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Growth promotion through industrial strategies – a study of Zambia¹

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Abstract

Zambia has experienced very good GDP growth rates in the last decade, above the SSA average. Growth remains largely based on copper exports, and on the high copper price that prevailed until 2013. The country has not yet achieved structural transformation of its domestic economy, in particular with regard to its ambition for broader based industrialisation. There are important changes in demand with urbanisation and increasing household incomes, in Zambia as well as in the neighbouring DRC. A review of trade patterns and the sectoral performance in Zambia assesses the size and direction of different effects on patterns of industrial development. It particularly considers the impact on agro-processing and engineering sectors and the key factors in development of these activities. The paper considers concerns relating to competition, investment along the value chain, and the ability to build capabilities based on local demand and export opportunities in regional markets, especially in South Africa and via regional supermarket chains. Based on this analysis the paper asks what policies are required to support broad-based industrialisation and critically assesses the existing framework and its implementation in this light. It concludes by considering the potential for collaboration in industrial policy across countries.

JEL Classification

L1, L2, L5, L6, O1, F15

¹ This paper was done as part of an International Growth Centre study (www.theigc.org). The views are those of the authors alone.

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Glossary

AMSA	ArcelorMittal South Africa
BOZ	Bank of Zambia
CAGR	Compound Annual Growth Rate
CAPEX	Capital expenditures
CCRED	Centre for Competition, Regulation and Economic Development
CEEC	Citizens Economic Empowerment Commission
CMZ	Chamber of Mines of Zambia
COMESA	Common Market for Eastern and Southern Africa
CSO	Central Statistical Office
CTI Policy	Commercial, Trade and Industrial Policy
DRC	Democratic Republic of Congo
DRI	Directly Reduced Iron
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
HACCP	Hazard Analysis & Critical Control Points
ICMM	International Council on Mining and Metals
IGC	International Growth Centre
JICA	Japan International Cooperation Agency
MCTI	Ministry of Commerce, Trade and Industry
MFEZ	Multi-Facility Economic Zone
MSMEs	Micro, Small, and Medium Enterprises
NTEs	Non-traditional exports
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
PSDRP	Private Sector Development Reform Programme
SADC	Southern Africa Development Community
SNDP	Sixth National Development Plan
TCO	Total Cost of Ownership
TEVET	Technical Education, Vocational and Entrepreneurship Training
UMCIL	Universal Mining and Chemical Industries Limited
UN ISIC	United National International Standard Industrial Classification
UNZA	University of Zambia

ZABS	Zambia Bureau of Standards
ZACCI	Zambian Chamber of Commerce and Industry
ZAM	Zambia Association of Manufacturers
ZAMEFA	Metal Fabricators of Zambia Limited
ZAMTEL	Zambia Tele
ZCCZ	Chambishi Zambia-China Economic and Trade Cooperation Zone
ZDA	Zambia Development Agency
ZDA	Zambia Development Agency
ZEGA	Zambia Export Growers Association
ZESCO	Zambia Electricity Supply Corporation Limited
ZMLCI	Zambia Mining Local Content Initiative

1. Introduction

Zambia recorded high GDP growth rates during the past decade, 7.76% on average between 2004 and 2013, well above the 5% Sub-Saharan Africa average (World DataBank, accessed February 2015). GDP is expected to grow by approx. 6.5% in 2015-2016 (World Bank, 2014b). Zambia's good economic performance has been largely driven by the copper mining sector, which in turn has spurred faster urbanisation rates and rising income levels, and the growth of associated industries such as construction, ICT and retail. Between 2008 and 2013, non-traditional exports (NTEs) increased threefold. A small but growing share of these NTEs represents increasing capabilities and competitiveness of Zambia's manufacturing sector.

Despite positive GDP growth rates, Zambia's ambitions in terms of economic diversification and poverty reduction have not seen as much progress as expected by government, and as envisaged in various policy documents. For this reason, the Zambian government has placed high priority on industrial development, and has recently approved an *Industrialisation and job creation strategy paper*.

The current paper has been commissioned by the International Growth Centre (IGC) with the objective of assessing current and potential opportunities for industrial development. The terms of reference for this research included the following: an analysis of trends and patterns in industrial performance over time, as well as industry-level capabilities and competitiveness; a broad scoping of high potential sub-sectors, with particular attention to resource-based industries and regional markets; and a review of the policy framework for industrial development, including sector-specific strategies, implementation aspects and institutional setting.

The paper is based on a desktop review of recent research on industrial and trade competitiveness, and an analysis of GDP and industry data. In particular, the paper makes extensive use of trade data which allow disaggregation at the sub-sectoral and product levels. Moreover, researchers conducted interviews with key informants in Zambia.

The case for developing diversified and more sophisticated industrial capabilities is now widely accepted (see, for example, Hausmann *et al.*, 2007; Hidalgo, 2009; Page, 2012; Fagerberg *et al.*, 2007). This is, however, particularly challenging in resource based economies, especially those that are also landlocked as in the case of Zambia. The paper identifies important opportunities linked to growing local and regional demand, and what constraints exist for their exploitation.

On the basis of the data analysis and interviews, the paper identifies several areas of untapped, substantial opportunities for Zambia's manufacturing sector. Zambia's

competitiveness in global markets is challenged by macroeconomic factors (fluctuating exchange rates, real exchange rate appreciation) and structural bottlenecks (transportation costs, infrastructural services), which will require ambitious policy interventions (possibly an offshore sovereign wealth fund) and long term investment (roads and railways rehabilitation and construction, electricity, internet connectivity). The paper argues that there are existing opportunities for the local manufacturing base which are more immediate than the focus on copper beneficiation and should be developed alongside it. These consist of strengthening linkages to urban demand for processed food, increasingly structured around supermarket retail chains, and to copper mining demand for goods and services. The potential to tap the urban demand for processed foods can leverage on increasing levels of foreign and domestic investment in agricultural products such as soybean, wheat, poultry and sugar. Agro-processing is estimated to account for 60% of Zambia's manufacturing sector (Dinh, 2013). Upgrading into value added products in each of these value chains is constrained by specific factors related to competition, transport costs, firm capabilities, and policy and regulatory restrictions at national and regional level. Many of these can be addressed through targeted interventions and, indeed, recent developments and decisions by firms suggest that important and positive changes are underway.

The opportunities for suppliers to the mining sector are explored in a case study based on research undertaken by the Centre for Competition, Regulation and Economic Development (CCRED) in 2014. Copper mining companies require a local supply chain capable of providing value added services and products, at reasonable prices and within short lead times. The challenge for Zambian suppliers is to upgrade and meet their buyers' requirements. To do so, cooperation will be required between suppliers, buyers, government, and regional trading partners.

The paper also briefly comments on Zambia's existing strategy for the engineering sector. The paper reviews key issues which are relevant to the development of engineering manufacturing capabilities and proposes complementary measures to the strategy. Across the discussion of the agro-processing and engineering sectors, the research places particular attention on competition and regional integration perspectives.

The paper is structured as follows. Section two analyses industry trends on the basis of macroeconomic and industry data. Sections three focuses on opportunities for industrial development in the agro-processing sector. Section four reviews main issues related to the government strategy for the engineering sector, including presenting a case study on manufacturing linkages to the mining sector. Section five reviews Zambia's policy framework with regard to industrial development. Finally, conclusions and areas for further research are discussed in section six.

2. Industry trends

2.1 Trends at macro-level

According to Central Statistical Office (CSO) rebased GDP estimates, Zambia's economic growth during the last decade has been driven by the mining sector, and commercial and government services (Table 1). Between 2000 and 2013, construction slowed down in 2008-2010, but has picked up again since 2011, which is consistent with the cyclical nature of the sector. Transport and communication grew unabated, driven by stepped-up spending in infrastructure and rising urban incomes (World Bank, 2014b). In absolute terms, in 2013, the largest contributors to GDP were distribution (17.8%), government (15.7%), construction (12.4%), mining (10.4%), and agriculture (8.7%). Agriculture has nevertheless shown the worst performance out of all the sub-sectors.

During the 2000-2013 period, the manufacturing sector grew by 5.5% CAGR. This highlights a mildly positive trend, just below the 7.2% CAGR of total GDP. In 2013, however, manufacturing represented only 7.9% of GDP, a decline from its share of 9.5% in 2000. This points out to ample room for further growth.

Table 1: Zambia's GDP, selected sectors and economic activities (ZMK million)

	2000	2013	2013 % total GDP	2000-2013 CAGR
Agriculture, Forestry and Fishing	11,261.0	10,259.1	8.7	-0.7
Mining and Quarrying	1,972.1	12,225.6	10.4	15.1
PRIMARY SECTOR	13,233.1	22,484.7	19.1	4.2
Manufacturing	4,642.2	9,289.8	7.9	5.5
Electricity, Gas and Water	1,500.5	2,177.8	1.8	2.9
Construction	3,513.1	14,596.4	12.4	11.6
SECONDARY SECTOR	9,655.9	26,063.9	22.1	7.9
Wholesale and Retail trade	8,905.1	20,982.8	17.8	6.8
Restaurants, Bars and Hotels	846.7	1,762.6	1.5	5.8
Transport, Storage and Communications	1,543.2	10,701.2	9.1	16.1
Financial Intermediaries and Insurance	4,049.4	5,369.9	4.6	2.2
Real Estate and Business services	3,632.9	8,143.2	6.9	6.4
Community, Social and Personal Services	4,992.2	18,485.2	15.7	10.6
TERTIARY SECTOR	23,969.5	65,445.0	55.6	8.0
TOTAL	47,404.9	117,743.1	100	7.2

Notes: Constant Prices, 2010 Base Year. Source: CSO, 2014

In absolute terms, employment in the manufacturing sector increased fourfold from 55,600 people in 2005 to 216,700 people in 2012 (Table 2). Approx. one third of total

manufacturing jobs were in the formal sector (73,814), which accounted for 9% of formal employment in 2013 – the fourth largest source of formal jobs after education (135,471 people), distribution (110,365), and agriculture (87,420). Between 2005 and 2012, the percentage contribution of the manufacturing sector to total employment increased threefold. Whilst this is significant, its contribution stood at less than 4% in 2012. Overall, the GDP and employment data highlight that, although from a low basis, the manufacturing sector has experienced positive, sustained growth since 2000.

Table 2: Zambia’s sector employment, by selected sub-sectors

Industry	Employed population (number, % total employment)			Formal employment (number, % sectoral employment)		
	2005	2008	2012	2005	2008	2012
Total	4,131,531 (100)	4,606,846 (100)	5,499,673 (100)	495,784 (12)	511,338 (11)	847,420 (15)
Agriculture, Forestry and Fishing	2,983,968 (72.2)	3,284,208 (71)	2,872,331 (52.2)	29,840 (1)	71,888 (2)	87,420 (3)
Mining and Quarrying	166,143 (4)	92,810 (2)	88,251 (1.6)	154,513 (93)	62,082 (67)	67,608 (77)
Manufacturing	55,499 (1.3)	159,194 (3.5)	216,660 (3.9)	18,870 (34)	36,923 (23)	73,814 (34)
Construction	33,399 (0.8)	80,255 (1.7)	187,906 (3.4)	12,692 (38)	13,889 (17)	36,676 (20)
Trade, Wholesale and Retail Distribution	88,080 (2.1)	425,209 (9.2)	645,571 (11.7)	9,689 (11)	28,706 (7)	110,365 (17)
Transport and communication	22,773 (1)	94,800 (2.1)	137,301 (2.5)	22,773 (56)	29,484 (31)	61,797 (45)

Source: CSO Labour Force Survey, 2005, 2008, 2012

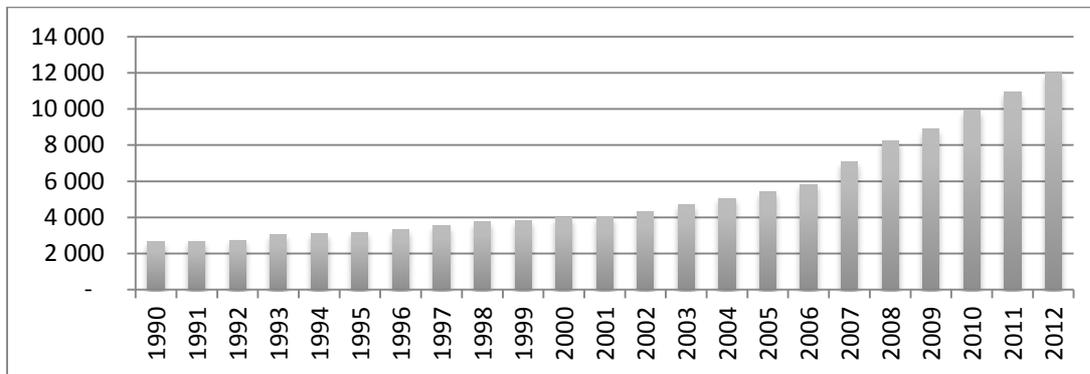
Zambia’s FDI inflows have grown substantially, from US\$ 4 billion in 2003 to US\$ 12 billion in 2012 (Figure 1). Whilst mining dominates FDI inflows, an increasing share of FDI has been targeting the manufacturing sector (OECD, 2012). Out of US\$ 1.7 billion FDI flows in 2012, US\$ 933 million targeted mining, and US\$ 470 million the manufacturing sector (Bank of Zambia, 2014). Manufacturing FDI stock rose from US\$ 883 million in 2011 to US\$ 1.3 billion in 2012.² Indeed, almost half of the 50 leading industrial companies in Zambia are of foreign origin (Sutton and Langmead, 2013).³ According to a survey conducted by the Bank of Zambia (BOZ), manufacturing

² The mining sector attracted US\$ 9 billion FDI stock as of 2012 (Bank of Zambia, 2014).

³ Based on a scrutiny of pledged investment with the ZDA, a study showed that only 17% of the Chinese firms registered in 2005-2009 were operational, and that around 15% of pledged FDI, in value, was concentrated in manufacturing (Sutton and Langmead, 2013).

was the second most profitable sector for foreign investors (measured as return on equity), after the professional, scientific and technical sector (Bank of Zambia, 2014). This is confirmed by a Business Perceptions Survey conducted by the Zambian Chamber of Commerce and Industry (ZACCI) in 2014 (Interviews, 2014).

Figure 1: Zambia’s inward FDI stock (1990-2012, US\$ millions)



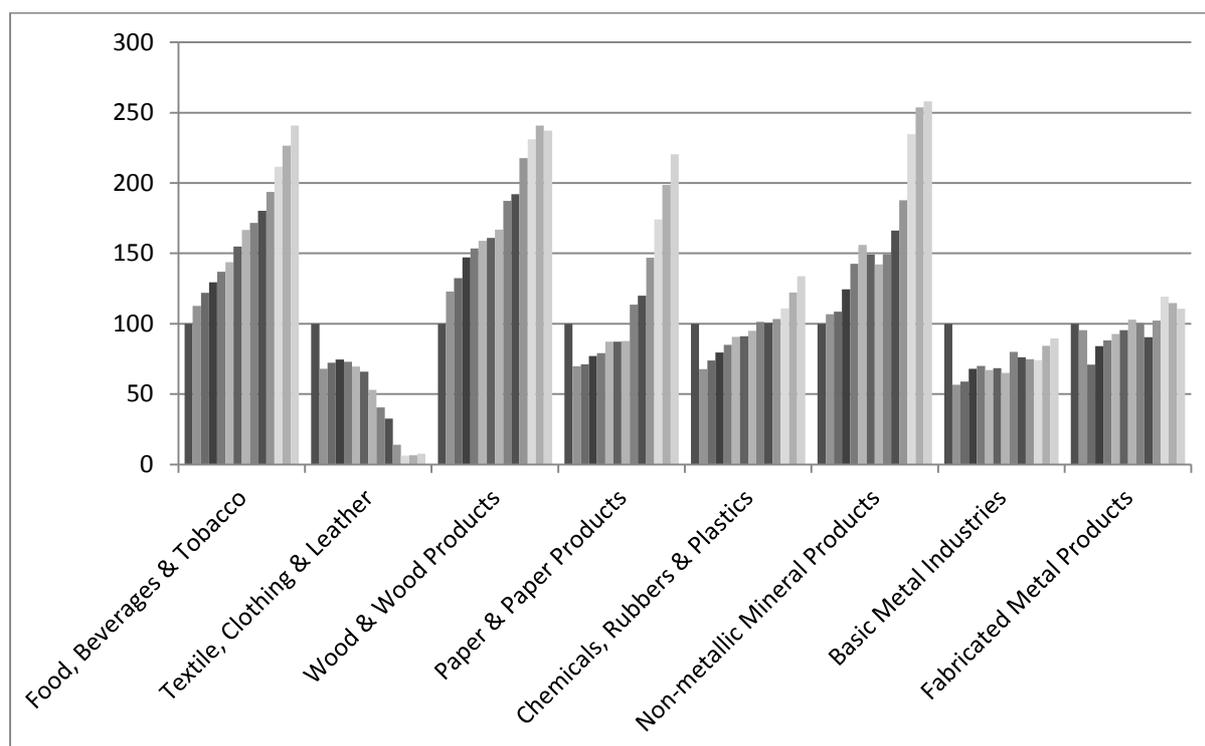
Notes: US\$ at current prices and current exchange rates. Source: UNCTADSTAT database, retrieved from <http://unctad.org/en/pages/Statistics.aspx> in May 2014.

2.2 Manufacturing sub-sector performance

The CSO industrial index allows a trend analysis disaggregated by sub-sectors (Figure 2).⁴ Food, beverages and tobacco have shown the strongest performance, growing by around 150% between 2001 and 2013. This sector growth has been driven by well-established commodities such as sugar, tobacco, and cotton, as well as more recent production of soybean and wheat. Cement production (non-metallic mineral sub-sector) also performed very well, driven by investment in cement production and the construction boom in Zambia and the DRC. There are concerns however over poor price competitiveness of Zambian cement (Box 1).

⁴ Unfortunately data on the relative size of Zambia’s manufacturing sub-sectors are not available. Hence the analysis is limited to growth trends.

Figure 2: Industrial index, manufacturing sub-sectors (2001 – 2013)



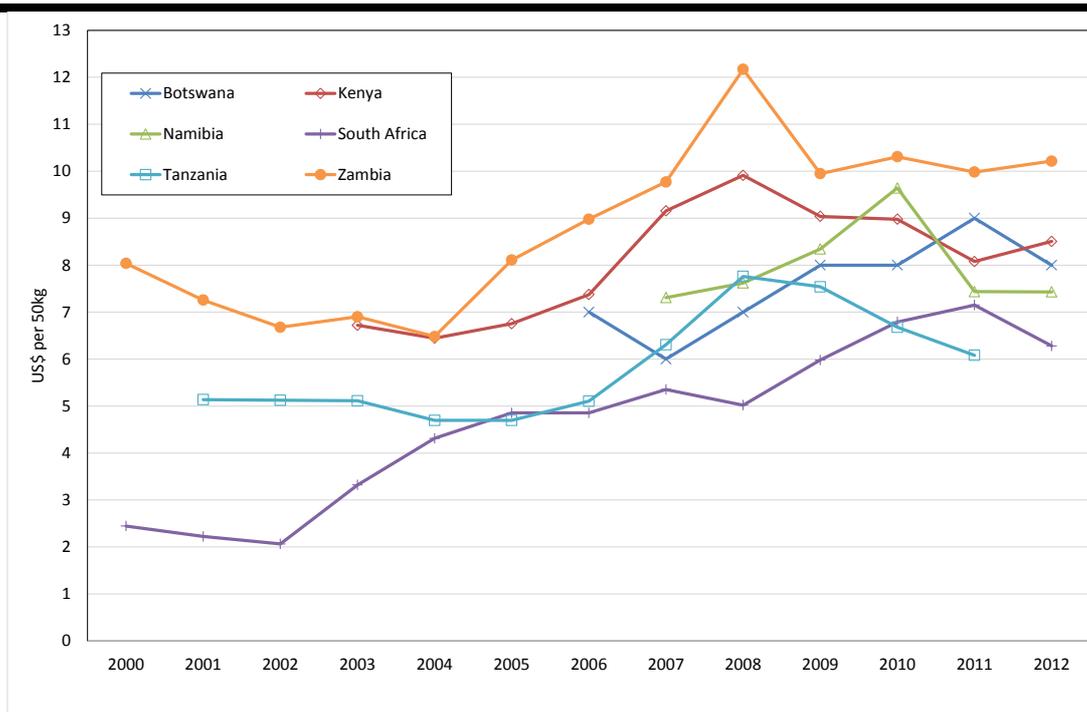
Source: CSO Industrial Index

Box 1: Low levels of competition and pricing of cement

The relatively small size of the Zambian economy implies that in industries with significant scale economies there may well be a single producer which dominates the local market. This is the case with cement where Lafarge Zambia accounts for the majority of cement production and supply. The implication is that the absence of effective competition means it can charge high prices which are not related to production costs.

