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Policy options for supporting household food security and resilience in the context of high food, fertilizer, and fuel prices in Kenya

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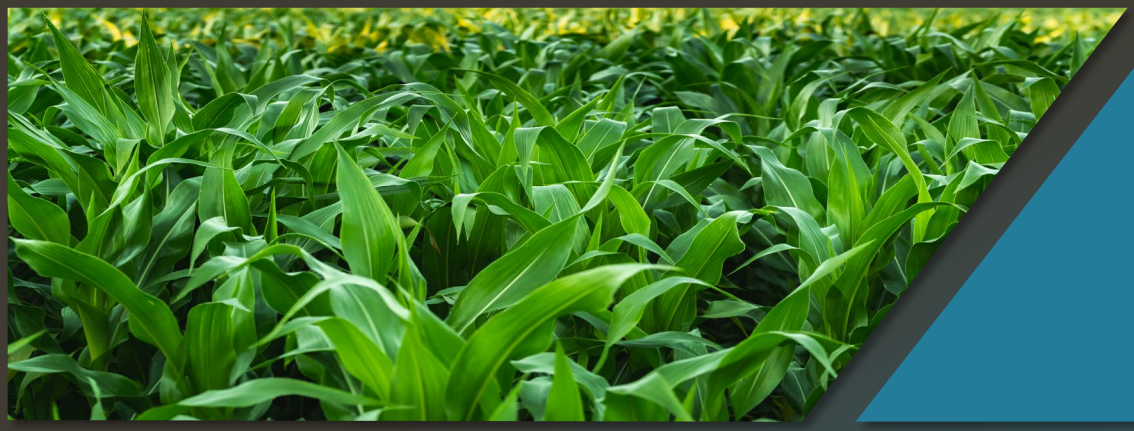

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Key Messages

Russia's invasion of Ukraine in February 2022 has further exacerbated significant increases in international prices of food, fertilizer, and fuel that began in late 2020. This has led to significant increases in the domestic prices of food, fertilizer, and fuel in Kenya, which imports all its oil, half of its cooking oil, and some maize and wheat.

Poorer Kenyan households are likely to be more vulnerable to the surge in food prices in 2022 than they were in 2007/08 and 2010/11 due to depletion of household savings and assets during COVID-19 lockdowns and three consecutive seasons of depressed rainfall in much of the country.

In the short term, urgent action is warranted to mitigate the effects of extremely high domestic food and fertilizer prices on the incomes, assets, and food security of vulnerable Kenyan households and individuals **through:**

1. **Humanitarian assistance in the arid and semi-arid areas of northern, eastern, and coastal Kenya.**
2. **Temporary expansion of existing targeted social safety net programs.**
3. **Expansion of funding and number of smallholders registered for Kenya's private sector-friendly, targeted e-voucher National Value Chain Support Programme (NVSP).**
4. **Reducing the maximum allowable quantity of subsidized fertilizer per farmer from the National Cereal and Produce Board (NCPB) from 100 bags to 24 bags.**

And in the medium to long term through:

5. **Increased efforts to disseminate available "best practice" complementary crop and soil management practices, while continuing to invest in agricultural research & development (R&D) to further develop technologies that are urgently needed to improve crop-fertilizer response rates and soil fertility over time.**
6. **Shifting all input subsidy funding to NVSP. In a situation of national food security emergency, provide medium-scale farmers with temporary access to NVSP e-vouchers sufficient for obtaining inputs for up to 4 ha of maize or potatoes.**
7. **Adoption of a transparent, rules-based approach to the timing and duration of import tariff waivers for cereals as well as for National Cereals and Produce Board (NCPB) grain purchases, sales, and pricing. This would improve the enabling environment for private sector investment in domestic grain marketing, which should reduce costs within the grain marketing system and strengthen its resilience to future climatic and market-related shocks.**

1. Introduction

The current international food, fertilizer, and fuel price crisis began in late 2020, as the world economy began to recover from the early stages of the COVID-19 pandemic. A surge in the global demand for many commodities at that time was not met by sufficient global supply because of supply chain constraints. This led to significant increases in international prices of food, fuel, and fertilizers throughout 2021. Following the Russian Federation's invasion of Ukraine on 24 February 2022, economic sanctions were imposed against Russia and Belarus, and Russia self-imposed export restrictions in response. This further increased these international prices to inflation-adjusted levels not observed since the 2007/08 international food and fertilizer price crisis (Laborde, 2022). Because Kenya imports all its oil and fertilizer, about half of its cooking oil, and some of its maize and wheat, the dramatic increases in these international prices have been transmitted partially or fully to Kenya's domestic markets. The magnitude and duration of domestic price increases in Kenya to date are estimated to have decreased real household consumption by 2.5 percent on average and by 3.8 percent among poor households, which in turn are estimated to have increased the national poverty headcount rate by 2.5 percent (Breisinger *et al.*, 2022).

