

EVALUATION OF THE 2006/7 AGRICULTURAL INPUT SUPPLY PROGRAMME, MALAWI

INTERIM REPORT

MARCH 2007

Revised May 2007 with data from Logistics Unit Final Report

Minor typographical and editorial corrections have been made throughout the report, together with updates on coupon disbursement and recovery, fertilizer and seed sales, and programme costs.

Imperial College London Wadonda Consult Michigan State University
Overseas Development Institute

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Executive Summary

This report presents the preliminary findings of an evaluation of the 2006/7 agricultural input subsidies programme (AISP). The objectives are to feed back to stakeholders preliminary information about interim findings, proposals and issues for imminent decisions about the 2007/8 season. In order to provide this report as early as possible it has been possible to complete only a preliminary analysis of information gathered in the field from focus group discussions and a survey of input retailers. A major part of the rest of the study will involve analysis of information from a household survey and focus group discussions to investigate impact of the AISP.

Agricultural, rural and national economic development in Malawi are constrained by a number of interacting poverty and productivity traps. These constrain input and maize market development, investments in maize intensification, diversification out of maize into other agricultural and non-agricultural activities, the ability of (particularly poor) rural people to protect themselves from shocks, and wider local and national economic development. Unless it can break out of these traps the majority of Malawian farmers appear to be locked into a cycle of increasing soil degradation, declining agricultural productivity and increasing livelihood vulnerability.

In this context the Malawi government introduced a large scale fertilizer subsidy programme to support production in the 2005/6 cropping season, in order to increase agricultural production and food security. The programme was intended to provide 1 million farmers with 2 coupons with which they could buy two 50 kg bags of 'maize fertilizer' (23:21:0 for basal dressing and urea for top dressing) at a drastically reduced price of MK950, and a further 200,000 tobacco farmers to buy a bag of CAN and Compound D fertiliser each at MK 1450. 3 kg packs of subsidised OPV seeds were also made available for sale without coupons. 2 million fertiliser coupons were initially distributed to farmers in rural areas using local government structures followed by a supplementary 0.6 million coupons. Fertilisers were procured by government through international tender and local purchases from importers. All subsidized fertilisers were sold through parastatal distributors (ADMARC and SRFFM). The programme cost MK7.2 billion against a budget of MK5.1 billion, and sold around 130,000 tonnes of fertilizer. Private sector reports and examination of fertilizer sales suggest that a combination of fertiliser price increases and the subsidy sales together led to a significant fall in commercial sales to smallholders. It is difficult to determine the extent of

displacement alone but this is likely to have contributed to incremental fertilizer use on maize being considerably below subsidized sales: of the order of 45,000 tonnes incremental fertilizer with 65,000 tonnes for displacement of normal sales. Significant reductions in commercial sales had a very negative effect on input suppliers with retail networks. Most importers carried over larger stocks at the end of the season, but were not affected as badly as retailers since SFFRM had bought over half its stocks from local importers. There are particular concerns about the impact of the subsidy on the emerging agro dealer network.

The final form and mode of implementation of the 2006/7 subsidy programme developed over the period April to November 2006 through a complex process of negotiation, compromise and changing circumstances involving government, the private sector (fertiliser importers and distributors and seed suppliers) and donors. The results were a high degree of uncertainty for all actors, including farmers; late procurement and distribution of inputs; late issuing of coupons, and late sales.

Despite these difficulties, a number of notable achievements were made:

- a very large quantity of fertilizer was procured and distributed,
- new systems were developed and implemented involving both government and the private sector in distribution of fertilizer and seed distribution;
- these systems were largely successful in terms of moving large volumes of inputs to farmers
- nearly 175,000 metric tonnes of fertiliser and over 4,500 tonnes of maize seed were sold under subsidy, with hybrid maize comprising 60% of seed sales;
- the health of the agricultural inputs industry in Malawi improved as compared to the previous year.
- increased input sales have no doubt contributed, with good weather, to crop estimates predicting a record maize harvest.

Significant problems were faced during the implementation of the programme, relating to logistical problems in moving very large quantities of fertilizers around the country and to remote areas when the rains had already started, in extensive press reports of fraud in the use of coupons, and in the issue of large numbers of supplementary coupons which then led to very substantial budget overruns.

Focus group discussions and key informant interviews in six districts suggest that although there were cases of misappropriation and fraud, these were not as widespread as might be suggested by the press coverage.

A survey of retailers in the same districts together with wider key informant interviews and collation of data on national fertiliser sales suggests that the 2006/07 subsidy program has had generally positive impacts on the private sector compared to the situation in 2005/06. Fertilizer suppliers have increased sales volumes substantially, but they still remain below levels that prevailed between 2000 and 2005. The seed sector is extremely pleased with the increase in uptake of hybrid seed that was made possible by the product flexibility in the seed voucher program. Both subsectors show evidence of resilience with new actors having entered recently and survived the very difficult 2005/06 season. Suppliers are making investments (product research, some limited expansion of depots), but timidly, pending more information about government's intentions for the next several years. Costs of participating in the voucher system have been more problematic for the seed sector than the fertilizer. Seed suppliers report that the costs of processing vouchers are much higher than anticipated and that once vouchers are submitted payment is very slow (more than two months in some cases). Late payments affect cash-flow and finance charges. Despite the problems,

confidence is high and most respondents believe that the voucher system should be continued next year, with modifications to address the weaknesses identified this year.

Two over-riding issues emerge from the report.

There is widespread concern and substantial evidence that coupon sales of fertiliser are very significantly displacing normal commercial sales (this does not appear to be the case with maize seeds). This is a major concern as if the subsidy programme is not significantly increasing aggregate fertilizer use then it cannot meet its overall development objectives. It is extremely important that the extent and effects of this be determined and that all actors consider ways in which this can be reduced. Recommendations are made in the report which it is hoped will reduce this problem, and the extent and reasons for it will be further investigated in the household survey to be conducted as part of this evaluation.

Uncertainty and delays in the design and implementation negatively impact on all stakeholders in the programme and on its outcomes – costs are raised for both government and the private sector, while uncertain and late delivery of coupons and inputs to farmers may be one factor promoting reduced commercial sales, and it leads to congestion at markets, incentives for fraud, wastage of farmers time, increased exclusion of poorer potential beneficiaries, and late and therefore less effective use of both seeds and fertilisers.

Recommendations are made both for improvements within the current broad system for coupon allocation and redemption, and for modifications to this system (*section 8*). The following major recommendations are highlighted:

- The objectives of the system need to be more clearly developed, stated, and understood taking account of the programme's contribution to long term national economic and social development processes, national and household food security, and increased maize production (*section 8.1*).
- The design and implementation of the programme needs to be integrated with other development policies concerned particularly with maize pricing, marketing, and trade; social protection; other aspects of agricultural development; private sector development; and investment in road infrastructure (*sections 8.1 and 8.3*).
- Timely consultation among stakeholders (government, private sector companies in the input industry, donors) and decisions are essential within each year and in the context of a long term programme allowing expenditure and procurement commitments to be made ahead of June budget approval (*sections 8.3, 8.4.1, 8.4.2, 8.4.3 and 8.7*).
- An Agricultural Inputs Subsidy Programme Committee comprising these stakeholders be formally established as a means for taking these issues forward. (*section 8.4.1*)
- Major aims in moving the programme forward should be to promote private sector involvement in the implementation of the subsidy programme in order to release government resources for other activities, promote the reach of the private sector network into more remote areas, and, perhaps most importantly, reduce the extent of displacement of commercial sales (*sections 8.3, 8.4.1, and 8.4.3*).
- Coupons should be allocated to districts on the basis of farming population rather than cultivated area, and there are strong arguments for a comprehensive programme serving all smallholder farmers, with a smaller subsidy value per household (*sections 8.4.2 and 8.5.2*).
- The coupon system should provide a means of budgetary control for the programme, but in 2006/7 the issuing of supplementary coupons led to very large budget overruns. Issue of

supplementary coupons must be eliminated or at least tightly controlled to prevent such over runs (*section 8.4.2*).

- A number of detailed recommendations are made in the report for improving the 2006/7 system for coupon allocation and distribution, input procurement and distribution, and coupon redemption (*section 8.4*). Other proposals are made for more substantial changes in the system (*section 8.5*). It is essential that programme adjustment and redesign does not slow down and delay implementation of this year's programme, and a schedule is provided to guide this (*section 8.7*).

Looking ahead, recent large (25%) increases in the prices of some major fertilisers pose a major challenge to the design and funding of the programme: implications and illustrative options are discussed briefly towards the end of the report (*section 8.5.3*).

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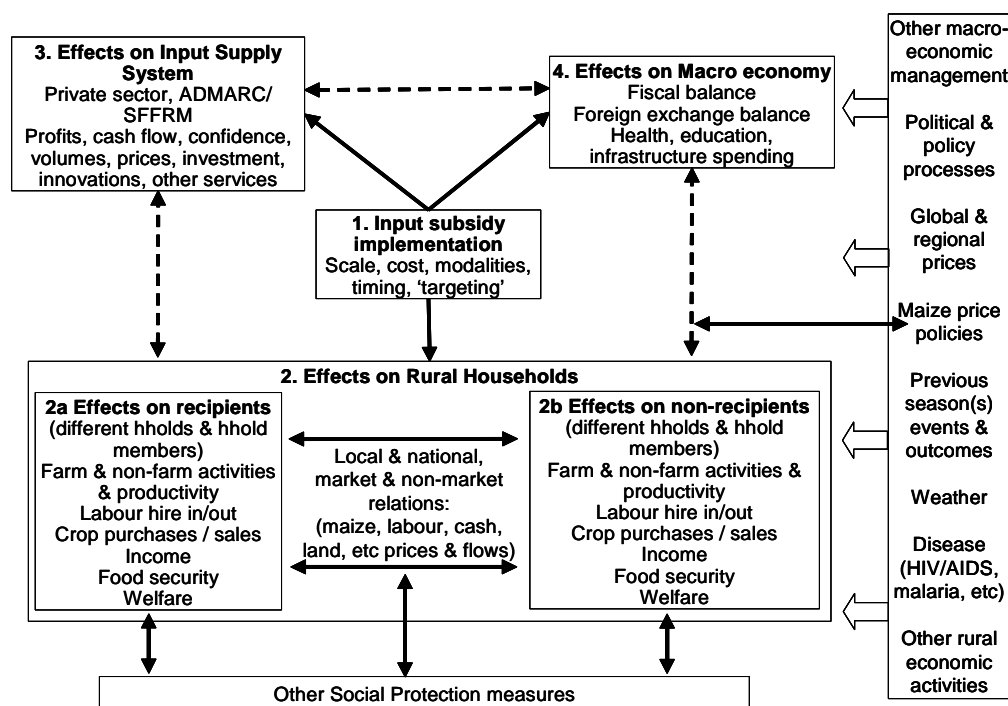
THE 2006/7 AGRICULTURAL INPUT SUPPLY PROGRAMME

1 Objectives of the report

This report presents preliminary findings of the work by the team evaluating the 2006/7 agricultural input subsidies programme. The objectives are to feed back to stakeholders information gleaned about the implementation and outputs of the programme in order to provide preliminary information and structured discussion about interim findings, proposals and issues for (a) imminent decisions about the 2007/8 season and (b) the rest of the evaluation. The report reviews the background to input subsidies in Malawi and experience with the 2005/6 subsidy. It then discusses the development and implementation of the 2006/7 programme. We conclude by setting out key issues that need to be considered in the planning and implementation of future subsidy programmes, and preliminary recommendations for addressing some of these.

This is an interim report that is part of a wider evaluation of the 2006/7 Agricultural Input Subsidy Programme (AISP). This report focuses particularly on the implementation and outputs of the programme. These however have to be seen in the context of the wider objectives and potential impacts of the AISP which will be addressed more thoroughly later in the evaluation study. The study as a whole will address the major processes and factors that affect the impact of the input subsidy programme as set out in figure 1.1. At the heart of figure 1.1 is the implementation of the input subsidy programme (1). The scale of this and the way that it is done impact directly on coupon recipients (2a), on the input supply system (3) which is composed of private sector suppliers, ADMARC and SFFRFM, and on the macro-economy and its management (4). The livelihoods, activities and welfare of coupon recipients then affects relationships within rural communities and local and wider markets (for maize and ganyu) and this impacts upon non-recipients (2b). All of

Figure 1.1 Framework for the Study: Input subsidy impacts



these components interact with each other and with wider factors in the environment, shown on the right hand side of the diagram. Another set of interactions of particular importance to this study are likely to arise between impacts of the input subsidy on the one hand and impacts of other (formal and informal) social protection measures.

We are conscious that this is a preliminary report in a number of ways. Evaluation of the Agricultural Input Subsidy Programme (AISP) is a complex and challenging task as

- The programme is highly politicised due to its importance to the people of Malawi and its very large cost
- There are multiple stakeholders with a wide range of differing interests in different aspects of the programme
- As is clear from figure 1.1, there are multiple potential direct and indirect impacts of the AISP which interact with and are dependent upon other major policies, and these interactions occur at multiple levels and involve a variety of different logistical, market, livelihood, fiscal, social and political processes which are often highly variable, changing, imperfectly understood, and the subject of much debate

This report is being provided as early as possible, but it has been possible to complete only a preliminary analysis of information gathered in the field from focus group discussions and a survey of input retailers. Analysis of historical data on input supplies has also thrown up gaps and inconsistencies which we have not always been able to address to our satisfaction. Finally, a major part of the study in the next few months will involve collection of information from a household survey and focus group discussions of recipients and non recipients in rural areas. Analysis of this information will try to establish impact of the AISP in terms of what would have been the effects if the AISP had not been implemented and instead the government had pursued other investment and agricultural policies. As we are conscious that there will be gaps and inaccuracies in some of the information in this report, and that important decisions will need to be made about prioritization of issues to address in the remainder of this evaluation, the Team will very much value critical constructive comments that can guide us and improve the quality and relevance of the evaluation as it moves forward.

2 Background

2.1 Agricultural, food security and input policies and performance to 2005

The importance of agriculture and of maize to the Malawian economy and to the livelihoods of most Malawian people together is the critical backdrop to the AISP, together with the low agricultural and maize productivity, and associated high national and individual/household food insecurity. Table 2.1 provides some key indicators of this, with large numbers of very poor people working on very small areas of land which are predominantly planted to maize. Continual cultivation of maize on the same land without addition of organic or inorganic fertilizers leads to low yields, and 'local' varieties of maize show a much lower response to inorganic fertilizer (principally nitrogen) than hybrid and, to a lesser extent, composite or open pollinated varieties (OPVs). Low yields in turn lead to inability to afford the purchase of inputs. Purchase of inputs on credit is also not possible for most farmers because the costs of credit administration are too high, as are risks for both borrowers and lenders, and low volumes of input demand and poor infrastructure and high transport costs lead to high input costs and inhibit the development of input supply systems in less accessible areas. Highly variable maize prices (discussed below) add to the risks of input use (whether purchased with cash or credit).

Table 2.1: Background Information on Smallholder Agriculture

	North	Center	South	National
Rural population (% total pop)	10	38	40	88
<i>Income and Poverty</i>				
Median expenditure/capita (MK '000)	17	20.9	16.9	17.5
Poor households (% rural pop)	56	47	64	52
Ultra-poor households (% rural pop)	26	16	32	22
<i>Nutrition and Food Security</i>				
Mean rural daily per capita consumption (kcal)	2,253	2,482	2,210	2,332
Mean rural daily per capita consumption (kcal): poor	1,738	1,811	1,703	1,746
Incidence of stunting in children (% 6 mths - 5 years)	39.6	47.9	40.8	43.7
Incidence of underweight children (% 6 mths - 5 years)	16.1	20	17.2	18.3
Share of calories from own production	0.53	0.58	0.47	0.52
Median month 04/05 harvest own food exhausted (actual)*				September
Median month 05/06 harvest own food exhausted (est.)*				November
Suffered crop yield loss last 5 years (%)	NA	NA	NA	68.8
Suffered large rise in food prices last 5 years (%)	NA	NA	NA	79.2
<i>Smallholder Agriculture</i>				
Landholdings less than 0.5 ha (%)	12.1	15.4	25.4	19.9
0.5 to 1.0 ha (%)	19.3	25.2	28.7	26.3
1.0 to 2.0 ha (%)	30.1	33.5	24.9	29
more than 2.0 ha (%)	28.8	16.2	7.7	13.4
<i>Crop cultivation</i>				
Maize growers (%)	93	97	99	97
Local varieties (%)	38	55	62	56
Composite varieties (%)	5	6	7	7
Hybrid varieties (%)	58	67	59	55
Cassava growers (%)	45	11	24	21
Tobacco growers (%)	22	25	6	15
Fertilizer use (kg/ha)	32	45	24	34
Access to credit for food crop inputs (%)	2.5	4.2	3.0	3.4
Access to ag extension (%)	24	12	11	13
Farm households (MoA data)	388	1,248	1,646	3,282

Source: IHS2 except (*), own calculations from NSO AWMS 2006

There is a major dilemma in maize pricing. While higher maize prices are needed to make purchased input use more profitable, the majority of Malawian maize producers are poor net purchasers of maize, and hence the livelihoods and food security are damaged by high maize prices. High maize price variability damages both net producers and consumers, as low prices present risks to producers' investments in inputs, while high prices present risks to consumers. Poor access to international and domestic markets (due in large part to poor transport infrastructure) and poor local market development (due to low and uncertain volumes, high costs of transport, and uncertain government intervention) lead to high intra- and inter- seasonal maize price variation, the latter further depressing market development. Risks of high maize prices encourage poor consumers to grow as much of their own staple food as possible, even at very low levels of productivity. At the

same time there are limited higher return income earning opportunities within or outside agriculture: there has been limited success in the search for smallholder export crops, and the local markets for horticultural and livestock products and for local services are constrained by low incomes.

Productivity and investment in productive activities is further constrained by people's poverty and by their vulnerability to a wide variety of (often related) shocks, particularly low crop yields (as a result of poor rainfall), sickness (with high rates of morbidity and mortality), high food prices, and loss of income from employment or remittances. Women, who play a key role in agricultural production and rural livelihoods, tend to be particularly vulnerable to these shocks. Macro-economic conditions in recent years have also inhibited growth, with high real interest rates, high rates of inflation, and significant devaluations of the Kwacha (although macro-economic management has improved recently).

Agricultural, rural and national economic development are therefore constrained by a number of interacting poverty and productivity traps which constrain input and maize market development, investments in maize intensification, diversification out of maize into other agricultural and non-agricultural activities, the ability of (particularly poor) rural people to protect themselves from shocks, and wider local and national economic development.

Understanding of the nature, causes and relative importance of these problems varies (indeed elements of the analysis above are not universally accepted, nor is it suggested that this brief summary is a comprehensive account of the complex issues involved). As a result a wide variety of different policies, programmes, projects and other activities have been debated and implemented by different stakeholders (politicians, government ministries and agencies, NGOs, CBOs, commercial organizations, donors, rural people themselves) to address different aspects of these problems.

Input subsidy and maize market intervention policies have been a longstanding major focus of government and donors. From the mid 70s to the early 90s government financed a universal fertilizer subsidy, subsidized smallholder credit and controlled maize prices through the activities of ADMARC and SACA. This system began to break down with partial market liberalization and cash flow difficulties in the late 80s/ early 90s, but then completely collapsed in the mid 90s as a result of the coincidence of widespread harvest failure (and, in the absence of insurance, credit default), multi-party elections (undermining repayment), continuing pressure for and partial implementation of liberalization and structural adjustment policies (constraining government expenditure), and substantial devaluation (raising local fertilizer prices). Fertilizer use and national maize production fell. Government and donors responded with a variety of interventions subsidizing maize fertilizer and seed access (principally starter pack, TIP, and APIP) and with intermittent interventions in maize markets. A number of smaller programmes have also promoted 'inputs for assets' where rural people work on (for example) community infrastructure schemes and are paid in kind with inputs (or with coupons with which they can obtain inputs).

There has also been increasing interest in the development of private sector involvement in input markets. However in 2004 there were announcements that fertilizer would be subsidized and SFFRM placed large orders for purchase of 23:21 and urea. This created considerable uncertainty for private sector fertilizer importers and distributors and is widely believed to have led to farmers holding back fertilizer purchases. Following difficulties in procurement of urea by SFFRM, government implemented another TIP programme, for 2 million households, while private sector fertilizer importers carried forward significant unsold stocks to the following season.

