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Zimbabwe Fertilizer Industry: A Conceptual Framework on Fertilizer Supply and Distribution Strategies

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Abstract:
This paper looks at and analyzes the key drivers for fertilizer consumption patterns, drawing from the trends in the supply of fertilizer in Zimbabwe. These patterns have been driven by key factors such as government policy, market information and infrastructure. On the demand side, the paper asserts that the farmers' capacity to acquire fertilizers, availability of water through rainfall and farmers' knowledge on fertiliser use have been the key drivers. The paper traces the historical patterns of government control before and after Independence on fertiliser trading through foreign currency rationing. The country had its fair share of socio-economic challenges and crises, especially following The Fast Track Land Reform Programme in 2000 ranging from foreign currency shortages, political instability and hyper-inflation and this affected fertilizer production and consumption. Crop productivity dropped significantly and this was compounded by a series of droughts and against this backdrop the government started distributing subsidized seed.
The paper further examines different fertilizer types used in the country noted as Nitrogen, Phosphate and Potash, with the latter being imported. Another examined aspect are the price fluctuations and these to some extent affected resource-poor farmers. The paper also notes that the enactment and enforcement of laws and regulations dealing with quality control, registration, packaging and labelling are important in the fertilizer industry and these have been non-existent or ineffective. Due to unaffordability by farmers, fertilizer was often distributed as part of the subsidy program. The paper argues that if fertilizer subsidies are a cost-effective way of assisting the poor, they can be justified on equity grounds. (258 words)

Key words: *Fertilizer consumption patterns, key drivers, government policy, market information and infrastructure, foreign currency rationing/shortages, Fertilizer types resource-poor farmer, law enactment and enforcement*

The Key Drivers to Fertiliser Consumption Patterns

1. Introduction

The trends in the supply of fertilizers in Zimbabwe have been driven by key factors such as government policy, market information, and infrastructure. On the demand side farmer's capacity to acquire fertilizers, availability of water (rainfall) and farmer's knowledge on fertilizer use have been key drivers. From 1930 to early 1990s the government maintained direct controls on fertilizer trading through foreign currency rationing. The demand for agricultural inputs including fertilizers increased during the period 1980 to 1987 owing to the growth in number and size of smallholder farmer's loans granted by Agricultural Finance Corporation and favourable weather (Rohrbach, 1989).

According to Rukuni, et al (2006), in the 1990s the industry had more players. The liberalization removed price controls, subsidizes and access to foreign currency by few privileged firms. Although the fertilizer industry was in private hands, mandatory government approval of fertilizer compositions and import permit requirements still remained in place. The reforms introduced competition. However, because of high entry barriers the traditional companies maintained a comparative advantage.

Following the Fast Track Land Reform Programme 2000, the country was plunged into various crises ranging from foreign currency shortages, political instability and hyper-inflation and this affected fertilizer production and consumption (FAO, 2006:25). Crop productivity dropped significantly and this was compounded by a series of droughts. The government started distributing subsidized seed.

The supply of fertilizers in Zimbabwe has been driven by government policy, finance and infrastructure. The demand has primarily been a function of farmers' capacity to acquire fertilizers, availability of water and farmers knowledge of fertilizer use. There is need for a policy shift that promotes a competitive fertilizer marketing to support a broader range of farmers in

Zimbabwe leading to agricultural productivity and growth. Investment in infrastructure is critical to reduce marketing costs and to boost fertilizer
Demand. Policies that strengthen the farmer's capacity to acquire fertilizers and increase their supply r knowledge on fertilizer use, complemented by technologies that promote water use efficiencies are needed.

2. Aims and Objectives of the Study

- Understand factors affecting fertiliser demand supply in Zimbabwe
- Understand major fertiliser types and land use patterns
- Examine the fertiliser production and consumption patterns in the country
- Examine the key drivers to fertiliser supply and demand

3. Fertilizer Production and Consumption

To understand the fertilizer trends in Zimbabwe, researchers have traced nitrogen, phosphate and potash fertilizer production, consumption and imports for the period 1961-2007. According to recent reports by FAO, these are the most important fertilizer types used in the country.