Poorer Kenyan households are likely to be more vulnerable to the surge in food prices in 2022 than they were during previous spikes in food prices in 2007/08 and 2010/11 for two main reasons. First, more than 70% of urban and rural households in Kenya reported a loss of income over the first 10-12 months of the COVID-19 pandemic, and a similar percentage of households reported sales of assets as a coping strategy (Olwande *et al.*, 2021; Alvi *et al.*, 2021)[1]. Reductions in assets typically make households less resilient to future adverse price, market, climatic, and/or health shocks. Second, much of Kenya and East Africa has experienced severe drought in the past three consecutive seasons, which has led to lower household and national food production and significant losses of livestock weight and numbers. In this brief, we investigate how domestic prices of food, fuel, and fertilizer in Kenya have been affected by the on-going crises. We then discuss strategies and policy options to help mitigate the adverse effects of increased prices on household incomes and food security in the short term, and household and market-level resilience to future price and climatic shocks in the longer term. These strategies are based on existing empirical research from Kenya as well as from other sub-Saharan Africa countries.

2. Energy and transport costs

Because the price of oil is a key component of both the production and marketing costs of food and fertilizer, increases in international oil prices can lead to or exacerbate increases in both international and domestic prices of food and fertilizer. While the international price of oil fell by 13% between January 2020 to January 2021, it then increased by 57% between January 2021 and January 2022 (prior to the invasion of Ukraine) and increased another 39% from January to June 2022. The price of natural gas – a key component of nitrogenous fertilizers -- increased by 75%, 228% and 27% in those three time periods, respectively. The increases in oil and natural gas prices during these three

[1] These widespread income losses appear to have contributed to a reduction in food and nutrition security for many households, as a majority of sample households (both urban and rural) reported that they ate less food, had a poorer quality diet, and skipped more meals in February 2021 relative to 12 months earlier (February 2020; right before COVID-19) (Olwande *et al.*, 2022).

periods were largely due to: (i) the rebound in global demand for oil and gas following the COVID-19-related economic downturn in 2020; and then (ii) a reduction in Russian exports of oil and natural gas due to economic sanctions on Russia and Russia's own export restrictions. Fallout from the Ukraine crisis has led to further, significant increases in international oil and natural gas prices as Russia accounts for about 11% of world oil production and exports and 17% of world production of natural gas[2]. Because the demand for both oil and natural gas is highly inelastic (i.e., the quantity demanded of the commodity is not very sensitive to changes in its price), even a relatively modest reduction in the international supply of oil and gas can result in large increases in their prices on the international market.

3. Food Prices

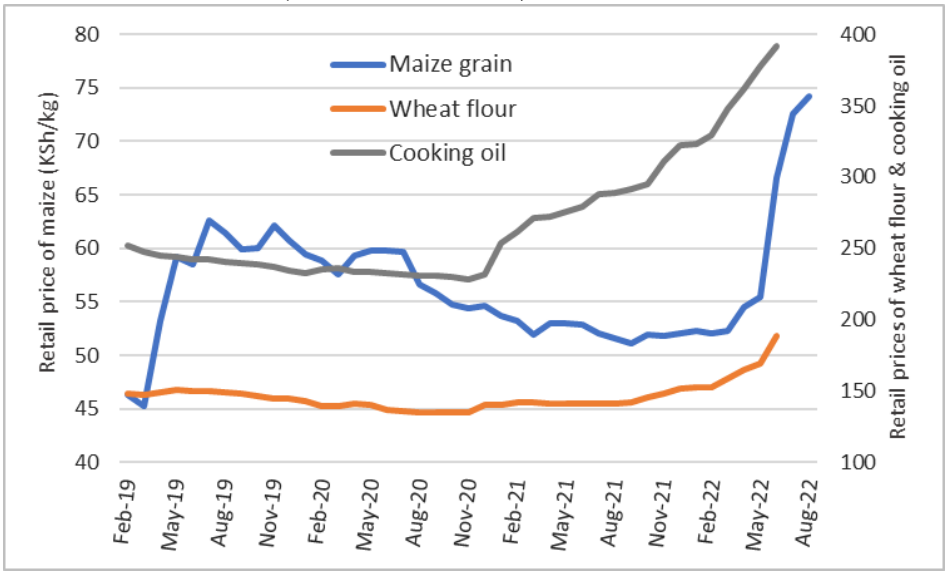
Domestic food price increases: In Kenya, domestic food prices increased significantly in 2021 due to increases in international grains and oil as well as decreased national food production in the past three consecutive seasons, in which much of Kenya has had below-average rainfall (and four such seasons in the Arid and Semi-Arid parts of the country). Domestic food prices have risen even more rapidly in 2022 due to a further spike in global oil prices and their influence on domestic transportation costs; a recurrence of below-average rainfall in the short and main season; and reduced cross-border imports of maize from Uganda and Tanzania (FEWSNET, 2022). For example, from January 2021 to January 2022, inflation-adjusted, national-level retail prices of wheat flour and cooking oil increased by 9% and 27%, respectively[3]. The prices of wheat flour and cooking oil increased an additional 24% and 17%, respectively, from January to June 2022, while the price of maize increased by 42% from January through August 2022 (Figure 1). Because most Kenyan smallholders are net buyers of maize (57%) (Kirimi *et al.*, 2011), higher maize prices reduce the welfare and food security of a majority of smallholders and most urban households.