Cement prices in Zambia have been amongst the highest of cement producing countries in the region (Amunkete et al. 2014). In recent years, ex-factory cement prices of around \$10 per 50kg bag were more than 50% higher than prices in South Africa (Figure A). This implies substantially higher construction costs in Zambia. The landlocked nature of Zambia and the high costs of overland transport means that the extent of pricing power is greater than, for example, Tanzania, where openness to imports has provided discipline to the pricing of local producers.

Figure A: Estimated ex-factory cement prices, 50kg bag, US\$



Note: Kenya and Tanzania data from respective National Bureau of Statistics (per tonne prices converted to per 50kg and thus exclude bagging costs). South Africa data for 2008 to 2012 was extended to earlier years using the producer price index for ordinary and extended cement. Calculated in US\$ using average annual exchange rates. *Sources:* As per ACF study of Amunkete et al. 2014: Averages computed by researchers from data from firms and national statistics.

Lafarge Zambia has a long-established plant with good access to the key inputs such as limestone. According to Lafarge Zambia annual reports, the margin of profit before tax out of revenue has been 45% in 2013 and 44% in 2012. This is after all administration, distribution, marketing and management expenses including payments to the Lafarge parent company for management and technical services equivalent to 8% of revenue in 2013. This is higher than margins of other listed companies. In South Africa after the ending of the cement cartel in 2009 the margins of PPC, the largest supplier, fell to 25% from the cartel levels of above 40%.

In other countries prices have come down with new entry. For example, prices in Kenya are reported to have fallen by around 15-20% in 2013 and 2014 with the entry of several new substantial rivals in recent years.⁵ Prices in Namibia fell in 2011 with the entry of Ohorong cement, which provided rivalry to supplies from South Africa. This illustrates the role that industrial policies supporting entrants can play. It is expected that the substantial Dangote cement plant in Zambia due to start production in early 2015 will have a positive impact on prices. Another producer

⁵ <http://www.constructionkenya.com/3007/cement-prices-kenya-drop-12-year-low-fall/>. The entrants are National Cement, Savannah Cement, Mombasa Cement.

(Amaka Cement) has also announced plans for construction of a new plant in Lusaka to come on-stream in 2017.

The wood industry, in heavy decline since the 1990s, has performed better since the mid-2000s. Its performance is largely driven by the construction boom in the domestic market (70% of output, mainly sawnwood) and in the DRC (Dinh, 2013). With a labour force of 47,000 people, the wood industry is a more important source of employment than copper and steel fabrication put together. Despite this and the presence of a small number of dynamic exporters of value added products, the perspective for the industry is weak, given low labour productivity and capacity utilization constraints, high wood price, low levels of investment, and a largely informal structure. The paper industry has also been performing better since the late 2000s. This industry has been mainly focused on the domestic market for tissue paper, paper serviettes, exercise books, polythene products and PET packaging (Sutton and Langmead, 2013). It is however import-intensive, relying on South Africa, China, Europe and India for raw materials and intermediate products. In terms of value added, both wood and paper industries are likely to be small.

The basic metal industry has performed relatively poorly, reflecting absence of a steel-making industry. The fabricated metals sub-sector has shown some growth, although from a low basis, thanks to a growing number of copper and steel fabricators, the latter driven by the construction boom. The industry saw the entry of around 10 new firms in recent years (Interviews, 2014). Already on a declining trajectory since the 1990s, the textile and clothing has collapsed during the past decade.

From this analysis, two sub-sectors emerge as having particularly high potential: food, beverages and tobacco, and metal fabrication. Cement had a very strong growth but has limited potential for further downstream processing and industrial development. Turning to Zambia's export performance confirms that these two sub-sectors had, to different degrees, shown considerable level of dynamism and international competitiveness in recent years.

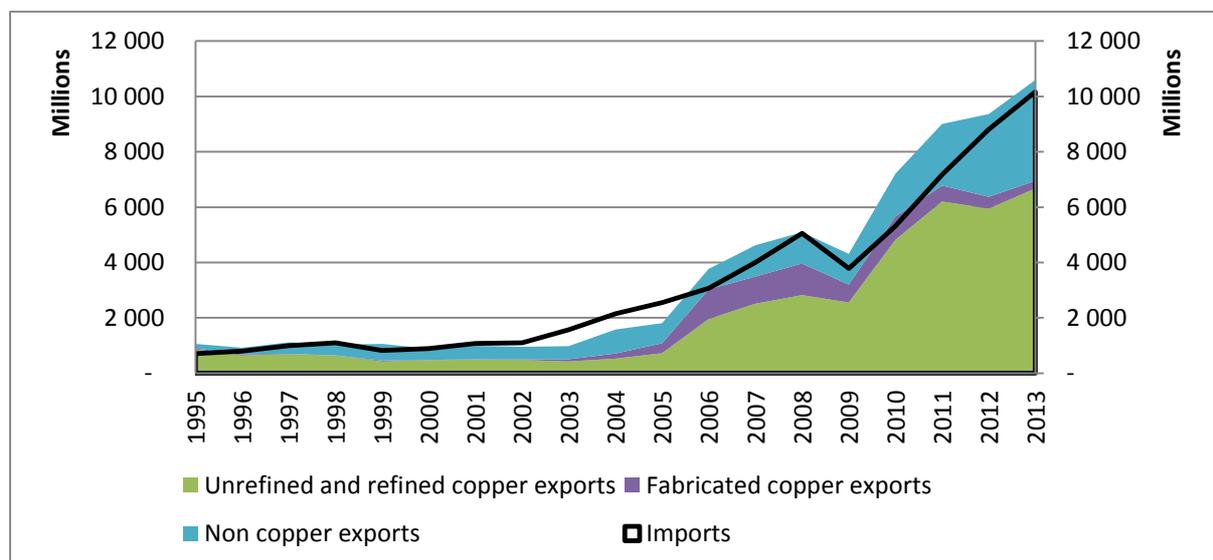
2.3 Trade profile

Exports

From the early 2000s, Zambia's export performance improved significantly, driven by copper exports. Indeed, from 2006 onwards, Zambia has achieved a significant net trade surplus (Figure 3). Between 2003 and 2013, copper exports averaged 70% of total exports. Copper exports grew by 29% on average per year in 2002-2012

(although less than half of this in real terms), increasing their share of GDP from 14% in 2002 to 30% in 2012 (World Bank, 2014a,b). Mineral beneficiation has been a policy objective for Zambia since it gained independence in 1964. However, Zambia beneficiates only approx. 5% of its copper output into copper semi-fabricates (MCTI, 2012; Nathan Associates and EME, 2010). Comtrade data seems to be inaccurate with respect to export figures for copper semi-fabricates. According to Comtrade, exports have increased since 2003, peaked at around US\$ 1 billion in 2006-2008 (approx. 1/3 of copper exports), and declined dramatically since then. Nevertheless, data from the Zambia Development Agency (ZDA), which relies on corporate data, reported significantly lower levels of copper semi-fabricates exports: exports peaked in 2006, with US\$ 289 million exports, and declined since. The ZDA figures are more realistic and calls for further investigation into the possible errors with the ZRA/Comtrade data.

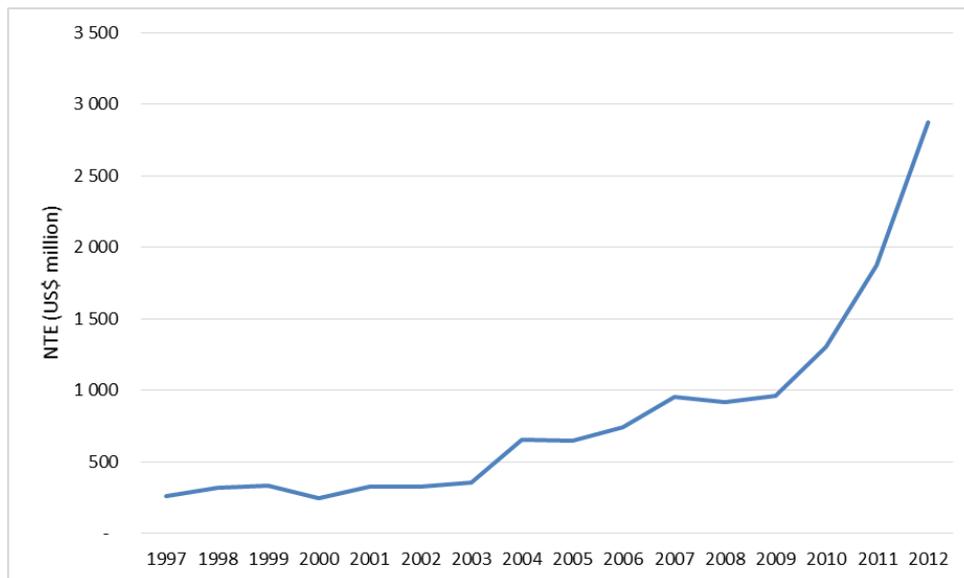
Figure 3: Zambia's trade flows (US\$ millions, 1995-2013)



Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

Non-copper exports seem to have an erratic pattern in relative terms: 48% of total exports in 2003, 22% in 2008, and 34% in 2013 using Comtrade data. However, looking at absolute values, there is a more consistent pattern. Non-copper exports increased from US\$467 million in 2003, to US\$ 1.1 billion in 2008, and finally to US\$ 3.6 billion in 2013. They grew at a CAGR of 22% in 2003-2013, faster than copper exports, albeit from a lower base (World Bank, 2014a,b). This figure however includes re-exports of machinery and vehicles, mineral by-products and precious stones. ZDA export data portray a similar positive trend although on the basis of lower values (Figure 4).

Figure 4: Zambia's NTEs (1997-2012, US\$ million)

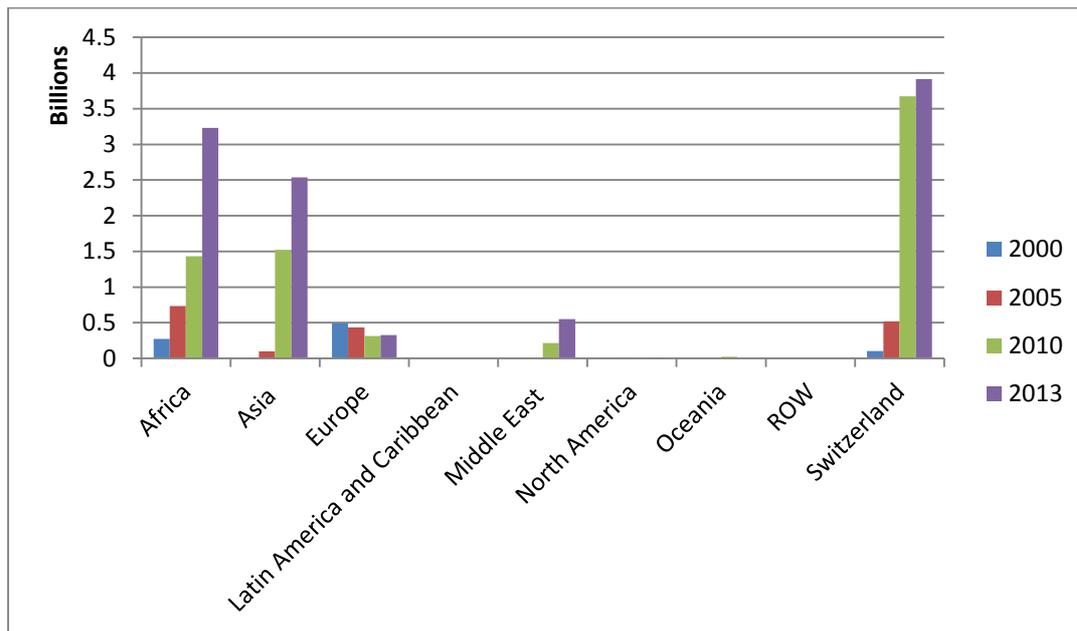


Note: ZDA defines NTEs as everything but unrefined and refined copper. Source: ZDA

Zambia's trade profile shows a remarkable market shift (Figure 5). Exports to African and Asian countries have increased substantially, reaching US\$ 3.2 billion and US\$ 2.5 billion in 2013 respectively. Exports to Europe stagnated. Switzerland is being plotted separately because of the disproportionate weight of non-fabricated copper exports formally directed to this country. Although major buyers are located in Switzerland, mirror data shows that China is the actual major importer of Zambian copper (World Bank, 2014a). Including Switzerland under Europe would mask the EU's decline as a destination market for both traditional and non-traditional exports.

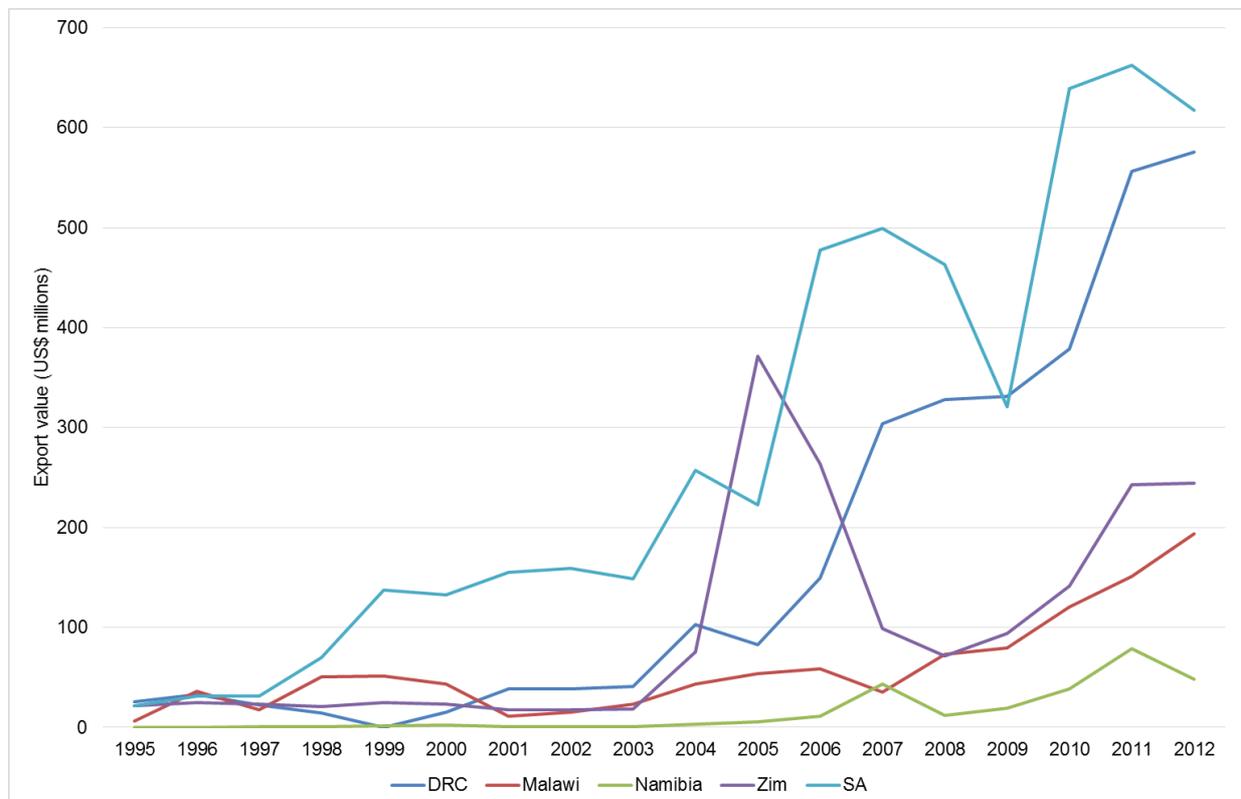
Africa, in particular the SADC region, has emerged as an increasingly important market for Zambia's diversified exports (Figure 6). Export levels, particularly to neighbouring countries have increased substantially from 2005/6 onwards. Increased trade has been driven primarily by the surge in exports to the DRC following the end of the civil war in that country (first elections in 2006), as well as the recovery in the global copper demand and price, which affects the economies of both the DRC and Zambia.

Figure 5: Zambia's total export, by destination market (selected years, US\$ billion)



Source: UN Comtrade, retrieved from <http://comtrade.un.org/>, accessed January 2015.

Figure 6: Zambia's exports to the region



Source: UNCTADSTAT database, retrieved from <http://unctad.org/en/pages/Statistics.aspx> in May 2014.

A recent World Bank report found that not only have Zambia's exports grown in non-traditional products, but also their technological content has increased (World Bank, 2014a). Exports of medium/high skills and technology content products increased faster than low tech exports and labour/resource intensive exports (54% per year vs. 19% per year between 2003 and 2011). Whilst no re-export data are available for Zambia, firm-level customs data shows there is significant re-export of machinery and equipment to the DRC, for the mining sector (World Bank, 2014b). The World Bank calculation includes re-exports, hence it may be overestimating the actual technological content of Zambia's NTEs.⁶ This is confirmed by Table 3, which shows that NTEs growth has been driven by cement, tobacco, cereals and sugar, which are not high tech exports. High-growth, value added exports represent a small share of total NTEs: animal fodder, milling products, essential oils, and iron and steel. Overall, none of these products represents more than 2% of total exports, which implies there is ample room for growth.

Table 3 looks at the top 10 NTEs, excluding minerals and precious stones (copper, cobalt, gold and gemstones), copper by-products, and major re-exports. It should be noted that fabricated copper has not been included because of the data quality problem discussed earlier. Whilst as a share of total trade the top 10 NTEs are small, they represented 65% of exports net of minerals and by products, major re-exports, and precious stones. They have grown significantly, from US\$140 million in 2003 to US\$1.2 billion in 2013, a CAGR of 24%. This growth has largely been driven by cereals and cement (38% CAGR), and animal feed and essential oils (50% and 55% CAGR although off a low base).

Cement, tobacco, sugar and cereals represented the bulk of NTEs in 2013. Cement exports increased from US\$11.2 million in 2003 to US\$274 million in 2013, a 38% CAGR between 2003 and 2013. The market for Zambian cement is 100% regional being a low cost, high volume product, and thanks to demand from the DRC mining sector. In fact, 83% of Zambia's cement exports target the DRC. Domestic production and exports are largely accounted for by one firm, Lafarge, with a large-scale investment by Dangote Cement (although it is not clear whether the cement plant has been commissioned yet).

⁶ The products highlighted as medium/high skills and technology exports are the following: electrical equipment, civil engineering machinery and parts, pumps, chemicals (e.g. sulfur and related products, essential oils, cosmetics, explosives, fertilizers), plastic containers and other articles of plastic, aircraft/helicopters and parts (World Bank, 2014a).

Table 3: Zambia's selected NTEs (selected years, US\$ '000)

	2003	2008	2012	2013	CAGR 2003-2013
Cement	11,239	33,738	120,979	274,232	38%
Tobacco and manufactured tobacco substitutes	22,318	71,893	156,797	216,948	26%
Sugars and sugar confectionery	33,289	64,276	143,576	188,910	19%
Cereals	6,678	51,411	419,761	161,686	38%
Cotton	53,830	39,081	132,488	85,598	5%
Animal fodder	1,365	4,962	131,737	80,732	50%
Milling products	5,261	33,268	36,122	68,217	29%
Essential oils; perfumery, cosmetic or toilet preparations	849	3,019	12,774	65,846	55%
Iron and steel	2,806	10,279	54,803	54,982	35%
Raw hides and skins (other than furskins) and leather	2,693	5,898	6,582	50,052	34%
Total	140,330	311,928	1,215,620	1,247,205	
% total exports	14%	6%	13%	12%	
% total exports minus copper and by products, gemstones and major re-exports	41%	37%	58%	65%	

Note: Analysis at the HS2 level. Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

Cereal exports have shown very good growth (38% between 2003 and 2013). They are composed of wheat (31% of cereal exports in 2013), maize (24%) and rice (15%). The bulk of exports are destined for Zimbabwe (46%), Malawi (30%) and Tanzania (10%). Most wheat is exported to Zimbabwe. There has been a dip in export values between 2012 and 2013 from \$420 million to \$160 million. This was largely due to a massive drop in the export volumes of maize from over 725 000mt in 2012 to just under 174 000mt in 2013. This was due to a regulatory intervention from the Food Reserve Agency (FRA). From September 2012 to May 2014, the FRA assumed complete control of maize exports by becoming the only legal Zambian exporter of maize grain through government-to-government deals (World Bank, 2014b). Export and price controls caused many commercial farmers to move away from maize production, if not for on-farm consumption. Maize production has become increasingly reliant on rain-fed production in smallholder farms.

Tobacco is a very well-established export industry, which has experienced positive growth since the 1990s, but has not been exported with much local value addition. It has a global market, for example in 2013, one third was exported to Malawi for marketing, and the rest to China, UAE, Zimbabwe and Europe. Exports grew by a 26% CAGR between 2003 and 2013.