3.1. Nitrogen

Nitrogen fertilizer production in the country has been characterized by fluctuating trends. In 1969 nitrogen fertilizer production were 23 thousand tonnes and this rose sharply to around 60 thousand tonnes in 1971. Produce in the drop tion and levels dropped between 1977-1979. Researchers further attributed this to the widespread droughts, deteriorating terms of trade and civil unrest. The period of stagnation was followed by a period of extremely rapid growth which restored fertilizer production above 60 thousand tonnes in early 1980s. This growth was facilitated by good weather, improved support services and the recovery of the country after the war of liberation. There after this was followed by a period of stagnation. The 1984 drought is closely connected with this development and also hard currency shortages due to the debt crisis.
The 1992 drought was also a cause in the drop in production levels. Production levels dropped again sharply from 1999 and never recovered till today. The drop coincided with the chaotic implementation of the agrarian reform and the macro economic challenges the country started to face like foreign currency shortages, power outages and fuel shortages. As a result fertilizer companies failed to finance production and import raw materials and spare parts. The performance of fertilizer supply systems varied depending on climatic, economic and political factors.
Nitrogen fertilizer imports fell sharply from forty-seven thousand tonnes in 1966 to 10 thousand tonnes in 1971. This was due to sanctions imposed on the country in 1965. Imports were high during the period 1980 – 83 and this was powered by the maize revolution in the country during the 1980s. The period where consumption was significantly higher than local production, the demand for nitrogen fertilizer imports increased.

3.2. Potash

"There is no potash production in Zimbabwe and as a result all potash requirements are imported. From 1961 to 2007, potash consumption requirements were adequately satisfied by imports with the exception of the period 1967 to 1972 where consumption requirements were slightly above imports, causing nutrient shortfalls", notes Minde.

4. Drivers of Fertiliser Demand

The farmer's capacity influences the demand for fertilizer to invest in fertilizer use, commodity and fertilizer prices, profitability of fertilizer use, crop yield response to fertilizers and availability of complementary inputs (Minde, et al 2010). Researchers further note that "even if fertilizer use is profitable farmers may be unable to purchase it because they lack cash, cannot obtain credit, or cannot obtain fertilizer locally" (Minde *et al*, 2010. The majority of smallholder farmers in Zimbabwe lack the necessary finance to purchase adequate fertilizers. In the period immediately after independence in 1980, the availability of subsidized credit drove maize yields and in turn drove fertilizer demand.
From 1981 to 1986 fertilizer purchases increased four-fold to reach a peak of 127 thousand tonnes because smallholder farmers had access to short term loans from Agricultural Finance Corporation. However, sales began to decline after the 1986/87 season because of reduced seasonal loans to smallholders following high default rates (Rugube, 2003). In Zimbabwe fertilizers have been traditionally sold in 50kg packs making them unaffordable to resource poor farmers (FAO, 2006). ICRISAT, based in the Matopos have been pilot testing the demand of smaller fertilizer packs in semi-arid areas of Zimbabwe (Matonho, 1994).

5. Drivers of Fertilizer Supply

According to Minde and others, "the pillars that drive the performance of fertilizer markets in Africa have been categorically highlighted before as: policy, human capital, finance, market information, regulation and infrastructure.

6. Policy

Minde further notes that a conducive and stable policy climate is vital for promoting private sector-based input markets. A distorted policy environment characterized by price and non price distortions (e.g. price controls and import tariffs) sends wrong signals, lowers private sector investments and keep transaction costs high. Before 1990 the Government of

Zimbabwe controlled input production through multiple mechanisms, despite that the majority of marketing activities were in the hands of private traders. The government has from time to time controlled the prices of fertilizers on the grounds of shielding the consumers.

However, this has in turn discouraged private sector development. Other researchers have argued that these controls limited farmers' choice of fertilizers. They noted that only thirteen compound fertilizers and eight single nutrient fertilizers were on the market from 1970 to the 1990s.

The introduction of Economic Structural Adjustment Programme in the early 1990s created significant reforms in the provision of fertilizer inputs that saw the removal of controlled prices and subsidized fertilizers. The policy reforms experienced by the fertilizer industry in Zimbabwe noted that between 1990 and 1997, fertilizer producers in Zimbabwe were protected by fertilizer import taxes that ranged from 0-5 percent and a 10% surcharge on finished products which compete with domestic production. These duties, taxes and tariffs acted as disincentive to competitive importation of fertilizers.

7. Infrastructure

Transport, communication and storage infrastructures are vital to fertilizer availability. Internal transportation costs are usually high in Africa because of poor feeder roads and acts as a disincentive to private dealers to expand to remote areas (Minde, et al 2010), Zimbabwe is a landlocked country and inherently suffers from high transportation costs from the ports and this is usually transmitted to farmers in the form of higher prices for imported fertilizer. Fertilizer is a bulky commodity with relatively low value to volume, so transport costs are a relatively large share of the farm gate prices (World Bank, 2006).

