National Competitiveness Commission

"Enhancing Zimbabwe's Global Competitiveness"

Fertilizer Value Chain

Competitiveness Report

November 2022

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ACKNOWLEDGEMENT

The National Competitiveness Commission (NCC) would like to acknowledge the support received from the Ministry of Industry and Commerce and contributions made by various stakeholders in the value chain, who spared their time to provide information and data that was crucial for this Report. The Report would not have been complete without insights and inputs from our valued stakeholders in fertiliser value chain.

Finally, the Commission also wishes to express gratitude to the National Competitiveness Commission Board, which provided support and guidance towards production of this Report.

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Acronyms

AFFM	Africa Fertilizer Funding Mechanism
AN	Ammonium Nitrate
AU	African Union
B	Boron
CAD	Canadian Dollar
CBCA	Consignment Based Conformity Assessment
COVID – 19	Coronavirus Disease
DAP	Di-ammonium Phosphate
EMA	Environmental Management Agency
EU	European Union
FFRI	Fertilizer, Farm Feeds and Remedies
FSG	Fertilizer, Seed and Grain
IFA	International Fertilizer Association
MAP	Mono-ammonium Phosphate
MOP	Muriate of Potash
Mt	Metric Tonne
NDS1	National Development Strategy 1
NGO	Non-Governmental Organization
NPK	Nitrogen, Phosphorous and Potassium
NRZ	National Railways of Zimbabwe
NSIA	Nigeria Sovereign Investment Authority
NSSA	National Social Security Authority
NWTC	National Working Technical Committee
PPPs	Private Public Partnerships
R&D	Research and Development
RPAZ	Radiation Protection Authority of Zimbabwe
SAZ	Standards Association of Zimbabwe
SOP	Sulphate of Potash

SSP	Super Single Phosphate
TSP	Triple Single Phosphate
UN COMTRADE	United Nations Commodity Trade
US	United States of America
ZEPARU	Zimbabwe Economic Policy Analysis and Research Unit
ZFC	Zimbabwe Fertilizer Company
ZFMA	Zimbabwe Fertilizer Manufacturers Association
ZimPhos	Zimbabwe Phosphate Industries
Zn	Zinc

FOREWORD

The Fertilizer Value Chain Competitiveness Report outlines the main competitiveness challenges facing the sub-sector and proffers appropriate policy responses for improving production efficiency and competitiveness of the industry.

Implementation of the proposed interventions by both Government and industry players is expected to lead the country towards achieving the goals of the African Continental Free Trade Area, Abuja Declaration of 2006, National Development Strategy 1 targets, the Comprehensive Agricultural Policy Framework (2012 – 2032) and the Zimbabwe National Industrial Development Policy (2019 – 2023). These all recognise the importance of fertilizer production in stimulating output in the agriculture sector in order to achieve food and nutrition security, thereby, enhancing economic growth and development of Zimbabwe.

The industry has not been spared by the negative impact of global phenomenon, such as the COVID 19 pandemic and invasion of Ukraine by Russia, which resulted in disruption in the global supply of critical raw materials and led to the spiral of fertilizer prices induced by shortages.

To avert future disruptions, import substitution becomes very critical in the local fertilizer industry. The findings and recommendations of the Report will be channelled to the relevant institutions for actioning and in collaboration with the Fertilizer Competitiveness Lab, which will be comprised of technical experts in the industry.

P. Phiri

Executive Director

NATIONAL COMPETITIVENESS COMMISSION

PREFACE

Zimbabwe`s economy is agro-based and addressing competitiveness challenges in the fertilizer value chain will have multiple positive effects to other sectors of the economy. The value chain is a key enabler of industrial growth, as it aids in the production of key inputs used in the agro-processing sub-sector.

The fertilizer manufacturing industry has been experiencing challenges, weighing on competitiveness, resulting in declining output and its contribution to economic growth and development. Implementation of strategies aimed at addressing the existing challenges is expected to improve the sector's productivity, competitiveness, expansion of the industrial base, import substitution, creation of new jobs and promotion of economic growth in line with the objectives National Development Strategy 1, which is also anchored by the Zimbabwe National Industrialization Development Policy (ZNIDP 2019 – 2023) in attaining the realities of Vision 2030.

It is my considered view that this Report, which benefitted from crucial input from stakeholders, will go a long way in ensuring that our fertilizer industry's productivity and competitiveness is enhanced. To this end, concerted effort from Government and industry players is critical in addressing the identified competitiveness bottlenecks through implementation of the proposed interventions.

Lastly, I would like to thank all stakeholders, for the support towards production of this important Report.

B. Shayanewako

Director Competitiveness

NATIONAL COMPETITIVENESS COMMISSION

EXECUTIVE SUMMARY

The National Development Strategy 1 (NDS1) (2021 – 2025) prioritised the Fertilizer value chain as a key enabler of industrial growth, particularly in the manufacturing sector, as it provides key inputs that enhance productivity and increased output in the agriculture sector. To this end, fertilizer manufacturing is critical in enhancing agro-processing value chains' competitiveness, as well as addressing challenges such as poverty, hunger, food security and nutrition. This is also in line with the echoes of the African Union (AU), which emphasizes on the development of a sustainable local fertilizer industry.

The fertilizer value chain used to have strong linkages, running from phosphate & iron sulphide mining, sulphuric & phosphoric acids manufacture to fertilizer production, and supply to the agriculture sector. Of major concern, Zimbabwe has become a net importer of phosphate fertilizer, irrespective of abundant phosphate deposits.

Furthermore, despite available fertilizer manufacturing capacity and high demand for the product, the industry has also gradually deteriorated due to low-capacity utilisation, influx of cheap fertilizer imports, inefficient rail system, antiquated technology, inadequate working capital and unreliable electricity supply, which impinge on industry efficiency and competitiveness.

In addition, competitiveness of the local fertilizer industry is undermined by the prevailing macroeconomic conditions characterised by high inflation of 268.8% as of October 2022, high cost of borrowing averaging 200% and foreign currency shortages to import critical inputs such as potash and ammonia gas. This is exacerbated by other exogenous factors such as the ongoing Russia-Ukraine war, which has caused disruptions in the global fertilizer supply chain. Russia is the world's largest exporter of fertilizers, accounting for 23% ammonia, 14% urea, 10% processed phosphate, and 21% potash.

To this end, there is need to domesticate the fertilizer value chain, in order to reduce the import bill of US$955 million (UN COMTRADE, 2022), ensure food and nutrition

security, as well as job creation. This requires combined effort from all relevant stakeholders, including the Government and private sector to transform and enhance the industry's productivity and competitiveness.

Government interventions to achieve macroeconomic stability, continued investment in expansion of electricity generation capacity, construction, rehabilitation and maintenance of road networks and dams are expected to enhance competitiveness of the value chain. Industry players, should however, complement by investing in new technology, Research & Development (R&D) to ensure that fertilizer products address specific soil nutrient deficiencies and crop nutrient requirements.

This report benefited from wide national stakeholder consultations across the value chain, as well as a benchmarking visit to Nigeria, which is one of the major fertilizer producers in Africa and a Cost Driver Analysis study that was done by Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU).

This Fertilizer Value Chain Competitiveness Report provides useful insights and the following key recommendations:

- Establishment of an independent Zimbabwe Fertilizer Manufacturers Association (ZFMA);
- Privatization of the primary producers to attract investment in new technologies;
- Streamline regulations along the fertilizer value chain;
- Dedicated and uninterrupted power supply to fertilizer manufacturers;
- Timely orders and payments to fertilizer producers by Government;
- Accelerate implementation of the Fertilizer Import Substitution Roadmap; and
- Rehabilitation of the railway infrastructure.

The above recommendations are critical for addressing existing challenges, improving productivity & competitiveness, expanding industrial base, promoting import substitution and economic growth & development.

1.0 INTRODUCTION

1.1. Fertilizer production has strong backward and forward linkages with mining, agriculture, manufacturing industries and has spill over effects on transport & distribution and financial services, among other sectors of the economy. This has a knock-on effect on food & nutrition security, hence the value chain is a global and national priority.

> *IFA defines fertilizer as "any solid, liquid, or gaseous substance containing one or more plant nutrients in a known amount, that is applied to the soil, directly on plants, or added as aqueous solutions (as in fertigation) to maintain soil fertility, improve crop development, yield, and/or crop quality."*

1.2. At the global level, the United Nations Sustainable Development Goal 2 seeks to ***"end hunger, achieve food security, improve nutrition and promote sustainable agriculture."*** In order to achieve this, policy measures at global, regional, and national level were developed to promote agriculture productivity, which subsequently requires efficient fertilizer production to address soil nutrient deficiencies.

1.3. The African Heads of States and Government recognised the importance of fertilizer production in stimulating economic growth and development, hence adopted the Abuja Declaration of 2006. The Declaration underscores the importance of fertilizer in transforming the Continent's agricultural sector, thereby guaranteeing food security. This led to the development of a Comprehensive Africa Agricultural Development Programme (CAADP),[1] which calls for a 6% annual growth in agricultural production, as a framework for the restoration of agricultural growth, food security and rural development in Africa.

1.4. Consistent with the Abuja Declaration, Zimbabwe through NDS1 prioritised the fertilizer industry, under agro-processing value chains, as a key enabler of industrial growth particularly in the manufacturing sector as it provides key inputs that enhance productivity, increase output in the agriculture sector, food and nutrition security. Furthermore, the Comprehensive Agricultural Policy Framework (2012 – 2032) and the Zimbabwe National Industrial Development Policy (2019 – 2023) also recognise the importance of strengthening the fertilizer value chain to create competitive economic linkages and opportunities for agro-based industrialisation.

1.5. Pursuant to the above, the industry produces basal and top-dressing[2], also known as inorganic or chemical fertilizers, constituting Nitrogen (N), Phosphates (P), and Potassium (K). From these, nitrogen is the most important, accounting for more than 56% of the global fertilizer nutrient consumption.

1.6. The NDS1 envisages a 66.67% and 700% increase in phosphates and ammonium nitrate production respectively, with a commensurate decline in imports, over the plan period.

1.7. Table 1 shows basal fertilizers and nutrient compositions for both blends and granulated requirements for different crops in Zimbabwe:

[1]CAADP is an Agenda 2063 continental initiative that aims to help African countries eliminate hunger and reduce poverty by raising economic growth through agriculture-led development.
[2] Basals are incorporated into the soil prior to planting, whilst top dressing fertilisers are applied to the surface layer of soil.

Table 1: Types of Basal Fertilizers and Nutrient Composition, 2022

Product	Nitrogen	Phosphate	Potash	Sulphur	Micronutrient %	Main Crops for which Fertilizer is used
Blends						
Double D	14	28	14	6	1% Zn	All cereals, and Sugar beans
Cereal Blend	6	23	23	8	0.05B, 0.5Zn	All cereals, and Sugar beans
Tobacco Blend	6	28	23	6	0.1 B	Tobacco Lands, Potatoes, Paprika, Tomatoes
Soya Blend	6	27	20	7	0.25% B	Soyabeans, Sunflower, Cotton, Groundnuts
Vegetable blend	9	24	20	7	1% Zn, 0.15% B	All Vegetables
Potato Blend	10	19	25	7	0.15 B	Potatoes
Potato Super Top	23	0	24	8.5		Potatoes/Paprika/Pepper/ tomatoes
Granulated						
Super D	10	20	10	6		All cereals, and Sugar beans
Tobacco-Fert	5	15	12	8	0.1B	Tobacco Lands, Potatoes, Paprika, Tomatoes
Seedbed Fert	7	21	8	7.5	0.04B	Tobacco Lands, Potatoes, Paprika, Tomatoes
Cotton Fert	5	18	10	8	0.25	Cotton, Soyabeans, Sunflower, Groundnuts
Maize Fert	7	14	7	8.5		All cereals, and Sugar beans

Source: ZFC Limited **Key:**B – Boron, Zn – Zinc

National Competitiveness Commission

"Enhancing Zimbabwe's Global Competitiveness"

The National Competitiveness Commission (NCC) is a statutory body established by an Act of Parliament [Chapter 14:36] and it falls under the purview of the Ministry of Industry and Commerce.

The Commission is mandated to facilitate the creation of a competitive environment for Zimbabwean businesses through the development, coordination and implementation of key policy improvements required for domestic, regional and global competitiveness.

The following are some of the key functions of the Commission:

Continuous monitoring of the cost drivers in the business and economic environment and advise on measures to be taken to enhance productivity and address current and emerging costs challenges.

Provide a platform for dialogue between the private and public sector, labour, academia, and non-state actors on issues related to competitiveness.

2.0 OVERVIEW OF THE FERTILIZER INDUSTRY IN ZIMBABWE

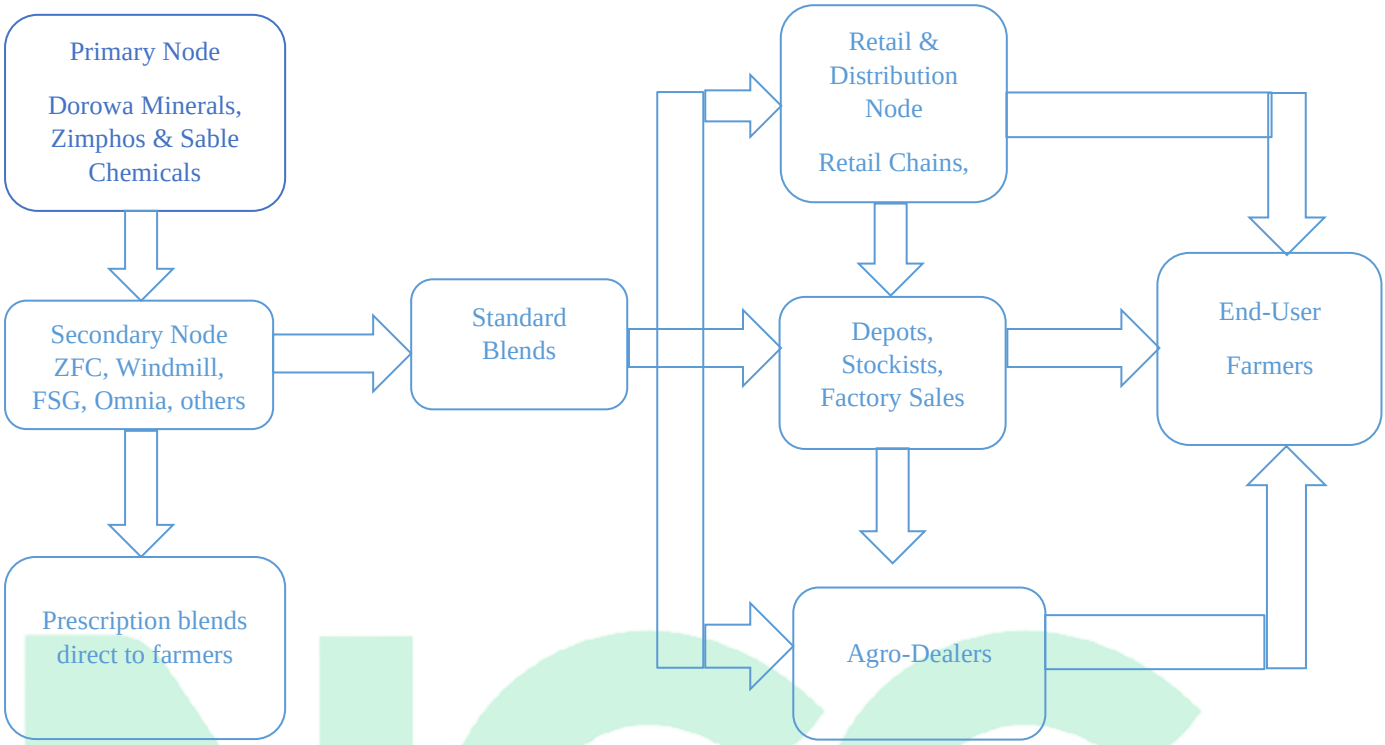
2.1 The local fertilizer industry has an installed annual production capacity of more than 2 million tonnes of compounds and blends, thus exceeding national demand of 350 000 metric tonnes. Currently, about 25% of phosphate and 27% of AN national fertilizer requirements are produced locally, while about 75% is imported on an annual basis to cover the deficit.

