ZIMBABWE ECONOMIC POLICY ANALYSIS AND RESEARCH UNIT

ZEPARU

# Chemical Industries Value Chain Analysis

# CHEMICAL INDUSTRIES VALUE CHAIN ANALYSIS


ZIMBABWE ECONOMIC POLICY ANALYSIS AND RESEARCH UNIT

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# EXECUTIVE SUMMARY

The Chemical Industries value Chain Analysis Study for Zimbabwe was called for by ZEPARU in collaboration with USAID-SERA program and conducted by SIRDC with the objective of policy recommendation to create an environment that enhances economic growth and industrialisation. This reportis organized into five sections. Section one provides the country economic co text, the structure of the chemical industry and highlights the importance of Chemicals to the Zimbabwean economy. Section two has provided a brief overview of the context, objectives, and the methodology and study limitations for this value chain analysis research. Section three sets out the detailed value chain analysis forthe five subsectors with select examples of certain commodities, sector data statistical analyses and key stakeholder contributions. Section four examines the business enabling environment for manufacturing & trade. Section five presents the conclusions, policy implications and recommendations to enable development in the chemical industries sector. Comprehensive detail of data analysis, questionnaires used, value chain actors & contacts, list of interviews conducted, references and other information is provided in the appendices.

The study approach was adopted from the UNIDO methodology of industrial value chain diagnostics (UNIDO 2011) that provides for an integrated view of the value chain emphasizing on seven value chain dimensions: primary production and inputs; processing capacity and technology; end-markets and trade; governance of value chains; sustainable production and energy use; value chain finance; and business environment and socio-political context. 45 chemical companies, 6 Financial & Insurance Institutions, 6 Policy makers, and 10 organisations representing (regulatory bodies, industry and lobby groups) formed the core sample. This draft is based on a 60% response rate from the chemical companies, 83% on Finance institutions, 100% on policy makers and the other organisations. Of the sample population – 13% of the firms have since ceased operations. Two sets of questionnaires were developed and distributed to respondents. This was followed up with one on one interviews and a first all-stakeholders conference.

The Zimbabwean chemical sector is diverse and complex. On the one hand it comprises a well developed upstream industry ; Basic Chemicals and Other Chemicals , with the former being highly capital intensive. On the other hand is the more labour-intensive downstream industry. The chemicals sector is the fourth-largest employer in manufacturing, behind foodproducts, mining, engineering & metals and clothing, textiles & apparel. In 2012; its gross output & sales exceeded $730 million although it is projected to decline in 2013. It is a crucial industry from the perspective of Zimbabwe's ongoing recovery growth path for advancing socio-economic development objectives. The development of the chemicals sector has two major elements: firstly, to promote beneficiation of minerals into primary products for exports and also to

provide feedstock into higher value-adding manufacturing activities; and secondly, to promote downstream manufacturing of polymers, ceramics and chemical formulations thereby creating more jobs and adding significant value. Primary beneficiation faces constraints such as the risks and coordination problems associated with large capital-intensive projects and outdated technology. Downstream industries requires far more competitive pricing of inputs, skills development, support for company and industry level technical capabilities such as R&D, tooling and stronger matching of final product demand patterns to intermediate products and inputs. The consumer care industry is threatened by high-levels of import penetration. The industry faces coordination and regulatory challenges with regards to state procurement demand, licensing procedures, and price administration. Zimbabwe's chemicals exports have been depressed at an annual average rate of around 18% of gross output, on the poor competitiveness as a result of low manufacturing output. The government aims to address this imbalance with its recently introduced national industrial policy of 2011 starting with Fertilisers Industry, which aims to boost the country's agricultural production. The local industry is biased towards internationally uncompetitive upstream sector and a neglected downstream sector that has great potential for development. Reversing this bias would help the industry to increase beneficiation (or value-addition), exports and employment.

## LIST OF ABBREVIATIONS

| | |
|---|---|
| AfDB | African Development Bank |
| CIP | Census of Industrial Production |
| CZI | Confederation of Zimbabwe Industries |
| MoHCW | Ministry of Health & Child Welfare |
| MoE | Ministry of Energy |
| MoF | Ministry of Finance |
| MoIC | Ministry of Industry and Commerce |
| MoSME | Ministry of Small to Medium Enterprises |
| MoYIEE | Ministry of Youth, Indigenisation and Economic Empowerment |
| SAZ | Standards Association of Zimbabwe |
| SIRDC | Scientific & Industrial Research & Development Centre |
| UNIDO | United Nations Industrial Development Organisation |
| ZERA | Zimbabwe Energy Regulatory Authority |
| ZESA | Zimbabwe Electricity Supply Authority |
| ZETDC | Zimbabwe Electricity Transmission & Distribution Company |
| ZIMRA | Zimbabwe Revenue Authority |
| ZimStat | Zimbabwe National Statistical Agency |
| ZNCC | Zimbabwe National Chamber of Commerce |

# SECTION 1

## INTRODUCTION - THE ECONOMY

### 1.1.0 Overview

The macroeconomic environment in Zimbabwe is fairly positive and stable, contrasting with the previous decade of economic meltdown (19982008), soaring budget deficits and negative growth. Zimbabwe has recorded respectable economic growth since dollarization of the economy in 2009 with the rate of growth of Gross Domestic Product (GDP), increasing from: -5% in 2008 to 6% in 2009, 9% in 2010, 10.6% in 2011, and 4.4% in 2012 (World Bank Country Reports). Growth is projected to improve marginally to 5.5% in 2013, underpinned by improvements in mining and agriculture (UNDP 2013). The fall in GDP growth rate reflects a fragile recovery owing largely to inherent political and economic uncertainties, a high debt overhang and the deteriorating infrastructure. Key challenging factors to doing business have been linked to policy instability, lack of funding, excessive or poorly functioning government bureaucracy and inadequate infrastructure (World Bank 2012)

**Table 1: Zimbabwe GDP & GNI Statistics**

| | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|
| **GDP** (USD) | 6,1 billion | 7,4 billion | 9,6 billion | 10,8 billion |
| **GDP Per Capita** (USD) | 475.85 | 568.43 | 722.84 | 787.94 |
| **GDP Growth** (%) | 6 | 9.0 | 10.6 | 4.4 |
| **GDP Per Capita Growth** (%) | 5.12 | 8.04 | 7.07 | 2.22 |
| **GNI Per Capita** | 380 | 460 | 590 | 680 |

Source: World Bank- Zwe MetaData

Imports in Zimbabwe declined to 7,483.04 million USD in 2012 from 8,594.29 in 2011 and 5,864.80 million USD in 2010. The economy continues to experience structural challenges emanating from the limited sources and high cost of capital; uncertainties arising from policy inconsistencies, especially with respect to economic empowerment and indigenisation regulations; dilapidated infrastructure and obsolete technologies (African Economic Outlook 2013). The poor performance of domestic revenue inflows against the background of rising recurrent expenditures will continue to constrain the fiscal space.

### 1.2.0 The Global Chemical Industry

The global chemical industry has experienced steady growth in production, consumption and trade over the last 35 years. The value of the chemical trade rose from US$171,000 million in 1970 to US$1,500,000,000 million in 1998 (Buccini 2004). Global chemical output has continued to rise increasing by 63 per cent in 2010 compared to 1996. Estimated annual growth rates for the global industry range from 2.6 to 3.5 per cent, corresponding to the predicted rate of growth for global gross domestic product (GDP). Total demand for chemicals is forecasted to increase more rapidly in the developing than in the developed world. By

2020, the developing world is set to increase its share from 23 per cent of global chemical demand and 21 per cent of production in 1995 to 33 per cent and 31 per cent, respectively. Although Africa's contribution to value-added production is very small, current trends suggest that its contribution to global production of chemicals will continue to grow.

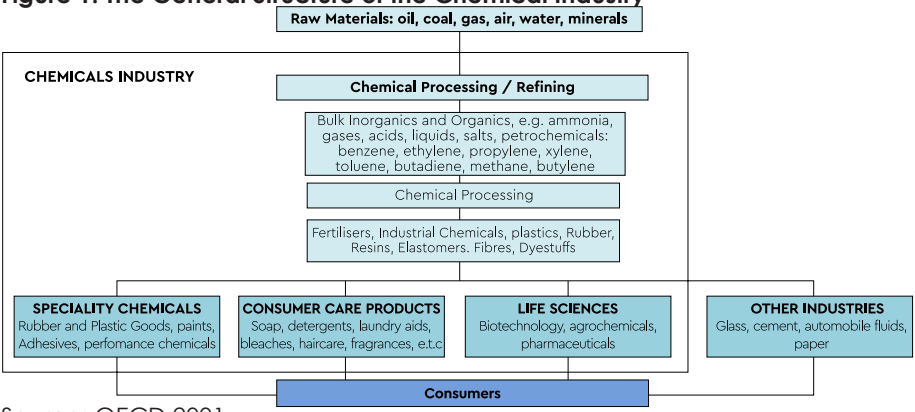
### 1.3.0 The Zimbabwe Chemical Industries Sector

Zimbabwe's chemicals industry is fairly limited largely due to limited natural petroleum resources and most of the necessary chemicals (e.g. caustic soda, ammonium phosphate, ammonium nitrate, magnesium sulphate e.t.c) are imported, By 1994 chemicals and chemical derivatives and pesticides had been targeted for import-substitution by the Zimbabwean government which saw a number of processors and chemical refineries being built. These included Zimchem refiners, National Chemical Products and the expansion of ZFC factories. The greater part of the industry is dominated by fertiliser manufacturers which have remained operational despite the economic downturn that spanned from the early 2000s to 2008. There is a growing influence of private players in the Zimbabwean chemical industries landscape who are pursuing backward and forward integration. Petro and basic chemicals had a 34 percent share of volume and a dominating 37 percent share of chemicals value in 2012 with respect to output within the chemical industry. Specialty and fine chemical acquirers had a 19 percent share in volume but only a 9 percent share in value, indicating mainly portfolio adjustments in this more fragmented segment. 38 percent of activity in the same sector lay with the "others category" (ZimStat 2013).

### 1.4.0 Industry Mapping

A comprehensive list of the Zimbabwe Industries Business Database was used to identify industry players in the Chemical Industries sector. The companies were listed and categorised into five sub-sectors according to the structural categories and overview of the chemical industry developed by (OECD 2001) as shown in figure 1.

**Figure 1: The General Structure of the Chemical Industry**

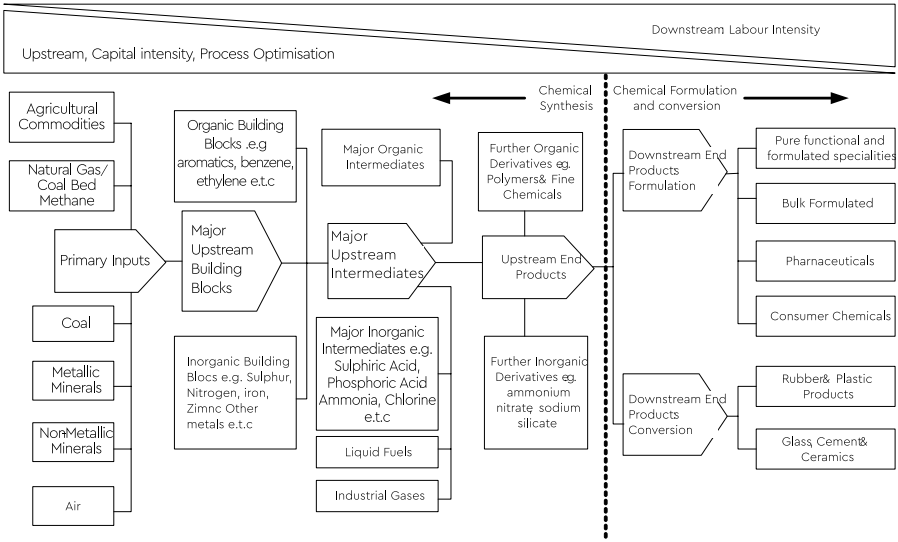



Source: OECD 2001

The industries were classified per sector and these five broad categories were adopted: Chemical Raw Materials, Chemical Refineries / Processors, Speciality Chemicals, Consumer Care Products and the "Other Industrial Chemicals" Sub-Sectors. Pharmaceuticals were excluded from the Chemicals Industry as it is considered a stand alone sector in most economies. The comprehensive list was expanded to cater for backward and forward integration in the sector and thus the value chain was subdivided into six levels of value added activities. The firms identified from the business directory were placed against the level at which they are involved. Level 1: Suppliers, Level 2: Collector Traders / Production, Level 3: Manufacturers & Processors, Level 4 Wholesale, Level 5: Retail & Exporters and Level 6: End Markets & Final Products users.

The sector using the above criterion can be further classified as either downstream or upstream. While its upstream segment is concentrated and well developed, the downstream sector - although diverse - remains underdeveloped; (ii) The basic chemicals subsector of fertilisers is prominent, with Chemplex being the leader in inorganic chemical synthesis and technologies.

**Figure 2: Zimbabwe Chemical Industries Sector**




Source: Zimunga

Extending from this classification, the table below summarises all the finer details of products produced and or imported in Zimbabwe.

**Table 2: Chemical Products & Categories Traded in Zimbabwe**

| CHEMICAL PRODUCT CATEGORIES IN ZIMBABWE | | | |
|---|---|---|---|
| 1 | Salt, sulphur; earths and stone; plastering materials, lirne and cement | 8 | Essential oils and resinoid; perfumery, cosmetic or toilet preparations |
| 2 | Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes | 9 | Soap, organic surface active agents, washing and lubricating prep., polishing or scouring prep., candles and similar, modelling pastes, waxes and prep. with basis of plaster |
| 3 | Inorganic chemicals; organic compounds of precious metals, of rare earth metals, of radioactive elements or isotopes | 10 | Albuminoidal substances; modified starches; glues; enzymes |
| 4 | Organic Chemicals | 11 | Rubber and articles thereof |
| 5 | Fertilisers | 12 | Miscellaneous Chemical Products |
| 6 | Pharmaceutical Products | 13 | Plastics and Articles thereof |
| 7 | Tanning or dyeing extracts; dyes pigments and other colouring matter; paints and varnishes; putty, mastic; inks | 14 | Explosives; pyrotechnic products; pyrophoric alloys; certain combustible preparations |

Source (ZimStat)

### 1.5.0 Significance of the Chemical Industries Sector

**Table 3: Chemical Industry Sector Contribution to GDP**

| CHEMICAL INDUSTRY SECTOR | 2009 Gross Output ($) | %age Contr to GDP | 2010 Gross Output ($) | %age Contr to GDP | 2011 Gross Output ($) | %age Contr to GDP |
|---|---|---|---|---|---|---|
| **RAW MATERIALS-** | 103,345,698 | 1.69% | 149,392,499 | 2.01% | 189,317,083 | 1.96% |
| **General Manufacturing Processing, Refineries & Consumer Care Pdcts** | 54,925,600 | 0.90% | 317,034,739 | 4.78% | 355,262,988 | 3.68% |
| **SPECIALITY CHEMICALS** | 103,303,846 | 1.68% | 143,238,878 | 1.93% | 168,633,151 | 1.75% |
| **OTHER** | 2,867,887 | 0.05% | 6,154,398 | 0.08% | 2,486,134 | 0.03% |
| **TOTAL** | **264445040** | **4.31%** | **615822524** | **8.28%** | **715701368** | **7.41%** |

Source (ZimStat, World Bank)

20% of manufacturing output is from chemical industries and it contributed 4.31% of total GDP in 2009, 8.28% in 2010 and 7.41% in 2011. This is forecast to be around 7.5% in 2013. The industry is dominated by agricultural chemical manufacturers making up the bulk of the total gross output (see table 3). The chemical industry has a strong impact on the the economy in general, by virtue of it being one of the key drivers of the agricultural sector, which in turn is the main source of raw materials for manufacturing sector. One of the key subsectors in the chemical industry is the fertiliser industry which accounts for 32% of chemical supplies manufactured locally, while about 68% are imports.

Government has specifically prioritised fertiliser production in the chemical industry through acquisition newer technologies for coal gasification and coal

bed methane gas as spelt out in the industrial development policy (2012-2016). With regard to coal-bed methane a favourable legislative and regulatory framework will be created to promote exploitation of the resource. The categories in table 3 can be subdivided into product specific classification expressed in imports and exports statistics as a comprehensive commodity list for Zimbabwe chemicals.

### 1.6.0 Domestic Chemical Exports Classified By HS Sector ($)

**Table 4: Zimbabwe Chemical Commodity Export Values**

| CATEGORY | | FISCAL YEAR | | | | |
|---|---|---|---|---|---|---|
| | | 2009 $ | 2010 $ | 2011 $ | 2012 $ | 2013* $ |
| 1 | Salt, sulphur; plastering materials, lime and cement | 58,081,964 | 35,948,938 | 48,049,823 | 46,162,354 | 48,655,121 |
| 2 | Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes | 34,146,871 | 46,295,847 | 29,462,996 | 38,436,611 | 40,512,188 |
| 3 | Inorganic chemicals; organic or inorganic compounds of precious metals, of rare earth metals, of radioactive elements or isotopes | 6,288,625 | 3,060,225 | 638,954 | 577,777 | 608,977 |
| 4 | Organic Chemicals | 48,993 | 71,177 | 105,963 | 126,889 | 133,741 |
| 5 | Fertilisers | 1,475,486 | 1,918,460 | 6,994,495 | 1,565,074 | 1,649,588 |
| 6 | Tanning or dyeing extracts; tannin and their derivatives; dyes pigments and other colouring matter; paints and varnishes; putty and other mastic; inks | 2,775,224 | 2,363,456 | 2,994,065 | 1,905,393 | 2,008,284 |
| 7 | Essential oils and resinoid; perfumery, cosmetic or toilet preparations | 390,215 | 617,301 | 478,429 | 567,982 | 598,653 |
| 8 | Soap, organic surface active agents, washing and lubricating prep., artificial or prepared waxes, polishing or scouring prep., candles and similar, modelling pastes, dental waxes and prep. with basis of plaster | 312,349 | 934,789 | 645,054 | 731,392 | 770,887 |
| 9 | Albuminoidal substances; modified starches; glues; enzymes | 51156 | 70,503 | 65,027 | 39,246 | 41,365 |
| 10 | Explosives; pyrotechnic products; pyrophoric combustible preparations | 0 | 72,500 | 37,138 | 44,290 | 46,682 |
| 11 | Miscellaneous Chemical Products | 785,125 | 2,001,556 | 2,048,455 | 2,374,508 | 2,502,731 |
| 12 | Plastics and Articles thereof | 5,733,612 | 5,833,392 | 4,954,962 | 4,967,959 | 5,236,229 |
| 13 | Rubber and articles thereof | 1,551,310 | 2,959,920 | 2,809,905 | 9,280,577 | 9,781,728 |
| **TOTAL EXPORT FIGURES** | | **113,616,677** | **105,193,838** | **102,814,978** | **109,329,536** | **115,233,331** |

Source: ZimStat Quarterly Digest of Statistics 2013

The exports in this sector are dominated by mineral based chemical products and derivatives with the largest contribution coming from lime, cement, coal and bituminous fuels, oils and waxes. This follows the fact that most Zimbabwean chemical industries are either directly or indirectly involved in beneficiation of such mineral raw materials abundantly available in Zimbabwe.

## 1.7.0 Domestic Chemical Imports Classified By HS Sector ($)

### Table 5: Zimbabwe Chemical Commodity Import Values

| CATEGORY | | FISCAL YEAR | | | | |
|---|---|---|---|---|---|---|
| | | 2009 $ | 2010 $ | 2011 $ | 2012 $ | 2013* $ |
| 1 | Salt, sulphur; plastering materials, lirne and cement | 22,508,187 | 24,760,623 | 32,807,050 | 41,170,548 | 43,393,758 |
| 2 | Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes | 401,503,261 | 939,638,070 | 1,255,420,588 | 1,532,064,346 | 1,614,795,821 |
| 3 | Inorganic chemicals; organic or inorganic compounds of nonmetals, of radioactive elements or isotopes | 25,419,989 | 50,314,275 | 65,719,824 | 73,365,295 | 77,327,021 |
| 4 | Organic Chemicals | 16,762,785 | 23,993,767 | 37,400,975 | 31,878,100 | 33,599,517 |
| 5 | Fertilisers | 88,383,533 | 149,833,919 | 2,031,438,819 | 330,650,271 | 348,505,386 |
| 6 | Tanning or dyeing extracts; tannin and their derivatives; dyes pigments and other colouring matter; paints and varnishes; putty& mastic; inks | 13,779,448 | 21,577,564 | 27,043,267 | 26,802,069 | 28,249,381 |
| 7 | Essential oils and resinoid; perfumery, cosmetic or toilet preparations | 15,858,567 | 35,606,543 | 63,024,213 | 72,840,545 | 76,773,934 |
| 8 | Soap, organic surface active agents, washing and lubricating prep., artificial or prepared waxes, polishing or scouring prep., candles and similar, modelling pastes, dental waxes and plaster preps | 70,649,153 | 94,351,114 | 122,790,492 | 106,668,851 | 112,428,969 |
| 9 | Albuminoidal substances; modified starches; glues; enzymes | 4,446,045 | 6,029,812 | 8,259,658 | 9,156,919 | 9,651,393 |
| 10 | Explosives; pyrotechnic products; pyrophoric alloys; certain combustible preparations | 16,236,056 | 28,186,508 | 32,007,584 | 33,122,471 | 34,911,084 |
| 11 | Miscellaneous Chemical Products | 42,082,885 | 73,573,276 | 88,064,089 | 86,308,381 | 90,969,034 |
| 12 | Plastics and Articles thereof | 93,979,644 | 148,355,601 | 202,021,491 | 206,141,988 | 217,273,655 |
| 13 | Rubber and articles thereof | 49,765,422 | 79,009,171 | 103,910,440 | 110,185,333 | 116,135,341 |
| TOTAL EXPORT FIGURES | | 3,688,410,383 | 1,755,907,121 | 4,180,241,483 | 2,854,110,390 | 3,008,232,351 |

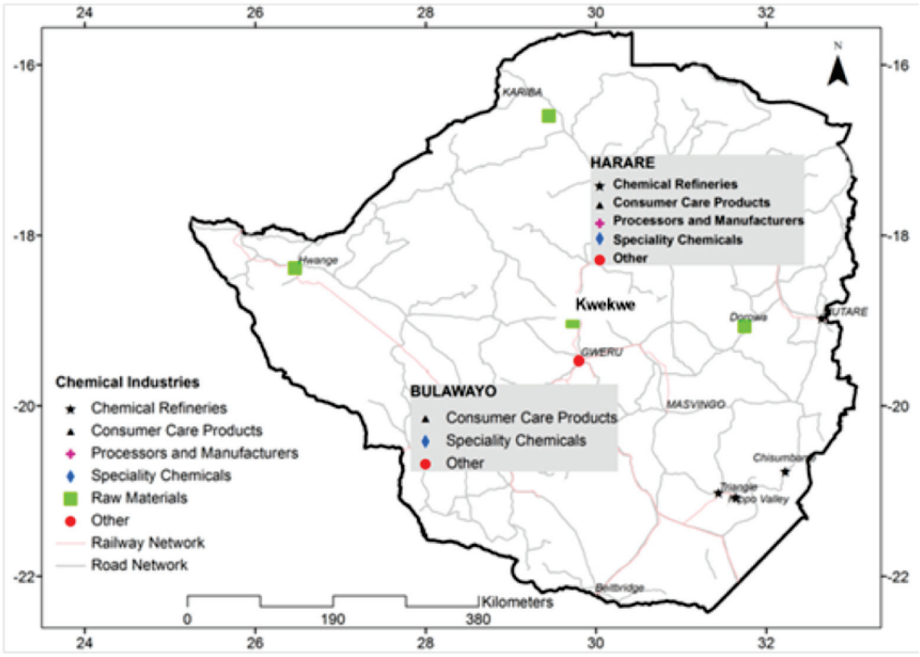
Source: Zimstat Quarterly Digest of Statistics

The bulk of imports are dominated by plastics, pharmaceuticals and petrochemical derivatives and polymers to which Zimbabwe does not have capacity to produce locally. The sector in Zimbabwe reached its peak in 1996 at 76% capacity utilisation. Capacity utilisation has been declining from 2009. Average utilisation stood at 41.6% in 2012 and 30% in 2013 (CZI Manufacturing Sector Survey Reports) despite increasing gross output in absolute monetary terms.