A combination of very high prices of basic staples like maize and beans throughout the country and inadequate food supplies in the arid and semi-arid counties recently led FEWSNET to forecast an IPC Level-4 food security emergency for most of northern Kenya from October 2022 to January 2023 and a crisis for eastern Kenya (FEWSNET, 2022). Given Kenya's extremely high food and fertilizer price environment and the likely recent and on-going adverse effects on this environment on the incomes, assets, and food security of Kenyan households in recent months – particularly poorer ones -- policymakers need to respond as effectively and efficiently as possible to these food security challenges in both the short- and longer-term. To do so, it is important to understand some of the policy options that can help to lower food prices in Kenya and improve the food security and resilience of both rural and urban households, which are informed by empirical research and experience from Kenya when it has faced similar challenges in the past.

Kenya's structural maize deficit and trade policy: Since 2004, Kenya has had a growing structural deficit in maize production due to stagnant maize yield that has not kept up with increasing demand from rising urbanization, population, and incomes (Short *et al.*, 2013). Kenya imports an average of

[2] Authors' computations using data from the US Energy Information Agency (EIA).
[3] Authors' computations using retail price data from the Kenya National Bureau of Statistics (KNBS).

Figure 1. Retail prices of maize grain, wheat flour, and cooking oil in Kenya (constant KSh/unit) 2019-2022



Source: KNBS. Notes: Maize grain (kg), wheat flour (2 kg), cooking oil (1 L); KSh Sept 2022=100.

10 percent of its maize consumption each year, ranging from a low of 5 to 8 percent in good production years to 20 to 30 percent in years with below-average rainfall[4]. Kenya typically imports maize from neighboring Tanzania and Uganda at prices below those in world markets (Nyoro *et al.*, 2001), while maize from outside the East African Community (EAC) is usually more expensive and faces an external tariff ranging from 35 to 50% (*ibid*, 2013). The Government of Kenya (GoK) has often waived this external tariff when forecasts indicate that Kenya's maize production and potential imports from Tanzania and Uganda are not adequate, although the timing and duration of such a waiver is an *ad hoc* administrative decision and thus uncertain (Kirimi *et al.*, 2011). The GoK recently waived this external import tariff for Maize on May 9, 2022, for a period of three months. The GoK then extended this period up to September 30, 2022, after maize importers raised a concern that the initial waiver period was too short to allow for imports from overseas to reach the country by the original waiver end date (August 6, 2022).

