

# POLICY BRIEF II

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## Improving the Effectiveness of Malawi's FISP

By

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### Policy Pointers

- 1) Benefit cost analysis indicates that in some years FISP fertilizer does not generate high enough returns to cover the cost to the government. Returns can increase if maize yield response to fertilizer improves and implementation costs are reduced.
- 2) High expenditure on FISP potentially crowds out other agricultural development programs. This threatens the sustainability of FISP, and may undermine smallholder agriculture in the long-term.
- 3) The heavy reliance on imported fertilizer also places tremendous pressure on the country's balance of payments position.
- 4) A number of steps should be taken to improve FISP effectiveness and lower program costs. Among those are:
  - i) Gradual shifting of resources from FISP to fund other developmental programs and work towards building an agricultural credit system.
  - ii) Improve FISP targeting criteria, to focus on relatively productive farmers. Provide social safety net programs for poor households who cannot use fertilizer effectively.
  - iii) Allow private retailers to again sell FISP fertilizer. OPTICHEM, an experienced fertilizer company in Malawi, can be included in the program to procure, blend and pack FISP fertilizers.
  - iv) Increase farmers' required contribution to purchase FISP fertilizer to 30% market price.
  - v) Move the fiscal calendar so that the year begins in January or include next year's FISP budget in the current year. This will lower procurement costs and help ensure that FISP fertilizer is available to farmers in a timely manner.

### Policy summary

*Benefit and cost estimates of the Farm Input Subsidy Program (FISP) indicate that the program often does not generate high enough returns to cover its costs. This has led to an ongoing debate regarding the effectiveness and sustainability of fertilizer subsidies in sub-Saharan Africa (SSA). In this brief we evaluate effectiveness of the FISP in Malawi under the following four criteria: 1) benefits vs. costs at the household level; 2) impact on the private input sector; 3) impacts on funding for other agricultural development programs; and 4) Macro-level and foreign exchange impacts. Our findings raise questions about the program's fiscal sustainability. On private sector involvement, we note that seed retailers have likely benefited from participation in the program, while fertilizer retailers have likely not benefited by being excluded since 2008/09. At the macro-level we note that FISP takes a large share of the agricultural budget and potentially crowds out other investments and social programs. The heavy reliance on imported fertilizer has also placed pressure on the country's balance of payments position. This coupled with an increase in fuel price, has contributed to high inflation rates.*

*We propose a number of strategies that could be take in the short, medium and long term that may help ensure sustainable agricultural development in Malawi.*

### INTRODUCTION

Input subsidies are currently receiving a great deal of attention and funding in Sub-Saharan Africa (SSA). The goal of these programs as articulated by many African governments is to improve farmers' incomes and national food security by increasing food production among smallholders. To date fertilizer subsidies have enjoyed popular support in Africa, and in some

countries account for substantial shares of national budgets. Benefit/cost estimates generally suggest modest returns to these programs at best. Moreover, a major debate surrounds the effectiveness and fiscal sustainability of fertilizer subsidies in SSA. For example, concerns are often expressed about whether such programs meet national policy objectives more efficiently than other public investments in agriculture

(GRAIN 2010; Harrigan 2008; Minde et al. 2008). The first part of this brief investigates the sustainability of Malawi’s Farm Input Subsidy Program (FISP) along different dimensions. Part 2 provides recommendations to help improve the sustainability of the program.

## PART I: DEFINING EFFECTIVENESS IN THE CONTEXT OF MALAWI’S FISP

We first define 4 criteria under which one might evaluate the FISP’S effectiveness. 1) FISP benefits vs. costs at the household level; 2) impact on the private

input sector; 3) impacts on funding for other agricultural development programs; and 4) Macro-level and foreign exchange impacts.