Sugar exports have grown by a CAGR of 19% between 2003 and 2013. Most of sugar goes to the DRC (29%), Mauritius (26%) and the UAE (14%). A more detailed look into the sugar industry can be found in Section 3.1.

The remaining NTEs are significantly smaller than the top 4, and all but cotton have shown very strong growth performance. Animal fodder exports are mainly destined for Zimbabwe (63%) and South Africa (19%). Exports grew by 50% CAGR between 2003 and 2013 despite a fall back from 2012 to 2013. The reduction in 2013 appears to be due to a price effect as the main types of animal fodder experienced increases in export volumes between 2012 and 2013, with soybean oilcakes increasing export volumes from 7141 tons in 2012 to almost 42 000 tons in 2013, reaching similar volumes as that of maize-based animal fodder.

Milling products experienced a CAGR of 29%, and reached US\$ 68 million in 2013. Most milling products are exported to the DRC, mostly as cereal grouts and wheat flour. In a sense this is part of Zambia growing as a regional hub for a market which naturally looks to source from established Zambian suppliers.

Cotton exports have experienced the lowest CAGR among the top NTEs, at 5% over 10 years. Most cotton is exported to South Africa (38%) and Switzerland (26%). Cotton exports also experienced a dip between 2012 and 2013 due to a decrease in the export volume of uncarded or uncombed cotton. This could be related to the relatively low productivity of cotton production in Zambia which is seen as the biggest constraint to the sector (ECIAfrica Consulting, 2012: 43). Crop production was also affected by weak world prices (KPMG, 2014: 7). However, prior to the dip, demand had generally increased in the international markets due to improved quality which has been attributed to the training that farmers received related to pest control, weeding and harvesting times (ECIAfrica Consulting, 2012: 39).

Essential oils and perfumery grew by 55% CAGR between 2003 and 2013. While most of the export value of essential oils is made up of perfumes destined for the UAE, Switzerland and South Africa, the greatest export volume is that of mixed odoriferous substances which are generally used in the food industry and these were largely destined for the DRC. Iron and steel exports have increased dramatically from \$12 million in 2003 to \$55 million in 2013. This represents a CAGR of 35%. The iron and steel exports are largely destined for South Africa (36%), Mozambique (16%) and Zimbabwe (15%). Raw hides and skins, mostly high-value crocodile skins, are mostly exported to South Africa (86%). It has experienced a CAGR of 34%.

Zambia's export sector has a dualistic structure. On the one hand, large commodity exports are controlled by a handful of firms. 15 firms account for 80% of export earnings, including 6 mining companies, across six industries: metals, sugar,

chemicals, cement, wire and cables, flour (Sutton and Langmead, 2013). On the other hand, there is a large number of small firms trying to access the export market. Firm-level customs data for 1999-2011 sheds some light on this group of exporters (Banda and Simumba, 2013; World Bank, 2014b). The number of firms, products and markets has increased considerably in the period under analysis. The number of exporting firms increased from 232 in 1999 to 1,754 in 2011; their products increased four-fold; their markets two-fold. Excluding the large established exporters discussed earlier, 80% of transactions were relatively small sized (less than US\$ 0.5 million) and directed at SSA markets. Re-exports of machinery, presumably for the mining sector, was the most active sector of activity, in terms of number of firms and products. There are very high rates of entry into exporting, but also extremely low levels of survival by international standards: around half of the exporters did not survive after the first year, and survival in the same product and destination market was very hard. The two top constraints underlying the low survival rate have been exchange rate fluctuation, and costly import of inputs (World Bank, 2014b).

Imports

We turn now to take a brief look at the imports data. During recent years, imports have surged due to higher infrastructure spending and FDI inflows, which led to imports of iron and steel, petroleum products, and capital goods (World Bank, 2014b). A similar shift towards trade with the region as seen in the exports data (Figure 5) is seen in the imports data. Apart from copper ore imports from the DRC and petrol from the Middle East, South Africa is the main source of imports. China is increasing its market presence in heavy and light manufactured goods (machinery, electrical equipment, motor vehicles, metal/plastic products and textile products).

Zambia's imports mainly consist of equipment used in the mining industry, chemicals used in the agricultural and other industries, pharmaceutical products, iron and steel for the mining and construction industries (Table 4). There are also imports of copper ores from the DRC for further processing in Zambia. All of these products have experienced relatively high CAGRs between 15% and 83%.

To conclude, although the manufacturing sector is still small in terms of relative contribution to GDP and employment, there have been some encouraging signs in recent years. These include: positive growth of manufacturing value added, increased values and shares of FDI inflows targeting manufacturing, very good performance of NTEs, in particular the growth of value added exports, and an increasing number of smaller firms trying to enter the export market, especially the regional one. At a disaggregated level, the agro-processing industries and cement have performed best, with small but positive growth in the metals industry as well.

Table 4: Zambia's top 10 import products (US\$)

	2005	2008	2013	CAGR
Machinery & mechanical appliances	237,487,338	840,064,662	1,815,179,509	23%
Ores, slag and ash	3,685,605	426,953,873	1,560,439,054	83%
Mineral fuels, mineral oils & products of their distillation	130,611,835	815,698,743	1,082,471,734	24%
Vehicles	118,482,443	492,879,214	889,181,706	22%
Electrical machinery and equipment	131,450,911	321,701,718	624,652,938	17%
Articles of iron and steel	41,456,653	184,999,306	562,499,457	30%
Fertilisers	68,091,434	204,063,124	382,452,466	19%
Inorganic chemicals	42,213,157	60,774,321	381,043,350	25%
Plastics and articles	62,397,275	134,689,335	280,135,719	16%
Iron and steel	48,310,456	143,864,890	238,111,260	18%
Rubber and articles	32,523,102	77,911,590	210,237,018	21%
Miscellaneous chemicals	30,560,947	94,974,776	184,528,774	20%
Pharmaceuticals	34,605,643	159,448,419	170,124,980	17%

Source: UN Comtrade, retrieved from <http://comtrade.un.org/>, accessed January 2015.

The next sections look more into detail at the opportunities for industrialisation in the agro-processing and metals industries. This was done prioritising manufacturing activities where there are existing firm capabilities (evidenced by significant growth in domestic and export markets) and where there is scope for further downstream linkage development. According to these criteria, cement and tobacco were not included, but engineering products were. Agro-processing industries in particular, have important upstream linkages from agriculture. Notwithstanding its large contribution to GDP level and employment, the agricultural sector has been the most stagnant sector in the Zambian economy. Yet it is very important in terms of job creation and poverty reduction (most poor live in rural areas). Hence developing agro-processing value chains could have significant positive impact on growth, employment and poverty reduction.

3. Industrialisation opportunities in the agro-processing sector

The agro-processing sector includes all the activities related to processing of resources from the agricultural, fishery and forestry sectors. It is a very broad industry for several reasons (FAO, 1997). Firstly, the industry includes primary processing, such as sorting, grading and packaging of agricultural products, rice and flour milling, leather tanning, cotton ginning, oil pressing, and saw milling, as well as secondary processing, such as production by modern, capital-intensive methods of textiles, pulp and paper. Secondly, it includes both food and non-food industries. According to the UN ISIC classification, agro-processing cuts across 3.1 Food, beverages and tobacco; 3.2 Textile, wearing apparel and leather industries; 3.3 Wood and wood products, including furniture; 3.4 Paper and paper products; 3.5.5 Rubber products. Thirdly, because of technological innovation processes, this industry extends to an increasing number of agro-industry activities and inputs.

Agro-processing accounts for 60% of Zambia's manufacturing sector (Dinh, 2013). We focus on one major component of the agro-processing industry in the form of food and beverages. Cut flowers and tobacco will not be discussed because they do not fit the criteria highlighted earlier of existing production and export capabilities and potential for significant further downstream processing. This section further restricts the discussion to processing activities that go beyond sorting, grading and packaging, hence maize exports, for example, are excluded. Textile, leather and wood are not discussed in-depth within this report but would deserve further scrutiny. There has been substantial growth in wood products, mainly sawn timber with demand driven by construction (as with cement) as well as growing exports of hides (crocodile skins). In both cases, the growth does not appear associated with increased sophistication of local processing capabilities. Similarly most tobacco is exported in relatively unprocessed form.

A key reason for the focus on food and beverages is the growing demand associated with rising incomes and urbanisation. Linked to these trends is the spread of formal retail chains, including regional supermarket groups such as Shoprite, Pick n Pay and Choppies. These developments provide opportunities for rapid growth if challenges of upgrading in processing, packaging and distribution can be met. Upgrading to meet local demand can be a stepping stone to growing regional exports, especially given the constraints in some regional countries including Namibia, Botswana and South Africa in agricultural production. For example, South Africa has a large trade deficit in wheat and soya production due to agricultural conditions, which will remain even given some increases in production. As soya-cake is an important input into animal feed it implies a potential for countries such as Zambia to be a major regional exporter of animal feed, displacing the current soya cake imports largely from Argentina. Ultimately a lower cost poultry industry in the region can move the region into a net

surplus from its current substantial deficit, which would create substantial job opportunities.

Food and beverages is the largest component of household consumption in Zambia, and in the region (with the exception of South Africa, where it comes third after housing and transport, and Namibia where it comes second after housing) (Table 5). In relative terms lower income groups and rural households spend more of their household budget on food and beverages. In absolute terms nevertheless, in Zambia, Namibia, and South Africa, food and beverages consumption levels are higher in urban households (Table 6). This trend will likely be replicated in other countries in the region, as income rise and urbanisation rates remain positive (Table 7).

Table 5: Share of final household consumption spent on food and beverages, by income group (2010, %)

Country	All	Lowest	Low	Middle	Higher
Malawi	63.61%	70.18%	55.05%	37.41%	32.42%
Mozambique	52.51%	62.97%	36.33%	18.86%	5.59%
Namibia	23.55%	46.25%	25.79%	13.74%	8.01%
South Africa	15.16%	37.80%	28.74%	15.84%	7.49%
Tanzania	66.90%	71.99%	49.33%	26.08%	10.26%
Zambia	49.39%	58.09%	39.64%	27.32%	15.18%

Source: World Bank Global Consumption Database, retrieved from <http://worldbank.org/>, accessed January 2015.

Table 6: Final household consumption spent on food and beverages, by income group and areas (2010, US\$ million)

	Areas	All	Lowest	Low	Middle	Higher
Zambia	Urban	1,744.2	950	666.2	183.6	4.3
	Rural	1,254.4	1,198.2	55.2	0.8	0.1
South Africa	Urban	17,059.4	1,667.2	4,834	4,642.1	5,916.1
	Rural	6,485.8	2,601.7	2,745	830.8	307.3

Source: World Bank Global Consumption Database, retrieved from <http://worldbank.org/>, accessed January 2015.

Table 7: Urban population growth (annual %)

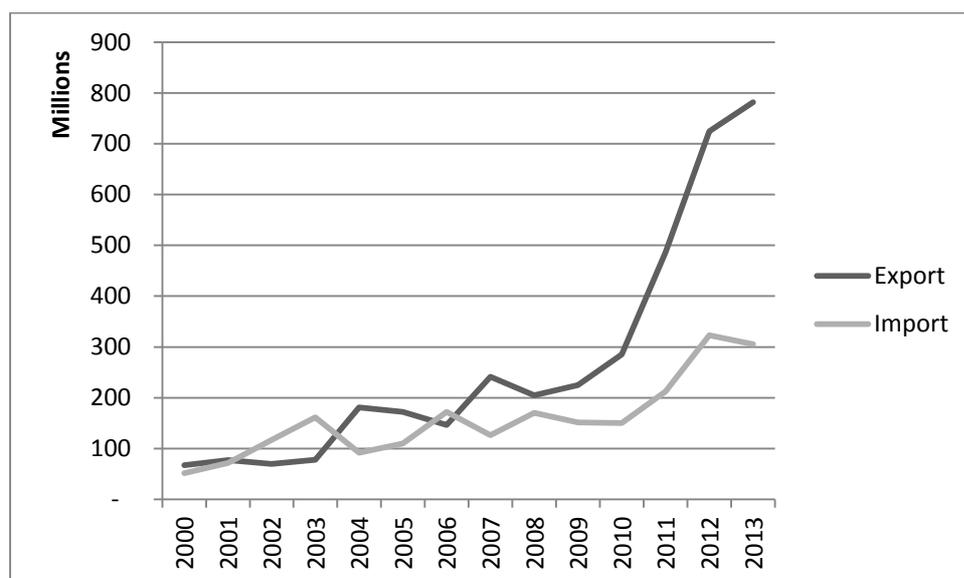
	1990s	2000s	2013
Botswana	5.54	1.91	1.28
Malawi	4.46	3.41	3.75
Mozambique	4.90	3.33	3.27
South Africa	3.10	2.46	2.16
Tanzania	4.63	4.97	5.39
Namibia	4.62	3.86	4.22
Zambia	1.40	3.48	4.35
Zimbabwe	3.63	0.41	2.50
Swaziland	2.26	0.57	1.32
Lesotho	5.08	3.21	3.08

Source: World Bank Global Consumption Database, retrieved from <http://worldbank.org/>, accessed January 2015.

The rise of the urban middle class, in particular, is critical because it is driving consumption of processed foods and beverages. For example, Parmalat, Zambia's largest dairy processor, producing 50,000l per day, reconstitutes around 200,000l of milk per month, in order to meet domestic demand for fresh milk, which is distributed through large and small supermarkets, and small retailers in urban areas (Sutton and Langmead, 2013). Demand for dairy has also tripled. Indeed, Zambia's processed food imports have grown substantially.

Since 2007, Zambia has registered an increasingly large trade surplus in food products (Figure 7). This has been driven by export growth in unprocessed commodities: in 2013, the largest contributors to trade surplus were beverages, sugar, and cereals (Table 8). In 2013, Zambia had once off exports of beverages undenatured ethyl alcohol (strength < than 80 %) worth US\$ 177 million to the Middle East. Apart from this year, Zambia has seen consistent and significant trade deficit in beverages. Smaller trade surpluses were recorded also for fresh vegetables, coffee, milled cereals, oilseeds, and cocoa preparations. The largest contributors to food imports were fish, dairy, bakery products, prepared fruits and vegetables, and miscellaneous edible preparations. These products reflect rising middle class and urban household consumption which is currently not met by the local industry.

Figure 7: Zambia's trade balance for food products (US\$ million)



Note: HS Chapters 2 - 4, 7 - 2, 16 – 22. Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

Table 8: Trade balance, by product (2013, US\$)

HS Chapter	Product Description	Trade balance
2	Meat and edible meat offal	(2,371,985)
3	Fish and crustaceans, molluscs and other aquatic invertebrates	(49,274,115)
4	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	(26,374,497)
7	Edible vegetables and certain roots and tubers	21,167,309
8	Edible fruit and nuts; peel of citrus fruit or melons	(14,441,536)
9	Coffee, tea, mate and spices	5,493,951
10	Cereals	145,210,399
11	Products of the milling industry; malt; starches; inulin; wheat gluten	55,587,097
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	25,437,371
16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	(1,516,971)
17	Sugars and sugar confectionery	176,887,405
18	Cocoa and cocoa preparations	12,348,036
19	Preparations of cereals, flour, starch or milk; pastry cooks' products	(12,671,441)
20	Preparations of vegetables, fruit, nuts or other parts of plants	(21,069,813)
21	Miscellaneous edible preparations	(18,420,532)
22	Beverages, spirits and vinegar	180,561,814

Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

Turning to food imports (Table 9), we can identify fast-growing imports of fresh products (meat, fish, dairy) with CAGR ranging between 26% and 59%, and processed food (beverages, preparations of cereals, vegetables, fruits, meat and fish, cocoa products) with CAGR ranging between 18% and 33%. Interestingly, there has been a decline in imports of cereals, vegetables and milling products, a comparatively static CAGR for oilseeds. These reflect increasing import substitution from the domestic industry, which has indeed moved into exporting to the regional market.

Table 9: Zambia's food imports (2013, US\$)

Product Description	2003	2008	2013	CAGR (%)	Top sources (2013)
Meat and edible meat offal	50,350	1,366,770	5,255,530	59	Ireland (39%); SA (24%)
Beverages, spirits and vinegar ^P	2,022,880	13,596,490	35,346,510	33	SA (59%); Namibia (29%)
Fish and crustaceans, molluscs	3,421,430	4,562,440	50,048,340	31	Namibia (37%); Zimbabwe (32%); China (24%)
Dairy produce, birds' eggs, natural honey	3,162,760	12,980,530	31,842,490	26	SA (41%)
Preparations of cereals, flour, starch or milk	4,695,430	14,245,550	28,849,100	20	SA (83%)
Cocoa and cocoa preparations	1,200,650	3,845,530	6,825,340	19	SA (84%)
Preparations of vegetables, fruit or nuts	4,860,540	13,717,480	26,413,060	18	SA (88%)
Preparations of meat, fish or of crustaceans	562,100	1,249,420	2,932,860	18	SA (73%); Thailand (14%)
Miscellaneous edible preparations	7,188,730	10,455,000	31,126,150	16	SA (80%); Kenya (12%)
Edible fruit and nuts	3,909,320	5,862,380	15,094,120	14	SA (86%)
Sugars and sugar confectionery	3,429,020	8,472,070	12,022,830	13	SA (41%); China (26%)

Oil seeds and oleaginous fruits	5,913,470	30,748,870	13,115,470	8	Malawi (68%); SA (17%)
Products of the milling industry	19,461,420	9,343,140	12,630,320	-4	Belgium (24%); France (24%); Zim & SA (16%)
Edible vegetables and certain roots and tubers	24,461,080	4,965,150	9,757,820	-9	SA (94%)
Cereals	74,923,790	31,313,250	16,475,400	-14	SA (33%); Vietnam (23%)
Total food imports	159,261,980	166,724,070	297,735,340	6	
Proportion of all imports	10%	3%	3%		
Total processed food imports (Ch. 16-22)	23,958,360	65,581,540	143,515,850	20	
Proportion of food imports	15%	39%	48%		

Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

Growing domestic demand does not necessarily mean it can or should be met by local production. There will be some products where Zambia is not competitive and does not have the potential to become so. Zambia's agricultural potential, however, means in many food products there is potential, especially as transport costs tend to reduce with the level of processing. There are, however, substantial scale economies involved in processed food. In products such as canned foods, packaging costs are very substantial and may outweigh any advantages in producing the food itself. Overland transport costs also do remain substantial.

The food industry has recorded strong growth (World Bank, 2014b). A number of product groupings are particularly interesting in Zambia's agri-food industry:

- a large, globally competitive sugar industry
- fresh vegetables for the local market and small export-oriented cluster
- the milling sector
- growing soybean to poultry value chain with export potential, and growing animal feed exports.

3.1 Sugar

The sugar industry contributes 3-4% to Zambia's GDP and is a significant employer, with 11 000 workers (Sutton and Langmead, 2013; ECIAfrica Consulting, 2013). Production and exports are largely controlled by one company, Zambia Sugar. Zambia Sugar is controlled by South Africa's Illovo Sugar group (with 82% held by the Illovo group and the balance by institutional and private investors).⁷ Zambia Sugar produces around 380,000 tonnes of refined and unrefined sugar, as well as syrup, caster sugar and speciality sugar in small quantities. Around 40% is sold to the domestic market, of which 75% to households and 25% in bulk to beverage and food manufacturers. Zambia Sugar controls 90-95% of the domestic market, around 150,000 mt.

Zambia exported US\$ 188 million worth of sugar in 2013 (Table 10). Of this, US\$121 million was exported to the DRC (28.6%), Mauritius (25.9%), South Africa (24.4%), and the remainder to other regional markets. An additional US\$ 50.1 million of molasses were exported mostly to South Africa. It must be noted that the exports recorded as going to Mauritius were switched from Europe when Illovo was acquired by Associated British Foods and, as such, the exports are invoiced to Mauritius but are likely destined for Europe.

Over time the share of exports to deep sea markets (mainly Europe) has declined. In 2005, out of US\$72.8 million worth of exports, US\$44.5 million targeted the EU, and only US\$28 million the region. The preferential access to the EU market had been important in ensuring good prices from this market, however, the substantial transport costs reduce the net price received for exports which results in prices that are substantially below those being earned in the local market. In particular, the growth in demand from the DRC has absorbed increased levels of production. In effect, exports to the DRC are close to being local sales given the proximity and the link to the growing consumer demand in the DRC Copperbelt.

There are very substantial opportunities in sugar confectionary products as the SADC region imported US\$283.8 million worth of sugar confectionery products in 2013. We return to this below.

