

## Towards 'smart' subsidies in agriculture? Lessons from recent experience in Malawi

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**T**he recent spike in international food and fertilizer prices has underlined the vulnerability of poor urban and rural households in many developing countries, especially in Africa. The combination of factors that resulted in this spike has renewed policymakers' focus on the need to increase staple food crop productivity. While the pros and cons of input subsidies have been hotly debated over the past decade, input subsidies are being introduced (or re-introduced) in several countries as a means to shore up food security in the short-term while also implementing longer-term investments to raise productivity. With fertilizer prices likely to remain high in the short to medium term, such subsidies will inevitably imply a high budgetary burden. The challenge is to design so-called "smart" input subsidy programmes that have a significant impact on the availability of food in the short run while stimulating growth and rural development and increasing (or at least not suppressing) effective demand for and commercial distribution of inputs in the long run. Beginning in 2005/6, after almost a decade of experience with smaller-scale subsidy programmes, Malawi introduced a large-scale input subsidy programme using vouchers. The purpose of this brief is to review Malawi's experience in order to identify the challenges facing "smart" subsidy programmes if they are to be sustainable and cost effective in delivering on their goals.



This series is published by ODI, an independent non-profit policy research institute, with financial support from the Swedish International Development Cooperation Agency, Sida. Opinions expressed do not necessarily reflect the views of either ODI or Sida.

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### Policy conclusions

- The Malawi Government Agricultural Inputs Subsidy Programme as implemented in 2006/7 was very costly, but is capable of generating benefit:cost ratios between 0.76 and 1.36 (a ratio of 1 represents a "break even" point), not allowing for "second-round" growth effects.
- Major determinants of programme impact include clear understanding of programme objectives (increased wages, reduced food prices, growth and diversification) and trade-offs, extent and effectiveness of subsidy targeting, timeliness in implementation, programme scale and cost, extent of public/private sector partnership, and policy makers' access to and use of reliable and timely information.
- Programme impact is also vulnerable to factors either partially or completely outside government control, including variations in international fertiliser and maize prices and weather.

### ***Policy conclusions cont'd...***

- The voucher or coupon system can be an effective way of rationing and targeting subsidy access to maximise incremental production and economic and social gains, with opportunities for innovative public/private partnerships to develop input supply and demand systems – but there are many practical and political challenges in programme design and implementation to increase efficiency, control costs and limit patronage and fraud.
- Other countries looking at Malawi's experience must identify interactions between the potential benefits of input subsidies, socio-agro-ecological conditions, critical programme features needed for achievement of benefits, and the costs and risks of failure.
- Input subsidies are not a quick fix for dealing with high food and fertiliser prices: their design and sustainable implementation must promote smallholders' incremental access to and productive use of inputs, build sustainable demand and private sector supply, and be integrated with other policies for increasing agricultural productivity, rural development and management of incremental production to provide rural people with reliable improvements in food access and real incomes.

## **Introduction**

Agricultural input subsidies were common in poor rural economies in the 1960s and 70s, and a major element in Asia's green revolution. However, conventional wisdom among policy analysts in the 1980s and 90s was that subsidies had been ineffective and inefficient policy instruments in Africa, contributing to government over-spending and fiscal and macro-economic problems. Recent years have seen a resurgence of interest in these subsidies in Africa, together with the emergence of 'smart subsidies', innovative delivery systems intended to reduce common problems facing subsidy programmes and to extend their benefits.

The evolving implementation of a large-scale seed and fertiliser subsidy in Malawi has attracted considerable international attention. This policy brief presents the major findings of an in-depth evaluation of the 2006/7 subsidy programme.

## **Background**

The implementation and impacts of the 2006/7 Agricultural Input Subsidy Programme (AISP) in Malawi have to be understood in the context of widespread rural poverty and food insecurity, vulnerable agriculture-based livelihoods, low and variable agricultural productivity, severe liquidity constraints to fertiliser use, and a long-standing history of smallholder agricultural input subsidies in Malawi.

Poverty in Malawi is pervasive and predominantly rural with a national poverty head count of 52% in 2004/5 and 94% of poor people living in rural areas (NSO, 2005). Poverty and limited land availability means that the great majority of the poor are food-deficit small-scale farmers: their food security and real incomes are heavily dependent on low-input production of maize (the dominant staple in most parts of the country) on small land holdings with declining soil fertility, as well as on casual labouring and other income earning opportunities for significant parts of the year when they have to buy food. At

these times their real incomes and ability to purchase food are highly sensitive to maize prices, which change dramatically between and within seasons. During the last 10 years such farmers have faced both chronic and acute food insecurity problems with national food shortages due to poor production seasons and reliance on late and expensive government and donor-funded food staple imports.