### 1 *Benefits and Costs of FISP at the household level*

At a basic level one could make the argument that the FISP may be fiscally sustainable if the benefits of the program outweigh the costs. Considering costs, Table 1 shows that In 2006/07, the FISP accounted for 6.8% of the national budget, and 2.5% of GDP. In 2008/09 fertilizer world fertilizer prices were extremely high so FISP costs increased to 16.2% of the national budget, and 6.6% of GDP. The program costs were lower after 2008/09 as fertilizer prices declined, and in 2010/11, the program accounted for 8.0% of the national budget, and 3.0% of GDP. One clear point that comes out of Table 1 is the huge financial burden that the FISP imposes on both the MoFAS and national budget. One reason for the high costs is the extremely high subsidy rate as farmers are paying as little as 7% of the “market” price

of fertilizer in recent years. Lowering the rate of subsidy by increasing farmers’ required contribution would reduce government costs, and also induce less productive farmers who would sell FISP fertilizer so self-select out of participating in the program.

It is also important to note that Malawi has largely funded the FISP through its national budget, but the national budget in Malawi receives considerable donor support. For example, in 2012/13 the programme total cost estimated at just over or US\$144 million or MK 52.8 billion. This was about 60% of the total MoAFS budget and 10 % of the national budget. Development partners contributed directly by covering 12% of the estimated net costs and indirectly through budget support (Chirwa and Dorward, 2013).

Table 1: Important features of the FISP, 2005/06 to 2010/11

| Cropping year                                   | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Average |
|---|---------|---------|---------|---------|---------|---------|---------|---------|
| Total fertilizer subsidized (MT) <sup>1</sup>   | 131,388 | 174,688 | 216,553 | 197,498 | 159,585 | 160,531 | 139,901 | 168,592 |
| Fertilizer subsidy (%) <sup>1</sup>             | 64      | 72      | 79      | 91      | 88      | 91      | 93      | 83      |
| Total program cost (US \$ million) <sup>2</sup> | 36.43   | 53.57   | 82.14   | 139.14  | 155.04  | 129.99  | 129.48  | 103.68  |
| Total cost as % MoFAS budget <sup>2</sup>       | -       | 46.8    | 57.2    | 67.6    | 52.7    | 60.1    | 48.9    | 55.6    |
| Total cost as % of national budget <sup>2</sup> | -       | 6.8     | 8.2     | 16.2    | 6.5     | 8.0     | 7.1     | 8.8     |
| Total costs as % of GDP <sup>2</sup>            | -       | 2.5     | 3.1     | 6.6     | 2.5     | 3.0     | -       | 3.5     |

Source: Chirwa and Dorward (2013); <sup>1</sup> pg. 91; <sup>2</sup> pg. 123.

On the benefit side, the main outcome from a kilogram of subsidized fertilizer distributed as part of the FISP is the amount of maize that it generates for smallholders. Dorward and Chirwa (2011) estimate the direct benefits of the program by calculating the benefit-

cost ratios from 2005/06 to 2008/09. Their calculations are based on assumed maize-nitrogen response rates of 18 (high), 15 (medium), and 12 (low) kg of grain per kg of nitrogen. Fertilizer is valued at prevailing commercial

fertilizer prices.<sup>1</sup> Ricker-Gilbert and Jayne (2012) also estimate the plot-level response of maize to fertilizer. They find an average response rate of 8.13 kg maize per kg of subsidized nitrogen acquired.<sup>2</sup> Using these figures, Lunduka et al. (2013) calculate cost/benefit ratios of FISP. Table 2 presents the benefit/cost ratios<sup>3</sup> for the FISP between 2005/06 and 2008/09 by comparing maize response rate from Dorward and Chirwa with those estimated by Ricker-Gilbert and Jayne (2012). When we value fertilizer at the subsidized price paid by recipient farmers, the benefits are well above 1 (column F of Table 2). This indicates that households that received subsidized fertilizer, benefit from it. This is not surprising given that these households acquired a productive input at above a 90% subsidy rate in some years. When we use the assumed medium maize-to-fertilizer response ratio of 15:1 in column D, the benefit-cost ratios are greater than 1 in all years of the program. However, when we use the estimated marginal response of 8.13:1, we find that the benefit-cost ratio is below 1 in all years except for 2007/08 (column E of Table 2).

