large number of products, product groups and services<sup>3</sup>. The study primarily focused on those likely to be produced by SMEs in the formal sector, those that require medium to high technology capacity, and are more likely to be scalable to provide for different mines rather than specific to one particular mine site. In addition there are products/services that are likely to be regular purchases and those that are one-off or irregular purchases.

The research focused on mining companies as they represent the key consumers of mining inputs from domestic suppliers. Original Equipment Manufacturers (OEMs) represent a second group of key consumers as mining companies increasingly look to outsource non-mining related activities, particularly in the fields of maintenance and warehousing. The two together constitute 'lead firms', that is, they determine the specifications, standards and volume of procurement of goods from SMEs in the region and internationally.

Overall, 11 mining companies were surveyed in South Africa accounting for 56% of the platinum operations, 22% of the coal, 67% of gold and 37% of the iron ore operations in the country. Two of the three active mining operations in Mozambique, the largest operating mine in Madagascar and five of the largest mining companies in Zambia were surveyed. The names of respondents and mining companies have been withheld in this report to ensure confidentiality. Where information of their activities has been available in the public domain, mining companies have been identified by name.

Further informal interviews and discussions with mining companies and suppliers were undertaken at two major conferences. The first was the Mining

on Top Africa Conference in London, held 24-26 June, 2015. The conference hosted just over a 100 delegates, including ministers from African mineral economies, CEOs of leading mining companies, and a limited number of construction and supplier firms. The second event was the BAUMA Africa conference held in Johannesburg 15-18 September, 2015. This international trade fair focuses on construction machinery, building material machines, mining machines and construction vehicles and had 616 exhibitors from 42 countries. This conference was used to focus on mining equipment and other input suppliers (from small to large scale firms) to gauge the reasons behind the high level of imports into the southern African region and the lack of development of local added value by these firms.

Additionally associations, such as the national Chamber of Mines, mining company supplier development programs and national development agencies were also surveyed to provide context for the development of linkages in the region<sup>4</sup>.

## 1.2 The mining procurement chain

The procurement chain for mining companies operating in southern Africa is shown in Figure 1. Starting with the mining company, procurement by mining companies has five main conduits; through SMEs, Original Equipment Manufacturers (OEMs), Engineering, Procurement and Construction Management firms (EPCMs), corporate buying at the head quarter level and in-house (usually mine specific) development of inputs.

Procurement from SMEs can be disaggregated between 'captive' and 'others'. Captive refers to SMEs that are part of the mining house's supplier development program. These firms have been identified by the procurer, will have received mentoring, training and often capital investment to support them. They are part of an organized supplier development system and are primarily trained to

<sup>2</sup> SNL Metals & Mining estimates (October, 2015)

<sup>3</sup> Annex 2 lists some of these products as defined by a study for the DTI South Africa

<sup>4</sup> A full list of respondents is available in Annex 1



cater to the standards and needs of the mining house they are reporting to. It is reported to be difficult to get into a supplier development program, but once included support is provided, which makes it easier to qualify for orders.

Firms within these supplier development programs can be further disaggregated; those that are still at the incubation stage and those that have matured to become largely independent. Research findings have indicated that the majority of firms tend to be in the first category rather than the second.

'Other' SMEs refer to businesses operating independently of supplier development programs. These can be disaggregated between regional (referring to those operation in the four countries under review) or international. Within regional firms, the firm can either be an importer/trader with no local manufacturing; an SME linked to a specific mine site; manufactures for a wider industrial segment.

A further category under 'Other' is international SMEs referring to those headquartered in Europe and rest of the world. These could be supplying to the regional market either through sales/franchises (imports), have rudimentary assembly in the region

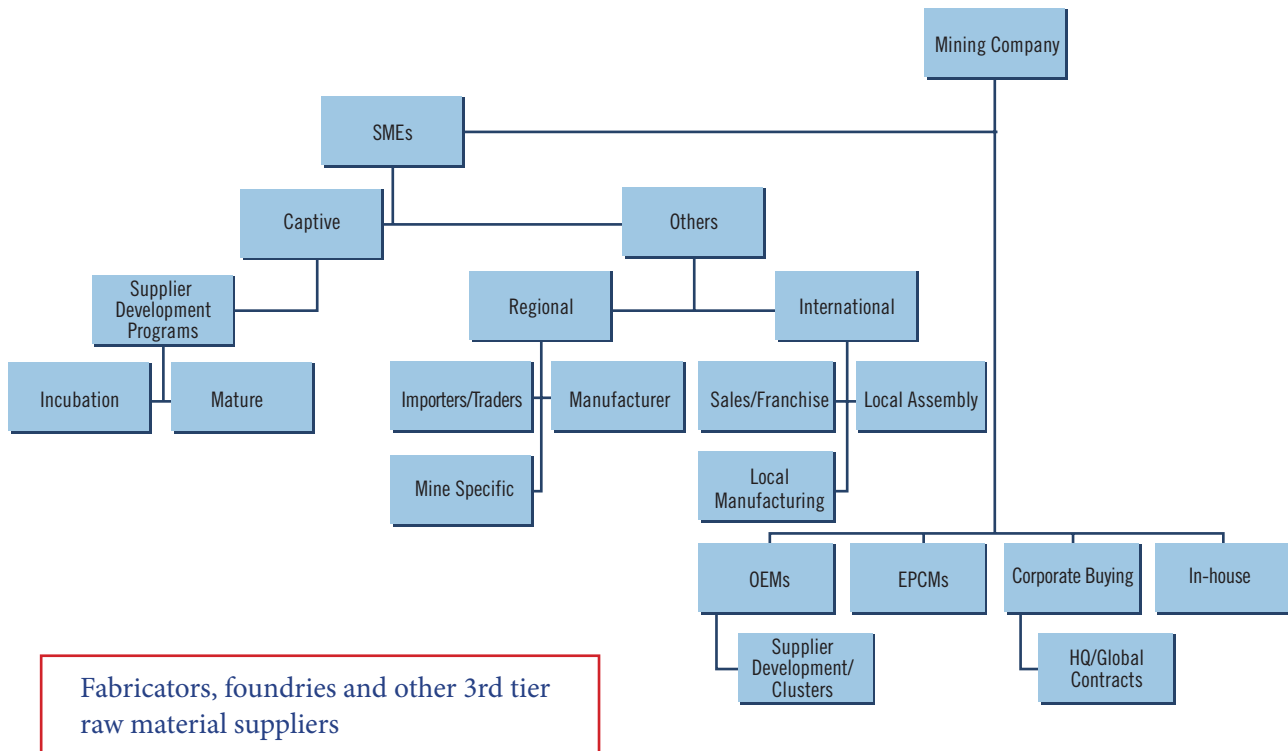
or have complete manufacturing units.

Within the OEMs, much like mining houses, there are indications of supplier development programs focused on SMEs, but not to the same scale as mining houses. OEMs tend to require specialised, high quality inputs for manufacturing their products. Due to the limitations of the local foundries and plastic industries to provide these inputs, these raw materials are being largely imported.

Finally, the larger mining companies that operate in multiple jurisdictions will have a centralized/regional procurement system that allows them to negotiate internationally for companywide purchases. In addition, these companies have internal units (in-house) that provide basic engineering products, repairs and services. These are included within the procurement chain, as they involve services that can be potentially outsourced to SMEs.

The entire mining procurement chain is affected by fabricators, foundries and other third tier suppliers, providing the inputs that the other suppliers use to manufacture procurement that feed into the mining procurement chain.

Figure 1 Mining Procurement Chain - Southern Africa



Source: SNL Metals & Mining



## 2 Contextual Issues

## 2.1 The global mining environment

The international mining sector has suffered a fall in mineral and metals prices, and investments in exploration started to slow down from 2012 onwards.