## 1.8.0 Chemical Industries Geographic Distribution

Zimbabwe's chemicals industry is organised into clusters around Harare, Bulawayo Kwekwe-Gweru with scattered individual industries as shown in the map of Zimbabwe below;

**Figure 3- Geographical Distribution of Major Chemical Industries in Zimbabwe**




Source: SIRDC 2013

The bulk of industries are located in Harare and Bulawayo. Harare industries cover all categories of the industry sector except for mineral extraction of chemical compounds, fertiliser chemicals and their derivatives. Bulawayo industry has gone through difficult times and has been hardest hiby the economic meltdown in Zimbabwe. The greater part of the indutry population has shut\down operations. Most mineral and raw material sector industries are located outside of Harare and Bulawayo with Hwange, Dorowa, Chegutu, Gwanda and Gweru. The South Eastern Lowveld is dominated by ethanol chemical producing companies either directly from sugarcane or from by-products of sugar processing. The most common industry that covers the bulk of Zimbabwe is covered by the consumer care products sector where household goods and personal hygiene goods dominate the product and services portfolio.

### 1.9.0 Main Commodities Produced

Although it is relatively small by international standards, Zimbabwe's chemical industry plays a significant role in the economy contributing about 4 per cent of GDP and employing approximately 15 000 people. Currently, petrochemical commodities, polymers and fertilizers are the main products of the Zimbabwe chemical industry (MBendi 2010). Some of the major products are as listed below:

| | |
|---|---|
| *Petrochemicals:* | Toluene, Xylene, Benzene, Creosote, Tar and plastic products |
| *Agrochemicals:* | Phosphate Fertilizers, Nitrous Fertilisers |
| *Industrial Raw Materials:* | Gases – Nitrogen, oxygen, Argon, Carbon Dioxide, Acetylene, Coal, Crude benzole and crude tar |
| *Industrial Chemicals:* | Nitric Acid, Sulphuric Acid, Ammonia, Ethanol, Propanol, Butanol, Aerosols, Other Ethanol Derived Products and Solvents, Paints, Detergents and Soap |

The production of agricultural chemicals is a key focus of the chemical industry in Zimbabwe.

**1.10.0 Main Challenges and Constraints**

The industry has been faced with numerous challenges and the chemicals industry has been no exception. Some of these challenges among others are:

- Outdated technology
- Shortage of working capital and absence of lines of credit.
- Highly inadequate and erratic supply of key economic enablers namely electricity, fuel, coal and water.
- Unfair competition from imported products.
- Prohibitive import duty for raw materials
- Dilapidated infrastructure
- De-industrialisation and the widespread closure of companies
- Non payment for consignments
- Policy inconsistencies, especially with respect to economic empowerment and indigenisation regulations
- Adverse global economic developments;
- Difficult external sector position;
- Persistently recurrent liquidity challenges and
- The negative effect of sanctions

**1.11.0 Chemical / Industry Sector Policies**

Through the Industrial Development and Trade Policies, the government identifies: export-led industrialisation as a key for instrument for four industry "priority sectors". The sectors are namely, agro-processing (food, beverages, clothing, textiles, leather, wood and furniture), chemicals and fertiliser industry, pharmaceuticals and metals and electricals. According to the policy these sectors are earmarked to be the drivers and pillars of industrial growth for Zimbabwe in the period 2012-2016.

A number of strategies were identified in these policies addressing some of the specific constraints identified in 2.4.0 above i.e. Industrial Financing in which the Government set to establish a dedicated financial mechanism through the re-modelling or restructuring of existing institutions primarily dedicated to financing medium and long term recapitalization of industry. The policy also proposes to establish lines of credit as a distressed strategic companies short term measure revolving fund. The Government also set to review the import

tariffs structure on the customs duty and VAT on industrial raw materials and packaging to level the playing field for locally produced goods. The industrial development policy also identifies strengthening of existing research institutions to coordinate the crucial role of modernizing industry's plant and equipment and to improve on its systems and quality of products in line with international best practice. The trade policy document 2012 was advanced by a separate policy document to support the trading environment to maximize attractiveness of Zimbabwean products in the region and globally.

Of major concern to the sector specific policies and strategies is that they have either not been followed altogether or are lacking the policy maker's will to implement successfully.

# SECTION 2

## BACKGROUND AND STUDY METHODOLOGY

### 2.0.0 Context

ZEPARU, in collaboration with USAID selected the Zimbabwean Chemical industry for value chain analysis (VCA) with the objective of identifying policies to enhance economic growth in the sector. This is part of efforts through the mandate of ZEPARU which aims to increase trade and competitiveness by reducing barriers to trade, improving market access, and industrial growth. Trade in chemicals is identified as being particularly important as almost the whole industry and economy depend on this sector's products and services. The study methodologies employed in this study include both secondary and primary research, which also uses quantitative and qualitative research methods. The project was conducted in concurrent phases in order to allow for an evaluation of the deliverables due from each stage and capitalise on the resulting information and knowledge thereof. The end of each phase/stage constituted a project milestone with due deliverables.

### 2.1.0 The Aim of the Study

The broad objective of this diagnostic study was to make an assessment and map the viability of value chains in selected subsectors of Zimbabwe's Chemical Industry with the view of identifying measures or strategies to enhance competitiveness of these industries. This is geared towards providing a framework for the development of output volumes and contribution of the sector to the economy of Zimbabwe.

### 2.2.0 Objectives and Scope of the Study

The specific objectives of the assignment were to:

1. Conduct a VCA and produce VCA flow charts a sample of products throughall points of market transfer and value-added including but not exclusive to: service providers, producers, traders, parastatals, exporters and processing companies.
2. List all players and stakeholders along the chain by name, location, type of entity, contact information, status of operation that is dormant, % capacity, and ownership structure.
3. Identify volume flow between sectors and identify and explain all constraints and opportunity issues at each transfer point in the chain; that is processing limitations (low technology), yields, prices, payment systems, transport and quality.
4. Identify and explain the value change between transaction points adjusting for measurement differences and conversions.
5. Assess the status, impact and opportunity for policy, trade regulations, policy framework and opportunities of the structured trading system

### 2.3.0 Research Methodology

We used an integrated value chain diagnostic approach that allowed for a combination of the dimensions as well as the 7 approaches defined by UNIDO that cater for aspects of primary production and inputs; processing capacity and technology; end-markets and trade; governance of value chains; sustainable production and energy use; value chain finance; and business environment and socio-political context. We focused the chemical sector and conducted field visits, e-mail contacts, in-depth face to face interviews, telephone interviews and consultations with key actors in the chemical industry. We used both qualitative and quantitative methods. The VCA study included all the five identified sub sectors of the chemical industry stratified from all the six VC levels using the following criteria:

i. Sub-Sector of activity
ii. Level of activity
iii. Firm size and geographical location.

A sample size of 45 companies across all provinces and across all sub sectors was calculated.

**Figure 4: Study Sample Size and Sample Distribution**

| STRATIFIED SAMPLE: CHEMICALS | | | | | | |
|---|---|---|---|---|---|---|
| | CHEMICAL REFINERIES | PROCESSORS & MANUFACTURERS | CONSUMER CARE PRODUCTS | RAW MATERIALS | SPECIALITY CHEMICALS | OTHER |
| KEY MANUFACTURER / PLAYERS | ZIMCHEM | SABLE CHEMICAL INDUSTRIES | UNITED REFINERIES | HCCL | ASTRA PAINTS | ZIMGLASS |
| | GREEN FUEL | ZIMPHOSPHATE INDUSTRIES | UNILEVER | NEW ZIMSTEEL | DYNO NOBEL | PPC |
| | NCP DISTILLERS | ZFC | RECKIT BENCKISER | LYNNX | PIGGOT MASKEW / GB | CLAY PRODUCTS |
| | TRIANGLE | WINDMILL | OLIVINE INDUSTRIES | DOROWA | PRO PLASTICS | LAFARGE |
| | NOIC | ASTRA CHEMICALS | MULTI MANUFACTURERS | | MEGA PAK | SINO CEMENT |
| | BOC GASES | CERNOL | | | SALTRAMA | |
| | TARCON/BITUMAT | BARCO | | | PRODORITE | |
| | | CAPH | | | TREGER | |
| | | ALCOL | | | | |
| | | CHEMCO - AGRICURA | | | | |
| | | ECOMARK | | | | |
| | | G & W | | | | |
| | | | | | | |
| PRODUCTS | BENZINE | GAS | BODY PRODUCTS | COAL TAR | PAINTS | CEMENT |
| | TOLUENE | FERTILISER | SANITISERS | CRUDE BENZOL | EXPLOSIVES | SODIUM SILICATE |
| | PETROL DIESEL | NITRIC ACID | DETERGENTS & SOAP | AMMONIA GAS | RUBBER | CONTAINER GLASS PRODUCTS |
| | ETHANOL | INDUSTRIAL SOLVENTS | MISCELLANEOUS | GRAPHITE | PLASTICS | CERAMIC PRODUCTS |
| | GAS | OTHER AGRIC CHEMICALS | | PHOSPHATES | | |
| | TAR | INDUSTRIAL OTHER | | LIMESTONE | | |
| | CREOSOTE | MISCELLANEOUS | | MISCELLANEOUS | | |

| BANKING & INSURANCE | POLICY MAKERS | REGULATORY & OTHER |
|---|---|---|
| CBZ HOLDINGS | MoI&T | ZIMRA |
| BARCLAYS BANK | MoHTE,S & T | EMA |
| STANBIC | Mo FINANCE | ZIDISTAT |
| FBC HOLDINGS | MoSMEs | IDC |
| ZB BANK | MoINDEG | UNIDO / TNDP *** |
| IDBZ | MoENERGY | ZERA |
| | ZIMTRADE | ZNCC |
| | | ZIMTRADE |
| | | COUNCILS |
| | | CZI |

## Main Chemical Industries Population - Zimbabwe

| SERVICES, GROUPS & POLICYMAKERS | V C LEVEL | KEY STAKEHOLDERS | | | |
|---|---|---|---|---|---|
| CZI | LEVEL 6 - FINAL PRODUCT & MARKET | INDIVIDUALS | TRANSPORT INDUSTRIES | | |
| ZNCC | | CONSTRUCTION INDUSTRIES | | FREIGHT BUSINESS | |
| BANKS - ALL | | BEVERAGES INDUSTRIES | | | |
| ZLMSTAT | | MINING INDUSTRIES | | | |
| CHEM & ALLIED WORKRS U | LEVEL 5 - RETAILERS | OK ZIMBABWE | TOTAL | SASOL CHEMICAL | NATIONAL TESTED SEEDS |
| WORLD BANK | | FOOD CHAIN | FUCHS LUBRICA | ZUVA | FARM & CITY |
| AGRIC ITD ASSOC | | William Scott & Co | PETROZIM | TM SUPERMARKETS | |
| UNDP | | Nungu Energy Pvt L | AI DAVIES | PICK N PAY | |
| ZIMIRA | | ENGEN MARKETD | TM SUPERMARK | SPAR | |
| IDC | | SAKUNDA | | | |
| SAZ | LEVEL 4 - WHOLESALE | CURECHEM | UNION HARDW | Rock chemicals Fill | NOIC |
| UNIDO | | BAYER ZIMBABWE | H.J. Teasdale Pvt I | TECHNICAL SERVICE AFRICA | |
| universities (all) | | CHEMPLEX MKTNG | | | |
| Polytech (all) | | POLACHEM DISTR | Shandong Sanfeng Group Co., Ltd | | |
| COMESA | | CASTROL ZLMBAB | Art-Rich Enterpri | Chipstow Investments (PVT) LTD | |
| MoInd TRADE | | CPS AFRICA | | | |
| MO Finance | LEVEL 3- PROCESSING / MANUFACTURING/ PRODUCTION FACTORIES | ZFC | SYGENTA | UNILEVER | GEN CHEM CORP |
| MoSMEs | | ZIMPHOS | BIOCI-EM-RUWA | African Explosives | OMNIA ZIM |
| City and Local Councils | | WINDMILL | ALCOL CHEMIC | CHEMCO HOLDD | CHEMICAL ENTERPRISES |
| Mo Trans | | AGRICURA | MULTIPEST | FLORACHEM | PLASCON |
| MoENERGY | | BOC GASES / LIND | PRIME SEED PVT | BARCO | DYSORT ENTERPRISES |
| ZERA | | ASTRA CHEMICAL | CAPH - | PROPLASTICS | LAFARGE CEMENT |
| ZIMTRADE | | BITUMEN-BITUM | CAFCA | MUKUNDI | TRANSLOAD |
| CCZ | | ELIGO PLASTICS | RECKITT BENCE | PRODORITE | NOIC |
| ZSE | | VERSAPACK | DULUX | CPS | MEGAPACK |
| | | HITACHI PLASTIC | CROWN | KAYLITE KINGS | MILLPAL |
| | | OLIVINE INDUSTR | NEGONDO | WALLACE | BESTAFORM |
| | | SALTRAMA | MULTI MANUF | RECKITT BENCK | TREGER |
| | | CERNOL | CITCHEM | ASTRA PAINTS | VITAFOAM |
| | | ZIMCHEM | SINO CEMENT | PPC | LEDGER PAINTS |
| | | SABLE CHEMICAL | ZIMGLASS | CLAY PRODUCT | POLYFILM |
| | | ZFC | WATER GLASS | GASIFICATION L | CHROMA |
| | | DYNO NOBEL | AN CHEMICALS | ZLMFOAM | POLYWASTE |
| | | ANCHOR INDUSTR | BOC GASES | UNITED REFINER | ROYAL MANUFACTURERS |
| | | KPM | NOIC | DUNLOP | IHC |
| | | ZLMSILICATES | DOROWA MINE | PIGGOT MASKET | STANCHEM |
| | | TRIANGLE LTD | ***COAL GASI | ECO CHEMICALS | TRINIDAD |
| | | HIPPO VALLEY | FINEALT ENGIN | TREGER | HORIZON CHEMICALS |
| | | NCP DISTILLERS | MUTARE BOARD | Amalgamated Chemical | MULTI MANLTACTURERS |
| | | GREEN FUEL | UNILEVER | CHEMATEK | ZIMSILICATES |
| | LEVEL 2 - COLLECTOR TRADERS | EDDAZIM INVEST | MANICA | CHEMICAL WAREHOUSE | |
| | | W & M ENTERPRI | CHEMATEK | | |
| | | VETERINARY CHEMICALS | | | |
| | LEVEL 1 - SUPPLIERS | IMPORTS | LYNXX/ZGGM | BOC GASES / LINDE GAS | |
| | | BOTASH*** | DOROWA MINE | ZISCOSTEEL | |
| | | CHEMPLEX MARKETING | | | |
| | | HWANGE COLLIERY COMPANY | | | |
| | | | | | |
| | | | | | |

This population was extracted considering the Central Business Directory & Consultation with other stakeholders.

**2.4.0 Principal Indicators**
Gross output, intermediate consumption and value added are used as principal indicators in this report.

**Gross output -** illustrates the result of the overall production activity of establishments (i.e. industrial units) and it corresponds to the sum of the value of all goods or services that are actually produced within an establishment and become available for use outside that establishment plus any goods and services produced for own final use. The value of production is given by:

Gross output = value of sale/turnover/shipments of all goods or services produced by the establishment + value of sale/turnover/shipments of all goods and services purchased for resale in the same condition as received - purchases of goods and services for resale in the same condition as received + receipts for industrial work done or industrial services rendered to others + other revenues + value of own-account fixed assets + change in work-in-progress + change in inventories of finished goods + change in inventories of goods purchased for resale in the same condition as received.

**Intermediate consumption -** consists of the value of goods and services consumed as inputs in the process of production, excluding fixed assets. The goods or services may be either transformed or used up in the production process and is calculated as follows:

Intermediate consumption = Cost of raw materials and supplies except gas, fuels and electricity + cost of gas, fuel and electricity purchased + purchases of services except rentals + rental payments + changes in inventories of materials, fuels and supplies.

**Value Added –** Based on Gross output and intermediate consumption;
Value Added = Gross Output – Intermediate Consumption

**2.5.0 Desk Research**
The study also included a phase of document and literature review. The major source of information were; the World bank, Reserve bank of Zimbabwe, Zimbabwe National Statistical Agency (ZimStat) and the African Development Bank (AfDB) Other key sector data was obtained from the Confederation of Zimbabwe Industries (CZI)'s annual manufacturing sector Surveys, ZNCC, World Bank Enterprise Surveys on Zimbabwe, Industry Surveys and ZimStat Cover Census of Industrial Production (CIP) statistics.

**2.6.0 Questionnaires**
Questionnaires were developed based on the 7 diagnostic dimensions and the criteria defined above. The draft questionnaire was tested in the field over a period of three days prior to them being emailed to respondents. Some questionnaires were printed in hard copy format for the other part out of the core sample that included micro and small enterprises. A separate

questionnaire for the banking sector was also developed. The team followed up the questionnaire distribution and conducted face to face interviews. It is in these interviews that some of the questionnaires were administered. The resultant follow ups were critical to give the researchers in-depth understanding of operations and physical evaluation of the situation in the industries.

**2.7.0 Interviews**

Face to face interviews were conducted with the respondents as well as Key Stakeholders lige industry lobby groups, government ministries and regulatory bodies. The proceedings in these meetings were recorded with voice recorders

**2.8.0 Data Analysis**

Statistical manipulation of the collected data was done using the Microsoft Excel Statistical Function as well as SPSS Package. Interpretation of the data was thus recorded as part of the value chain analysis as recorded in this report.

**2.9.0 Limitations**

The volume of work was considerable given the amount of information required relative to the time available and lack of recent value chain studies on the Chemical Industries Sector. Capturing all the complexities of a single product value chain for all products was not feasible for all the subsectors within the allocated time study hence only a few products were analysed. We could also not access all the data needed from ZimStat particularly trend data specific to the chemical Industries. Some of the respondents were not willing to release information especially information specific to financials and shareholding structure. Some of the identified organisations in the sample have since folded up operations and only 27 of the distributed questionnaires were returned at the time of compilation of this report.

Industries were reluctant to release information with most players fearing that the researchers were acting on Indigenisation Law enforcement. Others cited that they have participated in too many previous surveys and studies that yielded no benefit and thus saw no relevance in participating.

# SECTION 3

## INDUSTRY VALUE CHAIN ANALYSES

### 3.0.0 Chemical Raw Materials Sub-Sector

Chemical raw bulk substances, and their derivatives, are widely used in many development and economic sectors of Zimbabwe including industry, agriculture, mining, water purification, public health and infrastructure development. The challenge facing Zimbabwe is how to invest and harness the benefits of chemicals cost effectively. This subsector is driven largely by coal and the mining of other non metallic minerals such as limestone, phosphorous, carbon and sulphur amongst others. This is contrary to the most advanced chemical industries on the continent found in Northern Africa (Algeria, Egypt, Libya, Morocco and Tunisia), Western Africa (Nigeria) and Southern Africa (South Africa), the development of chemical industries in these subregions has been facilitated by access to larger markets and by the presence of natural resources that can support growth in this sector, such as natural gas, coal and oil, and well-developed infrastructure and communications (MBendi 2013). Compared to these developed value chains on the African continent Zimbabwe's chemical industry has huge potential due to its vast resources in coal, natural gas and other chemical non-metallic minerals identified above.

### 3.0.1 Production & Consumption

Chemical raw materials production in Zimbabwe is predominantly for domestic consumption, with 100% of production coming from commercial scale mining.

**Table 6: Production Figures for the Bulk Raw Materials Sector**

| RAW MATERIALS INDUSTRIAL GROUP | Gross Output ($) 2010 | Gross Output ($) 2011 | Gross Output ($) 2012 | Gross Output ($) 2013* |
|---|---|---|---|---|
| Mining of chemical, fertilizer minerals, extraction of salt, carbon, quarrying and other mining & agglomeration of coal and lignite | 149,392,499 | 189,317,083 | 137,345,697 | 129,876,622 |

*** Figures based on study estimates** SOURCE: ZIMSTAT

The chemical raw materials value chain is dominated by major trading companies (that is Hwange Colliery Company Limited, BOC – Linde Gas, Hwange Coal Gasification Company, Steelmakers Coal, RioZim Sengwa Coal Mine, Dorowa Minerals, G&W Chemicals, African Mills and Zimbabwe German Graphite mines amongst others) who extract the raw materials and are also directly involved in active storage, processing and trade. Interviews with these stakeholders suggested that as much as 80% of production in this sector was for

local consumption. This is however not the case for graphite where up to 58% production was directed to the export market.

### 3.0.3 Value Added

The sector adds approximately 40% of value with a lower to upper range of 39 – 43% as a ratio of gross output. Sectoral Intermediate consumption was as high as 63% for the year 2011. Gross Margins in the sector hover above 33%. Below is a summary of value added in the subsector from 2010 to 2013. The figures for the year 2013 are based on estimates.

**Table 7: Value Added Figures for Raw Materials Subsector**

| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | 2010 $ | 2011 $ | 2012 $ | 2013* $ |
| Gross Output | 149,392,499 | 189,317,083 | 137,345,697 | 129,876,622* |
| Intermediate Consumption | **108,376,995** | **119,630,010** | **86,523,654** | **77,664,778** |
| Value Added | 42,026,385 | 69,687,073.00 | 50,822,043.00 | 52,211,844.00 |
| Intermediate Cons. / Gross Output | **59%** | **63%** | **62%** | **60%** |

SOURCE: ZIMSTAT *** Figures based on study estimates**

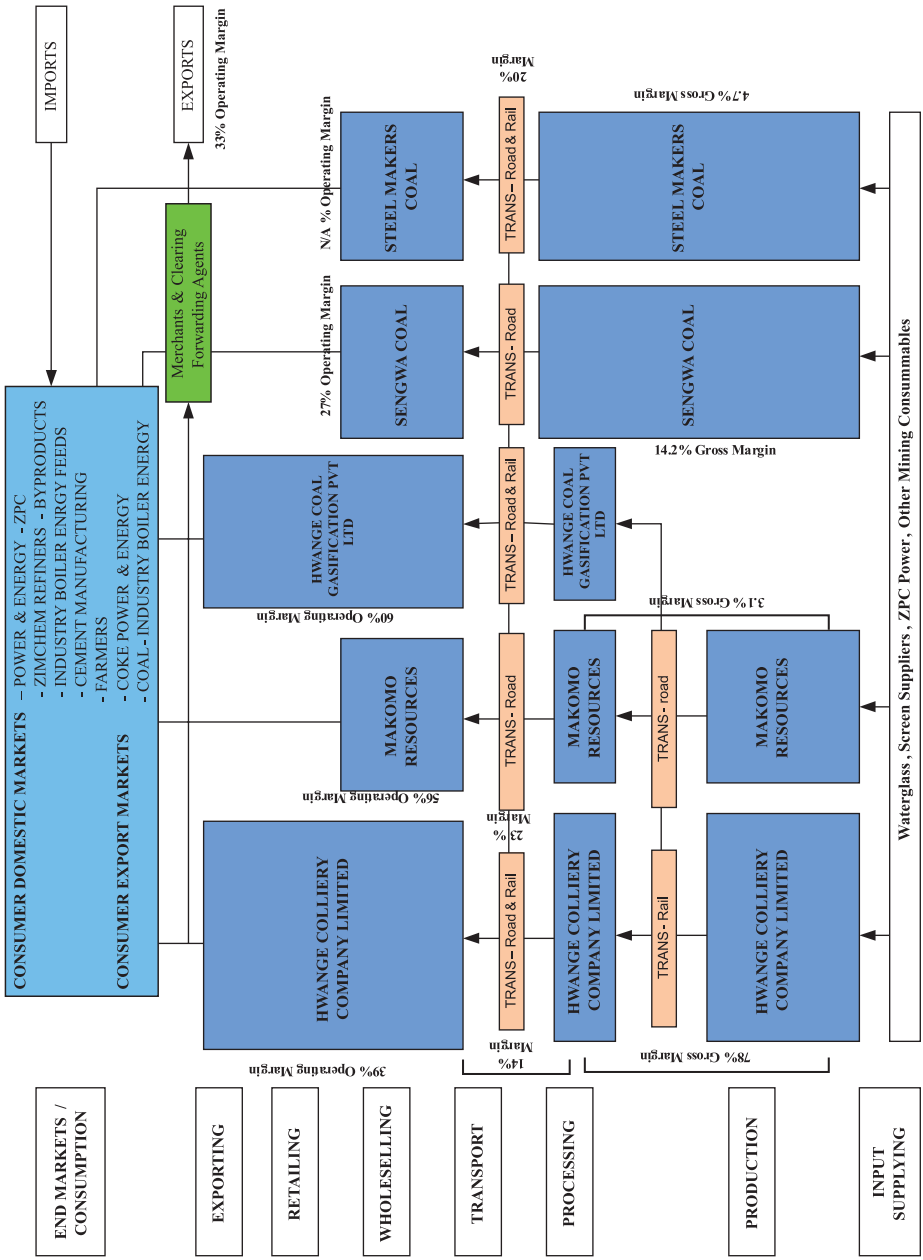
Due to the mining nature of the players in this field, most organisations handle the greater part of the value and supply chain through internally developed structures. Most organisations in this subsector either have strong vertical and horizontal linkages with sister companies in a holding parent group.