The findings in column E of Table 2 raise questions about the program's fiscal sustainability, given

that the returns to subsidized fertilizer often do not generate enough revenue to cover the cost to the government. From column E it appears that the subsidy program would have provided nearly equivalent or lower returns than providing recipients with cash, while the response rate in column D makes the program look more favourable. Chirwa and Dorward (2013) recently calculated a benefit cost ratio of 1.7 for the FISP in 2012/13, and a fiscal efficiency ratio of 0.75 when only direct impacts of the subsidy program are considered.

The main conclusions on the various estimates of benefit-cost ratios for the FISP is that the ratio is low and can be improved. It will cost money to provide complimentary inputs that can improve maize to fertilizer response rates, such as better fertilizer management and soil fertility treatments. Some resources may have to be pulled from direct fertilizer distribution to fund complimentary programs that can help increase response rates. The ratio can be improved on the cost side if steps are taken to implement the program more efficiently and reduce administrative costs.

Table 2: Benefit-cost ratios of subsidized fertilizer, 2005/06 to 2008/09

| Year    | (A)<br>Commercial price of maize (US\$/kg) | (B)<br>Government cost per kg of fertilizer (US\$/kg) | (C)<br>Subsidized price of fertilizer (US\$/kg) | Benefit-Cost Ratio                             |   |   |
|---------|--|---|---|--|---|---|
|         |  |   |   | (D)<br>At government cost per kg of N (15*A)/B | (E)<br>At government cost per kg of N. (8.13*A)/B | (F)<br>At subsidized fertilizer prices (8.13*A)/C |
| 2005/06 | 0.14                                       | 0.42  | 0.15  | 1.67   | 0.90  | 2.53  |
| 2006/07 | 0.13                                       | 0.44  | 0.11  | 1.50   | 0.81  | 3.13  |
| 2007/08 | 0.20                                       | 0.43  | 0.10  | 2.36   | 1.28  | 5.65  |
| 2008/09 | 0.21                                       | 1.02  | 0.05  | 1.03   | 0.56  | 10.84   |

Source: Lunduka, et al. (2013).

## 2 Impact on the private input sector

Two issues influence how the FISP affects the private input sector in Malawi. The first demand-side issue is how the presence of a large-scale fertilizer and seed subsidy affects households' decisions to purchase inputs on the commercial market. This is the displacement or crowding out effect, and it ultimately determines how effectively the FISP raises total

fertilizer and seed use, and how many kilograms of new inputs ultimately end up on farmers' fields. Figure 1 shows the percentage using commercial and subsidized fertilizer in a sample of 462 smallholders for whom we can trace fertilizer use over time. Though this sample is not nationally representative, it is useful to track this group's fertilizer use over 8 years. Figure 2 shows the

<sup>1</sup> This assumes that the government's price is the commercial price of fertilizer.

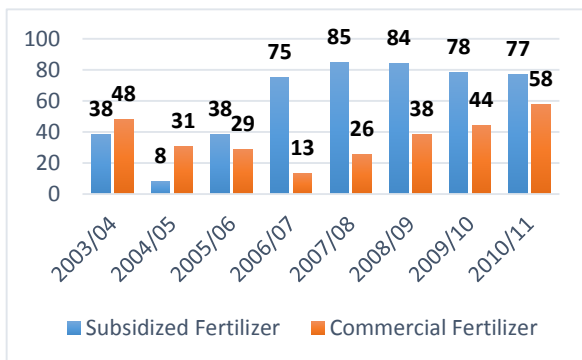
<sup>2</sup> Fertilizer use response rates are converted to nitrogen use response rates by multiply the fertilizer response rate by 3.