⁷ <http://www.illovosugar.co.za/About-us/Zambia>, accessed in February 2015

Table 10: Zambia's sugar exports – raw cane and molasses, by export destination (2013, US\$ million)

	Exported value 2013 (US\$ thousand)	Share in Zambia's exports (%)	Exported growth in value in 2009- 2013 (% , p.a.)
World	188,910	100	13
DRC	54,067	28.6	15
Mauritius	48,967	25.9	25
South Africa	45,662	24.2	-6
Kenya	13,030	6.9	451
Zimbabwe	9,057	4.8	29
Namibia	4,993	2.6	118
Mozambique	4,770	2.5	215
Malawi	3,316	1.8	54
Botswana	1,891	1	97

Source: ITC TradeMap, retrieved from <http://www.trademap.org/>, accessed January 2015.

Sugar production in Zambia is expanding with investments both by Zambia Sugar and by new entrants (ECIAfrica Consulting, 2013). Zambia Sugar is expanding production through development of Nanga Farms, and donor and government-funded outgrowers schemes. Also, there is new investment in the pipeline, with African-based AGZAM Project Developers Ltd planning a US\$251 million sugar plantation (15,000 hectares of cane sugar in Kazungula) and a bio-ethanol plant to produce 200,000 metric tonnes of sugar and 28 million litres of bio-ethanol per year. World prices are forecasted to remain attractive, with profitability likely to be affected mostly by exchange rate fluctuations and weather.

The majority of Zambia's sugar exports are of household and industrial sugar as a bulk commodity. While there are exports of value-added sugar products, these are relatively small compared to the potential represented by regional demand and considering the SADC imports of US\$238 million. In 2013, Zambia exported US\$15.5 million sugar confectionery to Zimbabwe, DRC and Malawi. In comparison, in 2013, Egypt exported US\$85 million of sugar confectionery products to Sudan and Yemen; Kenya exported US\$32 million to the EAC region, despite being a net sugar importer; and Brazil US\$165 million to the US, Latin America and Angola. Other value added uses for Zambia's sugar include downstream processing by manufacturers of beverages, biscuits and bakery products, snacks, fruit and vegetable processors, and dairy products.

SADC countries' markets for sugar confectionary are growing faster than the world average due to increasing consumer spending in the region (ITC Trademap Data). World demand for sugar confectionary grew by an average of 8% per year during

2009-2013, while demand in Mozambique grew 32% per year, Zimbabwe 28%, DRC 21%, Angola 15% and South Africa at 14%. The main source of imports in the region is South Africa, with the exception of the Angolan market (dominated by China, Colombia, Portugal) and the Tanzanian market (Kenya). South Africa's main import sources in 2013 were Swaziland, Botswana and China. Zambia is managing to compete only in the DRC and Zimbabwe.

In growing regional exports Zambian manufacturers face stiff competition from South Africa and need to address factors that make their final products more expensive. A fundamental issue is competition related. Zambian sugar production (the main input to sugar confectionary) is dominated by a single company which several studies have found has market power and is exerting it to sustain relatively high prices to domestic customers including those manufacturing sugar confectionary (Chisanga *et al.*, 2014; Ellis *et al.*, 2010; World Bank, 2014a). In addition to the natural protection afforded by transport costs, the Zambian market is protected from import competition through a domestic regulation which restricts imports of household sugar to vitamin A-fortified sugar.⁸ According to the Zambia Association of Manufacturers (ZAM), this requirement is an entry barrier which serves no legitimate purpose.⁹ Importing also requires obtaining a licence, which has been observed to be burdensome and non-transparent.¹⁰ In addition, the obvious sources of imports such as Zimbabwe, Malawi and South Africa are markets where Illovo itself is a major producer, alongside Tongaat-Hulett, and these firms have long-term close relationships through the role of the sugar industry in regulation in South Africa.

The upshot is that whilst Zambia is one of the world's lowest cost production locations (at US\$169/t vs. global average of US\$263), domestic prices remain high (World Bank, 2014a) (Figure 8). As a result, the margins of Zambia Sugar have been substantially higher than those of the South African operations of Illovo (its immediate parent).¹¹ This is the case even although Zambia Sugar has a number of costs which appear to be higher than would be expected of an efficient firm. For example, in the 2013 financial year distribution costs were equivalent to 18% of total revenue, administration costs 13%, and finance charges 9%. These costs apparently included management fees paid to Illovo Sugar Ireland, export commissions and payments for marketing services paid to associated companies in the Associated British Foods and Illovo group, finance charges for loans within the group, as well as substantial sums for imports of goods and services from within the group.¹² Export

⁸ Note, however, that fortifying sugar adds only 0,01% to the production costs, and the requirement does not apply to industrial sugar.

⁹ Interviews with Zambian firms and ZAM.

¹⁰ Interviews with Zambian firms and ZAM.

¹¹ See segmental analysis, p56, Illovo Annual Financial Statements, 2013.

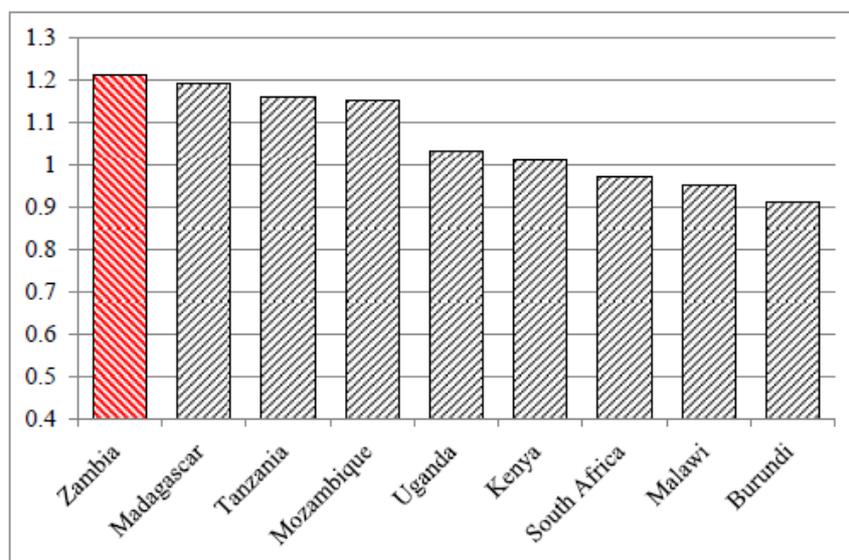
¹² Zambia Sugar Annual Reports.

sales to Europe were also made to associated companies, which from the trade data appear to be registered in Mauritius.

Prices of sugar as a key input clearly has an impact on the competitiveness of the confectionery industry, and high prices have also impacted negatively on other industrial users such as beverages companies.¹³ Indeed in 2006 downstream industrial users brought the matter to the Competition and Consumer Protection Commission of Zambia, which recommended the establishment of an import quota regime. This recommendation however was never implemented. Together with the lack of new entry in the market until recently, this has left the market dominance by Zambia Sugar unchallenged.

New entry has the potential to increase competition in Zambia, however, this will take considerable time. Instead there is a more immediate source of competition from regional producers if trade restrictions were removed. Lower sugar prices would improve the competitiveness of downstream industries and grow local sugar demand, supporting the long-term sustainability of the overall value chain. It can be an important part of a strategy to make Zambia an agro-processing hub for the region. According to ZAM, Trade Kings relocated their sweet manufacturing plant out of Zambia and into South Africa given the high prices of sugar in Zambia (although it was not possible to confirm this directly with Trade Kings).

Figure 8: Retail sugar prices in selected countries (2013)



Source: World Bank, 2014a

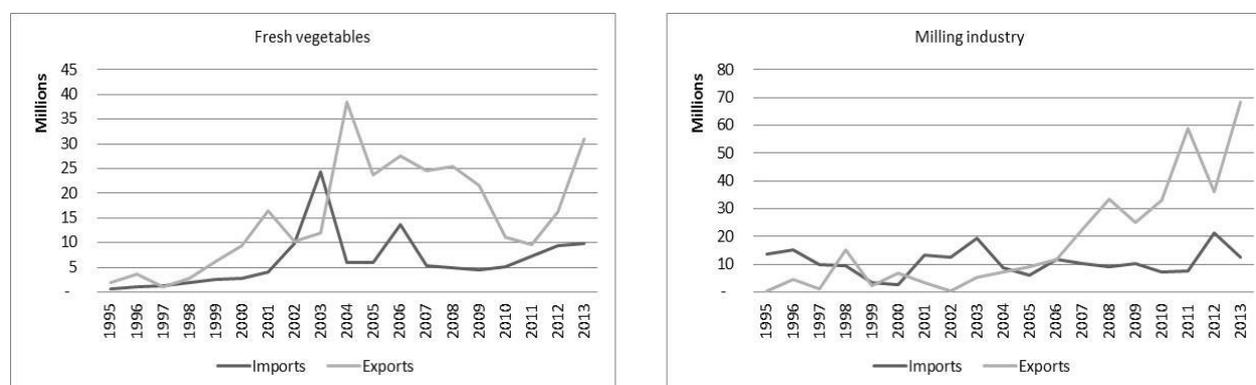
¹³ According to the Zambia Association of Manufacturers (ZAM), beverages producers faced sugar price increase of around 14% per year (Interview with ZAM, 14 October 2014).

3.2 Vegetables and milling products

Export patterns for fresh vegetables and milling products have followed two very different trajectories (Figure 9). Fresh vegetables exports picked up in the 2000s thanks to linkages to EU buyers. Exports include asparagus, mange tout, sugar snap peas, courgettes. Production is located near the international airport, in order to facilitate a cold chain and airfreight distribution. An EU-funded export development programme assisted the sector significantly in, among others, meeting EU supermarkets' requirements. The sector has a very effective business association, the Zambia Export Growers Association (ZEGA), which set up training programmes for farmers on best agricultural practices, and supported SPS compliance mechanisms and freight arrangements to facilitate exports.

At the end the 2000s, exports dwindled as a result of a decline in global demand together with higher freight costs, currency appreciation, and electricity disruptions which affected irrigation and the cold chain (World Bank, 2014a). Recently, the industry has managed to recover by re-orienting its exports towards the region, in particular the DRC (49.6% of total vegetable exports in 2013) and South Africa (33.9%). This has enabled exports to recover to close to the 2004 peak. Small export volumes are also directed to Australia and New Zealand.

Figure 9: Zambia's trade balance for fresh vegetables and milling industry, US\$ million



Source: UN Comtrade, retrieved from <http://comtrade.un.org/>, accessed January 2015.

The trend over time for milling products is different in that deep sea markets have never been the main target, while there is similarity in the growth in recent years being driven by growing regional demand linked to rising incomes and consumer spending. Overall, exports from the milling industry picked up in the late 2000s reaching US\$68.2 million in 2013 (Figure 9). They have always been regional in scope (DRC, Zimbabwe) and, indeed, adding informal trade flows to neighbouring countries, regional exports are more significant. For example an estimated 100,000 tonnes (US\$35 million) of maize meal were sold to Zambian and DRC cross-border traders, hence total maize

exports are estimated to be 10-30% larger than suggested by official statistics (World Bank, 2014a).

Of the total recorded exports of milling products, Zambia exported US\$10.6 million of value added cereal products such as breakfast cereals and biscuits into Malawi, DRC, and Zimbabwe in 2013. Zambia also exported cereal preparations worth US\$ 12.9 million in 2011, US\$ 45.9 million in 2012, and US\$ 16.2 million in 2013. One of the leading firms in bakery products, Trade Kings, serves the SADC market and also has a global supply chain from Europe and East Asia (Sutton and Langmead, 2013).

The milling industry is dominated by 8 large scale millers, which are largely mechanised and efficient. However, more recently, competition from medium and small new entrants has been having an impact on prices. US-owned National Milling is the industry leader (Sutton and Langmead, 2013). It processes maize, wheat and soya, claiming 25% and 30% of the flour and mealie meal market, respectively. It is also the second largest animal feed producer (Namfeeds). Its main export market is the DRC, and the company is considering vertical integration upstream into farming and downstream into bakery.

Zambia has become increasingly self-reliant in wheat production, with a growing surplus available for exports, as milled flour (World Bank, 2014b). Maize flour and bran exports have also grown considerably, together with maize exports. Maize trade flows have been erratic because they have been dependent on a range of domestic policies (seasonal export bans, etc.). The wheat industry has grown more consistently, however, this has been on the back of import protection which, according to the bakery industry, has hurt their cost competitiveness in the domestic and regional market. In 2011 wheat flour cost around US\$700/t at the factory gate, 50% more than Ethiopia and Tanzania (Dinh, 2013). While import protection has been justified on infant industry grounds, wheat is now the third most consumed staple foods and the industry has been able to export (World Bank, 2014a). Wheat production has grown sufficiently to meet local demand and create a surplus for exports to the region. However further research is required to understand how price competitive Zambia's bakery industry is in the domestic and regional market.

Key issues for competitiveness

There are opportunities to expand Zambia's presence in the regional market and to upgrade into value-added manufacturing products. For example, most of Zambia's vegetable exports are in fresh form, rather than frozen or canned form. Only US\$5 million worth of canned vegetables and fruit/vegetable juices were exported to the region compared to US\$30.1 million in fresh vegetables. Yet, SADC imported US\$716.4 million in prepared food in 2013, with a number of neighbouring markets

growing well above the world average (ITC Trademap Data). The regional demand in this food category has been increasingly met by South Africa, China and Latin America.

Assessing competitiveness and market opportunities requires considering market demand patterns, locally and regionally, key input costs, issues of quality and standards, linked investments such as in packaging, and branding and distribution including through the growing footprint of supermarket chains.

Growing local consumer demand represents an important base for developing local capabilities and increasing scale and efficiency. An important development is the spread of supermarket chains, mainly from South Africa, in Zambia's retail sector. For example, Pick n Pay opened its first Zambian shop in 2010, and since then opened 8 stores, with plans to have 15 by 2015 employing 2000 people and investment worth US\$ 50 million (Pick n Pay, 2014). Shoprite entered the Zambian market in 1995 and now has over 22 stores across Zambia, employing around 2500 people.¹⁴

Supermarkets cater for the rising middle class and urban consumers, but their spread to rural areas is changing how low income consumers shop too. The challenge for local food processors is two-fold: entering the supply chain of supermarkets, which requires meeting stringent requirements in terms of consistent quality, cost, consistent volumes, just-in-time supply, and meeting mandatory and private standards. Marketing fresh food produce to supermarkets in particular has been difficult as often the institutional, as well as public and private physical and financial infrastructure support systems are weak (including packing houses¹⁵, cold chains, shipping equipment, credit facilities, standards and certification processes etc.). Local producers are usually responsible for all post-harvest activities up until the product is delivered to a distribution centre or a supermarket. In 2013, South Africa supplied 87.6% of prepared fruits and vegetables imports into Zambia, most likely for the supply to South African supermarkets. Further analysis is required to understand whether these products compete with local production and what is driving Zambian preferences.

The second challenge is for suppliers to upgrade into value added, differentiated products, which enable them to move into a more profitable market segment. Pick n Pay committed to 50% local content, which is already met for fruits and vegetables and manufactured products (Pick n Pay, 2014). Only 25% is imported directly, however this share accounts for 80% of the range of products. These figures suggest that Zambian suppliers still have to move into the higher value added, more differentiated segment of the market. Shoprite claims that 70% of their stock is sourced and produced in Zambia (Company website), however, it is unclear whether this is in

¹⁴ <http://www.shoprite.co.zm/>

¹⁵ With the ability to provide washing, packaging, labelling, bar-coding services.

terms of volume or value, and at what level of value addition these local Zambian products are.

To effectively enter and compete within the supermarket supply chain, as well as increase value added offerings, suppliers require significant investment in capital and technology to upgrade capabilities. This appears not to happen at the pace required to maintain competitiveness in countries in the SADC region (Emonger and Kirsten, 2006; Weatherspoon and Reardon, 2003) and is an area that government policies can target.

There are some examples of local firms that are attempting to upgrade their capabilities. According to ZDA, some local firms are making major inroads in supplying products such as detergents and mineral bottled water to supermarkets and have now displaced their South African competitors.¹⁶ Useful lessons can be drawn from their experiences. Speciality Foods, a local food manufacturer, managed to enter the supermarket supply chain (Sutton and Langmead, 2013). It produces food products across the following categories: sweets, snacks, peanut products, baby foods powders, liquids. It manufactures to order for Shoprite, Pick n Pay and Spar, plus wholesalers across the country. The firm invested in meeting the supermarket standards, with in-house laboratories and quality control processes across the entire production chain, including relying on UNZA and ZABS testing facilities. It upgraded its machinery and packaging and health standards. Access to supermarket supply chains gave the firm a larger market for its products and underlined its upgrading efforts. However, the firm struggles to find external finance to expand operations. Access to capital has been found to be a critical constraint across sectors and firms of different size (Box 2).

Moreover, in order to meet the buyers' requirement, the firm had to internalise a number of quality related activities, which smaller businesses and new entrants would struggle to do. This has important implications in terms of how government and supermarket chains can jointly support local food processors. Discussed in more detail in Section 3.3, another example of a local firm managing to enter and remain competitive in the supermarket value chain is that of Zambeef. Zambeef has a strategic partnership with Shoprite to run and manage its own butcheries in Shoprite stores. The capabilities required for it to enter into such arrangements would offer valuable insights on what types of support suppliers typically need.

¹⁶ ZDA representative intervention at the validation seminar held on 4 May 2015 in Lusaka, Zambia.

Box 2: Capital constraints for Zambia's business sector

Zambia's private financial sector has been relatively stable, thanks to sound regulatory reforms undertaken in the last few years (World Bank, 2014b). Whilst private sector credit rose by 10% per year between 2011 and 2014, financial intermediation with respect to private enterprises has remained weak, for a combination of lack of bankable projects and risk aversion (Interviews, 2014). Concerns remain that the financial services sector is underdeveloped and dominated by a few commercial banks. These commercial banks do not cater for long term lending, and their high short term lending rates are high (Interviews, 2014; OECD, 2012). The high rates have fuelled suspicions of anti-competitive collusive behaviour.

For various reasons, credit facilities from microfinance institutions, CEEC Empowerment Fund, and the Development Bank of Zambia fail to address the financing needs of small and medium manufacturers (for example, DBZ is oriented towards agricultural firms) (Dinh, 2013). The ZDA Trade and Industrial Development Fund has not been established yet, although ZDA is currently implementing Zambia Insurance Export Development Fund to support export activities of MSMEs (Interviews, 2014). Other forms of capital funding include Growfin, a venture capital fund which nevertheless has a very small market, and the Lusaka Stock Exchange which is now looking at creating a new exchange for the smaller companies (Interviews, 2014). Even for Zambia's 50 leading firms external sources of finance are a constraint, and growth is funded through internal resources (Sutton and Langmead, 2013).

Further analysis is required to identify which products could be processed competitively in Zambia, taking into account cost of tin cans, access to high quality raw materials, costs of meeting standards, etc., and where demand is likely to grow in the region. This analysis should be expanded beyond vegetables, into for example, fruits and nuts.

Encouraging suppliers to invest in upgrading capabilities is however only one side of the coin. From the demand side, the procurement and sourcing strategies of key retail chains like Shoprite and Pick n' Pay have a significant impact on domestic producers and food processing firms. Reardon, Timmer and Berdegue (2004) and Humphrey (2007) highlight that the manner in which large supermarket chains procure have drastically transformed food supply chains. In general, supermarkets have moved away from spot purchases to adopt specialised procurement agents giving them direct influence over quantities, terms of delivery and product quality. This has the adverse

effect of shrinking the supply base by using only preferred suppliers. Further, supermarkets chains tend to use their own centralised distribution centres (such as Shoprite's Freshmark) supplying a broad range of stores, shifting away from the traditional store-by-store procurement and supply practice. These centralised strategies may result in more products being imported from South Africa rather than procured locally. Therefore further research needs to be undertaken evaluating the changing procurement strategies of supermarkets and the consequent impact on local suppliers. From a competition perspective, this includes understanding the supply agreements between large, multinational suppliers and supermarkets.

3.3 Soybean to poultry value chain

In the past decade, there have been dramatic changes in the value chain which runs from soya and maize, to animal feed and poultry. Moreover it points to substantial potential for ongoing growth given continued supportive policy measures. The most important change has, however, been in agricultural production, with Zambia moving towards a surplus in soya to complement the surplus in maize production which has generally been the case. This holds out the promise for very competitive animal feed production as maize and soya oilcake (a co-product with vegetable oil) are the two main cost components. The change is already evident in the growth in animal feed exports in recent years to neighbouring countries including South Africa.