Southern Africa has also witnessed a decline in production volumes and lower investments in greenfield projects, with mining companies focusing on controlling their operating costs. After the commodity price boom during the first seven years of the millenium, investment tended to plateau. Expansion plans have been put on hold, and exploration budgets slumped. Therefore potential business opportunities within the early stages of the mining cycle, particularly exploration, are limited. The global outlook for the mining sector is expected to pick up in 2017, but this is not guaranteed.

As investors and mining companies move towards capital conservation, there has been a shift away from constructing 'mega' projects or 'world-class' assets and newer mines tend to be mid-sized projects. Mid-sized mines (based on ore production) have different operating requirements to small and large scale mines. This impacts the procurement considerations and requirements for these mines.

## 2.2 Political and regulatory pressures

In the southern African mining sector, as with other extractive dependent countries, the pressure for local content is increasing. It has been observed that the meaning and use of the term 'local' differs amongst countries as well as its usage by mining houses, OEMs and other development partners.

Local content policies, often not clearly defined and drafted in isolation from other national policies, are being introduced in regulations and mining contracts. The larger mining companies, for both economic and political reasons, are also looking to increase local content in their procurement.

The implementation and monitoring of such policies tends to differ across countries. In Madagascar and

Mozambique local content regulations are being prepared or have been recently drafted. While this paper has not attempted an evaluation of these regulations, reporting by mining companies and suppliers indicate these are weakly enforced at best. The distinction between local procurement, local value added and local ownership is not always clearly outlined.

### Madagascar

Madagascar encourages the use of local content where possible and is considering drafting set requirements into its regulations. However, given the lack of potential local suppliers in the country, the extractive companies largely rely on imports (either directly or through traders). Genuine local value added appears to be limited. International mining companies are allowed duty exemptions on their imports of inputs and equipment and thus put local firms at a price disadvantage to imports.

### Mozambique

Mozambique, in order to encourage investment in the mining sector, has granted tax/import duty exemptions to international mining companies. The companies are exempt from payment of customs duties on the importation of construction materials, machinery, equipment, accompanying spare and accessory parts and other goods used in the carrying out of the licensed Industrial Free Zones activity.

This offers mining companies a cost advantage in procuring from South Africa, rather than from local producers. National mining input manufacturers suffer from a price disadvantage vis a vis imported goods, unless they are also located in the Industrial Free Zone.

A general regulatory trend is emerging towards increasing the contribution of local companies through reduced taxation of locally domiciled companies and increasing levels of employment of Mozambican nationals by foreign owned or managed companies. It is expected, that legislation will move to compel Mozambican ownership of local companies.

To be regarded as Mozambican company, a firm simply needs to be registered in Mozambique; there are no requirements of Mozambican ownership (in equity terms). Foreign investors establishing companies are required to employ Mozambican labour up to semi-skilled levels and transfer of knowledge and skills to Mozambicans from foreign management. How effectively this regulation is applied is unclear.

### South Africa

South Africa is, relative to the other three countries, facing much higher regulatory pressures on procurement procedures of mining companies and other first tier suppliers. The Mining Charter (2010-2014)<sup>5</sup> was under renegotiation in the latter half of 2015, and there are pressures to push further for procurement from Black Economic Empowerment (BEE) firms. In the first charter, mining companies were required to procure a minimum of 40% of capital goods, 70% of services and 50% of consumer goods from BEE companies by 2014. In addition, multinational suppliers of capital goods annually contribute a minimum of 0.5% of annual income generated from local mining companies towards socio-economic development of local communities into a social development fund from 2010.

The regulations for BEE procurement for first and second tier supplier firms to the mining companies tend to be more stringent, as they fall under the Department of Trade and Industry, and have further requirements for their sourcing and supplier development strategies.

### Zambia

In Zambia, until 2008, the mining sector was regulated by the 1995 Mines and Minerals Act, the legislation which privatized the mining assets. In 2008, the Zambian government repealed the 1995 Act and replaced it with the 2008 Mines and Minerals Development Act. New provisions on local supply

procurement for mining companies were set; mining companies were to extend preferences to “materials and products made in Zambia” and to “service agencies located in Zambia and owned by Zambian citizens or citizens owned companies”.<sup>6</sup> The approach attempted to build mutual trust and collaboration between local suppliers and the mining industry rather than setting compulsory regulations on local sourcing. With regard to service providers, the Act focuses on firm ownership rather than value added content.

Zambia’s tariff structure discourages assembly operations (intermediate inputs attracted 5-15% duties) in favour of imports of final products. Non-SADC originating parts and components attract a duty, but capital equipment in final form can be imported duty free from South Africa under the SADC FTA, or directly by the mining company under a custom duty dispensation.

Unlike the Mining Charter in South Africa, mining companies in Zambia do not have to align their procurement strategies to increase local content. At the political level, they have been under pressure in the past to give market access opportunities to local suppliers.

## 2.3 Close geographical vicinity to mine site

There are pressures on mining companies to source from within a set geographical vicinity to the mine site, some of these are through government regulations while others are part of the mining company business models and Corporate Social Responsibility commitments.

Increasingly ‘giving back’ to the local communities (usually defined as within 30 to 70 km radius of mine site) has become a major operating strategy for mining companies. For example the E&Y

5 [http://www.sadpmr.co.za/upload/Mining\\_Charter.pdf](http://www.sadpmr.co.za/upload/Mining_Charter.pdf)

6 Section XIII of the Mines and Mineral Development Act (2008)

report<sup>7</sup> on risks facing the global mining sector, obtaining a Social License to Operate continues to be ranked in the top 10 risks facing the sector. These strategies therefore attempt to source material from local businesses, encouraging suppliers to set up manufacturing capacity near the mine site.

While some of the mine site procurement, such as food and catering service, are well suited to local enterprises, for other products there are issues of scalability, i.e., providing for more than a single mine. Where there are mining clusters, such as along the copper belt in Zambia, this is not a problem; operations based near one mine are in close proximity to other mine sites.

Mining clusters within the four countries are most easily found in South Africa. In Madagascar, the larger mining operations are spread near the south (Mandena – heavy mineral sands) and north east (Loharano – graphite, Ambatovy – nickel) and north (Andriamena – chromite). In Mozambique coal operations are located in the north-west (Tete province) and then near the eastern coast (Marropino – tantalum, Moma – heavy mineral sands). While Tete provides some clustering potential, the other developments are further out.

In Zambia, the existing cluster of suppliers to the Copperbelt mines is based in Kitwe. Others are based in Chingola, especially if their largest buyer is Konkola Copper Mines. Ndola was characterized by a broad manufacturing sector, which included supplier firms to the mining sector. However the town has seen an overall decline in productive capacity, and only a handful of suppliers remain there. Very few suppliers can be found in Mufulira. The new mining companies located in the North Western Province (Kansanshi and Lumwana) face a significant challenge as there is no input supplier cluster in Solwezi.

The discussion facing South Africa and Zambia, in terms of mining clusters is different from that facing the other two countries. With poor road and rail infrastructure in the latter, mining companies have a preference for having local suppliers close to hand. The company has the option of holding large inventories or forcing its supplier to hold stocks nearby; the option of local suppliers to be located away from the client is both a costly and time consuming proposition.

The issue of local vicinity demand from mining companies has an impact on the utilization of business opportunities for supplier firms. On the one hand, if the firm establishes a production unit that is located close to its main client, its ability to service its client increases. However, its ability to tap into new businesses that are not located in the cluster will diminish. On the other hand if the firm establishes its production unit in a more ‘central’ location it will have to create warehouse units near its clients to ensure that it can meet their demands quickly. In this case the additional warehouse, while conducive to client relations, will become an additional cost for the supplier firms.