<sup>3</sup> A benefit-cost ratio equal to 1 indicates that a kg of subsidized fertilizer is equal to giving recipients cash; a

benefit-cost ratio less than 1 indicates that the returns to subsidized fertilizer are lower than giving recipients cash. This does not mean that it is equivalent to a cash-transfer program, which would have its own administrative costs.

average amount of commercial and subsidized fertilizer that these households use over time. Commercial fertilizer dropped for the households in the initial years of the program, beginning in 2005/06 to a low of 13% participation and 21 kilograms in average purchases in 2006/07. However, the percentage of households purchasing fertilizer commercially, and the average amount of fertilizer purchased commercially has risen in recent years and is now comparable to pre-FISP use on average (see 2003/04 use, and 2010/11 use in Figure 2). This is an encouraging sign, and offers some evidence that commercial fertilizer demand has increased, and the private sector has been able to deliver fertilizer to farmers even though they have been excluded from retailing FISP fertilizer since 2008/09. It should be noted however that the median farmer still used zero kilograms of commercial fertilizer until 2010/11, when he or she purchased 15 kgs.

When we further unpack the relationships in Figures 1 and 2 to control for other things that affect



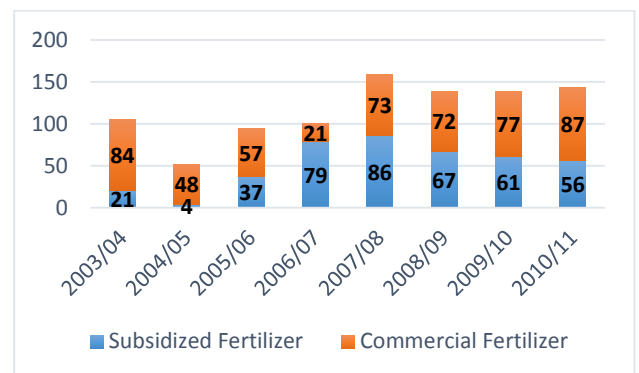
**Figure 1: Percentage of Households Using Inorganic Fertilizer, by Source and Year.**

Source: Author's calculations from the IHS2, AISS1, AISS2 and AISS4 surveys. Number of observations=462, not Nationally representative

A second important issue is how the FISP directly influences private sector sales and profits. This matters because if the FISP were to end or be scaled down, the private sector would be responsible for meeting input demand for Malawi's farmers. Evidence suggests that the private sector has increasingly been involved in the procurement and distribution component of the FISP. Chirwa and Dorward (2013) indicate that the number of private firms competing for and being awarded bids to procure inputs for FISP has increased between 2008/09 and 2009/10, which is a positive sign.

Two studies analyse the impacts of the FISP on private input retailers in 2007/08 and 2008/09 season (Kelly et al. 2010 and Fitzpatrick, 2012). These studies do not draw strong conclusions regarding the private

fertilizer purchases, such as fertilizer prices, maize prices, household wealth etc., we are able to generate a more complete estimate of how much commercial fertilizer is actually displaced by the subsidy. We find that the average "crowding out" rate for the same 462 households used to generate in Figures 1 and 2 during the 4 years when they were surveyed is 18%. One way to interpret the results is that, over the four years, 100 additional tons of subsidized fertilizer contributed 82 new kilograms to total fertilizer use. In contrast, 18 of those subsidized kilograms simply took the place of commercial fertilizer. The findings in Table 1 are consistent with other studies including earlier work by Ricker-Gilbert et al. (2011), who found a 22% crowding out rate between 2003/04 and 2006/07. Chirwa and Dorward (2013) also find a similar crowding out rate of between 15-21%. A crowding out rate around 20% is not insignificant, but it is not overly large either.



**Figure 2: Average Kgs of Inorganic Fertilizer used, by Households, Source and Year.**

Source: Author's calculations from the IHS2, AISS1, AISS2 and AISS4 surveys. Number of observations=462, not Nationally representative

sector impacts from the FISP, but Kelley et al. suggest that seed retailers have benefited from participation in the program, while fertilizer retailers have not benefited since their exclusion from the program in 2008/09. The authors also state that allowing farmers to obtain subsidized seed from private agro-dealers, while only permitting them to purchase fertilizer from the government, likely puts an extra burden on households because they may have to make 2 trips instead of 1 to redeem FISP vouchers. The evidence on private sector impacts from FISP suggest that fertilizer retailers may have benefited from recent increases in fertilizer demand from farmers. However, including the private sector in the retailing of FISP fertilizer would

strengthen their position and make the input supply chain more sustainable.