Recent years have also seen an increasing emphasis on social protection policies and interventions. From an agenda that initially focused on relatively small targeted programmes and large emergency responses to crises following poor agricultural seasons, social protection has increasingly become concerned with addressing systemic vulnerability in rural livelihoods, and hence with maize

production, access to inputs, and maize markets. Views on the relationship between social protection and agricultural development policy objectives and interventions have, however, differed among different donors, government agencies, and other stakeholders. This, together with political and economic changes in Malawi and changes in donor policies, has resulted in major year to year changes in input supply systems, and these have become a major source of uncertainty to all stakeholders. Pertinent major events and changes in policy are summarized in table 2.2 overleaf.

Table 2.2 Major pertinent events in Malawi from 1990/91

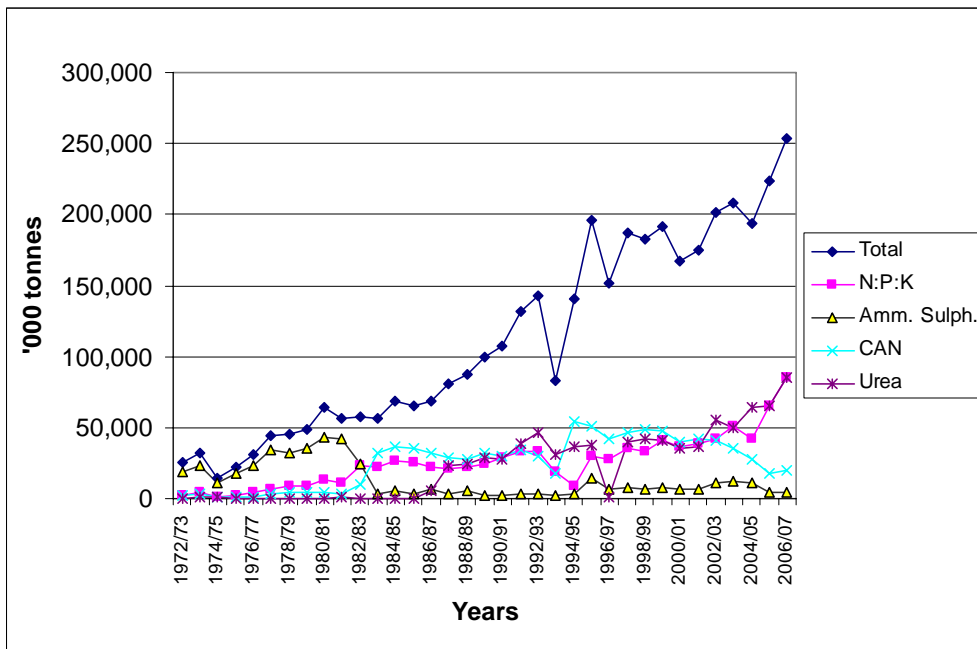
		Major Input Interventions	Maize Prodn ('000 mt)	Peak pre-harvest maize price, MK/kg*	Min post-harvest maize price MK/kg*	Real peak pre-harvest maize price (1990 prices)	Real 1 harv pric (199 prices)
1990/91	On going structural adjustment & liberalisation promoted by donors			0.48	0.31	0.44	0.2
1991/92	Widespread Southern Africa drought , low yields & with growing movement for multiparty democracy & elections, credit default & SACA collapse		657,000	0.44	0.42	0.33	0.3
1992/93		Large free fertilizer * distribution	2,033,957	0.92	0.52	0.56	0.3
1993/94	Multi party elections. Election of President Muluzi. drought conditions, low uptake of hybrid seeds.		818,999	0.84	0.70	0.38	0.3
1994/95			1,327,865	1.39	1.22	0.34	0.3
1995/96			1,793,461	6.50	1.92	1.14	0.3
1996/97	Removal of fertiliser subsidy with rapid devaluation led to soaring input prices, low production despite good rains		1,226,478	3.10	2.47	0.50	0.4
1997/98	1997/98 drought in Karonga Agricultural Development Division and floods in Shire Valley in 1997/98 season.		1,623,507	7.60	4.15	0.94	0.5
1998/99		Starter pack (2.88 million)	2,399,781	11.55	6.27	0.98	0.5
1999/00	Re-election of President Muluzi	Starter pack (2.88 million)	2,501,311	8.84	5.15	0.58	0.3
2000/01	Starter pack scaled back. Heavy March rains. Poor harvest, dry spells and floods in some areas, low input uptake.	TIP (1.5mill)	1,619,091	7.50	7.16	0.40	0.3
2001/02	2001/02 season: early rains, late rains, dry spell in February & floods in the escarpment & lakeshore exacerbated by low input use	TIP (1 mill)	1,437,043	32.50	14.10	1.51	0.6
2002/03		Extended TIP (1.9+0.8 mill)	1,758,688	19.03	9.47	0.81	0.4
2003/04	Election of President Bingu Mutharika.	TIP (1.7mill)	1,733,125	19.10	12.96	0.73	0.4
2004/05	Political expectations of universal fertiliser subsidy did not materialise: late TIP distribution, poor March rains low production	late TIP (2 mill)	1,225,234	51	18	1.69	0.5
2005/06	Maize export ban.. Very high maize prices in growing season, some harvest price support. Fertilizer and maize seed subsidy.	Input subsidy (147,000 mt)	2,720,762	30	10	0.87	0.2
2006/07	Scaling up of agricultural input subsidy. Very low maize prices during growing season, continued export ban lifted end of Feb..	Input subsidy (175,000 mt)		10		0.26	

MoA Net average prices for sampled markets deflated by retail price index at 1990 prices; * Stephen Carr, pers. comm..

2.2 Fertiliser sales in Malawi

A brief overview of the structure and evolution of the Malawi fertilizer industry is provided in section 7. It is necessary near the outset of this report, however, to present basic information on volumes and structure of fertilizer imports and sales. Figure 2.1 shows a striking trend of increasing fertilizer sales over the last 25 years¹.

Figure 2.1 National Fertiliser Sales, 1972/73-2006/7



As well as increasing volume of sales, another feature of change in the Malawi fertilizer industry has been the increasing involvement of the private sector. Up to the early 1990's only ADMARC was permitted to sell fertilizer (at a subsidy) to smallholder farmers and private importers supplied ADMARC and supplied commercial estates. With liberalization of the sector and the removal of the subsidy in the mid 1990s, the market opened up, and the private sector became increasingly involved. Table 2.3 shows the changing extent of private and public sector activity in the fertilizer market over the last 10 years. Information has been assimilated from a variety of sources to construct this table. Data collected by IFDC provided valuable information on sales up to 2003/4, but consistent and complete data was particularly difficult to put together for the last three years. The data presented in table 2.3 and figure 2.2 represent our best estimates of imports and sales distinguishing between 3 different stages in the fertilizer market chain in Malawi – importation of fertilizer, distribution and sales of fertilizer to farmers, and purchase of fertilizer for on farm use.

¹ Sales up to 1991/2 are ADMARC smallholder sales reported by Conroy 1993, citing Darudec 1991: these exclude sales to estates, which are included in data for subsequent year. From 1992/3 total sales are reported, to 2004/5 from IFDC and in 2005/6 and 2006/7 own calculations from various sources.

Table 2.3 Private and Public Sector Involvement in Fertiliser Imports, Sales and Purchases 1997/8 to 2006/7

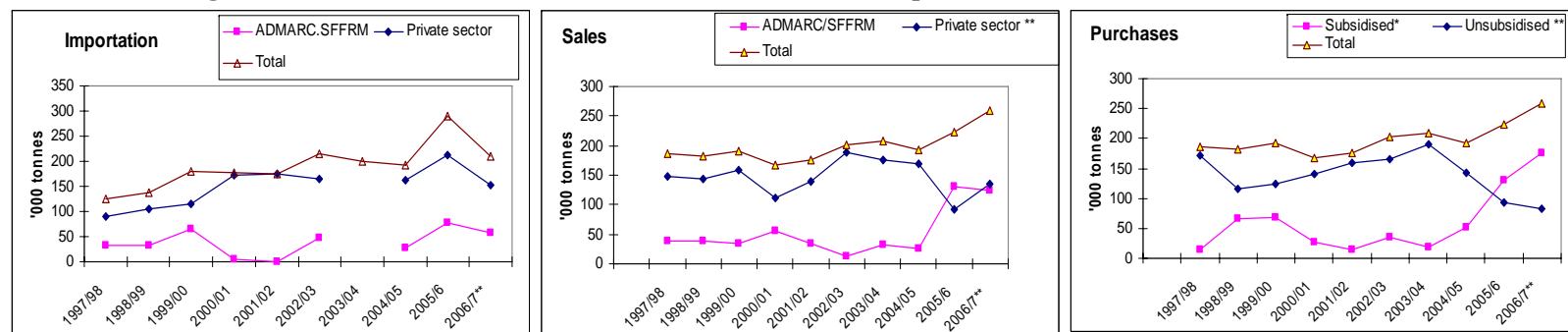
	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/6	2006/7
	Metric tonnes									
Total Imports	123,926	137,776	179,652	178,213	174,613	213,778	200,311	191,761	290,396	209,120
Total sales	186,926	182,776	191,652	166,978	174,956	201,798	208,183	193,237	223,920	259,120
Importation ***										
ADMARC.SFFRM	32,772	33,265	64,350	5,012	0	48,461	N/A	28,129	77,000	56,415
Private sector	91,154	104,511	115,302	173,201	174,613	165,317	N/A	163,632	213,396	152,705
% Private sector	74%	76%	64%	97%	100%	77%	N/A	85%	73%	73%
Distribution/ Sales										
ADMARC/SFFRM	38,976	38,863	33,434	55,455	34,814	13,024	32,403	24,661	131,000	124,206
Private sector **	147,950	143,913	158,218	111,523	140,142	188,774	175,780	168,576	92,920	134,914
% Private sector	79%	79%	83%	67%	80%	94%	84%	87%	41%	52%
Purchases										
Subsidised*	15,000	66,522	68,330	27,301	15,281	35,425	17,829	50,700	131,000	174,688
Unsubsidised	171,926	116,254	123,322	139,677	159,675	166,373	190,354	142,537	92,920	83,708
% unsubsidised	92%	64%	64%	84%	91%	82%	91%	74%	41%	32%

Compiled from IFDC data and data supplied by David Kampchacha and fertilizer importers and distributors.

* Subsidised includes subsidy, starter pack, TIP & ,APIP; excludes purchases by NGOs etc for small projects, except 2006/7

**Figures on 2006/7 importation based on estimates for carry over stock at the end of the season

Figure 2.2 Private and Public Sector Involvement in Fertiliser Imports, Sales and Purchases 1997/8 to 2006/7



Compiled from IFDC data and information supplied by David Kampchacha and fertilizer importers and distributors.

A number of points of interest should be noted in table 2.3 and figure 2.2. First, over the last 10 years the private sector has had the major share of both importation and sales of fertilizers, and, with the exception of 2006/7, private sector imports have been rising, though the share has fallen since the turn of the century. The private sector has also had the major share of sales, until 2005/6 and 2006/7 when the large scale subsidy programmes were implemented largely through ADMARC and SFFRM. However the most notable feature of the table is the high degree of variability across years, affecting all rows. There are large variations in total imports and total sales, and in importation and sales by the parastatals and by the private sector. There are also large variations in the volumes of subsidized purchases. Despite this variability, however, there are generally trends of increasing total imports and sales, and of increasing private sector importation. The generally flat total sales from 1992/93 to 2004/5 despite varying amounts of subsidized sales suggests that a significant proportion of subsidized sales displace commercial sales. If this is the case, and as reported later many in private sector believe this to be so, then it suggests that subsidized fertilizer sales lead to only limited increases in overall fertilizer use. This is a very important issue for the subsidy programme and is specifically addressed in Annex A.

3 The 2005/6 Input Subsidy

In 2005/6, government decided that it would implement a fertilizer subsidy to promote access to and use of fertilizers in both maize and tobacco production in order to increase agricultural productivity and food security. National commitment to the programme was expressed in a resolution by parliament to implement a universal fertilizer subsidy program (Agriculture and Natural Resources Committee, 2006). No comprehensive evaluation has been conducted on the implementation and impact of the 2005/6 scheme, and the information below is gleaned from discussions with government, donor and industry stakeholders, from various reports and statistics provided by these stakeholders, and from two independent evaluation reports, commissioned by CISANet (Nakhumwa, 2006) and the European Union (Spooner, 2006).

Despite the limited information available, it is important to understand the 2005/6 system as different stakeholders' experience with the 2005/6 programme has strongly influenced the development, implementation and reactions to the 2006/7 programme.

3.1 Development of the programme

Nakhumwa 2006 reports that in March 2005 the government instructed ADMARC to procure and distribute 70,000 tonnes of subsidized fertiliser for maize production, evenly divided between 32:21:0+4S and Urea (basal and top dressing fertilizers). This programme was then expanded by Parliament to cover a total 147,000MT of fertiliser, with extra 23:21:0+4S and urea and with basal and top dressing fertilizers for tobacco (D-Compound and CAN). In order to provide wide coverage of the farming population, to limit cost, and to limit leakage both within Malawi (to commercial producers) and outside Malawi, a voucher or coupon system was developed. Nakhumwa reports that the government also subsidized provision of 6,000MT OPV maize seed to be offered for sale without coupons at a price of MK150/3kg as compared with a market price of MK500/3kg.

We consider the program in terms of three main components: *coupon allocation and distribution*; *fertilizer procurement and distribution*; and *coupon redemption*. These clearly interact (quantities of fertilizer procured and distributed, for example, must match coupon allocations) and these interactions operate at different scales (nationally and down to village level). There is substantial variability in the way that the program components have developed and been implemented – over time and in different areas. There are also differences in the perspectives of different implementing and beneficiary stakeholders and differences between systems, processes and outcomes as they were planned or intended and those that actually occurred.

3.2 Coupon allocation and distribution

Coupon distribution occurred in two stages. Coupon distribution involved first printing and allocation of 2.74 (some sources report 2.84) million ‘base’² coupons and allocating them across regions, districts and EPAs. Different informants have reported different systems for allocation of these coupons to districts. Nakhumwa reports that the Ministry of Agriculture constructed a distribution matrix allocating the four different types of input to EPAs in proportion to the number of maize and tobacco growing households in each EPA (and allowing for ADMARC to distribute 54% of the fertilizer and SFFRM to distribute 36%). The Ministry of Agriculture, however, has indicated that the distribution matrix allocated coupons in proportion to cultivated area of each crop, by EPA. The budgeted distribution of fertilizers by district as reported by Nakhumwa does not suggest the consistent use of either of these allocation methods. Table 3.1 below shows total budgeted quantities of subsidized fertilizer sales by region (in metric tonnes) and the equivalent ratio of coupons per ha and per grower of maize (for 23:21:0+4 and urea)³. It is clear that allocations per ha and per grower vary widely across the regions. Similarly Figure 3.1 shows that allocations per ha and per grower varied widely between districts within regions.

Table 3.1 Total 2005/6 fertiliser allocations by region

	Urea	23:21	CAN	D Compound	Urea/NPK bags/ha	Urea/NPK bags/grower
North	9,777	9,777	5,479	4,487	2.16	1.08
Centre	21,580	21,574	7,688	13,717	1.32	0.71
South	18,649	18,649	1,833	3,796	1.27	0.46
National	50,006	50,000	15,000	22,000	1.41	0.63

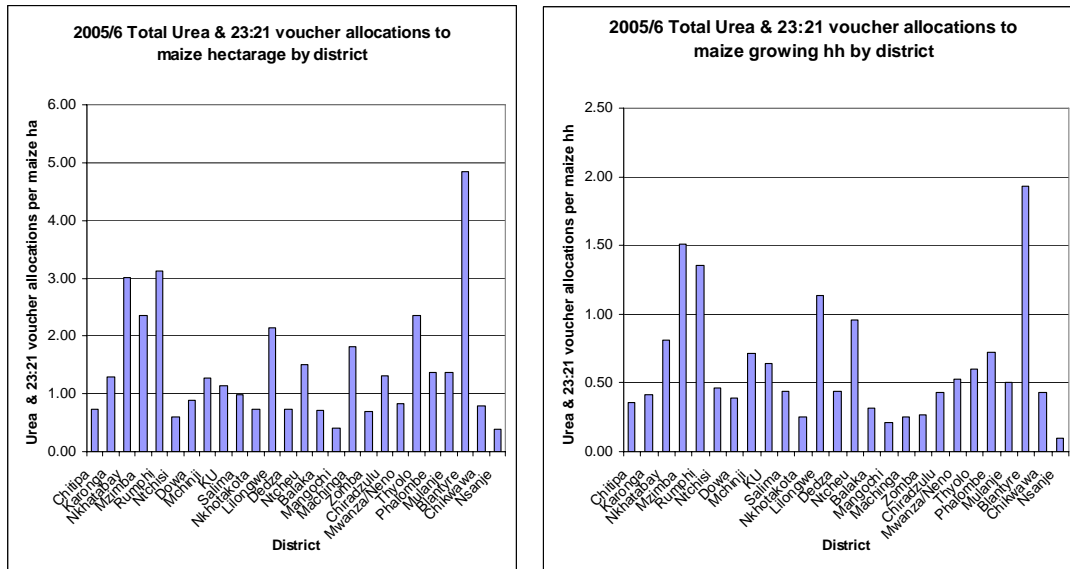
Coupons were then distributed to districts and TAs (traditional authorities) by the Ministry of Agriculture. TAs were supposed to allocate coupons between villages, delivering them to Village Development Committees, who were then supposed to identify recipients to receive coupons which they could then redeem for any of the four fertilizer types, at MK950 per bag for 23:20:0 and Urea (the ‘maize fertilisers’) and MK1,450 for compound D and CAN (the ‘tobacco fertilizers’)⁴. There is some uncertainty about the criteria determining prioritization and selection of beneficiaries, about how many people received coupons, and about how many coupons each recipient household received. What is clear, however, is that there was considerable variation between areas in all of these, and the situation was complicated by the government issuing supplementary coupons. It is reported that about 1.1 million of these were printed, and 583,000 were actually issued. Since demand for these supplementary coupons was reportedly fuelled by people having no coupons in areas where ADMARC markets did have fertilizer, these tended to be issued in an ad hoc way late in the season.

² We use the term ‘base coupons’ to distinguish the initial formal allocation from later allocations of ‘supplementary coupons’.

³ Data on fertiliser allocations are taken from Nakhumwa, who calculated them from data provided by ADMARC, SFFRM and Ministry of Agriculture. Maize hectareage figures are taken from information supplied by the Ministry of Agriculture, and maize grower information is calculated from the Ministry of Agriculture information on farm families and IHS2 information on the % of farmers growing maize and tobacco in each district.

⁴ Although coupons were allocated separately for ‘maize fertiliser’ and ‘tobacco fertiliser’ the coupons were in fact identical, and therefore coupons allocated for ‘tobacco fertiliser’ could be redeemed for 23:20:0 or urea.

Figure 3.1 District Allocations of 2005/6 Coupons



The stated criteria for eligibility to receive coupons were in the line with the general objective of the programme to provide fertilizer not as a safety net but to people who had the resources to use it productively but would otherwise have difficulty in obtaining it. Beneficiaries were therefore sometimes required to demonstrate that they had access to funds needed to redeem the coupons, while in some areas having household or family members in employment disqualified the household head from receiving a coupon. People did, however, often find their way around difficulties in demonstrating that they could afford to redeem the coupon (for example by borrowing the necessary cash just to show it to the relevant authority) or could argue that family members in employment were not members of their household. Nakhumwa reports that in small number of cases households who earned cash from MSFAF programmes were denied coupons as their MASAF payment was too late for them to demonstrate their ability to afford coupon redemption.

As regards the number of coupons issued per household, and the number of households receiving coupons, again information on this is contradictory, and probably represents varied understandings of the objectives of the programme. Thus, for example, an emphasis on household food security would suggest a more even distribution, of 1 maize fertiliser coupon each to 2.9 million households (thus reaching the vast majority of households) but an emphasis on national food production and security would be more consistent with plans to give two coupons to half the number of households, and would explain why it was planned to subsidise equal quantities of 23:20 and urea to allow beneficiary households to apply a basal and top dressing application. It is clear that there was considerable variation in distribution systems implemented in different areas, reflecting different numbers of coupons available and different approaches to their distribution: in some areas the majority of households got coupons, while in others only limited numbers of people got them. In the latter situation sometimes (some) recipients got two coupons, sometimes the majority of recipients got one coupon each, and sometimes people shared coupons.