## 2.4 Uncompetitive cost of production

In questioning manufacturers of equipment and international companies who do not currently manufacture in the region, the uncompetitive costs of production in both South Africa and Zambia were noted. In South Africa, the primary manufacturing country in the sample, energy costs were reported to be high, with intermittent and irregular electricity provision being cited as primary problems. As one firm noted, the ‘cost of quality’ i.e. the cost of production for producing high standard products has increased over the past decade.

<sup>7</sup> <http://www.ey.com/GL/en/Industries/Mining--Metals/Business-risks-in-mining-and-metals>

Skilled labour was another issue, which was either not available or expensive. Training of workers is being undertaken by some manufacturers; however the practice of other firms poaching employees, once trained, was considered a disincentive by firms. Other issues with labour, particular strikes, was also mentioned.

Manufacturers of inputs also showed an inclination towards imports for raw materials/parts rather than rely on South African providers. This was linked to the inability of local firms to deliver on time rather than an issue of quality. There is the appearance of heavy use of import parity pricing in the region and

therefore local products do not necessarily provide a cost advantage to the buyers.

Another issue raised was the inability for SMEs to benefit from economies of scale. Large firms tend to dominate the southern African supplier markets. Medium sized firms are unable to find enough business orders to justify investment in expanding capacity and therefore remain providers of low to medium calibre items. These companies also tend to be focused on national markets and could benefit from expanding into neighbouring regions; however they lack the required resources.



# 3 Southern African Mining Procurement Profile



Mining companies are not a homogenous group and procurement practices differ depending upon the size of the company. Two tiers of mining companies were reviewed for this study; the Large/Majors and the Medium/Mid tiers. Majors are defined as those with sales revenues above US\$500 million in the previous year. Majors tend to have multiple mine sites, and multiple minerals, located in more than one country/continent. Majors will have country offices, regional hubs and company headquarters (usually located outside of southern Africa).

Majors, such as Anglo American and South32 (spin off of BHP Billiton), are large organizations, with highly developed in-house systems supplier development and procurement units. The large size of these companies allows for them to be 'the market' for the suppliers they develop and hence shape supplier development to meet their own needs and standards. Firms that grow within such captive supply chains can find it difficult to seek new businesses outside of their main client.

These supplier development programs also tend to behave as incubators for selected firms. In addition, there is 'compartmentalization' between capable and incubator status SMEs, where certain product categories are assigned to the former and others to the latter.

For the large and mature mining companies, particularly with international operations, procurement for medium to high technology products is governed by international contracts with global equipment manufacturers. The relationship between these equipment manufacturers and the mining houses is more than supplier-procurer, as they will invest in R&D activities together and provide for contracts that include parts and maintenance. While there are recent reports of mining houses un-bundling such contracts to reduce costs, the main value added component of these contracts tend to remain with the global equipment manufacturers.

Mid-tiers have sales revenues between US\$50-500 million in the previous year. They will operate one to two mines, usually located in one country. The country office will be the major decision making

authority and authorization divisions between mine managers and country officers will not be clearly delineated. These mid-sized firms have lower cash holdings and will often not have the resources to invest in full term supplier development programs. While they will usually have company employees willing to mentor and develop their supplier firms, a systematic way of doing this is unlikely to be undertaken. These firms are also more interested in procuring locally, as this can cut down on their input costs. The drawback being that these firms have limited procurement demand and while likely to be more open to trying out new suppliers, they are limited in generating enough volume to allow for scalability of SME products.

### 3.1 Procurement authorization

Pressures to cut costs have increased on all mining companies, regardless of size, as mining price and investment cycles have turned downwards over the past five years. Efforts to reduce expenditure have been met with different strategies; from increasing bargaining power with suppliers, out sourcing non-core functions, and developing local suppliers. The overall strategy allows the firm to capitalize on economies of scale that result from having a number of operations.

The Majors have enhanced company procurement processes by applying a tiered approach to procurement decisions and authorizations. The spend value authorizations, similarly, follow a tiered structure with mine managers allowed to make low value, non-contractual decisions<sup>8</sup>, with successively higher value decisions linked to senior management levels. For example, the mine site manager for one mining company is able to authorize any purchase below US\$0.5 million, above which a tender committee in the regional hub authorizes procurements up to a US\$1.5 million spend level. Any procurement above that value is referred to the central headquarters.

<sup>8</sup> Contracts (short to medium term) in contrast to one-off purchase orders.

Mid-tiers operate more decentralized procurement authorization structures. The level of decentralization varies; one company indicated 95% of their procurement purchased occurred at the mine site level, while other respondents operate a tiered system that centralizes procurement of the most high value and complex good and services while keeping procurement of the more regular items at the mine site level. Given such firms will have one or two mine operations; greater decentralization allows more opportunities for cost efficiency.

#### Tiered Procurement Process

**Categories managed at central level** – these are related to strategic sourcing. It's limited to few specialized goods which are universally used across multiple mine operations: explosives, tires, heavy mining equipment, trackless mining equipment, crushers, and so forth. Decisions are made by procurement departments, but businesses have power to influence procurement because they are end users.

**Categories managed at business level (by specific minerals)** – most goods and services fall into this level and relate to input needs that are specific to minerals; all gold businesses have a shared need for cyanide, all coal businesses require heavy trucks.

**Categories managed onsite** – these relate to repetitive buying for ad hoc buyers (not across mines or businesses). Procurement is still ratified by a manager.

### 3.2 SME engagement process

As a result of cost management pressures, as well as ensuring financial reporting compliance, the Majors have developed standardized and often rigid systems for engaging with suppliers, including SMEs. Each company reviewed has a supplier registration portal on its webpage. All suppliers must be registered through the portal to be included in the company's supplier database. Business cannot be granted to firms not registered in the company's database.

The registration process allows for mining companies to score current and potential suppliers, identify those

that need to be enrolled in the company's supplier development programs and those more likely to be able to compete with less assistance. Regardless of how much or little assistance an SME receives from the mining company, they are required to meet the same standards to be considered as order-qualifying or order-winning. It is easier for a local supplier to access the supplier portal, but to qualify for the company's supplier database can prove more challenging.

Mid-tiers report limited use of in-company databases or portals (as these can be costly to manage and maintain where there is an external user interface). Instead, these companies report working with regular SME partners, where relationships have been developed over time. Given cost pressures, mid-tiers are also exploring new suppliers that can offer lower prices. The ability to access Mid-tiers for SMEs may be more challenging than accessing Majors, as they rely on personal networks. However, once a relationship is established, the ability to access business opportunities appears to be easier.

In the case of OEMs, where SMEs attempt to qualify as service providers for particular OEM clients, registration is again undertaken through a web portal. In addition to the provision of firm details, the potential end-user department at the mining site has to attest to the supplier's technical competence. This is intended to prevent problems with quality of the goods or services provided should the new supplier win a contract/tender.

### 3.3 The role of local SMEs in the procurement process

Procurement protocol refers to the use of tenders, quotation requests etc. and preferences for awarding contracts to SMEs based in local communities.

There is some similarity between Majors and Mid-tier companies in this category; very little use of open tenders is reported as these are said to be a costly exercise. More common use of closed tenders is indicated, where three selected suppliers (whether from the in-house database or through personal

networks) are invited to submit quotations. In some cases, where technical partnerships are required or there are very limited suppliers, single quotations will be asked for with no tenders issued.

All mining companies, regardless of size, report the need to increase local sourcing, although the definition of local changes from country to country. In the case of South Africa, local refers to mine site vicinity (within 30 to 70 km) and companies are focusing on developing SMEs in close vicinity. This is motivated by national regulations as well as the need to contribute to the communities they operate in.