In Zimbabwe roads, telecommunications and postal services are in poor state, and in some areas there are no roads. This is a deterrent to farmers and at the same time discourages private sector investments in the fertilizers trade in rural areas. In 1992, ZFC established depots in smallholder areas to improve availability of fertilizer. However, the company closed these depots following viability problems because of seasonal demand and high transport costs (Ibid).

Researchers have noted that Zimphos was struggling to meet its phosphate production capacity of 150 000 tonnes/year owing to railway transportation constraints which affected the shipment of raw materials from Dorowa Mine. The non-existence of strategic buffer stocks that might cater for periods when there are shortfalls in the domestic production or fertilizer imports due to foreign currency shortages and international price fluctuations remains a key barrier to fertilizer supply in the SADC region.

8. Other Factors

For a well functioning market, the flow of information needs to be smooth and timely. Fertilizer manufacturers, dealers, farmers and policy makers should have access to information about fertilizer prices, stock and availability in national, regional and global markets (IFDC, 2001). In Zimbabwe the majority of fertilizer players lack adequate market information and this is compounded by stringent cross border regulations.

Enactment and enforcement of laws and regulations dealing with quality control, registration, packaging and labelling are important in the fertilizer industry. Yet in many African countries these are non-existent or ineffective (Minde, et al, 2010). Non-stop administrative changes discourage fertilizer trade as it is usually accompanied by high transaction costs.

Another factor affecting fertilizer supply is financial resources. In Zimbabwe limited access to finance resulting from high interest rates, underdeveloped financial structures, tough collateral requirements and the risk averse attitudes of commercial banks towards agriculture and agri-business makes it difficult for fertilizer importers, wholesalers and dealers to purchase fertilizers and raw materials timely to meet the farming needs as well as importing equipment and machinery for refurbishing production plants (FAO, 2006:26).

Quite a number of African smallholder farmers appear to use much less fertilizer than is economically optimal. They may use too little fertilizer because they lack information on how to use fertilizer effectively and profitably, because they avoid dangers in the face of uncertain rainfall, or because they have no money to pay for it because of low income and poorly functioning credit markets. In areas with low or uncertain demand, retailers will not find it worthwhile to stock fertilizer, resulting in reduction of the local fertilizer supply. If subsidies help farmers remove these setbacks and reach optimal application rates such that the additional farm income exceeds the cost of the subsidy program, they can be justified on efficiency grounds. Alternatively, if fertilizer subsidies are a cost-effective way of assisting the rural poor, they can be justified on equity grounds (IFPRI: 2009).

Based on these arguments, as well as general unstable markets, most African governments tightly controlled their fertilizer markets in the 1970s and 1980s. Typically, one or more had a legal monopoly on importing and distributing fertilizer. Fertilizer prices were subsidized at below-market levels and fixed at one rate throughout the country. The fertilizer was often distributed as part of government-run agricultural credit schemes, and a large percentage of the fertilizer was provided by donor agencies as aid free.These policies, however, resulted in high financial costs and inefficient distribution. Fertilizer was often delivered to farmers late and in limited quantities.

Although fertilizer subsidies were politically popular, economists and policy-makers began to believe that the fiscal cost was not worth the benefits to farmers. In addition, growing evidence indicated that the many of the benefits of these subsidies went to well established farmers Thus u equity argument for subsidies was undercut."Under the structural adjustment programs of the International Monetary Fund (IMF) and the World Bank, most African countries phased out fertilizer subsidies and opened up fertilizer markets to competition from the private sector as part of wider market reforms in the economy. The link between fertilizer policy and fertilizer use in Africa is not very direct".

According to the Food and Agriculture Organization of the United Nations (FAO), annual growth in fertilizer use in Sub-Saharan Africa was nine percent over the 1960s and 1970s. However, since 1981 fertilizer use has gone down at around 1.9–2.2 million metric tons, with some possible signs of growth since 2000. Given that few countries had started to open up their fertilizer markets

by 1981, it is difficult to attribute this stagnation to the reforms. In some countries, subsidy removal and devaluation resulted in sharp reductions in fertilizer use (Cameroon, Ghana, Nigeria, Senegal, and Tanzania), whereas in other countries fertilizer use actually increased (Benin, Madagascar, Mali, and Togo). This finding implies that fertilizer policy is only one factor affecting fertilizer prices and that fertilizer prices are one of several determinants of fertilizer use.

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