There were of course a number of reports of mis-allocation of coupons in the coupon distribution process, some of these being high profile cases, others involving village authorities keeping back small numbers of coupons for themselves or their associates. It is, however, impossible to quantify the extent to which coupons were misappropriated or misallocated. It is worth noting, however, that distribution of coupons does not appear to have been as controversial and divisive as was the situation with targeting of TIP coupons to the poorest households (Chinsinga et al, 2002).

3.3 Fertilizer and seed procurement and distribution

As noted above, it was decided that a total of 147,000 tonnes of fertilizer (or approximately 2.9 million 50kg bags) would be subsidized in the scheme, broken down as 55,000 tonnes of 23:21 basal dressing for maize, the same quantity of urea as a top dressing, 22,000 tonnes of compound D basal dressing for tobacco, and 15,000 tonnes of CAN top dressing for tobacco. Nankhuma reports that about 70,000 tonnes (48%) was supplied by private sector importers and the remaining 77,000 tonnes were imported by SFFRM.

All distribution of subsidised fertilizer and seed was by ADMARC and SFFRM. Fertiliser deliveries were late to many areas as a result of late ordering of imports, and distribution priority was given to the south and centre where the rains started earlier. However distribution within regions was not always consistent – thus at the end of the year Chitipa in the North had received deliveries exceeding budgeted fertilizer sales, while other districts in the region had only received about 50% of their budgeted maize fertiliser allocation. Similarly Ntchisi, Dowa, Nkhotakota and Dedza in the Centre received more maize fertilizer than their budgeted allocations while others went short (overall the region had received 75% of its allocations by the end of the year). Similar discrepancies are reported in the South. The North had received no tobacco fertilizers by the 2005 year end, the Centre about 50%, and the South about 7%. Sales of fertilizer were dependent upon the distribution to unit markets in EPAs and farmers' redemption of fertilizer with their coupons

There appears to be much less information about seed distribution, but seed was for OPVs rather than hybrid, and there are some reports that some of the OPV seed was of poor quality.

3.4 Coupon redemption

Holders of coupons were entitled to redeem coupons for fertilizer at the rate of 1 coupon and MK950 for one 50kg bag of 23:20 or urea, and at 1 coupon plus MK1,450 for one 50kg bag of Compound D or CAN. Coupons were supposed to hold three signatures, of different members of the VDC. Since tobacco fertilizers cost more to redeem and were in any case in short supply, it appears that many coupons allocated (but not marked) as tobacco coupons may have been used to buy 'maize fertiliser'.

Nankhumwa reports that at the end of 2005 national sales of urea were about 82% of district deliveries, with equivalent figures of 74%, 15% and 21% for 23:20, Compound D and CAN (with wide district variation in all regions and there are some discrepancies in the figures). Equivalent figures for sales as percentage of budget were 56%, 66%, 6% and 6%.

Sales continued into January, and in different areas were limited either by a lack of fertilizer stock or by a lack of coupons. In the latter case supplementary coupons were used in some areas, but shortages of fertilizer in time for it to be useful meant that significant numbers of coupons were not used: it is estimated in the Ministry of Agriculture that of the 2.8 million 'base' coupons and 0.58 million supplementary coupons issued, only 2.54 million coupons (about 75%) were actually used, representing total subsidy sales of 127,000 tonnes. ADMARC/SFFRM report total subsidy sales of 131,000 tonnes, which would represent 2.62 million coupons. No information has been available on seed sales.

3.5 Impact

The impact of the subsidy scheme can be considered in terms of its effect on overall fertilizer use in the country, on crop production quantities, on national and household food security, on the livelihoods of recipients, on soil fertility, on maize prices, on the government budget, and on the development of the fertilizer industry in Malawi. Its impact depends upon the effectiveness of its implementation (for example later fertilizer deliveries are likely to have reduced the incremental production impacts of the fertilizer supplied) and upon natural events (for example 2005/6 had generally good rains) and upon the implementation of other policies (for example government decided to support maize prices for the 2005/6 harvest). No systematic evaluation of the 2005/6 programme has been conducted, and we briefly present limited and sometimes anecdotal evidence on the major types of impact discussed above.

Costs: The programme is reported to have cost MK7.2 billion against a budget of MK5.1 billion. These are direct costs of purchase and distribution of fertilizer, net of sales receipts. They do not, however, include overhead costs such as salary costs for permanent Ministry of Agriculture and ADMARC staff and depreciation on government and ADMARC vehicles. It is not clear how large these extra costs are, nor what cost savings and efficiency gains there might be if more importation and distribution were contracted out to private sector companies.

Fertilizer sales and use: Based on the redemption of 2.54 million coupons, total subsidy sales should be 127,000 tonnes. As noted earlier, ADMARC/SFFRM recorded sales of 108,986 MT urea and NPK, and 22,402MT of CAN and D Compound, a total of just over 131,000 MT of fertiliser. However benefits from the subsidy need to be evaluated in terms of incremental fertiliser use on smallholder maize and its direct and indirect impact on production and livelihoods. It should be possible to estimate such incremental fertilizer use by comparing 2005/6 fertiliser use on smallholder maize with previous years. It is, however, difficult to determine fertiliser use on smallholder maize as it is difficult to breakdown national sales of different fertilizers between smallholder and commercial farmers and between different crops.

Table 2.3 (in section 2) shows estimated fertilizer imports and sales use from 1992/93 to 2006/7. These are analysed in Annex A where it is estimated that demand for fertiliser in the absence of significant amounts of subsidized fertiliser⁵ is probably around 170,000 tonnes. Total incremental fertilizer use is estimated at 50,000 tonnes, and incremental fertilizer use on maize as a result of the 2005/6 subsidy is estimated to be around 45,000 tonnes.

Private sector imports and retail sales: Impacts of the subsidy scheme on the private sector need to distinguish between impacts on fertilizer importation and on retail sales. Importation of fertilizer has been affected by uncertainty regarding demand for both cash sales to smallholders and supply to government. The private sector was able to respond to late government requests to supply fertilizers to the scheme but these were not large, and the bulk of private sector imports were intended for dispersal through retail sales. Here, however, private companies have reported falls in business of 60 to 70% with closures of retail outlets and laying off of staff as a result of reduced retail sales during 2005/6. There are also reports that there has been a major contraction in the agro-dealer network that has been slowly building up over the last few years. Key informant interviews suggest that the reasons for this are complex, and may be caused by (a) uncertainty and unrealistic expectations among farmers regarding the volumes of and access to subsidized fertilizer⁵ and (b) other aspects of programme design and implementation which will be discussed later in the report. Impacts on demand for small packets of fertilizer from agro-dealers may however be inevitable if

⁵ Affecting both cash and credit sales

subsidized fertilizer is provided to the productive poor – but may have significant production and livelihood benefits if it allows them to invest more productive time in their farming rather than take time out earning cash through ganyu.

Whatever the reasons, these reports suggest that the subsidy displacement of commercial sales has been significant. In addition to impacting the retail business, failure to make retail sales affects importation as it led to companies carrying over significant stocks after the 2005/6 season. Costs of holding stock are very high, and uncertainty and late orders make the importation business very difficult.

Production: Table 2.2 earlier provided information about estimated maize production for different years, including the 2005/6 season. This shows a record harvest of 2.72 million tonnes, nearly 0.25 million tonnes greater than the previous highest estimated harvest (2.5 million tonnes in 1999/2000) which was achieved with the combination of good rains and the starter pack programme. The very high production of 2005/6 was also achieved with a combination of a large fertilizer subsidy programme and good weather. A simple regression model relating maize production to rainfall, nitrogen in ‘maize fertilisers’ and the proportion of the maize area reported as hybrid is used to estimate incremental production from the subsidy. Using the estimates of 45,000 metric tonnes of incremental fertiliser use on maize as a result of the subsidy, as discussed above, and ignoring any explicit contribution of subsidized OPV seed sales to increased production, the incremental maize production from the maize fertiliser subsidy is estimated at between 300,000 and 400,000 tonnes of maize⁶.

Livelihoods and maize prices: The widespread popularity of the programme suggests that it is perceived to have had a beneficial impact on people’s livelihoods. Unprecedented low maize prices during the 2006/7 growing season support the estimates of record maize production due to a combination of both good weather and the subsidy, as discussed above. The maize price dilemmas posed by the subsidy will be discussed later. Information from focus group discussions and key informant interviews in February 2007 suggest that in many places ganyu rates have increased by 50% in Kwacha, which with lower maize prices suggests increases in real wage rates of 75% or more. A significant part of this is, of course, the result of good weather as well as the subsidy. As noted above, reduced cash constraints may also allow more labour use on farm, providing further incremental production effects not accounted for in the calculations above and resulting from the reduced price of all the fertilizer distributed on the subsidy programme rather than on the net increase in fertilizer use.

3.6 Summary and issues

The 2005/6 subsidy programme is widely believed to have had a positive impact on maize production in the context of good rains. The scale of its different impacts, and indeed of the increase in fertilizer use, is not clear but it appears to be substantial (roughly estimated at 15 to 22% of total production). It is also not clear that the subsidy model used in 2005/6 was the most effective and least cost means of achieving these benefits. It represented a very significant item on the government budget, and it is important that the government and tax payers should be sure that they are getting the best value for money. There are particular questions about the fiscal sustainability of the programme, about displacement effects, about the impact on the private sector and on total fertiliser sales and use, about OPV seed quality, and about the efficiency of ADMARC as compared with private sector companies. These issues have been recognized and some of them have been addressed to some extent in the design and implementation of the 2006/7 subsidy

⁶ Further information on the estimation of this incremental impact, and of the difficulties involved, is provided in annex 2.

programme, which is in many ways modeled on the 2005/6 programme. Other issues are intended to be the subject of the 2006/7 programme evaluation, of which this report is a part.

4 2006/7 Planned and actual implementation systems

Following the perception of broadly successful implementation of the 2005/6 input subsidy programme, there was a general consensus that the programme should be repeated in 2006/7, with modifications both to reflect lessons learnt (although there was limited formal evaluation of the 2005/6 experience) and to recognize the interests of some stakeholders who were keen to contribute to and participate in the programme but who felt that their own and wider interests could be served better by making particular changes to the programme. This section of the report describes the development and implementation processes of the subsidy programme. Important changes from the 2005/6 programme involved greater involvement of donors and the private sector in the programme as a whole, and particularly in the system for distribution of maize seed. We describe in some detail the ways in which the implementation systems for fertilizer and seed distribution were developed and the final systems for coupon allocation and distribution, input procurement and distribution, and coupon redemption/ input purchase. Before describing these systems, however, it is necessary first to consider the objectives of the input subsidy system.

4.1 Stakeholders and Stakeholder Objectives

As will be discussed later, a major issue in the evaluation of the 2006/7 AISP concerns clarification of its objectives, of the means by which they will be achieved, of the likely period of time over which it should be implemented, and of conditions which would allow it to be terminated.

There is broad agreement that the objective of the programme is to improve land and labour productivity and production of both food and cash crops by cash constrained smallholder farmers, to promote economic growth and reduce vulnerability to food insecurity, hunger and poverty. A further objective emphasised by some is promotion of the development of the private sector agro dealer (input) network. These objectives are consistent with the National Agricultural Policy Framework (2006) overall objectives and purposes, and with results and strategies concerned with sustainable management and use of natural resources (2), increased smallholder productivity of food and cash crops (8), and promotion of agribusinesses (11).

Within this broad agreement of objectives, however, there appear to be a variety of understandings about the mechanisms by which increased food security and reduced hunger were to be promoted and achieved under the programme. At one extreme, some see food security primarily in terms of national food self sufficiency, so that the programme should concentrate on promoting fertiliser use among smallholder farmers who will use it to the greatest effect – able bodied farmers with land and labour but who would not buy unsubsidised fertiliser. Others, however, see food security in terms of household food self sufficiency (this was detailed as the programme objective in the Agricultural Communications Branch leaflet distributed throughout the country), and under this interpretation the programme should concentrate on promoting fertiliser use among smallholder farmers who are most food insecure. We will discuss later the relationships between national and household food self sufficiency and food security, but note here these different views, which suggest different approaches to subsidy targeting and to other aspects of subsidy design and implementation.

Different understandings of ‘food security’ and differing emphases on different aspects of the programme’s objectives and on different ways of achieving these objectives arise in part because of the large variety of stakeholders with interests in and influence on the development and implementation of the programme. Each stakeholder may have different long and short term objectives relating to

- the interests of the organisations they are members of,
- their professional training and interests
- their professional standing within and outside those organizations, and
- their personal (for example social or financial) interests

The various stakeholders with potential interests in the programme, and the nature of their main interests, are set out in Table 4.1. The balance between these interests will, of course vary between individuals, and it is important to note that different professional and cultural backgrounds of individuals and of organizations tend to encourage differing understandings of and emphasis on different technical, social, and economic processes and achievements. Thus, for example, the Ministry of Agriculture and agricultural professionals are likely to place more emphasis on the importance of agricultural production in promoting food security than, for example, economists who may place more emphasis on market development. Similarly government, private sector, donor and NGO organizations and their managers and employees often have different perspectives on the importance and roles of market development in promoting economic growth and poverty reduction.

There will also be varying degrees and types of opportunism. Only those interests which might be termed 'legitimate' (compatible with legal and moral rules and norms) are shown in the table. Other interests concerned with opportunities for illegal financial or other gain are not shown in the table. Such interests need to be recognized. Where there is potential for large scale opportunism, either resulting from single instances on a large scale (such as in fertilizer importation), or from many instances even if each is on a smaller scale (such as misappropriation in coupon distribution or in input sales at selling points) then express measures need to be taken to guard against such opportunism.

Table 4.1 Stakeholders and Stakeholder Objectives

Organisation	Individual	Interests/ Objectives
	Farmers – commercial/ smallholder; surplus/ deficit; male/ female; in different regions; growing different crops	<ul style="list-style-type: none"> • Higher yields, increased incomes & food security, reduced costs & vulnerability, improved livelihoods (surplus producer interests in higher prices; deficit producers share consumer interests bedlow),
	Maize consumers	<ul style="list-style-type: none"> • Stable and low cost access to maize
	Taxpayers & Electorate	<ul style="list-style-type: none"> • Agricultural, economic & social development • Increased incomes and food security • Effective use of government resources
	Local leaders	<ul style="list-style-type: none"> • Agricultural, economic & social development for community – as above • Increased influence, etc
Political parties	Politicians (national, local)	<ul style="list-style-type: none"> • Economic & social benefits for electorate at acceptable / low cost • Effective use of government resources • Political influence
Ministry of Agriculture Local Government	Administrators, Technicians (HQ, ADD, district, field). Differing professional & career interests	<ul style="list-style-type: none"> • Agricultural, economic & social development • Increased national & local production & food security • Improved rural livelihoods • Effective use of government resources • Increased organisational, professional & personal influence & resources • Individual advancement
Parastatals – ADMARC, SFFRM	Managers, clerks, drivers, labourers, etc	<ul style="list-style-type: none"> • Sustainable, activities & organization • Contribute to econ. & social development • Increased organisational & personal influence & resources • Individual advancement
Donors	HQ, Lilongwe Administrators, technicians	<ul style="list-style-type: none"> • As for government but in different national, professional, political, organizational & funding contexts
Private sector – importers, distributors, maize traders, transporters	Owners, managers, clerks, drivers, labourers, etc	<ul style="list-style-type: none"> • Profitable activities & organization • Contributions to economic & social development • Increased organisational & personal influence & resources • Individual advancement
NGOs	Local/ international Fundors, managers, other employees	<ul style="list-style-type: none"> • As for government & donors but in different national, professional, political, organizational & funding contexts

4.2 Development of the programme

Early documentation of the 2006/7 Agricultural Inputs Subsidy Scheme is found in a 'Draft Concept Document for the 2006/7 Fertiliser Subsidy Programme' produced by the Ministry of Agriculture in early 2006. This set out the objective of the programme in terms of building on the success of the 2005/6 programme, which had aimed to increase agricultural productivity and hence improve food security at both the national and household level. It was proposed to use a similar distribution matrix system for allocating coupons as in 2005/6 ('taking into account the agricultural practices of the districts') and to continue to use local government and Village Development Committees (VDCs) to distribute coupons, but to strengthen the distribution to reduce instances of misallocation of coupons by introducing mechanisms to increase the transparency of the system, to increase the involvement of government and civil society representatives, and to issue clearer instructions on the system.

Over the next few months there were intensive discussions involving Government, donors and private sector importers and distributors as regards the development of systems for implementing the programme. The major events in this process are summarized in Table 4.2.

There was considerable concern among some donors and among private sector companies involved in fertilizer importation and distribution that a repetition of the 2005/6 system using only ADMARC and SFFRM for fertilizer distribution would further damage the private sector. This led to discussions between Government (Ministry of Finance and Ministry of Agriculture), donors and private companies. The private sector, through recently established fertilizer and seed supplier associations, put forward proposals for coupons to have a fixed value which farmers could use to obtain a fixed discount when buying fertilizer or other inputs (such as seeds and chemicals) at private sector outlets or at ADMARC or SFFRM depots. Under this inputs sold through private sector outlets would be procured and distributed by the private sector while ADMARC and SFFRM would be required to sell at prices that covered their full costs, including overheads. Discussions continued in a Malawi Fertiliser Workshop sponsored by the World Bank in May 2006

Government recognised the potential benefits from private sector involvement in terms of increased coverage of selling points to reduce congestion, the promotion of agribusiness, and utilization of its ability to source stocks, but expressed concerns about the risks of large unsold ADMARC stocks if the private sector made significant sales and about the quality of inputs (particularly seeds). Government was also concerned that farmers in remote areas, with higher transport and distribution costs, would be disadvantaged by variable prices for inputs and that only reputable and well established private companies with experience and investments in retail outlets could be relied upon to implement the system.

During June and July 2006 a compromise began to emerge, supported by the offer of finance from DFID to (a) address some of Government's concerns about private sector involvement by funding the financing and administration costs of unsold Government fertilizer stock and (b) fund both the management of coupon and input distribution by the Logistics Unit and the maize seed component of the input subsidy programme. This compromise also involved

(a) involvement of 'bona fide' private input dealers with existing outlets in fertilizer distribution, together with ADMARC and SFFRM outlets, with fixed farmer payments when redeeming coupons for fertilizer and variable payments per coupon to private suppliers depending on the location of the outlet and associated transport costs;

(b) private sector supply of maize seed, with active involvement of the Seed Traders Association of Malawi (STAM) in a more liberalised system (as compared with the fertiliser system) with (as

discussed initially) values of payments per coupon to approved private suppliers to be fixed but payments by farmers redeeming coupons for seed to vary, depending upon prices determined by suppliers; and

(c) Technical quality monitoring of seed and fertilizer stocks to be financed by DFID.

This compromise provided the basis for subsequent implementation of the programme, and the greater involvement of the private sector in the seed system was seen as a test of such a system which could provide lessons for the fertilizer system in subsequent years.

Government also asked Farmers World if they would deliver their contracted tonnage for SFFRM warehouse stocks through their own shops. Reliance on the private sector to retail fertilizers and seeds which they were to procure themselves reduced the need for government procurement – there was no need for any government procurement of maize seed (since this all to be supplied by private seed suppliers) and targeted government procurement and distribution of fertilizer was reduced from 150,000 MT to 135,000MT, with the private sector expected to procure and retail 15,000MT.

During August progress was made with DFID's financial support, the development of a financing agreement with Stanbic Bank (whereby the bank would buy unsold fertiliser stocks from the Government at the end of the season but at the same time the Government would undertake to buy these stocks back for the next season at the same price). The Logistics Unit also started working and proposed a systems distribution, monitoring and control of coupons and of fertilisers to be distributed through ADMARC and SFFRM outlets. Schedules were developed for deliveries to SFFRM depots in Blantyre, Lilongwe and Mzuzu. Restricted invitations to tender were issued for transportation, and contracts were issued for printing of coupons. Coupons were printed in books in triplicate, with colour coding for coupons for different inputs (gold for maize seed, blue of 23:21:0 4(s). green for urea, pink for CAN and red for Compound D). Each coupon had a unique serial number, security features to prevent counterfeiting, and different shading of the top, duplicate and triplicate copies, and (see figure 4.1).