In the case of Mozambique, local refers to SME operations owned by citizens. Mining companies are either importing inputs from South Africa, or using local franchise/sales agents, who are again importing the goods from either South Africa or elsewhere. The limited local manufactured items that are available are either not price competitive and/or unable to meet the standards for the company. One large smelter operating in the country indicated that since all procurement decisions are made in the regional hub in Johannesburg, the local office can only recommend local suppliers but is unable to secure contracts for them.

In the case of Madagascar, the largest mining operation surveyed reports it spent 54% of its total spend on local firms, for the first half of 2014. However this value only indicates spend on local firms and does not represent local value added and instead largely reflects purchases from local trading firms and franchises. As in the case of Mozambique, while there is a preference for local value added procurement, the SME capacity to provide for the mining sector does not appear to be competent at this time.

In Zambia, procurement protocols largely rely on selective tenders, with companies preferring to work with suppliers they are already familiar with. Supplier auditing is being increasingly undertaken by mining companies, which can be seen as instrumental in identifying upgrading opportunities in local firms.

The emergence of BEE compliance regulations in South Africa, have seen a large number of new SMEs offering their services to the mining sector, although they are more often than not, reported to be either lacking technical and/or financial capacity to qualify as potential suppliers. This has led to a continuing problem of sorting the 'wheat from the chaff', which is a costly (both in terms of time and resources) exercise for the mining house.

All mining companies surveyed reported to be open to the idea of new suppliers, with some companies actively creating opportunities to engage with potential SMEs. For example, one gold mining company's strategy is to assess new entrants by requiring a presentation of their goods to the company and to be then selected for a monthly procurement supplier list. When buyers prepare requests for quotations, they send it to 'known' suppliers and three new ones, from the monthly supplier list.

### 3.4 Supplier development programs

With the regulatory and internal pressures to increase local content, the large mining companies have developed extensive supplier development programs, focusing on local SMEs. Others have outsourced supplier development and supply chain management to third parties (private), and still others have partnered with international development partners (such as the IFC) to develop local capacity. A detailed analysis of the supplier development programs is not presented here, instead the paper summarises the six main experiences of local capacity development.

First, the focus of supplier development tends to be on three levels; SMEs that are suitable for incubation programmes, those that have some capacity but need support, and finally in partnership with local communities. In the top tier there are very few, very capable suppliers, they tend to be good entrepreneurs and very important for job creation (employing 10 to 250 workers). The mining company expends resources to develop them through monthly meetings and

report good results. In the second tier, there are more supplier firms but less experienced and with lower capabilities than those in tier one. The company will assist these firms with their development, but not as intensive as for top tier. Finally in the third tier the mining company canvases the ability of the local communities to supply materials and offers tutoring in safety, quality and bidding procedures. Experience indicates that most suppliers in this category are job seekers and not entrepreneurs.

Second, supplier development programs have tended to produce 'captive' SMEs with little capacity to increase scalability or diversify clients. An SME that develops through the regime of a particular mining company is trained in meeting the standards and requirements of that particular company. While some specifications (such as health and safety standards) may be applicable to a number of different mining companies, the certification requirements will differ across companies. Apart from one or two examples of SME suppliers who have diversified, there were few cases cited of SMEs that have demonstrated increased scalability.

Third, related to captivity, the success rate for SMEs graduating these programs is reported to be dismal while the rate of attrition is also high. The costs of supplier development (and failure) have been indicated as a source of concern by mining companies, particularly in the current period of cost cutting and expense management. The upgrading of local SMEs is considered critical; however mining companies are finding it difficult to achieve this.

Fourth, supplier development programs, run in conjunction with international development partners (IFC and Mozlink in Mozambique, IFC Copperbelt SME Supplier Development Programme Zambia, USAID and SASDC in South Africa) have shown successful results – while the development partners participated. Reported experiences in Mozambique and Zambia narrate a fall in performance levels of SMEs once support was withdrawn.

Fifth, mining companies have increased pressure on their first tier suppliers (such as OEMs) to develop their own local supplier development programs and increase local content in their processes. Limited interviews with OEMs indicate that while the potential for local SME engagement exists, supplier development has remained limited at this time. The role of OEMs in increasing local content is emerging.

Sixth, a distinction is appearing between supplier management and enterprise development. Supplier development is limited to providing training and developing capacity to deliver to the lead firm's standards. Additional requirements fall under the enterprise development category, relating to developing managerial and marketing capacities, managing cash flows, process developments, certifications etc. The latter fall into a larger category for developing manufacturing capacity, with the mining sector acting as a catalyst in enterprise development.

### 3.5 The role of Original Equipment Manufacturers

Original Equipment Manufacturers (OEMs) is a broad term that commonly refers to the company that builds the original product, which may then be sold to other companies to re-brand or sell under their own name. For this report, OEM refers to companies that are responsible for overreaching design and manufacture of a product.

OEMs are increasingly being looked at as the source of innovation and provision of 'solutions' rather than selling products for mining houses. Therefore their R&D capabilities and adaptation to geographical requirements for the region are important.

OEM suppliers tend to be large international companies, with production/manufacturing units in particular geographic locations to supply a host of mining operations across the world. For example Bell Equipment has a manufacturing unit in Richard's Bay South Africa, a global logistics centre and regional hub in Johannesburg and an assembly plant in Kindel

(Germany). All major OEMs have large subsidiary offices in South Africa, with one or two also having an office in Zambia.

These offices, apart from sales, will also carry out spare part and maintenance services. The OEMs have smaller offices in Mozambique, and operate through franchise/agents in Madagascar. All major services (such as spare part and maintenance) are provided through the regional office in South Africa. For example Hitachi will ship trucks from Mozambique to its South African workshop, when major repairs are required.

The issue reported by OEMs in creating increased engagement with local firms stems from their clients requiring two ‘conflicting’ key performance indicators from the firms. On the one hand, procurement managers at mining companies are driven by cost considerations, passing on their own cost cutting pressures to their suppliers. On the other hand, end-users of their products (mining engineers) require high standard products as they focus on output considerations. Therefore OEMs are being required to provide lower priced higher grade products by their clients. To rely on SMEs to be a part of this delivery process can be seen as high risk, particularly as OEMs can be financially penalised by their clients for delivering products that are not up to specifications.

The relationship between OEMs and domestic suppliers can be classified into two categories; first as suppliers to the OEM themselves; second as ‘competition’ by replacing the OEMs as providers of spare parts and services.

The majority of OEMs report to have either no manufacturing capacity in South Africa or report these to be assembly units. In these cases, the larger value added items are imported from the ‘mother’ company and smaller parts are sourced from local suppliers.

One large OEM<sup>9</sup>, with manufacturing units in South Africa reported that 70% of goods and services for the company are procured locally, while the remaining 30% is imported. Bell Equipment reported its local content in the past was as high as 65-70%, and has declined recently to around 50%<sup>10</sup>.

Facing similar BEE regulations and compliance requirements as mining operators in South Africa, OEMs report issues with sourcing from these new suppliers. Issues include the inability of active suppliers to respond to an increase in scale of business and lack of technical expertise.

As a means of outsourcing its own non-core activities, OEMs have ‘spun-off’ their previously in-house capacities to form separate SMEs. Joy Global, for example, closed one of its machine shops in Steeldale and consolidated the surplus machinery, using it to part-capitalise a company formed by retrenched workers and their investor partners. The former provided a supply agreement allowing the company to establish its foothold. African Mining Crushers, another OEM reports a similar approach to developing SMEs.

As with some mining companies, some regional OEM suppliers have experimented with using SME suppliers, only to return to their original international supplier. Since the quality of most components is essential (related to health and safety standards) local products were simply considered unsuitable.