Farmers are well aware of the potential for hybrid seed and fertilisers to increase their maize production, but purchases of both are limited by supply constraints (poor and/or costly parastatal and private distribution systems to rural areas) and major profitability and affordability constraints on demand. High fertiliser prices, high maize price variation and a range of agronomic and crop management constraints on maize yields lead to limited profitability of fertiliser use on maize. Value:cost ratios (VCRs) of 2 or more are generally recognised as the minimum for profitable investment in fertilisers, but figure 1 shows that VCRs over the last ten years have been highly variable, particularly when maize is valued at pre-harvest prices (the value of maize to deficit, buying households) and almost always below 2 when maize is valued at post-harvest prices (the value of maize households with a surplus to sell). Deficit households for whom fertiliser use on maize is most profitable also face severe "affordability" problems – they are very short of cash with which to buy fertilisers, credit is perceived as risky and difficult or costly to obtain, and there are limited opportunities to buy fertilisers in bags smaller than 50kg: in 2003/4 the cost of one 50kg bag of fertiliser was around 10% of median per capita annual rural expenditure.

It is not surprising that in this context agricultural input subsidies have a long history and major political and economic significance in Malawi. General price subsidies on smallholder maize seed and fertilisers, were, with subsidised credit, a major component of Malawi's agricultural development policy during the 1970s and 80s. The withdrawal of these subsidies has been followed by their fitful reintroduction in response to

maize shortages, changing political pressures, rising domestic fertiliser prices, and low maize productivity. Restrictions on private sector trading in maize and fertilisers were also removed in the 1990s, but parastatal and humanitarian interventions in these markets have continued. Beginning in 1998, first universal “starter packs” and then “targeted inputs” of free packs of fertiliser and matching maize seed for 0.1ha of land were distributed. Maize production and prices fluctuated wildly, however, and combined with high fertiliser prices led to the low and variable VCRs presented in Figure 1 and discussed earlier.

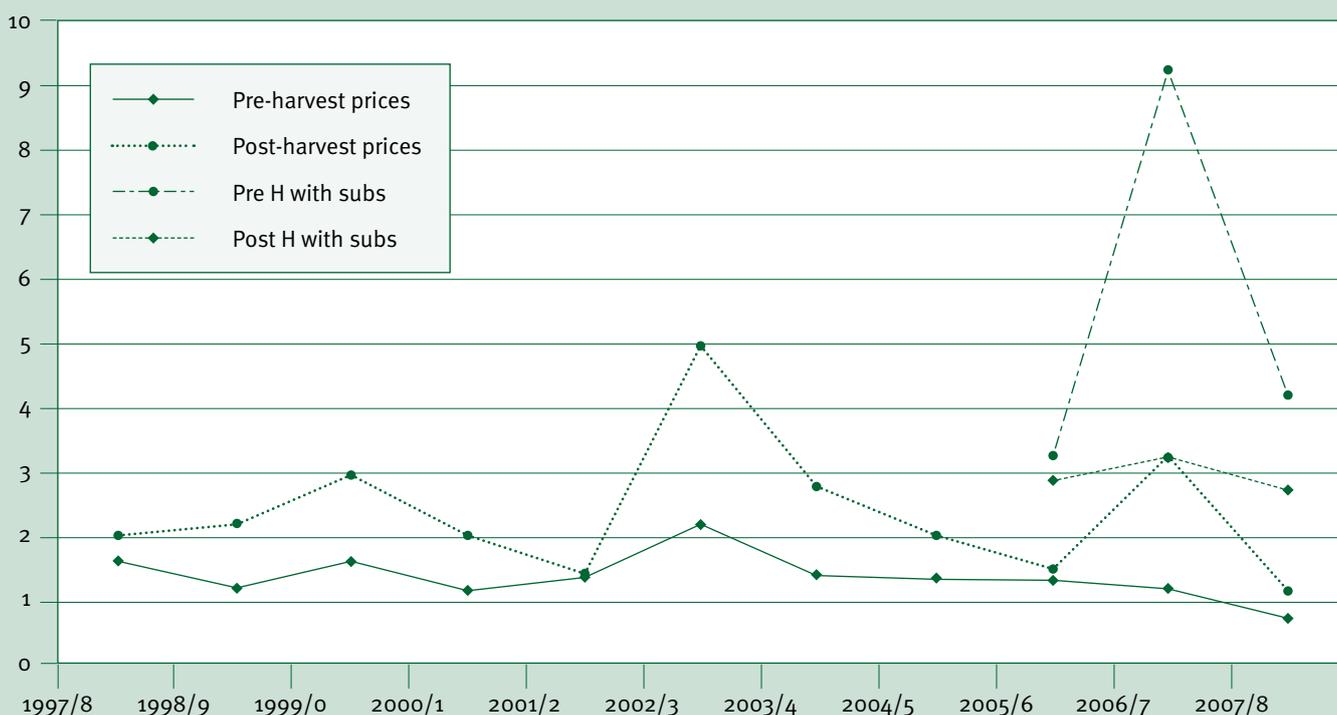
### The 2005/6 subsidy programmes: implementation and results