Table 4.2 Outline of main events in development of the 2006/7 Inputs Subsidy Programme

April	Development of basic concept & scale SFFRM call for tenders SFFRM cancelled tenders
May	WB fertiliser workshop GoM requests tenders Ongoing negotiations and proposals for private sector participation in distribution
June	Ongoing negotiations and proposals for private sector participation in distribution Proposals for greater PS involvement in seed supply 30 June tenders for seeds opened
July	12 July meeting between government and private sector fertiliser suppliers Discussion of proposal for DFID funding of fertiliser stock carry over
August	GoM awards tenders, 150,000MT, (53,600 to SFFRM) 3 rd August, budget approval by Parliament Meeting of seed industry Logistic Unit plans for implementation of ADMARC/SFFRM fertiliser distribution Development of DFID proposal to fund fertiliser carry over, logistic unit, seed subsidy, input quality monitoring Proposal conditional on agreement on private sector involvement in fertiliser & seed distribution Expressions of interest by other donors in funding seed programme 20 August, first of weekly progress report meetings Agreement that FW tender sold on coupons through retail network
September	Reductions of SFFRM tender and reawards continued for next few weeks Seed tender cancelled, new call
Week 1	Deliveries to SFFRM depots start Printing of coupons initiated Call for expressions of interest from private sector to participate in sales of subsidized fertiliser Coupon distribution matrix finalised
Week 2	Debate about seed selling system Seed companies decided on 400MK seed packs, no farmer cash ADMARC / SFFRM still negotiating storage fees Questions about effect of fuel price increases
Week 3	ADMARC contracts with Monsanto & Seed Co for seed sales Govt request for DFID funding for extra fertiliser transport costs
Week 4	Development of contracts & redemption values for private sector fertiliser sellers Coupon distribution matrix finalized
October	
Week 1	Signing of Stanbic Bank surplus fertiliser financing contract Delays in especially NPK deliveries to depots Uplifting to unit markets started in SR Dispatch of coupons to SR started
Week 2	Briefing meetings on subsidy held for local government etc in each ADD Congestion at Kanengo (and some at Luwinda) Problems with lack of staff in ADMARC and SFFRM unit markets

Table 4.2 (cont)

Week 3	Continued NPK delivery problems Agreements with Yara, Farmers/ World/Agora, NASFAM & Rab Processors to sell subsidised fertilizers Continued problems with lack of staff in ADMARC and SFFRM unit markets Coupon distribution to districts virtually completed in Southern Region, but distribution to farmers held up awaiting funds from MoA Uplifting started in CR
Week 4	ADMARC awaiting GoM funds to open some markets Continued NPK delivery problems Adjustment of contracts for fertiliser delivery Congestion problems at Kanengo Continued problems with lack of staff in ADMARC and SFFRM unit markets Continuing delays in Southern Region coupon distribution to farmers in some districts Coupon distribution started in CR
November Week 1	Contracts for fertiliser selling signed with Yara, Farmers World/Agora, NASFAM & Rab Processors Continued NPK and other fertiliser delivery problems Adjustment of contracts for fertiliser delivery Uplifting continued in SR and CR started in NR
Week 2	Coupon distribution to districts completed in CR and SR and virtually completed in North Communication activities underway though delayed by transport problems Private retailers sales started GoM further request for increased fertiliser transport etc funding from DFID Slow uplifts from SFFRM depots due to loading difficulties Muli Bros engaged to monitor ADMARC sales
Week 3	rains started in some places Seed sellers reluctantly accept coupon redemption system, retailers reclaim through them
December Week 1	GoM further request for increased fertiliser transport etc funding from DFID Increasing press reports of coupon misuse 957,560 supplementary coupons printed Sales in full swing
Week 3	Fertiliser deliveries to SFFRM now over 80% for all fertiliser types exc Compound D (72%) Nyiombo allowed to participate in retail sales accepting coupons DFID pledged support for transport costs Apparent that Stanbic surplus fertilizer financing agreement will not need to be exercised
January Week 2	150,000 tons of subsidized fertilizer sold. Government decided to continue selling despite the impact to the budget. Export Trading allowed to participate in retail sales accepting coupons Urea shortages in southern region, extra 4000mt purchased for SFFRM stocks Central and southern region sales closed 26 January
February	Northern region sales closed first week. 174,688 tonnes sold nationally under the programme

At the end of August weekly input subsidy meetings began at the Ministry of Agriculture, involving the Ministry, donors, input suppliers and the police. Fertiliser deliveries to SFFRM depots began (these will be described in the following section) but there were still outstanding questions regarding (a) contracts for private distribution of subsidized fertilizer, (b) the system for seed sales, and (c) donor funding for the seed component.

Figure 4.1 Copy of Coupon for 23:21:0 (4S) NPK

2

**MALAWI GOVERNMENT
FERTILIZER SUBSIDY
PROGRAMME**

Government of Malawi
Mangochi

CHIPHASO CHOGULIRA NPK Nº 054521

MALAWI GOVERNMENT
FERTILIZER SUBSIDY

Ife a Komiti ya m'mudzi wa _____ Mfumu yayikulu

T/A _____ M'bomali tikuikira umboni kuti

Bambo / Mai _____ Ndi mlimi wa m'mudzi uno.

lwowa amalima chimanga/fodya/thonje (*chongani pa dzina la mbeu yoyenera*). Agulitseni thumba limodzi la feteleza wa mbeuyi.

Oikira umboni ndi:

Chairman wa VDC Secretary wa VDC Committee member
(Chiphaso ichi ndi chogulira thumba limodzi lokha)

Contracts for private distribution of subsidized fertilizer required agreement on the mark ups to cover distribution costs (for transport, handling and storage) in each district. These were based on calculations of costs charged by the private sector for transport and distribution from the three regional SFFRM depots into districts under the TIP programme. The margins were worked out at an average 7.5% mark up on the cost of all fertilizers delivered to the regional SFFRM depots, but following fuel price increases the margins were later increased across the board for all districts to give an average 10% mark up.

The Government had been surprised by the large number of private companies which had expressed an interest in involvement in fertilizer distribution, and in order to limit administrative and quality control costs and problems, proposed to limit participation to a limited number of *bona fide* and established input suppliers and to limit the number of outlets per district for some firms. There were then delays in resolving these issues and in awarding of contracts, and it was not until mid November, as the rains started in some areas, that it was announced that four companies had been selected to participate in the fertilizer programme (Agora and Farmers World, Yara Malawi, Rab Processors, and NASFAM). Two other companies were allowed to participate in the distribution programme, Nyiombo (in mid-December) and Export Trading (in January).

Concerns about large numbers of small retailers also arose with the seed distribution system, as AISAM and Rurmark, associations of large numbers of independent outlets, some of them very small, put forward expressions of interest. It was agreed that only a limited number of larger and more established members would be permitted to participate within AISAM and Rurmark. To ensure that only seed from certified seed suppliers received subsidy, the Ministry decided to only accept claims for coupon redemption from approved seed suppliers, not from seed distributors. Distributors and seed companies were concerned that this system would lead to major costs in processing of coupons (by distributors and then again by seed suppliers) and cash flow problems arising from consequent payment delays. In the end with the season advancing, seed suppliers and distributors reluctantly accepted this system. Seed suppliers were concerned that farmers would prioritise their cash expenditure on fertilizer and might have little cash available to purchase seed. They decided that farmers with seed coupons of a value of MK400 would be able to purchase 3kg packs of OPV or 2kg packs of hybrid seed without any requirement for an extra cash payment. Retailers would be paid a commission out of the MK400 that seed companies would receive from Government on submission of properly documented coupons and invoices.

Donor funding for the seed programme was finalized in late November, and the first tranche of DFID finance released as this had been held up by being conditional on the signing of contracts between government and private distributors. DFID funding was subsequently extended to cover unanticipated maize fertilizer transport costs, with some of this being funded from savings on the cost of the Stanbic Bank facility for repurchasing fertilisers, as it became apparent that this would not be necessary.

4.3 *Coupon allocation and distribution*

Coupon allocation and distribution can be considered in two main parts: first allocation and distribution to districts and EPAs, second allocation and distribution to beneficiaries within districts and EPAs. We discuss these in turn.

4.3.1 Coupon allocation

As in 2005/6, coupons were initially allocated to each district according to a distribution matrix constructed by the Ministry of Agriculture. This matrix was constructed in three stages. First, district allocations of coupons for 23:21, urea and maize seed were made proportional to the maize area in the district, with NPK, urea and seed in the ratio 1:1:1.54. Adjustments were then made between districts within each region to reflect perceptions of relative strength of demand in the 2005/6 subsidy programme (for example in the North Karonga was perceived to have had less demand than Chitipa, and so some coupons were reallocated to Chitipa). The third stage of the allocation process was to divide coupons in each district between EPAs in proportion to each EPA's maize hectareage. A similar process was followed for constructing the distribution matrix for allocation of coupons of Compound D and CAN intended for tobacco. As in 2005/6, there was then a coupon issue of supplementary coupons, for NPK and Urea only (in equal quantities). Table 4.3 and figure 4.2 show base and supplementary allocations by district

Table 4.3 Coupon Allocations 2006/7.

District	Urea & NPK					CAN & D Compound			Seed
	2005/6 *		2006/7			2005/6		2006/7	
	Alloc'n	Sales	Base	Supp.	Total	Alloc'n	Sales	Alloc'n **	
Chitipa	14,880	32,333	66,440	2,000	68,440	4,520	3,868	19,080	51,108
Karonga	26,800	25,366	14,600	82,000	96,600	6,680	1,588	0	11,231
Nkhatabay	34,480	17,433	13,840	35,760	49,600	10,760	147	400	10,640
Mzimba	264,040	287,330	191,000	200,000	391,000	148,640	71,487	62,160	146,923
Rumphi	50,880	53,928	40,120	25,000	65,120	28,720	11,135	22,360	30,861
Ntchisi	25,720	34,036	73,880	2,000	75,880	25,620	13,808	20,160	56,831
Dowa	52,640	93,938	149,480	2,000	151,480	52,000	28,668	41,200	114,985
Mchinji	75,040	94,050	154,120	2,000	156,120	64,400	65,134	31,120	118,554
Kasungu	94,560	125,318	152,000	2,000	154,000	74,960	75,266	52,960	116,923
Salima	40,880	49,882	54,880	2,000	56,880	7,000	8,197	2,040	42,215
Nkhotakota	15,880	20,796	26,600	2,000	28,600	2,020	4,015	1,720	20,450
Lilongwe	363,560	367,356	345,720	113,000	458,720	136,440	74,051	79,720	265,939
Dedza	67,240	80,952	99,640	2,000	101,640	31,100	18,241	7,400	76,646
Ntcheu	127,560	141,236	123,720	44,000	167,720	34,560	17,748	7,680	95,169
Balaka	32,480	29,564	54,000	13,500	67,500	1,720	1,525	1,800	41,539
Mangochi	42,560	55,147	123,600	2,000	125,600	11,480	2,782	10,800	95,078
Machinga	73,920	70,902	129,040	50,900	179,940	14,220	12,322	8,200	99,261
Zomba	56,200	95,978	149,000	17,900	166,900	13,760	18,450	16,000	114,615
Chiradzulu	36,760	36,641	67,440	89,800	157,240	1,920	1,736	3,400	51,878
Mwanza/Neno	29,320	31,922	59,800	2,000	61,800	2,320	652	400	46,000
Thyolo	96,880	109,503	123,640	92,000	215,640	11,040	4,242	2,200	95,108
Phalombe	58,520	42,174	86,760	38,000	124,760	15,620	1,301	5,000	66,739
Mulanje	79,040	86,580	108,320	57,800	166,120	14,040	3,942	1,200	83,323
Blantyre	188,720	184,286	170,360	102,000	272,360	26,380	7,614	3,000	131,046
Chikwawa	45,200	9,138	13,480	1,000	14,480	80	120	0	10,369
Nsanje	6,360	3,930	8,520	19,900	28,420	0	0	0	6,554
Totals									
North	391,080	416,390	326,000	344,760	670,760	199,320	88,225	104,000	250,763
Centre	863,080	1,007,564	1,180,040	171,000	1,351,040	428,100	305,128	244,000	907,712
South	745,960	755,765	1,093,960	486,800	1,580,760	112,580	54,686	52,000	841,510
National	2,000,120	2,179,718	2,600,000	1,002,560	3,602,560	740,000	448,039	400,000	1,999,985
Allocation per ha cultivated									
North	2.16	2.30	1.80	1.91	3.71	6.32	2.80	3.30	1.39
Centre	1.32	1.54	1.80	0.26	2.07	4.33	3.08	2.47	1.39
South	1.27	1.29	1.86	0.83	2.69	6.84	3.32	3.16	1.43
National	1.41	1.53	1.83	0.71	2.53	5.04	3.05	2.72	1.41
Allocation per grower									
North	1.08	1.15	0.90	0.96	1.86	2.34	1.03	1.22	0.70
Centre	0.71	0.83	0.98	0.14	1.12	1.08	0.77	0.62	0.75
South	0.46	0.47	0.68	0.30	0.98	0.65	0.32	0.30	0.52
National	0.63	0.68	0.82	0.32	1.13	1.13	0.68	0.61	0.63

Notes:

* 2005/6 1st round allocation only, from MoA matrix

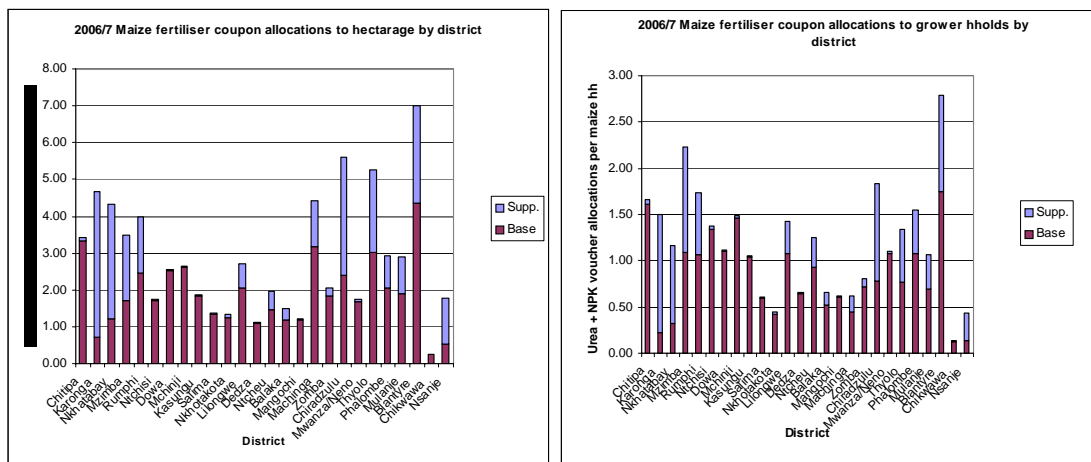
** No 2nd round allocations

2006/7 information compiled from MoA & Logistics Unit data, 2005/6 information from Nankhuma (2006) and ADMARC.

Grower numbers calculated from MoA farm families & IHS2 data on % ulimi growing each crop

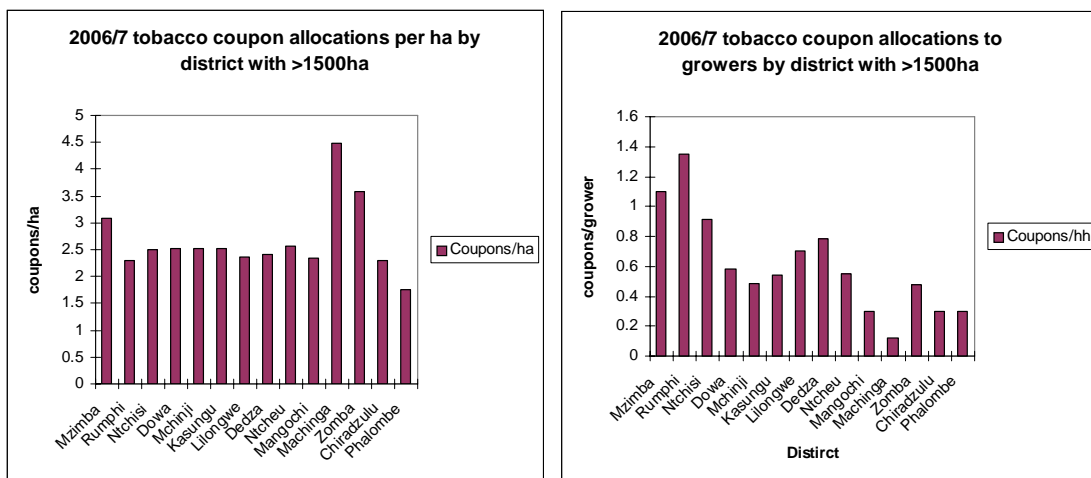
much more even in 2006/7 than in 2005/6 (see Table 4.3), they still varied widely between districts, as seen in figure 4.3. The supplementary maize fertiliser coupon allocations then re-introduced discrepancies between the north and the other two regions, and also gave the south higher per ha allocations than the centre.

Figure 4.3 Per ha and per grower Urea and NPK allocations by district, 2006/7



There are much smaller differences between major tobacco growing districts as regards tobacco fertiliser coupon allocations per tobacco ha (see figure 4.4).

Figure 4.4 Per ha and per grower D Compound and CAN allocations by district, 2006/7



Overall allocations this year were considerably higher than base allocations last year, but as noted earlier there were around 0.58 million supplementary coupons issued last year. It is not known how these 2005/6 supplementary coupons were allocated between districts, but it appears that they have affected people’s views of the coupon allocation this year, even though (as will be discussed later)

the proportion of coupons that have been redeemed for fertilizer is greater this year (around 87%⁸ as compared with around 79% last year) despite a greater base allocation and greater proportional supplementary allocation this year (supplementary allocation was roughly 33% of base for all fertiliser types in 2006/7 as compared with 21%).

With regional differences in average cultivated area maize and tobacco per grower, similar per ha base allocations would be expected to lead to higher per grower base allocations in the North and Centre, as compared with the Southern Region. This is indeed the case, and for all 2005/6 base allocation and for the total 2006/7 allocation the northern region allocations per grower are greater than the central region allocations, which are greater than those in the southern region (see table 4.3). There are of course household food security, productivity, equity, political and practical targeting implications of the regional aspects of this distribution, which will be discussed at the end of the report.

4.3.2 Coupon distribution

For the base coupon allocations, coupon books were parceled up in packs for each EPA in each district, and serial numbers recorded, before dispatch to the Chief Executive of each district. Although written instructions had been widely distributed on how coupon distribution should be administered within districts, key informant interviews conducted in six districts and anecdotal evidence suggests that a wide variety of different procedures were followed.

The instructions circulated by the Agricultural Communications Branch (ACB) stated that district, area and village committees should be formed in line with standard Local Government structures. The District Coordinating Committee (DCC) should be chaired by the District Commissioner (Chief Executive) and include as members the MPs for the District, Chiefs, District Agricultural Development Officer, District Manager ADMARC, Officer in Charge Police, a SFFRM representative, three religious representatives, one agricultural NGO representative, and the Chairperson of the Disaster Preparedness Committee. The ToR for the Committee was to (a) conduct civic education on the programme, (b) monitor and report to the AISP the delivery and distribution of fertilizers, (c) stamp out malpractices, (d) review guidelines for beneficiary identification, and (e) recommend where necessary the opening and closing of selling points.

Area Development Committees (ADCs) were to supervise village development committees (VDCs) and were to have similar representation at the area level as the District Committee (ie Traditional Authorities, MP, Agricultural Extension Development Coordinator, ADMARC supervisor, Group Village Headmen, and police, community policing, CBO, NGO, Disaster Preparedness and one male and one female farmer representatives). Their ToR included, at a lower level, tasks (a) to (c) above of the DCC, and in addition they were to supervise beneficiary identification and sales, communicate need for new sales points, and assist in communicating technical information about input use.

Finally, the Village Development Committee (VDC) would include the group village headman, village headmen, agricultural extension development officer, chairs of village policing committees, the MP, and two male and two female smallholder farmer representatives. Its ToR involved a much more active role than the other committees, as they had to actually receive and distribute the coupons (and account to the ADC for them), identify eligible beneficiaries, ensure farmers' proper use of fertilizers, maintain records of fertiliser purchases, report irregular procedures to the ADC, and keep unused and counterfoil coupons.

⁸ This is calculated using coupons redeemed to give total programme sales.