### 3.0.3 Value Chain Map

Due to the diverse nature of commodities in this particular subsector, three value chains with actual value are shown below. Below is a coal value chain map incorporating the main players.

Hwange Colliery is the country's largest producer and processor of coal, coke and coal by-products. The largest coke works are located at the dormant Ziscosteel and by-products feed into the mainstream petrochemical industries where the major player is Zimchem Refiners. The value chain diagram shows the distribution of value added in terms of margins at different operation levels in the value chains. The export market is currently generating less in terms of margins approximately 33% margin compared to local markets which are as high as 60% in some cases.

## Figure 5: Coal Value Chain Map



### 3.0.4 Geographic distribution

**Phosphates -** Zimbabwe has a well-developed indigenous phosphate industry. All of the known phosphate resources are either of igneous provenance, associated with carbonatites, or guano. This industry is concentrated in the Dorowa area in Manicaland in the Buhera district.

**Limestone -** The limestone industry is clustered around Harare, Gwanda, Gweru Kadoma and Chinhoyi areas. Some ofthese large marble deposits are mined and processed for the cement industry (e.g. Sino-Cement, Lafarge and PPC) while the other part is mined for the sole purpose of agricultural lime production by G & W Minerals, the Early Worm Operation and Chegutu Stone operations. G & W produces approximately 40% of this production was (G&W 2013).

**Sulphur / Sulphides -** The only sulphide source mined for the sole purpose of providing sulphur for sulphuric acid production is the Iron Duke Pyrite mine, 45km north of Harare. This underground mine used to produce pyrite ore containing 35.5% S (Barber and Muchenje 2010). General annual production rates ranged between 50,000 and 70,000 tonnes with approximately 85% of the pyrite is supplied to Chemplex Corporation Ltd. **Coal & Natural Gas –** Coal has been the dominant energy mineral for Zimbabwe. The country boasts of vast reserves of coal particularly in the north-west and southern parts of the country. Zimbabwe's coal industry is located in the Matebeleland North Province with major players being Hwange Colliery and Hwange coal Gasification Company in Hwange, Sengwa in Gokwe-Binga area, Makomo resources in Bulawayo with mining operations in Hwange and Steel makers in Chiredzi. **Other Industrial Gases -** At present the sole gas manufacturer is BOC Gases in Harare. BOC has since shut down manufacturing operations in other centres which are now being used as distribution and retail centres (Interviewees 2013).

### 3.0.5 Value Chain Structures and Linkages

The companies in the limestone, sulphur and phosphate value chain are characterised by a well defined vertically and horizontally organised network. (See value map). The conglomerate is owned by the Industrial Development Corporation of Zimbabwe (IDC) through Chemplex Corporation. In the chain the Transport and haulage division is also owned through Chemplex Corporation of IDC. Fertiliser and agricultural chemicals companies are the main beneficiaries of Dorowa & G&W which are subsidiaries in an interconnected Network. The main Zimbabwean market for coal is ZPC and the rest of industries that operate coal/ coke fired boilers for energy supply.

### 3.0.6 Supply Chain Dominance

The producers / manufacturing firms in this case of the raw materials sector dominate the market. Organisations have structures in every level of the supply chain either vertically or horizontally. A typical example of the coal industry is as shown in the value chain map of the coal industry.

### 3.0.7 Constraints and Opportunities

This subsector has the potential of providing a high level economic growth and drive into subsequent industries with coal being a strategic energy source that drives all the other industries. There is great potential for growth in the sector with new licences granted that are likely to see growth for other value chains extending intothe petrochemical, agricultural and other chemical value chains. there is need for Zimbabwe to develop new value chains in view of increasing consumer demand through the blueprint ZIMASSET tabled by the Zimbabwe Government. These industries have not been receiving support on the same scale as other industries in the mining of raw and bulk mineral products. There has been little legislative policy and capital financing given to develop traders and processors to start or develop business (ZNCC 2013).

Unreliable data on production yield levels, potential areas for increased production and feasibility studies on establishing new value chain players or factories makes thesituation worse. Lack of a clear government strategy or guidelines does not help the industry to develop. Most players (78%) in the sector have had their operations on a downward scale. There is a lack of information amongst producers and traders about prices and potential markets which creates uncertainty margin and profitability. In an atmosphere of uncertainty traders have to include larger margins to cover potential risks which are seen in the chains in which organisations do not control the supply chain.

### 3.1.0 Basic Chemicals & Other Chemical Products

The basic chemical industry sector can be split into the following three chambers;

i. Chemical Refineries Sub-Sector
ii. Chemical Processing Sub-Sector
iii. Consumer Care Products Sub-Sector

According to the list provided in the Central Business Register, this category is dominated by the Chemical Processing subsector especially agrochemicals, with 43% being *fertilisers, agrochemicals and animal healthcare* followed by the Refineries *(petrochemical and ethanol 36%)* with the smallest subsector being the Consumer Care Products (21%). Furthermore, consumer care sector is generally dominated by small and micro-enterprises especially with the others having a proportionally higher number of medium and large enterprises. The majority of enterprises appear to be spread between Harare, Kwekwe and the South Eastern Lowveld but in general Harare is the dominant locality in which firms are located and is home to about 47% of all firms in the sector.

### 3.1.1 Production and Consumption

The basic chemicals production in is predominantly for domestic consumption, with 100% of production in the consumer care section and agro-processing being channelled to the domestic market. Production in the refineries especially that from NCP distillers (87%), Zimchem Refiners (48%) is channelled

toward export markets and that from Feruka Oil Refinery & Green Fuel channelled towards the domestic market. There are a number of dormant industries in the sector with organisations like Dyno Nobel in explosives manufacture having folded operations. Statistics from ZimStat Census of Industrial Production (CIP) reports reveal the following production and consumption figures as summarised in the table below.
Most products that fall in this category are imported to supplement the little local production that is still active. In the fertiliser section imports from China and South Africa's Omnia Nutriology Pvt Ltd fill in the deficit. Consumer care products have since been dominated with imports for floor products, surface cleaners, soaps, detergents, sprays and others.

The table below is a summary of gross output trends in this sector in the chemical industries.

**Table 8: Production Figures for the Basic Chemicals Sector**

| BASIC CHEMICALS AND OTHER CHEMICALS GROUP | Gross Output ($) 2010 | Gross Output ($) 2011 | Gross Output ($) 2012 | Gross Output ($) 2013* |
|---|---|---|---|---|
| Manufacture of basic chemicals; Manufacture of other chemical products | 317,034,739 | 355,262,988 | 332,886,479 | 373,026,774* |

*** Figures based on study estimates** SOURCE: ZIMSTAT

### 3.1.2 Value Added

The sector adds approximately 40% of value with a lower to upper range of 39 – 43% as a ratio of gross output. Sectoral Intermediate consumption was as high as 63% for the year 2011. Gross Margins in the sector hover above 33%. Below is a summary of in terms of value added in the subsector from 2010 to 2013 obtained from the Census of Industrial Production compiled and published by ZimStat. The figures for the year 2013 are based on estimates.

**Table 9: Value Added Figures for the Basic Chemicals Sector**

| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | 2010 $ | 2011 $ | 2012 $ | 2013* $ |
| Gross Output | 317,034,739 | 355,262,988 | 375,157,716 | 279,135,205 |
| Intermediate Consumption | 205,589,311 | 222,327,666 | 215,657,836 | 163,568,431 |
| Value Added | 111,445,428 | 132,935,322 | 159,499,880 | 115,566,774 |
| Intermediate Cons. / Gross Output | 64.8% | 62.6% | 57.5% | 58.6% |

* Figures based on study estimates SOURCE: ZIMSTAT

The nature of the players in this field makes it convenient for most organisations to handle the greater part of the value and supply chain through internally developed structures. Most organisations in this subsector either have strong vertical and horizontal linkages with sister companies in a holding parent group.

### 3.2.0 Chemical Refineries Sub-Sector

The petrochemical and other related industries subsector comprises of companies which produce or refine ethanol, Petrol & Diesel Fuel, Benzene, Toluene, Xylene (BTX) and tar products. Ethanol is produced by Green Fuel, Triangle & Hippo Valley Tongaat Hullet Sugar and National Chemical Products Distillery Pvt Ltd (NCP Distillers) situated in the lowveld. Green Fuel Ethanol is for automotive use while that for Tongaat Hullet is further refined to manufacture portable alcohol, methylated spirits, lacquer thinners, Propanol, Butanol, and methanol. Zimbabwe does not have oil reserves and therefore imports crude oil which is imported and refined by NOIC through their Feruka refinery. Blending of fuels also takes place at the Msasa and Mabvuku Underground plants. NOIC is also the solely authorised importer of refined gasoline (petrol fuel) which is then purchased by dealers and distributed to various filling stations. Crude benzole and coal tar are refined by ZIMCHEM Refiners Ltd to produce BTX, tar acid, creosote, oil and tar pitch amongst others. The refining process also produces styrene, indene, non aromatics and naphtha as by products.

### 3.2.1 Geographic Distribution

This is a summary of how the industries are distributed in Zimbabwe

**Table 10: Geographic Distribution of Petrochemical Industries**

| PRODUCT | LOCATION |
|---|---|
| BTX and tar products | Redcliff Kwekwe |
| Ethanol | Chisumbanje, South Eastern Lowveld - Masvingo |
| Petrochemicals & Fuel | Mutare, East, Highveld-Manicaland |

The industries in level 4, 5 and 6 of the value chain are spread throughout the country especially in the fuels sector. Market and Gross Ouput domination in this sector is by Zimchem, NOIC and Green Fuel. Due to lack of a strong natural resource base for oil and gas in Zimbabwe this sector's production is limited to petrochemical derivatives from coal by-products and the dormant / broken down value chain of crude oil processing.

### 3.2.2 Production and Consumption

Most of the production in this sector is targeted at import substitution. The Feruka Oil Refinery is designed to refine crude petroleum into all petrochemical fractions of diesel, petrol, kerosene and other oils and waxes. The refinery is however dormant, acting as a storage and blending facility for petrol/ethanol blends. The Mabvuku and Msasa plants are distribution and storage facilities. All production except that of Zimchem is consumed locally. The table below shows in detail annual production figures for four years.

**Table 11: Petrochemical Production and consumption Figures**

| REFINERY PRODUCT CATEGORY | | FISCAL YEAR | | |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 |
| Benzene, tons | 69,8450 | 43,200 | 28,944 | 28,944 |
| Toluene, tons | 47,860 | 34,560 | 34,560 | 23,040 |
| Xylene, tons | 24,1000 | 17,280 | 17,280 | 11,520 |
| Styrene, tons | 13,432 | 9,072 | 9,072 | 6,048 |
| Indene, tons | 19,440 | 19,440 | 19,440 | 12,960 |
| Naphthalene, tons | 29,364 | 21,600 | 21,600 | 14,400 |
| Light non aromatics, tons | 7,600 | 3,888 | 3,888 | 2,592 |
| Heavy non aromatics, tons | 8,211 | 6,480 | 6,480 | 4,320 |
| Tar acid, tons | 8,000 | 9,072 | 9,072 | 6,048 |
| Creosote, tons | 35,200 | 29,635 | 29,635 | 19,757 |
| Coal Tar Oil / Fuel, tons | 201,000 | 187,200 | 187,200 | 124,800 |
| Pitch, tons | 340,060 | 302,400 | 302,400 | 201,600 |
| Fuel Ethanol, Litres "000 | - | 3,850 | 4,500 | 1,050,000 |
| Portable Ethanol, Litres "000 | 5,000,000 | 5,796,000 | 5,418,000 | 5,696,000 |

Source: Green Fuel, Zimchem, NCP Distillers

### 3.2.3 Value Added

**Table 12: Value Added Figures for Refineries & Petrochemicals**

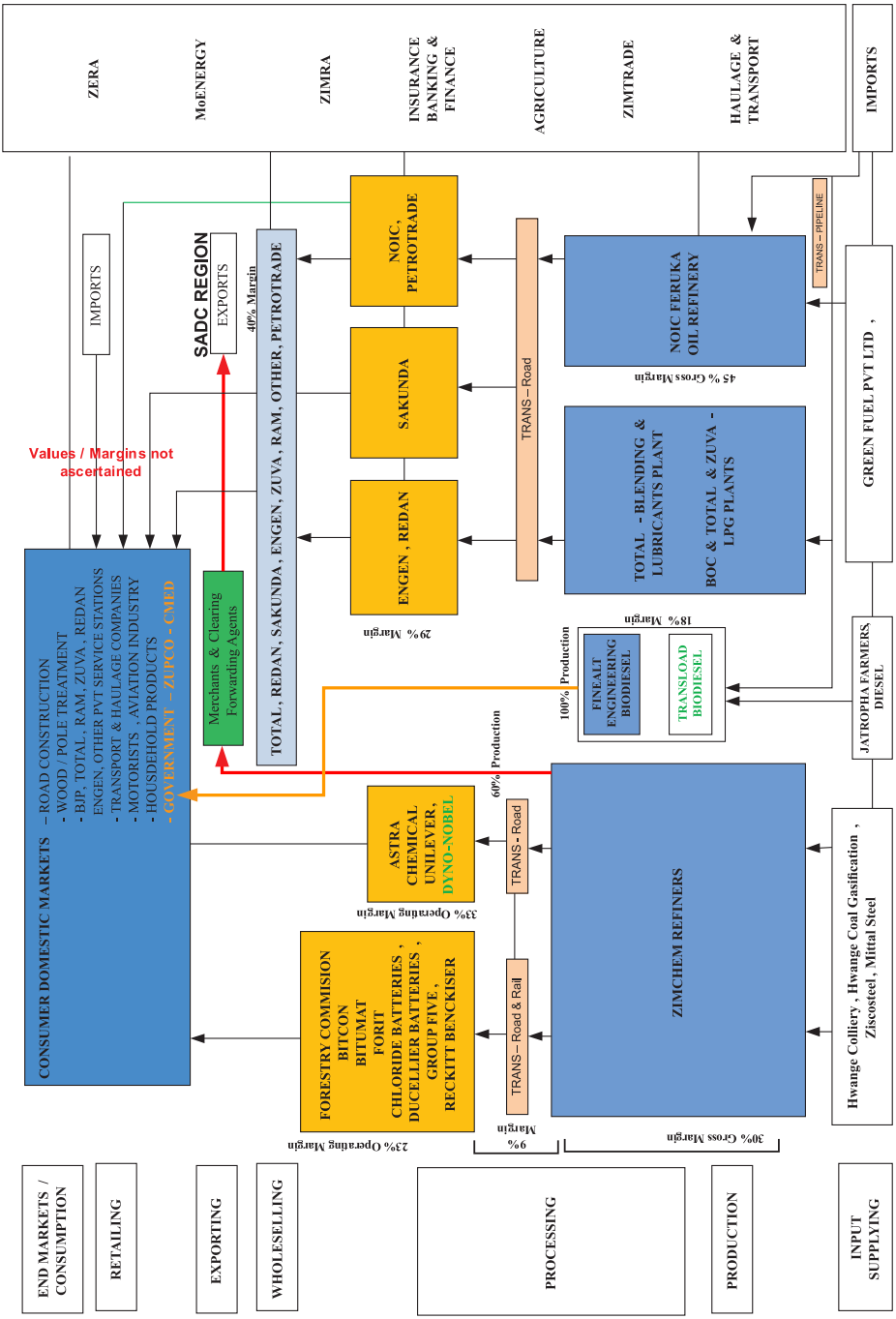
| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | **2010*** | **2011*** | **2012*** | **2013*** |
| **Gross Output** | 6,649,617 | 6,483,677 | 6,092,071 | 7,202,029 |
| **Intermediate Consumption** | 2,992,328 | 3,436,349 | 2,863,273 | 3,456,974 |
| **Value Added** | 3,657,289 | 3,047,328 | 3,228,798 | 3,745,055 |
| **Intermediate Cons. / Gross Output** | **0.45** | **0.53** | **0.47** | **0.48** |

All Figures based on study estimates (Zimchem, Green Fuel, NCP)

### 3.2.4 Value Chain Map

Manufacturing in the petrochemical sector is dominated by Zimchem Refiners Pvt Ltd a joint venture between IDC of Zimbabwe, Hwange Colliery Company Limited, Ziscosteel, IDBZ, CDC and other minority private shareholders. The other bulk of petrochemicals are imported from South Africa, The Middle East and Mozambique. Feruka Refinery which was designed for crude petroleum refining and processing is functioning only as a blending and storage facility.

## Figure 6: Value Chain Map of Petrochemicals in Zimbabwe

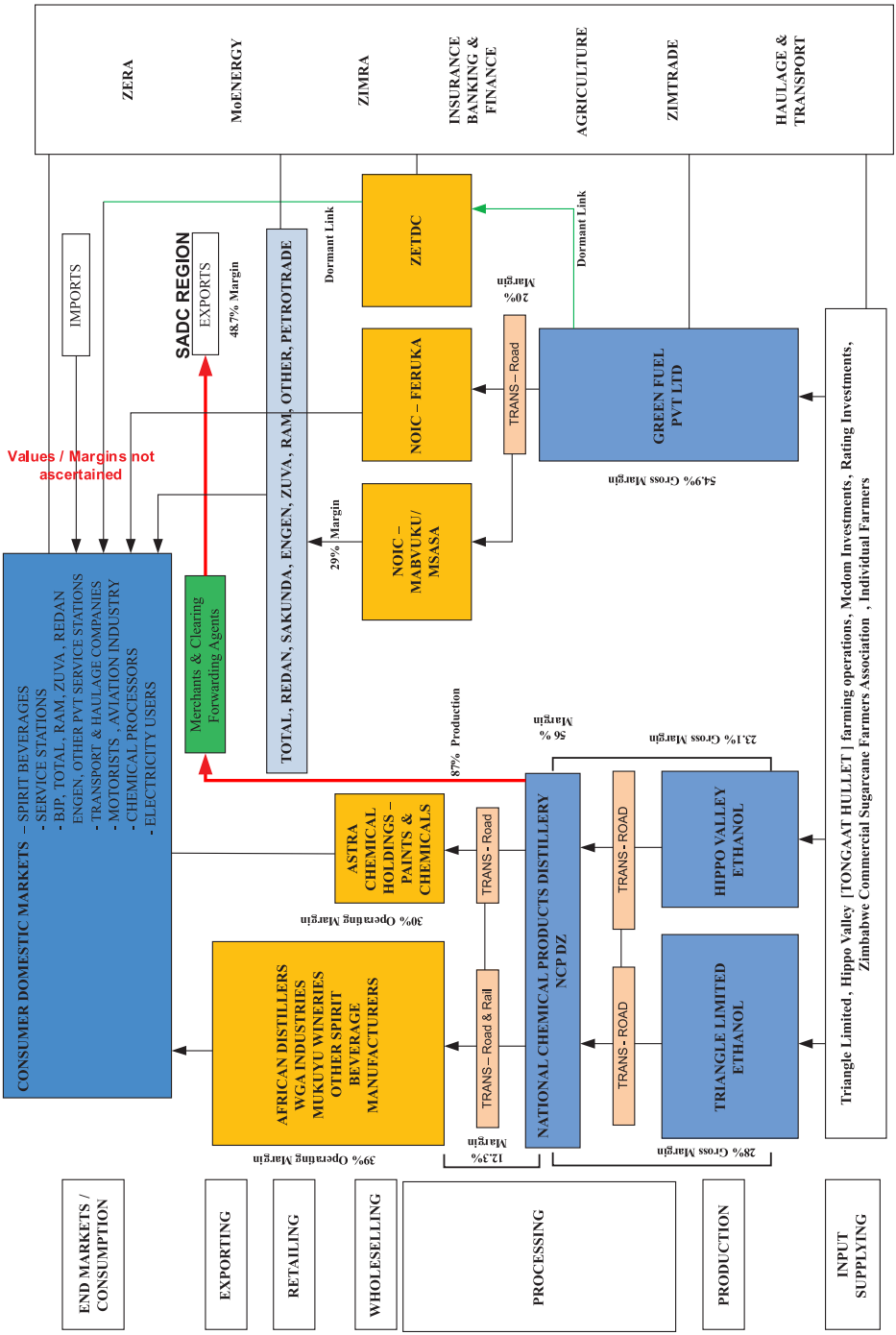


Total Zimbabwe and a few other large conglomerates operate blending and packaging plants although some are now dormant. The main manufactured products in this category are tar pitch, creosote, benzene, xylene, toluene and aromatic derivatives. The bulk of imports are diesel, petrol, waxes, oils and lubricants.

**3.2.5 Value Chain Map – Ethanol**

The ethanol chain is dominated by NCP distillers (Portable Alcohol and others - Methanol, Propanol, Butanol & Aldehydes) as well as Green Fuel (automotive ethanol). The detailed map of the main industry players is as set out in the diagram below;

## Figure 7: Ethanol Value Chain Map in Zimbabwe



The NCP Distillery is a joint venture operation between Hippo Valley - Tongaat Hullet and Astra Chemicals Zimbabwe. All primary alcohol production is done at Triangle and Hippo Valley Tongaat Hullet and refined at NCP. The by-products are used by solvent, paint and other chemical processors. Green fuel manufactures its own ethanol from sugarcane at the Chisumbanje estates which finds direct use in E10, E15 and E85 petrol ethanol blends. The values and margins were extracted from the information provided by the players in the industry and are only indicative. Green Fuel also has a by-product of electricity through co-generation which is meant for the domestic market but is still dormant due to funding and contractual constraints.

**3.3.0 Chemical Processing Sub-Sector**

This category is dominated by the agrochemicals sector with fertilisers & animal healthcare topping the list. Besides agrochemicals the other category looks at hazardous industrial chemicals manufacturing. Fertilisers' was identified by the Zimbabwean Government as a key sector to the growth and performance of the country and thus we also looked at the industry in detail.

**3.3.1 Fertilisers**

Fertilizer industry in Zimbabwe is largely dominated by production of nitrogen, phosphate and potash fertilizers. Production, consumption and imports for the period 1990s to date show dips and peaks owing to varying demand, droughts and farmer crop preferences. The industry is dominated by Sable Chemical Industries - the sole manufacturer of ammonium and ammonium nitrate fertilisers, Zimphosphate Industries through Zimbabwe Fertiliser Company and Windmill Pvt Ltd. The first three companies are wholly owned subsidiaries of IDC Zimbabwe which make them public entities. Zimphos is part of Chemplex Corporation a group wholly owned by IDC. Omnia Pvt Limited is another player although strictly a wholesale and retail division of the South African based company. The other fertiliser needs are supplemented through imports from Asia and the Middle East. In Zimbabwe the agrarian land reform enabled a lot of farmers to have access to land. Since 2000, the farmers have had a decade of economic recession and with it reduced productivity in most crops except for tobacco and a few other cash crops. The ZimAsset policy document seeks to revive the fortunes of the ailing economy and is targeting multifaceted issues. The ZimAsset policy framework on fertiliser hinges on the achievement of 300 000 tonnes annually of fertilisers for both compound D and ammonium nitrate. Other major fertiliser consumers are the tanning industry, yeast and ethanol manufacturing companies. Stimulation of product market through value addition of commodities is also being championed as a panacea toimprove production. TheZimbabwean government is prioritising the production of inorganic and organic fertilisers. ZimAsset and previous policies view the fertiliser industry as a key enabler in reviving the fortunes of the chemical and agricultural industries.

### 3.3.2 Production and Consumption

Fertiliser production in Zimbabwe has decreased considerably in the past 10 years owing to depressed economic activity. The fertiliser industry has seen some growth from 2009 with increases in output being realised. The 2013 projections have seen companiesstagnating due to non payment of consignments by government, lack of lines of credit, antiquated machinery, equipment breakdowns and incessant power cuts. For a comprehensive production figure see table below.

