

## A Green Revolution in Kenya's Arid and Semi-Arid Lands: The Fertilizer Solution

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### Key Highlights

Fertilizer is a key input for enhancing agricultural productivity and food security in Kenya. However, many small-scale farmers in the arid and semi-arid lands (ASALs) face challenges in accessing and using fertilizer effectively. This policy brief explores the potential ways of improving fertilizer use among these farmers, considering their socio-economic and environmental contexts. The key highlights include:

- i) The government is implementing fertilizer subsidy in the country. However, fertilizer adoption challenges by small scale crop farmers include limited access to credit, persistent reliance on outdated farming practices, and inefficient supply chain management in delivering and distribution of fertilizer.
- ii) To enhance fertilizer adoption, increase fertilizer availability by having subsidy programmes or cooperative efforts to enhance timely distribution of fertilizer, enhance credit services, enhance land tenure security by formalizing land ownership and awareness creation, capacity building, and incentive mechanisms to encourage small-scale farmers to adopt fertilizer.

### Introduction

The agricultural sector is the leading contributor to Gross Domestic Product in Kenya. It contributed 20.9 per cent, 22.6 per cent, 22.4 per cent and 21.2 per cent to GDP in 2019, 2020, 2021 and 2022, respectively.<sup>1</sup> Fertilizer use in Kenya plays a crucial role in sustaining the country's agricultural sector, which serves as a cornerstone of the nation's economy and food security. With a predominantly agrarian economy, the application of fertilizer has become an essential practice for Kenyan farmers. It enhances crop yields, improves soil fertility, and contributes to the overall well-being of the population by ensuring a steady food supply.

Arid and Semi-Arid Lands (ASALs) of Kenya are still struggling, with agricultural output with most of them averaging 2 per cent of the agricultural output in their Gross County Product (GCP). Approximately 78 per cent of farmers in Kenya are small scale, with land sizes of less than 5 acres, which constitute 33 per cent of total farmland but at the same time they produce about 41 per cent of the country's food grains. In 2021, smallholder farmers generated output estimated at around Ksh 385 billion, which was double the output value (Ksh 141 billion) generated by large scale farmers (those who cultivate above 2 hectares of land) in the same year.<sup>2</sup>

The ASALs also experience irregular environmental conditions, with limited access to water, unpredictable rainfall, and dry conditions all of which substantially hinder agricultural practices. The arid regions are primarily characterized by communal land ownership, largely dedicated to nomadic pursuits. This poses a notable difficulty for small-scale crop cultivation, impeding the adoption of mechanized farming methods such as fertilizer use and obstructing effective farming processes. The well-being and food security of the communities dwelling in these areas rely on small-scale farming and livestock rearing, underscoring the need to investigate creative solutions to surmount these obstacles.<sup>3</sup>

### Challenges in Fertilizer Supply Chain in Kenya

Majority of small-scale farmers in Kenya use inorganic fertilizer, with most of it being imported. In 2020 and 2021, approximately 836,071.9 tonnes and 758,456.5 tonnes of fertilizer, respectively, were imported into the country to take care of the supply deficit. Fertilizer takes much of the material input for agriculture. In 2021, Ksh 2 billion was used for fertilizer purchase out of the Ksh 8.8 billion for the total inputs, which included seeds and crop chemicals.

The Government of Kenya has taken several measures to promote fertilizer use and enhance food security in the country. Some of these measures include subsidizing fertilizer prices for farmers growing food crops. For example, in 2010, the government reduced the price of DAP fertilizer from Ksh 6,000 to Ksh 2,500 and the price of CAN fertilizer from Ksh 6,000 to Ksh 1,650 per 50kg bag.<sup>4</sup>

In 2022, the government availed Ksh 3.55 billion to subsidize 1.42 million x 50 kg bags of fertilizer, for growing food crops during short rains season.<sup>5</sup> In 2023, the government unveiled a Ksh 5.7 billion fertilizer subsidy fund to subsidize prices for 2.28 million 50-kg bags of fertilizer.<sup>6</sup>

The Kenyan government collaborates with the private sector and development partners to establish local fertilizer production and distribution systems. For example, it has partnered with Fortescue Future Industries (FFI) to establish a green fertilizer plant in the country in a bid to reduce reliance on imports.<sup>7</sup> The government has also worked with Development Gateway, Africa Fertilizer, International Fertilizer Development Centre, and the African Fertilizer and Agribusiness Partnership to develop a user-friendly dashboard that visualizes key information on fertilizer price, use, product availability, and policy at the national and county level in Kenya.<sup>8</sup>