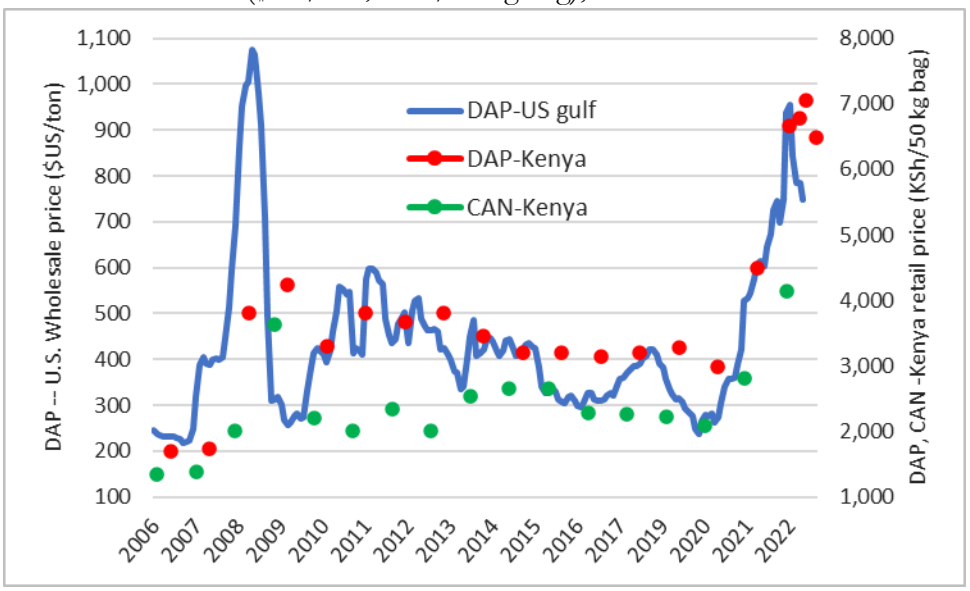
4. Fertilizer prices

International fertilizer prices increased significantly in 2021 due largely to export restrictions imposed by two of the world's largest fertilizer exporters – China and Russia – though also due to concurrent increases in international oil and natural gas prices. Fertilizer prices increased further in 2022 due to the fallout from the Ukraine crisis. For example, the international price for diammonium phosphate (DAP) from the U.S. increased by 47% in 2020, by 77% in 2021, then by 36% from January thru April 2022, before eventually declining in recent months (Figure 2). These price increases are reflected in the Kenyan retail prices of the two fertilizers commonly applied to maize — DAP and CAN (calcium ammonium nitrate) – both of which fell slightly in 2020, yet

[4] Authors' computations from USDA PSD data https://apps.fas.usda.gov/psdonline/app/index.html#/app/advQuery

increased by 76% and 102% in 2021, respectively, then by another 10% and 56%, respectively, from January to July 2022 (Figure 2).

Figure 2: International & Kenyan domestic prices of DAP & CAN ($US/ton; KSh/50 kg bag), 2006-2022



Source: World Bank; MALFC

We would expect that fertilizer price increases of this magnitude would lead smallholders to significantly reduce their fertilizer use on maize and other food crops. This expectation is confirmed by recent household survey data from upper-Eastern Kenya, which indicates that the share of farmers that applied inorganic fertilizer dropped from 75% in October 2021 (upper-Eastern main rain season) to 66% in March 2022 (short rain season) —a 15% decline. Likewise, the average fertilizer application rate (among users) also declined by 20%, from 41 kg/ha in October 2021 to 33 kg/ha in March 2022.

5. Fertilizer subsidies

Kenya's recent input subsidy approaches: Since the international food and fertilizer price crisis in 2007/08, the GoK has implemented two types of input subsidy programs (ISPs), on and off, that have taken quite different approaches. The first was the National Fertilizer Price Stabilization Plan (NFPSP) initiated in 2008 and implemented each year until 2019. Importation and distribution of subsidized fertilizer under the plan was managed by the National Cereals and Produce Board (NCPB), a state-owned parastatal organization with a mandate to manage the national grain reserve. The government imported the fertilizer through the NCPB using competitive tenders to private sector importers, then NCPB handled the physical distribution and retailing of this subsidized fertilizer to farmers through its 110 depots, which are located primarily in zones of medium and high agroecological potential. Thus, in this approach, private agro-dealers were bypassed in the distribution and retailing of the program's subsidized fertilizer. In addition, the location of NCPB depots meant that farmers farther from the depots could not access the subsidy or had to incur much higher transportation costs to do so.

The objectives of the NFPSP were to influence fertilizer prices and cushion farmers from price fluctuations across the seasons and to increase fertilizer use among farmers by making fertilizers affordable to farmers who did not use the input due to financial constraints. The NFPSP was not conceptualized with household-specific targeting criteria, and thus remained a universal subsidy that was available to any farmer who registered to access it. The unit price of subsidized fertilizer in this program varied over time, though amounted to a 26 to 46 percent subsidy of the market price at the time, depending on the year (Nduati et al., 2015; Mather et al., 2018). The maximum quantity of NFPSP fertilizer allowed per farmer was limited in two ways: first, by the farmer's intended area planted; and second, by an overall maximum of 2,000 kg of per farmer (or 40 bags of 50kg each).