In each village a specific input subsidy programme committee was also supposed to identify beneficiaries, who were supposed to be ‘full time smallholder farmers who cannot afford to purchase one or two bags of fertiliser at prevailing commercial prices, as determined by local leaders in their areas’. Guidelines also specified that coupons should be issued to identified farmers ‘just before they go to a market point to purchase inputs, to minimize chances of abusing them’.

Systems actually implemented in the districts visited by the team varied. The involvement of the DDC was a universal feature, but Mzimba appeared to operate only one committee level under that, which very effectively also organized bulk transport for farmers by taking farmers’ coupons and cash (under a duly authorized and documented process) to selling points. The extent of involvement of the TAs in the process varied, and seemed to be strongest in the central region (Kasungu and Lilongwe) where there were reports of TAs subverting the process in various ways (the monitoring study conducted by the Ministry of Agriculture reported these problems as more prevalent in Lilongwe, Mchinji, Ntchisi, Dedza, and Zomba). As a result, the supplementary coupons were distributed through the District Agricultural Development Office with TAs and traditional leaders only supply names of beneficiaries, and then agricultural extension staff actually distributed coupons. Substantiation of specific allegations is patchy. Problems of differences between TA and EPA boundaries were noted in Kasungu and Rumphu. In Mzimba and Lilongwe there was disappointment and initial suspicion as a result of small numbers of base coupons as compared with the previous year (as noted above). Figures of coupons received in each district roughly tally with the allocation figures in table 4.3.

4.4 Input procurement and distribution

4.4.1 Fertiliser procurement and distribution

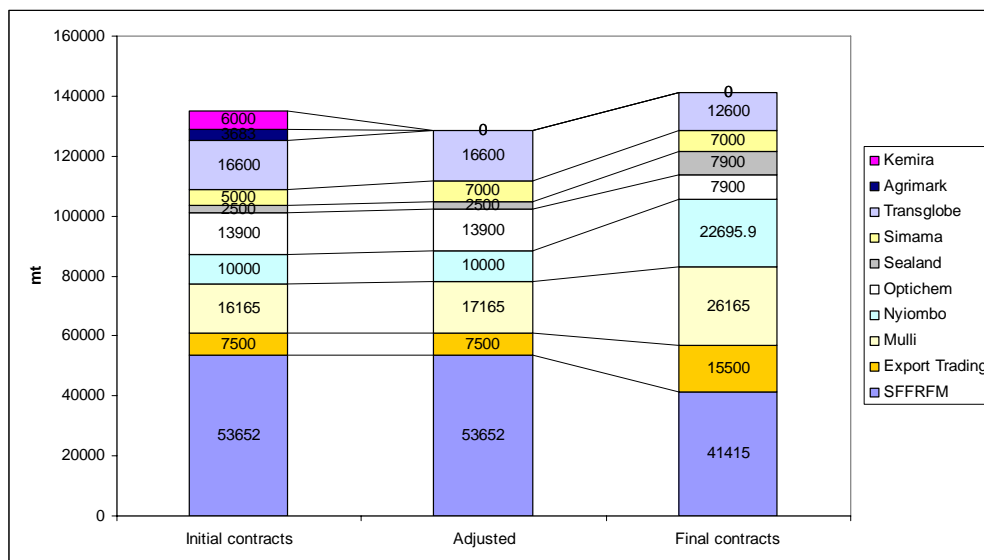
The bulk of the fertilizers sold under the programme were distributed by ADMARC and SFFRM, through a programme of procurement into three SFFRM depots located in Blantyre, Lilongwe and Mzuzu. Procurement of the targeted quantities of 150,000 metric tonnes began with SFFRM requesting tenders in April 2006. This tender was then cancelled and the Government issued a new request for tenders in May, in which SFFRM participated, along with local and international suppliers. These contracts were awarded in August, with SFFRM winning a contract to supply 53,600 tonnes of NPK and urea, a little over a third of the total amount required by government for the subsidy programme, with mainly local suppliers/ bidders picking up the balance and preference reportedly being given to bids with supplies in the country, and then to lowest price. As the season progressed and it became clear that some suppliers would not be able to meet their delivery schedules, contracts were amended as other suppliers picked up shortfalls. Figure 4.5 shows how the balance of contracts between companies changed over the season and was eventually reflected in quantities delivered to the SFFRM depots (the Farmers World and Malawi Fertiliser Company contracts were transferred from delivery to SFFRM to sales through their own stores and are not included in the graph). These adjustments appear to have led to some cost increases for government, with average prices rising from approximately \$440 to \$454 per tonne⁹.

⁹ Average final cost is calculated from total parastatal fertiliser supply costs of MK8,562,896,990 for 134,593 MT fertiliser (deducting D Compound brought forward and SFFRM 4,000 MT Urea not invoiced). With further about the breakdown of the delivery depots in the original contract, further analysis could determine if and how far this increase in average costs might be due to changes in the relative allocation between depots (there are no significant price changes due to changes in the relative proportions of different fertilisers).

Once fertilizers had been delivered to depots they then needed to be uplifted to the ADMARC and SFFRM unit markets where they would be sold to farmers. This followed a detailed allocation plan drawn up by the Logistics Unit, taking account of storage space at each market and coupons expected to be redeemed in each EPA. The Logistics Unit was also responsible for contracting with transporters and organizing/ coordinating transport from depots to unit markets. Problems experienced here included slow staffing and opening of ADMARC markets, related in part to delays and short falls in government’s payments for these activities, and poor roads, particularly to more remote areas after the rains had started. Information on quantities and timing of uplifting of fertilisers to unit markets is provided later in section 6.2.

Private companies were responsible for procuring and distributing fertilizers sold through their own retail outlets, and no centralized information is available on this, apart from seed association reports of seed availability in the country. Delays in agreeing systems and finalizing contracts inevitably slowed stocking, but how far late stocking delayed actual input disbursement is not clear, given delays in issuing of coupons to farmers and in contract finalization.

Figure 4.5 Company shares in SFFRM delivery contracts



Note: MFC and Farmers World contracts excluded as they were eventually supplied into the programme through Farmers World/ Agora retail sales.

4.4.2 Seed procurement and distribution

Seed procurement and distribution was handled entirely by the private sector from stocks of seed produced in Malawi in 2005/6. As noted earlier in section 4.2, a limited number of seed suppliers worked through a much larger number of distributors. Seed suppliers distributed seed to retailers across the country, and by the end of November STAM reported that suppliers had distributed 7,937 metric tonnes of seed, Assuming an 80% uptake of OPV and 20% of hybrid, 2 million coupons would need 5,600 metric tonnes of seed, so this meant that supplies nationally were more than 40% above requirements, with regional variation from 26% above target in the Central Region to 60% above target in the Southern Region.

4.5 Coupon redemption

Fertiliser coupon redemption by farmers required them to take a coupon to a participating supplier and submit the original coupon plus MK950 and they would then be supplied with the input specified on the coupon. As noted earlier, for maize seed the coupon itself was sufficient to obtain either 2kg of hybrid seed or 3kg of OPV seed, depending upon the farmer's choice and seed availability in the outlet. In all cases farmers should have been issued with the original and duplicate copy of the coupon, and should have retained the duplicate. Coupons were identified by district (by serial numbers) and input sellers were instructed that they should only accept coupons with serial numbers for the district where they are situated. All outlets were supposed to provide the farmer with a cash receipt for the subsidized bag of fertilizer or seed, and then attach the duplicate of the cash receipt to the coupon. Coupons (with their cash receipts) were then to be collated and sorted within each outlet and then at district and submitted to the Logistics Unit. For private suppliers of fertilizer the coupons were to be accompanied for an invoice stipulating the number of coupons for each fertiliser type and district and calculating the amount due based on the agreed price for each fertilizer in each district. The Logistics Unit would then check that coupons matched the cash sale receipt and that numbers for each fertiliser type and district were correct before recommending payment by the Ministry. For seed sales the system had another stage in it as retailers had to submit vouchers plus cash sales to the original approved seed suppliers, who then had to sort them in order to submit invoices to the Logistics Unit.

While ADMARC and SFFRM were supposed to follow the same procedures for submitting redeemed coupons to the Logistics Unit, they did not depend on this system for payment for the fertilizer sold, as the fertiliser they sold was supplied by government – in fact they needed to make returns to establish the funds owed to government for the money received from farmers. The incentives for the return of coupons by ADMARC and SFFRM is therefore very limited, and as might be expected the return of coupons by ADMARC and SFFRM to the Logistics Unit has been very slow.

4.6 Communications

The government provision for the subsidy programme did not include an information, education and communication programme. However, during the consultation process with donors it was apparent that effective communication will be required to support the subsidy programme and farming activities in 2006/07 season. Among the donors, the United Nations Development Programme (UNDP) offered to fund the provision of a communication expert to advise the government on a comprehensive communication strategy covering all elements of the media and targeting key stakeholders including Parliament, Government, civil society, the private sector, extension workers and communities.

This led to the communication programme by the Department of Agricultural Extension Services for the Maize Production Intensification under the Fertilizer Subsidy Programme. The main objective of the communication programme was to achieve food self sufficiency by equipping staff and farming communities with knowledge and skills in recommended maize production and storage technologies and sustainable group mobilisation strategies. The specific objectives of the programme were to a) intensify maize production, b) minimize maize post harvest losses, and c) improve farmers' access to maize intensification technologies, knowledge and skills. The major activities of the programme included production and airing messages on recommended maize technologies, capacity building activities for staff, training of farmers in maize production and storage technologies, and monitoring and evaluation.

The communication programme, in practice, largely focused on the promotion of the technology. The main technology that was promoted was the Sasakawa method of maize planting – the one station one plant method – using hybrid and OPV maize seeds. The Sasakawa method was

promoted with a cluster-green belt concept in which farmers formed clusters (groups) and aligned their ridges and planted maize using the Sasakawa method to form a green belt. Leaflets were produced in the local language on the method and the appropriate application of fertilizers. In addition, 2 radio programmes were designed and are being aired on MBC and Zodiak radio stations on the implementation of technologies for maize production. Other medium for the dissemination of technologies include puppet shows and film shows in mobile vans. While a number of activities were implemented, most fell below the targeted levels in terms of the outputs.

According to the key informants and the report of the programme, only a few activities directly dealt with issues regarding the processes of the fertilizer subsidy. The Agricultural Communication Branch (ACB) contributed to the content of the Booklet that was used for briefing stakeholders. The booklet was produced in English, Chichewa and Chitumbuka. However, it was mainly the booklets in the local language that were used in the sensitization. During the first week of October 2006, a press release was produced on briefing meetings for the 2006/07 fertilizer and maize seed subsidy programme led by cabinet ministers in various parts of the country. The briefing sessions were conducted from 10th – 15th October 2006, with participants including members of District Assemblies, Members of Parliament, traditional leaders, officer-in-charge of the Police, district representatives of ADMARC and SFFRFM and District Agriculture Development Officers. The communication programme also produced 4.4 million leaflets and 1,600 posters as IEC materials for the fertilizer subsidy. However, very few activities were tailored towards the subsidy.

Generally, the communication activities in support of the subsidy were mainly focusing on the appropriate maize technologies. It was weak in providing IEC on the processes of the input subsidy and in public relations management, given the controversy and malpractices that were reported on the implementation of the subsidy by Members of Parliament and other stakeholders including the media. Limited press releases were issued, but most did not help to clarify the objectives and the implementation modalities of the subsidy programme.

5 Implementation Achievements and Issues

The major task of the programme was to make subsidized fertilizer and seeds available to smallholder farmers, and quantities of fertiliser and seed supplied are therefore the first output of the programme that needs to be examined. The effectiveness of those inputs in promoting maize production and food security, however, depends upon the timing of sales, its distribution to different areas, and ease and extent of access by different types of beneficiary or potential beneficiary. Other issues of concern when considering the immediate achievements of the programme are its cost and the extent to which apparent achievement may have been reduced and/or costs increased by irregularities in its implementation. In this section of the report we present preliminary information on these issues but it should be noted that there is a present only limited information on seed sales as this depends upon submission of coupons to the Logistics Unit which is proceeding very slowly.

5.1 Input Sales

Total quantities of inputs sold under the programme are shown in table 5.1. Table 5.1(a) provides a breakdown of total sales of the five inputs by region and by sales channel. ADMARC/SFFRFM sales are calculated from stock changes as reported in the Logistics Unit Final Report rather than from coupons submitted to the Logistics Unit, which were lower overall (coupon returns from some markets were higher than stock sales, in some cases this may have been the result of exchange of NPK coupons for Urea, but in many cases it is difficult to explain)

Table 5.1(b) shows that overall the programme exceeded its targets for sales of all inputs. It is important to note that the overall achievement of 116% of the original fertiliser sales target was

made possible by both the issue of supplementary coupons and the involvement of private sector retailers in the programme. In 2005/6 the supplementary coupon issue amounted to approximately 21% of the base issue, but only approximately 79% of total coupons issued were utilised and total fertiliser sales were still only 89% of the target. In 2006/7, however, with a supplementary coupon issue of 33% of the base issue, 87% of total fertilizer coupons issued were utilised and as noted above total fertiliser sales were 116% of the target.

It should be noted that in some districts (notably Kasungu, Mchinji, and Lilongwe) ADMARC/SFFRFM sales and private retailer coupon redemptions significantly exceeded coupon issues, leading to sales/coupon redemptions of 105% of allocated coupons in the central region as a whole. This is associated with the existence of further supplementary coupons as reported in section 4.3. The Logistics Unit Final Report that an unspecified number of coupons with serial numbers outside any known range of issued coupons have been submitted for redemption and referred to the Ministry of Agriculture. This is a serious matter which needs proper investigation.

Table 5.1(a) End of Programme Summary Sales

(MT, from coupon redemption for seed and for retailer fertiliser sales: ADMARC/SFFRM from stock records)

	FERTILISERS					MAIZE SEEDS		
	NPK	Urea	CAN	D Comp	Total	Hybrid	OPV	Total
Depot Deliveries								
NR	8,150	8,150	2,600	2,600	21,500			
CR	24,161	27,481	7,554	6,100	65,296			
SR	24,316	26,459	2,042	1,300	54,117			
Total	56,627	62,090	12,196	10,000	140,912			
Uplifts								
NR	8,222	8,167	2,664	2,674	21,727			
CR	24,312	27,267	6,360	6,294	64,233			
SR	24,314	25,042	1,311	1,153	51,820			
Total	56,848	60,476	10,335	10,121	137,780			
ADMARC/SFFRM sales (from stock records)								
NR	8,175	8,097	2,325	2,115	20,712			
CR	21,984	25,297	3,187	4,468	54,937			
SR	23,797	24,169	952	870	49,788			
Total	53,956	57,564	6,464	7,453	125,437			
Retail sales								
NR	4,258	5,124	666	640	10,688			
CR	12,560	11,097	3,370	2,105	29,132			
SR	4,151	4,279	517	484	9,432			
Total	20,969	20,500	4,553	3,229	49,251			
Total sales						MAIZE SEEDS		
NR	12,433	13,221	2,991	2,755	31,399	Hybrid	OPV	Total
CR	34,544	36,394	6,557	6,573	84,069	343	195	538
SR	27,948	28,449	1,469	1,354	59,220	1,295	739	2,033
Total	74,925	78,064	11,017	10,682	174,688	1,129	796	1,926
						2,767	1,757	4,524
Original target	65,000	65,000	10,000	10,000	150,000			1,999,985 (vouchers)
Total sales % target	115%	120%	110%	107%	116%			91%

Seed sales from coupon recovery, rounding error on OPV total

* As at Feb 4. Figure in final LU Report is 137,493MT not broken down by fertiliser type

Table 5.1(b) End of Programme Coupon Redemptions (from Sales Reports)

COUPON DISTRIBUTION						
Base coupons	NPK	Urea	CAN	D Comp	Total	Seed
NR	163,000	163,000	52,000	52,000	430,000	250,763
CR	590,020	590,020	122,000	122,000	1,424,040	907,712
SR	546,980	546,980	26,000	26,000	1,145,960	841,510
Total	1,300,000	1,300,000	200,000	200,000	3,000,000	1,999,985
Supplementary coupons						
NR	162,380	182,380	0	0	344,760	
CR	85,500	85,500	0	0	171,000	
SR	182,100	304,700	0	0	486,800	
Total	429,980	572,580	0	0	1,002,560	
Total coupons						
NR	325,380	345,380	52,000	52,000	774,760	250,763
CR	675,520	675,520	122,000	122,000	1,595,040	907,712
SR	729,080	851,680	26,000	26,000	1,632,760	841,510
Total	1,729,980	1,872,580	200,000	200,000	4,002,560	1,999,985
% Vouchers redeemed (ADMARC/SFFRFM from stock sales)						
NR	76%	77%	115%	106%	81%	88%
CR	102%	108%	107%	108%	105%	92%
SR	77%	67%	113%	104%	73%	92%
Total	87%	83%	110%	107%	87%	91%
2005/6 voucher fertilizer redemption						
	total vouchers issued		3,323,120			
	total sales bags		2,627,758			
	% vouchers redeemed		79%			
ADMARC/SFFRFM fertiliser sales and targets				Sales	Target	
			(MT)	(MT)	%	
2006/7			125,437	140,912	89%	
2005/6			131,000	147,000	89%	

ADMARC/SFFRFM sales were 89% of the total fertilizers delivered to depots, identical to the 89% achievement in 2005/6.

The improved overall performance in 2006/7 may be attributed to a number of factors: experience gained by Government, ADMARC and SFFRFM from the 2005/6 programme; the involvement of the Logistics Unit in coupon and fertilizer distribution; financial support from donors for some elements of the programme; and the involvement of the private sector in retail sales.

ADMARC and SFFRFM sales accounted for 84% of total target sales of 150,000MT and 93% of the revised ADMARC/SFFRFM target of 135,000MT. The private sector fertilizer sales, however, are approximately 328% of the target of 15,000 MT.

ADMARC and SFFRFM sales accounted for 72% of fertilizer sales in the national programme, with private retailers accounting for 28%. The ADMARC/ SFFRFM share is higher in the Southern region than in the Central and Northern Regions. A similar pattern is observed for maize seed sales, though the retailer share is higher for seeds than fertilizer (see table 5.2).

Slow return of coupons and invoices means that information on seed sales under the programme was delayed. The Logistics Unit Final Report states that 1,825,566 maize seed coupons were

redeemed. Of these 1.38 million (76%) were for hybrid seed. Total seed sales under the programme amounted to 4,524 tonnes, with 2,767 tonnes of hybrid seed and 1,757 tonnes of OPV seed.. First round crop estimates (see table 5.3) report a 20% increase in area planted to hybrid as compared with the previous year (OPV area is estimated as increasing by 9% and local areas decreasing by 12%).)

Table 5.2 ADMARC/SFFRFM Share of Total Sales

(balance is through retailers)

	Fertiliser	Seed
North	66%	38%
Centre	65%	38%
South	84%	51%
National	72%	43%

Table 5.3 First round crop estimates: maize area estimates

	2003/4	2004/5	2005/6	2006/7
	Area ('000 ha)			
All Maize	1,538	1,514	1,624	1,682
Local	737	769	654	576
Composite	341	373	546	597
Hybrid	460	373	424	509
	% change from previous year			
All Maize		98%	107%	104%
Local		104%	85%	88%
Composite		109%	146%	109%
Hybrid		81%	114%	120%
	Area as % total maize area			
All Maize	100%	100%	100%	100%
Local	48%	51%	40%	34%
Composite	22%	25%	34%	36%
Hybrid	30%	25%	26%	30%

5.2 Timing

Timing of farmers' purchase and use of seeds and fertilisers is a critical determinant of the production, livelihood and food security impacts of the programme. Seeds and basal dressing fertilizers (NPK and Compound D) should be in the possession of farmers by the start of the rains, to allow early planting. Times of planting depend upon the uncertain timing of the start of the rains.

Table 4.1 presented earlier in section 4.2 summarises the timing of major events leading up to and during the implementation of the programme. There was general concern among key informants and farmers interviewed by the team that the programme had been too rushed and consequently implementation had suffered as had timely access to and use of inputs by farmers.

There were general problems with timely deliveries of fertilisers to SFFRFM depots in all three regions, but a particular problem with NPK (see figure 5.1). Problems with deliveries to SFFRFM depots included late arrival of imported consignments (due to late and problematic international

orders (discussed earlier) and shipping, off loading, and transport problems into Malawi); and congestion at depots caused by a number of factors including slow unloading, power problems, late arrival of NPK as compared with urea, poor labelling and some poor quality materials. Late arrival of NPK was particularly problematic as farmers require this at planting time, and it was scheduled to be uplifted to unit markets before urea, but was coming into depots behind urea.