2.2 Despite the fertilizer industry having the capacity to meet national demand, Zimbabwe spent approximately US$955 million (UN COMTRADE, 2022), importing fertilizers over the past 5 years (2016 – 2021). The huge import bill for fertilizers calls for intervention measures, as this is unsustainable.

Fertilizer Industry Structure

2.3 The Zimbabwe Fertilizer Industry comprises of value chain players in primary, secondary, retail & distribution and end-user nodes. The primary and secondary nodes are largely dominated by Chemplex Corporation, which owns Dorowa Minerals, G&W Industrial Minerals, Zimbabwe Phosphate Industries (ZimPhos) and has significant shareholding in Sable Chemical Industries (36%) and ZFC Limited (50%). Figure 1 below shows the structure of the local fertilizer industry:

Figure 1: Structure of the Local Fertilizer Industry



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Fertilizer Market

2.4 Fertilizer market is dominated by Fertilizer, Seed & Grain (FSG), ZFC Limited and Windmill. These 3 players have a combined market share of 73%. Table 2 below shows the market share by company:

Table 2: Market Share Estimates for 2021 by Company

Company	Estimated Market Share
ZFC Limited	24%
Windmill	16%
Omnia	6%
FSG	33%
ETG	9%
Others	12%
Total Trade	**100%**

Source: ZFC Limited

2.5 The relative market share tends to change from time to time, depending on the company's marketing strategy, investment appetite and adaptability to innovation and technology.

Primary Producers' Node

2.6 The primary node is comprised of producers of raw materials through extraction, semi processing of basic fertilizer nutrient components and key ingredients for manufacture of compounds. The primary producers, on average, are operating at 38.3% capacity utilization as shown in Table 3 below:

Table 3: Capacity Utilization of Primary Fertilizer Producers in Zimbabwe, 2022

Primary Fertilizer Producers	Type of Fertilizer	Installed Capacity (MT)	2022 Production (MT)	Capacity Utilization	Status
Sable Chemicals	Ammonium Nitrate	240 000	120 000	30%	Using imported Ammonia after decommissioning of the electrolysis plant in 2015.
ZimPhos	Phosphates	225 000	100 000	45%	Importing acid after decommissioning of the acid plant in 2010. .
Dorowa Minerals	Phosphate Rock Concentrate	150 000	60 000	40%	Not meeting local demand due to.
Average Capacity Utilization				38.3%	

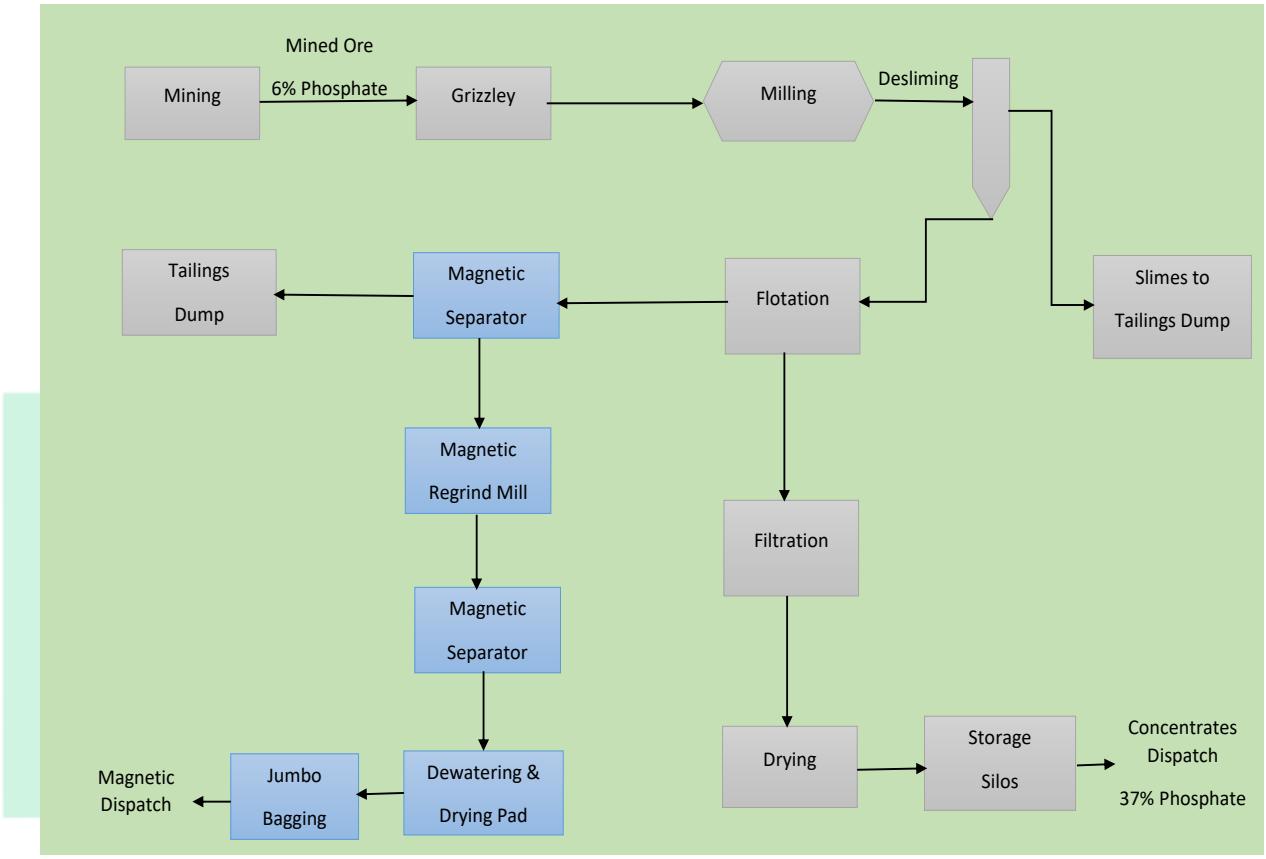
Source: ZFMA

Dorowa Minerals Limited

2.7 Dorowa Minerals Limited has phosphate ore deposits estimated at 122 million tonnes, which are expected to last over 60 years. The mine specialises in the extraction of phosphate rock using open cast mining, which is relatively less expensive. Current production capacity for phosphates stands at 75% of installed capacity of 80 000 metric tonnes, leaving an idle capacity of 20 000 metric tonnes.

2.8 The rock differs in phosphate content, ranging from 4 to 11%. Rocks with different phosphates compositions are blended to produce the 6.5% phosphate grade, which is required as feed into the plant for beneficiation[3] as illustrated in Figure 2:

Figure 2: Phosphate Beneficiation Process, 2022



Source: Dorowa Minerals Limited

2.9 During the beneficiation process, magnetite is produced as a by-product, and is exported to Mozambique, while milled phosphate rock concentrate is supplied to ZimPhos for further processing into phosphate. Magnetite is important for the manufacture of iron ore for steel, ammonia, paints and ceramics.

2.10 However, productivity and competitiveness of Dorowa Minerals is impeded by the following constraints:

- Antiquated equipment resulting in frequent mechanical breakdowns;

[3] The beneficiation process involves milling, floatation, dewatering, filtering and drying to produce a phosphate concentration of 37%

- Short term and high cost of funding for acquisition of new equipment and expansion;
- Dilapidated rail infrastructure[4] resulting in the company having to use road, which is expensive;
- Low – capacity utilisation;
- High cost and erratic power supply; and
- Exorbitant regulatory charges (incorporating local authority rates and taxes, licence fees, EMA charges) as illustrated in Table 4 below:

Table 4: Regulations Affecting Dorowa Minerals

Description	Act	Annual Fee – US$
EMA	Environmental Management Act Chapter 20:27	10 148.00
NSSA	Pneumonoconiosis Act Chapter 15:08	3 500.00
	National Social Security Authority Act Chapter 17:04	WCIF- Payroll Based
MCAZ	Medicines and Allied Substances Control Act (Chapter 15:03)	300
RPAZ	Radiation Protection Act 5 of 2004 (Chapter 15:15)	TBA
HPA	Health Professions Act (Chapter 27:19)	993.11
Local Authorities Fees	Buhera RDC	~90 000.00
	ZINWA	14 405.00

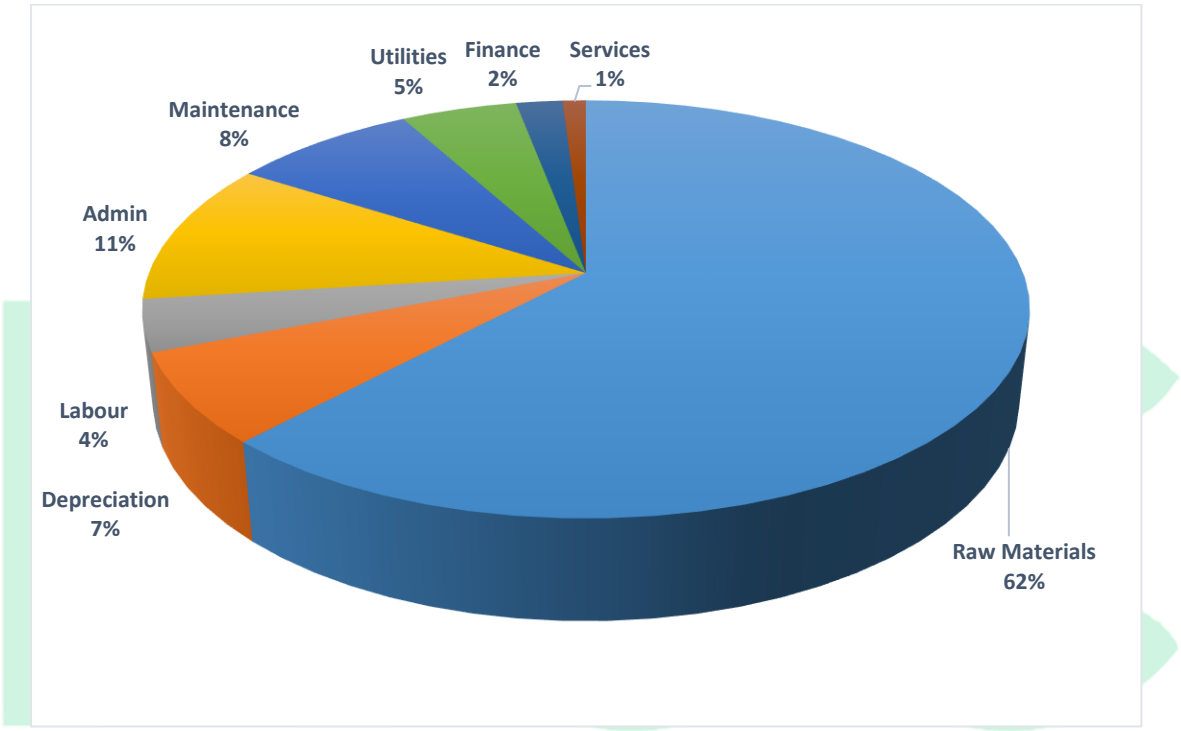
Source: Dorowa Minerals

[4] Rail ends at Nyazura hence phosphate has to be transported by road for about 65km which adds to costs. This is weighing on the company's plan of producing 12,000MT of phosphate per month against current production capacity of 5,000MT per month.