The second ISP used a private-sector-friendly, targeted voucher approach (also called a "smart" subsidy) that was implemented between 2007/2008 and 2015 as the National Accelerated Agricultural Inputs Access Program (NAAIAP). All subsidized NAAIAP fertilizer and maize seed was physically handled by Kenya's existing private sector importers, wholesalers, and agro-dealers. The government's main roles in the NAAIAP were to first identify and distribute vouchers to farmers who met the program eligibility criteria ("resource-poor farmers"), then to reimburse private sector traders for the program inputs they imported, distributed, and sold to targeted farmers. Beginning in 2019, the GoK has implemented an improved version of NAAIAP known as the National Value Chain Support Programme (NVSP). This new program has adopted promising innovations such as use of electronic vouchers and "flexible" input subsidies, where the portfolio of eligible inputs has expanded beyond fertilizers and certified maize seed to include lime, agro-chemicals, and seed of other crops. NVSP provides a subsidy of 40 percent of the commercial price to targeted farmers for eligible inputs. Unlike the NCPB-led approach, only smallholder farmers are eligible to receive an e-voucher from NVSP – those with landholding from 1 to 12 acres (i.e. 5 hectares or less). In addition, program-eligible crops have expanded beyond maize to also include rice, Irish potato, and coffee.

A key advantage of a flexible input subsidy is that by making inorganic fertilizer, quality seed, and other yield-enhancing inputs available at subsidized rates – and allowing participants to redeem the value of their e-voucher towards any combination of program-eligible inputs – it helps facilitate farmer adoption of complementary inputs. Likewise, by allowing farmers to use their own cropping preferences and location-specific knowledge of the agro-ecological and marketing potential of the program-eligible crops, NVSP can dramatically improve the degree to which an e-voucher increases any given farmer's crop productivity and profitability per hectare – and, thus, the level of overall program impact.

In 2019, approximately 88 percent of farm households in Kenya had less than 2 ha of land[5]. Many of those smallholders likely do not have access to formal credit for farm inputs[6], have relatively little livestock and farm equipment, and are below or not far from the poverty line. The NVSP improves smallholders' access to improved inputs, with which they can both increase their farm productivity

[5] Authors' estimate using data from Kenya's 2019 Population and Housing Census.
[6] Unless it is tied to coffee or tea production.

and improve their ability to maintain food security through own-farm production and/or income from crop sales. In fact, NVSP is one of the nine pillars (flagships) of the GoK's Agricultural Sector Transformation and Growth Strategy (ASTGS), which calls on the government to: "Shift nationwide subsidies focus to register 1.4 million high-needs farming households and empower them to access a range of inputs from multiple providers, enabled by an e-voucher delivery system (MoALFI, 2019, p.79)."

Empirical evaluation of the two programs: There has been considerable empirical research from Kenya that has evaluated both the NFPSP approach and that of Kenya's two private-sector friendly, targeted voucher programs to date (Nduati *et al.,* 2015; Makau *et al.*, 2016; Mather *et al.*, 2018; World Bank, 2020). There is also considerable empirical research from other African countries that have used program designs similar to either NFPSP or NAAIAP/NVSP (Jayne *et al.*, 2018 provides a review). This research shows that a well-implemented, private-sector-friendly ISP is typically more effective and efficient in achieving the usual program goal of ISPs—to increase the food crop productivity of resource-poor farmers through improved access to inputs—for various reasons. First, by working with and through private sector supply chains, "smart" ISPs help to strengthen and deepen them, while government-run ISPs—such as the fertilizer subsidy program implemented through the NCPB—lead to more undercutting or crowding-out of private sector supply chain actors, e.g. private agro-dealers. Second, successfully targeting input subsidies to farmers who are relatively less endowed with land and/or assets (i.e. the resources to acquire inputs on their own) can significantly increase input use among recipients. By contrast, receipt of subsidized fertilizer by relatively larger and better-endowed farmers does not increase their input use nearly as much, on average, because better-endowed farmers would likely purchase adequate amounts of inputs without a subsidy[7] (Mather *et al.*, 2018).