**Table 13: Production Figures for Zimbabwean Major Fertiliser Players**

| PLAYER & CATEGORY | | FISCAL YEAR | | | | |
|---|---|---|---|---|---|---|
| | | 2009 | 2010 | 2011 | 2012 | 2013* |
| Sable Chemicals | Cap Utilisation | 19% | 37% | 34% | 25% | 38% |
| | Pdctn (Tonnes) | 41,959 | 89,625 | 82,209 | 58,933 | 83,000 |
| ZFC | Cap Utilisation | 28% | 34% | 43% | 29% | 31% |
| | Pdctn (Tonnes) | 74,497 | 107,138 | 116,311 | 78,619 | 80,000 |
| Windmill | Cap Utilisation | 100% | 100% | 100% | 60% | 45% |
| | Pdctn | 270,000 | 266,000 | 261,000 | 160,000 | 121,000 |

Source Kingdom Commodities Report October 2013

### 3.3.3 Value Added

**Table 14: Value Added Figures for Fertiliser Industries**

| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | 2010 US$ millions | 2011 US$ millions | 2012 US$ millions | 2013 US$ millions |
| Gross Output | 300,795,950 | 298,688,000 | 193,408,800 | 184,600,223 |
| Intermediate Consumption | 201,533,286 | 188,173,440 | 114,111,192 | 110,760,008 |
| Value Added | 99,262,664 | 110,514,560 | 79,297,608 | 73,840,000 |
| Intermediate Cons. / Gross Output | 67% | 63% | 63% | 60% |

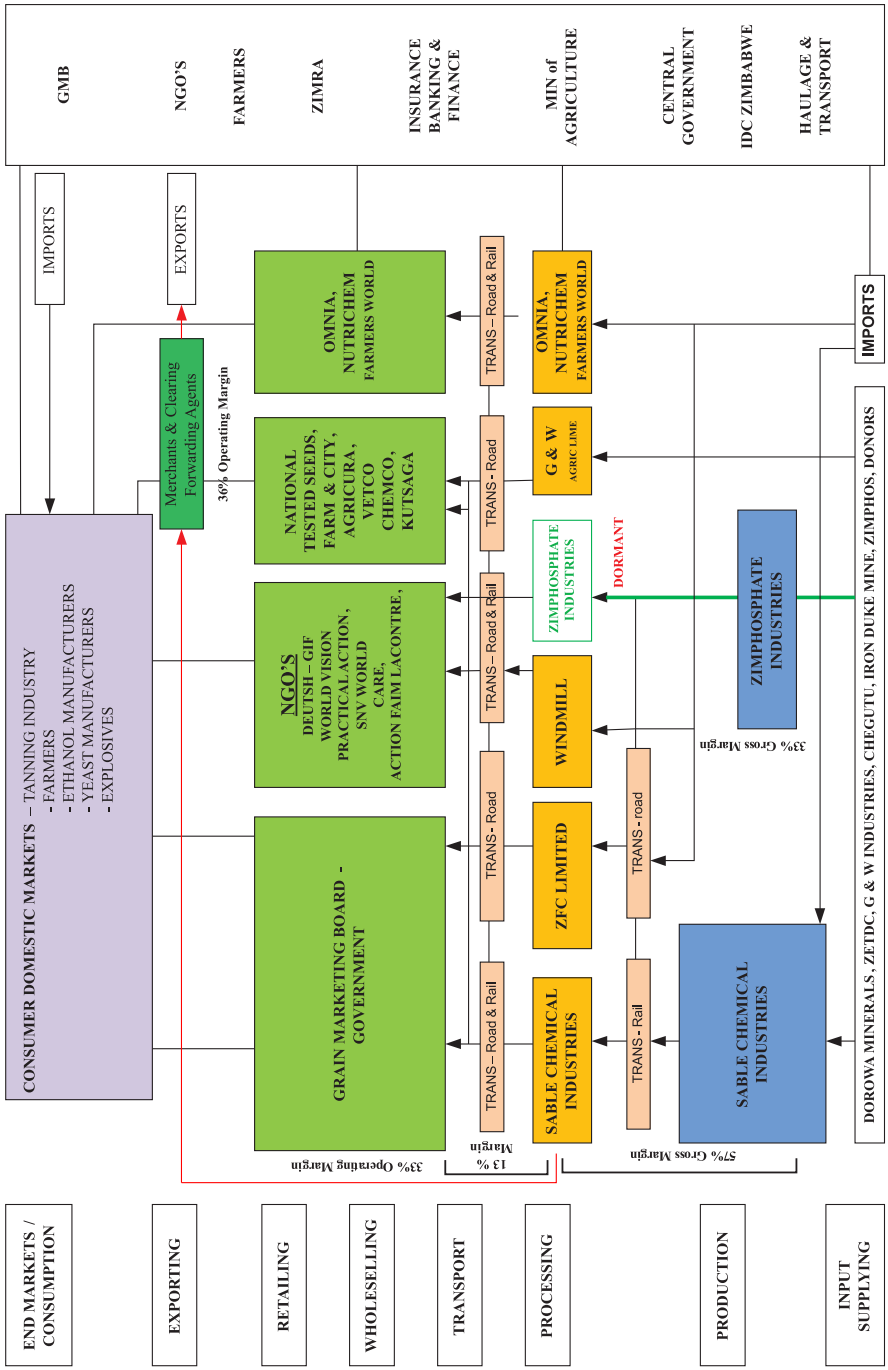
Source Sable Chemicals, Windmill, ZFC, Zimphosphate Industries

Sable Chemical Industries is the dominant player in the industry and sole manufacturer of Ammonium Nitrate. It has standing agreement to supply Windmill (46%) and ZFC (54%) of its monthly production. However cash challenges and constraints have forced Sable to accommodate other players likeOmnia, SuperFert and others. Windmill and ZFC remain the dominant compound manufacturers taking phosphates from Zimphosphate industries and Potassium component is imported. Value addition is in the order of

### 3.3.4 Fertiliser Value Chain Map

The fertiliser landscape in Zimbabwe changed when the Economic and Structural Adjustment Programme (ESAP) was introduced. Before the liberalisation of the fertilizer industry, four companies were involved in the production of fertilizers Zimbabwe Fertilizer Company (ZFC), Windmill, Zimbabwe Phosphate Industries (Zimphos)and Sable Chemicals. The liberalization removed price controls, subsidizes and access to foreign currency issues existing at the time. Liberalisation was aimed at improving efficiency in fertilizer production, product diversification and supply of fertilizers to farmers at lower prices. As a result new players like Omnia, Nutrichem and Farmers World joined the industry and they are involved in the importation of straight fertilizers, which are used to produce blends. Mandatory government approval of fertilizer compositions and import permit requirements still remain in place. (Ministry of Agriculture 2013)

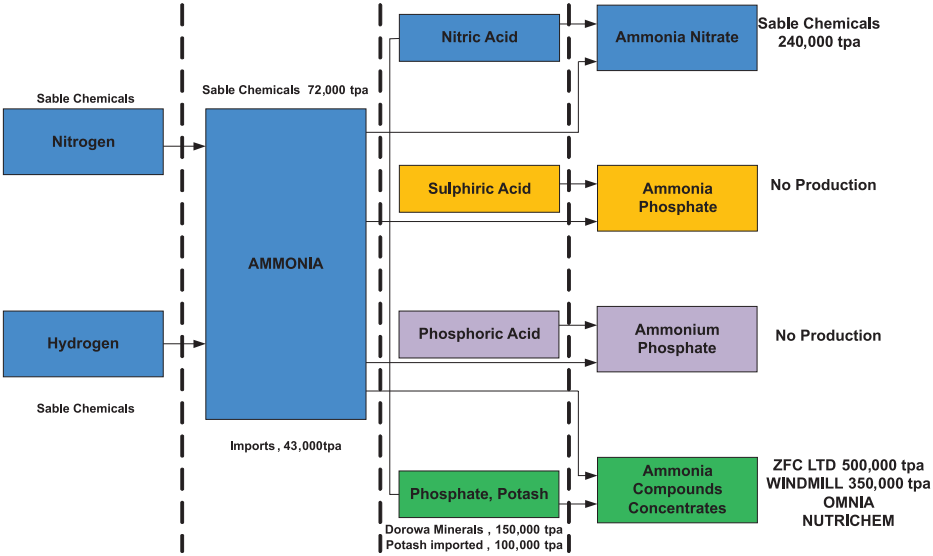
## Figure 8 - Zimbabwe Fertiliser Value Chain



The value chain has largely been dominated by the big players owing to the capital intensive nature of the industry. Zimbabwe mainly produces straight fertilisers like ammonia and blends compounds.Chemplex is the largest player in the market; it owns Sable Chemical Industries, Zimphos and has a stake ZFC. The companies produce a wide range of fertilisers from compounds to straight ammonium nitrate and ammonium phosphate fertilisers. It also has a business unit which manufactures lime. Chemplex is well positioned in the market as their businesses are interlinked, it has the capacity to move its produce as it also owns a transport division.

Ammonia is the major driving chemical in the fertiliser and agrochemicals sector as a source of Nitrogen. Zimphosphate industries imports its entire stock of the product from South Africa and Sable chemical Industries manufactures 220 tonnes per day which leaves a shortfall of 95 tonnes per day to be catered for by imports. A detailed ammonia value chain is as illustrated below;

**Figure 9: Ammonia Value Chain**




### 3.3.5 Constraints & Opportunities

Electricity and raw material cost has been the major cost drivers of ammonium fertiliser production in Zimbabwe. For 2013 Sable Chemicals will only be able to produce 70, 000 tonnes of ammonium nitrate despite viability problems. Increases in global ammonia prices in 2012 forced the company to abort plans to close the electrolysis plant and rely solely on imports. The electrolysis plant uses 70MW of electricity per month. Zimphos is also failing to access cheap funding. The company intends to recapitalise but the cost of capital has been cited as a challenge. Capacity utilisation for Zimphos is currently at 20% for 2013 (Zimphos 2013). Delivery of raw material from their subsidiary Doro-

wa Minerals is also affecting production. Dorowa produces 150 000tpa but failure by the National Railways of Zimbabwe to consistently deliver and the low uptake of phosphate rock by fertiliser producers has made costs to skyrocket. Late payments for orders from the private sector and Government have seen firms scaling down production. Zimbabwe fertiliser plants have old technology making efforts for resource and energy efficiency secondary issues. In the short to medium term the capacity of undertaking such projects is compromised by liquidity constraints on the market. The fertiliser prices in Zimbabwe are high owing to a number of factors such as lack high raw material, energy and labour costs. The prices are also much higher as compared to other smaller markets in Africa regardless of market size and proximity to port facilities. Some countries are heavily subsidising input prices making retail prices lower; Zimbabwe is also earmarking subsidising input manufactures in the 2014/5 farming season (Kingdom Commodities 2013).

There has also been some movement within the Southern African Development Community (SADC) to effect policy frameworks that promote fertiliser production and consumption. A study on fertiliser production opportunities in the region (Malawi, Mauritius, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe) was conducted in 2009 and a key recommendation was that the region considers harmonising fertiliser labelling in all member states. The SADC bloc is in the process of developing a simple harmonised labelling system. NEPAD is also targeting improved fertiliser use since the Abuja Declaration on Fertilisers in 2006, the organisation is championing the regional policy developments to increase product market and enhance consumption of fertilisers across borders. With the frameworks still in their infancy, there is still a lot of ground to cover.

**3.4.0 Industrial & Other Chemicals**

This category includes Caustic Soda, Sulphuric Acid, Sodium Silicate, Aluminium Sulphate, Industrial Solvents, Nitric Acid, and Sulphuric Acid, Arsenicals, Barium Compounds and other inorganic and organic chemicals. This sector of the chemical industries has numerous players with the majority being small and medium scale operations. The greater number of the large scale industries in this sector are dormant e.g. Zimphosphate, Dyno Nobel with a few remaining operational Cernol, Waterglass, Barco, Astra Chemicals and others. The bulk of industrial chemicals for Zimbabwe are imports with players like Curechem Overseas Pvt Ltd, Acol Chemicals, Bayer Zimbabwe, Fivet, CAFCA and Chemplex Marketing.

Trends in this category were difficult to trace from single interviewees as most players would not divulge much into their operations. Basing on data obtained from ZimStat we were able to determine the gross industry output data trends.

### 3.4.1 Gross Output

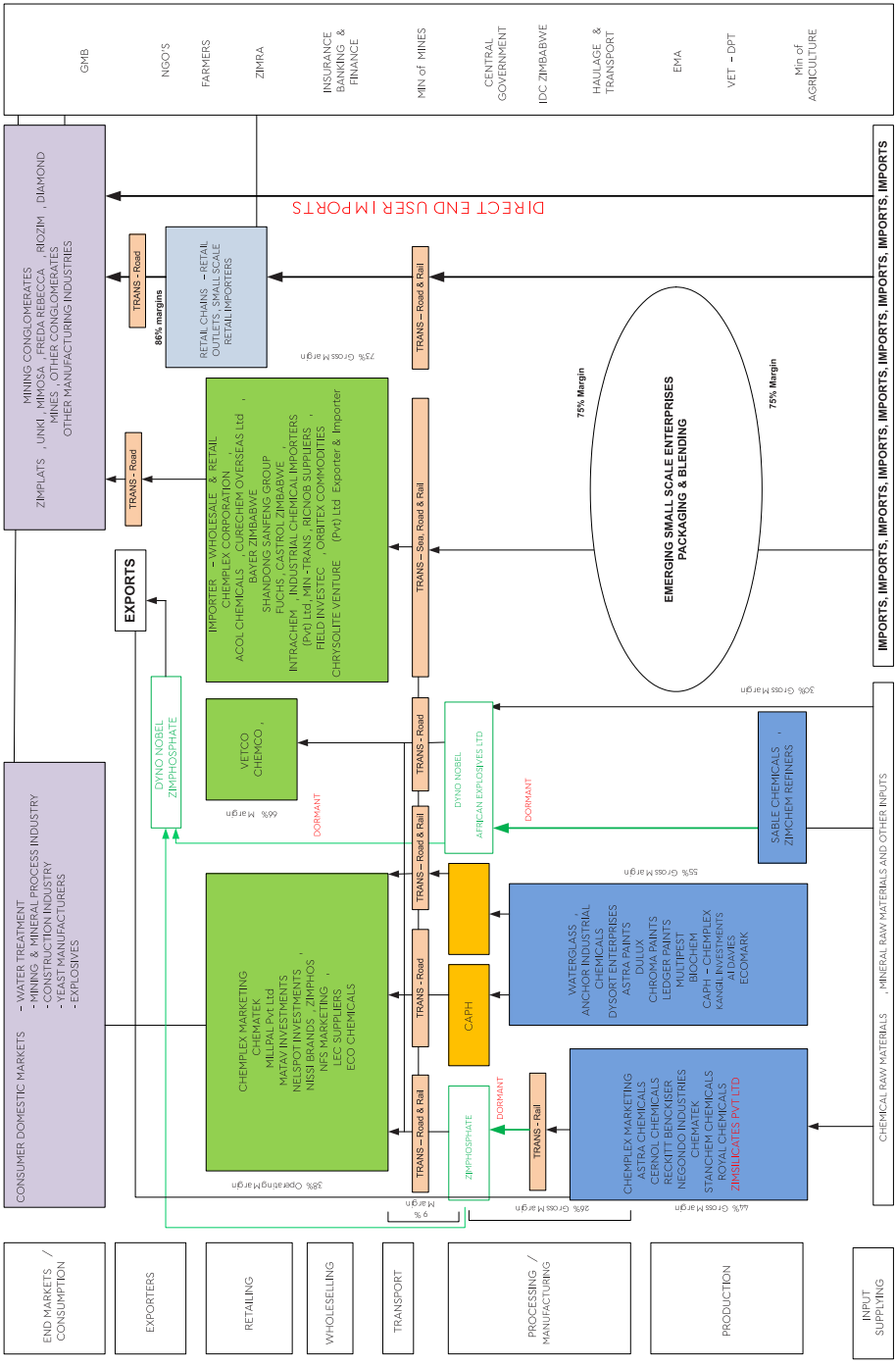
**Table 15: Gross Output Values for the basic Chemicals Sector**

| | Gross Output ($) | Gross Output ($) | Gross Output ($) | Gross Output ($) |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013* |
| **Basic Chemicals And Other Chemicals Group** | 33,776,442 | 43,552,889 | 48,552,774 | 41,663,776 |

SOURCE: ZIMSTAT

A detailed value chain map for the sub-subsector is summarised in the diagram that follows;

## 3.4.2 Value Chain Map



The value chain map shows numerous players at various categories. Huge industrial players and mining concerns which take up the bulk of the chemical imports in this category prefer to import their requirements directly to avoid the value added by middlemen and importer-distributors. Of note is that most small scale players charge margins of as much as 100% in some cases.

**3.4.3 Geographic Distribution**

The industry clusters are concentrated around Harare and Bulawayo. Most of the distribution takes place from these two central industrial hubs in Zimbabwe.

**3.4.4 Constraints and Opportunities**

Limited natural chemical resource base and small market to justify economic investment in the industry remain the main constraint to this category of the industry. Questionnaire detailed analysis revealed that overall, the main constraints in this sector remain shortage of local raw materials, shortage of imported raw materials, weak domestic market demand, weak export market demand, heavy competition abroad, breakdown of machinery shortage of machinery spare parts, cash flow difficulties and labour disputes remain some of the major constraints in this sector (See Statistical Analysis Section).

The opportunities in this sector are good for dense media separation, floatation, leaching and other chemicals used in hydrometallurgical operation in the platinum, nickel and other precious minerals. However investment in this sector would need to be supported by a vibrant export market since the quantities for Zimbabwean demand are too small to justify investment.

Respondents indicated low orders for the home market with negatives balances of up to 65%. Most enterprises anticipated an increase in home market orders in the next fiscal year except for arsenicals that anticipates a drop in demand due to more stringent environmental regulations and plans to phase it out by EMA. The export market orders are meagre than the home market for almost all the products and the situation was expected to remain like that considering the predicted slowdown in industrial growth in 2013.

**3.5.0 Consumer Care Products Subsector**

The consumer care industry provides basic hygiene products to the general populace and contributes immensely to the well being of the same. The major players in the category are Johnson & Johnson, Unilever, Colgate Palmolive, Pfizer Zimbabwe Pvt Ltd, Datlabs, Negondo Industries, Reckit Benckiser, Health & Hygiene, Softex, Bayer Consumer Care Products, Olivine industries and United Refineries e.t.c. The industry manufactures soaps, toothpastes, perfumes & deodorants,, oral healthcare products, soaps, washing powders, sanitisers, aerosol sprays, floor products, skin care products, toiletries e.t.c. The economic meltdown spanning 1998 to 2008 saw many companies closing, shifting manufacturing base, reducing output or refocusing operations to storage, warehousing and distribution.

### 3.5.1 Production & Consumption

The greater part of industrial production in this subsector is led by Unilever Zimbabwe and Negondo Industries. Other Players like Olivine Industries, Onsdale Enterprises, United Refiners, and Colgate Palmolive are operating below capacity with Johnson and Johnson, Reckitt Benckiser having relocated operations to South Africa, making Zimbabwe operations distribution outlets. Estimates of Local production and consumption are as summarised in the tables below:

**Table 16 Consumer Care Products Production**

| | Gross Output ($) | Gross Output ($) | Gross Output ($) | Gross Output ($) |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013* |
| Consumer Care Products | 93,227,333 | 99,221,256 | 95,553,775 | 87,773,664 |

*** Figures based on study estimates** SOURCE: ZIMSTAT

### 3.5.2 Value Added

**Table 17: Value Added in Consumer Care Industry**

| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013 |
| Gross Output | 93,227,333 | 99,221,256 | 95,553,775 | 87,773,664 |
| Intermediate Consumption | 58,733,220 | 59,532,754 | 65,932,105 | 64,952,511 |
| Value Added | 34,494,113 | 39,688,502 | 29,621,670 | 22,821,153 |
| Intermediate Cons. / Gross Output | **0.63** | **0.60** | **0.69** | **0.74** |

Source ZIMSTAT

### 3.5.3 Geographic distribution

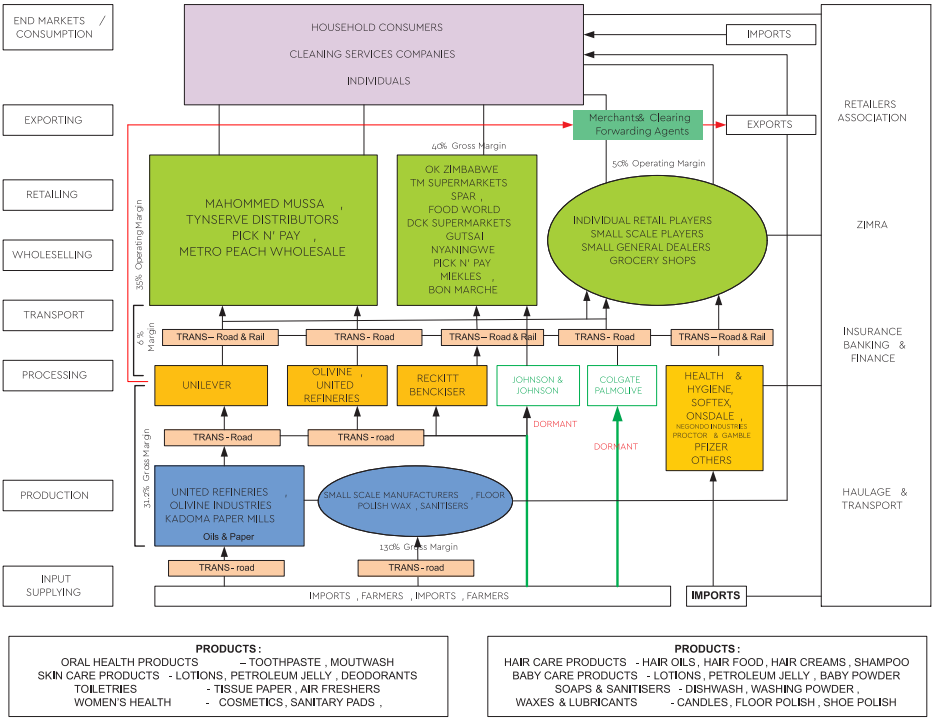
The dominant players in the subsector by market share are Reckit Benckiser and Unilever. These are located in Harare with distribution centralised. The enterprises dominate

- Soap and other cleaning chemicals (Unilever)
- Perfumes, cosmetics and other toilet preparations (Unilever)
- Other – polishes, waxes and dressings (Reckitt Benckiser)

Olivine Industries located in Harare manufactures soaps and other edible oils and fats while "United Refineries" located in Bulawayo does the same. Numerous other players operate at small scale and supplement the soap and cleaning chemicals category. Other small players include companies like Royal Chemicals, Buffalo, Stanchem, AN Chemicals, Barco Chemicals and Cernol amongst others

### 3.5.4 Value Chain Map

**Figure 10: Consumer Care Products Value Chain**




| PRODUCTS: | |
|---|---|
| ORAL HEALTH PRODUCTS | – TOOTHPASTE , MOUTWASH |
| SKIN CARE PRODUCTS | - LOTIONS, PETROLEUM JELLY , DEODORANTS |
| TOILETRIES | - TISSUE PAPER , AIR FRESHERS |
| WOMEN'S HEALTH | - COSMETICS, SANITARY PADS , |

| PRODUCTS: | |
|---|---|
| HAIR CARE PRODUCTS | - HAIR OILS, HAIR FOOD, HAIR CREAMS , SHAMPOO |
| BABY CARE PRODUCTS | - LOTIONS, PETROLEUM JELLY , BABY POWDER |
| SOAPS & SANITISERS | - DISHWASH , WASHING POWDER , |
| WAXES & LUBRICANTS | - CANDLES, FLOOR POLISH , SHOE POLISH |

### 3.5.5 Constraints and Opportunities

Overreliance on imports in this sector has been necessitated by the deterioration of the value chain as evidenced by the closure or partial closure of some the key companies in the value creation process. Some companies in the value chain have resorted to importing finished goods from import markets and selling them locally. Another challenge that is negatively affecting the value chain is the decline in the quality of products made locally vis-a-vis imports from the developed world. The quality of products has been affected by the obsolete plant and machinery that requires replacement in light of new developments in the technological sphere. Another challenge faced by companies in the value chain is the low productivity of workers as compared to other

companies abroad. Another challenge facing companies in Zimbabwe is the issue of sanctions. While some people have argued that the sanctions were targeted, it is difficult to argue that these sanctions have not affected some of the public companies in which government has a stake directly or indirectly. The decline of the chemical industry in general and, the absence of a sodium hydroxide industry in particular have also impacted negatively on the ability of local companies to continue production of consumer care products. In the absence of a growing production capacity, consumption continues unabated in sympathy with the population growth even if means that the gap between production and demand is covered by exports.