Figure 5.1 Cumulative Planned & Actual Depot Deliveries by Fertiliser Type

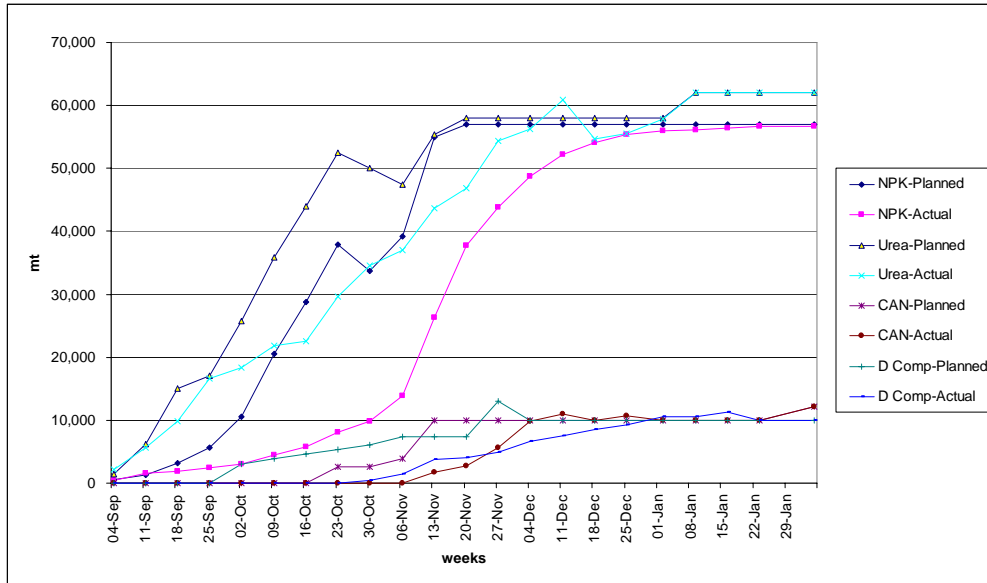
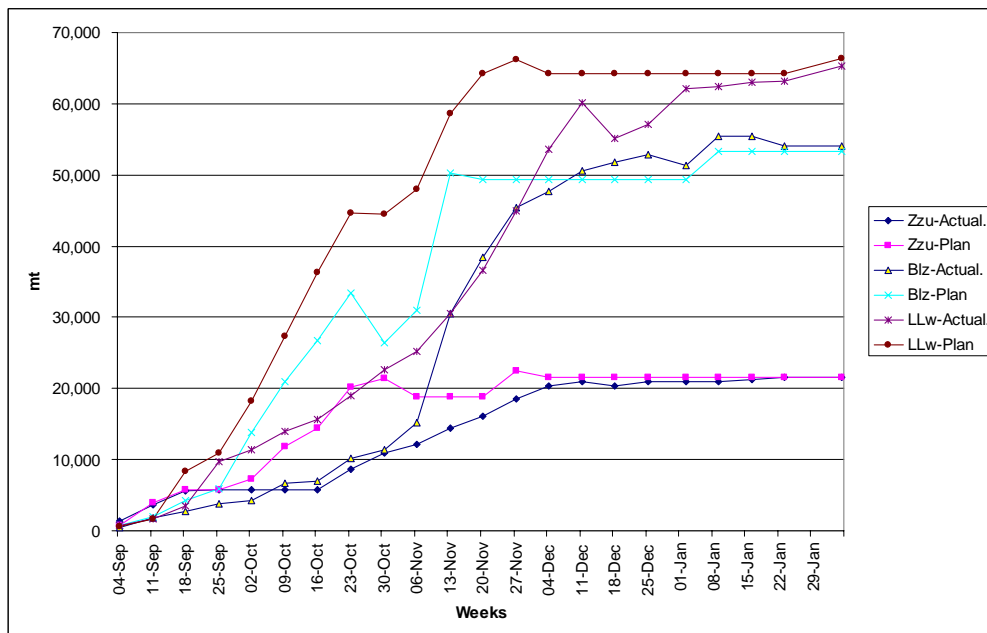


Figure 5.2 shows how actual deliveries built up against planned deliveries for each depot.

Figure 5.2 Cumulative Planned and Actual Depot Deliveries by Region



With the rains generally starting earlier in the South and moving up through the Centre to the North, it was unfortunate that deliveries to Blantyre got off to a slow start as compared with Lilongwe and Mzuzu. They did however subsequently come in faster and by 4th December both Blantyre and Mzuzu had largely received all their deliveries (with over deliveries to Blantyre). Lilongwe was about a month behind in finally reaching planned deliveries.

Figure 5.3 show fertilizer sales, uplifting and depot deliveries for NPK and Urea by region. The strong performance of the private retail sales is evident in the Central Region. The pattern of NPK and Urea deliveries to and sales from unit markets and sales from private retailers are very similar within each region, except in the Southern Region where extra procurement of urea led to a late surge in deliveries and unit market sales. A noticeable feature of all these charts is the roughly two week lag of both unit market and private retailers' sales behind deliveries to unit markets.

Fertiliser delivery to depots and markets was not, however, the only cause for concern as regards timing of the programme. Two processes have to be completed for farmers to obtain subsidized inputs: coupons have to be distributed to them, and inputs have to be distributed to local markets. Both these processes involve a number of different activities which have to be completed in sequence.

Figure 5.4 shows the timing of these activities as they occurred with respect to the particular example of NPK to the Southern Region. This chart suggests that, allowing for variation between districts, the real problem causing late NPK purchases in the South is more likely to have been delays in coupon distribution to farmers than delays in fertilizer deliveries, caused in turn by delays in coupon delivery to districts but, more critically in some districts, to delays in release of funds to districts for coupon distribution to farmers. However, ADMARC/SFFRM and private retailers' capacity to sell was only a little ahead of farmer demand, due to the delays in opening and stocking NPK in ADMARC/SFFRM (as noted earlier) and to delays in finalizing contract agreements for private retailers. The bulk of NPK sales occurred at the end of November and beginning of December, after the rains had started.

Figure 5.3 Fertilizer sales, uplifting and depot deliveries for NPK and Urea by region

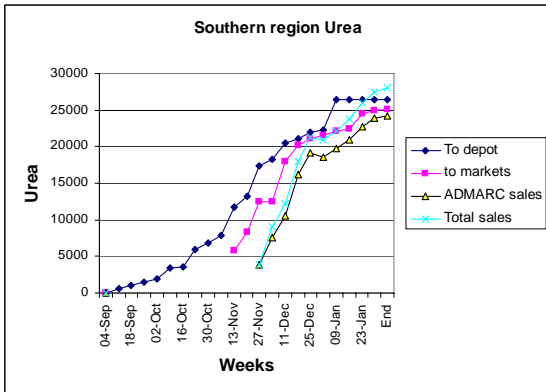
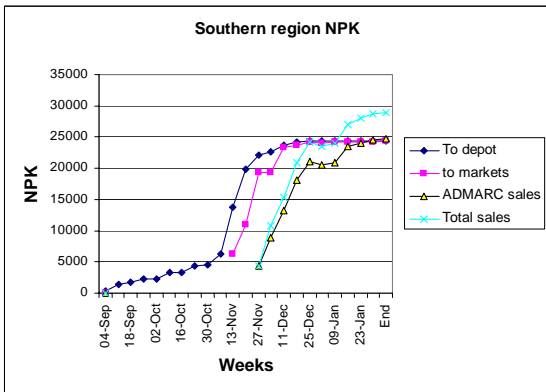
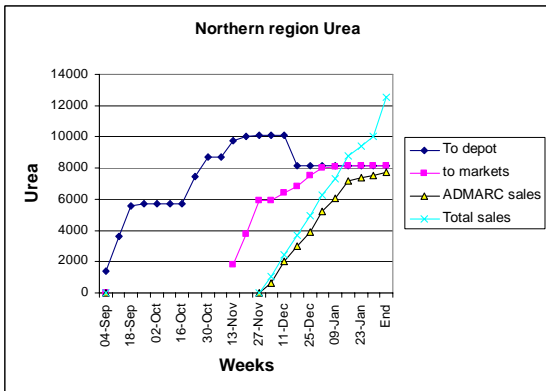
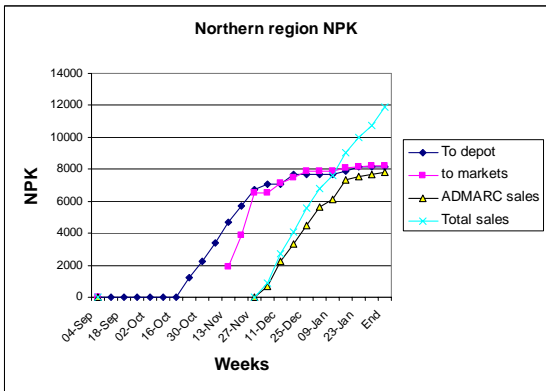
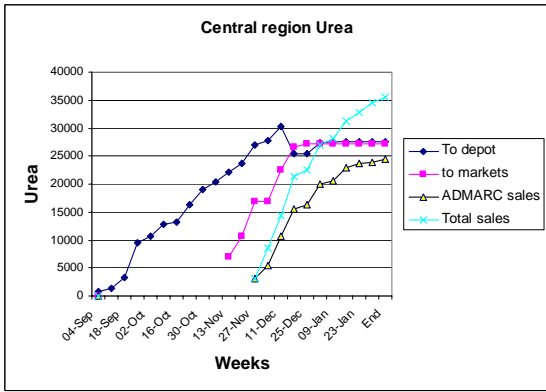
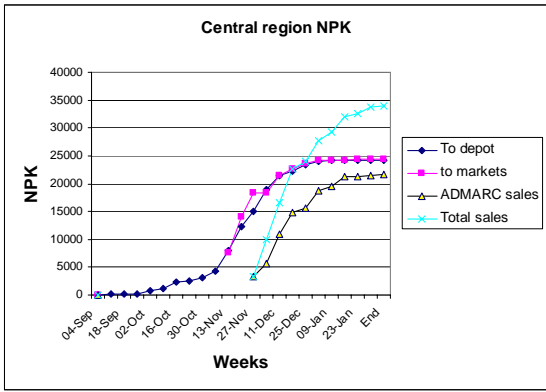


Figure 5.4 Timing of Activities for Subsidised NPK Sales in Southern Region

Activity	August	September	October	November	December	January	February
				Start of rains			
determination of District allocations		—					
Breakdown of district allocation to EPA level		—					
Publicity campaign providing details of the scheme			—				
Voucher printing		—					
Base coupon distribution to Districts			—				
Funds distribution to Districts			—				
Base voucher distribution to EPA			—				
Base voucher distribution to VDC			—				
Base voucher distribution to farmers			—				
Supplementary coupon distribution to districts				—			
Supplementary coupon distribution to farmers				—			
Finalising fertiliser supplier contracts		—					
appointment of transporters		—					
Finalising cost of handling (SFFRFM/ADMARC)		—					
Fertiliser delivery to main SFFRFM depots		—					
Staffing of unit markets		—					
Fertiliser delivery to sales outlets			—				
ADMARC/SFFRFM sales				—			
Finalisation of private retail sale system		—					
Identification of private retail participants			—				
Private retail contract agreements			—				
Private retail sales				—			

Most of the problems and constraints in the 2006/07 subsidy programme relate to implementation and timing of critical activities. Delays in procurement, delays in decisions relating to private sector participation in the distribution, phased distribution of coupons have all affected the efficient implementation of the programme. Timing of critical activities has important implications for a seasonal input support programme and critical dates were missed in the planning and implementation of the subsidy programme.

There is a general concern among the stakeholders with respect to policy incoherence, certainty of the programme and timing of the procurement. As has been noted above, there have been delays in procurement of fertilizers for the 2006/07 subsidy programme. Some of the stakeholders have attributed this to the timing of the budget session of Parliament and the farming season in Malawi. The budget session of Parliament that approves the national budget and sectoral allocations takes place in July and sometimes drags to August or September. The agricultural season generally starts in October, during the period in which farmers prepare their farms in anticipation of rains in November. Apart from carry-overs from the previous season, the bulk of the fertilizers are imported, and it takes on average 3 months to place an order and for fertilizers to be delivered in Malawi. The certainty about the subsidy is only known after the budget session, in July or August, and most imports of fertilizers are unlikely to land in Malawi in time.

There were also delays in the distribution of inputs from the depots to the retail ADMARC and SFFRFM. There were also reports of delayed authorisation of the private sector participation in the subsidy programme. Although, the rains start early in the south, followed by the centre and the north, in the 2006/07 seasons rains in the north started early than normal but the system was unable to respond to this change in the timing of rains sufficiently and efficiently. There are different views from the stakeholders on the appropriate timing of availability of fertilizers in the distribution outlets. Generally, most stakeholders would like the inputs to be available at least by September/October. One of the advantages for early deliveries is the fact that rural roads that are impassable during the rainy season: with earlier delivery they would be passable.

The phased distribution of coupons to the EPAs also contributed to the inefficient use of inputs. In all the six selected sample districts, coupons were delivered in at least two lots. For instance, in Kasungu, coupons were delivered in three lots including the supplementary coupons. This phased distribution was not only mistimed for farmers but also led to increasing operational costs of distribution for the DAs. The supplementary coupons in most cases were ill-timed, with most of the fertiliser such as NPK not being appropriate to apply on the crop around January in most areas (**Box 5.1**). The supplementary coupons were allocated in January and were mostly for NPK and Urea, although Urea would have been the more suitable fertilizer in the crop development cycle. In Blantyre and Lilongwe, the supplementary coupons were distributed to the farmers in January 2007.

The timing of coupon distribution was mainly poor in the northern region, particularly for seeds. The northern region typically receives rain late, but this season the rains came a bit early than expected. In Mzimba, it was reported that ADMARC started selling the fertilizers late. The fertilizer in some of the markets was already in stock before the coupons were distributed and the VDC were custodians of the fertilizers at the markets. Nonetheless, coupon distribution was also late.

Box 5.1 Stakeholders' views on the timing of subsidy

“The coupons came in November after most people had planted, so the subsidized seeds were used to replace those that did not germinate.” *[FGD with women, TA Chiseka, Lilongwe]*

“Coupons came after farmers had already planted their crops.” *[FGD with men, TA Mwalweni, Rumphi]*

“I received the coupons very later and had difficulties to purchase fertilizer. There were a lot of people waiting to purchase fertilizer. Other could even sleep at the selling points.” *[Case Study Household in TA Mbelwa, Mzimba]*

“For seeds the coupons were distributed very later as most farmers had already planted recycled varieties. For fertilizer it was good time because it was time for basal dressing.” *[Interview with AEDC, TA Mbelwa, Mzimba]*

“There were no seed coupons by the time people were planting. Coupons were distributed very late and people started purchasing inputs when most farmers had already planted.” *[Interview with VH Mtola Bota, TA Mbelwa, Mzimba]*

“I received the fertiliser coupon in January; it was late but I still bought and applied the fertiliser on my maize garden.” *[Case Study Household in TA Kabudula, Lilongwe]*

5.3 Geographical distribution of fertilizer sales

The geographical allocation of coupons was discussed earlier in section 5.3 where it was noted that total coupon allocation, including supplementary coupons, led to substantially higher maize coupons per ha of maize and per maize grower in the North as compared with the other two regions. Central Region had the lowest number of maize coupons per maize ha, and Southern Region the lowest number of maize coupons per maize grower. Redemption of coupons (see table 5.1b) was significantly lower in the south at (73%) than the north (81%), exacerbating regional allocation differences per household. As noted earlier coupon recover in the centre was 105%. Redemption of both types of tobacco fertilizers was above 100% in all regions.

5.4 Programme Cost

This section presents a cost build-up of the 2006/07 agricultural input subsidy program. Implementation of an agricultural subsidy involves monetary and non-monetary costs. The major cost components include the cost of producing coupons, the costs of inputs (seeds and fertilizers)

and the distribution costs, the cost of distributing and monitoring coupons and input sales and cost of information, education and communication activities. In 2005/06 fiscal year, government spent MK6.9 billion on the subsidy, which was 45 percent above the budget although only 140,327 MT of fertilizers and seeds were delivered compared to the planned 147,000 MT of fertilizers (MoF, 2006).

The 2006/07 subsidy had two sources of funding: government and the donor community. In the 2006/07 fiscal year, Parliament approved a budget of MK7.2 billion (US\$51.4 million) for fertilizer subsidy programme. This represented 43 percent of the Ministry of Agriculture annual budget. The major donors set aside funds to support the participation of the private sector and the maize seed subsidy. The maize seed subsidy involving 2 million coupons redeemable at a costs of MK800 million, was funded separately by the donor community. The donors include DFID, EU and Norway. In addition, UNDP funded the IEC activities in support of the subsidy programme and USAID set aside funds for monitoring and evaluation.

Table 5.4 presents a summary of actual expenditure and estimated final expenditure and sources of funding for different activities.¹⁰ According to latest estimates, the total cost of the subsidy in 2006/07 is estimated at MK10.34 billion net of the MK950 per bag paid by farmers at ADMARC and SFFRFM retail markets. The expenses financed by donors amount to MK1.32 billion against a resource envelope of MK1.7 billion – leading to unspent amount of MK438 million. Since the Stanbic Bank finance arrangement will not be paid by donors, this has contributed to the surplus on donor commitment.

The major burden of the subsidy falls on the government and the analysis shows over-expenditure of MK1.8 billion above the MK7.2 billion approved in the 2006/07 national budget. This assumes recovery of MK2.4 billion for the MK950 per bag paid by farmers at ADMARC and SFFRFM retail markets. It also excludes government costs in taking up the the Stanbic Bank finance arrangement (although transport of fertilisers from unit markets to depots is included). The additional costs are partially attributed to the provision of extra coupons that entailed supply of more fertilizers than planned. Some stakeholders have also argued that the transport rates for distributing the fertilizers from SFFRFM depots to retail outlets were about MK4/tonne-kilometre above what could have been offered on non-donor procurement.

5.4.1 Supply and distribution costs of inputs

The cost of fertilizer supplies and related transportation expenses are categorized into fertilizers distributed through parastatals (ADMARC and SFFRFM) and that distributed through the private sector. The parastatals distributed about 72 percent of the fertilizers at a cost of MK9.33 billion including transport, handling and storage costs.¹¹ The major part of the cost is, however, the supply of the fertilisers into the SFFRM depots in Blantyre, Lilongwe and Mzuzu. Final costs of fertilisers delivered into these depots averaged MK 63,621 or \$454 per tonne.

It would be desirable to compare ADMARC/SFFRM costs of supplying and distributing fertilisers with those of the private sector, which distributed 28 percent of the fertilizer at an average cost of \$490 (allowing for voucher reimbursements and the MK950 farmer payments). However there are a number of difficulties with making simple comparison of ADMARC / SFFRM cost per tonne sold against private sector cost per ton sold: ADMARC / SFFRM storage and handling costs are likely

¹⁰ Figures are based on the Logistics Unit Final Report (April 2007) and information collected from other stakeholders in February 2007. Some costs still need to be finalised. .

¹¹ However, the handling costs are likely to be understated. ADMARC and SFFRFM received less than approved amounts from the government to cover planned handling and storage, and might have used their own resources to implement the programme in remote rural areas.

to be understated and are therefore unknown, as are ADMARC / SFFRM overheads. Also unknown are the lowest prices that the private sector would be prepared to accept. Comparisons are further complicated by differences in costs as most of the private sector retail outlets are in more accessible areas compared to the retail market outlets for parastatals. On the other hand, however, it was noted earlier that ADMARC/SFFRFM had a higher proportion of sales than retailers in the Southern Region, where their costs to depot are much lower than costs to depot in the North (their costs to depot in the central region are only slightly higher than those in the south).¹²

¹² Additional information is required to undertake a comparative analysis of cost effectiveness of different distribution systems. One approach is to select only those parastatal outlets within the same trading centres as private sector outlets in order to control for remoteness of parastatal outlets, and undertake commercial costing for parastatal activities in those markets including taking into account implicit subsidies. Separate analysis would also need to be done for different types of fertiliser. Across all sales, differences in composition of sales between fertiliser types is very small.

