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Redesigning the Affordable Inputs Program to Diversify and Sustain Growth

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Key Messages

- Malawi has been implementing a large input subsidy program since the 2004/5 season to improve access to agricultural inputs by smallholder farmers.
- Recently, there has been recognition within government that significant reforms are needed.
- These calls for policy shift are consistent with existing evidence that suggests that the benefits from subsidy programs have been considerably smaller than anticipated due to low crop response to fertilizer and other challenges.
- These calls present an opportunity for innovative policies to decisively address the existing pitfalls and devise ways for greater and more efficient use of resources.
- Malawi could consider implementing a streamlined, smarter subsidy program and/or venturing into other forms of subsidies tailored to different farmer and ecological needs (e.g., subsidizing legume seeds, agriculture lime, etc.).
- Government could also consider going beyond subsiding inputs to promoting interventions that holistically addresses soil health and land conservation challenges faced by the nation's farmers.
- Malawi could adopt policies other than subsidies, such as strengthening agricultural Research, Development and Extension to improve productivity of land, labor and other inputs.
- Bidirectional learning between extension workers and farmers, improving public infrastructure, increasing access to education and land tenure rights, creating an enabling policy environment, and promoting dietary and production diversity will all be critical for the country.

Introduction

Malawi has been implementing nationwide subsidy programs since at least the 2004/5 agricultural season to improve smallholder farmers' access to improved agricultural inputs. This was in response to falling agricultural productivity, slow and erratic growth averaging about three percent in the last 10 years. The poor performance of the sector has been associated with frequent food insecurity and high poverty rates in the country

Prior to the 2020/21 agriculture season, the program targeted between 0.9 to 1.6 million smallholder farmers countrywide with inputs for legume and maize production for roughly 0.2 hectares of land. After the 2020/21 agriculture season, government expanded the program to reach 3.7 million farmers countrywide with a similar quantity of inputs. Two seasons on, and having faced many new and familiar challenges, there is an expressed interest at the highest level of government to rationalize the program and potentially devise a plausible exit strategy. At the launch of the 2021/22 Affordable Inputs Program (AIP), His Excellency, President Chakwera, emphasized the need for mindset change and an exit strategy for the AIP. The State President cited the need to ensure beneficiary incomes are progressively increasing and making steady progress to successfully graduating from subsidies.[1] These calls have been reinforced by the

Public Affairs Committee (PAC), a quasi-religious body, who also cite the need to rethink the AIP. Further, the nation recently adopted of a ten-year Malawi Implementation Plan for the long-term vision, Malawi 2063, which calls for reforms to agricultural programming and potentially freeing resources to implement other types of interventions.

This Policy Brief presents evidence on how the AIP program can be reformed while improving food security and accelerating poverty alleviation. We draw from existing research evidence to guide how government may leverage on the lessons from similar programs in the Sub-Saharan Africa (SSA).

There are several reasonable arguments for subsidizing inputs like fertilizer and hybrid seeds, such as promoting more self-sufficiency and employment compared to, say, food aid. Besides increasing domestic food production in the short term, input subsidies could potentially generate effective demand for commercially purchased inputs. Thus, farmers could graduate from the subsidy program to purchases from private sector input suppliers that would have been drawn to rural areas by the demand generated through subsidies.

These theoretical benefits notwithstanding, there is a great deal of evidence supporting the inclination to reform or exit from subsidy policies, and that the benefits of previous subsidy programs in Malawi have been considerably smaller than anticipated. For instance, the most recent data-driven research shows the productivity increases in maize attributable to subsidies have been smaller than earlier estimates.[2,3,4] This has been coupled with persistently volatile and frequently high maize prices.

Household food security and national food self-sufficiency have also generally not been achieved as maize imports and persistent food insecurity continue to rise, requiring distribution of food aid. A recent Malawi Vulnerability Assessment Committee (MVAC) Report found that around 10% of the country's population (1.69 million people) faced high levels of acute food insecurity between July and September 2020, despite the generally good harvest experienced at a national level.[5] These variations in the availability of maize cast doubts on the ability of subsidy programs alone, in their current form, to ensure and sustain the country's food security. Improving the overall impact of limited public resources on national economy is a sensible goal for any country, but first it is important to understand why previous programs may have underperformed.

Challenges faced by input subsidy programs

Support for a policy shift comes from the fact that subsidy programs in Malawi have faced a number of pitfalls, including:

Crowding-out private sector. The subsidy program had displaced, on average, 15 - 21% of commercial input sales prior to the 2020/21 season.[6,7] In other words, each additional kg of fertilizer that was subsidized reduced the quantity of unsubsidized purchases by 0.15-0.21 kgs. Displacement offsets some of the immediate benefits of the program and could have long-term negative repercussions for the private fertilizer sector. The displacement rate almost certainly increased during the 2020/21 season, as beneficiary coverage increased roughly four-fold.