Zimbabwe Phosphate Industries

2.11 ZimPhos produces Single Super Phosphate (SSP) using phosphate from Dorowa Mine and imported sulphuric acid. These raw materials constitute 62% of the total production costs as shown in Figure 3 below:

Figure 3: Phosphate Cost Build Up, 2022

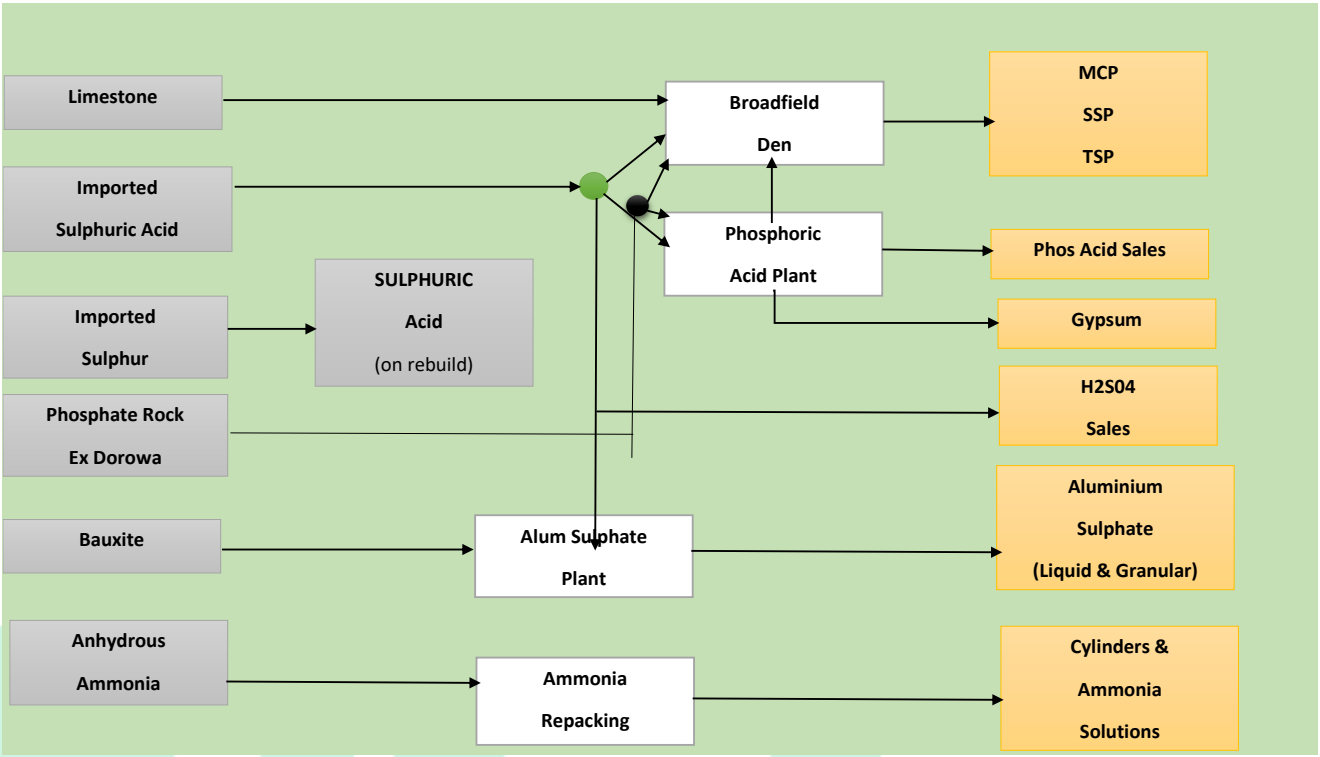


Source: ZimPhos

2.12 ZimPhos is currently operating at 45% capacity and has a capacity to produce 225 000 tonnes of phosphates per annum.

2.13 However, ZimPhos ceased production of high analysis phosphates in 2010, which are associated with by-products such as gypsum used for soil conditioning, as well as cement, plaster and ceiling board manufacturing. The current stock of gypsum was piled before closure of the phosphoric plant and the stock is gradually diminishing. Figure 4 below shows the flow chart of ZimPhos operations:

Figure 4: Flow Chart of ZimPhos Operations, 2022



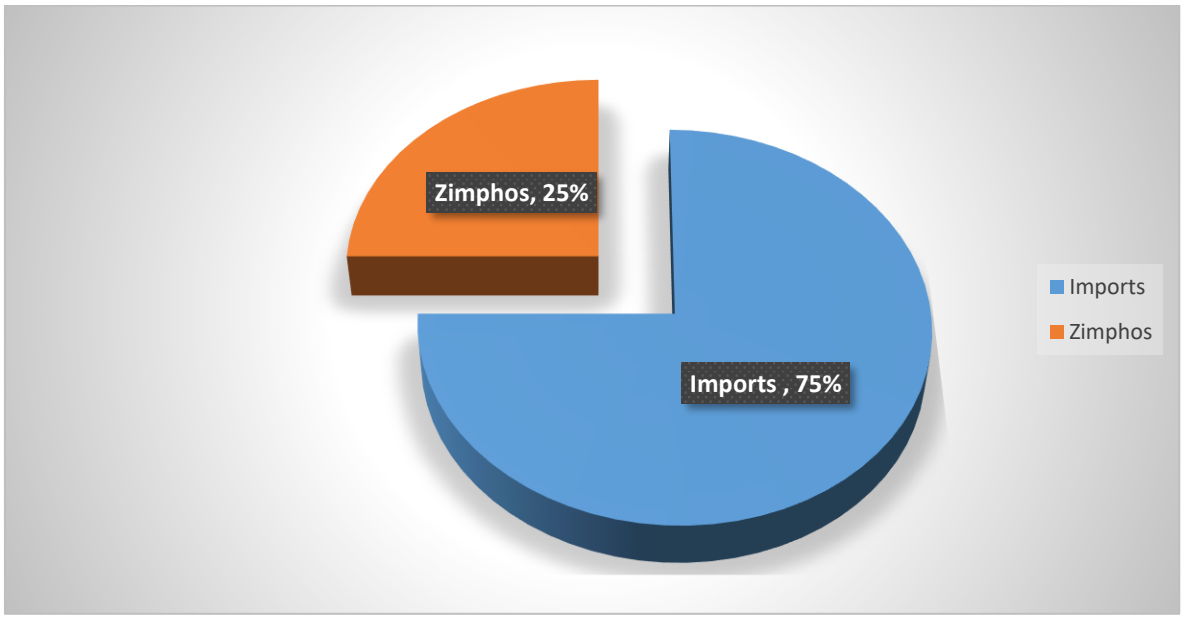
Source: ZimPhos

2.14 As shown in Figure 4 above, the company used to produce sulphuric acid in two separate plants, using imported sulphur and local pyrites (iron sulphide) from Iron Duke Mine, after closing in 2010. However, the recent acquisition of the mine by Ming Chang Sino Africa Mining Investments, is expected to resume the local supply of iron sulphide, thereby effectively reducing ZimPhos' production costs by 33%.

2.15 ZimPhos also used to produce Triple Super Phosphate (TSP) until 2010, when the phosphoric acid plant ceased to operate. TSP is a high analysis phosphate grade with 45% phosphate content. The local huge phosphate deposits provide a competitive advantage and opportunity for the production of TSP, which is currently in high demand.

2.16 ***On the contrary, the local fertilizer industry is not taking advantage of the huge phosphate deposits, hence continues to heavily rely on imported phosphates as shown in Figure 5 below:***

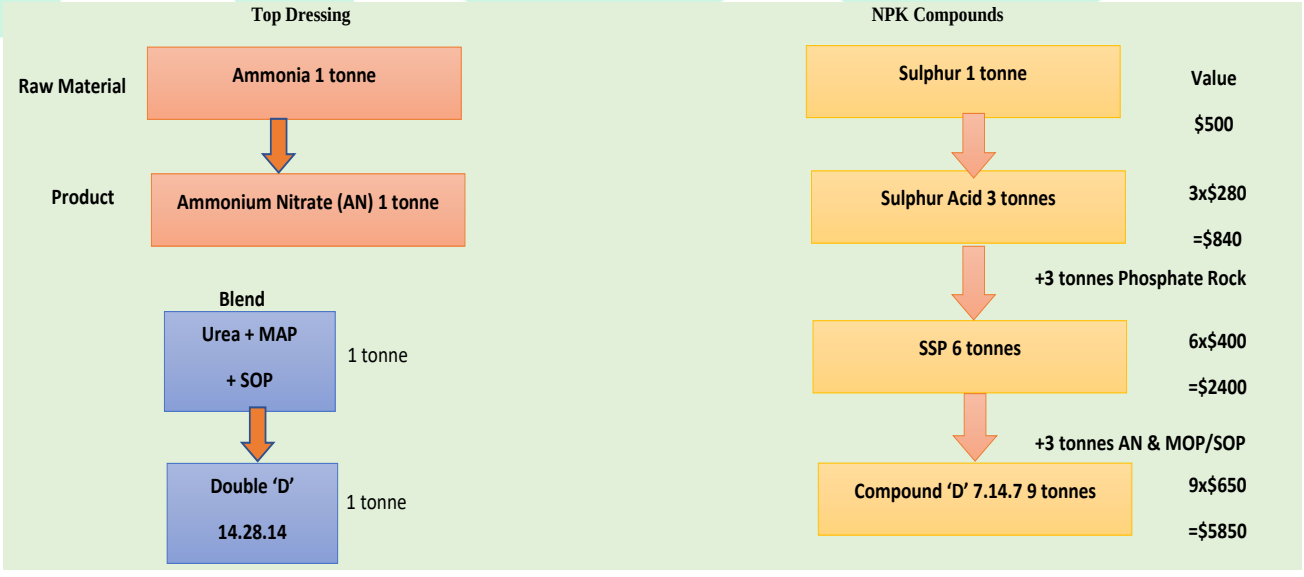
Figure 5: Share of Phosphates Produced Locally Against Imports, 2022



Source: ZFMA,

2.17 The sector can benefit from value addition of sulphur, and in the process achieving import substitution of finished compounds, thereby enhancing competitiveness of locally produced fertilizers, as indicated in Figure 6 below:

Figure 6: Benefits of Local Fertilizer Value Addition, 2022



Source: ZimPhos

Challenges

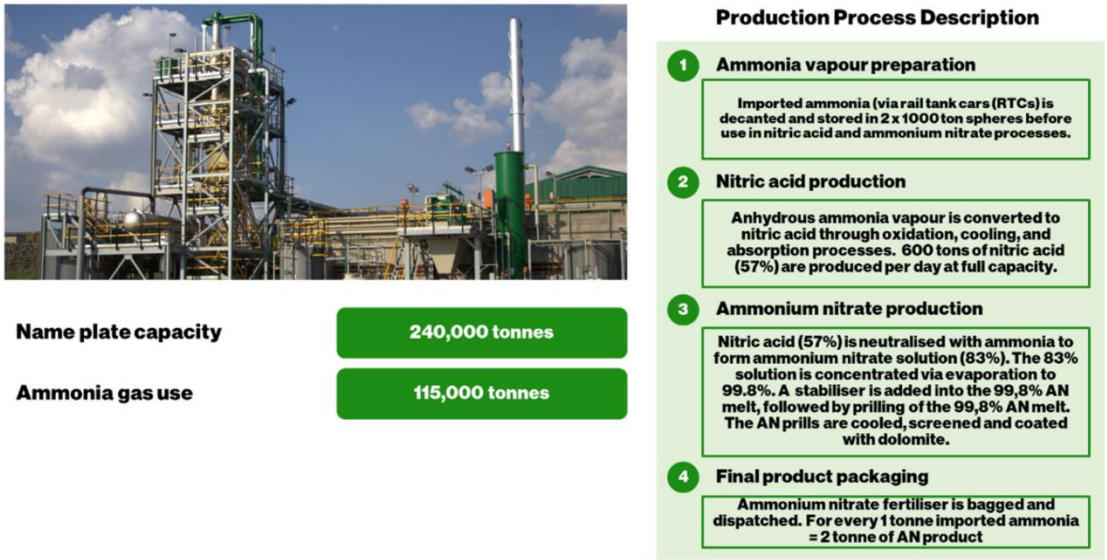
2.18 The company is experiencing funding challenges, where available it is short term and expensive, which is undermining capacity utilisation. This is compounded by an influx of cheap fertilizer imports.

2.19 In addition, lack of adequate financial resources by farmers indirectly affects ZimPhos, as secondary producers such as ZFC, Windmill, Omnia, among others, experience downturn in demand for local fertilizers.

Sable Chemical Industries

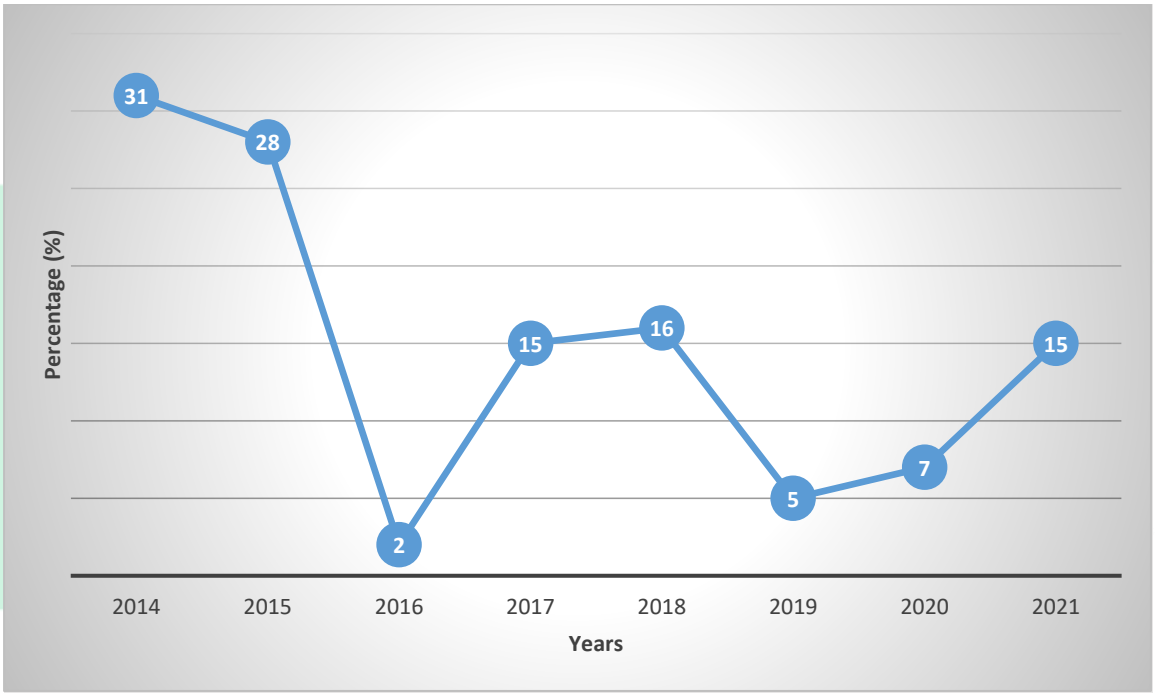
2.20 Sable Chemical Industries is the sole producer of AN, which is used as a top-dressing fertilizer, a raw material in the production of compound fertilizers and explosives for mining purposes. The company has installed capacity of 240 000 metric tonnes per year, against actual production of 36 000 tonnes during the 2020/21 season, and is expected to reach 200 000 tonnes in the 2022/23 agriculture season, against an estimated demand of 300,000 tonnes. Figure 7 below shows a brief process description of the production of AN fertilizer:

Figure 7: Brief Description of AN Production



2.21 Following the decommissioning of the electrolysis plant in 2015[5], the company is currently importing 32 500 tonnes of ammonia gas from South Africa duty free. Prior to this, Sable Chemicals relied on hydrogen and nitrogen generated from the electrolysis process, which enabled the company to meet 85% of the market demand and the balance being imported. Resultantly, the company's capacity utilization has been on a downward spiral, showing the impact of not having backward linkages in the value chain. Figure 9 below shows the company's capacity utilization trend from 2014 to 2021:

Figure 8: Sable Chemical Industries Capacity Utilization Trend, 2014 - 2021



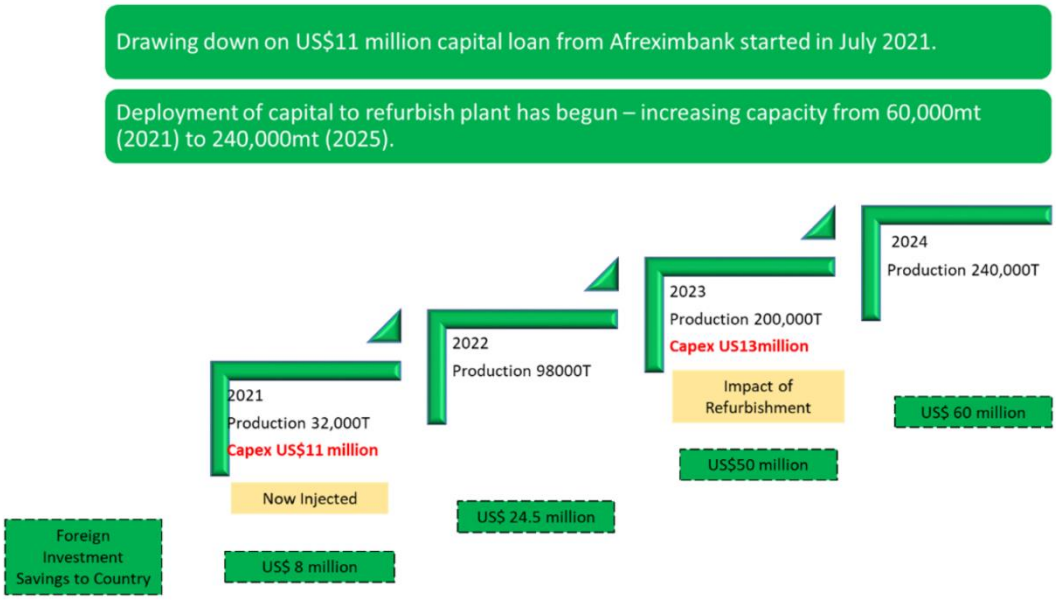
Source; Sable Chemical Industries

Recapitalization

2.22 On a positive note, the company indicated that it benefitted from a US$11 million Afreximbank loan facility, being utilized for refurbishment of the ammonia plant, as well as lease of 30 rail tankers from Zambia and procurement of new 33 ammonia rail tankers, used to transport ammonia gas from South Africa. Figure 9 shows Sable Chemical Industries recapitalization process up to 2024:

[5] Electrolysis technology was no longer viable as it consumed an average of 9 – 10% of power in the national grid, coupled with an 86.67% increase in the cost, from US$0.03 cents in 2009 to US$0.056c in 2015.

Figure 9: Sable Chemical Industries Import Substitution Roadmap, 2020 – 2024



2.23 The recapitalization process is expected to increase production to 300 000 tonnes within the next two years.

AN Cost Build Up

2.24 The imported ammonia gas is the major raw material in the production of AN as it constitutes 82% of the total cost as illustrated in Table 5:

Table 5: Ammonium Nitrate Cost Structure, 2022

Cost	Weighting (%)
Imported Ammonia	82%
Other Variable Costs	2.6%
Bagging Cost	2.0%
Depreciation	1.0%
Repairs & Maintenance	0.4%
Insurance	0.4%
Power	2.2%
Fuel	0.2%
Labour	3.8%
Water	0.9%
Admin Cost	1.0%
Interests	0.7%
Transport	0.1%
Other production O/H	2.7%

Source: Sable Chemical Industries

2.25 The discovery of gas in Muzarabani by Invictus Energy Limited, is expected to provide an opportunity for import substitution, thereby enhancing competitiveness of the fertilizer value chain.

Challenges

2.26 The company is accessing inadequate foreign currency of US$500 000/week on the auction market, translating to US$2 million per month, against monthly demand of US$3.5 million.

2.27 Furthermore, the multiplicity of regulations by different Government Agencies along the value chain, some of which, are duplicative as they relate to the manufacture and storage of hazardous substances, tend to impinge on productivity and competitiveness of the sector. Table 6 below shows Regulatory Costs impacting on Sable Chemical Industries:

Table 6: Regulatory Costs Impacting on Sable Chemical Industries, 2022

Description	Act	Annual Fee – US$
EMA	Environmental Management Act Chapter 20:27	24,879.84
NSSA	Factories & Works Act Chapter 14:08	7,500
	Pneumonoconiosis Act Chapter 15:08	2,750
	National Social Security Authority Act Chapter 17:04	WCIF - Payroll based
MCAZ	Medicines and Allied Substances Control Act (Chapter 15:03)	300
RPAZ	Radiation Protection Act 5 of 2004 (Chapter 15:15)	4,446.63
HPA	Health Professions Act (Chapter 27:19)	1,800.00

Source: Sable Chemical Industries

Cost Drivers Affecting the Primary Node

2.28 The primary node is often constrained by several challenges, most of which are detailed in Table 7 below:

Table 7: Summary of the Cost Drivers Affecting the Primary Production Node

Cost drivers	Challenges
Finance	• Prohibitive interest rates on borrowed funds, averaging 200% per annum; • Delays in payments to foreign suppliers due to long lag, averaging 6 weeks, in approval and disbursement of foreign currency on the auction market; • Inadequate allocation of foreign currency on the auction market; • High forex retention requirements by the RBZ of 40% and 20% on exports and domestic nostro revenue, respectively, thus crippling other industrial activities that require foreign

Cost drivers	Challenges
	currency such as importation of spare parts, raw materials, amongst others; • 3.75% royalties to Government and Rural District Councils are impeding firms' competitiveness; • Volatility in global prices of ammonia gas, sulphuric acid and regency used in the extraction of phosphate; and • Antiquated equipment that breaks down frequently and maintenance delays, disrupts production, resulting in high costs and uncompetitive final products.
Electricity	• High cost and frequent power supply disruptions, which impact on operations.
Price Distortions	• Primary fertilizer producers, supply fertilizer raw materials in local currency, whilst inputs and consumables, such as spare parts and fuel are priced either in foreign currency or in local currency indexed to parallel market rates.
Macroeconomic Stability	• Relatively high inflation, unpredictable cost of labour, overheads and administration costs, among others, thereby affecting long term planning.
Transport and Logistics	• NRZ inefficiencies due to use of antiquated equipment & rail networks and shortages of locomotives; and • Loading delays of ammonia in transit country due to prioritization of their respective local industry.
Border Processes	• Delays due to Consignment Based Conformity Assessment (CBCA) on the importation of fertilizer inputs, is negatively affecting competitiveness; and • High cost of CBCA of 0.5% of invoice value to a maximum of US$2 675 per consignment is also an additional operating cost, which undermines industry competitiveness.

2.29 Major cost drivers in the primary node include raw materials and electricity, among others. These cost drivers have a knock-on effect on productivity and competitiveness of the subsequent nodes in the value chain.

Secondary Producers Node

2.30 The secondary node comprises of players that specialise in granulation[6] and blending[7] to produce liquid[8] and compound fertilizers. Table 8 below shows some of the fertilizer producing companies and their respective production processes in the node:

Table 8: Secondary Fertilizer Producing Companies, 2022

Company	Products			Granulation	Blending	Marketing
ZFC	Basal NPK	Top Dressing	Crop Chemicals	Yes	Yes	Yes
FSG	Basal NPK	Top Dressing		Yes	Yes	Yes
Windmill	Basal NPK	Top Dressing	Crop Chemicals	Yes	Yes	Yes
Omnia	Basal NPK	Top Dressing		No	Yes	Yes
ETG	Basal NPK	Top Dressing		No	Yes	Yes
Grow Agriculture	Basal NPK	Top Dressing		No	Yes	Yes
FertMap	Basal NPK	Top Dressing		No	Yes	Yes
NuFert	Basal NPK	Top Dressing		No	Yes	Yes
Damara	Basal NPK	Top Dressing		No	Yes	Yes
Orgfert	Basal NPK	Top Dressing		Yes	Yes	Yes
ZimPhos	Basal NPK	Top Dressing		Yes	Yes	Yes
Nutrimaster	Basal NPK	Top Dressing		No	Yes	Yes

Source: *ZFMA*

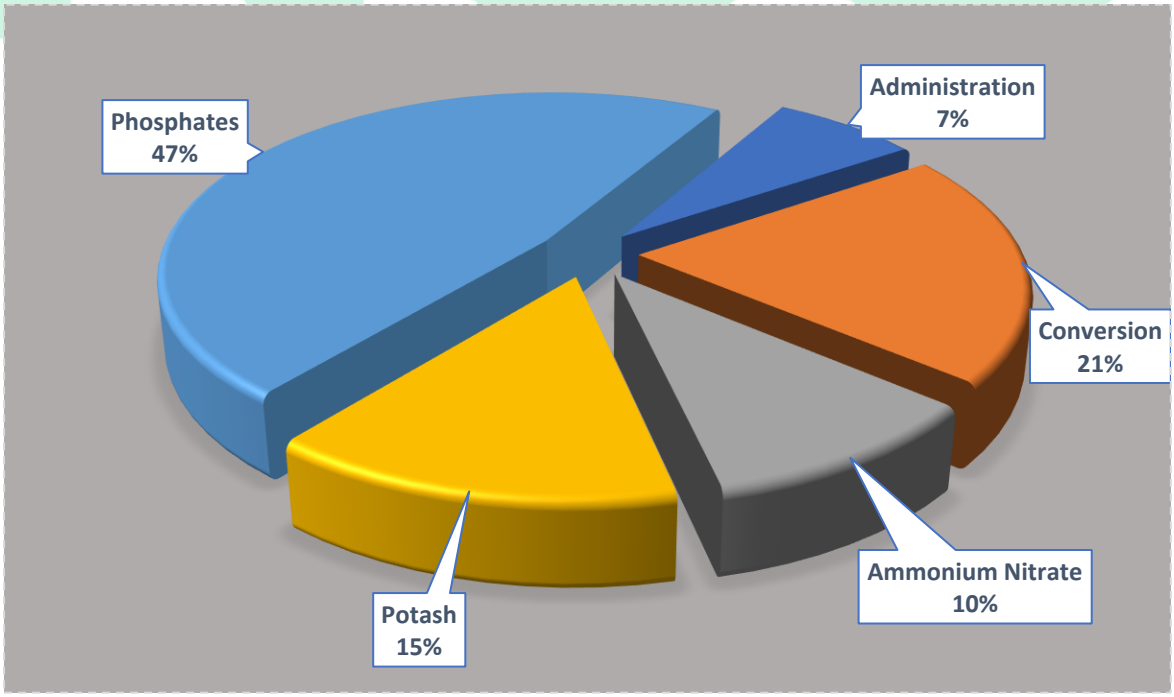
[6] The bonding or agglomeration of all nutrients in the granular drum to form compound fertilizer granules (balls).

[7] Blending mixes NPK granules into a multi-nutrient fertilizer in a blender and the different components are visible in the packed bag

[8] Liquid fertilisers uptake though still very low, are gaining popularity, due to their advantage over solid fertilisers.

2.31 There has been a significant increase in the number of fertilizer blending facilities in Zimbabwe due to the low cost of the blending technology, as well as the increased market demand of high analysis blends. In some countries with large commercial farmers like Brazil, blending is done at the farm level.

Figure 10: Compound Fertilizer Cost Structure, 2022



Source: ZFC

Cost Drivers Affecting the Secondary Production Node

2.32 Table 9 below gives a summary of the cost drivers and challenges affecting the secondary production node of the value chain:

Table 9: Summary of Cost Drivers Affecting Secondary Production Node, 2022

Cost drivers	Challenges
Price Volatility	• Unpredictable local and international prices of raw materials (Superphosphate Granular Zinc, Granular Single Super Phosphate (GSSP), Potassium Nitrate, Green-Sulphur, Tiger 90 (90% Sulphur), Granular and Ulexite (10% Boron); and • Escalating labour, maintenance and administration costs.
Electricity	• High cost and unreliable power supply, which disrupts operations.
Logistics	• Global supply disruptions for raw materials due to Russia invasion of Ukraine and outbreak of Covid 19 pandemic.
Finance	• Delays in disbursements of allocated foreign currency on the auction market; • High costs of borrowing, which is about 200%, coupled with very short-term loans, with average tenure of 1 year; and • Delayed Payments by Government - The biggest customer for the fertilizer products is the Government, which in most cases delays payments for the fertilizer supplied.
Compliance Costs	• Cumbersome regulations such as CBCA, licences, EMA, NSSA, City Council and Radiation Authority Licenses *(see table 10)*.