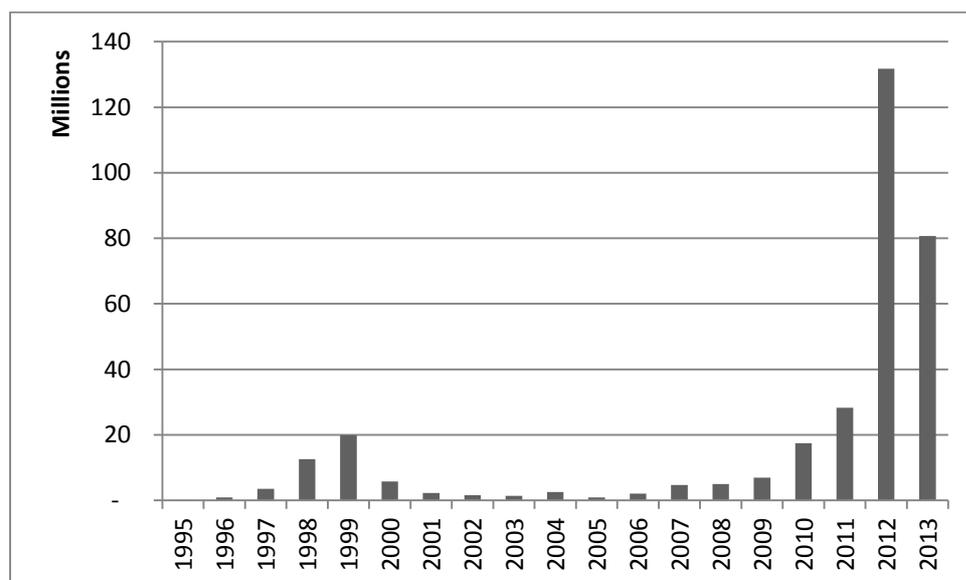
The potential is reflected in strong demand growth for poultry in Zambia and regional economies, as the main source of protein, and the fact that South Africa remains a large net importer of soya oil-cake and of protein from deep sea sources, mainly Argentina and Europe. Angola is also a very large net importer of poultry. Zambia should be aiming to replace these imports. Large companies have already identified this opportunity and are making related investments along the value chain. For example, Zambeef, now in a joint venture with South Africa's Rainbow chickens, is aiming to reduce soybean costs so that soya products can be landed in South Africa at competitive prices (estimated at around \$500/t in 2014).¹⁷ Improvements in transport and logistics will aid this, as well as coordination around regional trade and industrial policy to realise the collective benefits from a more competitive poultry industry across countries as opposed to mutually destructive trade barriers being raised, for example, between Zambia and Zimbabwe.

Soybean production in Zambia increased threefold, from about 60 – 70 000t in 2010 to over 200 000t in 2013, while investments in crushing capacity are running ahead of production such that capacity stood at 400 000t per annum in 2014 (Takala-Greenish,

¹⁷ South Africa is currently importing at US\$ 300/t. This implies that if Zambia can lower production costs at US\$ 300/t and transport costs to Gauteng can be reduced to US\$ 100/t, Zambian animal feed exporters would enjoy a significant profit margin.

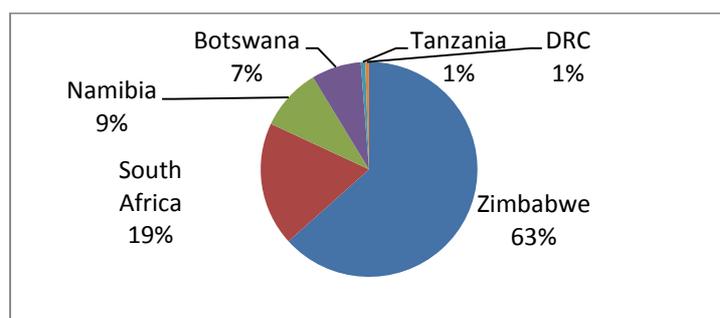
2015). Through an export ban on soybeans, all soybean output is processed domestically to meet local demand, mainly in the form of animal fodder by the poultry industry. Animal fodder production has grown substantially, moving into the export market since 2008, and reaching US\$ 130 million in 2012 and US\$ 80 million in 2013 (Figure 10). This is alongside strong growth in local demand. Exports have been regional (Figure 11).

Figure 10: Zambia’s exports of animal fodder (US\$ million)



Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

Figure 11: Zambia’s exports of animal fodder, by export destination (2013, US\$ million)



Source: ITC TradeMap, retrieved from <http://www.trademap.org/> accessed January 2015.

Poultry is the world’s fastest-growing livestock sector thanks to rising per capita income, urbanisation and population growth in developing countries. Given its protein-conversion rate, this meat is cheaper than pork or beef. Poultry consumption is characterised by high income elasticity, but with an inverse-U shape. Poultry consumption grows very fast at low income levels, but as income increases, demand flattens out. Lower-middle income developing countries have experienced the highest growth of poultry meat production. The major factor underlying the growth in poultry consumption has been a technological change in production organisation, equipment,

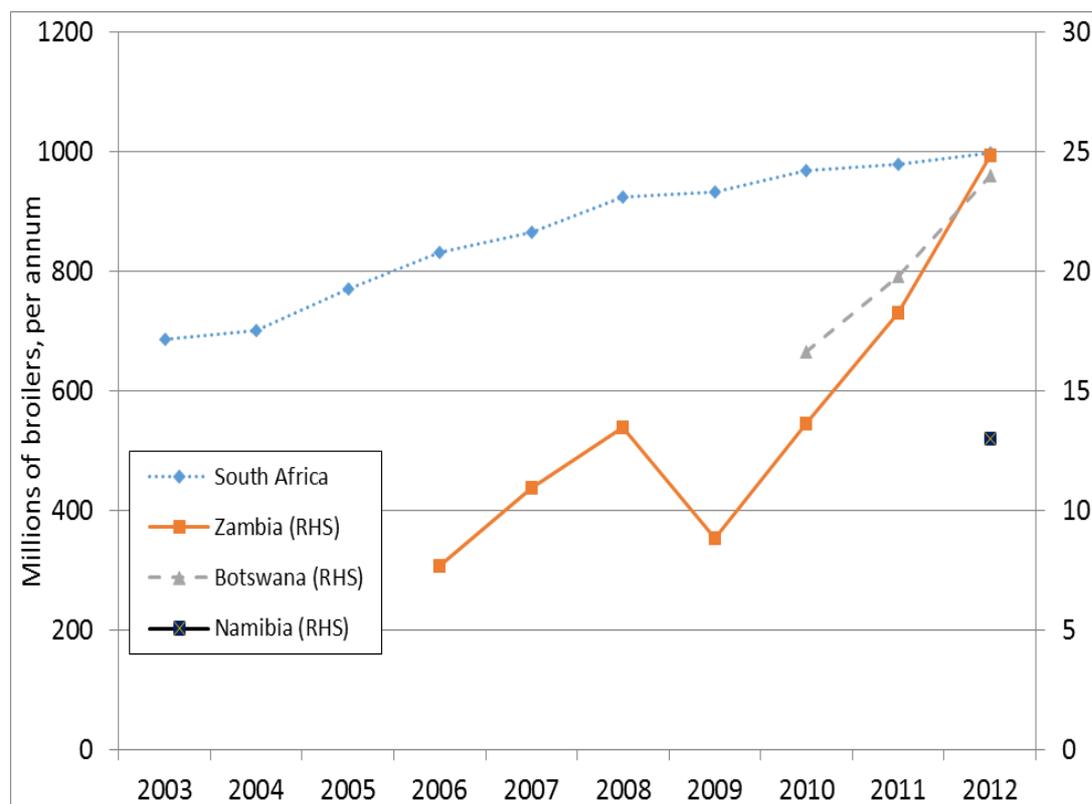
genetic material and inputs, which have made poultry products significantly cheaper (Narrood *et al.*, 2007).

The region's poultry sector is characterised by a dual market structure: a market of small producers selling live chicken or frozen whole chickens, and supermarkets and other retailers supplied by modern abattoirs. The latter sell processed, frozen, packaged and branded meat (Narrood *et al.*, 2007). Moreover, food service outlets are becoming increasingly important for poultry meat products (chicken nuggets, chicken breast sandwiches, fried drumsticks).

South Africa is the region's largest market in the poultry sector, both in terms of supply and demand. Consumption has grown from 19.7kg/per capita in 2000 to a projected 35kg/per capita in 2013 (DAFF, 2011). However, South Africa continues to have a poultry trade deficit of 15-20% of demand, met largely from Brazil and Europe. Other regional markets are also fast growing, although from a lower basis, for example Zambia and Mozambique have seen 20% CAGR in 2005-2012 (Technoserve, 2011; Poultry Association of Zambia <http://paoz.org>). The fact that, for example, Zambia's consumption is still at approximately 12kg per capita shows the potential for further growth. Other estimates suggest demand for poultry globally by those on median incomes will more than double over the next three decades and it will shift from being mainly purchased from the live market to being sourced in as processed fresh and frozen chicken from supermarkets (Aho, 2013).

To give a sense of scale, South Africa is by far the largest producer with production of one billion broilers in 2012, compared with 25 million in Zambia and Botswana (Figure 12). However, Zambian production almost trebled from 2009 to 2012 reflecting rapid urbanisation and growth in disposable income of the population as well as improved competitiveness of the local industry. Botswana's infant industry protection has also supported very strong growth from 2010. Note that Botswana imports raw materials for its feed manufacturing mostly from South Africa, with a shift to Zambia in recent years, as does Namibia since it started significant local poultry meat production in 2012.

Figure 12: Production of broilers (commercial)

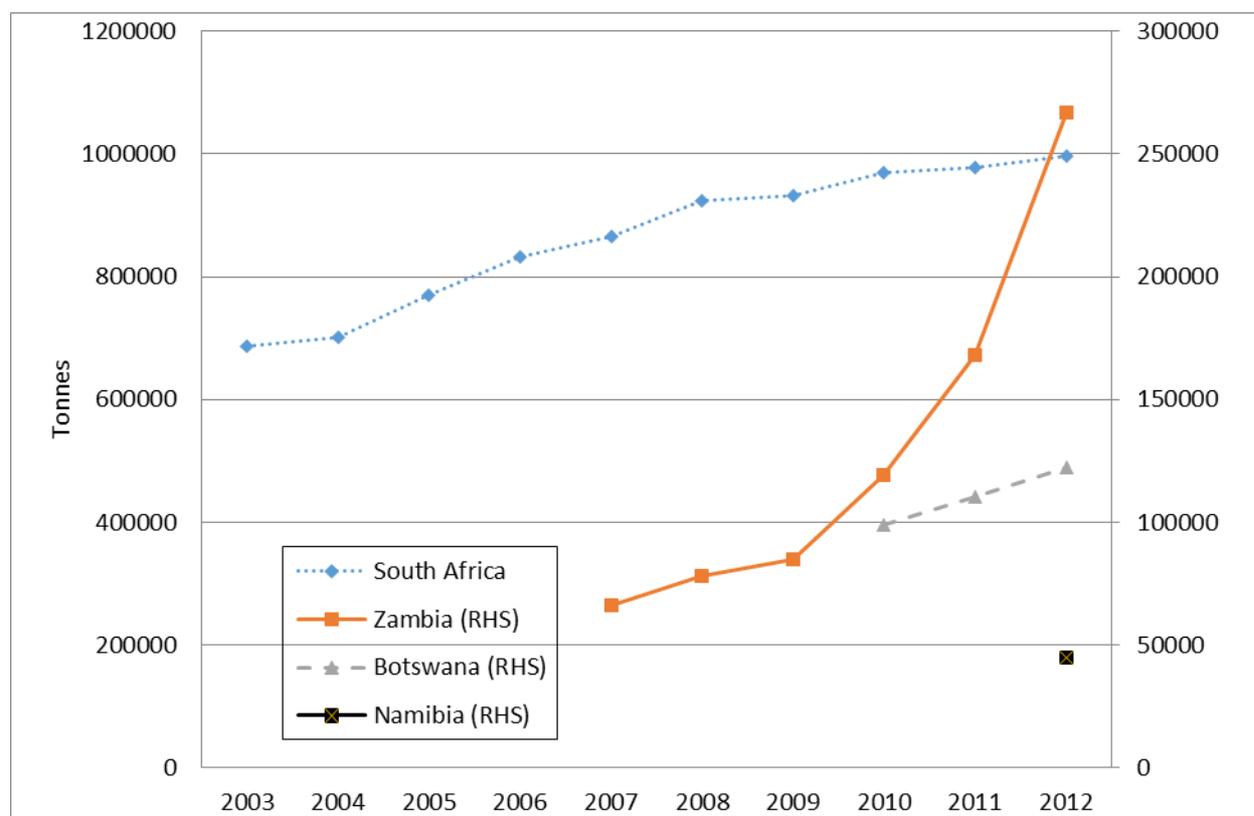


Source: As in Bagopi et al. 2014. Poultry Associations of South Africa,¹⁸ Zambia and Botswana Ministry of Agriculture, Namibia data derived from NPI

Interestingly Zambia's production of day-old chicks is more than double that of grown broilers. This appears to be due to exports of day-old chicks to neighbouring countries such as the DRC as well as broilers being reared in small-scale operations and sold live and not being picked up in the formal production data. The data on feed production reflect broadly similar trends, as might be expected, with the notable difference in both the level and growth of feed production in Zambia (Figure 13).

¹⁸ The figures for South Africa are the number of broilers slaughtered

Figure 13: Production of poultry feed



Source: As in Bagopi et al. 2014. Zambia¹⁹, Botswana Ministry of Agriculture and Namibia data derived from NPI, South Africa Animal Feed Manufacturers Association

In 2012, Zambia processed 700,000 chickens per week, all locally consumed, and the industry employed 80,000 people (Poultry Association of Zambia). It is now reaching self-sufficiency, with large informal exports of broiler meat to the DRC (World Bank, 2014a). Given the pace of local demand growth and regional export opportunities it is likely to double in size over the next five years.²⁰ The region, Zambia included, has received significant investment by South Africa’s commercial poultry industry. In South Africa, two vertically integrated firms, Rainbow and Astral, have historically controlled the majority of the market (Grimbeek and Lekezwa, 2013). In Zambia, Astral current capacity is 120,000 day-old chicks per week, but the target is to hatch up to a million day-old chicks per week as the demand for broilers in the region increases. Astral Food has more than 70 outlets for distribution of feed and chicks. It also exports parent stock to Southern and Central Africa. Astral is vertically integrated into TigerFeeds in Zambia, which is one of the largest players in animal feed production (20% market share) (Sutton and Langmead, 2013).

¹⁹ Zambia figures represent the production by the top five producers of feed.

²⁰ This implies an annual growth rate of around 15% while the Zambian Poultry Association has estimated annual growth at as much as 20% per annum over the past decade.

Rainbow Chicken bought a 49% share of Zambeef's poultry division, Zamchick, in early 2013. Zamchick is a major producer of broiler meat and table eggs, processing 5 million chickens per annum and producing 40 million eggs in 2014. In 2013, Zambeef and Rainbow launched a new broiler parent stock rearing, laying, and hatching operation for the supply of day-old chicks (Zamhatch Ltd.). The group is also market leader in animal feed production, through Novatek (30% market share) (Sutton and Langmead, 2013). Zambeef processes half of the national soybean output, of which 40% is grown in the company farms.

The regional flows of FDI in the poultry value chain have resulted in increased production capabilities in Zambia, but also in limited competition between very large vertically integrated companies. Increased production capabilities are opening the door for Zambia to become a regional hub for animal feed and, potentially, broiler meat. South Africa imports 350 000t of soybeans per year from Argentina, however, Zambia's soybean has been too expensive to compete. In 2011 the cost of production for commercial farmers in Zambia was US\$ 451 and US\$ 398 per ton for farming on dry land and using irrigation respectively (Takala-Greenish, 2015) while delivered prices were at import levels of around US\$700/ton (Bagopi et al., 2014). Zambeef's costs of production have been falling with large-scale investments in production and in 2014 were estimated to be approaching US\$300/t, including local transport costs. At these prices and with efficient transport costs Zambia will be competitive across the southern African region. In particular, if processing costs were maintained at competitive level, Zambia could meet the regional demand for animal feed and lower poultry production costs, especially in neighbouring countries Botswana and Namibia. Apart from efforts to reduce transportation costs and increase yields, this objective would also require cooperation between countries with strong national lobbies from feed mills and oil producers. The relationship between regional integration, transport costs, trade policy and competition is often complex, and deserves in-depth analysis at the industry and country specific levels (Box 3).

Box 3: Transport, competition and regional integration

Trade flows are linked to the production and location decisions of firms and the trade policy environment in the region. While investment decisions to grow productive capacity in Zambia can realise competitive businesses and efficient scale in areas where Zambia has a potential comparative advantage, it is also necessary to be able to get products to market. Transport costs are critical to being able to access markets such as South Africa.

In poultry, the available evidence suggests that it costs more to export maize (for animal feed) from Zambia to South Africa than for South Africa to import from Argentina. Similar concerns were raised by importers of sugar in South Africa seeking to source from Zambia. This speaks, in part, to constraints in terms of transport infrastructure, the harmonization of regulations in transportation, as well as delays and costs of transit at border posts for instance.

Transport arrangements also impact on the ability to source key inputs such as fertilizer. A 2014 study found that opening up road transport in Zambia, Zimbabwe and South Africa had led to Zambia undermining the incumbent fertilizer traders and had lowered prices in Zambia significantly compared to other countries such as Malawi and Tanzania. This had involved improved levels of competition in the freight sector (and stabilised prices) by improving domestic regulatory measures and increasing efficiency to allow for increased competition in the sector including from cross-border operators from South Africa and Zimbabwe in particular (Ncube *et al.*, 2014).

This example illustrates the significance of transportation as an enabler to greater cross-border rivalry. Cross-border competition relies on customers across the region being able to access substitutes in a timely and feasible manner such as to constrain the exercise of market power in a narrow geographic market often delimited by national borders. To take the example of cement, prices in Tanzania are relatively lower than those in neighbouring markets and while the Mbeya Cement (Lafarge) plant located in Mbeya is in Tanzania, it is situated just on the border with Zambia while other plants in Zambia are located further away, nearer to Lusaka. Other things equal, and absent colonial borders and restrictions, cement produced in this area should serve as a competitive alternative to Zambian cement in this area. However, prices remain vastly different between these areas which may be due to the fact that Lafarge is also present in Zambia, as well as by trade and transport constraints.

There is further evidence of the positive effects of new entry in the Zambian and Tanzanian fertilizer industries. Fertilizer markets in the region are largely oligopolistic and largely dominated by international giants such as Omnia and Yara International. A recent study into competition in the road transportation of fertilizer in Zambia, Malawi and Tanzania shows that new entry in the Zambian fertilizer industry following the uncovering and prosecution of a fertilizer cartel which lasted from 2007 to 2012, have led to greater price competition. Following the cessation of the cartel, the Export Trading Group which has grown its share of fertilizer markets in several African countries, and has brought greater price competition to the erstwhile cartelists in Zambia (Nyiombo Investments and Omnia). The growth

of the firm in Tanzania has also seen it capture an estimated 20-40% market share, in competition with the dominant incumbent, Yara. Interestingly, in South Africa the same major producers of intermediate fertilizer products, Omnia and Kynoch (then owned by multinational Yara) were found to have engaged in cartel conduct along with Sasol.²¹

These examples illustrate the linkages between trade policy, transportation costs, and the strategic location decisions of firms, and the need for further research in this area. Regional integration cannot be achieved where conflicting trade policies across countries, inefficiencies in transportation, and strategic behaviour of firms undermine rivalry between firms across political borders.

The challenges in building competitive supply through the value chain is highlighted by the fact that animal feed prices in Zambia until 2012 were in fact higher than in South Africa, as were the prices of breeding stock (day old chicks) and of frozen poultry meat (even after adjusting for brining) (Bagopi et al. 2014).²² This reflects the importance of ensuring competition between suppliers so that upstream cost advantages flow through to competitive downstream production.

Zambeef Products Group, one of Zambia's largest agribusinesses, employing over 5,500 staff, is one of the most successful examples of value chain upgrading in Africa. Zambeef is involved in the production, processing, distribution and retailing of meat and dairy products, eggs, edible oils, stock feed, flour and bread (Company Reports). It has vigorously pursued a strategy of vertical integration: the Zambeef group includes 5 farms (17,000 hectares of irrigated and rain-fed crops, mainly wheat, maize, soybean, and oil plantation), 3 processing plants, 10 abattoirs, 20 Shoprite butcheries, 90 retail outlets, 3 wholesale depots, 8 Zamchick Inns. The distribution strategy was particularly important in light of the fast-growing demand and profitability of supermarket and food service outlets. In 1998, it reached a strategic partnership with Shoprite, Africa's largest retailer, which evolved in Zambeef running and managing its own in-house butcheries in Shoprite branches. Moreover, the group operates its own fast food chain, Zamchick Inn. Its subsidiary, Zamanita Ltd, acquired in 2008, is one of the largest edible oil and soya cake producers in Zambia. In 2012, Zamanita successfully commissioned a large upgrade and expansion of its soybean crushing and Solvent Extraction Plant, which has doubled the crushing capacity from 50,000

²¹ Competition Commission Media Release (5 July 2010), 'Sasol agrees to divestiture in the fertiliser case', available: <http://www.compcom.co.za/assets/Uploads/AttachedFiles/MyDocuments/Final-Sasol-media-release-050710.pdf>

²² Day old chick prices in Zambia were estimated at more than double that of South Africa in 2012, while breeding was very concentrated (Bagopi et al. 2014).

tons per annum to 100,000 tons per annum. This division currently supplies all of Zambeef internal requirements (33%) and the surplus stock feed (67%) is sold to third parties in Zambia and the region. Its regional expansion strategy includes West Africa, where it has piggy-backed on its partnership with Shoprite.