### 3.6.0 OTHER CHEMICAL INDUSTRIES

The other chemicals Industry sub sector is made of mainly

I. Glass and Glass products
II. Cement and Ceramic Products

It is important to note that this sector is mainly dominated by the cement industry in Zimbabwe with the glass industry mainly a container glass type of industry.

### 3.6.1 Cement Industry – Production and consumption

Despite the local economic turmoil there is optimism regarding the cement Industry in Zimbabwe. The Industry has fairly high capacity utilization figures. There are three processing companies in Zimbabwe, Pretoria Portland Cement PPC, Sino Zimbabwe Cement Company SZCC and Lafarge operating a total of four process plants. These have strong backward integration into the mining claims and lower levels of the value chain. Despite rising operational costs, companies continue to do well, posting profits with PPC having posted an 8% rise in net profit to US$244m for the year ending September 2013. PPC is the largest cement producer followed by Lafarge and lastly SZCC. The production in this sector is summarised in the table below:

**Table 18: Gross Output Figures in the Cement Industry**

| OTHER CHEMICALS GROUP | Gross Output ($) | Gross Output ($) | Gross Output ($) | Gross Output ($) |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013* |
| Cement manufacturing & other cement derivatives | 119,375,285 | 146,421,210 | 148,223,122 | 152,223,489 |

SOURCE: ZIMSTAT

### 3.6.3 Geographical Distribution

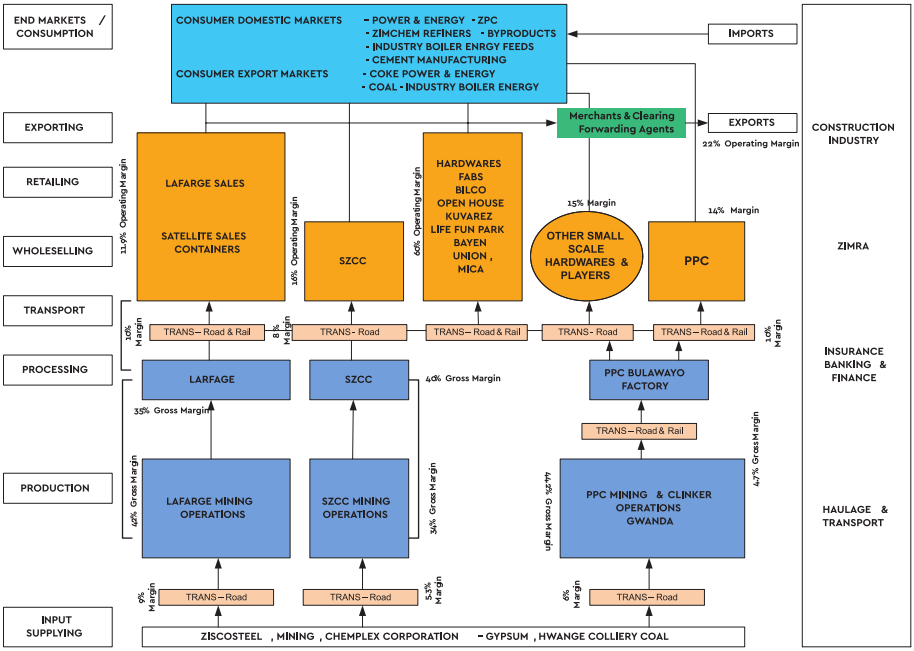
Much of the activity in the Zimbabwe Cement industry is in the southern region of the country. SINO is located about 30km southeast of the Midlands province capital, Gweru. The biggest cement producer in Zimbabwe, Pretoria Portland

Cement(PPC) is situated in the Matabeleland area.The Colleen Bawn plant in Matabeleland south is located about 150km southeast of Bulawayo. The other PPC plant is situated in Bulawayo. Zimbabwe's second biggest cement producer, Lafarge cement, is situated in thecountry's capital Harare.

### 3.6.4 Value chain map

The value chain addition and distribution in the cement industry is illustrated below;

**Figure 11: Cement Industry Value Chain Map**




Lafarge Cement has since expanded its vertical integration into the distribution, wholesaling and retailing market through satellite distribution containers located especially in construction zones / areas. Breakdown of the National railways of Zimbabwe rail transport network is hampering the operations of the cement industry due to the bulk nature of the raw materials and products. Road transportmakes the product more expensive due to huge value addition contribution of transport. Exports are mainly to the regional market with PPC dominating that market to Zambia and Botswana. Themain limitation in this level of the value chain is competitive-ness due to expensive transportation. The bulk of raw materials in the cement industry is all locally available raw materials from as far as Hwange – coal, Ziscosteel – slag, Gypsum – Chemplex Marketing. The value added distribution is as illustrated in the value chain map above.

### 3.6.5 Constraints and opportunities

The cement and lime processes are, like most basic beneficiation processes, highly energy intensive. In a typical cement factory energy accounts for 30% of the cost of production, with coal the largest portion. In the past, increases in the cost of energy were more predictable, and could be mitigated by optimisation in operational efficiency and through technology improvements. The estimated dramatic increases in energy cost in the medium term are likely to outstrip the ability of the industry to adapt using its usual strategies. The biggest challenge facing the Zimbabwe cement Industry has to do with energy supply constraints that have been affecting the country for over half a decade. It is important to note that these supply constraints are not limited to electrical energy, but expand to coal and also liquid fuels. The only appropriate response to these challenges is to address Energy as a focus topic from a corporate point of view. With the increase in energy cost, and the increasing variability of coal and diesel costs, energy cost as a percentage of operating costs have changed significantly (electricity 30% and other energy 11%) and are expected to increase even further in the medium term.

There is need to develop a group energy framework that sets realistic and achievable targets for energy efficiency and the development of renewable energy sources for this sector. These targets have to be developed bottom up, from projects and initiatives at the operations. The approval of these targets should hold for both top management and the implementers at the factory accountable for the delivery of these results. On the part of the power company the cement industry is facing the challenge of not being able to negotiate with the service provider. Hence, they are forced to accept terms. The other problem which was noted by the industry was that of the Environmental Management Agency EMA. There is a general consensus that EMA doesn't give specifications as far waste disposal and landfills are concerned. However, they still go on to charge the companies and it is impacting heavily on the cost of production. Expansion of the plants is being hampered to a greater extent by the Zimbabwe Revenue Authority. Some major equipment gets stuck at the boarders and this has a negative impact on plant capacity and results in daily losses in revenue that could be generated with the machinery installed. The industrialists feel the need to come up with policy that facilitates a credit as a way of payment to the revenue authority as they feel that the authority is not creating an enabling environment for business to thrive.

### 3.7.0 Glass Industry Subsector

Zimbabwe Glass Industries (Zimglass) is a monopoly in the Zimbabwe glass manufacturing sector. The company has strong vertical and horizontal integration owning three subsidiaries in the value chain namely Industrial Sands Pvt Limited, National Glass Company and Zimbabwe Silicates. The Gweru-based company reopened in 2012 after having suspended operations for three

years, to embark on a refurbishment exercise of the submerged electrode all-electric melting furnace as well as replace outdated equipment.

### 3.7.1 Production and Consumption

The furnace at Zimglass has a capacity of 110 tonnes per day of molten glass. Zimglass manufactures approximately 2100 tonnes of finished product per month translating to approximately 70% capacity utilisation. The production and consumption figures in this sector are summarised in the table below:

**Table 19: Production figures for container glass**

| OTHER CHEMICALS GROUP | Gross Output ($) | Gross Output ($) | Gross Output ($) | Gross Output ($) |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013* |
| Glass and Glass Products | 12,566,400 | - | 1,138,600 | 16,024,221 |

*** Figures based on study estimates** SOURCE: Interviewees, ZIMSTAT

The production summarised in this part of the report has been subdued mainly due to operational constraints in the sector. All the production was channelled to the domestic market with 90% of production going to Delta Beverages.

### 3.7.2 Value Added

**Table 20: Value Added Figures for Container Glass Industry**

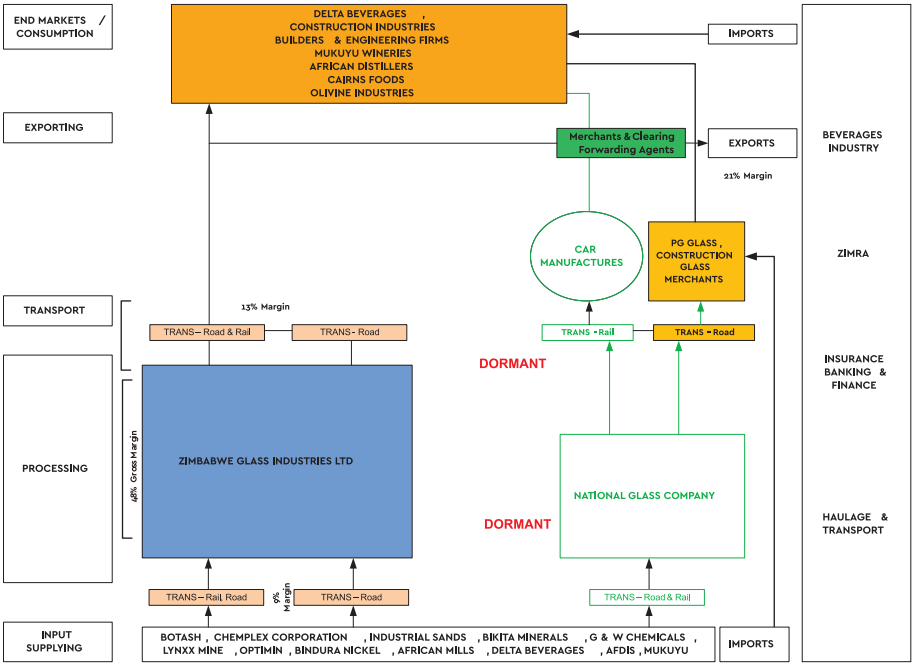
| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | 2010 $ | 2011 $ | 2012 $ | 2013 $ |
| Gross Output | 6,154,398 | - | 1,138,600 | 16,024,221 |
| Intermediate Consumption | 4,121,617 | - | 592,072.00 | 8,973,563.76 |
| Value Added | 2,032,781 | - | 546,528.00 | 7,050,657.24 |
| Intermediate Cons. / Gross Output | **69.1%** | **0.0%** | **52.0%** | **56.0%** |

***All Figures based on study primary data** SOURCE: Zimglass

### 3.7.3 Value Chain Map

The industry is a monopoly industry with Zimbabwe Glass Industries the sole manufacturer in the sector. Zimglass owns Indutrial Sands Pvt Ltd, the two dormant industries, National Glass Limited and Zimbabwe Silicates. All raw materials are beneficiated at Zimglass before either being exported or being transferred to the final product end users as final products.

**Figure 12: Glass Value Chain Map**




The value added in the stream is predominantly 44 - 48% of margins in the processing level. The other part of value addition is through transport service.

### 3.7.4 Exports and Imports

Exports in this industry are limited with regional Angola, Botswana, Lesotho, Mozambique, Swaziland, Namibia markets for Zimglass products. Interviews with the players in the industry indicated that as little as 10% of production in this sector is directed to exports. Imports are for rare minerals and come from Optimin in South Africa and Botswana Ash Pvt Ltd that supplies soda ash.

### 3.7.5 Geographic distribution

The industry is located in the midlands capital of Gweru a central location considering the source of major raw materials. The main reason for citing the factory at Gweru was because of the vast sand deposits at Somabula mine claim where Industrial sands operate from. PG Glass a large importer is in Mutare.

### 3.7.6 Constraints and Opportunities

Zimglass operates all electric melting furnaces that consume as much as 4.5MW of electricity at any given time. The high electricity costs in Zimbabwe makes the operating costs highly unsustainable. Having shut down in the year 2010 to engage in a rebuild and re-capitalisation exercise the high cost of money has not spared their operations. Coupled with failure to secure operating income to

operations have faced many challenges such as a ballooning debt, failure to pay employees, labour disputes e.t.c

The "new" technology is still second hand technology and is fairly old compared to regional and international standards. High technology advancement in the region and abroad makes it difficult for Zimglass to perform better in the market compounded by lack of working capital, stiff competition within the region especially from South Africa, Egypt and the rest of Africa, high production (operational) costs, expensive raw materials and some lack of quality in the local container glass products. There has been mass brain drain and skills flight from the Zimbabwe glass industries which is also compounding the failure of the operation to return to profitability.

The sector is in need for new packaging and labelling technologies. (For customized products i.e. different packaging and labelling requirements requested in special market environments), this is hindering new market / business opportunities that arises. Therefore the companies lack competitive edge over the rivals' i.e. international competitors. Working capital to finance operations is a requirement at a far cheaper rate than what is currently being offered by local finance institutions. Even though Zimbabwe is using the United States dollar, the country at the moment does not have enough liquidity to take care of the industry for recapitalization and introduce latest machinery and new innovations. Breakthrough into external markets is one opportunity that industry needs to tap into to create market expansion.

### 3.8.0 Speciality Chemicals Sub-Sector

This sector incorporates rubber, foam, plastic and other goods. Zimbabwe's plastics sector mainly comprises small firms, due to the ease of entry with dominating firms like Dunlop, Treger, Mukundi, Megapack. Plastics manufacturing contributed approximately 88% to this subsectors Output.

### 3.8.1 Production & Consumption

**Table 21: Production Figures for the Speciality Chemicals Subsector**

| SPECIALITY CHEMICALS | Gross Output ($) | Gross Output ($) | Gross Output ($) | Gross Output ($) |
|---|---|---|---|---|
| | 2010 | 2011 | 2012 | 2013* |
| Rubber, Plastics & Related Products | 143,238,878 | 168,633,151 | 161,887,825 | 157,919,951 |

SOURCE: ZIMSTAT

### 3.8.2 Value Added

**Table 22 Value Added Figures for the Speciality Chemicals Subsector**

| | FISCAL YEAR | | | |
|---|---|---|---|---|
| | **2010*** | **2011*** | **2012*** | **2013*** |
| **Gross Output** | 143,238,878 | 168,633,151 | 161,887,825 | 157,919,951 |
| **Intermediate Consumption** | 87,690,834 | 101,852,590 | 91,667,331 | 93,736,918 |
| **Value Added** | 55,548,044 | 66,780,561 | 70,220,494 | 64,183,033 |
| **Intermediate Cons. / Gross Output** | 61% | 60% | 57% | 59% |

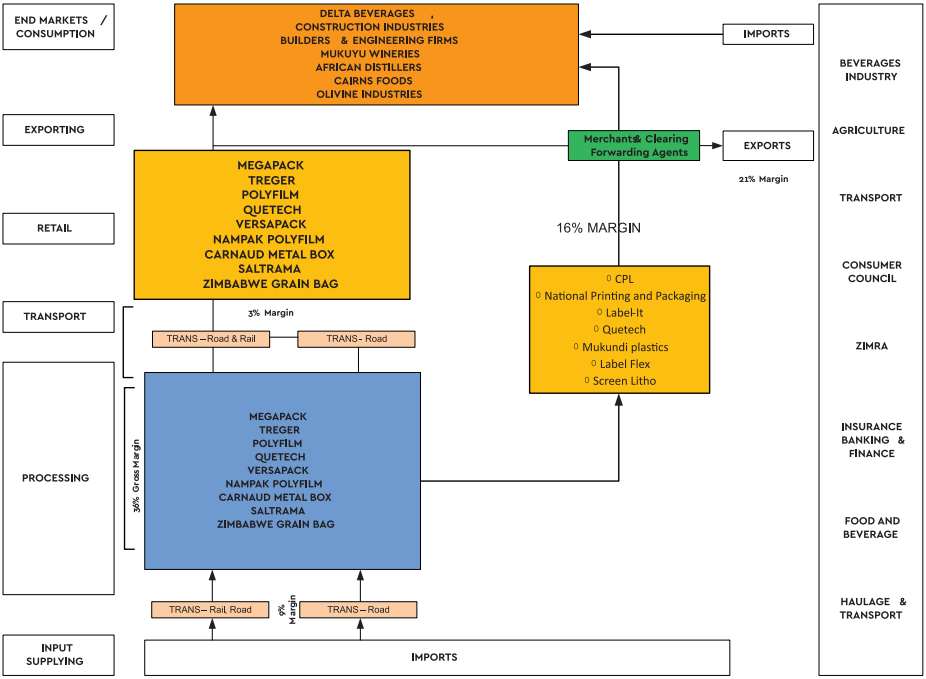
SOURCE: ZIMSTAT

The industry imports up to 93% of their chemical inputs with 60% of the raw material requirements coming from South Africa's Sasol. The other percentage is imported from the Asian and Middle East markets with Korea and UAE topping that category. Value addition is in the range of 39-43% margin.

### 3.8.3 Value Chain Map

The map is characterised by a few industry players with little vertical or horizontal integration.

**Figure 13 Value Chain Map – Speciality Chemicals**




The production growth rate is increasing to better since production capacity of companies is above 50%; a few are still struggling to produce. The total average production percentage for the responded companies is 55.5 % although rubber firms are as down as 20%. Companies are fully supplying the local market. The sector is in need for; New packaging and labelling technologies. (For customized products i.e. different packaging and labelling requirements requested in special market environments) and working capital to finance operations. This is hindering new market / business opportunities that arise. Therefore the companies lack competitive edge over the rivals' i.e. international competitors. Even though Zimbabwe is using the United States dollar, the countries at the moment do not have enough liquidity to take care of the industry for recapitalization and introduce latest machinery and new innovations. Breakthrough into external markets that will create market expansion which should be coupled with quality management skills for the production of competitive products.

### 3.8.4 Geographic distribution

Most players are in Harare and Bulawayo as highlighted below:

| | |
|---|---|
| Bulawayo | 25% |
| Harare | 70% |
| Mutare | 1% and |
| Other areas | 4% |

### 3.8.5 Constraints and Opportunities

a. There is no new technology, high technology advancement in the region and abroad makes it difficult for Zimbabwean companies to perform better in the market.
b. Lack of working capital.
c. Stiff competition within the region.
d. High production (operational) costs
e. Expensive raw materials (imports)
f. Lack of quality products (quality management systems)

### 3.9.0 Sector Diagnostics – The 7 Dimensions of Value Chain Diagnostic Study

An integrated framework for value chain diagnostics must be able to depict the status of value chain development in a wide range of aspects/diagnostic dimensions. Reviewing common practices in value chain analysis using the seven diagnostic dimensions yielded these results.

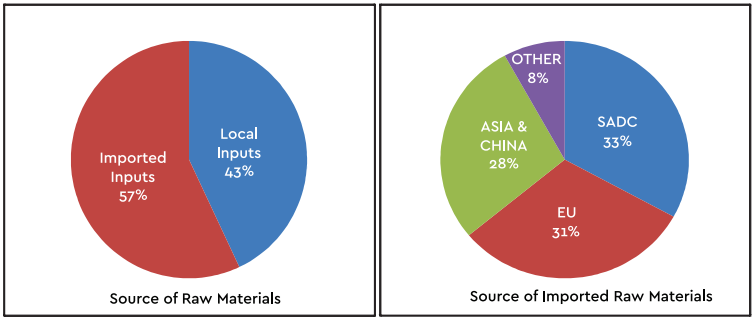
### 3.9.1 Diagnostic Dimension 1: Source Inputs and Supplies

The industry has diverse input resources with raw materials numbering up to as much as 18 for companies in some sectors. The largest diversity is in the consumer care subsector while the least diversity is in the chemical raw material production subsector.

### Input Supplies Sourcing by Place and Area

Research survey results estimates that 43% of inputs in the sector are locally sourced while 57% are imports by volume.

**Figure 14: Raw Material & Input Sources in the Chemical Industries**

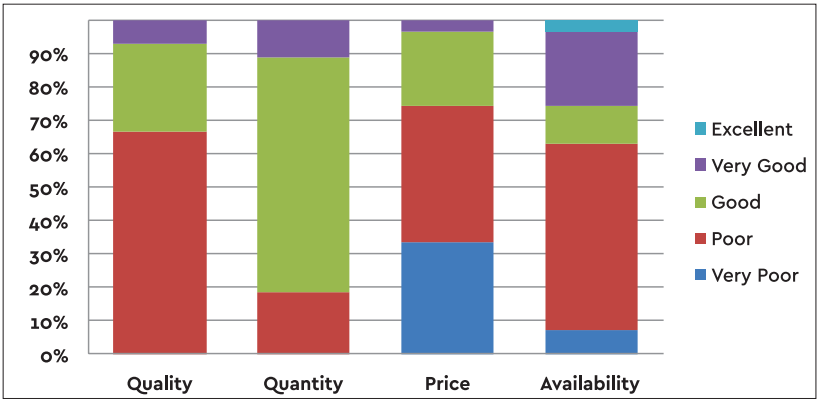


The major import source for raw materials come from SADC with South Africa topping the list accounting for up to 33% of the raw material imports into Zimbabwe. EU is second accounting for 31% followed by Asia & China 28% and the other regions of Australia, USA, Rest of Africa and South America e.t.c accounting for the remainder.

**Input Supplies Characteristics**

Local - Main challenges facing the local input supply of raw materials are mainly to do with cost, quality and availability. Local input and raw material supplies are viewed as expensive with 74% of the respondents citing that local prices are either "very poor" to "poor" on the scale given below compared to regional and global pricing regimes. Quality is viewed to have generally declined with more than 67% of the respondents saying that Zimbabwean raw material is of poor quality.

**Figure 15: Characteristics of local Input Supplies**

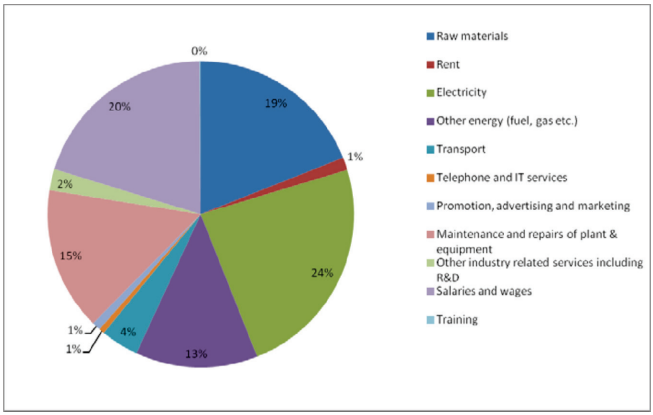



Imports – 92% of the respondents generally concurred that import input supplies and raw material are competitively priced FOB and CIF values mostly cheaper than locally produced or sourced raw materials. However there are some quality challenges linked to raw material inputs. 33% of the respondents cite imported raw materials as of inferior quality to local raw materials while 67% indicated that import raw materials are of superior quality. Most quality concerns were raised by respondents in the consumer care products sub-sector with all of the respondents citing Asia & China as the major source of poor quality raw materials.

**Industry Source Inputs & Supplies Cost Drivers**

The major cost drivers for chemical industries as a whole are Raw materials (19%), Electricity 23%, Other Energy 12.93%, Plant Maintenance & Repairs 15% and Salaries at 20.14%. These five out of the 11 categories of source inputs and supplies contribute up to 90.82% of the total cost structure of business on average.