Crowding out other public investments.[8] The subsidy program has dominated the government's annual funding to the Ministry of Agriculture (MoA) since the 2004/05 season. For example, the subsidy program received an average of 41% of government's budgetary allocations to agriculture, between 2009/10 and 2019/20, leaving little room for other programs like agricultural R&D (1.1%), agricultural extension (0.1%), irrigation

development (0.4%), and livestock development (0.8%).

High opportunity costs. Subsidies reduce spending on investments that could otherwise increase agricultural profitability, such as addressing the underlying drivers of high input and marketing costs (e.g., infrastructure); raising productivity (e.g., research and extension); or raising on and off farm productivity in the long-run (e.g., education).[8]

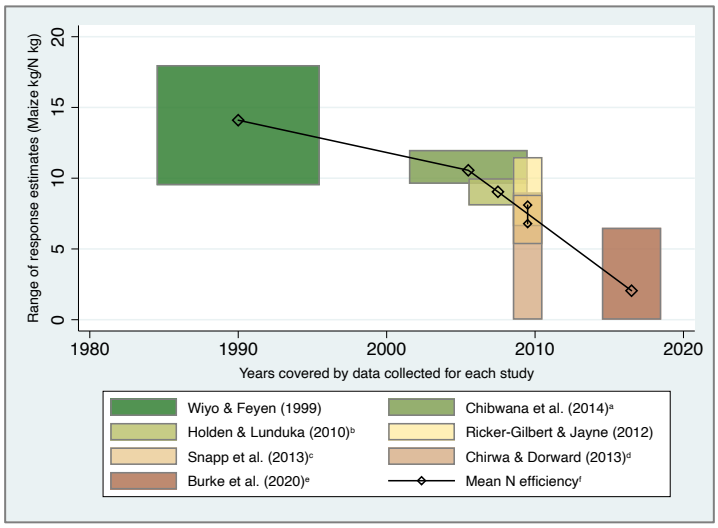
Low – and possibly declining – maize yield response to nitrogen fertilizer.[9,10,11,12,13] The most recent estimates indicate that farm-level maize yield responses for Malawi are in the range between nil and just over 6kg maize/N kg depending on farm management practices and ecological conditions, and 2.6 kg maize/kg N on average (Figure 1). Earlier estimates (from roughly 30 years ago) are as high as 18kg/kg, but the limited available evidence suggests yield responses may be declining over time. This is a feasible outcome after several years of reduced fallow, limited crop rotation as a result of population growth and shrinking land sizes.

Raising the agronomic efficiency of nitrogen will be paramount for raising the profitability of using inorganic fertilizers, organic inputs, and improved maize seed.[14] In turn, this would stimulate demand for commercial fertilizers and greater investments in input supply chains and support services.[15]

Subsidies are financially unsustainable in the long-run. As the 2021/22 season has revealed, not only is the budget for AIP very large (averaging 63.5% of the MoA 2021/22 budget), but the cost and distribution of fertilizers is also emerging to be a major financial burden to government. Distribution requires substantial use of the human resources (time) of various government agencies, especially the extension staff, police and others.

Moreover, for a given number of beneficiaries and subsidy rate, the program's cost will continue to be

Figure 1. Yield response to N on farmer-managed fields over time (1984-2018) in Malawi



Sources correspond to the color coding in the legend. The box representing each study spans the range of each's yield response estimates on the vertical axis, and the years covered by their data along the vertical axis. For more details on each study, see Burke et al. (2021).[9]

difficult to predict because fertilizer prices are largely determined outside of Malawi's borders.[16,17]

Ineffective targeting of beneficiaries, partly due to combining the objectives of food security and poverty alleviation in one program. The operational principle of targeted subsidy programs is that subsidized inputs are rationed to poor but potentially productive beneficiaries who would otherwise lack access to commercial inputs. Evidence suggests successive subsidy programs have occasionally disbursed greater quantities of subsidized inputs to households with higher assets and more land, partly because of these comingled objectives.[18] Ineffective targeting may reduce the cost-effectiveness of subsidies, the overall contribution of subsidies to fertilizer use, and/or exacerbate the adverse effects of subsidies on commercial input markets. Effective targeting can be made more feasible by implementing separate programs for food security and social security objectives, each with appropriately defined targeting criteria.[8]

Subsidies have limited influence on sustaining the uptake of agricultural technologies. Although subsidies incentivize uptake of agricultural technologies initially, adoption and program graduation will wane if the returns to the subsidized technology are low or begin to fall. This can cause sustained adoption to become dependent on sustained subsidization, which can be a major drain on the national treasury.[19]

In light of all the aforementioned issues, the government's decision to seek ways to reduce or even exit from massive input subsidy programs is well-supported by available research. The decision is also consistent with existing evidence that expenditures in alternative public programs may realize considerably greater benefits for Malawi in the long-run. Further, the decision could act as a catalyst for technical innovation in the sector, leading to greater and more efficient use of inorganic and organic fertilizers and improved seeds, and reinvigorated research and extension services.[13] We highlight below, some options that government may start considering in the short-, medium- and long-term.

