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EVALUATING THE IMPACT OF SUBSIDIES ON THE PRODUCTIVITY OF SMALLHOLDER FARMERS IN KENYA.

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ABSTRACT

Agriculture is the backbone of the Kenyan economy, but high input prices and climate-related shocks have continued to undermine its productivity. The present paper is an assessment of the National Fertilizer Subsidy Program (NFSP) under the Bottom-Up Economic Transformation Agenda (BETA), particularly assessing how it would impact the productivity of smallholder farmers in the year 2023-2026. The study intends to evaluate the effectiveness of the program using a desktop review methodology through the analysis of Kenya national bureau of statistics (KNBS), Ministry of Agriculture, and independent policy brief data. The results suggest that the national production of maize will increase a great deal owing to the subsidized price of Ksh 2,500 per 50kg bag, which is 64 percent less expensive than the market price of 2022. Kenya Integrated Agriculture Management Information System (KIAMIS) has improved the targeting process, enrolling more than 7.1 million farmers, and cut the leakages of ghost farms with the help of the e-voucher system that uses data to determine payments. Nonetheless, the review presents some severe policy paradoxes, such as a 49–57% crowding-out impact on the private fertilizer market and logistical last-mile bottlenecks that reduce the net benefit of the subsidy to the remote smallholders. The paper draws a conclusion that the NFSP has been successful in reducing the short-term cost of production and enhancing food security. However, the long-term fiscal viability of the system is questioned by high public debt and dependence on rain-fed-based systems. Recommendations include a transition towards soil-health-specific blends and the expansion of climate-risk insurance to safeguard productivity gains against increasing weather variability.

KEYWORDS: Agricultural Productivity, Fertilizer Subsidy, Smallholder Farmers, BETA Agenda.

Background

The importance of agriculture as the anchor of the Kenyan economy is also pre-historic, as an anchor that is supported by Sessional Paper No. 10 of 1965 that stated that the sector is the primary means of realizing national growth. During the 1960s and 1970s, the government introduced programs of universal subsidies and monopolies led by the state and distributed by the state agencies, such as the Kenya Farmers Association (KFA). Such initial interventions were however, scaled back during the 1980s and 1990s as Structural Adjustment Programs (SAPs) were embraced requiring market liberalization and price control removal. This era of de- subsidization resulted in a dramatic rise in input prices, which in turn lowered the fertilizer take- up rates and stagnated the productivity of the small holders over almost 20 years.

A revival of state-based interventions started in 2007 in form of the National Accelerated Agricultural Input Access Program (NAAIAP), which proposed the concept of smart subsidies to resource-poor farmers in the form of paper-based vouchers. Although such programs were created to cushion households against global price shocks, as is the case with NAAIAP, and later, the National Fertilizer Subsidy Program (NFSP) of 2009, they were often criticized due to poor administration, leakage to non-targeted beneficiaries, and high administrative costs. In 2022, a combination of disruption in global supply chains, with the worst drought in 40 years, led to a 34.3 million bags drop in Kenya maize production, and the urgency of fiscal necessity of a more solid and transparent input support system.

The late 2022 shift to the Bottom-Up Economic Transformation Agenda (BETA) was a paradigm shift in which consumer goods were no longer subsidized, but instead, primary production was promoted. One of the foundations of such a change is the implementation of the Kenya Integrated Agriculture Management Information System (KIAMIS), which is a digital superhighway that has substituted the outdated voucher systems with biometric farmer registry. By early 2026, more than 7.1 million farmers on KIAMIS have been registered, so that the National Treasury has been able to issue subsidies worth about Ksh 8.0 billion with increased accuracy previously unseen. Nevertheless, even with this technological breakthrough, the sector is prone to the fact that the input-led interventions can be undermined by crowding-out impacts on the private sector, and the fact that 98% of rain-fed

agriculture can restrict the effectiveness of input-led investments.

INTRODUCTION

Farming continues to be the structural backbone of the Kenyan economy, and it accounts about 20 percent of the Gross Domestic Product (GDP) and sustains the lives of more than 70 percent of the rural population (Kenya National Bureau of Statistics [KNBS], 2025). The history of policy development in the country is inextricably linked to the performance of this sector, which started out with early independence African Socialism, as expressed via the Structural Adjustment Programs (SAPs) of the 1990s and the use of the market (Government of Kenya, 2023). Regardless of those changes, the agricultural output has been permanently frustrated by the high prices of inputs and land tenure problems, as well as the rising susceptibility to the effects of climate shocks, including the extreme droughts experienced in 2021 to 2022 (Ayalew et al., 2024; KNBS, 2025).