**Figure 16: Cost Structure Build up in Chemical Industries**




**Logistics Management in Source Inputs & Supplies**

63% of the respondents use hired transport to source raw materials from source to their sites, 18% of the respondents use hybrid transport schemes i.e. both internal transport fleet and hired transport. 19% solely depend on their internal haulage operations or are supported through "group" haulage operations run by a parent holding company or sister companies where companies are horizontally integrated. 72% of the respondents cited that they do direct purchasing from the manufacturers of their raw material input supplies with the remainder using independent agents to provide the service? There is constant interaction between the industry and the input suppliers regarding the quality of raw materials and other input supplies. The breakdown summarising the use of different modes of transportation for freight of source inputs and supplies is as summarised below;

**Table 23: Distribution of Input Supplies & Raw Material Sources by Geographical Area**

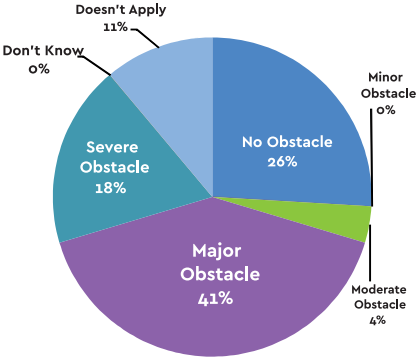
| Mode of Transport | %age of Respondents Using Transport Mode |
|---|---|
| Ship | 48% |
| Road | 100% |
| Rail | 29% |
| Air | 11% |

**Main Challenges & Constraints**

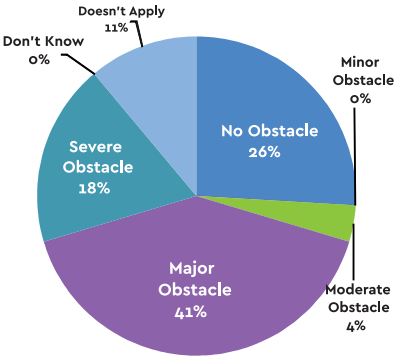
74% of the respondents cited transportation of raw materials as a major-severe obstacle to doing business. Most raw materials used in these industries are bulk raw materials and road transport makes the overall cost of raw materials expensive. Most respondents cited customs and trade regulations enforcement

as a moderate obstacle with 71% of the respondents categorising it as a minor to moderate obstacle. 59% of the respondents cited import tariffs on raw materials as a major obstacle. Those that cited import tariffs as an obstacle import their raw materials from countries outside of the SADC and COMESA trade region where these regions' products enjoy free duty as long as they originate from the mentioned regions.

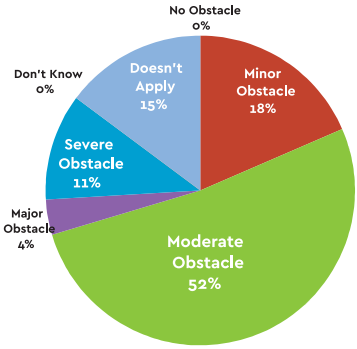
**Figure 17: Sourcing & Inputs Supply Major Obstacles & Rating**




Transport




Customs & Trade Regulations




Import Tariffs

**SCALE**

1. NO OBSTACLE
2. MINOR OBSTACLE
3. MODERATE OBSTACLE
4. MAJOR OBSTACLE
5. SEVERE OBSTACLE
6. DON'T KNOW OBSTACLE
7. DOESN'T APPLY OBSTACLE

**Sourcing & Inputs Supplies Summary**

Most formal agreements with input suppliers were eroded with the introduction of the multi-currency regime towards the end of 2008. Most procurement is done on cash transaction basis. 83% of the respondents cited that transactions for input supplies procurement are done on a cash upfront basis with 17% of the respondents having formal and informal delivery and payment terms with suppliers e.g. credit tenures. The sample population's general sentiment is that the industry is adequately equipped with storage space and handling facilities for their input requirements.

### 3.9.2 Technology & Industry Capacity

68% of the Zimbabwean manufacturing industry is reported to have technology from the 1900s according to surveys byCZI and ZNCC. A deeper understanding of the chemical Industry technology and capacity is as follows;

### Capacity Utilisation

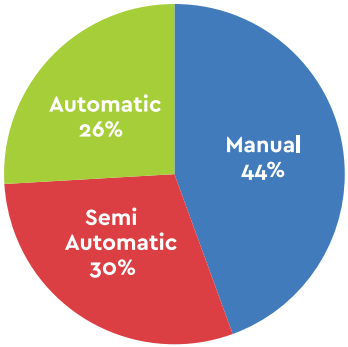
In the survey we sought to determine levels of capacity utilisation with respect to the level to which the productive capacity of a plant/firm is being used in the generation of goods. The global capacity utilization for the chemical industries sector was averaged to be 53%. From the respondents only 55.5% recorded capacity utilisations of above 50%, with a total of 7 firms recording a capacity of 100%. Other companies whose capacity utilisation was below 50% would fall as low as 20% forthose in the petrochemical sector and as little as 18% in the consumer care industries. The table below summarizes the capacity by subsectors.

**Table 24: Average Capacity Utilization by Chemical Industry Subsector**

| Chemical Industry Subsector | Average Capacity Utilisation (%) |
|---|---|
| Raw Materials | 35.0% |
| Basic Chemicals | 41.0% |
| Consumer Care | 23.0% |
| Speciality Chemicals | 46.0% |
| Other | 78.0% |
| **Sector Average** | **44.6%** |

### Process Equipment & Technology

**Figure 18: Type of processing and transformation technology used in Chemical Industries**



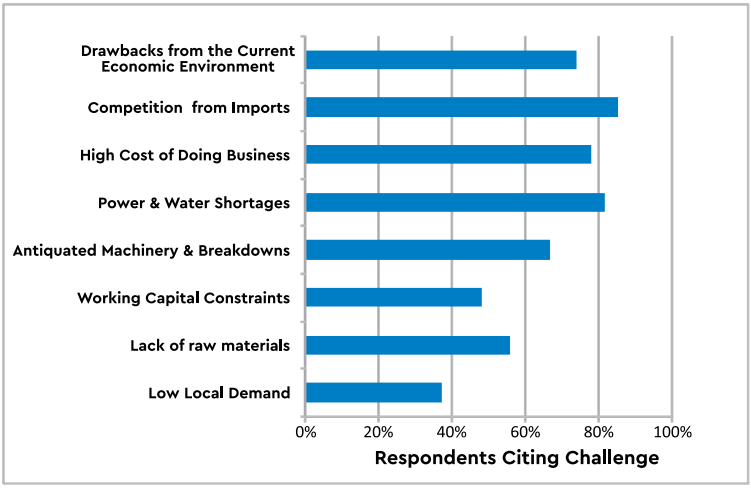

Ageing technology and process equipment remains a major challenge for the chemical industries sector. 44% of the industries use manual production techniques, 30% are semi-automatic with 26% using automated production

systems. This is compounded by statistics that reveal that 19% of the respondent's technology has efficiencies of below 50% while 52% of the respondent's technology has efficiencies of between 50-75%. Only 24% of the industries have technology that operates above 75% efficiencies. A closer look at the details show that major chemical distilleries technology are among the most efficient while those in the raw materials subsector are amongst themost ineffective.

**Main Capacity Challenges & Constraints**

Competition from imported products was cited as the major reason for low capacity utilisation in the chemical industries with 85% of the respondents being affected. Power cuts and load shedding was ranked second, identified by 81% of the respondents. The other reasons for low capacity utilisation included high cost of doing business and antiquated machinery and breakdowns. A full summary of the reasons is as shown below.

**Figure 19: Main Chemical Industries Capacity Constraints**




**Equipment & Technology Investment**

30% of the surveyed industries indicated that they are upgrading technology as part of efforts to increase competitiveness, 37% indicated that they have already implemented some technology upgrades in thepast three years. 48% of the respondents are also engaging in initiatives to upgrade processes and products.

**Table 25: Summary of upgrading companies in the sector**

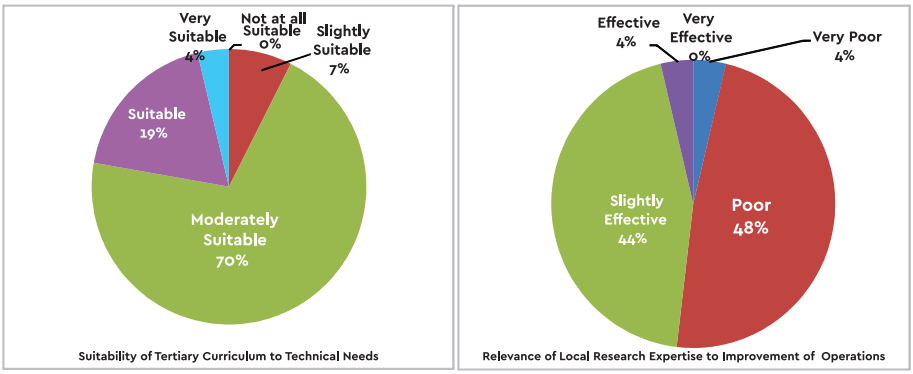
| CATEGORY | NUMBER | PERCENTAGE |
|---|---|---|
| Industries Upgrading Technology | 8 | 30% |
| Industries Who Upgraded in the past 3 years | 10 | 37% |
| Industries Upgrading Processes & Products | 13 | 48% |

Most of the technical upgrades are dominant in the "others" sub-sector with 100% of the respondents in that sector doing something to upgrade whereas the least upgrade activity is in the traditional basic chemical manufacturing category.

**Skills & Technical Expertise**

Respondents were asked to rate the suitability of tertiary education curricular in line with their technical requirements andhow suited the nation's research & development institutions products benefit them. 70% of respondents indicated that the tertiary curricular is moderately suitable. A detailed breakdown of the responses is as shown below;

**Figure 20: Tertiary education and research Institutions Relevance to Industry**

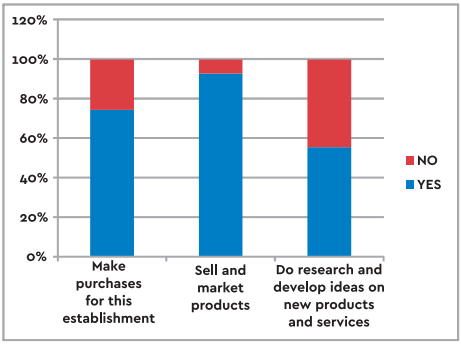


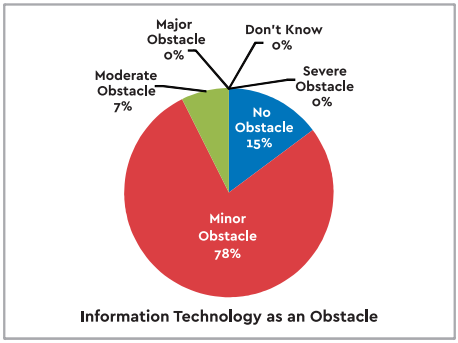

60% of the respondents indicated that they do not have any collaboration with technical institutions in technology related issues with the remainder having collaboration at different levels, i.e. slight, moderate and very collaborative.

**Information Technology**

71% of the respondents own and or run a company website while 29% do not own a website. The respondents were asked they use e-mail to communicate with clients or suppliers to which 89% responded positively and only 11% responded negatively. Internet connectivity was deemed to be slow by 44% of the respondents while 33% deemed it to be moderately fast and the remainder indicated that its very fast. Asked on how much business is done through the internet or information databases and computerised management systems 93% of the respondents indicated that they do business through the internet while only 7% indicated otherwise. Only 15% of the respondents have started using smart phones to for the operations of their businesses.

**Figure 21: Information Technology in the Chemical Industry**




The majority of respondents indicated that they use information communication technology to make business transactions as indicated in the graph above and that 78% of the organisations view it as a minor obstacle to doing business while 15% view it as a No obstacle with a mere 7% viewing it as an obstacle.

### 3.9.3 Diagnostic Dimension 3 - End Markets & Trade

Zimbabwe has the second most developed chemical manufacturing sector in southern Africa after South Africa. Major markets for Zimbabwean exports in priority sub-sectors as revealed by the survey are as follows;

- Inorganic chemicals: US, India, France and Germany;
- Bulk-formulated chemicals: Botswana, Mozambique, Zambia, Malawi and Tanzania;
- Consumer-formulated chemicals: Angola, Mozambique, Zambia; and
- Plastics conversion: Zambia, Zimbabwe, Malawi and Mozambique.

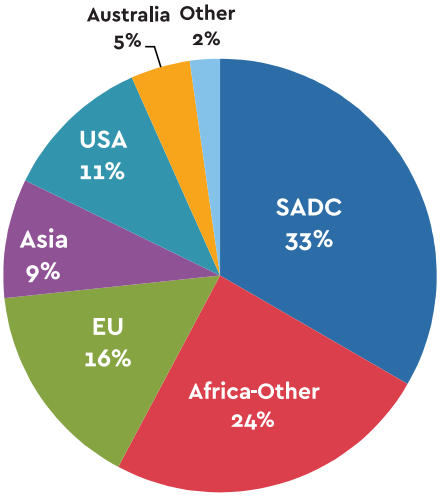
**Table 26: Import Export Market Share of Zimbabwean Chemical Products.**

| Chemical Industry Sector | Local Market % | Export Market % |
|---|---|---|
| Raw Materials | 90% | 10% |
| Basic Chemicals | 76% | 24% |
| Consumer Care | 89% | 11% |
| Speciality Chemicals | 80% | 20% |
| Other | 75% | 25% |
| **Sector Average** | **82%** | **18%** |

On average 82% of the industry's produce is channelled towards the local market while 18% is earmarked for the export market. Detailed breakdown of Commodity exports is as summarised;

**Export Market Distribution by Region**

**Figure 22: Export Market for Chemical Industries by Geographical Area**

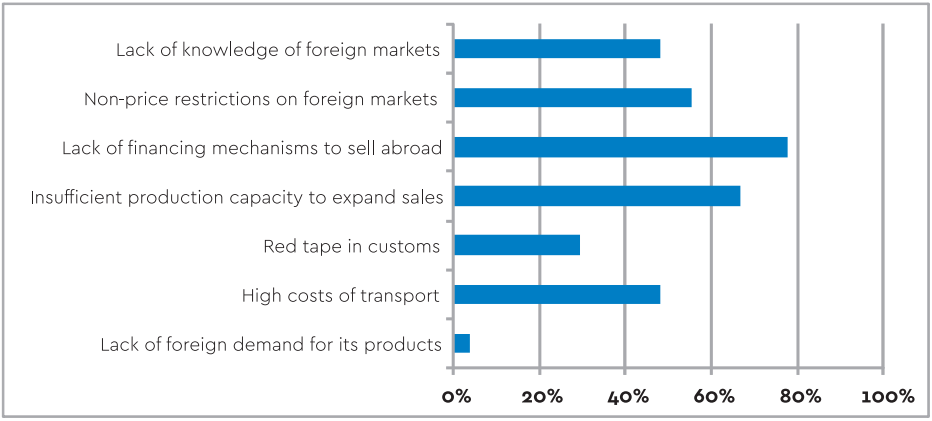



The largest chunk of Chemical Exports is directed towards the SADC region accounting for 33% of the chemical exports. Zambia tops the export markets as the number one market for Zimbabwean Chemical Goods, where 74% of the respondents cited the nation as an export market. The rest of Africa follows accounting for 24% followed by the EU at 16 %, Asia 9%, USA 11% and Australia 5%. Other regions contribute 2%.

**Main Challenges & Constraints**

Due to a small market and small industry capacity most chemical requirements are imports. Most industries have lost their market share to foreign companies whose products land on the market cheaper than locally manufactured chemical products.

**Figure 23: Major challenges facing the marketing and trade of chemical Commodities**




Respondents cited lack of financing mechanisms to sell abroad (78%) and insufficient production capacity to expand sales (67%) as the major limitations to trade expansion and growth of export markets. the other obstacles included non price restriction in foreign markets especially COMESA and SADC (56%), 48% citing lack of knowledge of foreign markets as well as High Costs of transporting products. Only 4% of the respondents cited lack of demand for their products. Interesting to note is that all those who cited lack of demand are players in the consumer care industry.

**Standards**

Eighteen out of the twenty seven respondents (67%) of the respondents subscribe to some form of product or industry specific quality standard. Sixteen indicated that they operate the ISO9001:2008 quality management system in their operations. At the time of interview 7/18 (39%) of those with ISO9001:2008 had not renewed their licensing due to diminishing operating standards or due to cash flow challenges. All the Quality Standards adopted in the chemical industry are of voluntary nature. Marketing practices require that these operators / enterprises keep in constant touch with their clientele. 81% of the respondents contact their customers on a weekly basis.

**Other End Markets and Trade Elements**

Marketing budgets - are not a priority for most organisations with 55% indicating that the marketing and promotional budgets are as small as 1.5% of total business operational y the response given by some respondents who cited lack of foreign markets as one of the major obstacles to trading their products.

Customs - 67% of the respondents revealed that it takes between 1-3 days to clear goods for export at the point of entry which sometimes is a frustrating effort and drawback to business operations. Informal Sector - Practices of informal sector players were identified as a major obstacle to doing business.

80% of respondents indicated that practices in the informal sector where most players do not pay tax and are involved in substandard manufacturing practices, poor unregulated products, poor factories and underhand dealings affect their business.

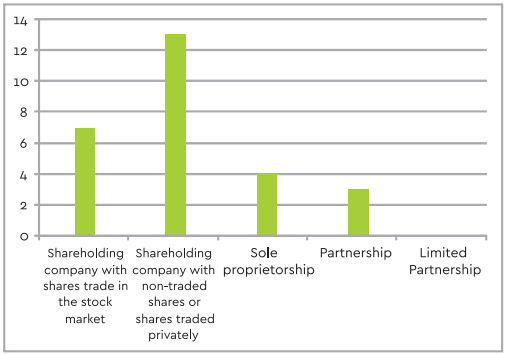
**Markets & Trade Summary**

Local products cannot compete in other markets, both in terms of price and quality. There is dire shortage of working capital to meet orders compounded by high cost of production which is rendering the product expensive. There is failure to identify potential export markets by local entities.

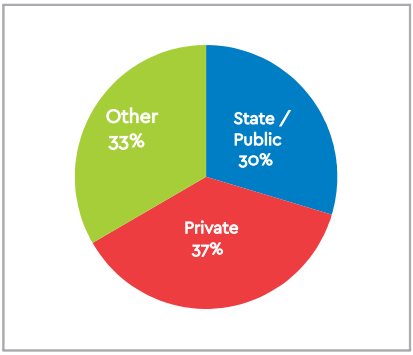
### 3.9.4 Diagnostic Dimension 4 - Value Chain Governance

The dominant players in the chemical industries are large corporations wholly owned or partly owned by the government of Zimbabwe. Government has majority shareholding in the Raw Materials Sector where Hwange Colliery, Dorowa, Ziscosteel e.t.c are identified as the key players. The same applies to the fertiliser industries with Zimphosphate, Sable Chemical Industries and ZFC, The Petrochemical Industries with Zimchem Refiners and Green Fuel e.t.c.

**Figure 24: Ownership & Legal Status of Chemical Industries in Zimbabwe**




Legal Statust Of Companies



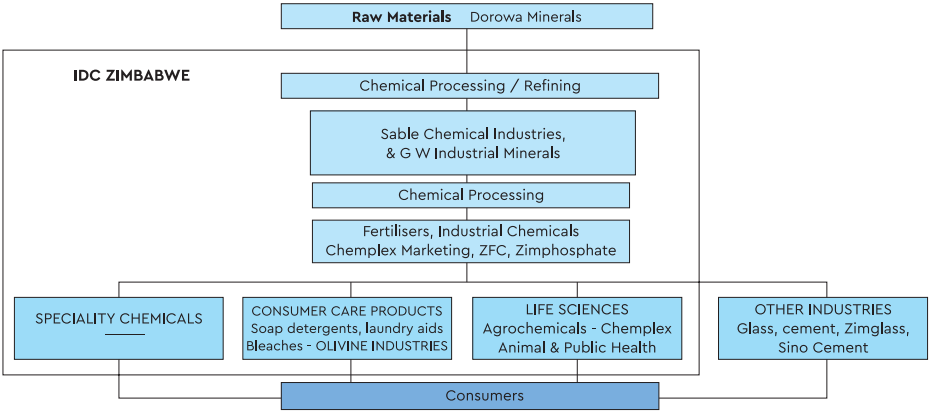

Ownership Structure Of Companies Interviewed

The "other" category is a mixture of both public and private investors e.g. Where a company has (1) Private domestic individuals, companies or organizations (2) Private foreign individuals, companies or organizations and (3) Government or State or other State owned entities.

**Vertical and Horizontal Integration**

33% of the enterprises interviewed are part of a huge conglomerate or form the parent company in such. The typical Example in the chemical Industries is the Industrial Development Corporation of Zimbabwe which has operations covering almost the entire spectrum of the sectors and subsectors as summarised in the diagram below;

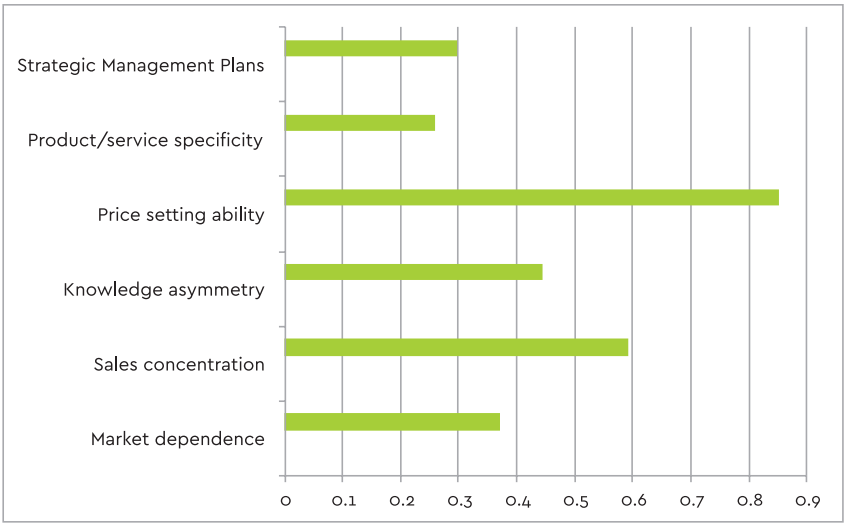
**Figure 25: IDC - Chemical Industry Value Chain Integration**




Due to the integrated nature of the dominant players, the specific subsector value chains in which the companies operate in are characterised by heavy horizontal and vertical integration. e.g. Chemplex Corporation owns the Raw Materials de[posits at Dorowa, Extracts the Minerals through Dorowa Minerals, Value adds at Zimphosphate Industries, Sends product to ZFC limited and ZFC directly markets to farmers with few retailer and wholesale intermediary players in the chain (See Detailed Value Chain Analyses). Some of these companies also have their own subsidiaries wholly or partly owned by them.

## Enterprise Core Competencies

**Figure 26: Industry Value Chain Core Competency & Governance Structures**



It is interesting to note that only 30% of the respondents indicated strategic management plans as a key competence factor to the success of the enterprise value chain governance success. 85 % of the respondents identified price setting ability as their key competence in an economy where the bulk of local products are deemed expensive. Sales concentration follows with 59%, Knowledge symmetry 44%. Product or service specificity was only highlighted by 26% of the population.

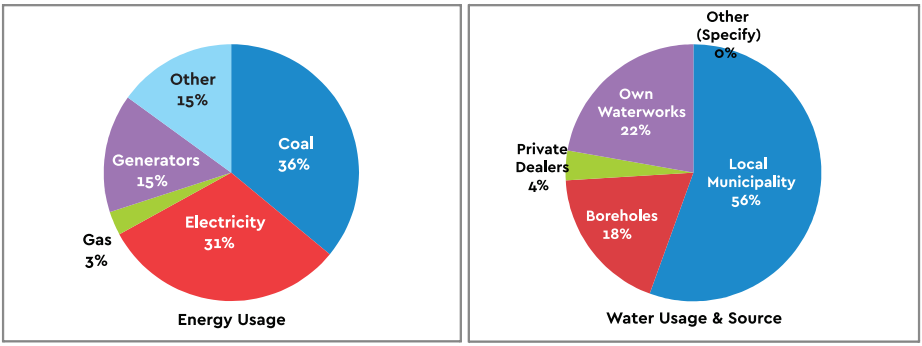
**Governance Summary**

67% of organisations interviewed pointed out that they have strategic partnerships or contractual agreements within the supply chain. Most top managers in the chemical industries (81%) have managers with more than 15 years of experience in the sector or related fields. The Survey results also indicated that 70% of the respondents do not regularly engage stakeholders in their sustainability strategies, disclosure, and performance including community groups, employees, NGOs, and government except where its compulsory through regulatory measures. Only 44% of the respondents spread their influence across the vertical and horizontal lines of integration in their respective value chains.