The government has been reformulating and updating fertilizer policies and regulations to enhance efficiency and effectiveness in the policies. The government has taken significant steps to review and update its fertilizer policies and regulations, such as the Fertilizer and Animal Foodstuffs Act (Cap 345) and the National Agricultural Soil Management Policy (NASMP), which was developed in 2020. These policies and regulations aim to ensure quality control, market regulation, subsidy administration, environmental protection, and research and development of fertilizers.<sup>9</sup>

However, despite these efforts, there are still some gaps that need to be addressed to improve fertilizer use and agricultural productivity in Kenya, especially in ASALs. The efficiency and sustainability of fertilizer use in Kenya have been a subject of concern. There is inadequate data on fertilizer demand and supply at the county level. The existing data on fertilizer use is often outdated, incomplete, or inaccurate. This makes it difficult for planners and policy makers to allocate resources efficiently and effectively. For instance, the latest data on fertilizer use by county is from 2016, which does not reflect the current situation and needs of farmers. Moreover, the data does not capture important factors that influence fertilizer requirements and outcomes, such as the variations in fertilizer use by crop type, soil type, agro-ecological zone, and farmer category.

Low adoption of improved inputs and practices by small-scale farmers. Many small-scale farmers still rely on traditional inputs and practices that limit their productivity and profitability. They face various challenges such as limited access to credit, which restricts their ability to invest in better seeds, fertilizers, and equipment. Furthermore, the absence of adequate extension services means that small-scale farmers lack the crucial knowledge and guidance required to transition to more advanced farming techniques.

Accessibility and affordability of these vital agricultural inputs for farmers are seriously hampered by the prohibitive cost of delivering and distributing fertilizers. This complex problem has several causes, one of which is road network, which increases delays in fertilizer delivery. The situation is made worse by the fact that inadequate storage spaces result in waste and thus rising prices. Unnecessary financial stress is put on farmers because of several taxes and levies imposed at different points in the supply chain. Inefficient supply chain management causes bottlenecks, delays, and unnecessary procedures, which lengthen the gaps between planting and topdressing seasons, and ultimately reducing productivity because of the untimely seasons. Corruption within the distribution system also encourages activities that raise prices and limit access for some.

## Policy Recommendations

To enable adoption of fertilizer, the following policy recommendations are proposed:

- i) Ownership of land to be formalized by the government through the Ministry of Lands, which will streamline registration procedures and provide legal aid to increase confidence in land ownership. Land registration encourages farmers to spend money on fertilizer and other long-term agricultural methods. Government officials could collaborate with counties and residents to settle land disputes and establish an open, accountable system for allocating land.
- ii) Increase availability of fertilizers; the government, through the Ministry of Agriculture could increase the availability of fertilizer in areas where it is currently limited. This can be done by lowering the price of fertilizer for farmers and promote bulk purchases that can be accomplished through the use of subsidy programmes or cooperative efforts to enhance timely distribution of fertilizer. The government may also form partnerships with private sector players and research institutes to advance the introduction of high-quality, climate-smart fertilizers adapted to regional soils and crop types.

- iii) Enhanced financial services: The government to collaborate with financial institutions to improve access to credit for farmers across ASALs. This will enable farmers to purchase fertilizer and other inputs without facing liquidity constraints. Additionally, the government could invest in infrastructure and distribution networks to ensure reliable and affordable availability of fertilizer. This will reduce transportation costs and delays that often discourage farmers from using fertilizer.
- iv) Targeted education programmes: This can be done by having education programmes tailored for farmers to be implemented by the Ministry of Agriculture in collaboration with the Ministry of Education and private players to capacity build and create awareness in the ASALs. Programmes such as this may educate farmers on the usefulness and safe use of fertilizers. Additionally, they may make use of pre-existing extension services, farmer organizations, and media outlets to increase their audience size and encourage peer learning.

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## Endnotes

- 1 Kenya National Bureau of Statistics (2023), Economic Survey. Retrieved from <https://www.knbs.or.ke/>.
- 2 KNBS (2022), Statistical Abstract 2022. Nairobi: Kenya National Bureau of Statistics. <https://www.knbs.or.ke/download/statistical-abstract-2022/>
- 3 Kenya (ASAL) <https://www.iucn.org/our-work/topic/ecosystem-restoration/restoration-initiative/projects/kenya-asal>
- 4 <https://reliefweb.int/report/kenya/kenya-government-subsidizes-fertilizer-prices-benefit-farmers>
- 5 Ministry of Agriculture, Livestock, Fisheries and Co-operatives; <https://kilimo.go.ke/fertilizer-subsidy-2022/>
- 6 <https://docs.wfp.org/api/documents/WFP-0000142846/download/>
- 7 <https://www.president.go.ke/kenya-signs-deal-on-green-energy-fertiliser-factory/>
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- 9 Abate, G. T., Abay, K. A. and Spielman, D. (2020), Fertilizer policies and implications for African agriculture. ReSAKSS Annual Trends and Outlook Report.

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