2.33 In addition, the industry's productivity and competitiveness is affected by various regulations. Table 10 below outlines some of the regulations weighing on the industry's operations:

Table 10: Regulatory Costs Affecting Secondary Node, 2022

Description	Annual Fee – US$
EMA	4 000.00 + 1667 per outlet
NSSA	3000
MCAZ	41 500 ZWL *(fees in ZWL only)*
RPAZ	3 000.00
Local Council Authority	1000
HPA	1 800.00
FFRI License	USD200 per outlet

Source: ZFC Limited

2.34 The identified cost drivers need to be addressed to enhance productivity and competitiveness of the local fertilizer industry as they adversely impact on final price of the product.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Retail and Distribution Node

2.35 The retail and distribution node plays an intermediary role of connecting the fertilizer producers to the end users. The node is comprised of secondary producers, who directly distribute their products or use established outlets, retailers and distribution agencies. Players in the retail node usually have established distribution contracts with secondary producers. Table 11 below gives a summary of challenges impacting on the retail and distribution node:

Table 11: Summary of Challenges in the Retail and Distribution Node

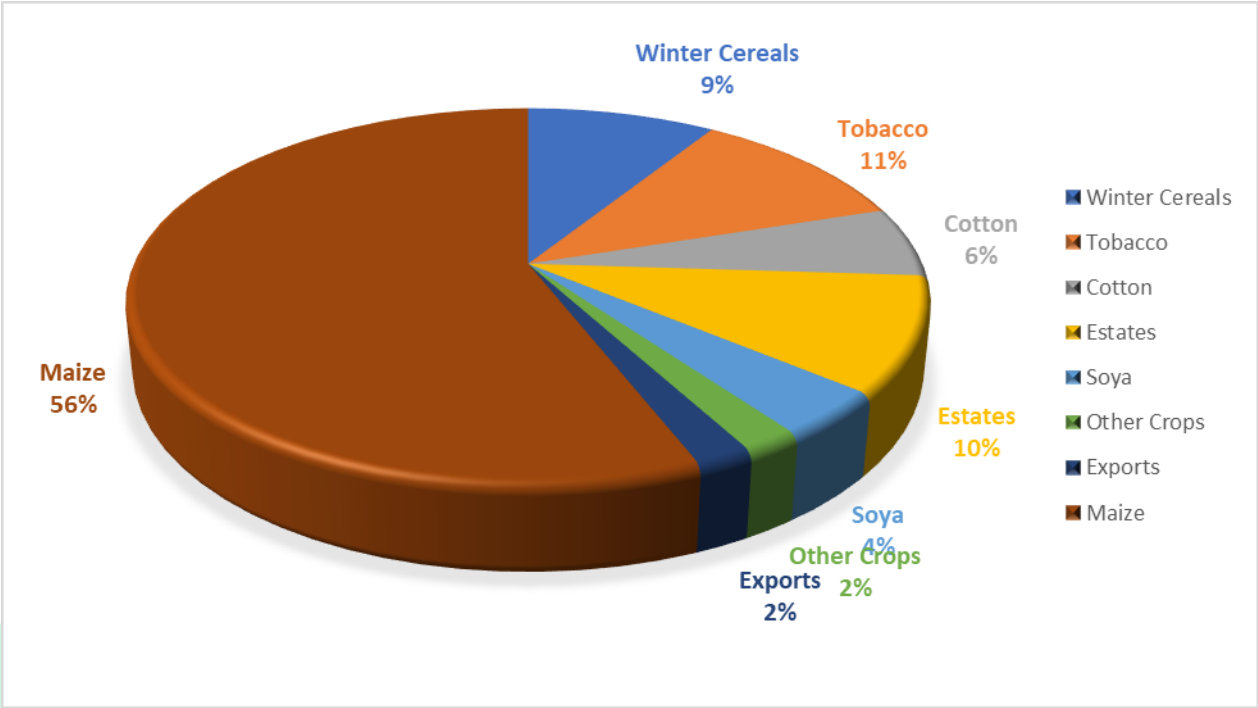
Issue	Challenges
Transport & Logistics Costs	• High and unpredictable fuel cost
Compliance Costs	• Punitive licence fees such as EMA per distribution shop, hinders efforts to have wide distribution networks throughout the country, thereby undermining the convenience for farmers.
Macroeconomic Instability	• Escalating overheads, labour and administration costs
Funding	• Limited and high cost of funding facilities to finance stocking in the distribution network.

Source: Farm and City

The End User`s Node

2.36 The End User`s node consists of mainly farmers who use fertilizers. Fertilizer consumption in the agriculture sector is mainly seasonal, as it follows the cropping cycle. In terms of crop fertilizer consumption, most is used locally with a mere 2% being exported. Figure 11 below shows fertilizer usage by crop for 2021:

Figure 11: Fertilizer Consumption by Crop, 2021

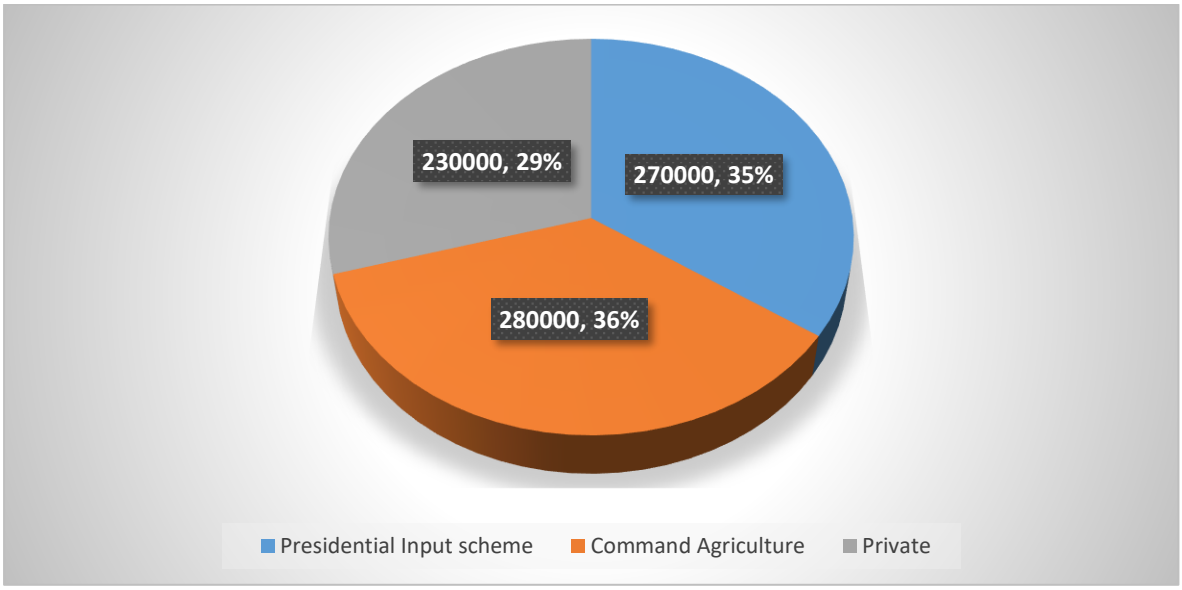


Source: ZFMA

2.37 Whereas maize is the staple food and is currently the leading crop in terms of fertilizer use, the ratio may shift mainly due to changing market dynamics and increase in the growing of cash crops.

2.38 It is worth noting that Government schemes such as Command Agriculture, Presidential Input Scheme, Agricultural Finance Corporation (AFC) scheme and CBZ Agro-yield constitute 71% of the fertilizer demand and 29% is from private businesses as shown in Figure 12 below:

Figure 12: Zimbabwe Fertilizer Demand by Scheme, 2022

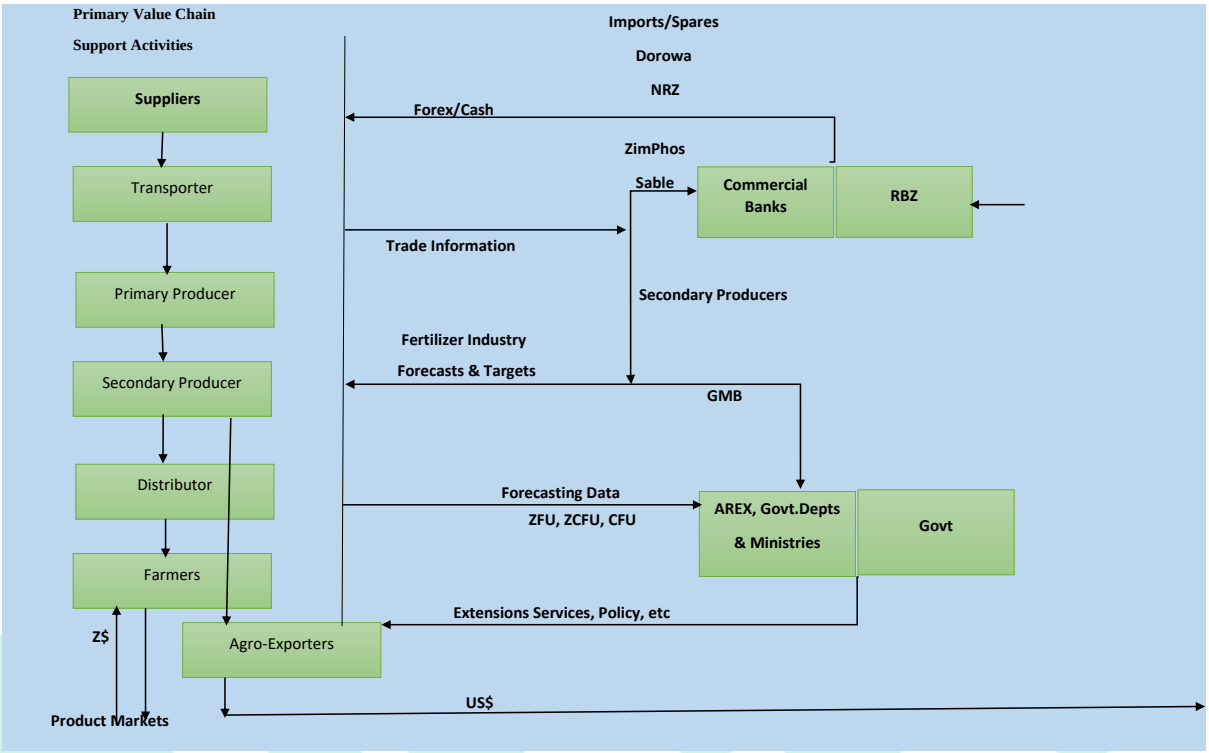


Source: ZFMA

Zimbabwe Extended Fertilizer Value Chain

2.39 Players in various nodes of the fertilizer value chain are strongly intertwined as shown in Figure 13 below, such that any challenge faced by each node has a domino effect, thereby affecting the availability and affordability of fertilizer, which impedes the industry's competitiveness:

2.40 **Figure 13: Fertilizer Value Chain Intertwined Relationship**



Source: ZFMA

Fertilizer Value Chain SWOT Analysis

2.41 As outlined in the preceding sections, the local industry is saddled with a plethora of cost drivers that are thwarting productivity and competitiveness of the value chain. This is further exacerbated by weaknesses that are inherent in the industry as detailed in the SWOT analysis below.

2.42 Notwithstanding, the weaknesses and threats in value chain, some strengths and opportunities also exist in the sub-sector, as indicated in Table 12:

Table 12: SWOT Analysis for the Fertilizer Industry

Strengths	Weaknesses
• Highly skilled labour; Established and reliable supply contracts with suppliers of raw materials; • Strong social contract with communities; • Established distribution network; and • Membership to IFA.	• Outdated technology; • Shortage of working capital; • Dilapidated infrastructure; • Lack of alternative sources of power; • High cost of production; • Lack of autonomous in ZFMA; and • lack of market information.
Opportunities	**Threat**
• Availability of abundant phosphate, coal bed methane and natural gas deposits, which provides the impetus for increased production of phosphates including high analysis phosphate and nitrogenous fertilizers; • The AfCFTA provides an opportunity to export fertilizer to a bigger market if production efficiencies improve; • A huge domestic fertilizer market for which supply is currently complemented by imports; • Availability of fiscal incentives on importation of plant, equipment, and raw materials; and • Investment and rehabilitation in irrigation infrastructure.	• Increased global demand for organic products produced without the use of chemicals and fertilizers; • Adverse global developments in raw material source markets (Russia-Ukraine War, Covid 19 pandemic amongst others); • Advent of the AfCFTA may open floodgates of cheap fertilizer imports that have potential to harm the domestic industry; • Negative effect of sanctions on country risk profile; • Climate change induced droughts affecting fertilizer usage; • Prohibitive interest rates on borrowed funds averaging 200% per annum; • Delay in payments to foreign suppliers due to huge lag in disbursement of allocated foreign currency averaging 6 weeks; • Inadequate allocation of foreign currency on auction system; • Foreign exchange rate volatility, which is inducing price distortions; • 40% forex retention requirement by the RBZ on exports revenue; • Delayed payment of consignments by central Government;

Strengths	Weaknesses
	• Policy inconsistencies; • Weak and ineffective regulatory frameworks/ systems; • Unfair competition from imported products; • Highly inadequate and erratic supply of key economic enablers namely electricity, fuel, coal, rail, and water; • Relatively high and unpredictable cost of labour, overheads, and administration cost; • Inefficiencies in transport and logistics enablers; and • Cumbersome State regulations such as CBCA, licences, EMA, NSSA, City Council and Radiation Authority Licenses.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3.0 GLOBAL FERTILIZER INDUSTRY OVERVIEW

3.1. The global fertilizer industry is dominated by countries that are richly endowed with natural deposits of phosphate, potash and gas and/or coal, namely China, India, Canada, Russia, Belarus and USA, among other key producers. Despite the endowments, fertilizer production is also influenced by factors such as technical capacity, transnational regulations, environmental constraints and pandemics that hinder productivity, competitiveness and marketing of fertilizer. For instance, the COVID 19 pandemic affected phosphate production in China, which declined by approximately 25%.

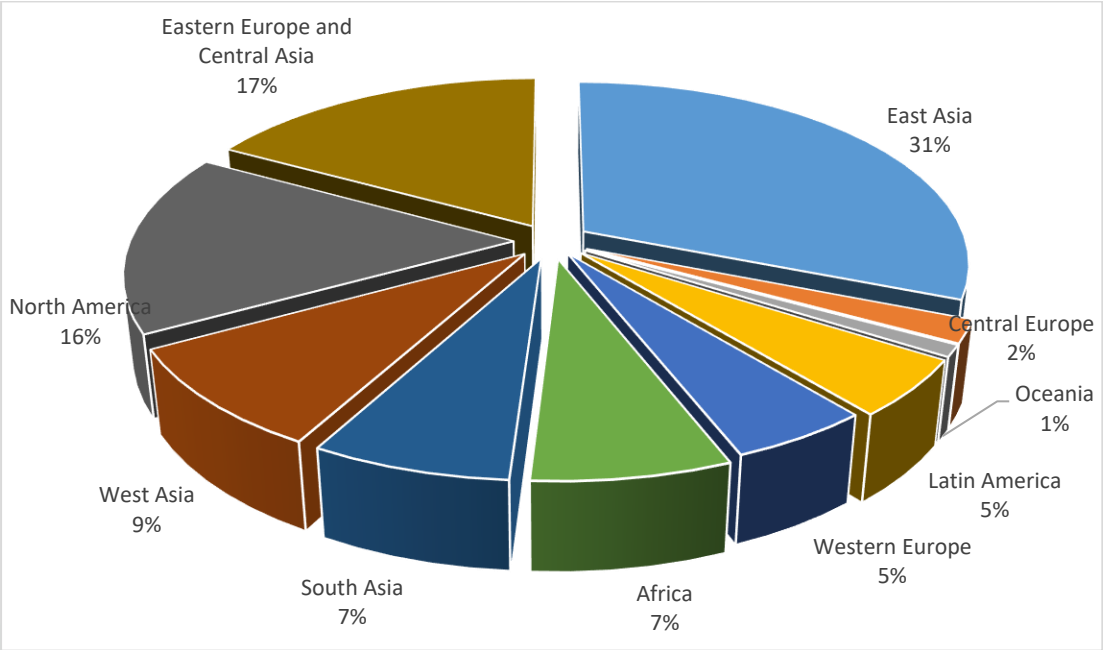
3.2. The global fertilizer industry is largely influenced by the International Fertilizer Association (IFA)[9], as it promotes the efficient and responsible, distribution and use of plant nutrients. In Zimbabwe, producers such as ZFC Limited, Windmill, Omnia and ETG are members of IFA.