The market value of after sales services and sales of parts and consumables was estimated by one respondent to account for more than half of the business revenue for a large OEM operating in southern Africa. SMEs have attempted to capitalise on this market segment by offering OEM – specification products, but at lower prices. There appears to be a growing market for this, as mining companies look to scale back their expenditure. When OEM equipment/

.....  
9 Company name withheld on request

10 These numbers have not been independently verified.

parts are out of warranty, mining companies are willing to look at other suppliers to purchase spare parts.

Mining companies are increasingly looking to cut costs by un-bundling contracts with international OEMs and sourcing services and spare parts from local firms. While the spare parts are likely to be cheaper when sourced from the local SME, they must meet the original specifications of the OEM. One medium scaled manufacturer (DOSCO, South Africa) has capitalised on this opportunity by re-manufacturing hydraulic pumps and pump motors to OEM specification. It is assisted in this by sister companies in the United Kingdom and Australia. Hytec Group is following a similar strategy; although 70% of its sales are reported to be of imported hydraulic products, the company runs the only certified Bosch Rexroth service centre in Africa – at which it refurbishes hydraulic cylinders to OEM standards.

In Zambia however, mining companies have reported a higher level of brand loyalty towards OEM parts than in South Africa; in the latter the supply of locally manufactured or imported non-original parts is more competitive in terms of quality, performance and price.

As a response to both the increasing competition and to fulfil the requirements of the mining companies, there has been a tendency for OEMs to establish a direct presence in the Copperbelt, eliminating sole distributorship and agency agreements with local firms. The objective of investing directly in a subsidiary is two-fold: first, to tighten control over the quality of services provided to the mines and second, to increase revenue streams from highly profitable aftermarket services.



# 4 Domestic Procurement Issues

In general, the issue being reported for problematic procurement was one of standards, where local/national SMEs were unable to meet the requirements for the mining houses. The mining companies interviewed for this project tend to be international companies, listed at international stock exchanges and have investors who are signatory to the Equator Principles. Therefore the company standards tend to be much higher and stringent for suppliers, than for their other clients in national industries operating in the southern African region. The only exception to this would be in South Africa, which has a similarly demanding automobile sector and in Mozambique, which is developing its oil and gas sector.

Another issue to emerge was the quality of the inputs for suppliers to the OMEs and mining companies, i.e. third tier suppliers. The issue appears to be the quality of inputs required for manufacturing products, such as specialized steel and iron, high grade ceramics and vulcanized rubber etc. The research suggested that local/national manufacturing for medium to high technology products tends to be more in the area of assembly rather than manufacturing. These third tier suppliers were not included in the scope of this project, but it does have the wider implications for developing local value added.

A number of respondents in Zambia have reported on failed attempts to out-source non-core activities, such as engineering services and care and maintenance, to local SMEs. Disappointing results and the inability of these SMEs to provide the services required, related to either having too much work or low quality products, resulted in the mining company retrenching these opportunities back into the company. In Madagascar and Mozambique similar narratives have been reported, where firms were forced to revert to in-house activities they had wanted to outsource to local SMEs, due to the lack of reliability (and in some cases presence) of potential firms. In Zambia, the mining companies in the Copperbelt tend to outsource as much as possible any activity outside their core business. However, their outsourcing strategies have to be adapted to local supplier capabilities. For example, in 2008, Mopani outsourced the maintenance and operation

of loaders to local firms, but these firms proved unreliable, and the buyer had to re-integrate this function in-house.

Mining companies in the Copperbelt prefer, whenever possible, a localised supply chain. Dealing with foreign suppliers increases transaction costs, in particular with suppliers that find Africa risky and want upfront payments. In South Africa, non-core activities are more likely to be outsourced, but SMEs are provided support by the lead firm through supplier development programs.

The case studies presented below are based on the procurement requirements identified through the surveying of mining companies in southern Africa and illustrate some of the issues mining companies face in domestic procurement.

#### 4.1 Consumables

**Context:** Consumables refers to a collection of chemicals and small machined products that are required at regular intervals of the mining process and are considered as a critical mining input. The products normally have a short lead time; the time between when the procurement order is made and when delivery is due is considerably short. Process consumables, which include chemicals, reagents, grinding media, etc., constitute between 15 – 18% of the operating expenditure of mining operations in southern Africa.

Process consumables are used in the processing of extracted ore in order to isolate and separate the intended metal from its mineralogy. Process consumables are not subject to universal quality standards. De facto quality standards have emerged, developed by suppliers that compete with one another to deliver a product that can most efficiently extract and process the specific metals. This has also led process consumable companies to bundled services for mining companies. For example, companies that supply gold mining operations with cyanide pellets will offer equipment facilitating their conversion into a liquid, as best suited for the company's extraction method (i.e. heap leach or mill leach processes).



Most consumables procured in southern Africa are either produced by larger firms within South Africa or come from producers in Europe and Asia, particularly China, and are supplied, by distributors, agents and franchise operators. As these tend to be bulk purchases, very little of this procurement is reported from local SMEs. For example, cyanide was identified as a problematic area for mining companies in southern Africa as SASOL, the largest supplier for cyanide in the region, tends to dominate the market and maintain import parity pricing. Mining operations indicated that they would prefer having a number of suppliers to choose from, to gain price advantage that competition brings.

**Issues:** These products are often needed with a short lead time and in greater quantities than those held by domestic SMEs. Thus they are unable to compete with the larger suppliers as they are unwilling or unable to invest the capital needed to develop the size of stock holdings required by mining operations. Local SMEs are also unable to offer the product range that larger mining suppliers are able to offer, and thus run the risk of not stocking products that are required by mining operations specifications.

SMEs in southern Africa have been reluctant to stockpile a range of consumables, as without sufficient dialogue and understanding with mine managers, and a lack of technical knowledge about specific requirements of specific mining operations, they run the risk of stockpiling items not required. For example the amount of cyanide (used in gold processing) required is predominately dictated by the nature of the ore and therefore different mines will have different procurement demands.

The larger mining companies have centralized procurement processes at the head/regional offices to benefit from volume discounts for bulk purchases. Procurement centralization favours a larger supplier that is able to supply multiple operations simultaneously. Local SMEs are usually unable to meet the volume requirements demanded by the regional offices.

## 4.2 Engineering related services

**Context:** Engineering related services refers to medium and high technology capabilities to reverse engineer machinery and parts, i.e. based on a product already existent, devise a method to engineer that product from the beginning. While South African manufacturers have shown the capability to provide spare parts and small machinery, this category was raised as a separate problematic area in dealing with more medium to high technology products. Spare parts can be manufactured by either being machined and assembled, or through the use of moulds to cast products. Engineering services is a step beyond, requiring the understanding of how a product (and the system) it fits in will be manufactured.

**Issue:** The ability of national/regional SMEs to provide engineering services for medium to high technology products, particularly where flexibility and innovation are required to adapt products, was reported as being problematic.

For example, engineering related services were required for replacing current supply into the aluminium processing sector, where most of the technology and products are being imported from Italy. The mining company considers this an expensive proposition and is currently looking at reducing its costs by developing capacity within the country. Apart from finding the technical engineering services nationally, it is also concerned with issues of copy right infringement, as the current technology is patented by the Italian firm.

Apart from these specific reverse engineering services, in general suppliers to the mining sector have reported the engineering competency to fabricate material for specific on site usage was challenging. Mining companies were either using in-house resources for fabrication or asking their international large equipment suppliers for such services. Therefore the services of engineering firms, as long as they focus on creating domestic value added within the country, would be of interest to many firms.