Third, use of e-vouchers makes it considerably more difficult for subsidized inputs to be obtained by non-eligible farmers or illegally diverted by program officials. Fourth, flexible subsidies empower farmers to choose both the types of subsidized input they want (fertilizer, seed, farm equipment, etc.) and the crop on which to use it. In summary, there is considerable evidence from Kenya and elsewhere in Africa that a private sector-friendly, targeted voucher or e-voucher approach to input subsidies is much preferred to an approach with a universal subsidy and/or a government supply chain design in terms of its effectiveness and efficiency in actually increasing fertilizer use on staple crops, while also supporting the continued development of a private sector fertilizer supply chain -- instead of undercutting and displacing it -- as well as the development of farmer demand for commercially-priced inputs.

One challenge faced by the NCPB-managed fertilizer subsidy program is that non-eligible individuals -- such as traders – have sometimes managed to take advantage of "loopholes in a manually administered beneficiary identification system that makes it difficult to verify the true beneficiaries of the fertilizer subsidy (World Bank, 2020)." As noted by a former GoK official, the

[7] For example, each kilogram of subsidized fertilizer received by farmers in the bottom half of the land distribution results in an increase of 0.77 kg/ha of inorganic fertilizer applied to maize, compared with an increase of 0.40 kg/ha among farmers in the upper half of the land distribution (Mather *et al.*, 2018).

result was that many such individuals managed "to purchase subsidized fertilizer in bulk and sell it at market rates, thus depriving small-scale farmers of the intended benefits (Waitathu, 2020)." This outcome was also enabled by two aspects of the NCPB-managed subsidy program design: first, the lack of a lower maximum amount of subsidized fertilizer accessible per farmer; and second, the distribution of such an expensive and highly demanded product through a public sector organization, which typically lacks the environment of personnel and financial accountability and monitoring by a private sector company (such as a private sector agro-dealer or hub agro-dealer). By contrast, the design of Kenya's private-sector friendly NVSP makes it very unlikely to experience such problems, especially given its use of e-vouchers. Another disadvantage of the NCPB-managed subsidy program relative to the NVSP is that only farmers in medium and high potential zones are close enough to NCPB depots to cost-effectively access its subsidized fertilizer. By contrast, the NVSP already reaches farmers in most agro-ecological zones. Currently, the one advantage of the subsidy through the NCPB is that, in the event of a food and/or fertilizer price crisis, it can scale up more quickly than NVSP can to provide access to subsidized inputs to farmers who are either not eligible for NVSP benefits or not yet registered for them. By design, NVSP has only registered smallholders to date, and the process of registering additional farmers and verifying their identities takes time.

Recent government use of ISPs: The GoK has continued to implement the targeted NVSP since 2020, while implementation of the NCPB-managed program stopped in 2019. However, in response to the rapid rise of fertilizer prices in Kenya in early 2022, the GoK announced a fertilizer subsidy in April 2022 for the 2021/22 long rains season that used the NCPB-managed approach, where subsidized fertilizer is distributed and retailed by NCPB. Unfortunately, the announcement of this subsidy came too late for most farmers to use in the 2021/22 long rain season[8].

In August 2022, the GoK announced that it would implement the targeted NVSP in 29 counties for the 2022/23 short rains season. While it appears that NVSP will continue thru the 2022/23 long rains season, the spatial coverage and scale of the program for this upcoming main season is not yet clear. Then in September 2022, the new government announced that it would again implement an NCPB-managed fertilizer subsidy program for the 2022/23 short season, in which NCPB would retail 1.4 million 50 kg bags of DAP and CAN fertilizer thru its depots at fixed subsidized prices that are approximately half the market price[9]. As with NVSP, the GoK announcement for the NCPB-managed program did not clarify whether it plans to continue this program for the 2022/23 long rains season. As before, the new NCPB-managed program does not use farmer-level targeting criteria -- such as farm size -- to try to limit the subsidy benefits to farmers who most likely would not be able to self-finance inputs at current prices or obtain credit. The maximum quantity of fertilizer allowed per farmer is again limited by the farmer's landholding, though the maximum allowable quantity has been increased from 2,000 to 5,000 tonnes per farmer i.e. 100 x 50-kg bags of fertilizer – an amount sufficient for about 16.7 hectares of maize[10].

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[8] https://www.kenyanews.go.ke/govt-avails-sh3-55billion-to-curb-high-fertilizer-cost/ The subsidized price of 50kg of DAP was set at KSh 2,800 against the market price of KSh 6,000 (a 47% rebate) while that of CAN was set at KSh 1,950 against the market price of KSh 3,900 (a 50% rebate).

[9] Its subsidized prices of DAP and CAN are set at KSh 3,500 and KSh 2,875, respectively (about half the market price).