Global Fertilizer Production

3.3. Production of NPK is mainly concentrated in East & Central Asia, Eastern Europe and North America. Figure 14 shows the share of fertilizer production by region.

[9]IFA is an international body that has membership of about 400 entities, encompassing all actors in the fertilizer value chain from producers through traders and distributors, as well as service providers, ag-tech start-ups, advisors, research organizations and Non-Governmental Organisations (NGOs).

Figure 14: Fertilizer Production by Region, 2022



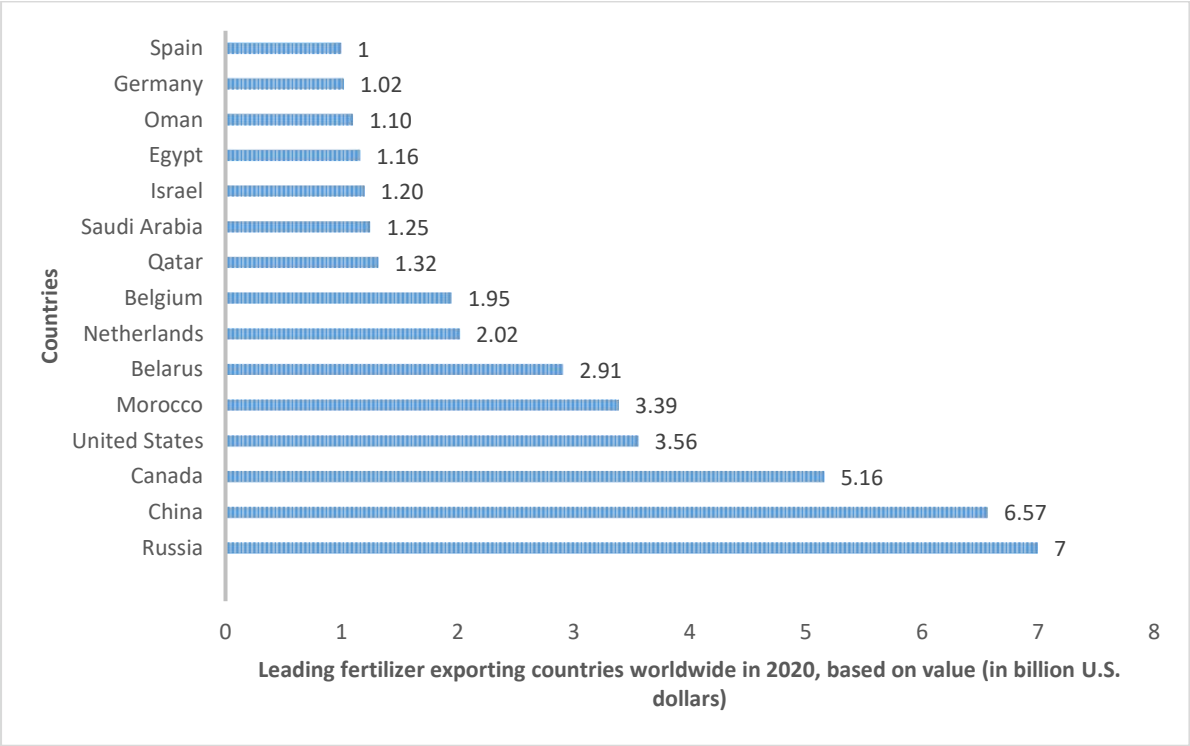
Source: Statistica

3.4. Africa's contribution to the global fertilizer industry is estimated at 7%, largely driven by huge phosphates and nitrogenous fertilizer production in Morocco, Egypt, Algeria, Nigeria, Mali, Libya, Senegal and Zimbabwe.

Fertilizer Trade

3.5. In 2020, Russia was the main exporter of agricultural fertilizers worldwide, with an export value of approximately US$7 billion while China and Canada accounted for US$6.6 and US$5.2 billion, respectively. Figure 15 shows fertilizer export value for major exporting countries.

Figure 15: Top Fertilizer Exporters by Value, 2020



Source: Statista

Global Dynamics in the Fertilizer Industry

Nitrogenous Fertilizer Production

> *Ammonia prices skyrocketed in 2021, reaching a record high of US$746 from US$487 per tonne in 2020 across the globe.*

3.6. Natural gas and coal are the primary inputs used to produce two nitrogen-based fertilizers, which are ammonia and urea, constituting 72 – 85% of nitrogenous fertilizer production costs. The dominant producer of nitrogenous fertilizer is China, which produces

approximately 30% of the world top dressing fertilizer by extracting ammonia from coal. Table 13 below shows the relative production share of top nitrogenous fertilizers producers:

Table 13: World's Top Nitrogen Producers, 2019

Ranking	Country	2019 Nitrogen Production [metric tonnes]	Share (%)
1	China	36,957,467.98	29.87
2	India	13,794,727.06	11.15
3	United States	11,327,557.47	9.16
4	Russia	10,368,944.16	8.38
5	Canada	3,948,980.00	3.19
9	Egypt	2,606,625.00	2.11
16	Algeria	1,198,086.00	0.97
20	Morocco	982,113.70	0.79
30	Nigeria	631,518.30	0.51
52	South Africa	163,323.00	0.13
70	Senegal	24,585.40	0.02
73	Zimbabwe	11,200.00	0.01
	Other countries	41,713,241.29	33.71
	Total world production	**123,728,369.36**	**100**

Source: Statistica

Ammonia Market Volatility

3.7. The ammonia market has experienced supply disruptions, which are drastically changing global trade flows. Ammonia and nitrogen prices have been particularly robust, with increases partly driven by rising production costs related to tight gas markets in Europe.

3.8. Ammonia prices skyrocketed in 2021, reaching record-highs of US$746 from US$487 per tonne in 2020 across the globe. Whilst ammonia prices were already trading at record-high before the Russia-Ukraine conflict, this exacerbated volatility

of the ammonia market. Consequently, there is a general shift from contracts and formula agreements to spot trading, which is growing in relevance, particularly in these periods of volatility.

3.9. The Russia-Ukraine conflict has also affected movement of nitrogenous fertilizer. Russian urea deliveries to Baltic and Black Sea ports for export remain heavily curtailed following the conflict in March 2022. Urea deliveries from Russian plants to ports fell by 25% from 624 000 tonnes to 458 000 tonnes in March 2022 compared to the corresponding period of the previous year. Ongoing logistical challenges and payment issues amid sanctions, as well as buyers' reluctance to deal with Russian material, are still affecting trade. Russian urea transit through the Baltic states ground to a halt in April 2022 with suppliers forced to divert more tonnage to Russian ports amid sanctions. These developments have a negative impact on the global fertilizer prices.

Potash Production

3.10. Canada is the world's leading potash manufacturer, producing 31% of the world output, mainly on account of huge deposits estimated at 4.5 billion tonnes. Russia, Belarus and China are also other major producers of potash. The global production of potash fertilizers in 2021 is estimated at 45.06 million metric tonnes. Table 14 below shows the relative share of potash produced by each country.

Table 14: Potash Producing Countries, 2021

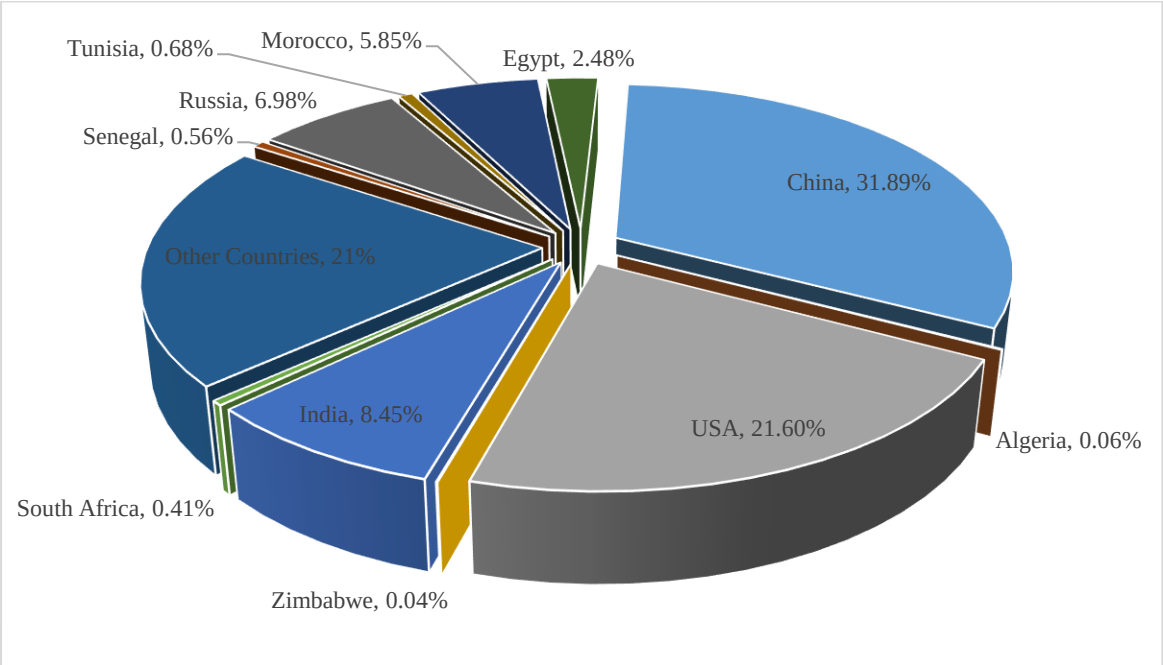
Ranking	Country	2021 Potash Production [metric tonnes]	% Share
1	Canada	14 million	31%
2	Russia	9 million	20%
3	Belarus	8 million	18%
4	China	6 million	13%
5	Germany	2.3 million	5%
5	Israel	2,3 million	5%
7	Jordan	1.6 million	4%
8	Chile	0.9 million	2%
9	USA	0.48 million	1%
10	Spain	0.4 million	1%
	Total world production	**45.06 million**	**100%**

Source: United States Geological Survey

Phosphate Production

3.11. It is worth noting that China produces 31.89% of the world's phosphate fertilizer, India 8.45%, while Russia accounts for 6.98% and Morocco 5.85%. Figure 16 below illustrates the relative share of phosphate fertilizer production by country:

Figure 16: Phosphate Fertilizer Production by Country, 2018



Source: World Bank

3.12. Notwithstanding the above illustrated contributions, global phosphate production tends to shift, depending on technology dynamics and investment in plant and equipment. A case in point is the establishment of a new phosphate fertilizer manufacturing plant in Brazil by OCP Group of Morocco.

Phosphates Supply Outlook

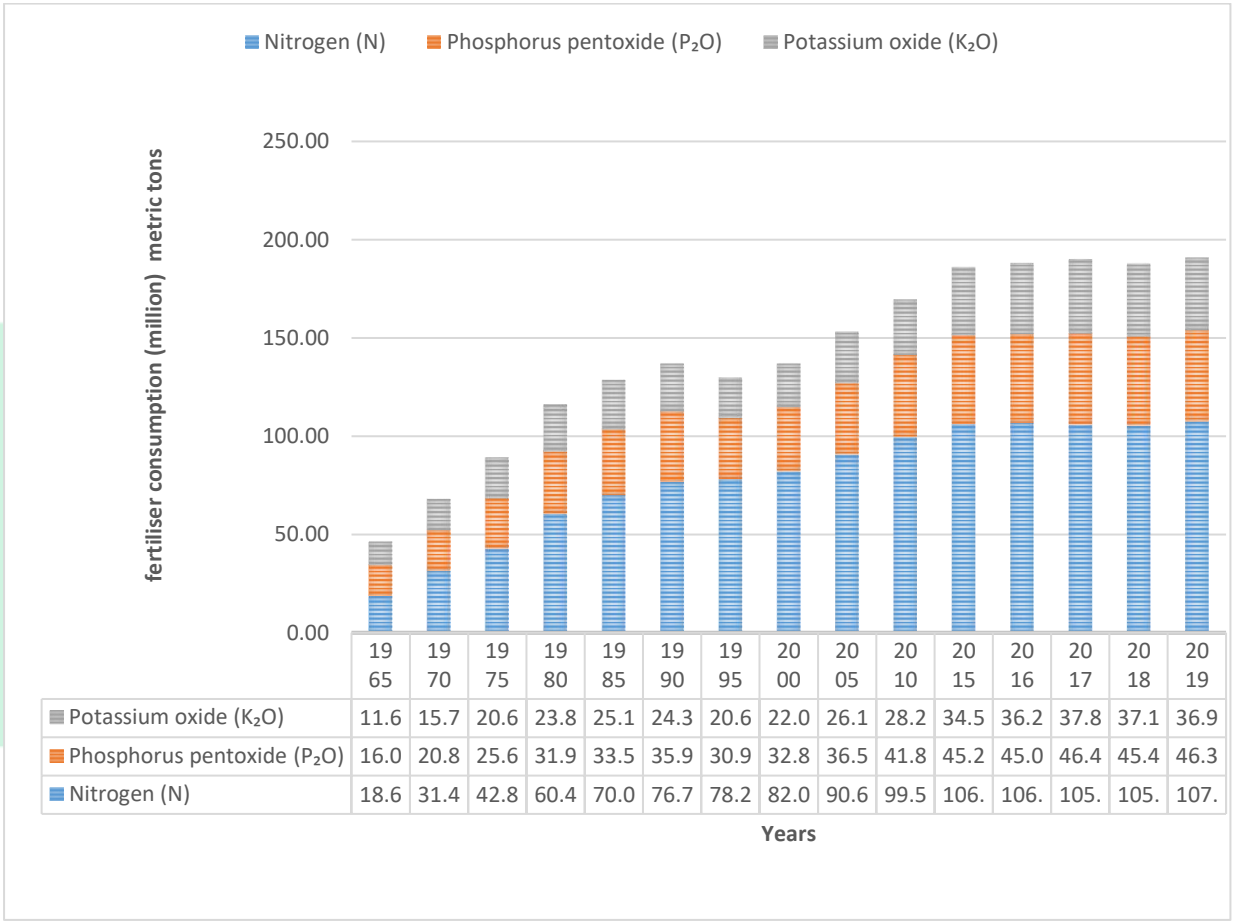
3.13. The world of phosphates has turned into a tale of two markets, Di-Ammonium Phosphate (DAP) and Mono-Ammonium Phosphate (MAP). In the MAP market, the initial flurry of trade after the start of the Russia-Ukraine conflict brought price shocks, with buyers backing away. However, prices are stabilizing in key importing markets such as Latin America. This is attributed to the return of China on the export market at increased volumes.