Zambeef's vertical integration strategy highlights how critical supply chain and forward linkages strategies are in the agro-food industry. Firstly, the main challenge for processing firms in the region has been securing access to raw materials that meet their requirements in terms of price, quality and consistency (Cramer, 1999). Whilst large companies have been able to control raw materials supply through vertical integration and/or various outgrower contractor arrangements (sugar, cotton), this poses a significant challenge for smaller processing firms. Secondly, by supplying modern, fast-growing distribution outlets, firms can capture higher profit margins and move into value-added activities. Section 3.2 has discussed how smaller firms and new entrants may struggle to do this, hence the need for public and private initiatives to support local supplier upgrading.

4. Industrialisation opportunities in the engineering sector

In April 2012, the Ministry of Commerce, Trade and Industry (MCTI) in collaboration with Japan International Cooperation Agency (JICA) released a strategy document entitled *"Industry Strategy for Engineering Products in the Region - The Hub of Manufacturing of Engineering Products in the Region"*. This document sought to pilot a 5 year strategy and action plan in the engineering products sector, one of the six priority sectors identified by the MCTI (see Section 5). The intention by the ministry is to extend the successful processes from this pilot to the other five sectors.

Within the engineering sector, two sub-sectors have been expressly identified by the MCTI as presenting opportunities for accelerated growth, development and increased regional exports - copper fabrication and iron and steel products. These sub-sectors have been the biggest contributors towards the engineering sector (see Section 2.2). The intention is for government to develop links between domestic producers, exporting companies and regional purchasers.

In this phase of the research it was not possible to conduct a thorough assessment of the MCTI strategy in terms of whether it is effectively designed or what the progress has been in its implementation. A preliminary analysis however pinpoints to a few issues. Firstly, the strategy will require more specificity in order to support implementable action plans. The strategy's action plans currently do not distinguish between copper fabrication and iron and steel, require basic information gathering, and are not sufficiently specific in terms of actions required from government and private sector. Secondly, it may be necessary to adjust the timeframe for

implementation. The wide range of action plans (20 action plans over 8 strategy components), which include the enactment of new laws, are to be implemented over a very short space of time (5 years).

In the next sections we assess trends and developments in each of these sub-sectors. In the third section, we present a separate case study on manufacturing linkages to the mining sector in particular looking at the supply of capital equipment and other inputs to mines. We believe greater opportunities exist in this space within the engineering sector which could locate Zambia as the regional hub, particularly for growing mining activities in the DRC.

4.1 Copper fabrication

The focus on exports of fabricated copper spurred from a view by the MCTI that, in addition to the country's abundance in copper ore, there has been a gradual accumulation of technology and human resources through emerging copper fabrication companies. In addition to a growing domestic market, the opportunities that stem from a growing regional market have been identified for this sub-sector. The main users of value-added copper products in Zambia are the power (40%), mining (10%) and construction²³ (50%) sectors (MCTI, 2012).

As mentioned in section 2, exports of copper semi-fabricates peaked in in 2006, with US\$ 289 million in exports, and since then declined. South Africa has been the most important market for all copper semi-fabricates with the exception of flat products (Table 11).

The regional market is key because copper fabricators operate on very low margins, hence transport cost have a large impact on profitability. Whilst Zambia is implementing reforms and investment to bring transport costs down, in the medium term these are going to be serious constraints to low margin businesses (Box 4). Zambia currently has no manufacturing facility for flat semi-fabricates and copper alloy.

²³ Construction includes 'Construction and other'

Table 11: Zambia's exports of copper semi-fabricates, by destination (2013, US\$ million)

	World	Top markets	
7408 Copper wire	127,658	South Africa	92,502 (72.5%)
		Kenya	12,595 (9.9%)
		Tanzania	11,768 (9.2%)
7409 Copper plates, sheets and strips (> 0.15mm)	79,020	Switzerland	55,007 (69.6%)
		UAE	20,011 (25.3%)
		Luxembourg	3,825 (4.8%)
7407 Copper bars, rods and profiles	61,804	South Africa	59,853 (96.8%)
7413 Copper stranded wire, cables, plaited bands, not insulated	7,662	South Africa	7,656 (99.9%)
8544 Insulated wire/cable	8,362	South Africa	51,753 (88.4%)
		Tanzania	5,842 (10%)

Source: ITC TradeMap, retrieved from <http://www.trademap.org/> accessed January 2015.

Box 4: Transport costs and trade facilitation

A 20-foot container from China to the Dar es Salaam or Durban ports costs around US\$ 2000, but from Durban to Lusaka costs rise to between US\$ 6000 and US\$ 8000 (Interviews, 2014). Most transport happens via road, which is expensive, due to a poorly developed rail infrastructure. Moreover, the region does not have standardised gauges, hence trains have to be packed and unpacked at different points or in different countries because the train's gauges are different. This raises costs of rail transport.

Several regional corridors converge in Zambia, opening the opportunity for the country to become a regional logistics hub (World Bank, 2014a). This requires increased efforts to improve border management coordination within Zambia and across neighbouring countries (Kasumbalesa, Chirundu, etc.), investment in railway operations, sustainable road user fees, and an effective regional bond guarantee scheme across COMESA and SADC.

In recent years, significant investments have gone into infrastructure development, but given Zambia's geographic location, any efforts to improve logistics calls for regional efforts because it has to rely on various countries e.g. Zimbabwe, South Africa, Namibia, and Tanzania (Interviews, 2014).

Zambia is already putting in place measures to reduce trading costs (World Bank, 2014b). These include: introduction of pre-arrival declarations, improved customs data management and risk management systems, elimination of pre-shipment inspection requirements, and One Stop Border Posts. Moreover, interviews confirmed that in order to deal with border management and border co-ordination, government is launching an initiative called “single window for trade”, which will be a single window system which will have all the border agencies (16) under one platform. Border agencies however need to improve publication and transparency of documentation requirements for cross-border trade because traders struggle to access information (World Bank, 2014b).

Moreover, Citi Bank has facilitated an e-payment system, which involves 5 other banks. The system is centralised so that payments made in one office reflects everywhere (firms can pay in Lusaka instead of at the borders). There are a couple of bottlenecks: firstly, smaller players are not yet on board regarding the e-payment system, and secondly, the system is internet-based but there isn't sufficient bandwidth.

The domestic market absorbs around 10,000 t of copper, 40% of which is sourced locally (MCTI, 2012). The industry is small, employing less than 1,000 workers (Dinh, 2013). US-owned ZAMEFA (Metal Fabricators of Zambia Limited) has historically been the largest industry player, producing copper rods, wires and cables. Around a third of its output is sold domestically to electricity utility, ZESCO, and telecommunications company ZAMTEL, the mines and other utilities. Non Ferrous Metals, which sources scrap to produce copper alloys castings, has been in operation for a long time and is a long established supplier to the mining sector. Other new entrants include: Kavino, which sources copper rods from ZAMEFA, to produce, among others, copper cables for the domestic market; ZALCO, which sources scrap copper to produce copper rods; El Sewedy Transformers (a partnership between an Egyptian company and ZESCO) which produces electrical transformers for the regional market, but imports copper sheets. El Sewedy's selection of Zambia as its choice of country to set up manufacturing facilities to cater for exports to the region is illustrative, in MCTI's view, of the potential for growth of this subsector. The construction of a copper sheet production facility is being considered by El Sewedy on the back of growth of the regional market. The MCTI views such investment, whether undertaken by ZAMEFA or El Sewedy, as a competitive advantage for Zambia over regional countries (MCTI, 2012).

Whilst acknowledging constraints in terms of skills, high manufacturing costs, lack of supporting industries and high import intensity, MCTI is of the view that the following

factors confer Zambia a potential advantage in copper fabrication: the recent entry of new fabricators as highlighted above, natural protection of being a landlocked country and a growing regional market in terms of GDP and population (MCTI, 2012).

It is not clear nevertheless how the strategy addresses cost-raising factors, such as electricity, finance and skills, and whether the regional market can sustain the demand for these products which are linked to demand from infrastructure and industrial users rather than population and GDP.

Further, looking at the challenges facing ZAMEFA sheds light on issues that could constrain other smaller firms and the new entrants listed above once they seek to expand. ZAMEFA competes with Chinese companies importing cables and wires duty free, while the company has to pay duties and taxes on imported aluminium and plastic compounds (Sutton and Langmead, 2013). This problem with the national tariff schedule cuts across several sectors (Box 6). The regulatory environment is problematic because the Citizen Economic Empowerment Commission is enforcing local procurement measures through SOE ZESCO which give preferential treatment to Zambian-owned trading companies compared to US-owned ZAMEFA (ZAMEFA, 2013). Moreover, the firm has to compete with low quality products which do not meet domestic standards.

In addition, contrary to the views of the MCTI, a 2012 study conducted for the Jobs, Prosperity and Competitiveness Project on the feasibility of copper fabrication concluded that Zambia was unlikely to develop a competitive industry (Nathan Associates and EME, 2010). The authors argued that access to copper cathodes would not confer sufficient cost advantages to Zambia, and proximity to markets was more critical. Moreover any cost advantage would be offset by the transport costs to global markets, cost of importing other metals to produce copper alloys, unreliable power, cost of finance and skilled labour. The study argues that the regional market was still too small to support significant investment in production capacity, and South African fabricators would be more competitive than Zambian fabricators. Moreover copper fabrication was a low margin business and was exposed to the same fluctuations as refined copper. Despite these challenges, the Zambian government has decided to prioritise copper fabrication through the MCTI policy, strategy and action plan in this sub-sector in its industrial policy.

More recently China's NFCA has invested in the Chambishi Zambia-China Economic and Trade Cooperation Zone (ZCCZ), a US\$ 800 million-worth investment, which will include, among others, a copper semi-fabricates manufacturing plant. This investment is likely to have a major impact on the industry, but a number of complementary strategies need to be put in place by Zambia in order to maximise the impact on the domestic economy. A crucial aspect in this respect is the maximisation of employment

and skills development linkages. Whilst technical training in Zambia has lagged behind industry needs, major investment in a range of skills, especially technical and artisanal, is required to meet the demand for skilled labour of new investors within a reasonably short timeframe (Box 5).

Box 5: Skills for industrial development

Zambia's nominal wages are lower than China's, but this is offset by lower productivity levels (Dinh, 2013). Higher inflation rates make Zambia labour costs more expensive than other low income countries. Training for management and technical staff and investment in modern equipment are critical to increase Zambia's competitiveness.

Zambia focused, and made progress, on primary education, but technical skills have not received commensurate attention (OECD, 2012). Zambia's suffers from acute skills gaps, in terms of output and quality. Although there has been growth in the workforce with post-secondary education driven by employment opportunities in the service sector, the quality of education has dropped (Moono and Rankin, 2013). In the manufacturing sector, the premium paid to those with post-secondary education does not differ as much across qualification, indicating that schools need to strengthen industry-specific training. Technical schools' curricula do not match the need and technologies of industry. In particular, there is no cooperation between technical institutions and industry in developing the curricula, and in teaching students (Interviews, 2014). Teachers have limited practical experience and schools use outdated equipment. The recent TEVET Development Programme aims to coordinate initiatives by government, cooperating partners and private sector to address this problem (OECD, 2012).

4.2 Iron and steel products

The iron and steel sub-sector was identified as crucial in providing cost-effective inputs to cater for growing demand in other sectors, such as construction and manufacturing, as well as growing demand in the region. It was also identified as a sub-sector that could potentially contribute to employment creation and development of MSMEs. Given the rich deposits of iron ore and coal in Zambia and possibility for significant import substitution, this sub-sector was identified as a priority (MCTI, 2012).

The contribution of steel and iron metal fabrication to GDP has increased in recent years, up to 20% in 2011 (Sutton and Langmead, 2013). There are around 40 formal firms, employing an estimated 2,000 to 6,000 people (Dinh, 2013; MCTI, 2012). In 2011, production amounted to 100,000 t, 50% of total apparent consumption (MCTI, 2012).

Fabricators usually rely on imported steel from South Africa through local distributors or South African traders/merchants such as Macsteel that have subsidiaries in Zambia. Steel is therefore expensive because of transportation costs and import duties (20%). However steel foundries relying on scrap steel (instead of virgin steel) have recently entered the market.

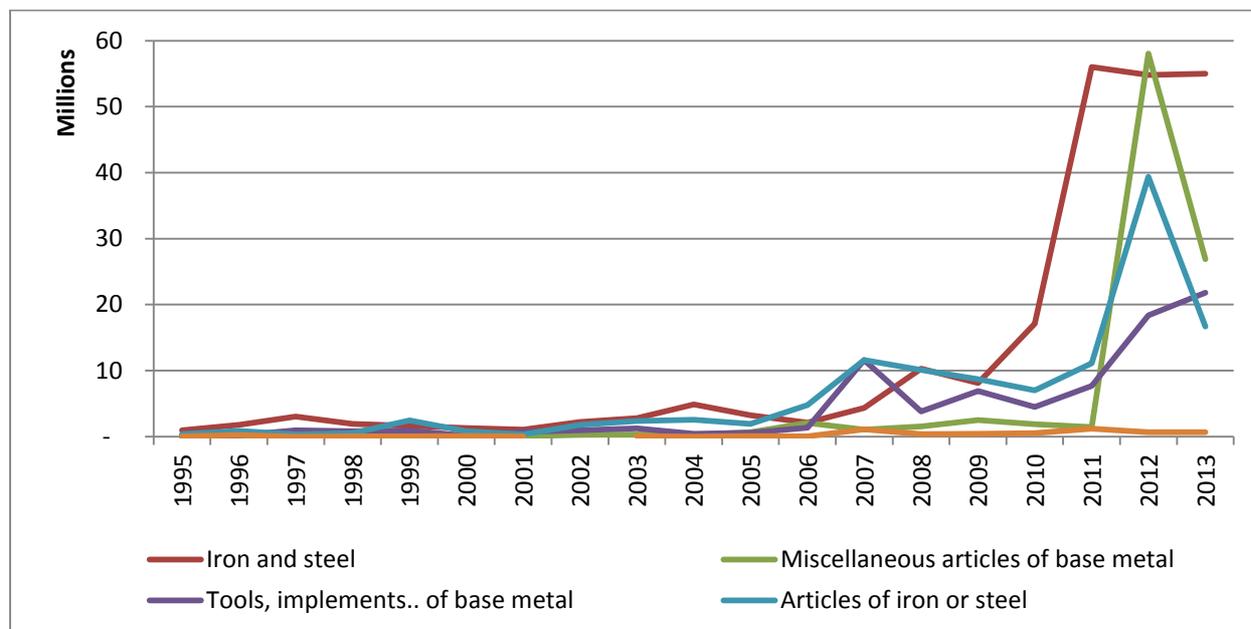
Local production, including those by steel foundries, is presently limited to long steel products (round bars, sections, angle bars), while no facilities to produce flat steel products like hot rolled sheets or tubes exist. As stated however, new investment in metal fabrication has been driven partly by a boom in the construction industry, hence there has been significant production of roofing sheets (manufactured from imported flat steel coil/sheets). Flat steel (hot and cold rolled coil) imports from South Africa are likely to be predominantly from ArcelorMittal South Africa (AMSA).²⁴

Similar to copper fabricators, there has been growth in recent years of steel companies. Even though Zambia has a trade deficit in steel and iron metal products, there are encouraging signs of growth of exports. Indeed part of the MCTI's rationale in developing this subsector is to reduce the trade deficit. Imports of iron and steel have grown significantly since 2000s (Table 4, Section 2.2). Imports increased from US\$ 41 million in 2005 to US\$ 562 million in 2013, a 30% CAGR. As seen in Figure 14 below, iron and steel exports picked up since 2008, whilst iron and steel fabricated products exports picked up between 2011 and 2012. This has coincided with the entry into the domestic market of new investors in the mid-2000s. The most important development has been the entry into the market of Universal Mining and Chemical Industries Limited (UMCIL), half owned by Trade Kings (Sutton and Langmead, 2013). The firm produces deformed bar, and in less quantities, other long sections, and exports 40% of its output to the region. It is SABS certified, which allowed it to gain market share quickly and reverse scepticism from local consumers over domestically

²⁴ The pricing of AMSA's flat steel products in South Africa has been a controversial issue for over a decade, with an excessive pricing case being brought to the competition authorities against AMSA (then Iscor) by South African gold mining company, Harmony Gold. The Competition Tribunal of South Africa found AMSA guilty of excessive pricing, an abuse of its dominant position in the flat steel market. However upon appeal, the Competition Appeal Court remitted the matter to the Tribunal for further analysis, and the parties subsequently settled out of court confidentially. AMSA's pricing to the region, including to Zambia, was on the same basis as its pricing in South Africa, in effect treating the regional market as an extension of the South African market. In South Africa, the allegation was that the excessive prices for flat steel as a key input into many downstream manufacturing industries stifled their competitiveness and development.

manufactured products. UMCIL is investing in backward integration into mining, with the plan of extracting iron ore from Sanje mine, and producing steel through the Directly Reduced Iron (DRI) process. This would eliminate the firm’s vulnerability to access to increasingly scarce scrap supplies and provide opportunities for Zambia to export DRI to the region.²⁵

Figure 14: Zambia’s exports of steel and iron engineering products (1995-2013, US\$ million)



Source: UN Comtrade, retrieved from <http://comtrade.un.org/> accessed January 2015.

The iron and steel sub-sector has also attracted foreign investors (MCTI, 2012; Sutton and Langmead, 2013). Safintra Zambia and TAP Zambia, major roofing sheets manufacturers, are owned, respectively, by SAFAL group and African Resource Group, two regional conglomerates. Their exports volumes are still small but growing. MM Integrated Steel Mills, originating from Tanzania, set up a cold rolling plant and a continuous galvanising line. Chinese-owned Good Times Steel is a steel maker producing re-bar, and exports around 40% of its production. Scaw Metals is the leading producer of mill balls in Zambia, but has faced strong competition from South Africa, China and India.

With regard to the engineering sector, government applies customs duties on deformed bars, cold roll coils, and galvanised coils, as well as on products such as mill balls, nuts and bolts (Dinh, 2013). There is also an export ban on scrap to ensure

²⁵ Another important firm is Agro-Fuel Investments Limited (AFIL), a transport and engineering company. It started as a transport company and integrated backwards into heavy fabrication for its own fleet (tankers, tippers/dump trucks), and later heavy and light fabrication work for the domestic market (office and hospital furniture) (Sutton and Langmead, 2013).

supply for downstream processors. The iron and steel sector is populated by players with different interests, and until such a time as a new steel maker becomes operational, government has to navigate these interests. For example, policy makers faced ad hoc, contradicting calls from industry players with regards to import protection and standard setting with the objective of restricting competition for products positioned differently in the value chain (OECD, 2012; World Bank, 2014). The Industry Strategy aims to set a coherent strategy for the sector. Whilst some measures seem reasonably specific, such as removal of import duties on inputs not produced in Zambia, most measures remain generic such as addressing soft and infrastructural constraints, increase quality standards, create new markets and so forth.

4.3 Case study on manufacturing linkages to the mining sector

As stated, we have identified that opportunities exist in engineering sub-sectors other than the prioritised copper fabrication and iron and steel sub-sectors described above. These opportunities are related to the supply of capital equipment and other inputs to the mining sector.

Our findings are mainly based on interview data collected between June and October 2014 in South Africa (Gauteng Province) and Zambia (Copperbelt Province) as part of a project undertaken for the TIPS/South Africa’s Department of Trade and Industry. The interviews targeted OEMs and supplier firms in Zambia, parent companies in South Africa as well as a number of institutional actors as presented in Table 12.

Table 12: Categories of respondents, June - October 2014

Suppliers	<ul style="list-style-type: none"> • 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
Institutions	<ul style="list-style-type: none"> • Kitwe Chamber of Commerce and Industry • Zambia Association of Manufacturers • Zambia Chamber of Commerce and Industry • Zambia Development Agency • Private Sector Development Reform Programme

The mining industry in Zambia invested very high levels of CAPEX to re-capitalise the mining assets and complete greenfield projects (Lumwana Mines). Copper output increased from 257,000 tons in 2000 to 600,000 tons in 2011 (Bank of Zambia Data; Chamber of Mines, 2005). Output growth was underpinned by substantial FDI flows.