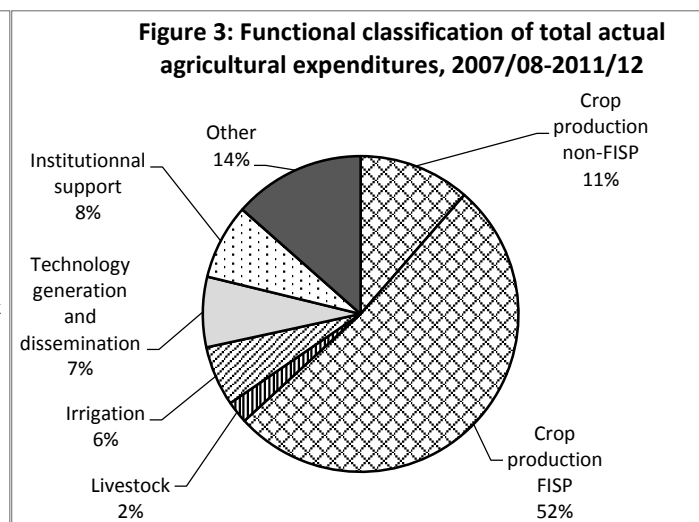
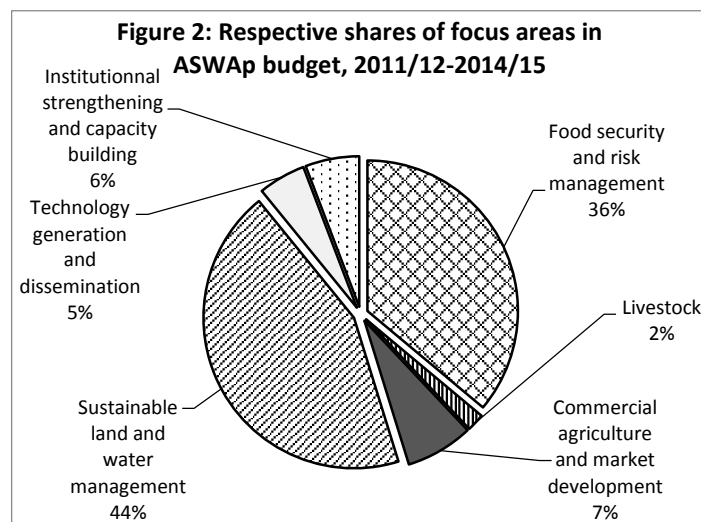
### 3 Impact on funding for other programs in agriculture

The FISP has received a larger share of Malawi’s agricultural budget than any other agricultural investment since 2005/06. The FISP share of the agricultural budget has been between 48-68% of the agricultural budget annually (Table 1). Given the substantial financial support the FISP has received, one must ask the question, what other types of programs may have been crowded out by the FISP?

Comparing the functional classification of total actual agricultural expenditures, including off-budget expenditures and other ministries agricultural expenditures, over the 2007/08-2011/12 period (Figure 2) with Agricultural Sector Wide Approach (ASWAp) interventions for 2011/12-2014/15 (Figure 3) reveals substantial discrepancies between what is presently being funded and what should be funded under the ASWAp. The current predominance of FISP does not leave room for developing the sustainable

land and water management and commercial agriculture and market development components to the levels planned in other critical agricultural development programs. It is clear that unless additional resources are raised or shifted from FISP, some crucial components of ASWAp will not receive sufficient support and are likely to fail to achieve their objectives (AgPER, 2013).