### 4.3 Castings, forgings and housings

**Context:** Castings, forgings and housings refer to parts/machinery that are required as inputs into the construction of larger machinery, provided by equipment manufacturers to mining companies. Casting involves pouring of molten metal into casts and allowing it to solidify. Forging focuses on the use of hammers and presses to forge an ingot into the desired shape. For such processes to be successful, the quality of the metal and ingot used needs to be of high standard and the process of casting and forging should not result in defects in the final product produced. Large equipment manufacturers were identified as user of SMEs services in the region.

**Issue:** The quality of foundry products, available to large equipment manufactures for their products for mining companies, was regularly reported as a major issue. Castings, forgings and housing are often not made of good quality material. For example, cast cylinders used in the manufacture of drifters (a hydraulic or pneumatic powered rock drill attached to an engine, chassis and pump or compressor by a flexible boom) was quoted as a problem by one manufacturer. The company experienced scrap rates (rejected parts) and failures of as high as 40%. To overcome this they had to re-engineer the parts themselves and now machine them in-house instead of continuing to buy the castings from the foundries. Since moving to in-house machined cylinders they largely eliminated the incidence of scrapping a cylinder nor have they had in-field failure of these parts. Another respondent reported switching from local foundries to imports from the Czech Republic to combat the problem.

The larger equipment manufacturers tend to be based outside of Africa, and their manufacturing is done elsewhere as well. For the medium sized equipment manufacturers, these components are a critical part of their equipment and they suffer penalties from mining companies, if their products fail specifications during operations. Therefore these companies are highly risk averse and require assurances to procure from local SMEs.

### 4.4 Equipment

**Context:** In general, the larger equipment needs (also referred to as capital equipment) for mining companies in the region are being met through imports. These large value items, trucks and equipment, are sourced from major international suppliers of mining equipment based in Europe, North America and China. These products tend to be outside the domain/capacity of most SMEs.

The equipment that is more suited for procurement from domestic suppliers constitutes electronic equipment and supplies, spare parts for the larger equipment, non-mining equipment replacement parts and tools, wear parts and ground engagement tools that can constitute around 10% of the expenditure category of mining companies in the region. The equipment and spare parts categories vary and can range from low to high criticality for mining operations. They require high standards to be met, particularly equipment used in underground mines, where the risk of fire is severe.

There are three major issues within this sector.

- ▶ **Short delivery time:** Equipment, such as crushers, liners, refrigeration units etc. can break down at any time and needs to be quickly replaced to carry on mining operations. Therefore either the mining company needs to carry a large inventory or expects its suppliers to replace/service products on short notice.
- ▶ **Product standard:** Although these products may be considered a smaller share of procurement costs, they need to meet high performance standards. For example, simple electronic products when used in underground environments where there is water present need to be of high quality to ensure there is no risk of fire or sparks. Similarly, other equipment (pumps, ventilators) need to perform at peak efficiency to ensure the mining operations is not disrupted. Mining companies have indicated they are willing to pay a price premium for such products, particularly when there is brand recognition for quality. They are

willing to test local suppliers but are concerned with the standard of these products.

- ▶ **Cost pressures:** As mining companies globally struggle to control costs for their operations, one area they are looking at is the spare parts for their OEM machinery. Most OMEs will bundle their sale of equipment with after-sales service contracts and provision of spare parts. As these contracts begin to expire and machinery is no longer under warranty, mining companies are seeking to reduce costs by contracting such services from SMEs to gain price advantages. As with the previous point, the standard specifications for these products need to be met by SME suppliers.

**Issue:** Mining companies identified smaller equipment and spare parts as an area that could be the target for local domestic production<sup>11</sup>. Individually these products would be a small part of the overall capital expenditure on mining equipment for mining companies, but collectively can assist the company in meeting their local procurement obligations. However, procuring these products has not been without issue. In the case of Mozambique and Madagascar, they are largely imported from South Africa or other low cost suppliers such as China. Zambia tends to have more capacity but still relies heavily on imports.<sup>12</sup>

Some products specifically mentioned by mining companies that could be locally produced, include hoists, refrigeration units for underground mining, crushers, liners and conveyor belts. These products require basic engineering capabilities and provision of good quality raw material (including steel) and can range from medium technology to high technology products.

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11 The range for equipment and spare parts can cover a wide variety of products, all of which were not identified during this research. These products by each category need to be researched further. Some of the products mentioned included machinery for sorting, screening, separating, washing, crushing, grinding, mixing or kneading minerals, crushers, liners, conveyors and refrigeration units for underground mining.

12 Some mining companies report these products to be purchased through local firms, but these are largely trader/franchise firms and not manufacturing within these countries.

The production of hoists for mining appears to be dominated by larger companies, many of which are based in, or have headquarters in Australia or Canada, with a few large European companies. Many of the SME suppliers of mine cooling systems identified through desk based research are based in South Africa, suggesting the practice of mining companies in southern Africa to import mine cooling equipment is not based on a lack of local supply. This can be attributed to either procuring equipment of higher quality or preference for contracts with larger international suppliers.

The issue of manufacturing crushers and conveyor systems in the region is, in some part, linked to the availability of the raw material required to make such systems. One manufacturer reported long and unpredictable lead times in securing material, as well as of problematic pricing for such inputs, when sourcing from South Africa.

#### 4.5 Personal protective equipment

**Context:** Personal protective equipment refers to items of clothing and other equipment (such as breathing apparatus, hard hats) that staff require whilst operating on a site. This range can include low value added items (high visibility jackets) to medium technology products (fire resistant clothing) to more high technology products (independent breathing suit). These items tend to be a regular purchase by mine operations, and CSR programs generally focus on mine vicinity procurement for the low value added items. For example, local communities are provided with the fabric and sewing machines for making uniforms etc. for mine personnel.

For the other items, Zambia presents an interesting example where some success has been achieved by SMEs providing the more medium technology products. However, without an upgrading in their capability, they are unable to progress to more advanced products.

**Issue:** Protective equipment, particularly clothing, that requires simple assembly (such as stitching

together fabric provided or moulding hard hats) is already being undertaken in the region. However the capacity of these firms to move onto more sophisticated products appears to be lacking. Additionally, competition from cheaper products from China and South Africa can quickly erode the progress made by the Zambian firms.

Mining regulations on safety equipment and auditing of mine sites is reported to be on the increase in the region, therefore demand for personal protective equipment is going to increase as well. Collective information on what the level of demand, in terms of numbers, and the type of protective equipment required (number of fire resistant suits) appears to be lacking.

#### 4.6 Certification

**Context:** Given the international standards that mining companies need to maintain, certification of goods, services and personnel is essential. While capabilities exist within SME suppliers, these firms do not always have recognised certifications. The following were identified as major areas for certification:

- ▶ **Product accreditation:** The product produced meets set specifications and is accredited to either an international benchmark or a country standard.
- ▶ **Process accreditation (ISO):** Refers to accreditation showing that certain processes were followed within the firm, whether it is a manufacturer of products or is a service provider. ISO standards<sup>13</sup> are the most widely used certifications for process accreditation. Some commonly required standards are ISO 9001.2008, concerning quality management standards; ISO 14001.2004, concerning environmental management; OHSAS 18001 concerning occupational health and safety management.

- ▶ **Personnel accreditation:** For reporting related to assaying results, geological evaluations and environmental assessments, the personnel who conduct and present these results need to be certified. For example, for results of geological testing to establish resource/reserve estimates, a 'qualified person' is required to produce the report.

The mining companies' requirements in terms of certification processes vary. In terms of product-related standards, ISO certification for capital equipment and reagents is generally preferred. Where production is located outside southern Africa, standard compliance issues are dealt with in the country of production. In southern Africa, the need for certification, and the lack thereof, can limit the business opportunities for local SMEs. For example in the Copperbelt subsidiaries of large international equipment manufacturers are certified, agents and distributors are mostly not. Thus the former are preferred sources of mining input purchases rather than the latter.