As discussed in Section 2.1, mining absorbs the lion's share of inward FDI flows. In 2011, FDI flows into mining totalled US\$ 955.6 million, in 2012 US\$ 933 million.

Whilst the mining assets' privatisation and the copper price boom led to a surge in FDI to recapitalise the mines, since the 1990s, Zambia's mining inputs cluster has been characterised by a process of de-industrialisation, with declining levels of local value addition and the exit of most manufacturers from the mining supply chain (Fessehaie, 2012). Domestic manufacturers have struggled to compete with imports, especially because government stopped supporting the supply chain in the form of preferential procurement policies and interventions in the labour and capital markets. The local supply chain has become increasingly populated by service providers. Whilst some of these provide value added services such as electrical and mechanical engineering services, most are pure traders which contribute very little in terms of value addition, technological innovation, employment and, often, taxation.

A study prepared for the Zambia Mining Local Content Initiative (ZMLCI) estimates local sourcing at approximately US\$ 2.5 billion, comprised of equipment and mining services (35% of total expenditures), consumables, parts and components, maintenance (40%), low tech manufactured goods (5%), and basic services (20%) (Table 13). Further stakeholder consultations raised this estimate to US\$ 5 billion (Genesis Analytics, 2014). Presumably, this figure includes fuel and contract labour, two major cost components.

Table 13: Estimated composition of Zambia's mining procurement expenditure, 2012 (US\$ '000 and %)

CATEGORY OF SUPPLIER	MAIN PRODUCTS & SERVICES	PROPORTION OF MINING SPEND		SHARE OF MINING BUSINESS BY NATIONALITY OF SUPPLIERS		
		Value (US \$,000)	%	Foreign Owned With Local Base (1) (US \$,000)	Overseas Based (2)	Wholly Local (3)
1	Mining services (production and technical)	875,000	35	700,000 (80%)	157,500 (18%)	17,500 (2%)
2	Chemicals, explosives, fuel, oils, plant and equipment parts supply installation and maintenance services	1,000,000	40	850,000 (85%)	100,000 (10%)	50,000 (5%)
3	Basic (low tech) manufactured goods supply and engineering services	125,000	5	46,250 (37%)	62,500 (50%)	16,250 (13%)
4	Security, cleaning, catering and transportation services	500,000	20	400,000 (80%)	75,000 (15%)	25,000 (5%)
Total		2,500,000	100	1,996,250	395,000	108,750
<i>Per cent of Total</i>		<i>100</i>		<i>79.8</i>	<i>15.8</i>	<i>4.4</i>

Notes: (1) Locally registered subsidiaries of foreign companies; (2) Not locally registered; (3) Ownership by registered residents and Zambian citizens. Source: Kasanga, 2012

Suppliers include locally-based international suppliers of goods and services (80% of total value of procurement), overseas suppliers (16%), and locally-based Zambian suppliers (4%). It is estimated that less than 5% of total goods is manufactured locally, amounting to no more than US\$ 87 million (Genesis Analytics, 2014; CMZ and ICMM, 2014). As discussed in Section 2.2, equipment imports were the largest import component. Equipment imports increased from US\$ 237.5 million in 2005 to US\$ 1.8 billion in 2013, a 23% CAGR (Table 4). The bulk of this imports supplied the copper mining sector, as reflected by discussion on CAPEX and inward FDI figures.

With the exception of one large steel foundry, domestic manufacturers supplying the mining companies tend to be relatively small-sized. Some of these are family run businesses owned by European and Indian migrants, which have been established during the nationalisation era, others have been established post-1990s, have a more formal management structure and are owned by South African and Asian investors.

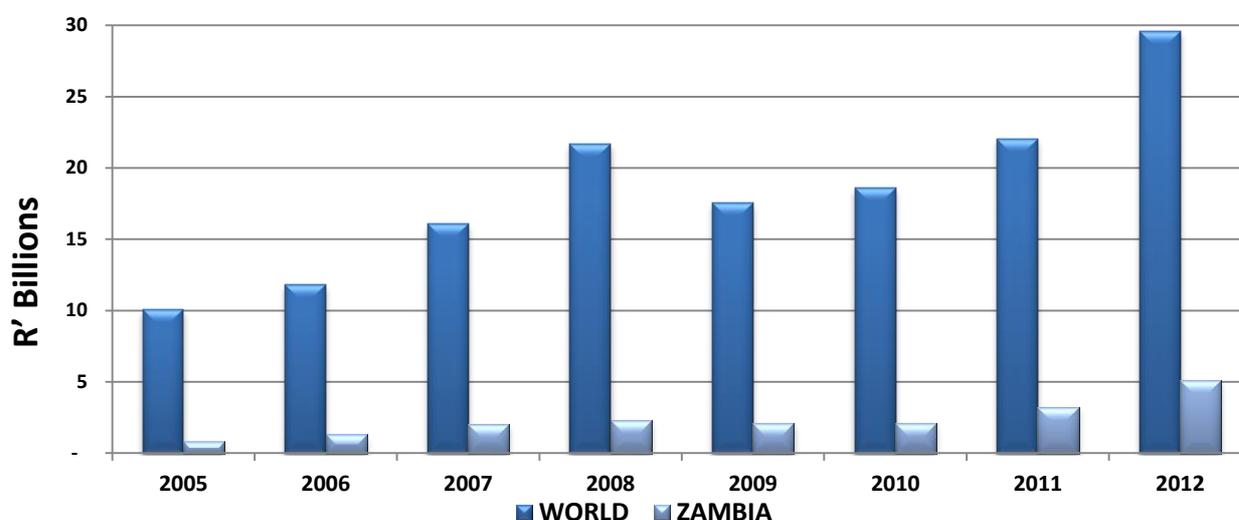
Although limited in terms of volumes, local manufacturers supply a wide range of inputs to mines, such as metallurgical, plastic and rubber products, engineering products, and paints (Fessehaie, 2012). For example, Mopani mine sources the following locally manufactured goods: cement, lime, concrete rail sleepers, roofing, railway line accessories, explosives, rubber hoses, electrical cables, personal protective equipment (Mopani, 2014).

The regional configuration of the supply chain is very important. While local sourcing of equipment and other mining input supplies in Zambia is currently limited, the growing demand in the Zambia and DRC mining sectors presents an opportunity for Zambia to position itself as the regional hub for the supply of these products and linked aftermarket services. Aftermarket services are important in terms of employment and skills development, and can lay the basis for future assembly operations. The DRC offers Zambian suppliers an opportunity to reach larger economies of scale for value added activities. Already, re-exports of mining equipment to the DRC saw the largest number of transactions and firms involved out of any other product in the 1999-2011 customs-transactions survey (Banda and Simumba, 2013; World Bank, 2014b). According to ITC TradeMap Data, Zambia exported US\$ 126.6 million worth of equipment to the DRC, obviously these being re-exports.

The other key regional partner in the mining supply chain is South Africa. Zambia is South Africa's most important export market in the region.²⁶ Indeed, the share of mining capital equipment destined for Zambia increased from 8% in 2005 to 17% in 2012 (Figure 15).

²⁶ According to data from South Africa Capital Equipment Exports Council (SACEEC)

Figure 15: South Africa's capital equipment exports to the world and Zambia, 2005-2012



Source. SACEEC (2013)

In turn, South Africa is Zambia's main source of imports for mining capital equipment. Mining capital equipment is supplied by both South African and international OEMs based in South Africa. According to COMTRADE data,²⁷ Zambia's top imports of mining capital equipment from South Africa consist of the following: structures, diesel powered trucks with a gross vehicle weight not exceeding five tonnes, dump trucks, parts of mineral processing equipment (sorting, screening, mixing crushing, grinding, washing and agglomerating machineries), parts of cranes, work-trucks, shovels, and other construction machinery, self-propelled excavating machinery, pumps and parts. For South African and international OEMs, the Copperbelt is an important market for these products due to poor growth in the domestic South African market. The Zambian Copperbelt is seen by these companies as a regional supply centre for Central Africa.

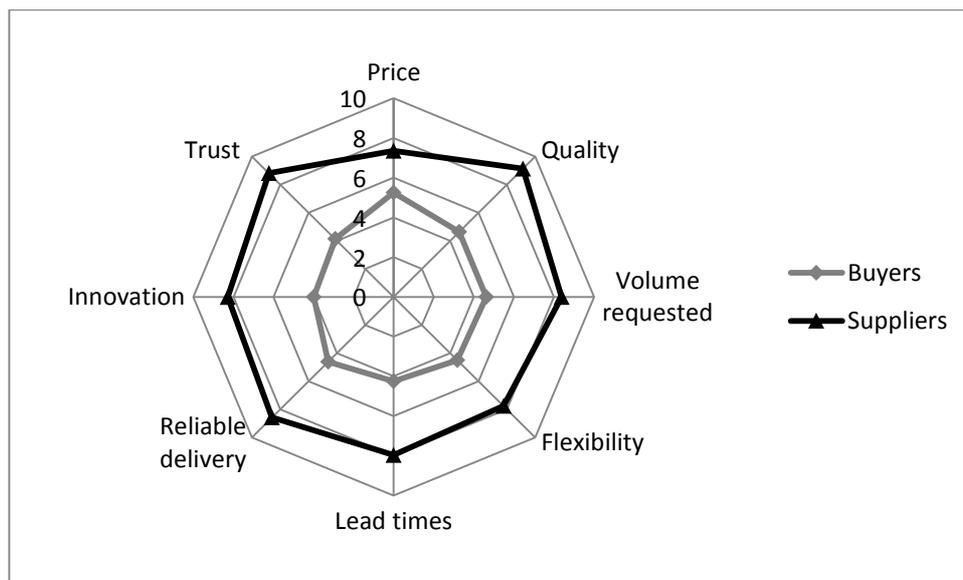
Understanding the procurement requirements and patterns of mining companies in the Copperbelt therefore is an important first step to understanding what capabilities are needed to competitively establish a bigger local manufacturing presence. As a global trend, mining companies are focusing heavily on reducing costs and increasing productivity (Fessehaie, 2014). Their procurement strategies focus on Total Cost of Ownership (TCO) that is inclusive of capital, maintenance and operational expenses. Hence, cost competitiveness must be accompanied by product quality, and efficient after-market services. Moreover, there is an increasing interest by the mining companies in receiving turnkey solutions from their suppliers. As a result, systems

²⁷ COMTRADE data have been collected at the HS 6 digit level. For specific tariff lines, COMTRADE data may overestimate trade values compared to SACEEC data, which have been collected at the HS 8 digit level.

design and management responsibilities have been progressively shifted onto OEMs. The latter are increasingly supplying not only their equipment, but fully operational plants.

In the Zambian mining supply chain, this resulted in buyers expecting value added services, such as a complete product offer and the skills and experience to provide technical advice and assist in fixing problems (Fessehaie, 2012). Figure 16 displays the rating of supplier capabilities according to mining companies and local suppliers. Buyers were very dissatisfied with the performance of the local supply chain, with the exclusion of a small number of capable suppliers (mostly OEM subsidiaries and some engineering firms). The worst supplier performance was deemed in terms of innovation capabilities. Local suppliers by and large failed to understand their weaknesses, because they understood the supply chain to be purely price-driven, and underestimated the importance of developing trust-based relationships and investing in innovation.

Figure 16: Comparative rating of supplier capabilities by buyers and by suppliers



Source: Fessehaie (2012)

Whist some of the supply chains in which local manufacturers are positioned may be more price-driven because they supply low and medium-tech products, buyers maintain high requirements in terms of quality, standards and aftermarket services. In particular, mining companies struggle to source locally manufactured goods due to poor quality, which risks causing operational downtime and equipment damage (Genesis Analytics, 2014). Sometimes suppliers passed initial technical evaluations, but failed to maintain consistent quality. From a cost perspective, costs are generally 15-20% higher than the South African benchmark. This is especially the case for plastics, rubber and steel. Moreover, mining companies are often bound by HQs to

demand formal supplier accreditations, such as ISO or an inspection by an auditing company. For instance, rollers and idlers require ISO 9001 whilst canteen food requires HACCP for caterers to use. This drives up compliance costs and barriers to entry for suppliers.

Local supplier competitiveness is hampered by the following factors (Fessehaie, 2012, 2014; Kasanga, 2012; CMZ and ICMM, 2014):

- 1) Manufacturing firms often operate outdated plants and machines, old technologies and with weak quality assurance mechanisms. They lack R&D capabilities and none of the firms interviewed had R&D budgets in Zambia.
- 2) Lack of access to long-term capital to refinance production infrastructure rehabilitation and upgrade, and to maintain large stocks of inputs and spares in order to supply mines with short lead times. The high cost of credit, of up to 30-40% was raised as a major concern.
- 3) High production cost structure: Communication, transport and utilities are problematic in terms of cost, reliability and access, raising the cost of doing business. Import procedures are expensive and time-consuming. Corporate income taxes are higher than the regional average.
- 4) Real exchange rate appreciation: Fluctuating foreign exchange rates make it difficult for local firms to plan ahead.
- 5) Skills shortages in the areas of mechanical and electrical engineering, IT, and hydraulics, as well as at vocational and artisanal levels.
- 6) Poor economies of scale: for example, Scaw Zambia Limited produces 20,000 mt of grinding media balls and other steel products, the primary customer being the mines (Sutton and Langmead, 2013). The company has recently invested in a plant to manufacture semi-autogenous grinding (SAG) balls for SAG mills in the mines. It supplied approx. 30% of total mill balls purchased by the mines. South African competitors on the other hand produce around 1 million mt per year, and therefore benefit from economies of scale. Moreover, South African firms do not pay duties in Zambia when importing these final products from South Africa, but Scaw pays duties on intermediate goods used in the production of the final product.
- 7) High import duties on non-South African originating spares: This is particularly problematic because Zambia's tariff structure discourages assembly operations (intermediate inputs attracted 5-15% duties) in favour of imports of final products (see Box 6).
- 8) Zambia's policy inconsistency was highlighted often during the interviews as a major impediment. For example, the hasty introduction and subsequent withdrawal of a regulation that required firms to trade in the domestic economy in Kwacha and not in US\$ resulted in uncertainty and loss of value of stock held by firms.

Box 6: Does the structure of import duties discourage local assembly and manufacturing?

Zambia's industrial sector is characterised by a weak network of Tier 2 suppliers, hence manufacturers rely on intermediate inputs and raw materials imports. Examples of inputs source at firm level, 2012 (based on Sutton and Langmead, 2013)

- Trade Kings (Agro-processing)

Palm oil and caustic soda are imported from South Africa, China and Southeast Asia. Fragrances are sourced from Europe. In particular, the flavourings and colour used in the manufacturing of confectionery are sourced from the Netherlands.

- AFIL Engineering (iron and steel)

Special steel that meets international specifications as well as axles (two German brands) are sourced from South Africa. Truck axles are imported from France; suspension and brakes from Turkey; tyres from China; lights from South Africa; hydraulics for tipping trailers from Holland; aluminium rims from India; and school desk pipes and boards from South Africa.

- ZAMEFA Engineering (copper fabrication)

Aluminium from South Africa and China. Plastic compounds from Mauritius, Malaysia, US, South Africa and Europe

Manufacturers struggle to compete with zero-rated imports of final products from South Africa whilst they have to pay duties on inputs originating from non-SADC and non-COMESA countries.

The example of protective shoes (for mining and other industries) is illustrative (Interviews, 2014). Zambian manufacturers pay 15% duty on soles, inner soles, and eyelets, plus duties on the industrial polish sourced from China. South African manufacturers pay no duty for any of these components from China and export finished shoes to Zambia duty free. Moreover, imports of components for mining machinery is subject to duties, but the final product is duty exempt. This has discouraged investment in local assembly operations which would be inherently more expensive. The problem of import duties on intermediate goods was raised also within the context of copper fabrication and steel.

How can Zambia build local firm capabilities?

In light of these constraining factors, backward and forward linkages are critical to support supplier performance, especially for manufacturers (Fessehaie, 2012). In terms of backward linkages, manufacturing firms owned by international or regional corporations have access to finance and knowledge as well as reputational assets through the parent companies. They can, for example, afford to hold large stocks, and hence offer short lead times.

In terms of forward linkages, blue chip companies from Europe, South Africa, Canada and Australia have procurement strategies more supportive of local suppliers compared to Chinese and Indian firms. Buyer supplier relationships are more supportive through information flows, longer term arrangements, forward purchase agreements and sending technical personnel to inspect suppliers' facilities and assist them in developing quality assurance systems. For some firms, these linkages were developed within the context of the IFC Suppliers' Development Programme between a group of manufacturers and some mining companies.²⁸ Lumwana mine is about to implement the most comprehensive supplier development programme to date (CMZ and ICMM, 2014). It involves the procurement, sustainability and engineering departments in identifying opportunities and build firm capabilities, and it also works with a third party, to provide technical and financial assistance.

Manufacturing firms supported by backward linkages to parent companies or forward linkages to buyers tend to upgrade by investing in capital equipment, upskilling their workforce and introducing or improving their quality management systems (Fessehaie, 2012). Conversely, manufacturing firms which lacked relationships with foreign conglomerates or operated at arm's length with buyers, struggle to upgrade. These firms tend to be excluded from supplying mining equipment spares and components, which are effectively controlled by OEMs through their warranty system and their aftermarket service offerings. Moreover, OEM spares and components are highly standardized and sourced from low cost global suppliers, which remove the potential advantage that local production could have presented in terms of in-country adaptation.

The research on linkages between Zambian suppliers and South African OEMs sheds further light on these dynamics and on local manufacturing opportunities (Fessehaie, 2014). First of all, South Africa-based OEMs move progressively into the Zambian market. Due to high search costs: they try various arrangements with local suppliers and only once they achieve sufficient turnover, do they establish subsidiaries. They obviously face high search costs. Sometimes the mining companies prefer to procure

²⁸ This programme impact was however limited due to low absorption capacity and poor access to capital in the context of high real interest rates.

from local agencies rather than importing. For example, Mopani grants a 10% leeway in procuring from local agencies compared to the cost of importing (Mopani, 2014). All foreign manufacturers/vendors approaching Mopani interested in doing business are also requested to appoint local agents. This creates a competitive advantage for OEMs with an established presence in Zambia.

OEM subsidiaries in the Copperbelt do not manufacture locally instead focusing on marketing, distribution and aftermarket services. There is very little sub-contracting, with only small fabrication work, structural steel work and lagging subcontracted (Table 14). Besides OEM subsidiaries, Zambian supply firms in general struggle to source their required inputs such as machining jobs, casting, bearings, nuts and bolts locally (only 10 – 30% of their inputs is sourced locally). The OEMs invest however in training local staff, with training done in-house and in South Africa (Table 14). This helps in building a skilled labour force, and larger OEMs tend to contribute more in this respect. There is no joint product development and no R&D budget for the Zambian operations. Even in cases where the South Africa-based OEMs cooperated with the mining companies in the Copperbelt to innovate or customise products, the involvement of local subsidiaries or agents is insignificant.

Table 14: Linkages between South Africa-based OEMs and Zambia

OEM activities in Zambia				Local sub-contracting		
Training	Joint product development	R&D budget	Subsidiary involved in OEM/mine collaboration	Yes	Some	No
100%	0%	0%	17%	0%	50%	50%
17%	0%	0%	0%	0%	17%	83%

Source: Adapted from Fessehaie, 2014 (N=18)

Zambia could tap into the regional value chain for mining capital equipment in order to attract value added investment and capacity building. As we have discussed earlier, OEM subsidiaries are investing in skills development and firm upgrading. In order to incentivise more of this investment, there is a need to harmonise local content policies across the region.

Both Zambia and South Africa are committed to increasing local content in their respective mining sectors. In Zambia, local content measures were put place when the mines were privatised, but these were weakly implemented. More recently however, suppliers, through one of their representative business association ZAM, have been spearheading a more ambitious local content initiative which is receiving support from the mining companies, the government and donors (Fessehaie, 2014).

South Africa's export credit incentives set domestic (South African) local content requirements on South African OEMs wishing to access export credit. These incentives are clearly in conflict with Zambia's drive towards increasing local (Zambian) content in the Copperbelt. Reciprocal and harmonised incentives schemes within SADC would provide a better framework to promote regional investment and mutually beneficial outcomes. One area of cooperation should aim to increase sub-contracting opportunities for local suppliers in Zambia. Genesis Analytics identified the following opportunities in this regard: explosives, lime, mill balls and rod mills, electric cables, hoses, liners, wire mesh HDPE piping, welding gases, nuts and bolts, rollers and idlers (2014). Regional cooperation should also tap into South Africa's more developed skills base and industrial capabilities to devise skills development and firm upgrading programmes to support linkages between private firms. South Africa's OEMs would benefit from such programme because it would increase their own competitiveness in the Zambian Copperbelt and eventually in Central Africa.