Within the prevailing Bottom-Up Economic Transformation Agenda (BETA), the Government of Kenya has shifted to a production-led growth mechanism. Such an approach is a huge shift in the history of the administrations that prioritized consumer end subsidies (including retail flour subsidies) instead of reducing the marginal cost of production at the farm gate (Njuguna, 2023). The most important aspect of this intervention is the National Fertilizer Subsidy Program (NFSP). The National Treasury budgeted the specific amount of Ksh 8.0 billion to this program as stipulated in the 2025/2026 Budget Policy Statement, and the goal is to lower the price of a 50kg bag of fertilizer to a maximum price per bag in 2022 and have it subsidized to ksh 2,500 (National Treasury, 2025).

The NFSP theoretical foundation is based on the Green Revolution framework, which argues that, in cases where smallholders are unable to use yield-enhancing technologies due to market failures (lack of credit and risk), specific input subsidies can be employed (Olwande et al., 2025). Nevertheless, one of the characteristics of the subsidy regime of 2024–2026 is its digitalization. The initiative is administered with the help of the Kenya Integrated Agriculture Management Information System (KIAMIS), which is a digital registry containing data about more than 7.1 million farmers (Ministry of Agriculture and Livestock Development, 2026). This online gatekeeping will be used to increase fiduciary restrictions and to remove a series of ghost beneficiaries that bedeviled earlier paper-based voucher systems (Mutahi, 2025).

Although the NFSP has the obvious social goals, its economic effectiveness is the topic of

active scholarly discussion. Tegemeo Institute (2024) and Rioba (2025) have theorized some important policy paradoxes in scholarly assessments. One such important issue is the so-called crowding- out effect, in which commercially sold inputs are driven out by government-subsidized inputs.

According to empirical data, Cui (2024) and Olwande et al. (2025) indicate that when 100kg of subsidized fertilizer is distributed in the market, the use of such a product by the private sector reduces by about 49-57 percent of the total because, in most cases, the program targets only those farmers who visited agrovets to purchase inputs instead of reaching the most resource- poor, non-users. Moreover, although the production of maize is projected to be a record of 70 million bags in 2026, there is a change in the long-term sustainability of the program in Kenya because of its high risk of debt distress, with the public debt standing at around 65.7 percent of GDP (African Development Bank, 2025).

The paper utilizes a desktop review research design to sum up these contemporary policy outcomes. The study explores whether digitized input subsidies have increased smallholder productivity or the effect of this kind of subsidy on market competition and fiscal stability by using data from the National Treasury, KNBS, and independent impact appraisals. Finally, the paper aims to answer the question of whether the existing subsidy model provides a sustainable template on the way to food sovereignty in a global and climatic environment that is becoming more and more volatile.

Policy Analysis and Evidence Review

The "Production vs. Consumption" Policy Pivot

The introduction of the National Fertilizer Subsidy Program (NFSP) in late 2022 indicated a core change in the fiscal policy of Kenya regarding food security. According to Njuguna (2023), the Kenyan government stopped implementing policies that are focused on the consumption side (e.g., the retail price cap of maize flour) and shifted to production-focused policies that focused on reducing the marginal cost of production. This transition fits the Bottom-Up Economic Transformation Agenda (BETA) that views agricultural productivity as the main driver of lowering the national cost of living. The National Treasury effectively applied fiscal policy by setting aside Ksh 8.0 billion in the 2025/2026 fiscal year specifically on fertilizer to artificially reduce the input prices of a market price of Ksh 7,500 to achieve a subsidized price of Ksh 2,500.

KIAMIS and Fiduciary Control Digital Governance

The research on digital gatekeeping in agricultural distribution is a significant scholarly contribution of the 2023 to 2026 period. Comprising paper-based systems, unlike the manual, the previous NAAIAP and NVSP systems were prone to rent-seeking and diversion, unlike the current NFSP, which is anchored by the Kenya Integrated Agriculture Management Information System (KIAMIS). Mutahi (2025) observes that KIAMIS, which now hosts data for 7.1 million farmers, has transformed the "kabambe" (basic) phone into a tool for national prosperity by facilitating real-time verification and e-voucher distribution. However, the "digital divide" remains a concern; Cui (2024) finds that households with higher education levels and smartphone access are significantly more likely to successfully navigate the registration process, suggesting that digital tools may inadvertently favour "resource-rich" smallholders over the most vulnerable.