### 3.9.5 Diagnostic Dimension 5 – Operations Sustainability & Energy

Energy use in the sector is distributed as follows;

**Figure 27: Energy & Water Usage in Chemical Industries**




Energy - The majority of players consume coal to power their operations (36%), followed by Electricity, Generators and other alternative energy sources like coal tar fuel, diesel, petrol and bagasse at 15% each and lastly LPG gas. The high percentage of generators is cited to be a factor necessitated by the incessant power cuts experienced from the power utility ZETDC. Respondents indicated that the power utility does not stick to their published load shedding schedule which affects their planning and operations. 81% of the respondents indicated that most power cuts last between 1-4hrs. The other 19% indicated that the length of such power cuts

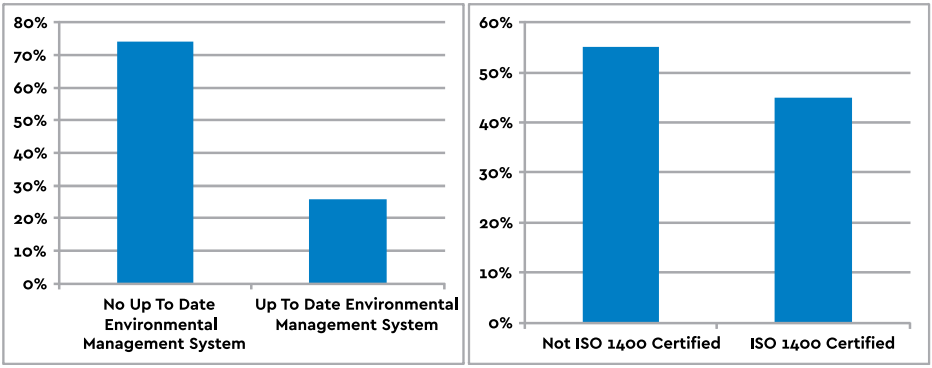
varies significantly. 67% of the respondents indicated that they lose up to 60% of their production due to the power cuts, 19 % lose below 20% while 21% indicated that they lose above 60%. Other sources f energy are abundantly available with the only prohibitive factor being the cost and cost of transportation.

Water – 56% of the respondents depend on municipal water supplies while 22% have their own waterworks with 18% using borehole water and last but not least only one player representing 4% using private water dealers to supply them with water. Incidents of water supply shortage are very few with only two respondents who indicated that they sometimes experience water supply shortages.

**Safety, Health, Environment & Quality Management Systems**

100% of the respondents indicated that their facilities management systems are in compliance with applicable environment laws and regulations, either local municipality and or national standards? 74% of the respondents have some form of environmental management system in place while only 55% have attained environmental management system certification ISO 14000. 44% of the industry players with special effluents or emissions indicated that their facilities hold the necessary license(s) or permit(s) to release their emissions into the environment under controlled conditions.

**Figure 28: Respondents with Environment Management Systems**




All organisations with management systems in place communicate their environmental policies, practices, and expectations to all employees and suppliers in local or appropriate languages prior to doing business with them.

**Pollution Prevention & Conservation**

89% of the respondents indicated that they consider design for the environment in the development their products and that they recycle waste tominimise pollution. Only 11% of the respondents do not havethese practices. 100% of the respondents who handle hazardous substances keep up to date

material and safety data information. They also indicated that plans are under way to substitute the materials as well as to eliminate their usage to sustainably operate conservatively.

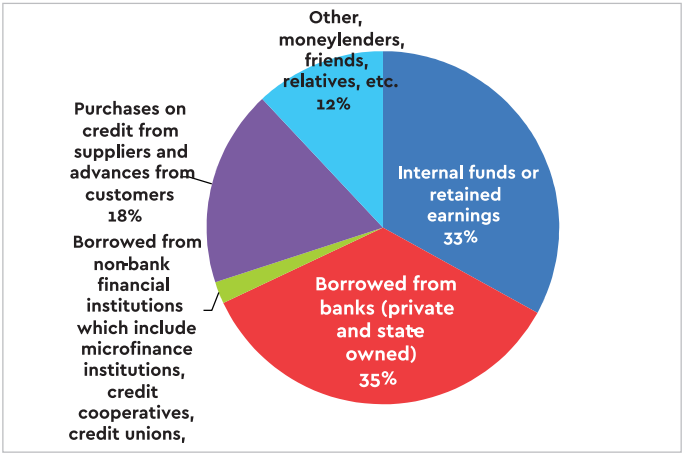
### 3.9.6 Diagnostic Dimension 6 - Value Chain Financing

Organisations indicated lack of operating capital as one of the major constraints to productive capacity utilisation in the technology and capacity diagnostic dimension. Asked how business operations are financed organisations responded as follows:

**Table 27: Chemical Industries Operations Financing Distribution**

| FINANCE SOURCE | No. Of Companies | Percentage |
|---|---|---|
| **Retained income** | 7 | 26% |
| **Debt** | 11 | 41% |
| **Hybrid** | 9 | 33% |
| **TOTAL** | **27** | **100%** |

**Figure 29: Average Working Capital Finance Sources across Chemical Industries**



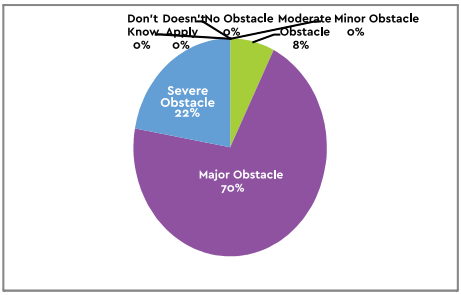

26% of respondents indicated that they use retained income for operations, 41% use Debt Financing and 33% use Hybrids. The breakdown of Working capital requirements showed that 33% is retained income, 35% borrowing from finance institutions and 18% is credit purchases.

### Investment & Financial Environment

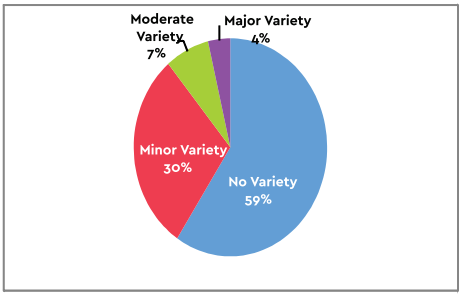
The economic environment is not conducive for foreign direct investment as shown by the bar chart below. Only 7% of the respondents indicated that the environment is conducive for foreign direct investment whilst half of the respondents indicated that the environment is largely deterrent. With the introduction of multicurrency, the financial sector

has not lived up to the expectations of the Chemical industries. More than 92% of therespondents indicated that it is difficult to access financing from the local banks and the choice of financial products is limited.70 % said that access to finance is a major obstacle to operations, 22% rated it as severe and 8% rated it as a Moderate obstacle. The results are prsented below.

**Figure 30: Degree to which Access to Finance is an obstacle to operations**




Access To Finance Challenges

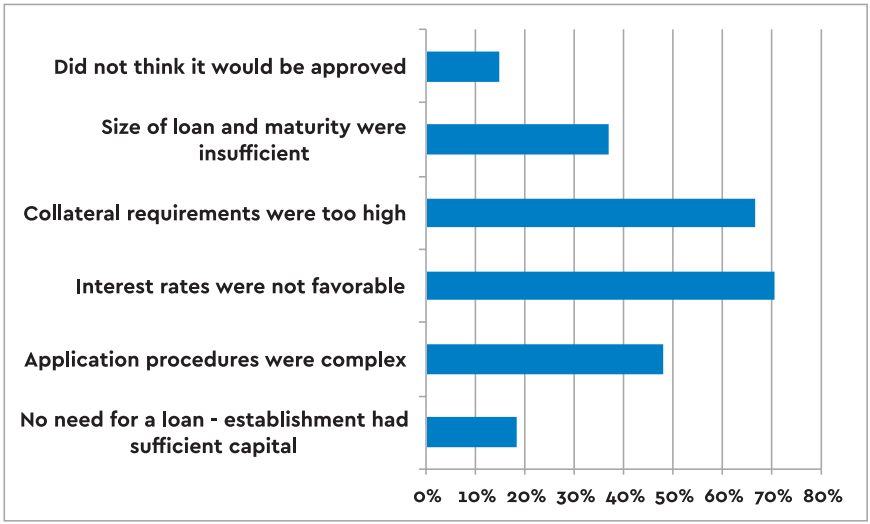



Variety of Financial Products

Financial Products are deemed to be without any financial variety, characterised by high interest rates and thus it makes the finance too expensive and not suitable for any meaningful investment whether long term CAPEX or short term Operations.

**Financing Summary**

**Figure 31: Hindering Factors to Finance Applications**




80% of those interviewed who had interest of sourcing loans or lines of credit indicated the reasons cited above as hindering factors. They cited that inter-

est rates of between 18-20% offered by the banks are not at all sustainable to fund for Operations or Capex. Financial management reporting and auditing structures are available for 100% of the respondents although the survey could not establish the effectiveness of such.

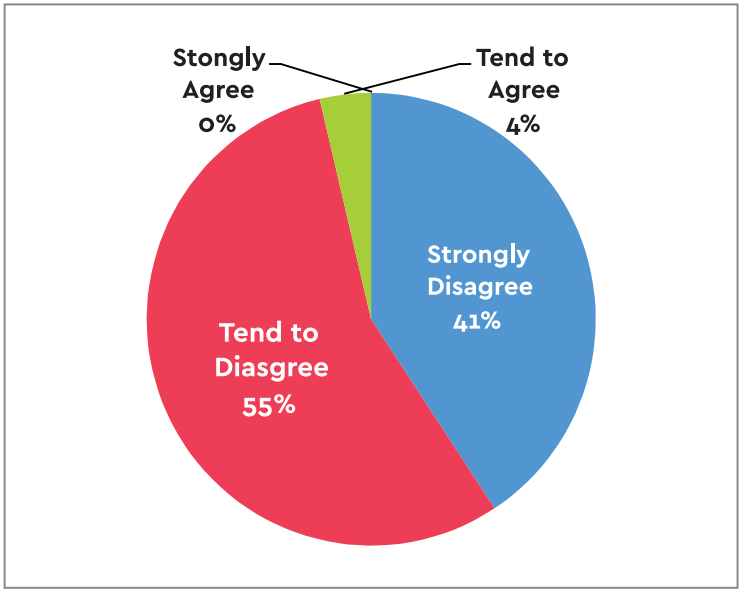
### 3.9.7 Diagnostic Dimension 7 - Business & Socio-Political Context

The following is a summary of factors that affect doing business in Zimbabwe and how different companies rate the level of impact.

**Administrative Issues**

Respondents contend that in a typical month over the year 2013 they would get visits from ZIMRA at least once a month to deal with tax and other customs related issues. Corporates also indicated that the courts & judicial system is such that the employer is guilty until proven innocent contrary to presumed innocence until proven otherwise. 44% of respondents strongly disagreed that the court and judicial system manages business cases fair, impartial and uncorrupted while 51% tended to disagree.

**Figure 32: Objectivity to deal with court cases fair, impartial and uncorrupted**




In verbal one-on-one interviews, corruption is identified as one element that is rife in business but that cannot be pointed out. The table below show the response of 12 respondents who answered questions on the existence and occurrence of some corrupt activities at any point in time within the organisation either from other value chain players, regulatory authorities, and government officials or otherwise.

**Table 28: Response to business obtained through informal payments or gifts**

| RESPONDENT ANSWER | No. Of Respondents |
|---|---|
| Decline To Answer | 4 |
| Don't Know | 5 |
| Doesn't Apply | 2 |
| No Payments | 1 |
| Didn't Respond / No Comment | 15 |

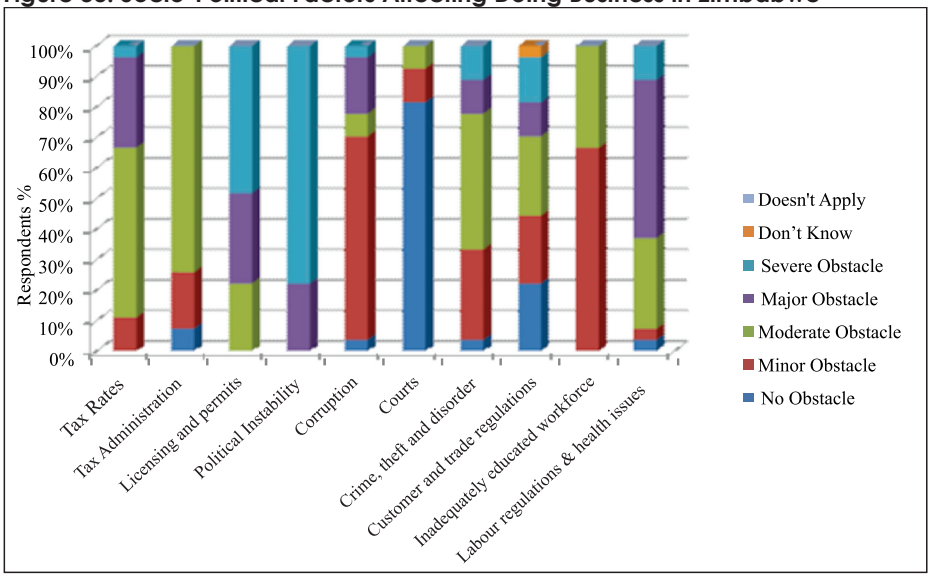
**Labour & Labour Relations**

The respondents employ a total of 7% skilled female employees and about 11% semis skilled across the board. 100% of the skilled female employees are employed on a permanent basis while 67% of the semiskilled employees are employed on a permanent basis. Most contract employees sign three months contracts that are subject to renewal at the expiry of each preceding contract. All employees undergo health checks prior engagement due to the nature of chemical work exposure.

On the training front, 33% of the respondents indicated that they conducted formal training programs for their permanent, full-time employees. Labour costs vary significantly from one organisation to the other and thus we could not compute any average based on the statistics received. Only 20% of the respondents indicated labour productivity as an issue.

**Challenges & Constraints**

**Figure 33: Socio-Political Factors Affecting Doing Business in Zimbabwe**



From the graph, licensing issues and permits, policy and political instability as well as labour regulations and health issues were indicated as some of the major factors having the greatest negative impact on doing business in Zimbabwe on a socio-political front for chemical industries. These tend to affect the entire spectrum in each value chain identified for all the subsectors.

# SECTION 4

## THE BUSINESS ENABLING ENVIRONMENT FOR TRADE IN CHEMICAL COMMODITIES

### 4.1.0 THE POLICY ENVIRONMENT

The main policies affecting growth in this sector are: the industrial development policy of 2011, the Trade Policy 2012, the Indigenisation Policy and other cross related Fiscal & Economic policies

### 4.1.1 Industrial Development Policy 2012 - 2016

Zimbabwe launched the Industrial Development Policy (IDP) with a vision to transform Zimbabwe from a producer of primary goods into a producer of processed value-added goods for both the domestic and export market. The policy identifies the overall objective as restoring the manufacturing sector's contribution to GDP of Zimbabwe from the current 15% to 30% and its contribution to exports from 26% to 50% by 2015 consistent with the Medium Term Plan. An average real GDP growth of 7% is targeted under this Policy Framework of 2012-2016. A closer look at the policy shows that governments seeks to create additional employment in the manufacturing sector on an incremental basis and reduce unemployment levels, increase capacity utilization from round 50% to 80% by the end of the planning period, to re-equip and replace obsolete machinery and new technologies for import substitution and enhanced value addition and to promote utilisation of available local raw materials in the production of goods.

The policy however lacked tangible action plans and ground strategies for implementation. This has seen growth declining from 57% capacity utilisation in 2011 to the current 39%.

### 4.1.2 Trade Policy 2012 - 2016

Zimbabwe had not developed a National Trade Policy (NTP) document to guide the country's trade with the rest of the world and inferences had to be made from the myriad of trade-related laws and regulations administered by various Government Ministries and Departments. In this regard, the country's trade issues were guided over the years by policies such as the Industrial Development Policies (1999–2003 and 2004–2010),the National Export Strategy (2006-2010), Economic Structural Adjustment Programme (ESAP)(1991-1995), Zimbabwe Programme for Economic and Social Transformation (ZIMPREST) (1996-1999), Millennium Economic Recovery Programme (MERP) (2000), National Economic Development Priority Programme (NEDPP) (2006), and the Short Term Emergency Recovery Programmes (STERP I &II) (2009-2011). All these were implemented with limited success. The policy aims to: To increase exports and promote the diversification of the country's export basket by harnessing comparative advantage in key priority sectors with the ultimate target of increasing export earnings by atleast 10% annually from US$4.3 billion in 2011 to US$7 billion in 2016; and To promote enhanced value-addition of primary commodities in all sectors of the economy thereby restoring the

manufacturing sector's contribution to export earnings from 16% to 50% by 2016. The policy spells out a number of initiatives to achieve trade policy objectives includingpricing and marketing policies

### 4.1.3 Indigenisation & Economic Policy

The policy endeavours to secure that at least 51% of shares of every business private and public be owned by indigenous Zimbabweans. Regulations thereto *inter alia* prescribe that all companies existing and new shouldhave an indigenisation plan. 67% of business interviewed outside of the core sample indicated that the policy though noble is not conducive for investment and is scaring away potential partners or investors. Over 50% the respondents cited that the policy should be earmarked for specified sectors of the economy and not every sector. In the chemical industries operators with huge foreign shareholding structure are thus folding operations, relocating to South Africa or scaling down operations output.

### 4.1.4 Tariffs and Non-tariff Charges

Zimbabwe's tariff regime is guided by the country's commitments under the regional and multilateral trading arrangements. At the coreof the country's tariff policy is the Customs and Excise Act which is administered by the Ministry of Finance. Tariffs have been reviewed on an ad-hoc basis seeking relief to industry, to improve the supply of commodities and to comply with the country's commitments under regional integration arrangements. 91% of the respondents contend that the tariff structures are not conducive for doing business. The policy states that Government should use tariffs to generate and promote trade. Efforts will be made to eliminate customs duties on selected imports of critical raw materials and intermediate goods that cannot be sourced locally. Respondents indicated that there is need to introduce a tariff regime to be applied on a sector-by-sector basis and dictated by the needs and imperatives of sector strategies as enunciated in the Industrial Development Policy.

### 4.1.5 Regional Structured Trading System Platform

Available trade agreements are: COMESA, SADC, Zimbabwe-Malawi trade agreement, Zimbabwe-Botswana trade agreement, and Zimbabwe-Namibia trade agreement. In 2009, Zimbabwe signed an Interim Economic Partnership Agreement (EPA) with the European Union (EU) under the Eastern and Southern Africa (ESA) configuration. The agreements are viewed differently by industries at different levels in the value chain. Free trade favours the retailers, wholesalers who import cheaper products and sell them at premium mark ups. 90% of the interviewed traders are pro-free trade regimes offered under SADC and COMESA. Industries procuring raw materials in these regions benefit from the structured trade systems. The Interim EPA is designed to take care of the trade relations between the ESA region and the EU while negotiations towards the full EPA continue. Under the agreement, trade between Zimbabwe and the EU will be on a reciprocal basis in line with WTO rules.

### 4.2.0 THE REGULATORY FRAMEWORK

The regulatory framework for trade is dominated by five Acts of parliament in Zimbabwe, Namely the Income Tax Act, Value Added Tax Act, Customs and Excise Act, Finance Act and Income Tax Bill 2012. It is through these regulations that most trade is controlled.

### 4.2.1 Customs Documentation and Clearing Procedures

Commercial importations and exports of various chemical goods for commercial purposes by any individual or organisation are cleared usingBills of Entry. The importers or exporters are required to have a Business Partner Number which is activated for customs purposes. A total of fourteen documents are required by ZIMRA amongst them bill of entry forms, suppliers' invoices, export or transit bill of entry from the country of export, bill of lading, value declaration forms, consignment notes, freight statements, cargo manifests, insurance statements and certificates of origin amongst others. Duty is calculated on the basis of cost, insurance and freight (CIF) value of the imported goods up to the point of entry into Zimbabwe. Documents are processed, assessed and if correct a delivery release order is issued authorising the collection of goods from the carrier or detention. If there is need to inspect the goods, an Examination Order is issued and an inspection carried out to verify the quantities, classification, origin, values or any aspect that needs clarification. Preferential duty regimes and certificates of origin apply to goods imported from SADC, COMESA or any Member State with which Zimbabwe has trade agreement, preferential rates of duty will be applicable if the correct applicable certificates of origin are attached.

### 4.2.2 Customs and Excise Duties

Customs Duty is levied on imported goods in terms of the Customs and Excise Act [Chapter 23:02] whilst Excise Duty is levied on certain locally manufactured, imported under Trade Agreements and other specified goods in terms of the same Act. Applicable rates of Customs and Excise Duties are set-out in the Customs Tariff, which is published in the form of a statutory instrument. Most Chemical products are subject to these tariffs and the applicable rates of duty depend on the category of goods. The tariffs are specified in the Tariff handbook published from time to time. Value added tax (VAT) is another tax levied on locally manufactured and imported goods in terms of the Value Added Tax Act [Chapter 23:12]. Duty may be reduced or waived where the following circumstances exist: suspensions, rebates, bilateral and multilateral agreements and remissions

### 4.2.3 Incentives under Customs and Excise

Tax incentives are generally defined as fiscal measures that are used to attract local or foreign investment capital to certain economic activities or particular areas in a country'. Generally tax incentives must confer an advantage on the beneficiary while at the same time imposing a cost on the government. The Zimbabwe Revenue Authority administers various tax incentives aimed at promoting investment while the Minitry of Industry and International Trade, the Industrial Development Corporation and the

Zimbabwe Investment Authority are the main administrators of non-tax incentives.Revenue incentives in Zimbabwe apply equally to both domestic and foreign investors and the major goals of incentives in place are:

a. Income generation
b. Export promotion
c. Employment creation and skills transfer
d. Small business development
e. Industrial development
f. Revenue inflows

Like many other developing countries, Zimbabwe offers a number of tax and customs incentives in the form of tax holidays, reduced tax rates, and accelerated depreciation. The incentives are given by sector, type of activity, form of organization, and geographical location of investment as follows:- Rebate of duty on goods for the mining industry, for the prospecting and researchfor mineral deposits, preparation and packaging of fresh produce for export, for an approved project, for incorporation in the construction of approved project, on capital goods imported for use in tourist development zones, under the export incentive scheme, aircraft assemblers, registered bus assembler, electrical manufacturer and others. It is interesting to note that there are no chemical industries that fall in this category except rubber tyre manufacturers and those involved in mining. Available trade agreements are: COMESA, SADC, Zimbabwe-Malawi trade agreement, Zimbabwe-Botswana trade agreement, and Zimbabwe-Namibia trade agreement.

**4.2.4 Trade (Import and Export) Restrictions**

The importation and exportation of certain chemical substances is restricted and possible only under certain conditions such as production of a relevant permit or license. For some products, the importation or exportation is absolutely prohibited. ZIMRA has been charged with the control of these import and export restrictions and prohibitions. Most of these controls are done in the interest of the public to protect the consumer against hazardous substances, objectionable or undesirable materials, harmful substances which include skin lightening creams, soaps and lotions. Some of the controls are meant to protect the environment against destruction of fauna and flora, environmental poisoning and extinction of endangered species. Restricted goods in this context are those which are subject to import or export control - that is, goods which may not be imported or exported except under license or permit. Importation or exportation of restricted goods can only be done under a relevant permit or license from a licensing body, e.g. department of veterinary Service, EMA and Medicines Control Authority of Zimbabwe.

**4.2.5 Standards**

The standard of products for imported or manufactured locally and intended for local consumption are mandatory and voluntary in some cases. These standards are set by regulatory bodies such as EMA for environmental standards, Medicines Control Authority for medicines and Standards Association of Zimbabwe. Standards are used as instruments of trade policy to

authenticate the quality and specification of imports and exports in conformity with international safety requirements and regulations that largely aim at consumer protection. Suitable measures under the WTO TBT and SPS Agreements are also implemented

# SECTION 5

## ECONOMIC POLICY IMPLICATIONS, RECOMMENDATIONS AND CONCLUSIONS

### 5.0.0 Introduction

Development is a political as well as an economic process. It succeeds only when both aspects are fully taken into consideration, especially the complex interaction between the two, and appropriate visions, strategies and action plans are fleshed out and executed. The politics of development refers broadly to *what can be done* under the political landscape of the country as well as the administrative capacity of the government, whereas the economics of development refers to *what should be done* in terms of policy content to move the economy to a higher level given its initial conditions. The one is about the feasibility of development policy and the other is about its desirability. Policy making is a very complex game, and any advice that looks only at one aspect is easy to formulate but certain to fail.