3.14. With ammonia supply constraints, it is anticipated that flexible phosphate producers are likely to prioritize MAP production over DAP. Thus, there is a likelihood that MAP will be more widely available seasonally than DAP.

Global Fertilizer Consumption

3.15. The world has experienced a general upward trend in fertilizer consumption[10] over the period 1965 to 2019. Figure 17 shows trends in global fertilizer consumption:

Figure 17: Global Fertilizer Consumption by Nutrient, 1965 - 2019



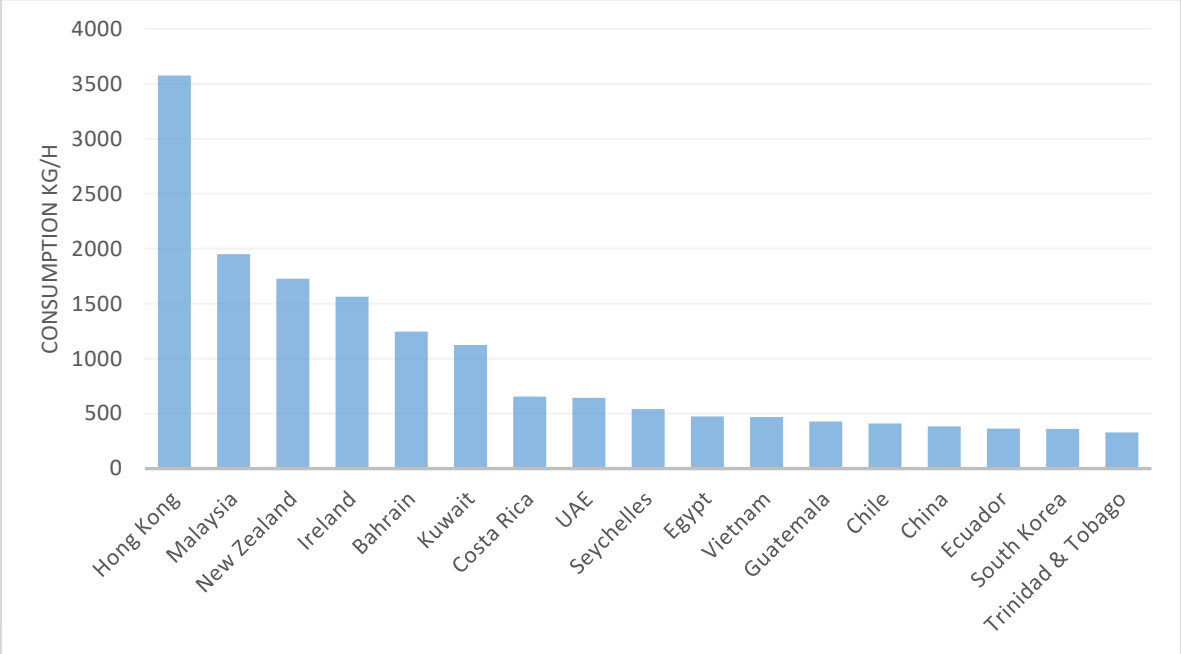
	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019
Potassium oxide (K_2O)	11.6	15.7	20.6	23.8	25.1	24.3	20.6	22.0	26.1	28.2	34.5	36.2	37.8	37.1	36.9
Phosphorus pentoxide (P_2O)	16.0	20.8	25.6	31.9	33.5	35.9	30.9	32.8	36.5	41.8	45.2	45.0	46.4	45.4	46.3
Nitrogen (N)	18.6	31.4	42.8	60.4	70.0	76.7	78.2	82.0	90.6	99.5	106.	106.	105.	105.	107.

Source: Statistica

3.16. The observed increase in global fertilizer consumption is mainly driven by countries such as Hong Kong, Indonesia, India, Brazil, Malaysia, Bahrain, Kuwait, UAE and China, among others. This is attributed to increased global application of fertilizer per hectare, increased hectarage of agriculture land and use of fertilizer subsidies to enhance food nutrition & security. Figure 18 below shows the world's top consumers of fertilizer.

[10] Fertilizer consumption measures the quantity of plant nutrients used per unit of arable land and is largely influenced by the world's production capacity, household incomes, prices, changes in climatic conditions, pandemics and related shocks such as geopolitical instability that disrupt global value chains.

Figure 18: World's Top Consumers of Fertilizer per Hectare, 2020



Source: World Bank

Case Studies of Fertilizer Producing Countries

3.17. The production, consumption and export of fertilizer varies from country to country as determined by the prevailing policy landscape. It is, therefore, important to analyse the nature and characteristics of the fertilizer industry from country to country to explore best practices both in terms of production strategies and the policy environment.

3.18. The following table provides a brief overview of the fertilizer industry for selected fertilizer producing countries:

Figure 19: Overview of the Fertilizer Industry by Country, 2022

Country	Overview
India	• Achieved 80% self-sufficiency in production capacity of Urea; • Similarly, 50% indigenous capacity has been developed in respect of phosphatic fertilizers to meet domestic requirements; • Phosphates, potash and intermediates are imported; and • Nutrient Based Subsidy of US$200 million and Urea subsidy of US$692 million.
South Africa	• The industry has about 41 fertilizer and compounds manufacturing companies, major players include Sasol, Foskor and Omnia; • Industry operates in a deregulated environment with no import tariffs or Government sponsored support measures; • Fertilizer consumption represents about 0.5% of the total global consumption, and as such, the local fertilizer industry is a price taker; • Maize accounts for 41% of total fertilizer application, sugarcane at 18% and horticultural and fruit crops 20% of fertilizer consumption; and • Imports 100% potash and 60% - 70% of nitrogen requirements.
Morocco	• Possesses over 70% of the world's phosphate rock reserves; • Has a production capacity of 40.7 million tonnes per annum, of which 25% is exported; and • Phosphate extraction and fertilizer production are highly energy and water-intensive, consuming about 7% of annual energy output and 1% of water.
Egypt	• Production is estimated at 22 million tonnes per annum; • Consumes an average of 45% of fertilizer produced and exports more than 50%; • Producers of the subsidized nitrogen fertilizers receive US$132.4 million in support from the Government and are partially State-owned enterprises; and • An estimated 25 – 30% of the subsidized fertilizer is provided to cooperatives.
China	• Dominant producer and self-sufficient in both nitrogen (produced from coal) and phosphate fertilizers contributing 31% of the global output; • Imports potash, though it has rapidly been developing its potash resources in the last decade to reduce import dependence; • Exports are estimated at US$7 billion annually; and • Industry benefits from incentives such as production and purchase subsidies, among others.

Country	Overview
Kenya	• Produces 10 000 metric tonnes of SSP, which is 10% of the country's demand for fertilizer; and • Sector is regulated by Fertilizer and Animal Foodstuffs and Standards Acts, enforced by the Kenya Bureau of Standards and the Kenya Plant Health Inspectorate Service.
Canada	• Produces 20.9 million metric tonnes of potash per annum, of which 95% is exported to more than 70 countries; • Has an efficient and reliable rail transport system which transport 75% of fertilizer; • Industry has higher compliance costs estimated at CAD5 billion per annum; and • Industry supports comprehensive trade agreements with the core elements of industrial goods, agriculture, rules on intellectual property, rules of origin, technical barriers to trade, labor, investment, and environment.
Brazil	• Imports 40% of fertilizer needs from Russia and Belarus; and • Rising prices continue to dampen import demand, hence the country launched a National Fertilizer Plan[11], with a view to cut fertilizer imports from 85% to 45% of national requirements by 2050.
Belarus	• Belarus' potash industry has been sanctioned by both the US and the EU, limiting the producer to other markets; • A bigger concern is that Belarus cannot export MOP through Lithuania or Ukraine and instead relies on Russian port capacity; and • There is no single port with spare capacity available to handle 11 million tonnes per year that is typically exported through Klaipeda, meaning exports could fall by half or more in 2022.
Russia	• The Russian-Ukraine war substantially elevated the risk of disruptions in the global fertilizer trade; • Unlike Belarus, Russian producers have been hit more by buyer sentiment than by direct sanctions. Buyers in the US and the EU are avoiding Russian products, while buyers elsewhere have to overcome payment and shipping issues to source from Russia; and

[11] The plan includes incentives to increase the use of organic fertilizers, financial investments in research and visits to producers across the country by the Brazilian Agricultural Research Company (Embrapa) to promote the increased efficiency in the use of fertilizers and inputs in the field.

Country	Overview
	• Ship owners willing to load Russian product are charging at least a US$60 per tonne premium and the bulk freight market otherwise looks tight, adding further fuel to high prices.
Nigeria	• One of Africa's largest Granulated Urea Fertilizer producer and exports to USA, India, Brazil, Mexico and Argentina; • Sector is private sector driven, and is supported by the Government in several areas, such as procurement of imported raw materials; • Industry benefits from a centralized importation of raw materials through the Nigerian Sovereign Investment Authority (NSIA), which uses ring fenced excess oil revenue. This ensures bulky purchasing for all producers, which effectively reduces logistical bottlenecks & the cost of inputs, as well as ensure that fertilizer producers obtain inputs at the same cost and foreign currency requirements are guaranteed; and • Duty free importation of raw materials, capital equipment and such raw materials imported under duty concession are not allowed to be re-exported. • Importation of finished fertilizer products is restricted, although there are no restrictions on exports of NPK and Urea fertilizers.

Source: NCC Compilation

4.0 OVERALL FINDINGS

4.1 The fertilizer value chain competitiveness analysis revealed that the competitiveness of the sector is undermined by the prevailing macroeconomic conditions, exogenous factors, as well as company specific strategies that impinge on efficiency. The country is richly endowed with coal and phosphate deposits, which could otherwise make the value chain efficient and competitive, thereby reducing the huge fertilizer import bill.

4.2 Despite the abundant phosphate deposits in Zimbabwe, commendable basal fertilizer manufacturing capacity and high demand for the product, the value chain's competitiveness has gradually deteriorated over the years. Zimbabwe is a net importer of phosphate fertilizer, a product which the country could be exporting. Below are major productivity and competitiveness gaps identified based on stakeholder engagements and benchmarking analysis of the value chain.

International Factors

4.3 Prior to the geopolitical instability in Ukraine, the global fertilizer market was already under pressure, as nitrogen-based fertilizers prices soared in 2021 due to the effects of Covid 19 pandemic and sanctions imposed on the top world fertilizer producers, Russia and Belarus. The prices have since more than doubled due to the Russia/Ukraine war. These developments had a negative impact on the global supply chain of major raw materials such ammonia gas and potash.

Domestic Factors

4.4 Fertilizer consumption in Zimbabwe, has significantly increased by 30.5% from 25.5 kg/ha in 2015 to 33.2kg/ha in 2020, benefitting from Government input schemes such as Command Agriculture, Presidential Input Scheme, among others. This is a significant milestone towards the Abuja target of 50kgs/ha. Despite an increase in fertilizer hectarage usage, Zimbabwe is still using AN as the major top-dressing fertilizer, whilst other countries are gradually phasing it out on account of associated security risks, due to its high explosive nature.

4.5 The local fertilizer sector's productivity and competitiveness is also being affected by the following factors, among others:

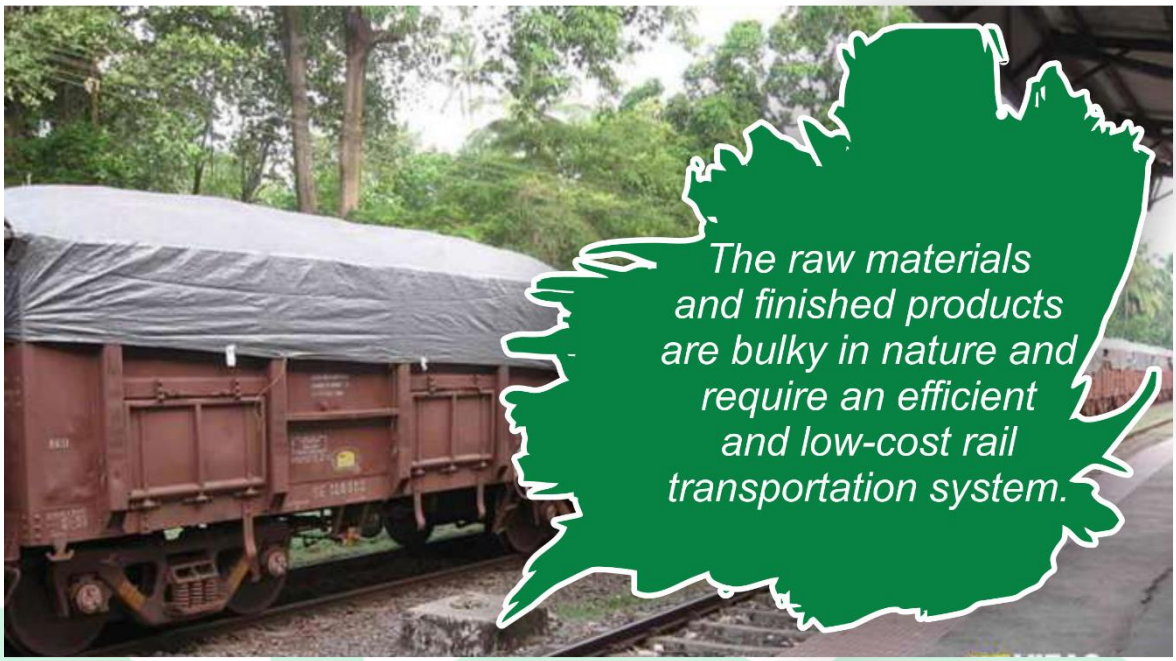
Macroeconomic environment

4.6 Macroeconomic stability is one of the key determinants of productivity, competitiveness and business growth. A stable economy allows business to grow and fosters a competitive environment. The fertilizer value chain has been affected by macroeconomic challenges, characterised by high inflation (268.8% as at October 2022), foreign currency shortages and delays in forex disbursement lagging by an average of 6 weeks, high costs of borrowing averaging 200%, which limit access to working capital, as well as long term financing for retooling. To curb exchange rate disparities, Government introduced measures such as Gold Coins and non-payment of inflated values to contractors, among others. These measures has seen the arbitrage gap reducing from an average of more than 100% to approximately 27%, with rates at US$1:ZWL$629.52 on Auction and US$1:ZWL$800 on parallel market, respectively, as of mid-October 2022.

Production Infrastructure

4.7 The physical state and level of technology determines the level of production efficiency at which the firm converts throughput into outputs. The industry is mostly characterised by antiquated machinery, which has not been refurbished for almost 5 decades, resulting in frequent breakdowns that disrupt the sector's productivity and competitiveness.