Short-term interventions (one to three years)

Consider a streamlined, smarter subsidy program for productive beneficiaries who only lack economic access to commercial inputs. Given their popularity, subsidies will likely continue having a role in the country's agriculture sector for some time. That does not preclude, however, reforming them into a smarter, more targeted program. Smarter subsidies could allocate entitlement to farmers to access inputs directly from their preferred agro-dealers, for example, instead of designated suppliers. This change could reduce the cost of program implementation and make it easier for the program to be flexible and diverse. Also, removing governments' direct involvement in the agricultural inputs business could free time and resources of government agencies, including police and extension staff, currently spent on subsidy implementation. Flexible vouchers could diminish the political interference and opacity associated with the tendering of suppliers in previous programs.[17] Finally, smarter subsidies could incentivize greater private sector participation, reduce the leakage of inputs, improve the timeliness of input distribution and accessibility, and program transparency. In short, effective targeting could be paramount to the success of smart subsidies.

Further improving program flexibility. Providing inbuilt flexibility in the program could enable farmers to access inputs of their choice (e.g., legume seeds, small luminants, and agricultural lime (where it could be useful), and herbicides, insecticide, fungicide, livestock feed and veterinary drugs in addition to fertilisers and seeds)) from agro-dealers at a time and place convenient to them.[20] These may have greater long-term benefits than previous subsidies but are still subject to many of their challenges. Of course, allowing farmers to choose their inputs as previously suggested would also accomplish this recommendation.

Consider transforming AIP into a soil health and land resources conservation program promoting interventions that holistically replenish soil fertility and/or conserve land resources. Existing evidence indicate that soil nutrients in Malawi are being depleted at a faster rate than they are being replenished, resulting in lower net nutrient balance for the key nutrients, such as nitrogen, phosphorous, potassium and sulfer.[14] This is partly due to extractive farming practices (e.g., continuous cropping – no rotation, no fallowing, and overreliance on inorganic fertilizers, etc.[21,22]), leaving soils uncovered in the off season (which allows runoff and hastens soil erosion at the start of the rainy season), and not adding mineral fertilizers correctly (the "4 Rs" – the Right

fertilizers, at the Right rate, at the Right time and in the Right place).[14]

Soil degradation can be mitigated by promoting a package of practices and improved technologies to enhance soil fertility and conservation. Examples include promotion of crops that utilize the whole soil profile (top and sub-soil) and provide vegetative top cover for the rest of the dry season or rebuild soil organic carbon (SOC).[14] Rebuilding SOC is critical for restoring the physical, chemical and biological soil health, improving nutrient retention and crop absorption of available nutrients.[8,11,12,15] Crops respond better to inorganic fertilizers in soils with high SOC.[12] Mineral fertilizers do not contain any carbon, which is why organic inputs must also be incorporated into production systems to improve soil health.[24]

Strengthen Agricultural Research and Development (R&D) and Agricultural Extension services to improve the overall productivity of existing farmland and labour. Agricultural R&D could develop technologies such as crop and area specific fertilizer recommendations, and continuously refine them based on feedback from farmers by way of extension programs. One role of extension programs would be to help farmers improve their crop and soil management practices to improve crop responses to fertilizers.

Relatedly, recruiting more researchers and reducing the farmer to extension worker ratio (currently estimated at between 2,500 and 3,000) would be a critical ingredient in revamping the current public R&D and extension services. Increasing funding to the Department of Agricultural Research Services (DARS) and Department of Agricultural Extension Services (DAES) is paramount for accomplishing these goals. Analysis of the expenditure on previous subsidy programs suggests that with about one-third of the proposed spending for the 2021/22 AIP, the government could have added 10 research officers at Chitedze Research Station, recruited and trained more than 4,000 extension officers, equipped each officer with a new motorcycle, and provided the fuel and funds to operate it as well as everything needed to run a demonstration plot for improved management.[8] This would more than triple the government's current research and extension capacities.