**Issues:** For domestic suppliers in southern Africa, obtaining the necessary certification to supply a new mining company can often be very costly and time consuming. One mining company indicated that it had traditionally been reluctant to take on new suppliers as the identification, screening, qualification and selection processes, coupled with necessary on-boarding procedures made using new suppliers a lengthy and expensive process for both the mining company and the supplier.

The issue for SMEs attempting to supply a new mine is heightened by the fact that each mining company has its own selection and certification processes. Only one mining company in South Africa indicated that it took into account references from other mining companies when considering a new supplier. For the SMEs, the result is that every time they want to supply to a new mine, they have to go through a complete selection and certification process again, and incur the cost and loss of time that comes with it.

13 A sample of ISO standards applicable to mining can be found here [http://www.iso.org/iso/home/store/catalogue\\_tc/catalogue\\_tc\\_browse.htm?commid=50164](http://www.iso.org/iso/home/store/catalogue_tc/catalogue_tc_browse.htm?commid=50164)

In Zambia, lack of certification is a major hurdle for some service providers (repair and maintenance of specialized equipment) and manufacturers. In future, the mining companies will require certification, but at the moment suppliers are expected to maintain minimum levels of quality, environmental, and occupational health and safety management systems. Some mining companies actively monitor the firms in this respect, with auditing and providing technical reports. Nevertheless, apart from a few exceptions, the suppliers do not need to have ISO certification. Some firms are more proactive and are applying for ISO certification even if not required because they foresee mining companies increasingly becoming strict in this area.

#### 4.7 Health and safety standard compliance for products and services

**Context:** Health and safety standards are fundamental to the operations of any mine site. These standards are set by the company, usually an adaptation of an international benchmark.

Health and safety standards generally apply to three verticals in mining operations; the products and equipment used on mine site, transportation of materials in and out of mine site and the standards followed by personnel working on mine sites.

- ▶ **Equipment:** Excluding the larger capital machinery and items (such as crushing plants or 60 tonne trucks), there are a number of smaller items that are required at the mine site. These would include auxiliary equipment such as ventilation equipment, pumps, piping, light vehicles and spare part for mining equipment. The standard specifications for such equipment, apart from performance standards, include specifications that allow them to be operated safely at mine sites. For example, light vehicles such as pickup trucks purchased from the general market need to be fitted with roll over protective structures. Others include guards for exposed rotating cutting machinery, nip-points on pulleys and drives, interlocked guards for rotating shafts and rollers etc.

Domestic SMEs providing such inputs are reported to be unable to meet safety and health criterion. While this has not completely precluded local/regional firms supplying such inputs to mine sites, mining company respondents indicated that the presented products usually do not meet the standards required. The company has to spend its own resources in helping SMEs meet their compliance standards for such equipment.

- ▶ **Transport:** Mining companies consume a number of hazardous and chemical materials, such as cyanide for gold production, reagents, and explosives. The transport and storage of such material is required to meet stringent health and safety regulations. One of the reasons provided for not using SMEs as opposed to the large firms (such as SASOL) for explosives and cyanide was the reported inability of the SMEs to secure and maintain health and safety standards for storage and transport for such material. A survey of business directories suggests that for South Africa, there are very limited SMEs that can meet the requirements set for manufacturing health and safety equipment and transport of hazardous material and chemicals. These activities tend to be in the domain of the larger firms or international providers.
- ▶ **Personnel:** The mining company is responsible for all personnel on the mine site, whether they are employees of the company, contractors or visitors. An injury or death on a mine site is taken very seriously by both the mining company and the country regulator. Apart from the loss of life, such incidents can shut down mine operations for a number of days, while investigations are conducted. Therefore a mining company takes compliance to health and safety standards as a critical factor.

For local SME employees, if their services require their personnel to be working on the mine site, they must be able to meet the company's health and safety standards. While mining companies are willing to provide such training for contractors/SMEs, it is an additional cost to the company. When considering

when to in-house services or out-source to SMEs, the cost of training for such contracts has to be taken into consideration. SME suppliers that are aware and can provide documentation to support their safety and health compliance would be more likely to secure contracts.

**Issue:** For local SMEs to be more competitive in this area, their technical capability to produce safety and health compliant products needs to be upgraded. Training, awareness and procedural practices need to be added to the skills of SMEs to become more competitive in the provision of chemicals and other consumables to mining sites. General training and internalisation of health and safety standards, and more importantly the documentation of such internal procedures to be presented to clients, is required by domestic SMEs.

A small sample of SMEs in South Africa<sup>14</sup> reported they consider health and safety regulations to be expensive to comply with (approaching 30% of a typical contract value). Training by mining companies on safety and health standards consumes time for SME employees (from one week to two hours of each work day). This time is seen as a business cost, and SMEs believe they are unable to fully recover the costs of compliance from their corporate employers.

The accreditations for safety and health regulation differ between mining companies (and reportedly sometimes between different mines sites of the same company). Thus SMEs are required to gain a range of certifications, which can act as discouragement for extending client base.

## 4.8 Environment related

**Context:** Environment related issues arise in the mining sector across the different phases of the mining cycle; Environmental Impact Assessment (EIA) studies at the exploration/licensing stage, management and storage of hazardous waste

14 <http://www.thepresidency.gov.za/docs/pcsaeconomic/sbp.pdf>

during the operations stage and at the mine closure stage. As the southern African mining sector moves towards more sustainable mining practices, the need for such services at a wider level is beginning to emerge. Environmental services can account for 2% of the operating expenditure of mining companies (dependent on size and nature of operations).

- ▶ **Exploration Stage:** With the four countries studied, EIA studies were noted as an issue for southern Africa regionally (excluding South Africa). The ability of local firms to lead EIA studies (as opposed to being sub-contracted by large international firms for particular tasks) was identified as an issue. The domestic SMEs were reported to have great potential in conducting this work, however their capacity was limited by their inability to cater to more than one project at a time, and to respond to higher international benchmarks when these studies need to meet the requirement of the national government as well as international investors<sup>15</sup>.
- ▶ **Operations Stage:** Mining projects in operation will produce various waste; top-soil/overburden<sup>16</sup>, waste rock<sup>17</sup>, and tailings<sup>18</sup>. In general, mining companies will store some of this waste on-site, as part of its rehabilitation plans. Other material, particularly hazardous waste that requires off-site disposal must meet stringent regulations (again either national standards or higher company standards). In addition to disposal, the idea of recycling discarded products (such as old tyres, machine oils) is beginning to emerge as a potential opportunity.

The ability to find SMEs that have the technical capacity to dispose off-site waste was found to be a problematic area by some of the mining

15 Where country level regulations may be weak, international mining companies will respond to higher standards set by their investors/company regulations.

16 Top soil layer removed to expose ore body

17 Non-metallic ore waste after crushing and grinding

18 Residual processing chemicals and elevated levels of metals, after beneficiation

companies surveyed. In countries such as Madagascar, where large-scale mining has emerged recently, local supplier capacity was reported to be particularly weak. Currently mining companies either deal with the process themselves, or spend considerable resources training supplier firms to meet their requirements.

- ▶ **Mine Closure:** At time of mine closure, hazardous material on-site needs to be made secure. This can involve either permanent disposal off-site or processes to ensure the material will not cause further damage to the environment (such as seeping into ground water, contribute to silting of any water bodies nearby). This business segment is differentiated from mine rehabilitation; the latter looks at returning mine sites as close to their original state as possible, or making the land available for other uses.

This segment was identified in discussions with other stakeholders as an emerging area of concern that is not being addressed. A number of South African mines have faced closure in the past decade, and acid-water drainage is being reported as an emerging issue. The technical ability and knowledge of domestic suppliers to engage with this is reported to be lacking. South Africa reports it is starting 'engineering competitions' to generate ideas and fund emerging suppliers who can devise solutions for this area. While positive results were noted for ideas, the capacity to transform these ideas into products requires assistance.