[10] This assumes that a farmer purchases 5 tonnes of subsidized fertilizer from NCPB and applies it at a rate of 300 kg

Government use of ISPs moving forward: The new government has committed to providing input subsidies to farmers, with the stated objective of enabling farmers who are not able to afford improved inputs to access them. In other words, its goal is to help farmers overcome liquidity constraints that prevent many from being able to afford inorganic fertilizer under normal circumstances. As noted above, the NVSP approach currently targets only smallholder farmers, who are most likely to face such financial and credit constraints. Yet, both the previous government and the new one decided to bring back the NCPB-led program recently in response to the extremely high food and fertilizer prices in Kenya since early 2022. While the governments' reasons for this decision are not yet clear, there are likely two explanations for it. The first is that given the severity of the current international food and fertilizer price crisis, the NCPB-managed subsidy approach can make subsidized fertilizer available to farmers with more than 5 hectares more quickly than NVSP could, as well as smallholders who are not yet registered with NVSP. Second, because the vast majority of smallholders in Kenya have 2 ha or less and low yields, they are unlikely capable of producing much of a surplus for the market in aggregate. By contrast, medium to large farmers are more likely to produce and market surplus maize and potatoes, and the NCPB-managed program allows farmers of any size to access subsidized fertilizer. Thus, as currently designed, NVSP primarily helps protect the food security of smallholders registered with the program, while NCPB can provide subsidy access to medium and large farmers fairly quickly, who can produce relatively more surplus food for the market.

For the upcoming long season 2022/23 (i.e. the short term), the government will likely need to use both subsidy programs to help protect the food security of Kenyan households. Yet, in the medium- to longer-term, NVSP can be adapted to enable farmers with more than 5 ha of landholding to participate while avoiding the well-known inefficiencies from rent-seeking and corruption that are common to input subsidy programs where inputs are physically distributed and retailed by government agencies or parastatals (Lunduka *et al.*, 2013; Mason and Jayne, 2013). For example, although NVSP was designed to target smallholders only, NVSP could begin to register medium-scale farmers (those with 5 to 100 hectares); then in the event of another national food security crisis, the program could provide medium-scale farmers with temporary access to NVSP e-vouchers, thereby enabling the program to quickly scale up its ability to generate adequate surplus maize, rice, and potatoes for the domestic market.

6. Policy recommendations

Based on the issues discussed in this brief and assuming that food, fertilizer, and fuel prices in Kenya continue to be extremely high, we offer the following recommendations:

Recommendations on Food Prices

1) In the short-term, protect incomes, assets, and food security of the most vulnerable urban households and individuals through (i) humanitarian assistance in the arid and semi-arid areas

per hectare of maize – the recommended fertilizer rate for maize averaged across various sub-counties (NAAIAP, 2014).

affected by drought, which is urgently needed; and (ii) temporary expansion of the government's existing targeted social safety net programs[11].

2) Avoid use of universal food subsidy approaches; these are extremely costly and inevitably provide income support to many households and individuals that do not need it compared with those near or below the poverty line. If there is a need to expand income support to vulnerable households and individuals beyond those in existing targeted safety net programs, and fiscal, time, and/or data constraints make administrative targeting infeasible in the short run, carefully consider self-targeting options to direct benefits to poorer households and away from wealthier ones—such as food for work programs. Providing indirect food subsidies to consumers via payments to large-scale maize millers (as had been briefly implemented in the past months) is not advised for several reasons.
    i. Sifted maize flour is consumed mostly by relatively high-income Kenyan households in urban areas, while relatively poor households in both rural and urban areas mostly buy maize grain and take it to a posho mill (Kirimi, 2011). Subsidizing sifted maize flour would thus transfer income support primarily to the less poor in urban areas.
    ii. In practice, it is quite complicated and costly to monitor and enforce that millers and retailers pass all the subsidy to consumers.
    iii. Subsidizing consumption at this scale (i.e. a universal subsidy) is extremely costly.
3) If and when estimates from the early warning system predict a need for importation of maize from outside of the EAC, GoK should waive the maize import tariff quickly enough to enable traders to import maize before maize prices increase significantly and to allow them to import over a sufficiently long period, which can avoid transport capacity constraints and domestic stockouts (Kirimi, 2011).
4) In the medium- to longer-term, adopt a transparent, rules-based approach to the timing and duration of tariff waivers for maize and National Cereals and Produce Board (NCPB) grain purchases, sales, and pricing. This would reduce financial risks faced by maize farmers, traders, wholesalers, and millers from the current unpredictability of GoK maize trade and marketing policy decisions. It would also improve the enabling environment for private sector investment in Kenya's food marketing system and strengthen its resilience to future adverse climatic events and international market shocks.