Improve the general on-farm management practices on smallholder farms. For instance, delayed weeding has been shown to severely limit yield response to fertilizers for many Malawian farmers.[9] This, again, emphasizes the importance of effective extension.

Adopt a model where unemployed youth can be engaged in extension and public works programs (e.g., constructing road infrastructure or training as extension officers). This could be an opportunity to accomplish the complementary objectives of meaningfully engaging the nation's youth while improving productivity, marketing and farming opportunities for all Malawians.

Adopt bidirectional extension and learning practices to generate and spread local knowledge more effectively. This promotes local adaptation of agricultural technologies to farmers' specific conditions by using home-grown knowledge to tailor the recommendations to farmers' socio-economic conditions. These concepts have proven successful in other settings in SSA.[23]

Medium-term interventions (three to five years)

Allocate more public resources to public infrastructure development, especially roads, railway and electricity infrastructure. As a continuation of the short-term interventions outlined above, this could provide greater long-lasting and widespread payoffs for food security and poverty reduction than agricultural subsidies.

Studies from India and elsewhere have consistently shown that investing in rural roads, electricity,

railway lines, health infrastructure and the like have more poverty reducing and agricultural growth impacts in the long run than spending on agricultural subsidies.[24,25]

Increase investments in social services (health, education, nutrition and others). Evidence has also shown that investing in education, especially in skills development and critical thinking, raises off- and on-farm labour productivity in the long-run.[26] Estimates suggest this could be feasible in Malawi. The amount of money spent on the subsidy program annually, since 2009/10, could have added nearly 9,000 classrooms to existing primary schools, built nearly 500 all-new primary schools, or 130 all-new secondary schools. For the cost of just 3.25 average years of the FISP, a new basic science learning laboratory could be built at every single secondary school in Malawi.

Focus on promoting dietary and production diversification to reduce emphasis on maize as a staple food crop. In Malawi, maize makes up over half of a typical diet and dominates farm-level production of subsistence farming households.[26] Rather than reinforcing this status quo, agricultural policy could be used to rigorously promote dietary diversity.

Promote public-private-partnerships that improve and sustain the country's food security status. These partnerships could come in the form of government working with private sector institutions with capacity to produce for the Strategic Grain Reserves (SGRs) to sustain food availability and accessibility by all. However, to the best of our knowledge, this is an untested and vulnerable approach that would require transparent rules and procurement practices, and independent oversight.

Long-term interventions (5 years and beyond)

Explore the possibility of locally manufacturing (at least some) fertilizers to reduce reliance on volatile global fertilizer markets. The country often faces high domestic fertilizer prices relative to world market prices. While this is expected for a small, long-stretched, land locked country like Malawi (at least 90% of the domestic price of fertilizer is determined before it reaches Malawi's borders[16, 17]), it may be sensible to explore the possibility of producing fertilizers locally in the long-run if this can be more cost effective than importing. However, it is not immediately apparent that this would be cost effective; the country would still rely on imported fertilizer production inputs and be required to generate a great deal of energy to convert atmospheric nitrogen into fertilizer.

Provide a consistent, coherent, and enabling policy environment. The policy environment is critical for driving productivity growth and poverty reduction and increasing payoffs to investments suggested in this brief. The examples of policy reforms that will be necessary for successfully reforming the subsidy program include the following:

Increase farmers' tenure rights and market liberalisation. Reforms that increase individual farmers' tenure rights, when accompanied by agricultural market liberalisation efforts, incentivise and stimulate output growth and private investment. This is clearly attested by evidence from six Asian countries (China, India, Indonesia, South Korea, Taiwan, and Vietnam) that achieved dramatic yield increases in the 1950s and 1960s.[26]

Investments in irrigation to improve water control increase the returns to agricultural subsidies, especially in semi-arid conditions by mitigating the impacts of droughts and moisture stress in crops.[19]

Streamline the regulatory barriers inhibiting private investment in agricultural markets and food systems. Malawi continues to have an unpredictable and unstable market environments for agricultural inputs and outputs, resulting in some of the highest staple food price volatilities in the region. The country needs to adopt a more

transparent, rules-based, and predictable maize marketing and trade policies to reduce the degree of maize price uncertainty and promote greater private investment in agricultural markets. The relative predictability and stability of agricultural commodity markets creates a favourable "enabling environment" for incentivising the further development of markets.[27]

Conclusion

This policy brief has examined options for Malawi to re-structure the subsidy program and rationalize agricultural programming altogether. The redefinition of the role of the program is critical to account for the recent developments in the sector and make more efficient use of available public resources.

This Policy Brief is a compilation of findings from previous studies. For citation, the authors recommend using original source material when possible.

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