Chirwa and Dorward (2013) provide additional evidence that only 15-20% of farmers currently receive any sort of extension advice on an annual basis. The FISP has taxed extension staffs’ time because they are directly responsible for registering beneficiaries for the FISP and distributing vouchers. The reduction in expenditure in other equally important agricultural development programs may undermine complimentary investments that are necessary to make the FISP sustainable.



(Source: AgPER, 2013)

### 4 Macro-level and foreign exchange impacts

As a land-locked country with no readily available source of fossil fuels, Malawi does not produce its own fertilizer. Therefore, all fertilizer used in the country must be procured from abroad. Given the size of the FISP, the program has consumed a significant portion of the country’s foreign exchange reserves. As shown in Table 1, the cost of the program increased in the early years of the program, and peaked in 2008/09 and 2009/10 as world fertilizer prices were very high. Subsequently fertilizer prices fell causing program costs

to decline. The government was also able to maintain tighter control of the volumes of fertilizer imported into the country (Dorward and Chirwa, 2011). Regardless, the cost of administering the FISP remain high, and the Malawian government has in recent years faced a particular challenge of financing the program. Shortly after the fertilizer price shock in 2008/09, a series of external shocks— most notably a sharp decline in tobacco prices—placed tremendous pressure on the country’s balance of payments position. Government

was able to contain FISP program costs by maintaining a fixed exchange rate, but the dwindling foreign exchange reserves eventually meant that the government had difficulty importing fuel and fertilizer, causing the policy position became untenable by early 2012. The sharp devaluation that followed had a

dramatic effect on program costs in the 2012/13 implementation period. Based on the current exchange rate regime, program costs are likely to remain volatile in the future given the Kwacha's fluctuation and the fact that inorganic fertilizer must be imported and paid for in US dollars.

## PART II: STRATEGIES FOR IMPROVING FISP EFFECTIVENESS & SUSTAINABILITY

In this section we highlight some short-term, medium-term and long-term strategies for making the FISP more sustainable. We recognize that the FISP will likely remain part of Malawi's short and medium-term agricultural development strategies, so we consider options to make it more effective and sustainable. We also present graduation strategies from the FISP that the government can pursue in the longer term.

### **Short-term strategies (1-3 years)**

- i) Begin increasing investments that will pay off in the long run (R&D of new technologies, extension, promoting use of small livestock rearing and use of organic manure, better weed management, improve output markets, ). May require FISP to be scaled down to pay for other investments.
- ii) Develop and slowly expand over time a credit program that allows farmers to access working capital up front for the purchase of commercial fertilizer, with the credit being recouped through providing labor in the dry season for local public feeder road and projects.<sup>4</sup>
- iii) Allow the private sector to be involved in retailing FISP fertilizer in the same way they are involved in retailing FISP seeds. OPTICHEM, a fertilizer blending and packing company, could tremendously reduce procurement cost of fertilizer if they are fully involved in the program.
- iv) The targeting guidelines need to be clarified, and more productive farmers need to be targeted. An auditing system is needed to ensure targeting guidelines are being met (discussed further in brief #3).
- v) If relatively productive farmers are to be targeted, create farmer clubs or cooperative that would receive coupons for the fertilizer. Possibly tie receipt of fertilizer to better land management practices.

- vi) Lower or eliminate diversion and fraud, to reduce the costs of administering the FISP. Consider moving to an e-voucher program to make diverting subsidized inputs more difficult.
- vii) Continue funding social protection programs such as food for work, and conditional cash transfers to support the very poor. Consider scaling down funding for the FISP, and scaling up funding for these programs (discussed further in brief #4).
- viii) Lower cost of program to government by increasing the required farmer contribution. This would also induce some people who have no intention of using the fertilizer to self-select out of participating.
- ix) Move the fiscal calendar so that the year begins in January. This will lower procurement costs and help ensure that FISP fertilizer is available to farmers in a timely manner.