Table 5.4 Cost and financing of the 2006/07 input subsidy (Malawi Kwacha)

Description	Final Costs (Estimates)	Source of Funding	
		Donors	Government
Parastatal Fertilizers			
Supplies	8,562,896,991	-	8,562,896,991
Transport *	665,729,605	405,000,000	260,729,605
Handling and storage	105,000,000	-	105,000,000
Sub-total	9,333,626,596	405,000,000	8,928,626,596
Private Retail Fertilizers			
Supplies and Distribution	2,440,668,665	-	2,440,668,665
Seeds			
Supplies + Retail Margin	731,592,800	731,592,800	-
Other Costs			
District Financing	27,262,192	-	27,262,192
Logistic Unit	51,537,656	51,537,656	-
Coupon Production **	15,036,385	13,743,966	1,292,419
Communications***	28,444,360	28,444,360	-
Input Quality Monitoring	6,319,075	6,319,075	-
Monitoring & Evaluation	40,500,000	40,500,000	-
Stanbic Bank Finance Fees	54,250,000	54,250,000	-
Sub-total	223,349,668	194,795,057	28,554,611
Grand Total	12,729,237,729	1,331,387,857	11,397,849,872
Sales Revenue			
ADMARC/SFFFRM			
MK950 Sales Revenue ****	2,383,303,000	-	2,383,303,000
Net Cost of Subsidy	10,345,934,729	1,331,387,857	9,014,546,872
Funding Sources			
Malawi Government		-	7,200,000,000
DFID/EU/Norway seeds		800,000,000	-
DFID transport		405,000,000	-
UNDP communications		35,000,000	-
DFID TA		137,700,000	-
DFID Finance Premium		378,000,000	-
Total Available Funds		1,755,700,000	7,200,000,000
Surplus/(Deficit)		424,312,143	-1,814,546,872

Note: * Donor / government breakdown to be confirmed
 ** Handling and storage an estimate, to be confirmed
 *** Expenditure to date at end April, expect to expend full budget
 **** Budgeted. based on sales, no information currently available on funds deposited by ADMARC/ SFFFRM

Source: Logistics Unit, DFID, GOM and UNDP

5.4.2 Other costs

Other costs attributed to the programme include financing of the Districts to support coupon distribution, cost of the Logistics Unit, fertilizer and seed coupon production, communication, input quality control, monitoring and evaluation, and the Stanbic Bank buy-back arrangement. These

costs are just over 2 percent of the net cost of the subsidy and most of the expenditure lines are supported by donors, with the exception of the District funding and the printing of tobacco related fertilizer coupons and supplementary coupons.

With respect to the cost of coupon printing, the programme was initially designed to target 1.5 million smallholder farmers using 3 million fertilizer coupons, but an additional 1.002 million supplementary coupons were printed directly by the Ministry of Agriculture. Although, the cost of discretionary spending of the Ministry of Agriculture on supplementary coupons is not significant¹³, the resulting fertilizer requirements has contributed to deficit spending on the subsidy beyond the expenses approved in the 2006/07 budget. As observed above, the basis for printing extra coupons and allocation of such coupons to districts was not based on any objective criteria.

Given that more than 150,000 MT of fertilizers have been sold, the Stanbic Bank buy-back arrangement has been exercised by the government on the remaining supplies but it is not being financed by the donors and is not included in table 5.4 and calculated costs. The only financing that has come from the donor provision is the commitment fee of MK54 million paid at the beginning of the contractual arrangements between the Malawi Government and Stanbic Bank.

5.5 *Quality of information, education and communication*

The information, education and communication (IEC) activities towards the 2006/07 subsidy programme were hardly adequate. Most of the IEC activities were ad hoc and carried out within a very short time period involving sensitization of major stakeholders at district levels. The inadequate coverage led to variations in understanding of the programme. The main problem was the absence of an IEC programme on the subsidy. This resulted in lack of clarity of the messages that were developed, poor understanding of the objective and intent of the programme, inability to clarify the question of targeted or universal subsidy and the eligibility criteria for targeting households.

There was less emphasis on the need to have a properly designed IEC program on the processes of the input subsidy. There was no special funding allocation towards the IEC activities in the design of the subsidy by the government. The communication program was funded by donors and focused on maize production intensification and post harvest management. The only activities under the maize production intensification were the printing and distribution of fertilizer subsidy leaflets and posters. The lack of a well-designed IEC programme focusing on the subsidy programme affected the implementation of some of the activities. For instance,

- The absence of the IEC towards the implementation of the subsidy did not help to clarify the roles of various stakeholders and to clear the various ‘political’ messages. In some areas, the farmers and traditional leaders planned on the basis that the coupons would be distributed through farmer clubs as argued by other politicians while others still thought that the subsidy was universal and everybody was entitled to coupons. Generally, there has been poor understanding of the processes and intent of the programme by different stakeholders and there were limited public relation activities targeted at different stakeholders to clear the misconceptions.
- The lack of clarity in the messages has generated a lot of mistrust between the traditional leaders and the communities. In most cases, the inadequate numbers of coupons were attributed to mismanagement of coupons by traditional leaders. This was evident in most of the FGDs and KI interviews conducted in the selected six districts. Most of the suggestions

¹³ Costs of printing some of the supplementary coupons are yet to be determined

on how the system can be improved point to the need not to involve traditional leaders in the distribution of coupons.

- There were variations in the understanding of the eligible farmers for the subsidy. In some of the FGDs and KIIs, the proof of having MK950 was used as the basis for allocation (for example, in one FGD with women in Lilongwe) while in other cases it was the judgement of the traditional leaders about the availability of such money within the household. In most of the FGDs, most farmers believed that everyone in the village was eligible for coupons and since the coupons were few those that got them were lucky. In other areas, farmers believed that target groups were the poor and the poorest. One beneficiary in Kasungu indicated that she received a coupon because ‘the Village Head said that I was very poor and I needed help’ while the other indicated that he had just registered and was given a coupon. In Blantyre, the messages that went out was to target the vulnerable and exclude those on an ‘input for work’ safety net programme. The inconsistency of the criteria used for targeting beneficiaries was also evident among agricultural officers at district and community levels.

5.6 Limited operational funds

The programme also suffered from the operational support to implementing agencies from central government. There were several areas of concern in terms of resource constraints that might have affected the efficiency in the delivery of services.

- Although, operational budgets that were submitted by the two parastatals involved in the distribution of inputs were approved, the amount of resources transferred to support the implementation of the program was far from adequate. For instance, ADMARC only received about 33 percent of the operational budget it requested, yet it was expected to open up markets specifically for input distribution in remote areas, provide adequate receipts to support the one receipt per coupon transaction and to recruit adequate personnel to operate such markets. With such limited funding, ADMARC was unable to recruit the required number of staff and adjusted its operational plan within the available resources. This eventually led to inefficient operations in many markets – insufficient receipt books, long queues and kick backs that allowed some farmers to jump queues (see also **MOA, 2006**).
- With respect to coupon distribution within the districts, funding was not only delayed but in most cases was hardly adequate to meet the demands of the subsidy programme. As a result most of the activities, particularly sensitization of the programme processes were done inadequately and often late. Other DAs had to use funds from their normal operating budgets at the expense of other planned activities, in order to ensure proper implementation of the subsidy programme. The monitoring of the implementation of the subsidy and the utilization of the inputs was ad hoc due to resource constraints at district level.
- The subsidy programme has been characterized by a flexible budget, due to poor planning. This may result in expenditures paid by the government beyond that approved by parliament without further donor commitment to offset the deficit.

5.7 Availability of inputs

There have been considerable variations in the availability of inputs, particularly fertilizers, in the country. While the inclusion of the private sector might have eased the problems of accessibility, many rural areas had no access to private sector outlets to purchase fertilizers. The situation for seeds, however, was much better due to the participation of the small-scale agro-dealers some of which are located in the rural remote areas. There were three major problems that smallholder farmers experienced in the purchase of inputs.

- In most areas, there were reported reports of long queue at ADMARC and private market sector outlets, although such queuing was worst in some ADMARC markets. FGDs and KIIs in all sampled districts reported many incidents of farmers spending 2 to 3 days before they could access the inputs. These delays resulted both from late and limited input supplies and from slow sales transactions as a result of cumbersome procedures and inadequate staffing.
- Some of the outlets had limited stocks of fertilizers and it could take weeks before they were replenished. Most of the stock problems were common among ADMARC markets. In contrast, in most places that had SFFRFM outlets, fertilizers were reported to be readily available. Some private sector outlets had similar problems of stocks, but restocking was generally reported to be faster than with ADMARC.
- Another stocking problem reported in some areas was a mismatch between stock allocations to markets and the location of demand in terms of households with coupons, so that households could not find inputs in the ADMARC markets nearest to them and had to travel to more distant markets.
- The other typical problem experienced by farmers was the mismatch of fertilizers on the coupons and availability of such types in the retail outlets. This prompted some of the private sector retail outlets to accept whatever fertilizer coupon with available fertilizers. In other cases, the fertilizers available and the coupons were not appropriate for the stage of crop development. As a result farmers were redeeming NPK coupons and applied it on maize as top dressing.

Another area of concern is the non-availability of commercial fertilizers rural areas which do not have private sector outlets since ADMARC and SFFRFM were only selling subsidized fertilizers. Most farmers that had more land devoted to maize or tobacco that required more fertilizers than what was supported by the coupon had to travel long distances to procure additional fertilizers on commercial basis.

5.8 Coupon redemption and payment system and delays

As described earlier, coupons were redeemed at parastatal (ADMARC and SFFRFM) input markets and sales outlets of approved suppliers. Apart from a few cases where they had agency agreements with appointed private distributors, independent agro-dealers were not involved in fertilizer distribution. The scope for private sector participation in the seed subsidy was much wider, with many independent agro-dealers participating in the redemption of coupons with supplies from approved manufacturers who invoiced against coupons they submitted to the Logistics Unit.

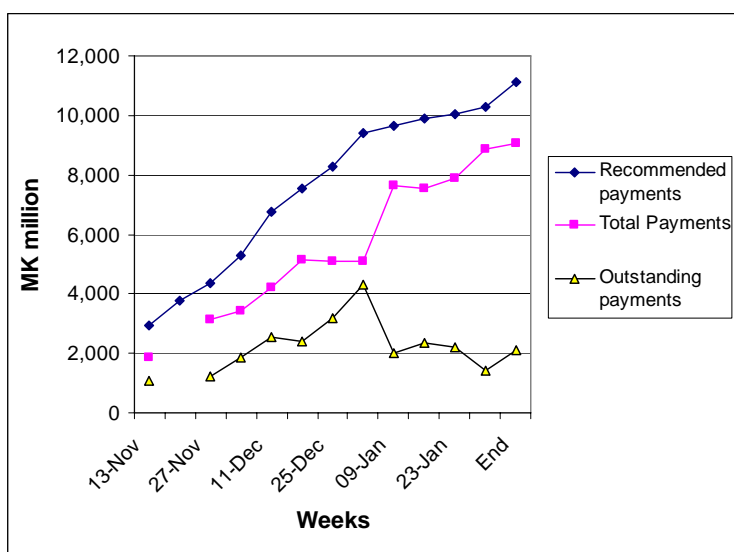
Various stakeholders expressed concern over the handling of coupons with regard to the volume of records, cumbersome process of compiling coupons, and delays in the processing of invoices.

- The procedures for inputs sales were demanding in terms of both time and resources. The requirement of one cash sale receipt per coupon sale resulted in excessive expenditures for the retailers – printing of triplicate receipt books instead of normal duplicate receipt books. Farmers that were also purchasing inputs on commercial sales in addition to use of coupons, had to be issued with different receipts, and those that were redeeming more than one coupon had to be issued with different receipts. The one coupon one receipt requirement introduced inefficiencies in the sale of inputs, taking up time for both farmers and staff, and required extra staffing expenditure by distributors . Some of the reported queues at retail outlets were a result of cumbersome of recording the coupon sales. This was particularly the case in ADMARC markets, but also occurred at private sector outlets, where there was only one clerk to handle the sales.
- The process of claiming funds from the LU was also cumbersome. Most of the distributors and suppliers, expressed concern over the requirements of sorting the coupons by serial

number and by EPA when submitting their invoices to the LU. Most private companies had to engage additional staff to compile and order the coupons according to serial numbers. This was a particular problem for seed suppliers as they had to compile coupon sales from the seed distributors, with delays first in receiving the coupons from the sellers and then significant costs and delays in sorting and submitting them. This in some cases has introduced delays in reimbursement to the private sector. For instance, by mid-February 2007 only 38 percent of the seed coupons had been invoiced by the seed companies.

- There have also been substantial delays in reimbursing the private sector once invoices have been submitted. Payment delays increase the costs on the part of the private sector in terms of finance charges and the cost of following-up such payments. The delays in payments by the Ministry of Agriculture, after recommendations for payment by the LU, are noted in most of the LU weekly reports. Figure 5.5 shows the pattern of invoice payment up to 4th February once invoices had been checked and recommended for payment by the Logistics Unit. Comparison of average weekly outstanding payments of MK2.2 billion and with average weekly presentation of invoices suggests a roughly 2.5 week time period between invoice approval and payment. On 2nd March payments outstanding against requests for payment by the Logistics Unit amounted to a little under MK1.4 billion (for transport and for seed and fertiliser coupon redemption). The inefficiency in the payment system as a whole (allowing for the administrative burden in submitting invoices and delays in processing of invoices) had far reaching implications on the livelihoods of maize seed farmers such as farmer-based organisations seed producers such as FUNWE.

Figure 5.5 Invoice approvals and payments



5.9 Management of the sales revenues from subsidized fertilizers

The sales revenues from subsidized fertilizers through the SOEs (ADMARC and SFFRFM) were supposed to be directly deposited into a Government holding account.¹⁴ However, key informant interviews revealed that poor remittance of funds from the SOEs into the government holding account. In the case of ADMARC, the funds were not directly deposited into the holding account. Instead, regional offices deposited the money in the ADMARC account at the head office and head office, transferred the money to the holding account. Monitoring of proceeds in this account was problematic. Information is not yet available on the amount that the government has recouped back from smallholder farmers.

5.10 Irregularities

A number of irregularities in the 2006/07 input subsidy programme have been reported in the media. These irregularities have mainly been with respect to the systems in fertilizer subsidy, but less so if any on the seed subsidy. The irregularities include use of duplicate copies of fertilizers to purchase inputs, sale of coupons by stakeholders, use of fake coupons, transparency and fairness in coupon allocation at household levels, 'tips' on coupon allocation and purchase of inputs, and exchanging coupons with different items or with different types of fertilizers at private sector outlets. Some of these incidents were supported by statements in FGDs and KIIs that were conducted in the six selected sample districts. There were less reported incidence of irregularities in Rumphu and Mzimba in contrast to Kasungu, Lilongwe, Machinga and Blantyre. In most cases hard evidence of irregularities was missing, and where the police had followed them up some led to subsequent arrests and in other cases the police had not found evidence to support claims of misappropriation. In general, there were no systematic and consistent patterns of irregularities, and therefore they seem to be relatively isolated cases. The challenge is to ensure that these isolated cases are guarded against and reduced in subsequent programmes as those involved learn new ways of defrauding the system.

Use of duplicates

There were some reported uses of duplicates coupons by smallholder farmers. In some cases, sales staff failed to differentiate the colours of the originals and duplicates due to the slight differences and the fact that the duplicated were also written in ink and not carbonated. However, there were also problems with the serial numbers of some of the supplementary coupons which had the same serial numbers as coupons printed previously under the base allocation.

Sale of coupons

Several reports emerged in the media about the sale of coupons. The coupons were allegedly being sold by some of the traditional leaders, by vendors and by smallholder farmers who did not have enough cash to buy subsidized fertilizers. The cited cases of malpractices in the media include those involving estates and traders buying subsidized fertilizers in bulk using corruptly obtained coupons in Kasungu, Salima and Chiradzulu districts. The FGDs and KIIs in the six sample districts revealed that sale or purchase of coupons was not common but varied from one place to another. Some of these media reports were confirmed in some of the sample districts for this study (Box 5.2). For instance, in Kasungu there are two court cases with respect to sale of coupons, but two other investigated cases proved to be baseless. In Blantyre, there were also reports of bulk subsidized fertilizers being impounded and some chiefs selling coupons. Most of the key informants interviewed in the six sample districts, noted that sale of coupons were mostly rumours which were not confirmed.

¹⁴ In the 2005/6 subsidy programme, each SOE opened an account at a commercial bank for deposits of sales revenues from the subsidized fertilizers. This system had problems of monitoring movements in the accounts and the funds were not remitted to the government.

Box 5.2 Some media reports on sale of coupons

“His Excellency the State President Dr. Bingu Wa Mutharika has noted with sadness and regret the practice and conduct of some traditional chiefs who are abusing the fertilizer coupon system by selling and withholding coupons meant to be distributed to the poor people.” [State House Press Statement, *Weekend Nation* 9 – 10 December 2006]

“Coupons meant for the fertilizer and seed subsidy programme have become hot business selling at K1500 each on the open market, a Malawi News visit at Malomo Trading Centre in Ntchisi this week established. Random interviews at Malomo revealed that the coupons are sold openly in hawkers and that some traditional leaders and Ministry of Agriculture officials are involved.” [Malawi News, December 16 – 22, 2006]

“In Kasungu, DDC last week confiscated 600 bags bought corruptly from T/A Simlemba’s area. The fertiliser was then sold to smallholder farmers from the same area and the money given back to the traders. Another 28 bags were confiscated from traders at Benga in Salima on their way to Nkhotakota. In Chiradzulu, Police arrested a 32-year old man for being found in possession of 37 bags of fertiliser believed to have been bought at subsidised fertiliser using coupons that are being distributed by government.” [Nation, 26th November 2006]

“The police at Jenda roadblock Tuesday impounded 74 bags of subsidized fertilizer, which they claim the suspects wanted to smuggle to Zambia. The Police at the same roadblock had earlier impounded a Zambian vehicle carrying 24 bags of subsidized fertilizer.” [Daily Times, 19 January 2007]

“A man in Chitipa, who wanted to make quick money, stole a booklet of 41 coupons by breaking into the house of an agricultural official in the district.” [Weekend Nation, 13 – 14 January 2007]

Focus group and key informant interviews also revealed that the many allegations of traditional leaders selling coupons were prompted by suspicions arising from (a) the inadequacy of coupons against the number of farming families that exist in the village and (b) lower numbers of base allocation coupons in some areas as compared with 2005/6. Although overall the number of coupons in the 2006/07 subsidy programme was more than the coupons in the 2005/06 programme, where fewer coupons were received the differences were suspected to have been withheld by the traditional leaders.

Fake coupons

The use of fake coupons was not widely reported in the 2006/07 subsidy, in contrast to the reports in the 2005/06 programme. The printing of security features that were printed on the coupons should have prevented most attempts to produce fake coupons¹⁵. However the redemption of some coupons with serial numbers outside those known to have been printed in either the base or supplementary allocations is a cause for concern.

Transparency in coupon allocation

The allocation of coupons to the households was not transparent in many areas (Box 5.3). This increasingly led to suspicions of biases in the allocation of coupons. This study finds evidence of non-transparent allocation of coupons, although this depended very much on the power relations between the committees and smallholder farmers. Key informants interviews revealed that traditional leaders were generally more powerful and controlled the coupons in the central regions compared to the northern and southern regions. In the central region, the ADCs and VDCs in the central region for the administration of the subsidy were chaired by the traditional leaders while in the northern region different sub-committees of ADCs and VDCs (not chaired by traditional leaders) were responsible for the coupons. All the four FGDs in Kasungu revealed that the

¹⁵ However the security feature involving the appearance of the word ‘bodza’ on photocopied coupons led to some confusion as this was readable on some original coupons.

traditional leaders were in control of the coupons and distributed them randomly; the community did not know the criteria that were being used.

Apart from the problem of transparency, biases in the allocation of coupons were not evident in the sample districts. There had been reports in the media of reported biases in some districts (*Nation*, 10 December, 2006). These incidents cannot be ruled out but may not have happened at a larger scale. Most importantly, there is no evidence that the allocation of coupons by the committees and the traditional leaders was political, based on the information from the FGDs and KIIs conducted in the six selected districts.

There was, however, significant lack of clarity in the criteria by which farmers qualified for coupons, and while in some areas civil servants and teachers (for example) were explicitly excluded from receiving them, in other areas it was reported that they were explicitly included.