Genesis Analytics estimates a best case scenario in which demand for goods and services grows to US\$ 4 billion per year (2014). This is a significant expansion of demand for goods, and in some products, such as mill balls, it represents a doubling of the market size. Additional economies of scale could be achieved by also supplying the DRC mining supply chain. This however requires continued efforts to improve access to this market, in order to reduce the costs of supplying from Zambia. It has been estimated that tripling of the proportion of inputs manufactured locally in the mines procurement, could add US\$ 160 million to local suppliers' turnover, of which half would be value added and create 10,000 direct jobs (CMZ and ICMM, 2014). Whilst Zambia is designing its local content policy, it should consider leveraging cooperation with the region, and in particular, with South Africa, the regional hub for mining equipment and services, and the DRC, which could turn Zambia into a sub-regional hub for higher value added activities.

5 Policy framework for industrial development

This section provides an overview of Zambia's industrial policy framework. Institutional support for industry so far has been weak and uncoordinated (Dinh, 2013).

Zambia's economic development agenda has been guided by the National Vision 2030, which sets the country's aspiration to be a prosperous middle income country by 2030. The economic development agenda has been operationalised by five year National Development Plans. The Sixth National Development Plan (SNDP), 2011-2015, includes a chapter of the manufacturing sector, defining objectives in terms of expanding the industrial base and increasing value addition, promoting the growth of MSMEs and rural-based industrial enterprises. Other six chapters include provisions

affecting industrial development namely: mining, trade and commerce, transport, energy, education and skills, science, technology and innovation. The SNDP leverages on the private sector to drive economic growth (Interviews, 2014). Hence government set up a comprehensive consultation mechanism, where the private sector is engaged through the Private Sector Development Reform Programme (PSDRP), which rolls out a number of reforms and initiatives, 45% of which are undertaken via PPP frameworks. The private sector formed the Private Sector Alliance and the Zambia Business Council, which have issue-based working groups (tourism, land, etc.).

The PSDRP was established in 2005 by the government as a framework to improve the business environment. It receives financial and technical assistance from cooperating partners. From an institutional point of view, the PSDRP has been innovative because it involved the private sector and high level political commitment. The programme is not manufacturing-focused but helped Zambia making considerable progress in reducing regulatory barriers to entry, easing the procedures to start a business (OECD, 2012). There are however many outstanding areas of work, and sometimes implementation is patchy. For example, industry is concerned over the implementation of a bill aimed at reducing the cost of licensing (Business Regulatory law), which came into effect in 2014 (Interviews, 2014). This law requires regulatory impact assessments before introducing any regulation. There have however already been regulations that came into effect without going through this process.

The Zambia Development Agency Act (2007) includes, among others, the establishment of the Zambia Development Agency, provisions on privatisation, priorities for trade and industry development, investment promotion and protection, Micro and Small Enterprise development, and the establishment of the Trade and Industrial Development Fund. The key measures spearheaded by the ZDA are the provisions of incentives for investors and the establishment of Multi-Facility Economic Zones (MFEZs). Incentives are granted to investment larger than US\$ 0.5 million in priority sectors. ZDA also designed a package for Micro, Small and Medium Enterprises (MSMEs) where the investment thresholds are lower. Corporate tax is reduced to 3%, for 5 years, and capital goods can be imported duty-free (Interviews, 2014).

MFEZ are industrial parks with improved infrastructure and services which can sell to export or domestic markets. Four MFEZ's and two industrial parks have been gazetted to date, three to be established by the private sector (Chambishi, Lumwana and Lusaka East), and one public (Lusaka South). The Industrial parks (Roma park in Lusaka and Sub-Sahara Park in Ndola - gemstones) are both private sector owned. The Chambishi MFEZ, or Zambia-China Economic & Trade Cooperation Zone

(ZCCZ), has created more than 3500 jobs and there 14 Chinese firms in the zone, but progress in other MFEZs has been very slow.

The list of priority sectors has grown considerably, losing the scope of a prioritisation exercise (OECD, 2012). In the 2013 budget it was announced that the incentives above would only apply for those firms which operate in a MFEZ, in priority sectors or in rural areas. This restriction is being opposed by industry on the ground that sectors have been earmarked as priority because they received FDI in the first place hence the new measure unduly excludes sectors that could also become priority if they attract FDI (Interviews, 2014). It is also unclear the extent to which tax incentives have been effective in attracting investors (OECD, 2012).

The ZDA is tasked with a very broad mandate but lacks the funding, autonomy and, in some cases, technical expertise to implement it (Interviews, 2014; OECD, 2012). For example, the seven regional offices are staffed by one person each. ZDA struggles to raise funds through marketable business development services. Government funding has tended to meet the operational costs of the agency leaving little resources for programmes. Hence ZDA has come to rely on donor funding for programmes, which may not necessarily be aligned to government priorities and vary from year to year. After-care services, which are essential to retain investment and attract new one, are only at an embryonic stage. Moreover, the effectiveness of the ZDA has been hampered by lack of a coherent investment legislation anchored to a national investment policy.

Complementary export incentives have encountered implementation problems, such as the duty drawback system, where refunds have been delayed and administration procedures cumbersome (World Bank, 2014b). More recently, firms have complained about the VAT Rule 18: if a company is zero-rated for VAT on exports, it can claim back taxes on exports if certain conditions are met (Interviews, 2014). However, government has not paid back money to the exporters and \$600,000 is outstanding to mining companies. The hurdle is that the regulation requires confirmation from export customer that the goods were exported and received, which is difficult if exports are done via traders.

The Commerce, Trade and Industrial Policy adopted in 2008 provides the overall policy framework for industrial development. The CTI Policy identifies 6 priority sectors, namely:

1. Processed foods;
2. Textile and garments;
3. Engineering products;
4. Gemstones;

5. Wood and wood products;
6. Leather and leather products

For each sector, the policy identified a set of recommendations, which have largely not been implemented yet (Interviews, 2014). Government also established a Technical Working Group on Manufacturing and Sub-groups for each cluster (OECD, 2012). However the effectiveness of these consultative mechanisms in informing MCTI policies, implementing the Group planned programme, and reach constituencies beyond Lusaka is weak.

Industrial policy received new impetus through the Strategy paper on Industrialisation and Job Creation issued by Cabinet to be implemented by a coordination unit in the Office of the President. The objective is to create 1,000,000 new formal sector jobs over the next five years. Overall, the Strategy builds on the existing policy framework, calling for some reforms such as reforming the ZDA mandate to focus on investment. Four growth sectors have been identified as having the greatest growth potential: agriculture, tourism, construction and manufacturing. The Strategy section on manufacturing is based on the CTI policy priority sectors, with the addition of pharmaceutical products. The proposed measures focus on improving the MFEZs, specific measures for engineering and pharmaceutical firms, attracting targeted FDI in motor vehicle assembly, copper fabrication, pharmaceutical, electrical and electronics, and enforce preferential procurement for SMEs from government and mining sector. The strategy also includes across the board interventions on infrastructure, education and skills development, improved availability of long term finance, transportation logistics and ICT as well as enhancing the business environment. Whilst it has the merit of adopting a comprehensive view on the manufacturing sector, the Strategy is still vague on the implementation aspect, and seems to lack focus.

Other cross cutting legislation and programmes include the 2006 Citizens Economic Empowerment Act (CEEA), which includes empowerment measures such as restrictions of areas of trade, commerce and industry to targeted citizens, and preferential procurement.

6 Conclusions and further research

Although from a low basis, Zambia's manufacturing sector has shown encouraging trends in terms of contribution to GDP growth, employment, FDI inflows, and export performance. The following manufacturing sub-sectors have shown the best growth performance: food, beverage and tobacco; cement; wood & wood products, paper products; and to a less extent, fabricated metals. However, these are very different in

size, with the agro-processing sectors taken together estimated to amount to 60% of manufacturing.

Growth has been driven by the domestic market (cement, wood, paper), as well as to a much smaller extent by increased exports. Indeed, one of the biggest developments of the past decade is the increased importance of international trade. On the export side this is largely due to copper, but, from a low base, non-traditional exports have also grown significantly. Apart from commodities such as sugar, tobacco and cotton, there are small but rapidly growing exports of processed goods such as animal fodder, milling products, essential oils, and fabricated copper and steel products. On the import side, there has unsurprisingly been dramatic growth in mining equipment imports, however, there has also been growing imports associated with growing consumer incomes, including of processed food products.

This paper analysed the performance and challenges in two main industry groupings, namely agro-processing and engineering products. These were selected as they are large in their own right and have good potential given demand and cost factors. In the case of agro-processing demand has been driven by urbanisation and consumer income growth for food products while there is competitive potential in inputs in the form of agricultural produce.

Engineering products and services (including fabricated metals, machinery and engineering services) have grown on the back of mining activity in Zambia and the DRC. There is a large a growing trade deficit representing potential for building a local cluster in Zambia. Such a cluster cannot grow in isolation from centres of advanced production such as South Africa and Europe, but should rather only in building value added linkages with these centres in terms of repair, assembly and sub-contracting. These can lower the costs to the mines through proximity of suppliers at competitive pricing.

In both cases regional relationships are critical to understanding the development patterns over the past decade as well as in identifying potential. Opportunities were identified in sugar, processed vegetables, milling products, and animal feed. Zambia's low cost production basis for cane sugar and soybean could make downstream processors competitive in the domestic and regional markets. Whilst this is being realised in the case of the animal feed industry where trade deficits have turned into surpluses with increasing levels of regional exports, high sugar prices have hampered the competitiveness of a local sugar confectionary industry, in particular, and other industrial users such as manufacturers of beverages, biscuits and bakery products in general. The expansion potential of the milling industry has also been constrained by high input prices, where access to competitively priced wheat is of critical importance. This has also apparently undergone a major change in 2013 to 2014 with a surplus of wheat production, which has stimulated investments through the value chain. In order to increase the volumes and value added content of vegetables, further analysis is required to identify which products could be processed competitively, taking into

requirements such as the access to high quality raw materials, packaging, and the costs of meeting standards, as well as where demand is likely to grow in the region. This analysis should be expanded beyond vegetables, into for example, fruits and nuts.

Given the size of the sector, the implications of mining, and the Zambian government's strategy, the paper also discussed the engineering sector. In copper fabrication, in particular, critical factors that need to be addressed are duties on inputs, and a local procurement policy informed by the CEEC which favours indigenous ownership vs. local value addition. Moreover, it was noted that the government strategy for the engineering sector fails to address critical constraints. One of these is skills development, which should be a top priority in order to maximise the impact of the Chinese ZCCZ investment on the local economy. We focus on the very significant opportunities to which insufficient attention has been paid in the inputs to mining, where even meeting some of the demand currently being served by imports will be a huge step forward in local value creation.

The paper identifies three major areas to bring the industrial development agenda forward. These are linkage development strategies, regional economic integration and cooperation, and competition.

Linkage development and capabilities

Linkage development has been looked at in the context of value chains into the mining sector and supermarkets. Recent research estimates that the mining sector's demand for goods and services will increase to up to US\$ 4 billion per year until 2030. Whilst there are many local suppliers based in the Copperbelt, the challenge is to increase local value addition in terms of the goods and services produced locally.

Food and beverages is the largest component of household consumption across most of the region. In Zambia and South Africa, food and beverage expenditures are higher among urban households than rural ones. Supermarkets retail chains are revolutionising the way consumers in urban and semi-urban areas shop for groceries and household items. The growth in supermarket outlets has been remarkable, tapping into demand for processed foods and beverages driven by fast urbanisation and rising middle class. There is anecdotal evidence that local firms have managed to supply bulk commodities, but value added, branded products are largely imported from South Africa and other deep sea sources.

In the supply chains to mining companies and supermarkets, local suppliers can find an opportunity to upgrade and access larger, more demanding markets. Access to larger markets enables firms to grow and operate on better economies of scale. This has been the case for Zambeef for example, for which access to Shoprite's distribution outlets has played a critical role in the firm growth. Higher standards enforced by these buyers force suppliers to upgrade their performance in terms of consistency of quality and volumes, price, lead times and standards compliance. In order to do so, firms

invest in quality assurance processes, new equipment, and labour upskilling. Whilst entry barriers are high, therefore, participation into these supply chains support important upgrading processes.

Linkage development strategies to facilitate entry and competitiveness into the mining and supermarkets value chains require a combination of government and firm interventions. Government needs to tackle factors such as access to credit and a national quality assurance system. The paper highlights the example of a large supplier to a local supermarket that had to vertically integrate a number of quality assurance activities because of weak public infrastructure. Buyers in the mining and retail sectors have an important role to play in helping suppliers meeting their requirements through supply chain development initiatives.

Regional economic integration

The region has become the largest destination market for Zambia's non-traditional exports such as sugar, animal fodder, cement, engineering products, milling products, fresh vegetables, and so forth. In other words, the regional market is important for Zambia's value added industries, and for smaller sized, diversified exporting firms. In particular, the regional market for sugar confectionery and prepared foods has grown at above world average rates. Several regional markets for poultry are growing at annual rates of 20% or more. In addition, the DRC market has absorbed fresh vegetables exports that once were directed at EU countries.

Regional integration efforts have so far focused on establishing free trade agreements. Lowering tariff barriers to the regional market is important for Zambia, especially because regional trade agreements include provisions for the removal of less explicit market access barriers such as NTBs and trade facilitation issues, and attempt to harmonise technical standards and SPS measures. However, the growth of Zambian exporting firms into the DRC market show that even in the absence of trade arrangements, or any formal trade for that matter, the regional market can offer more lucrative opportunities for Zambian firms than deep sea markets. The underlying reasons may be several: lower transportation costs, Zambian firms being more familiar with neighbouring countries distribution networks and consumer preferences, lower standards and Sanitary and Phyto-Sanitary (SPS) measures, and a degree of natural protection in markets such as DRC and Malawi due to distance from deep sea ports.

Our assessment reiterates that regional economic integration is strategically important for Zambian manufacturers. However, the paper moves the argument one notch up, and argues that regional cooperation on industrial development would also be important. The case study on the mining capital equipment is illustrative. South Africa is a regional hub for mining inputs, and provides a set of local content incentives for its own firms moving into regional and overseas markets. Zambia's mining inputs cluster has significant linkages to South Africa, either through agency and sole distributorship agreements with local firms, or through subsidiaries of international and

South African owned OEMs based mostly in Gauteng. Mining companies are interested in aftermarket services and shorter lead times as well as meeting Zambia's own local content requirements, which implies that OEMs with a value added presence in the Copperbelt are likely to have a competitive advantage over others.

Moving beyond their nationally-framed local content measures would enable Zambia and South Africa to reach a win-win outcome. South Africa could support its OEMs in investing into value added activities in the Copperbelt. This would increase their overall competitiveness in the regional market, as well as contribute to Zambia's local content objectives. This could be done by increasing local sub-contracting and training to build opportunities for local firms and workers. The Zambian mining inputs cluster would have realistic opportunities to enter the supply chain for, for example, components and spares, and, through OEM subsidiaries, to provide higher value added services which would create further employment, build local expertise, and revenues. If this was complemented by cooperation at government level in, for example, skills development at technical and engineering level, Zambia could have sufficient incentives to look at its local content measures within a regional framework.

At the same time, access and participation in the DRC mining supply chain is critical for Zambia to become a sub-regional hub for mining inputs. This market can increase the economies of scale for local suppliers to upgrade and increase the services provided and the products manufactured locally. In this respect, Zambia is already working on reducing transport costs to the DRC. Additionally, Zambia should investigate the possibility of a more tailored, specific strategy to improve the access of its suppliers to customers across the border.

Whilst there are established regional frameworks such as the SADC Industrial Policy Development Framework and the COMESA-EAC-SADC Tripartite Industrial Development Pillar, Zambia could consider a scaled down bilateral cooperation programme, focused on specific, achievable objectives within a limited timeframe. This could support the broader SADC and Tripartite frameworks by providing a pilot programme and lessons for future multi-country programmes.

Competition, regional integration and competitiveness

Our assessment highlighted where low levels of competition meant that prices of key products did not reflect the costs of production and undermined the competitiveness of downstream activities. In the case of cement, high prices and profit margins compared to other countries in the region have made construction more expensive. Internationally this industry is well known for anti-competitive conduct, including a cartel that operated across SACU until 2009. In Zambia, a single firm has substantial market power, rather than it needing a collusive agreement with putative competitors in order to raise prices.

The assessment of sugar prices and conduct reiterated what several other studies have found, namely that while Zambia is one of the lowest cost producers in the world,

its prices are relatively high compared to its neighbours. In addition to the harm to consumers this also undermines businesses manufacturing sugar confectionary products, as well as the wider set of food products for which sugar is an input. Again a single firm has substantial market power and is able to export large volumes while keeping local prices in Zambia relatively high. In confectionary there are already firms such as Trade Kings which have a regional foot print, have established manufacturing capabilities, and can thus expand Zambian production to meet local and regional demand if the local input costs are competitive.

In the case of poultry, it has been observed that the industry is very concentrated and that day-old chicks, required by broiler producers, have been priced at double the level in South Africa. This inhibits independent firms from capitalising on the more competitive animal feed that has resulted from growth in agricultural production and investment in feed production. Firms that are vertically integrated back into breeding stock can self-supply, however, if they maintain uncompetitive prices to others then the industry will not become broader-based.

These examples all point to the need for a progression from support for upstream investment to ensuring that competitive upstream production flows through to downstream and diversified activities. In the absence of competitive discipline, entrenched dominant firms will likely focus their energies on protecting their position and their ability to continue to earn supra-competitive rents including through lobbying for protection and regulations that undermine smaller rivals and entrants. The difference between competitive and monopoly or cartel pricing differ from industry to industry and depend on market conditions, however, international studies typically find mark-ups of at least 15-25% and it is likely that mark-ups in Zambia would be higher given the substantial transport costs and history of protection.²⁹

Integration of regional markets has the potential to increase competitive rivalry, as where scale economies mean that there are unlikely to be many producers in industrial products. The gains from integration where there is imperfect competition are much greater than the static gains from specialisation and exchange, as increased trade means more competitive outcomes (Baldwin and Venables, 1995). The distribution of the gains obviously depends on where the industries and consumers are located and there can be substantial first-mover advantages. This points to the need for a common understanding of the collective gains, including in supporting businesses across countries in the region while ensuring competition between them.

The case study of the opening up road transport across Zambia, Zimbabwe and South Africa is illustrative of the possible gains (Ncube et al., 2014). Harmonisation of licencing and regulations across the three countries substantially increased the ease of operation of regional trucking companies and reduced cross-border transport costs.

²⁹ See Connor (2014) for a review of international studies and Roberts et al. (2014) for a review of cartels in southern Africa.

While this meant an increased representation of Zimbabwean and South African registered trucking companies in Zambia it substantially lowered transport costs meaning higher returns to exports of copper and other goods such as animal feed. It was also found to have facilitated greater competition in fertilizer trading which reduced fertilizer prices by around 15% or \$100-\$150/t on prices of around \$800/t in 2013, when Zambian prices are compared to prices in Malawi and Tanzania. This also came on the back of a cartel being uncovered in Zambia, which ran from 2007 to 2012 and the entry of the Export Trading Group which has grown its share of fertilizer markets in several African countries, and has brought greater price.

These examples illustrate the linkages between trade policy, transportation costs, and the strategic location decisions of firms, and the need for further research in this area. Regional integration cannot be achieved where conflicting trade policies across countries, inefficiencies in transportation, and strategic behaviour of firms undermine competitive rivalry across borders.

Summary

To conclude, there are a number of cross-cutting factors hampering competitiveness: inputs, finance and exchange rates volatility, transport costs, and skills. In the case of transport costs, Zambia is already implementing a number of reforms and investment in infrastructure and trade facilitation. Financial instruments have been rolled out but they still haven't been effective yet in relaxing firm capital constraints. Finally, government policies still lag behind with regard to skills development and inputs markets. In terms of the overall policy framework for industrial development, policies rarely turn into specific strategies to support implementation, which overall remains weak. Hence a number of policy instruments, such as the ZDA Act and the Commercial, Trade and Industrial Policy, have had limited impact in fostering industrial development. Focusing on policy implementation and on high potential sub-sectors would help Zambia make significant progress in meeting its industrial development goals.

The following have been identified as areas for further research:

- Analysis of competition issues in specific industries and institutions affecting industrial development (banking, transport)
- Detailed analysis of food processing opportunities, by product and market
- Further research to elaborate on regional value chains and regional cooperation on industrial development
- Further research on domestic linkages policies: supermarkets, mining local content

- Research to understand how Zambia can leverage public procurement to support local engineering firms (given that public utilities are large customers for the sector)

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17 October 2014