### **Medium-term strategies (4-6 years)**

- i) Invest in better extension training (improve applied training for extension agents). For example, use the Land Resources Center in Zomba to train extension staff, and build capacity in these areas.
- ii) Increase extension pay and resources for extension personnel to be more effective. At the same time investigate and use new technology and methods for delivering important information to farmers at a lower cost.
- iii) Priority issues that may require attention to improve crop response to fertilizer include: (i) strategies for raising soil organic matter and developing more sustainable recycling of organic matter; (ii) micro-nutrient deficiencies; (iii) overcoming problems of soil acidity, which reduce plant uptake of phosphorus.

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<sup>4</sup> There is apparently some signs of success from such an approach in Ethiopia and in India. The idea would be to slowly wean farmers off the subsidy program and only more sustainable and commercial forms of input purchase,

acknowledging that up-front credit constraints are indeed a problem and would need to be built into a viable alternative program.

- iv) Invest in improving rural credit markets, through better farm credit clubs and associations so farmers have the ability to overcome their liquidity problems at planting time.
  - v) Commercial systems to help poor farmers' access credit for the purchase of commercial fertilizer are developed and put in place.
  - vi) Promote greater synergies between food crop and cash crop promotion. For example, in other countries, cash crop schemes have effectively provided credit to farmers to purchase fertilizer for use on their food crops as well as the cash crops, with the credit being recouped when the farmer sells the cash crop to the company at harvest time.
  - vii) Gradually hand over control of retailing FISP fertilizer ADMARC and SFFRM to the private sector. Government should move to oversight and auditing role.
  - viii) Train agro-dealers to better provide services to private sector.
  - ix) Continue scaling down the FISP as soil fertility improves, incomes improve, and the private sector strengthens.
  - x) Explore fertilizer supply chain issues to identify potential for reducing risks and costs in the system so as to reduce the costs of fertilizer to farmers and thereby promote effective demand.
  - xi) Continue the FISP in remote areas with low private sector presence and low effective demand.
  - xii) Explore domestic fertilizer blending options for Malawi. It may be efficient to work with other countries in the region.
- Long-term strategies (greater than 7 years)*
- i) Graduation out of FISP occurs when private sector has the capacity to meet the needs of smallholders and mechanisms for allowing poor farmers to access credit for the purchase of commercial fertilizer are in place.
  - ii) In the long run complimentary investments should help lower fertilizer costs, increase maize productivity, and farm incomes. All of these will make fertilizer more profitable for farmers, and make it more profitable to purchase fertilizer on the commercial market.
  - iii) Improving rural credit access helps relieve liquidity constraints, making it possible for farmer to buy fertilizer on the commercial market.
  - iv) Investments in R&D, roads, education, better statistics, better institutions for monitoring the private sector can all improve the Malawian economy without dependence on the FISP.
  - v) Malawi will likely still need to fund social protection programs for very poor. With better access and incomes for the poor the FISP can be scaled down.
  - vi) Promote labor-absorbing activities in the non-farm sector, such as primary processing, and small-scale manufacturing.

## CONCLUSION

In conclusion, we note that there is room to improve upon the effectiveness of the FISP given the 4 criteria used to evaluate the program in this brief. The benefit/cost ratios indicate that the program has been spending more than it has been generating in most years. The private sector has likely benefited from participation in the seed subsidy, but has not benefitted since being excluded from retailing subsidized fertilizer since 2008/09. The fact that the subsidy program continues to crowd out around 20% of households' commercial purchases reduces the effectiveness of the program, but this rate is not excessively high. In our view the greatest threats to FISP sustainability have been at the macro level where the FISP has caused a reduction in essential agricultural investments like

extension and soil fertility management programs. However, here is some evidence to suggest that commercial fertilizer use has increased in recent years.

Malawi's heavy dependence on imported fertilizer has caused pressure on the country's balance of payments position. This, coupled with an increase in fuel prices, has contributed to inflation and overall economic instability. This situation is difficult to remedy in the short term, as program costs will inevitably fluctuate with the international price of fertilizer and the value of the Kwacha. It necessitates that Malawi make investments outlined in this brief to improve FISP effectiveness, sustainability and help smallholder agriculture remain viable in the long term.

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