Evidence on Productivity and Yield Gains

The empirical evidence regarding yield impact is broadly positive but nuanced. Quasi-experimental studies by IFPRI (2024) and Olwande et al. (2025) indicate that the NFSP led to a 7% increase in fertilizer adoption among participants, translating to maize yield gains of 26% to 37% (approximately 164–233.5 kg/acre). These gains at the farm level have manifested at the macro level: national maize production is forecasted to hit a record 70 million bags in 2026, a substantial recovery from the 44 million bags recorded in 2022. This surge has been instrumental in reducing maize imports by 66%, thereby easing the pressure on Kenya’s foreign exchange reserves.

The Policy Paradox: Market Displacement and Crowding-Out

Although productivity has increased, reviews among scholars have indicated a very harsh crowding-out effect on the economy in the private sector. According to Tegemeo Institute (2024), 100 kg of subsidized fertilizer has been found to decrease the purchases of the private sector by 49 to 57% per 100 kg. Mather and Jayne (2018) have already suggested that this shift is the result of subsidies being mostly untargeted and thus reaching farmers who would have purchased commercial fertilizer regardless of subsidies, as opposed to attracting non-users. This increases the long-term issues of survival of agrovets in the rural areas; since the government controls the supply chain via the NCPB, the retailers may go out of business, which may cut the farmers off from non-subsidized inputs such as pesticides and special seeds.

Social Inclusion and Environmental Sustainability

Lastly, the review takes into account the NFSP's long-run viability. Considering the perspective of Cost Benefit Analysis (CBA), the program can be considered cost-effective, having a Benefit- Cost Ratio of 1.11 to 1.22. Nevertheless, according to Rioba (2025), such subsidies are growing unbearable in terms of fiscal burden when Kenya has a debt-to-GDP rate of 65.7 per cent.

Besides, in the 2025/2026 policy, the scientific movement is shifting to soil health; the Ministry of Agriculture is gradually replacing traditional DAP with non-acidic NPK blends (23:23:0) to reverse the decades of acidification of the soil due to the inappropriate application of fertilizers. This implies that the Future of Economic Policy in agriculture cannot be about increasing quantity (more bags) but quality (precision blends) in order to guarantee sustainable growth in yield.

Policy recommendations

To achieve a sustainable system of agriculture, it is important to get out of this cycle of short-term fiscal interventions into a more systematic, data-driven strategy that can reconcile productivity with health in the market. As per the existing study, the National Fertilizer Subsidy Program (NFSP) must be changed so as to become a wealth-stratified targeting model instead of a universal one. By using the KIAMIS database to target resource-poor smallholders who have less than two acres, the government can focus on beneficiaries who would not otherwise be able to purchase commercial inputs and, therefore, ease the fiscal burden of subsidizing more resource-endowed farmers who already have access to market liquidity. This move would take care of the so called crowding-out effect whereby untargeted subsidies would now crowd out the purchase of fertilizers in the private sector by as much as 48-57 percent.

To reduce market distortion and maintain rural infrastructure, the government can consider adopting market-smart partnerships involving the incorporation of local agrovets into the distribution channel. Nowadays, distribution under NCPB depots is centralized, which requires farmers to travel an average of 16 km, whereas local dealers who have gone private travel only 9 km. The government can also decrease the cost of transporting e-vouchers to farmers by accrediting these local agrovets as redemption points through which the company can reduce its own costs as a tactic to make sure that the private retailers are viable. The role of the state in this model would be changed to the wholesale and regulation role rather than

direct retail, where the input market would be more competitive and resilient.

Sustainability in the environment should also form part of the subsidy system to reverse the decades of soil acidification due to the conventional use of fertilizers. The policy in the future must require the sale of soil-health-specific combinations, including non-acidic NPK 23:23:0, and provide subsidies on agricultural lime in the high-acidity zones. The connection of KIAMIS e-vouchers with localized soil maps would be beneficial in ensuring that inputs are related to land needs, and that the policy would be based on the principle of quality rather than volume and high productivity. This accuracy strategy is critical since Kenya aims to produce a record of 70 million bags of maize and operates within a limited fiscal space, having a debt-to-GDP ratio of
65.7 percent.

Lastly, long-term sustainability of the farming support would be based on the ability to build independence among the farmers with a well-laid-out exit plan and risk control. Subsidies should not be considered permanent; instead, they should be seen as a kick-starter that can have a proposed five-year sunset of individual beneficiaries, whereby they move to the low-interest input credit facilities. In order to hedge these investments against the 98 percent rain-fed Kenyan agriculture, climate-shock insurance ought to accompany the subsidies. By adding an insurance premium on the e-voucher, one would avoid the poverty trap of crop failure. So the productivity gains would not be nipped out by the rising unpredictable weather patterns.

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