Recommendations on Fertilizer Prices

<u>In the short-term</u>:

1) Continue to expand the number of smallholders with access to Kenya's private-sector-friendly, targeted e-voucher input subsidy program (NVSP) by both increasing efforts to register eligible farmers and increasing the NVSP budget, for example, by shifting funds originally intended for the NCPB-managed fertilizer subsidy program to NVSP.
2) Consider reducing the maximum allowable quantity of NCPB-managed subsidized fertilizer per farmer from 100 (one hundred) 50-kg bags of fertilizer to 24 bags (an amount sufficient for approximately 4 hectares of maize). This can help boost the domestic production of surplus

[11] These include the Older Persons Cash Transfer (OPCT), Cash Transfer to Orphans and Vulnerable Children (CT-OVC), the Persons with Severe Disability Cash Transfer (PWSD-CT), and the Hunger Safety Net Programme (HSNF).

maize, rice or potato production from medium and large-scale farmers while reducing the magnitude of the known and significant leakages, inefficiencies, and inequities of this program:

a. Leakages: the capture of subsidy benefits by non-farmers who manage to obtain subsidized fertilizer by finding loopholes in the NCPB's manual administration system
b. Inefficiencies: the potential for medium and large farmers with adequate self-financing or credit access to obtain a large subsidy that may not actually increase their fertilizer use very much; and from leakages
c. Inequities: the infeasibility of farmers outside of NCPB depot areas to access the fertilizer, and potential for medium and large farms to obtain such large amounts of subsidized fertilizer that it could significantly reduce the amount of remaining fertilizer for smaller farmers, and thus the number of them who are able to access NCPB subsidized fertilizer before it runs out.

In the medium to long term:

3) Increase efforts to disseminate available "best practice" complementary crop and soil management practices. Alongside this effort, increase funding to agricultural R&D to support the development of technologies and management practices that are urgently needed to improve and maintain crop-fertilizer response rates and soil fertility over time, and to public extension to facilitate mobility of extension agents who can educate farmers and encourage their adoption of the technologies and practices.
4) Shift all input subsidy funding to the targeted NVSP, as proposed by Kenya's Agricultural Sector Transformation and Growth Strategy (MALFC, 2019).
5) In the event of a national food security crisis: (i) increase the value of each NVSP e-voucher (per farmer) as needed; (ii) allow registered medium-scale farmers to temporarily access NVSP e-vouchers with value needed to access inputs for up to 4 ha of maize or potatoes, depending on their planting intentions.
6) Ensure that e-vouchers and subsidized inputs are available to farmers early enough in each targeted growing season for farmers to make timely cropping and input-use decisions.
7) In the long term, GoK can most effectively and efficiently reduce domestic prices of inorganic fertilizers (and other inputs) through investments in transportation infrastructure -- especially rural access roads -- to lower distribution costs; and by establishing an enabling policy and regulatory environment conducive to private sector investment by fertilizer supply chain actors, including domestic fertilizer production and blending. Facilitation of investments in local fertilizer blending is particularly important given the widely recognized fact that soils on most Kenyan farms in major agricultural production areas are acidic and deficient in one or more micronutrients (NAAIAP, 2014). Fertilizer blends suited to local soil conditions are needed to increase crop-fertilizer response rates, in conjunction with recommendation (3) above.

7. CONCLUSIONS

Kenya currently faces several major food security challenges, including a series of negative economic effects from COVID-19, three years of widespread drought, and rapid increases in food and fertilizer prices due to the Ukraine crisis. Though the government may feel pressured to implement universal or non-targeted food and fertilizer subsidies that are accessible to any households or farmers, these actions should be avoided. Firstly, universal subsidies are extremely costly. Second,

such subsidies are regressive in nature because relatively well-off consumers and farmers are often better able to access them compared with households and farmers of limited means who are also more likely to be most severely affected by COVID-19, droughts, and high prices. A targeted approach to social protection and input subsidies that identifies those most in need will ensure that scarce resources are used most effectively and efficiently. Finally, these current challenges should not cause the Government of Kenya and donors to stop investing in their medium- and long-term goals of making Kenya's food system and agricultural sector more productive, inclusive, and resilient to the continuing challenges of climate change and adverse price and market shocks.

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