The major candidates in the 2004 presidential elections all made manifesto commitments to fertiliser subsidies. Poor rainfall, and late distribution and limited scope of the targeted inputs programme for the 2004/5 season, resulted in low national maize production in 2005. With slow official importation and emergency response measures, this low production translated into very serious food shortages and high maize prices in 2005/6. The government then introduced a large-scale input subsidy in the 2005/06 season with the stated objectives of promoting access to and use of fertilizers in both maize and tobacco production in order to increase agricultural productivity and food security. Distribution of fertilisers was to be handled entirely by parastatals, due in

large part to distrust between government and the private sector associated with the limited 2004/5 input subsidy programme.

The subsidy was implemented through the distribution of coupons for four fertilizer types which recipients could redeem at parastatal outlets at approximately one-third of the normal cash price. In addition, 6,000 tons of OPV maize seed were also offered for sale at a similar discount, but without coupons. There was considerable local variation in the criteria for the selection of beneficiaries, the proportion of people receiving coupons, and the number of coupons received per recipient household. A total of 131,000 tonnes of subsidized fertilizer were sold, all by two parastatals, with private sector involvement limited to importation of part of the total. Direct costs of the programme (excluding overhead costs) were reported to be MK7.2 billion against a budget of MK5.1 billion. This was financed from the government budget, supported by direct budgetary support. Reported 2005/6 private sector fertilizer sales were considerably lower than sales in the previous year and several of the main private sector fertiliser distribution chains reported significant financial losses as a result of lower commercial sales and their exclusion from the programme. These problems were particularly serious for a large part of the small-scale independent agro-dealer network. Incremental fertilizer use on maize as a result of the subsidy was estimated to be a little over 100,000 tonnes. This increase, coupled with good rains, led to a bumper harvest.

**Figure 1: Maize and Nitrogen Value Cost Ratios, 1997-2007**



Source: SOAS et al (2008)

## The 2006/7 subsidy programme: implementation and impacts

The programme was implemented again in the following (2006/7) season, but this time with some donor financial support, greater involvement of the private sector in subsidised input sales, and greater choice of varieties of subsidised maize seed for farmers. Two million seed and 3 million fertiliser coupons were budgeted for the 2006/7 programme and allocated to districts and sub-districts, with a subsequent distribution of more than 1 million unbudgeted 'supplementary' fertiliser coupons. There were reports of substantial diversion of coupons in some areas, but few large-scale confirmed cases. Farmers paid roughly 28% of the full fertiliser cost, with government paying the remainder.

A total of 175,000 tonnes of subsidised maize and tobacco fertilisers were sold (against the redemption of 3.5 million coupons), with just under 50,000 tonnes sold by six private companies. 4,500 tonnes of maize hybrid and OPV maize seed were sold (57% by private retailers, including small agrodealers). Late disbursement of inputs in the southern region (due to late fertilizer procurement, late issue of coupons, and late opening of markets), together with stock-outs in some markets, led to many farmers spending long periods queuing for their inputs, delaying planting and/or fertilizer applications.

Direct programme cost to government and donors was just under US\$91 million, with 87% funded by the Malawi Government. Fertiliser sales were 17% over budget (due to the issue of supplementary coupons) and total Government expenditure was 25% over budget (which was already 40% of the Ministry of Agriculture budget and over 5% of the national budget). Following estimates of a very large national maize harvest in 2007, Government agreed to exports of 400,000 tons of maize to Zimbabwe during 2007/8, although traders were subsequently only able to source and export around 300,000 tons.

Formal evaluation of the 2006/7 programme identified the following benefits:

- **Increased maize output:** the Ministry of Agriculture and Food Security (MoAFS) estimated total maize production of 2.7 and 3.4 million tonnes in 2005/6 and 2006/7 respectively, both record harvests and markedly higher than the 1.2 million tonne estimate for 2004/5. But whereas maize prices were very low following the 2005/6 harvest, as would be expected following a record harvest, the much higher prices following the 2006/7 harvest suggest that maize production was over-estimated. Furthermore, the good rains in both years mean that not all of the increases in production can be attributed to the subsidy programme.
- **Improved household food security:** Rural households' own subjective rankings of their economic well-being were 8% higher in May/June 2007 (before food prices started rising later in the season) than in 2004.