Rail



4.8 The raw materials and finished products are bulky in nature and require an efficient and low-cost rail transportation system. However, the current dilapidated rail infrastructure due to lack of maintenance & investment has created logistical problems for the value chain. For instance, rail track for the transportation of phosphates from the mine is accessible at Nyazura, approximately 65km from the source, forcing Dorowa Minerals to resort to the use of road, which is relatively expensive.

4.9 Notably, raw materials such as ammonia gas and potash, which are imported through South Africa and Beira, cannot be transported by road over long distance, hence requires an efficient rail system. NRZ is experiencing recapitalization challenges, hence the main producers are hiring rail tankers to transport key raw materials. This limits the efficiency of the value chain, hence, productivity and competitiveness.

High Input Costs

4.10 Local primary and secondary producers sell products in local currency, while importing raw materials such as ammonia gas, potash and spare parts. Whereas the industry is on foreign currency allocation priority list on the auction market, accessing the funds has been a major challenge, thereby resorting to the alternative market to bridge the gap.

International inflation, rising freight costs, which more than doubled in the past year and weakening of local currency is also contributing to escalating raw material import costs, and productivity & competitiveness of the value chain.

Power

4.11 Some of the industry players have dedicated power lines, for which payments are also exclusively done in foreign currency. However, fertilizer output for both primary and secondary producers is mostly traded in local currency. The auction market does not provide foreign currency for settlement of local bills, hence companies are incurring huge exchange losses as they source foreign currency to meet utilities. Furthermore, players without dedicated electricity supply are faced with an ever-increasing cost of power, coupled with load shedding, which negatively impacts on competitiveness of fertilizer value chain.

Market Demand

4.12 The biggest local customer for fertilizer is the Government, which accounts for 71% of the market. However, Government orders, which are often huge and made during mid-season, limit fertilizer producers' capacity to meet market requirements within a short period of time, thereby resulting in the influx of cheap fertilizer imports.

4.13 Furthermore, Government purchases are associated with delays in payments. This significantly undermines producers cashflows to finance operations, as well as lock into

forward contracts, which hedges manufacturers against international price shocks in an inflationary environment.

4.14 In addition, the Control of Goods (Import and Export) (Agriculture) Regulations as promulgated in Statutory Instrument 137 of 2007, prohibit/restrict the exportation of fertilizer if domestic demand is unmet. Although this is a noble policy measure, which ensures that local consumers are not starved of fertilizers, this negatively affects the industry's capacity to generate foreign currency.

Collateral Management Authority from Suppliers

4.15 The secondary node has benefited from the Collateral Management Authority (80% of stocks is in CMA translating to US$460m – 354 700t) through a credit facility, whereby imported raw materials are delivered and warehoused at local producer's custody. The local producers can only draw down the raw materials once payment has been made. This mitigates against logistical challenges that would otherwise arise from piece-meal importation.

Existing Government Support

4.16 The following are some of the incentives available to the fertilizer industry:

- Rebate of duty on imports of fertilizer raw materials;
- Suspension of duty on ammonia gas for use in the production of AN;
- Duty free importation of ring-fenced quantities of top-dressing fertilizer; and
- Prioritised allocation of foreign currency.

Fertilizer Standards

4.17 It has been observed that the Trade Measures Act (Chapter 14:23) compels fertilizer producers to ensure that prescribed fertilizer weight per bag is strictly adhered to. However, there are no regulations that compel the industry to comply with nutrient and granulometry tolerances of fertilizer products, since SAZ standards are voluntary. Whereas, the Fertilizers, Farm-Feeds and Remedies Act provides that fertilizer can only be sold if it meets specified packaging standard, composition, efficacy, fineness and purity, the

fertilizer products can still be susceptible to adulteration or dilution. This explains some reports that counterfeit/sub-standard fertilizer products have been penetrating the market.

Zimbabwe Fertilizer Manufacturers Association

4.18 ZFMA is under the Secretariat of one of the industry players, hence, weighs down on transparency among players. It also limits fertilizer Research and Development initiatives that facilitate continuous improvement of fertilizer products at association level, as witnessed in other countries such as Nigeria.

Lessons from Nigeria Benchmarking Visit

4.19 Despite the above-mentioned challenges militating against productivity and competitiveness of the value chain, the local industry can benefit from Nigerian experience as highlighted Table 15 below:

Table 15: Lessons from the Benchmarking Visit, 2022

Issue	Nigeria	Zimbabwe
Value Chain Development	• Leveraged on the natural gas endowments to boost its fertilizer industry, particularly the production of urea, which is being exported to USA, India, Brazil, Mexico, and Argentina.	• Despite having a huge phosphate deposit, Zimbabwe imports 75% of its phosphates requirements; • There are capacity constraints that hinder maximum exploitation of the resource; and • It is also important to note that Zimbabwe can leverage on huge coal deposits to produce Nitrogenous fertilizer.
Centralized procurement of Raw Materials	• Fertilizer raw materials are imported through a centralized procurement process, which is administered by the Nigerian Sovereign Investment Authority (NSIA); • The NSIA is a Government Agent that procures fertilizer	• In Zimbabwe, fertilizer manufacturers individually access foreign currency from the auction system; and • However, foreign currency allocations are not adequate to meet requirements and oftentimes delayed. This induces production bottlenecks which significantly affect competitiveness.

Issue	Nigeria	Zimbabwe
	raw materials using excess oil revenue; and • There is a guaranteed supply of raw materials.	
Structure of the fertilizer Manufacturing Industry	• The industry is dominated by purely private sector players that specialize in various nodes the value chain. This promotes competition and production efficiency.	• The State controls significant shareholding in several players across the value chain. These include Dorowa Mining Limited, ZimPhos and ZFC.
Investment in Research and Development	• The Fertilizer Producers and Suppliers Association of Nigeria coordinates research and development of fertilizer blends that address soil nutrients deficiencies.	• It is, therefore, critical for the local fertilizer association to coordinate Research and Development in order to analyze various fertilizer blends and propose suitable compounds that are unique for certain soil types and certain crops.
Marketing and Distribution of Fertilizer	• The marketing and distribution of fertilizer in Nigeria is through private players on a cash and carry basis; and • To enhance efficient distribution and timely payment of manufacturers, Government rarely participates in the distribution of fertilizer.	• 70% of the fertilizer produced is distributed by Government mainly through schemes such as the Presidential Input Scheme and Commend Agriculture; and • Whilst the schemes address key challenges for smallholder farmers, the main challenge arise from delayed payments which affect cashflows of producers, hence competitiveness.
Nature and effect of government support	• Fertilizer raw materials are imported duty free while importation of finished fertilizer products is restricted.	• Fertilizer raw materials are imported duty free; and • Subsidized at the end user node through targeted Government farmer programmers.
Regulations	• There is a Fertilizer Quality Control Act of 2019 to protect fertilizer end users from underweight, alterations and dilutions by enforcing production and sale of quality fertilizers.	• The Trade Measures Act and the Fertilizer, Farm Feeds and Remedies Act prevents the production and selling of fertilizer of underweighted fertilizer bags or that does not meet other specified packaging standard, composition, efficacy, fineness and purity;

Issue	Nigeria	Zimbabwe
		• SAZ would be an ideal organization to ensure that prescribed nutrients contents are strictly adhered to; and • However, SAZ standards are voluntary and there are no regulations to enforce compliance.

Source: NCC Compilation

4.20 The fertilizer value chain is laden with several challenges emanating both from domestic and international landscapes. Whilst some of the challenges are ad-hoc and unpredicted, the competitiveness of the value chain can significantly improve if known and predicted challenges are addressed.

5.0 RECOMMENDATIONS

5.1 The challenges impinging on the competitiveness of the fertilizer value chain require combined effort from all relevant stakeholders, including the Government and private sector companies along the value chain. Short-term and long-term interventions will transform the industry, enhance productivity and consequently competitiveness, in line with the objectives of NDS1. This will ensure availability and affordability of fertilizer by consumers.

5.2 Below are the specific recommendations, which are key in addressing competitiveness gaps in the fertilizer value chain:

Proposed Government Interventions

Short Term Interventions

Streamlining of Regulations

5.3 Government to streamline/harmonize some regulations, especially for EMA and RPAZ, to reduce costs, which undermines productivity and competitiveness. Furthermore, the State to fully fund the institutions so that they are not dependent on fees and levies as source of revenue.

License	Regulator	Recommendation
DEPOTS		
Storage and sell of Hazardous Substances	EMA	These can be licensed as sell of Hazardous substances and animal health products.
Pesticides retail license	Ministry of Agriculture	
Animal Health License	MCAZ	
FACTORIES		
Stack emission licenses	EMA	These can be classified under one license as the generators are housed at the factories.
Generator exhaust licenses	EMA	
Hazardous storage and sell license	EMA	These are licenses for handling hazardous substances that can be under one license.
Radiation License		

Timely Orders and Payments to Fertilizer Producers

5.4 Whereas Government is biggest buyer of fertilizers, orders are usually abrupt, and procurement is hardly on cash basis. To alleviate these challenges, the following recommendations are proposed:

- Government orders be lodged before onset of the farming season, to allow producers ample time to meet national requirements;
- Timeous payments to fertilizer manufacturers, as delays constrain continuous production capacity; and
- Government fertilizer subsidy programs are unlikely to cease in the foreseeable future, hence there is need for continuous improvement in their design and implementation to reduce leakages, maximize effectiveness, reduce impact on national budgets, and promote private sector participation.

Fertilizer Standards

5.5 The Trade Measures Act in Zimbabwe largely confines to volumes, mass and length and not to the quality of the product. In order to ensure that end users get quality fertilizer with the prescribed nutrients contents, it is recommended that Government introduce adequate regulations that govern nutrient and granulometry tolerances of fertilizer with a view to meet expected standards.

5.6 Government, through the Ministry of Lands, Agriculture, Fisheries, Water and Rural Development to undertake periodic and comprehensive soil mapping to continuously update fertilizer compositions.

5.7 Capacitate relevant institutions to invest in extension services, soil & water conservation, irrigation, integrated soil fertility management, improved seeds, access to finance and crop insurance, in order to increase the value-cost ratio of fertilizers, thereby raising demand.

Power

5.8 Whereas Government is investing in expansion of thermal power stations, it is critical that the industry be prioritised in order to minimise production bottlenecks that arise from load shedding, regardless of the currency of settlement of bills.

Long Term Interventions

Privatization of the Fertilizer Primary Producers

5.9 In the medium to long term, there is need to accelerate the privatization of the primary fertilizer producers in Zimbabwe, as this will be key for the sustainability of the industry. Privatization will be instrumental in terms of attracting both local and foreign direct investment in the value chain.

Local Production of Fertilizer Raw Materials

5.10 ZimPhos to prioritise investment in a new phosphoric acid plant, to enhance production of high analysis phosphate fertilizers, thereby achieving import substitution.

5.11 Considering the huge phosphate deposits in Zimbabwe, the envisaged new plant should have production capacity to meet domestic demand and exports. A commensurate investment in phosphate rock mining and crushing will also be required.

Exploitation of Natural Gas

5.12 There is need to invest in the production of coal bed methane, for the extraction of ammonia gas, which is a critical fertilizer raw material. This will reduce foreign currency requirements for importation of ammonia gas whilst enhancing the production of nitrogen fertilizer mainly by Sable Chemicals. It is therefore, critical that coal & gas exploration and development be prioritized.

5.13 Furthermore, Government should promulgate a favourable legislative and regulatory framework, which is a prerequisite to promote exploitation of coal bed methane, and/ or

other sources of gas such as Invictus Energy Project in Muzarabani to enable industry to utilize local resources as key inputs into the manufacture of fertilizers.

Rehabilitation of the Railway Infrastructure

5.14 Refurbishment of the rail infrastructure should be prioritised either through direct capital injection to the NRZ or Public-Private Partnerships (PPPs) for efficient transportation of fertilizer raw materials and finished products, which are bulky in nature. Improvement of rail infrastructure and upgrading of equipment is expected to reduce the overall costs of fertilizer production and distribution.

Accelerate Implementation of the Five-Year Fertilizer Import Substitution Roadmap

5.15 The earnest implementation of the Five-Year Fertilizer Import Substitution Roadmap (2020 – 2024) can be a game changer in Zimbabwe's fertilizer industry. In the interim, Government needs to support incremental production of fertilizer through direct capital injection for the capitalization of primary producers and invest in new fertilizer manufacturing technologies, which will enhance production, boost productivity, competitiveness, curtail imports, thereby saving foreign currency, ensure food security whilst creating employment.

5.16 It is anticipated that the import substitution strategy by Sable and Chemplex will reduce the import bill by approximately US$50 million and US$20 million per annum for AN and phosphates, respectively.

Proposed Industry Interventions

Establishment of an Independent Zimbabwe Fertilizer Manufacturers Association

5.17 The local fertilizer industry should establish an independent Secretariat, funded by fertilizer players. Some of the functions of the Secretariat will include R&D, establishment of regional fertilizer procurement and distribution facilities to leverage on bulky purchasing of raw materials that guarantees economies-of-scale to reduce fertilizer prices. Nigerian

and Tanzanian fertilizer manufacturers associations are using the Bulk Procurement Scheme to enhance affordability by arranging for bulk buying.

5.18 Furthermore, there is also need for the Ministry of Agriculture's Department of Research and Specialist Services to work with the ZFMA, as it is partially mandate to do Research & Development and quality control. Research and Development is the bedrock for the development of new products particularly fertilizer blends that suit certain soil types and crop specific fertilizers, as well as informing the quantum and timing of application.

5.19 NCC Fertilizer Competitiveness Lab will work in collaboration with the Secretariat, in coming up with interventions to enhance productivity and competitiveness of the sector.

Refurbishment of the old factory plant and equipment

5.20 Fertilizer industry to prioritize the refurbishment of plant and equipment to enhance production efficiencies.

5.21 Furthermore, the phosphoric and sulphuric acid plants should be refurbished, upgraded and modernized to ensure production of high analysis grades of phosphate fertilizers (TSP, MAP and DAP) in line with global trends. This will alleviate the foreign currency challenges as well as insulate the industry from exogenous price and supply shocks that would otherwise disrupt local fertilizer output and prices.

6.0 CONCLUSION

6.1 The competitiveness of the Fertilizer value chain hinges on complementary effort from both the Government and private sector entities. It is, therefore, critical that short term interventions be prioritised as low hanging fruits, whilst long term plans are developed.

National Competitiveness Commission

"Enhancing Zimbabwe's Global Competitiveness"

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