### 5.1.0 Sector Specific Issues

Data Analysis and follow-up interviews revealed the following major constraints per sector

**Table 29: Summary of Industry Specific Constraints and Opportunities**
**continued on next page**

| SECTOR | CONSTRAINTS | OPPORTUNITIES |
|---|---|---|
| **RAW MATERIALS** | • High transportation cost<br>• High domestic costs<br>• Antiquated Machinery & Breakdowns<br>• Tax administration<br>• Labour regulations & health issues | • Increased Production throughput<br>• Potential for regional export markets<br>• Operating & net profit are positive at every stage<br>• High demand for human consumption and industrial uses.<br>• Yield improvement. |
| | • High domestic costs<br>• Low international prices makes products uncompetitive.<br>• Lack of control over product adulteration | • operating & net profit are positive at every stage<br>• Increased Production Throughput<br>• High demand for human consumption and industrial uses. |
| **BASIC CHEMICALS** | • Unattractive prices of products<br>• Poor Product Quality<br>• Low Local Demand<br>• Antiquated Machinery & Breakdowns | • Yield improvement.<br>• Potential for regional export markets |

| SECTOR | CONSTRAINTS | OPPORTUNITIES |
|---|---|---|
| **CONSUMER CARE** | • Unavailability of funds at critical times<br>• Unattractive prices of products<br>• High domestic costs<br>• Poor Product Quality<br>• Competition from Imports<br>• Antiquated Machinery & Breakdowns<br>• Tax administration | • Potential for Import Substitution<br>• operating & net profit are positive at every stage<br>• Increased Production throughput<br>• High demand for human consumption and industrial uses.<br>• Yield improvement.<br>• Quality control |
| **SPECIALITY CHEMICALS** | • Antiquated Machinery & Breakdowns<br>• high cost of hiring labour<br>• Unavailability of funds at critical times<br>• Unattractive prices of products<br>• High domestic costs<br>• Poor Product Quality<br>• Lack of raw materials<br>• Competition from Imports<br>• Tax administration | • Potential for Import Substitution<br>• Operating & net profit are positive at every stage<br>• Increased Production throughput<br>• High demand for human consumption and industrial uses.<br>• Yield improvement.<br>• Quality control<br>• Potential for regional export markets |
| **OTHER** | • Equipment are generally not easily available locally<br>• Public power supply is very unreliable<br>• Lack of credit for processing enterprises<br>• Unattractive prices of products remain a serious problem<br>• High domestic costs<br>• Poor Product Quality<br>• Competition from Imports<br>• Antiquated Machinery & Breakdowns<br>• Tax administration | • Operating & net profit are positive at every stage<br>• Increased Production throughput<br>• High demand for human consumption and industrial uses.<br>• Yield improvement.<br>• Huge Potential for regional export markets |

### 5.2.0 Cross-Cutting Issues – Study Results

#### 5.2.1 Productivity

The basic issue in the chemical industry is that the production system is resource and mineral based with low inputs with low outputs scheme leading to a limited return, low productivity and slow growth. This is the cause and the effect of lack of capital and consequent inadequate technology development both contributing to low productivity, with two major consequences: product uncompetitiveness and poor value addition.

#### 5.2.2 Unorganized market structure

Zimbabwe chemical industries have a relatively small local and regional market; Producers are primarily focused on supplying the domestic market. However with traditional developed trade partner countries expected to grow relatively slowly over the next two to three years, a much greater emphasis is required on penetrating new export markets. This will necessitate more sophisticated export intelligence, better export marketing, more visible Zimbabwean 'presence', and dynamic product innovation and customisation to meet these new consumer demands.

#### 5.2.3 Commodity Pricing

Monopolistic pricing of privately owned key inputs and intermediate inputs into the chemical manufacturing sector is another key constraint. The lowering and removal of import tariffs for some of these products, particularly in sectors where single market-dominant firms exist, has provided some moderation of prices, estimated at between 5% and 10%. However, import parity pricing mark-ups are often of a higher order of magnitude, meaning that these tariff reductions have a limited impact on price moderation. The cost of critical intermediate inputs such as plastics and polymers into the manufacturing sectors continues to constitute a major constraint to industrialisation. Zimbabwe's enormous resource endowment should provide the basis for a competitive advantage with respect to a huge suite of input costs into manufacturing. The practices of import parity pricing and excessive profit-taking give rise to a situation where what should be a competitive advantage turns into a disadvantage.

#### 5.2.4 Import & Export Tariffs

There are increasingly stiff tariff and non-tariff barriers in potential markets. High tarif charges for the export of value-added goods, compounded by serious inefficiencies in rail logistics especially for bulk chemical raw materials and other commodities affects the sector. The cost of export of value-added tradable goods has for some time been higher than both the cost of exports of primary commodities and the import of tradable goods. This renders the chemical industry's products uncompetitive. A downward tariff pressure on a number of value-added products, which is resulting in a surge of imports, particularly in low-value, high-volume manufactured goods is a necessity. Attention must be given to unnecessarily high import duties on a number of raw materials used as inputs to the sector.

### 5.2.5 Negative Industrial Growth Trends (De-Industrialisation)

Increased import penetration has coincided with rising domestic cost pressures resulting from a range of production inputs. The resulting margin squeeze has led to company closures, some employment losses, increased use of labour brokers and/or seasonal workers, and under-investment in productivity-enhancing measures and plant-level maintenance. There has been a significant slowdown in private sector investment 'investment strike' – with a concentration of investment in consumption-driven sectors. Inadequate capital investment due to three decades of low demand, has led to plant, machinery and equipment not being continuously upgraded or replaced. Variable and often out-of-date production and technological capabilities have resulted in the industry losing ground in maintaining local content and being unable to effectively capture new opportunities offered by both private and public capital expenditure programmes.

### 5.2.6 Uncompetitive Input Costs

Escalating electricity prices are rendering firms, particularly high energy consumers, uncompetitive. This will be exacerbated by the 8% tariff increase granted to Eskom over the next five years and compounded by further additional premiums likely to be imposed by municipalities. The import parity pricing of major material inputs such as steel and aluminium remains a major impediment to the further development of these sectors.

### 5.2.7 Policy synchronisation

The industry players raised concern over conflicting policy especially that of Indigenisation and the policy on industrial development. Players also noted with concern how statutory regulations enforced by different statutory regulatory bodies tend to conflict. A case in position being that of taxation for capital equipment despite policy specifying that capital equipment is not subject to VAT taxation. Others noted that labour laws are a great concern with most employers being "presumed guilty" until proven innocent by the way the laws are structured.

### 5.2.8 Transparency & Accountability

Key stakeholders noted that the players in the sector are not transparent in the way that they deal with the financial and operational aspects of their businesses. This prejudices the organizational and tends to add Non-Value Value added costs. This was cited as one of the biggest drawbacks to the growth of industry where players deliberately inflate costs and overstate challenges for individual gain and diversion of organisational resources. One point in case raised was thatmanagement spending in the sector is not commensurate with sector performance and that there is need for governance policy that stipulates productivity and performance based perks.

### 5.2.9 Energy, Power & Water

Special treatment tariffs have been considered for critical industries like the fertiliser industry. The tarriff charges are deemed too high by industry, Stakeholders note that the demand trend for electricity has a

huge decline in the evening with power generation sometimes being reduced. Industries are urged to shift production times and procure more efficient energy equipment, more efficient power and water usage technologies to sustain operations competitively.

**5.2.10 Capacity Building, Education, Training and Research**

There is general consensus that the level of tertiary education is decreasing due to lack of resources. Government is encouraged to equip the existing tertiary institutions fully instead of setting up new institutions where there are no resources. it is in the best interest of the industries to resourcecurrent institutions to improve the quality of graduates coming out of universities and colleges who can match up to industry requirements than to have so many of them without the requisite expertise and knowledge. there is also a call among institutions to develop speciality areas and not to compete in the same e.g. universities are supposed to complement each other in terms of skills training a case in point being the UZ and NUST portfolios where NUST was established to complement engineering disciplines that were not offered at UZ and vice versa.

**5.2.11 Infrastructure Development**

Key stakeholders envisage that in the absence of local resource funding, the country should vigorously court FDI as the main engine of growth before opening the capital account. Separate Capex & Consumption Budgets. The chemical manufacturing sector is one case in particular where investors can be granted reprieve of the Indigenisation law.

**5.3.0 Policy Implications**

**Indigenisation Law**

The law has been criticised as an impediment in attracting foreign direct investment. The African Development Bank recently warned that the indigenisation law would put a further damper on investment in the country particularly in the mining sector. European Union (EU) echoed the same sentiments recently and added that the indigenisation process in Zimbabwe should not be tantamount to theft where prospective partners just grab the shares without contributing anything. 40% of the respondents who are affected by the law said the indigenisation process was an emerging trend in some countries but highlighted people who wish to be shareholders of any company should genuinely buy the shares. "The indenisation should not about takeover of companies. It's not about taking the 51 percent shares and say they are mine. Proper empowerment process should be a combined a participation in the function of the company which you want to indigenise

**Policy Uncertainty**

Policy inconsistency makes Zimbabwe a risky investment destination. Growth of the economy has decelerated between 2010 and 2012 due to policy inconsistencies and political uncertainty showing that while it is relatively easy to ignite recovery, sustaining it requires consistent policies thataddress the binding constraints on growth. The subdued growth reflects

challenges facing the economy, including: limited capital sources andits high cost; uncertainties arising from policy inconsistencies, especially with respect to economic empowerment and indigenisation regulations; dilapidated infrastructure; obsolete technologies and machinery; frequent breakdown of the existing machinery; and power and water shortages. These challenges are further compounded by contestations among the government of Zimbabwe and its partners around issues of the new constitution and how to implement it.

**Lack of Clear cut strategies**

Zimbabwe has produced good documented plans which fail at the implementation stage., this has been attributed to the failure to identify critical strategy and will to implement. The ZimAsset economic blueprint sets out the tone for development but nevertheless lacks clear strategy of how to attain the goals pointed out.

### 5.4.0 Policy Recommendations

Zimbabwe has had good policies before which were followed up by lack of proper action plans, strategies and lack of will power to implement. Considering the strategic nature of the Chemical Industries sector and clearly understanding its real-sector potential there is need to now equip with a policy system of vision, strategies and action plans to attain it. Action plans must be implemented, and specific problems arising in this process must be solved as a matter of highest priority. Weak coordination among concerned ministries, gaps in budgeting and execution, delays in land procurement and resettlement, training of officers in charge, and devising incentives to curb brain drain are some of the issues that may be encountered. Capacity is created where it is needed through solving such problems one by one, rather than by a general campaign to eradicate corruption or promote administrative efficiency. Dynamic capacity development is a natural consequence of real-sector pragmatism, goal orientation and the pursuit of unique strength.

Recommendations cover the entire spectrum of the diagnostic dimensions for the Chemical Industries sector and other general cross cutting issues necessary for the economy and country as a whole.

### 5.4.1 Sources of Input & Input Supplies Policy Recommendations

**a. Enhancing Unique Resource Strength Rather than Removing General Negatives**

Zimbabwe should identify the future potential (dynamic comparative advantage) unique to the country as Coal and Coal Bed Methane. This has many spill over effects into agriculture, energy, chemicals, mining and a whole spectrum of industries. Limited resources should thus be poured into this area to realize that potential rather than scattered across many unrelated programs. Main policy effort must be directed to removing barriers and constraints to attain this potential. It is interesting to note that most development in many other countries without oil and gas reserves develop on the backbone of natural gas and coal.

It should then come as policy with strategy and action plans to tap into this Chemical raw materials sector for the total benefit of the country.

### 5.4.2 Technology & Industry Capacity Policy Recommendations

**a. Dynamic Capacity Development**

Zimbabwe should adopt policy of dynamic capacity development that builds on capability through hands-on efforts to attain concrete goals rather than trying to improve manufacturing generally and aimlessly. Starting with government owned or controlled manufacturing / trading institutions, organizations should be created or restructured, and officials and advisors mobilized or re-assigned, to execute specific tasks required by the five-year plan, the master plan for a priority industry, or the blueprint for a new industrial zone. This approach has several advantages such as concentrating limited human and financial resources on truly needed areas clear criteria for monitoring and assessing performance, flexible reshuffling of resources in response to initial results or changing circumstances, and the cumulative pride and sense of achievement that emerge as specific targets are realized one by one.

**b. Fostering scientific and technological innovation**

The accumulation of technological knowledge and capabilities is critical to inducing structural transformation and gaining competitive advantage in export markets. Zimbabwe should provide more support for technology and innovation. This could take the form of stimulating domestic production of technological knowledge through the provision of incentives to entrepreneurs, capacitating national research institutions like SIRDC or it could take the form of facilitating access to existing technology through FDI, licensing and purchasing capital equipment. The Zimbabwean education sector should also be modelled to invest in education and skill formation to in relation to the country's industry to ensure that firms have reliable access to the skilled labour required to produce high-quality goods that can survive competition in global markets. Particular attention should be paid to modelling education and training in technical and scientific subjects such as engineering because these are the most relevant for industrial development.

### 5.4.3 End Markets and Trade Policy Recommendations

**a. Import & Export Tariffs**

There are increasingly stiff tariff and non-tariff barriers in potential markets. High tarif charges for the export of value-added goods, compounded by serious inefficiencies in rail logistics especially for bulk chemical raw materials and other commodities affects the sector. The cost of export of value-added tradable goods has for some time been higher than both the cost of exports of primary commodities and the import of tradable goods. This renders the chemical industry's products uncompetitive. A downward tariff pressure on a number of value-added products, which is resulting in a surge of imports, particularly in low-value, high-volume manufactured goods is a necessity.

Attention must be given to unnecessarily high import duties on a number of raw materials used as inputs to the sector as well to be reduced or to be totally removed. There is need for simplification of the tariff book and eradication of tariffs below 5% i.e. "nuisance tariffs"

**b. Diversification**

Diversification policies reliant on the on export and domestic market are key for Zimbabwe Chemical industries. This should also be catered for under a distinct export policy-driven industrialization coupled with outward-oriented industrialization, the existing export processing zones and a horizontal and "smart" industrial policy to build on the IDP of 2011. Government should assemble a technocrat team to concretize vision, national ideology that glorifies material advancement, unwavering belief in upgrading technology and competitiveness, backed by popular support for rising living standards based on industrial results as was the case in East Asia. It is recommended that Zimbabwe can adopt a policy menu addressing some of these key aspects to enhance competitiveness of the chemical industries;

### 5.4.4 Value Chain Governance Policy Recommendations

**a. Creating linkages in the industry and economy**

Zimbabwe should give priority to the creation or development of linkages in the domestic economy to ensure that the promotion of industrial development yields positive spill-over benefits in other sectors of the economy. There are various ways to create domestic linkages in an economy. Furthermore, linkages can be created between domestic and foreign firms by building domestic technological capabilities. Policies to support industrial clusters are also important. One typical broken down cluster is Chemplex. There is need for many such clusters in the economy to boost chemical industries development.

**b. Capability Growth-Enhancing Governance**

As noted in section 2, domestic capability of a latecomer country is initially very weak. Corruption and rent seeking are rampant. However, it is not only difficult but even undesirable to eradicate these "evils" in Zimbabwe's economy where market-enhancing rules and institutions are severely underdeveloped. Zimbabwe is rife with corruption, underhand dealings and nepotism. Most activities in the economy, commerce, production, and investment are carried out with the help of these non-market activities and their sudden removal (by strict policing and punishment, for example) would bring the economy to a halt. What is required is to design policies and incentives so that these non-market activities are channelled towards learning, productive investment, and political and social stability. Khan calls this.

Governance appeared as an omnipresent issue during field research. Interviews with keys actors in the value chain and government ministries, revealed that most if notall current and future expected bottlenecks would have a much higher chance of being resolved through institutionalized

public-private-discussions and if corruption is strongly dealt with. An institutionalized partnership should therefore be created, including all major stakeholders, to find a common ground on some of the difficult issues preventing the development of the value chain. To that regards there is need for military-like discipline through harsh penalties and imprisonment terms to rule to largely wipe out corruption and nepotism. In this process, politics and economics should be deeply intertwined. Leaders should not have illusions that politics and economics can be practiced separately or solved independently from each other.

### 5.4.5 Value Chain Finance Policy Recommendations

**a. Chemical Industries Industrial Financing**

Financing should focus on supporting substantively new value chains in the chemical industry particularly the coal to liquids and petrochemical subsector which has potential to generate spill over and demonstration effects. This entails support for entirely new chemical goods and services. Financing should be conditional on the achievement of measurable benchmarks by recipient firms. At the same time it must be transparent and easy to access as possible with a minimum of uncertainty and regulatory costs for applicants. This should be coupled with an explicit sunset clause and review process in the programme. The government can thus also monitor other government activities in efforts to retain best practices for such a government led support programme. This needs much stronger systems for incentive design, performance monitoring, enforcement of compliance, regular reporting, periodic review and adaptation and impact assessment. Streamlining should follow these streams in the industry:

a. Investments,
b. Industrial Upgrading,
c. Innovation & Technology,
d. Trade Facilitation and
e. SMEs

All financing interventions should be of sufficient size to change the structure of the targeted subsector and must become reciprocal and focused on the relevant constraint or opportunity it targets.

**b. Promoting Entrepreneurship & Investment**

Zimbabwe should step up efforts to promote entrepreneurship by creating an economic environment that favours both domestic and foreign investment in the chemical industrial sector. In particular, they should reduce policy uncertainty, strengthen infrastructure provision and improve access to finance for firms, particularly SMEs. Efforts should also be made to provide incentives for firms to invest in the discovery of new activities that enhance export competitiveness and diversification particularly the labour intensive sectors of Consumer Care Products. This particular sector does not require capital intensive investment and can create quick value since it already accommodates numerous small scale players. Because this sector benefits all Zimbabwean of all walks of life, Government should prioritise this sector and reserve it for local players.

### 5.4.6 Sustainable Production & Energy Policy Recommendations

**a. Core Infrastructure Development**

There should be a deliberate policy to build large-scale infrastructure, especially in the through transport, energy and power sectors. When such infrastructure is built, it is customary that supporting chemical industries that take advantage of that infrastructure or complement it are also provided for effectiveness and synergy. Government ought to formulate master plans for regional or industrial development, operation and maintenance programs, human resource development, safety and environment programs, local SME development, the "one village one product" program. It should be policy that all recapitalisation and new technologies should meet a minimum criterion for energy efficiency and environmental performance. Zimbabwe should put strict measures in place for consultation or inspection of any such technology whether locally assembled or to be imported. Operations should also be clean operations before they are granted licences to commence operations. Strict adherence to EMA environmental impact assessments standards should be followed.

### 5.4.7 Business and Social Political Context Policy Recommendations

**a. Improving government capabilities**

In promoting industrial development, Zimbabwe should ensure that the scope and degree of intervention takes into account government capabilities. Weak State institutions make it challenging for governments to successfully implement their industrial development programmes and policies. In this context, Zimbabwe government should give priority to enhancing government capabilities to design, formulate and implement policies. This can be achieved by providing training and capacity-building activities for public officials with support from international countries or organisations that have gone through challenges that Zimbabwe is currently facing.

**b. Enhancing resource mobilization**

The promotion of industrial development requires the mobilization of resources to finance investments in identified priority areas. There has been a tendency for Zimbabwean government to focus on resource allocation as opposed to resource mobilization issues in the conduct of industrial policy. Zimbabwe should pay more attention to the mobilization of resources and strengthen resource mobilization by boosting domestic savings, borrowing from development finance institutions, promoting FDI, harnessing local resource mobilisation as a source of development finance and encouraging traditional development partners to direct more ODA towards promoting industrial development. Without savings in Zimbabwe, NSSA, which has largely been involved in stock market and real estate, has a role to play in funding manufacturing. A key sector is the synthetic petrochemical subsector in natural gas and coal fields where investment similar to that found in South African is required.

**c. Adopting appropriate monetary and fiscal policies**

The effectiveness of industrial programmes and policy also depends in part on the extent to which monetary and fiscal policies are consistent with the objective of promoting industrial development. In particular, the mix of monetary and fiscal policies has to be such that firms have better access to credit and real interest rates are not at levels that deter investment. It is necessary to align the stance of monetary and fiscal policies with the objective of promoting industrial development, while ensuring that measures adopted to achieve such an alignment do not lead to medium- or long-term macroeconomic instability.

**d. Maintaining political stability**

Political stability is a necessary condition for industrial development. Without political stability, even a well designed and well-implemented industrialization programme is bound to fail. Therefore, efforts should be made by the Zimbabwean government to reduce the incidence of political crisis through better political and economic governance.

**5.4.8 IDP Priority Sector: Chemicals - Fertiliser Industry Recommendations**

The government of Zimbabwe identifies the fertiliser industry as a key industry for growth of the manufacturing industry and the economy. The government can transform the inefficient and high cost fertilizer industry to an efficient low cost industry where increased supply is matched to demand at lower transaction costs (i.e., shifting the supply and demand curve upward), by attending to the following recommendations:

**a. Policy reforms**

Policy reforms are vital to stimulate private investment in and commercial financing of agricultural input and output sector. Relevant policy options include: trade policies that promote free flow of goods, macroeconomic policies that facilitate access to foreign exchange, tax policies that do not place heavy tax burden on agricultural inputs like fertilizers, policies that promote competition by facilitating entry and exit of firms, and land tenure policies that increase farmer's access to credit. A comprehensive fertilizer policy has to be articulated and integrated into the whole policy framework. The development of appropriate and coordinated regional agricultural development policies and harmonization of fertilizer trade protocols to ensure that adequate fertilizer is produced and distributed across border will stand to benefit the country and SADC. The scope of reducing cost through joint procurement (pooling orders and jointly chartering vessels), joint investment and regional market expansion need to be tested.

**b. Regulatory and Institutional Reforms**

Regulatory and institutional reforms are needed to ensure smooth commercial exchanges at all levels of the value chain. Particular attention is needed in: the development and implementation of quality controls, enactment and enforcement of contract laws and prevention of excessive consolidation of market power.

**c. Industry Cluster Reforms**

The government should honour its debt to fertiliser producing companies as part of resuscitating the industry. The debt which is in excess of capitalisation requirements should see the industrial cluster investing in technology to improve capacity, sustainability and resource efficiency.

**d. Capacity building**

Capacity building is vital to improve the knowledge and skills of farmers and commercial fertilizer players. Training to improve farmer knowledge on fertilizer use should be emphasised and strengthened. Market and price information for fertilizers should be readily accessed by the fertilizer industry (manufacturers, private traders and government trading agencies and farmers). Capacity building can be achieved through public education systems, training programmes that target farmers and traders needs and through development of a vibrant Information Communication and Technology system (e.g. internet). This develops adequate human capital to drive the fertilizer manufacturing business and to spearhead a vibrant fertilizer entrepreneurial climate capable of promoting a competitive fertilizer industry. Strategic partnerships are needed to for the success of the strategies mentioned above. Key partnerships need to be forged between government, the private sector, farmers, financial institutions, local and international development partners, and research, training and extension institutions to attract the needed investments and create confidence in the industry.

**e. The future of fertilizer subsidies**

i. Use input vouchers that can be redeemed at local retail stores rather than direct distribution in order to maintain the capacity of private sector input delivery system. This notion is also shared by Rohrbach et al, (2004), who highlighted that direct input distributions have undermined the trading capacities of local retailers in Zimbabwe.

ii. Involve a wide range of fertilizer importers, wholesalers, and retailers in the input voucher scheme. Providing tenders to few firms to import fertilizers can squeeze out other firms resulting in a concentrated and uncompetitive input market. The system should allow farmers to redeem coupons at existing retail stores to promote additional investments in remote areas where it is most needed.

iii. Consider the objectives of the targeting, cost of implementation, time requirements and displacement of commercial sales by subsidized inputs. If the subsidy program objective is to increase total output, then the inputs need to reach farmers who can use them efficiently and on a large enough area to generate significant gains in total output. Evidence indicates that a high proportion of non-poor farmers are able to acquire fertilizer through markets. Thus spending scarce government resources to provide them with discounted fertilizer will largely substitute subsidized fertilizer for commercial fertilizer, adding relatively little to overall fertilizer use or crop output. In some cases, small farmers may also use fertilizer more

efficiently than larger farmers. If the subsidy program objective is to alleviate poverty, then it must be possible to identify poor farmers, and socially acceptable to channel vouchers to them, at a reasonable cost.

**5.5.0 Conclusions**

Overall, this research would suggest that the role of the chemical industries is significant in driving other industrial activity and smoothing areas of domestic and social services. Better trade flows of chemicals could and should be a key component of any industrial growth strategy, particularly given Zimbabwe's decline in industrial / manufacturing output in the past decade.

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