**Issue:** The issue faced for procurement of environment related services is twofold.

First, the capacity constraints of SMEs limit them to engagement with one/two projects at a time (exploration phase specific).

Second, the technical understanding and capacity to meet the stringent requirements for hazardous material disposal is reported to be lacking. A cursory review of business directories for the region indicates there are a sizeable number of certified SMEs in

South Africa that offer services for hazardous material disposal. The number of firms reported in Madagascar, Mozambique and Zambia is much lower. The certification and standards followed by these firms are also unclear.

Management of hazardous waste is a highly technical area, one which can be applicable across the industrial sector. South Africa, for example, requires that only certified waste disposal companies<sup>19</sup> be used. There are reported issues of many industrial companies dumping their hazardous material in general waste dumps. The scale of this problem is also quite large; with South African mining waste estimated to account for 72% of the solid waste stream<sup>20</sup>. The opportunity to open up this business category is substantial.

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19 Certification requires that companies have an Environmental Management System, with two independent audits of practices required each year. ISO certifications are also recommended.

20 [http://www.s-ge.com/en/filefield-private/files/27929/field\\_blog\\_public\\_files/7084](http://www.s-ge.com/en/filefield-private/files/27929/field_blog_public_files/7084)



# 5 Conclusion



Mining investment and operations into South and Southern Africa are expected to release many local development benefits over and above the direct effect of additional employment associated with the investment. One of the multiplier effects associated with the purchase of goods and services in the local economy, is the upgrading of the efficiency and capability of local suppliers. However, mining investments in Southern Africa have not resulted in the significant increase in local purchasing or sales linkages that could have been expected, nor, the related upgrading of local suppliers. The immediate challenge is transformation of the industry to widen and deepen the supplier base so as to create a significant demand for the upgrading of local suppliers to enable their increased participation in the mining industry supply chain.

The supplier industry in southern Africa has struggled to find entry points into the regional mining sector. It continues to do so despite the regulatory pressures on the mining industry to increase local content. The weakness of the domestic supplier industry originates in the particularities of mining procurement, and the enclave characteristics of the extractive industry, but is also grounded in the general structure of the regional industry. Even though some SMEs possess the technical skills necessary to compete in the mining industry, the vast majority lack crucial elements for a sustainable engagement in the sector. Financial stamina, the ability to digest large contracts, reputation and sheer size are the most prominent examples.

Triggered by local content regulation, or out of own economic interest, every major mining company in the region has in recent years engaged in supplier development. Despite the substantial funding for these programs, success stories are scarce. The programs report high rates of attrition for SMEs and an inability to grow independently when support is withdrawn.

Usually, supplier development programs are situated in the close vicinity of a mine as part of the mining company's attempt to give back to the local communities. This however creates a dependency of the supported SMEs since these will be trained to fit the needs of the particular mine and thus cannot diversify their client base.

In order to enable a domestic supplier industry that creates jobs and adds value to the local economy the above stated issues need to be addressed. And despite the cyclical low of the mining industry as a whole the conditions for doing so are promising. The southern African mining sector continues to be a major consumer and regular purchaser of a vast variety of goods and services, thus providing a substantial market to tap for local SMEs.

## Annex 1: List of Respondents

Country	Company	Core Business
South Africa	African Mining and Crushing	Contract mining and crushing
	Amplats	Mining
	Anglo American Zimele	Supplier Development (Mining)
	Anglo Gold Ashanti	Mining
	Anglo Coal	Mining
	Harmony Gold	Mining
	Jindal Africa	Mining
	Kumba iron ore	Mining
	Montero Mining	Exploration
	Pan African Resources	Mining
	Petra Diamonds	Mining
	Sibanye gold	Mining
	South32	Mining
	South Africa Chamber of Mines	Association
	South Africa Supplier Diversity Council	Association
Mozambique	German – Southern African Chamber of Commerce & Industry	Association
	Kenmore Resources Plc	Mining
	Mozal	Smelting
	Whasintelec SA (agent)	Supplier
Madagascar	ALBI	Supplier development (Mining)
	Ambatovy	Mining
Zambia	Kitwe Chamber of Commerce and Industry	
	Private Sector Development Reform Programme	
	Zambia Association of Manufacturers	
	Zambia Chamber of Commerce and Industry	
	Zambia Development Agency	
	33 mining supply firms; combination of Zambian, international and South African OEMs in Kitwe, Ndola and Chingola (Copperbelt)	
	14 OEMs, both South African and International, in Gauteng, KZN	
4 EPCM firms, both South African and International, in Gauteng, KZN		
5 mining companies		
Manufacturing equipment and other input suppliers	AARD Mining Equipment	Manufacture in South Africa
	Bell Equipment	Manufacture in South Africa
	Barlow Equipment	Equipment supplier (franchise)
	Cummins Filtration	Some Manufacturing in South Africa
	Dinoko Mining & Construction Consumables	Some Manufacturing in South Africa
	DOSCO Precision Hydraulics	Manufacture in South Africa
	Hitachi	Some Manufacturing in South Africa
	Hytec Group of Companies	Some Manufacturing in South Africa
	ITR – USCO	Local assembly
	Joy Global	Equipment supplier/manufacturer
	Megaroller Industries	Manufacture in South Africa
	Michelin	Imports
	ORICA	Imports
	Spare Power – Machine Power	Imports
	Trident SA	Manufacture in South Africa
Wix Filters	Imports	

## Annex 2: Mining Input Breakdown

Exploration	Development	Extraction and material handling	Comminution	Separation	Refining
<b>Capital Goods</b>					
Exploration drilling equipment	Development drills and rigs	Drills and rigs	Crushers, screens	Furnaces	Thickeners
	Shafts	Conveyors	Mill balls	Dryers	Conveyor belts
	Loaders, trucks	Excavators	Grinders, rollers	Refractories	Filters
	Electrical equipment	Loaders, trucks, trains	Storage tanks	Classifiers, thickeners	Tanks
	Pneumatic and hydraulic equipment	Rolling stock	Materials handling (conveyors, pumps)	Mixers, filters flotation tanks, washers, scrubbers	Dryers
		Draglines	Agitators	Separators	
		Hoists, winders, cades	Power generations systems	Dewatering systems, water purification systems	
		Coal cutters	Tanks	Pumps	
		Power shovels	Vessels	Electronic process control systems	
		Wall and roof bolting systems	Silos, bins		
		<b>Underground Mining</b>			
		Bulk materials handling (conveyors, locomotives, scrapers)			
		Pumps and valves			
		Head gear (motors, chains, cables)			
		Ventilation equipment			
<b>Consumables</b>					
Samples containers	Bricks	Bolts	Chemicals Reagents	Chemicals Reagents	Acids
	Bolts	Steel wires		Lime	Reagents
	Tyres	Explosives	Gases	Chemicals	
	Fuel	Detonators	Refractories		
	Lubricants	Tyres		Filters	
		Fuel			
	Lubricants				
		Personal Protection Equipment (PPE)			
		Fabrication products			
		Construction material			
		Rubber and plastic products			
Geological data gathering and compilation	Mine design Engineering and project management	Labour			
Geological mapping		Electrical and mechanical engineering services			
Geophysical coverage		Civil engineering services			
Remote sensing		Process control			
Laboratory analysis		Health services, security services, catering, cleaning, administration			
Drilling services		Logistics and transport			
Feasibility studies		Quality control and laboratory testing services			
Camp management services		Pneumatic and hydraulic services			
		Financial services			
		Legal services			
		Accounting services			
		Management and information systems			
		Environmental services, waste management services			
		R&D			