- **Increased private sector participation** in seed and fertiliser retail sales under the 2006/7 programme relative to 2005/6 (although small independent agro-dealers were still excluded from subsidised fertiliser sales) allowed for a partial financial recovery and increased optimism.

Cost-benefit analysis of the 2006/7 programme showed that impacts are highly sensitive to management and to external conditions, but that with good management the program could yield favourable economic returns (although it was not possible to compare the programme's rate of return with alternative longer term public investments). Estimated benefit:cost ratios ranged from 0.76 to 1.36 with impacts, costs and effective use of scarce government resources in such programmes depending upon:

- **Displacement of unsubsidised sales** - the extent to which subsidized fertilizer displace purchases which farmers would make anyway without the subsidy;
- **Incremental maize production**, which is determined by displacement, timeliness and method of use, variety / fertiliser interactions, and rainfall;
- **Coupon targeting**, which affects direct benefits to poorer households, fertilizer displacement, incremental maize output, and maize prices and wage rate impacts; and
- **National and regional maize prices** and the extent to which additional output lowers maize prices and makes grain more affordable to low-income households.

Financial analysis of government costs and returns found that net returns are very sensitive to displacement rates, and the programme cannot be justified solely by its contribution to reducing government financing of food imports in years of poor production: other approaches to securing grain supplies and price stabilisation may be more efficient and effective than a subsidy programme. Implementation of the programme does not appear to have had adverse effects on macroeconomic stability or on budgetary allocations to other sectors, but its staffing demands on the Ministry of Agriculture and Food Security and on local government have affected the delivery of other services.

Impact evaluation also needs to take into account the benefits not included in the above analysis: stimulus or constraints to private sector input supply, especially for currently under-served areas, and the benefits of transfers and lower maize prices in stimulating "second round" farm and non-farm growth. Impacts of the programme on the welfare and resilience of poor households (often referred to as social protection impacts) include a higher degree of food self-sufficiency among deficit producers, higher volumes of marketed maize resulting in downward pressure on maize prices to the benefit of food purchasers, and higher wages and farm and non-farm employment. Such benefits are critically important in the context of high rates of poverty, vulnerability, food insecurity and dependence upon low-productivity maize production

among rural people in Malawi. Such potential benefits from the 2006/7 programme were unfortunately undermined by the high 2007/8 maize prices, following exports prompted by over estimates of maize production and stocks.

## Conclusions and Policy Lessons

Experience from the 2005/6 and 2006/7 programmes suggests that there is considerable potential for Malawi to improve on the outcomes from the program. There are also, however, substantial dangers that without explicit action to improve effectiveness and control its costs the programme could become an unsustainable drain on resources. These dangers are likely to be exacerbated by recent dramatic increases in international fertiliser prices (Dorward and Poulton, 2008). The following key issues need attention.

**Programme objectives, policy coordination and complementary investments:** A comprehensive and consistent framework of objectives is needed to resolve potentially conflicting objectives and to allow appropriate targets and budgets to be set for long and short-term plans. Greater emphasis is needed on setting the programme within wider agricultural and national development strategies. Particular issues arise with maize market and price policies, social protection policies and programmes, and complementary investments in rural roads and in agricultural research and extension. If maize market interventions lead to high domestic prices (as occurred with maize exports in 2007/8) then this seriously undermines positive subsidy programme impacts on food security, social protection and rural economic growth. Paradoxically even interventions intended to reduce prices often have unintended consequences that result in higher prices. Similarly, poor roads and lack of agricultural research and extension limit the effectiveness of the programme in raising farm productivity. Adequate investments must be made in these areas and the scale of the AISP limited and its implementation made more cost-effective so that it does not starve other investments of resources. Improved coordination between the input subsidy and other safety net programmes could facilitate more efficient local coupon allocation, distribution and redemption mechanisms.

**Targeting and displacement of commercial fertilizer purchases:** National and household-level estimates suggest that in 2006/7 between 30 and 40% of subsidized fertiliser purchases displaced commercial purchases rather than adding to total purchases. Such displacement undermines private sector viability and transfers scarce government funds to less poor farmers with reduced developmental benefits from the programme. A positive correlation between displacement and household wealth and land holding in 2006/7 suggests that displacement can be reduced by targeting subsidies more effectively to poorer farmers, and by more timely and transparent programme implementation

to help farmers better plan their commercial purchases. An alternative to administratively complex and sensitive targeting within villages could be to provide a smaller subsidy to all rural households across the country or to all rural households in selected geographical areas whose agro-economic conditions offer the greatest economic returns to input subsidies (although the latter might pose particular political difficulties).

**Scale and cost control:** Year on year increases in both the scale of the programme and the prices of inputs have led to burgeoning costs and fiscal outlays (these continued in 2007/8). The programme is a major item in the national budget and has also gone over budget in all three years of its implementation as a result of both price and (except in 2005/6) physical input distribution overruns. Increases in programme scale are likely to lead to increasing displacement and hence declining returns to increasing costs, particularly in the context of recent dramatic increases in international fertiliser prices (2008/9 urea prices are more than 2.5 times the 2006/7 price). Programme scale and cost need to be limited, together with more effective targeting and efficient implementation, to ensure efficient resource use and to release resources for alternative and complementary investments.

**Agricultural sector and programme information needs:** There are fundamental information gaps that prevent effective planning and management of the AISP and of agricultural and rural programmes. Discrepancies between MoAFS and NSO estimates of farm families and rural households are very problematic. Reliable, rigorous information on smallholder production of major crops and of national stocks, flows and consumption of staples is also critically important for agricultural and food security and market monitoring and policy.

**Engagement of the private sector and timely, transparent implementation:** Although the private sector's 2006/7 market share increased over 2005/06, it has the capacity to supply much greater quantities. Allowing the private sector to supply more in future would enhance its viability as well as enable the government to reduce programme costs. In the past, investments in the agro-dealer network have supported increased competition and improved farmer access to low-cost inputs, particularly in under-served areas. Increased participation of agro-dealers in 2006/7 and 2007/8 needs to be continued. Uncertainties about subsidy programme modalities from year to year also depress the incentives for suppliers and farmers to invest in unsubsidised fertilizer procurement, and often delay subsidy implementation and reduce its effectiveness. Greater consistency, transparency and timeliness in planning and implementation is needed from government, as well as commitment from all stakeholders to a 'transition strategy' for greater private sector involvement in input markets in under-served locations.



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ISSN 1356-9228

**Flexibility and learning:** Programme consistency is important for developing administrative capacity in programme administration and for nurturing investment confidence among farmers and private input suppliers. However the programme also needs to evolve, responding to changing conditions, identifying and implementing ways of improving efficiency and effectiveness, and keeping one step ahead of the many opportunists looking to defraud the system. The Government has shown an admirable willingness to work with partners to develop and try new ways of working to improve the programme. Nevertheless managing transition, flexibility, and learning while maintaining consistency, stability and long-term commitment is a major challenge.

### Lessons for other countries

Decisions to implement similar subsidy programmes in other countries need to clearly identify programme benefits and objectives (with potential positive or negative interactions between them), and to establish (a) the potential for achieving these objectives (given the extent and nature of household vulnerability, food and input markets, and potential agronomic benefits of increased input use), and (b) critical features of subsidy programme design needed for effective and efficient achievement of objectives. Potential benefits then need to be weighed against the opportunity cost of resources allocated to the programme, particularly investments in long-term food staple productivity growth, and the risks of failure (involving, for example, difficulties in controlling costs, dangers of fraud and/or subsidy capture, displacement, high fertiliser costs, and bad weather). These issues must then be given significant attention in programme design and implementation (see SOAS et al, 2008, for a full discussion). High international fertiliser prices and likely increased weather uncertainty as a result of global climate change pose particular challenges and dangers – but may also, paradoxically, increase the potential gains from effective subsidy implementation. They also increase the importance and urgency of investment in promotion of wider measures for increasing soil health and fertility.

It is important that input subsidies should not be seen as a quick fix for dealing with high food prices: important and over-riding principles in their design and implementation should be that they lead to incremental access to and productive

use of inputs by smallholder farmers, that they should build sustainable smallholder input demand and private sector input supply, and that there be careful consideration of the management of incremental production to provide rural people with reliable improvements in food access and real incomes.

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### Acknowledgements:

*The authors are indebted to staff of the Malawi Ministry of Agriculture, donor agencies, members of the fertiliser and seeds industries, Malawian farmers, and colleagues who generously gave time and information to this study. USAID, the UK Department for International Development, and the Future Agricultures Consortium supported the review financially. John Farrington provided helpful editorial input. The views expressed in this report are not necessarily endorsed by the Malawi Government, USAID, DFID, FAC, or any other agency, and any errors or omissions remain the responsibility of the authors.*