Box 5.3 Farmer's views on transparency in coupon allocation

“Nobody was left out; all households were summoned and given equal opportunity regardless of status, kinship and gender. Only that the Chief did not disclose how many coupons he had been given in total and whether he had held some.” [FGD with women in TA Chiseka, Lilongwe]

“In this village, no meeting was called to select the recipients. In stead the GVH just summoned people one by one and gave them the coupons. Although the coupons were being issued in secret, there was no discrimination in terms of gender, kinship and political affiliation.” [FGD with women in TA Kabudula, Lilongwe]

“Politics had no influence on the distribution of coupons, but we do not know the number of coupons given to the Chiefs for distribution. Hence, we are not sure if all coupons meant for distributions were distributed.” [FGD with men in TA Chiseka, Lilongwe]

“I was given the coupon by the GVH. When I asked others who also received coupons, I learnt that the source was the GVH. The criterion used to identify recipients was better known to the GVH alone.” [Case Study Household that received a coupon, TA Kabudula Lilongwe]

‘Tips’ on coupon allocations and purchase of subsidized inputs

There have also been reports of bribery and tips paid to those distributing the coupons and at retail markets. The FGDs and key informants interviews in the six sample districts revealed that there were no reported incidents of bribery during coupon distribution, but several incidences of bribery or tips at retail outlets. ‘Tips’ paid by smallholder farmers at retail shops were reported in several areas. Due to the long queues that existed in most retail outlets, some were paying tips to the sales clerks to have preference over other farmers. This was happening both in ADMARC, SFFRFM and private sector retail outlets. These tips ranged from MK50 to MK300, and were reported in some areas in Kasungu, Lilongwe, Machinga and Blantyre (Box 5.4). However, most of the reports in these districts indicated that farmers were buying inputs without tips. No tips were reported in Mzimba and Rumphu. The FGDs and key informant interviews revealed that the VDCs were actively monitoring the practices in all the markets in Mzimba and Rumphu.

Box 5.4 Selected incidences of tips at retail outlets

“At the beginning of the sales, before the rains, there were tips to the selling staff to be served input faster. This practice disappeared after sometime, when selling agents increased and when some were opening on Saturday and Sunday.” *[Interview with ADEO, TA Santhe, Kasungu]*

“Tips were required to buy fertilizers at ADMARC and Kulima Gold outlets, and farmers were paying as much as MK150 per bag of fertilizer.” *[FGD with men in TA Kabudula, Lilongwe]*

“The malpractice of collecting tips involved some people thought to be vendors in coordination with the selling personnel. For a farmer to buy 50kg bag for fertiliser quickly she/he had to pay K200 to any member of the syndicate and would go home early.” *[Interview with GVH Khomani, TA Chiseka, Lilongwe]*

“To buy earlier, a tip was required at SFFRFM, Farmers World and Kawana shop, with the exception of Kulima Gold where tips were not allowed.” *[Interview with a household that did not receive coupons, TA Chiseka, Lilongwe]*

“People were said to be giving tips of K300 to buy earlier in all the shops that sold fertilizer in the peak period that is early and mid December except Kulima Gold.” *[Interview with AEDC, TA Chiseka, Lilongwe]*

“If one wanted to buy earlier at ADMARC, he/she could give MK200 – 300 to the guard.” *[FGD with women, TA Chikweo, Machinga]*

“The big problem that people faced at the selling points was wide spread demand for tips branded as ‘sugar ntape’ at all points and it ranged K450 – K550.” *[FGD with men TA Chamba, Machinga]*

“In all the ADMARC and SFFRFM depots, if anyone wanted to buy faster a tip of K100 was paid.” *[Interview with AEDC in TA Nsomba, Blantyre]*

Exchanging coupons for different inputs or items

Fertilizer coupons were reportedly being exchanged for different inputs and non-farm items in some of the private retail outlets. Stakeholders from the government side commonly cited the risk of misuse of coupons in private sector outlets that not only stock agricultural inputs but also other merchandise. This is one of the risks of private sector participation in the distribution of the fertilizer subsidy. However, such malpractices were not reported in the FGDs and key informant interviews in the six sample districts.

The practice of different fertilizer coupon being redeemed against different fertilizer types was reported in some of the private retail shops. This might have been facilitated by the scarcity of types that were required by farmers at particular times. For instance, those that received NPK coupons in late December and January would have a higher incentive to get Urea with an NPK coupon, and the shop would record it as an NPK sale. The private sector claim of the subsidy for NPK sales at any location was higher than any other type of fertilizer under the subsidy programme. The private sector had the incentive to accept a higher valued subsidy coupon for a low value type of fertilizer since the claim on government gave additional return. For instance, the maximum profit gains for accepting an NPK coupon for the low priced CAN per 50 kg bag are MK810 (Mangochi), MK837 (Nkhotakota) and MK1028 (Chitipa) in the southern, central and northern regions, respectively. If this is done at a larger scale, it has the potential to significantly increase the costs of the private sector component of the fertilizer subsidy. There are no incentives for such behaviour by ADMARC, but data in the Logistics Unit Final Report show some substantial excesses of coupon redemptions above stock estimates of sales in some markets. This is observed, in different markets, for all types of fertiliser.

5.11 Beneficiary access

The ability of different beneficiaries to access subsidised inputs depended upon the interaction of a number of factors. First, people needed to obtain coupons – and this depended upon the number of people and of coupons in the village; their knowledge of the programme and of local systems for accessing coupons; their standing with regard to formal and informal targeting and allocation criteria; and in some cases simply luck. Once people had coupons or the chance of having a coupon, their ability to redeem the coupon depended upon the physical and financial difficulties in getting to the front of a queue at a selling point with stock, and their having cash to cover the MK950 payment for a bag of fertiliser.

Most of these issues have been discussed in earlier sections. The relative supply of coupons was higher in the North due to the higher per household allocation, and numbers available in villages will also have been determined by the extent of misappropriation of coupons – which again may have been lower in the North. The chances of someone getting a fertiliser coupon were also determined by decisions by the VDC as to whether identify a smaller number of beneficiaries to each receive 2 fertiliser coupons or a larger number to receive one each.

Targeting criteria were extremely variable as is illustrated in Box 5.5, where it is clear that diametrically opposite criteria were used in different areas. Some of these expressly include the poor, whereas others (for example the need to have money to redeem the coupon) would exclude them.

The targeting criteria were often incapable of identifying equivalent numbers of beneficiaries to match the coupons available, and in a number of villages people were formed into lines, and those at the back of the line (or lines) were unlucky. Some of the difficulties facing poorer farming households in accessing and using coupons are illustrated by the cases in Box 5.6. Some of the cases indicate how people's poverty may make it more difficult for them to obtain coupons as, for example, they may have to go elsewhere to earn ganyu and so miss critical information. A number of focus group discussions reported that in 2005/6 there had been greater opportunities to be employed on safety net programmes to earn cash for subsidised fertiliser. For some people this is an important mechanism to assist them to acquire a coupon and afford subsidised fertiliser.

Box 5.5 Examples of targeting criteria reported in Focus Group Discussions & Case Studie

Machinga

- Households that could afford (and show the money) to buy the subsidized inputs
- Smallholder farmers without estates/leased land
- Households hosting orphans and the aged
- Poorest households
- Every villager with farm land
- Households with nobody to help them with money or fertilizer (orphans, aged)
- People should show the money before getting coupons

Lilongwe

- Those found to be able to buy the coupons not those without money
- Those that were the poorest
- Households with farm land

Kasungu

- Households that could afford to buy the subsidized inputs
- Households that belongs to the villages concerned
- Poorest households
- Household with garden in the village of the area
- Those without good employment or have no employed relative

Mzimba

- The very poor / poor / Poorest / the least privileged
- Households hosting orphans and people living with HIV and AIDS
- Households headed by the disabled / elderly / widowed
- Those without livestock
- Only for smallholder farmers / Household with farm land and were using it
- Households that could afford the subsidized inputs
- All villagers because all are poor
- Those that were active in development activities
- Only the married / bona fide citizen and poor farmers of the community

Rumphi

- Those that can't afford unsubsidized fertilizer
- Those with farm land and are able to farm and are farming
- Those with cash to buy the subsidized fertilizer
- Those that are very poor or the poorest
- Those that did not benefit in previous year / those that did not sell coupons the previous year (first round) and everyone (second round)
- Those that are married / divorced and widowed
- Households hosting orphans and vulnerable children
- All village heads and their relatives / all VDC members
- Those that are talkative in public / those that are fierce
- Those well known (friends of those responsible for distribution of coupons)

Blantyre

- Every farming household
- Whosoever had money to purchase the subsidized inputs
- Every community member including civil servants
- Poor people (initially but later possibly second round every one got coupons)
- Whosoever the traditional leaders wanted including ghost beneficiaries (first round) and those left in the first round but based on socio-economic status (second round)
- Whoever had a friend among the distributing committee

Box 5.6 Access to coupons: some illustrative cases

The supplementary coupons were said to be distributed at Tega primary school. By the time the coupons were being distributed she was somewhere else working as a casual labour to buy inputs. With the money earned from 'ganyu', she bought small packets of fertilizer worth K300 and applied to part of her field. The type of fertilizer she bought was NPK. *[Interview with a household that did not receive coupons, TA Chamba Machinga]*

. . . .in order to receive a voucher, the registered names were used and one had to show that they had cash to receive. Both of her sisters were chosen but she was not. One of her sisters did not have enough money, so the respondent gave her half the required amount and they shared the fertiliser equally. . . some people who showed part of the money were able to receive the voucher. *[Interview with a household that did not receive coupons, TA Chikweo, Machinga]*

All the people were queued according to their respective corner in the village, which were four, then elderly were given first then the rest by distributing same number among the queues at a time in turns until all were finished. He got coupons because of the position he was on the queue was covered in their corners' share. *[Interview with a household that received coupons, TA Chikweo, Machinga]*

She participated in the safety net programme involving road works for two weeks for a pay of K2,400. . . . She qualified by being incapable of earning enough on their own for unsubsidized inputs. In October, 2006, she was issued with three coupons from the village headman with the VDC. . . *[Interview with a household that received coupons, TA Nsomba, Blantyre]*

She had kept K950 to buy subsidized fertilizer. Then she decided to use the money to employ a casual labour on her field. When the supplementary coupons were distributed, she had no money, so she did not receive any coupon. On both occasions one was not supposed to show money to receive a coupons but she did not want to receive a coupon and just to keep it. *[Interview with a household that did not receive coupons, TA Kuntaja, Blantyre]*

I only received one coupon for NPK because the coupons were not enough. I received the coupon very late and had difficulties to purchase fertilizer because there were a lot of people waiting to purchase fertilizer. *[Interview with household that received coupon, TA Mbelwa, Mzimba]*

We were buying fertilizer at Manyamula ADMARC. There were long queues and it was very very difficult to buy fertilizer. We could go there as early as 4 am and return at 3 pm or 4 pm. Some people were even sleeping in the open outside the ADMARC depot in order to buy fertilizer. People had no any other choice but to wait as Admarc was the only selling point available in the area. *[Interview with female household member that received coupon, TA Mbelwa, Mzimba]*

Firstly I would like to tell you that this system is very bad and it should be stopped because it is bringing confusion to those that do not receive. Secondly, we face problems in buying inputs; there are always a lot of people and congestion at the markets. The coupons is also restrictive, it is as if forcing you to buy the type of input that you do not want. *[Interview with female household member that received coupon, TA Mpherembe, Mzimba]*

This year coupon distribution was very good in that every household in Mpachare Village received two coupons for maize fertilizer. We only faced problem in buying fertilizer as it was not always available at the nearest depot. People had to travel long distances in order to buy fertilizer. *[Interview with female household member that received coupon, TA Mwalweni, Rumphi]*

My daughter was engaged in public works programme outside this village and she got K4,000 for the whole month she had worked. In that way, the daughter helped to source fertiliser for maize garden and some on subsidy coupon for tobacco. *[Interview with male household member that received coupon, TA Chiseka, Lilongwe]*

This season, I also received a coupon. They were just distributed randomly and no exact criterion was followed. I kept enough money to buy two subsidised bags of fertiliser, but only managed to get one. *[Interview with female household member that received coupon, TA Santhe, Kasungu]*

For the two seasons the coupons system has been in place I have never received any coupon. I do not know the criteria that were followed for me not to be given the coupon. I only registered my name with the VDC and was not given the coupons in both seasons. *[Interview with male household member that did not receive coupon, TA Wimbe, Kasungu]*

The need to travel long distances to markets with stock and to wait in queues, either overnight or from very early in the morning, places particular difficulties on access by the poor and by women. Increased demands for tips in congested situations pose further problems.

In the context of uncertainty about the availability of coupons and criteria and ways of accessing them, these and other cases clearly demonstrate the extent of poor peoples' willingness to invest precious time and money in trying to get coupons, and hence demonstrate poor peoples' demand for fertiliser. They also demonstrate, however, the difficulties that poor people face in accessing coupons. These result from their lack of information about the system, from their exclusion from targeting criteria, and from their lack of time and money needed to obtain coupons and fertiliser. Taken together, the demand of poor people for coupons for fertiliser and the difficulties they face in acquiring coupons and fertiliser suggest that there are major potential poverty reduction, food security, and incremental fertiliser use and production benefits to be gained from changes in the design and implementation of the system to increase the participation of poor excluded people in the programme. These changes should aim to promote clearer information about the programme and about opportunities for and means of accessing coupons; greater availability of coupons; clearer targeting and access criteria which explicitly target poor people with land; employment programmes to provide opportunities to earn cash; a greater density of outlets selling subsidised inputs; and less congestion and more reliable stocking of these outlets.

5.12 Input quality and quality control

The Department of Research of the Ministry of Agriculture was responsible for monitoring of chemical composition and physical characteristics of fertilisers delivered to SFFRM depots, did not report any problems of sub-standard fertilisers. There were significant problems with one fertiliser consignment which was reported by SFFRM as caked, and this held up deliveries to Kanengo at one point before it was decided that the problem was not of major significance. A specialist company was hired to monitor seed and fertiliser quality at input selling points. Reports concentrated mainly on visual inspection of conditions of packing and storage, seed treatment and extent and treatment of damaged goods. Very few problems were reported apart from stocking difficulties. On 29th December a report was received regarding germination tests on composite samples of each variety reconstituted from each agro-dealer's source and outlets, and one variety was reported to have a germination percentage of 69%, some way below the standard of 90% germination (all other samples had germination percentages of above 95%). The same report stated that fertilisers samples had been sent for chemical analysis, but no information has been received regarding receipt of the results of those tests. We are not aware of action taken following the report of the failed germination test.

5.13 Relative performance of different distributors

There are many dimensions on which player effectiveness can be measured, including geographical coverage, accessibility, quality of goods and services, timeliness of deliveries and restocking, time taken to serve clients, and cost-effectiveness or least-cost delivery of service. These interact and there may be trade-offs between them. Thus for example a national input subsidy programme requires a distribution network that will deliver inputs nationally, but geographical coverage may affect performance in other dimensions where high performance may only be possible with selectivity in location and restriction in coverage. Similarly, it is difficult to compare unit costs for players that have differential access or service to remote areas.

In general, all else being equal, people are more likely to patronize suppliers or retailers that are closest to their locations than those further away (accessibility). Similarly, holding prices constant, the supplier or retailer with better quality goods and services, who makes timely deliveries and restocks in the shortest possible time when supplies run out should expect to get a better rating

from customers. Conversely, if quality and service are the same, then the supplier with the lowest cost (or price) should be considered the most cost-effective supplier of the good or service.

Geographical coverage: ADMARC has the widest coverage in terms of network and number of depots. For most villages where focus group discussions were held, not only is ADMARC their only source of inputs, but within a radius of 30 km the choice was among ADMARC depots that were short of one input or another.

Accessibility: This is closely linked to geographical coverage. For many in the remote areas, ADMARC was their closest and only supplier and hence most accessible in terms of distance to the market. Understandably, in all regions, retail outlets of the private sector players were only found at the relatively more accessible and well-established trading centers.

Price: From the customers' point of view, there should have been and generally were no differences, in prices. However, as noted earlier, tips were reported in many locations and these ranged from MK500 to MK300. The practice was reported from ADMARC, SFFRM and retail outlets where there were queues. Most farmers, however, did not have to pay tips.

Availability of maize seed and fertiliser stocks: With regard to maize seed, private retailers and agrodealers were reported to have sufficient types of seed in stock to meet farmers' requirements. In contrast, farmers in some areas complained that ADMARC brought maize seed a week after the first rains had fallen, and in some areas did not stock enough varieties of the farmers' preference. In general SFFRM got the highest rating while where ADMARC depots exist along side other suppliers, ADMARC scores poorly. Where ADMARC and SFFRM are located near each other, SFFRM was consistently rated more favourably by farmers. Focus group discussions tended to rate SFFRM better on availability of inputs in terms of initial deliveries and of restocking when supplies ran down. In many places, ADMARC's seed supplied came after the first rains and when they run out of fertilizer it took more than two weeks to restock. Private retailers generally scored well on stocking.

Quality of inputs: Poor quality of seed and fertiliser was not generally an issue raised by farmers. However, poor germination was reported for Seedco maize sold by some ADMARC and SFFRM depots in the central region. Similarly, there was one report of lumpy fertilizer with impurities sold by a retailer in the central region.

Length of queues and waiting times: The common length of queues reported in focus groups was about 50 meters, but this varied from 30metres to over 100metres, and two to three days queueing to buy fertilizer was common. ADMARC was reported to have the longest queues and focus group discussions suggest that it was these long lines that led to rent-seeking behavior and payment of tips. A payment of MK100 to agents of outlet attendants could then gain promotion to the front of the queue. At most outlets of private suppliers the lines were relatively shorter and customers were served more quickly.

Cost effectiveness: As noted earlier, it is not possible with available data to compare ADMARC/SFFRM and private sector costs in delivering fertiliser.

Return of coupons: The design of the subsidy program presents widely different incentives for the parastatals and private retailers to return fertiliser coupons. Private retailers have very strong incentives to return coupons to the Logistics Unit with an invoice in order to allow payment for the fertiliser supplied. ADMARC and SFFRM, on the other hand, do not receive any payment as a result of returning invoices – in fact full accounting of the coupons they have received from farmers indicates the extent of funds they owe to government for the monies received from farmers' cash payments for their subsidised fertilisers. As a result, no fertiliser coupons had been returned to the Logistics Unit by ADMARC or SFFRM by the end of February, although the vast majority were subsequently submitted.

The system for seeds is different, as like other retailers, ADMARC and SFFRM receive their sales commission for presented coupons. In this situation ADMARC and SFFRM were relatively quick in submitting substantial numbers of coupons to their seed suppliers, for return to the Logistics Unit for payment¹⁶.

Overall: In the focus group discussions participants were asked to provide an overall comparative rating of different input suppliers. Where participants were able to compare ADMARC, SFFRM and private retailers, SFFRM as generally given the best average rating and ADMARC the worst, with private retailers falling in between. There is little information on rating of the performance of independent agro-dealers selling seeds.

6 Impact on Malawi's input supply system

6.1 Size and structure of the input sector

In terms of value, the agricultural input sector represents one of the four largest markets in Malawi (maize, tobacco, and sugar being the others that are valued at more than \$100 million annually). The agricultural input sector (including fertilizer, seed, and agricultural chemicals) is the only one in the top four comprised primarily of private sector actors (IFDC 2004). Given that the input markets in Malawi were liberalized just over ten years ago, the number and diversity of actors is quite high, even at the import level where economies of size and scale often result in African input sectors characterized by a few relatively large firms and little effective competition.

During the recent past, there have been about a dozen firms involved in fertilizer procurement (primarily imports, but some processing). These importers supply a formal network of over 400 retail outlets in Malawi (public and private sector combined) plus an informal network of independent agro-dealers estimated by some to comprise as many as 1000 small traders in the recent past.¹⁷

Figure 6.1 shows the salient structural characteristics of the fertilizer sector and identifies the key actors involved during the past few years. In addition to the business enterprises, there are a number of active associations. One is the fertilizer importers association, which has been acting as a liaison between the fertilizer sector and the GOM in discussions of fertilizer policy. The two other associations of note are the CNFA/RUMARK and AISAM networks of agrodealers. Donor-funded projects created both networks as a means of building a more vibrant private sector supply system in rural areas. Also of note is the NASFAM network of farmer cooperatives. Although their input supply activities run strictly on a commercial basis, member cooperatives also benefit from donor funding which provides training and business management support. Government participation in the market—at both procurement and distribution levels—is highly variable from year to year, depending on decisions about input support programs. A strength of the government network is its ownership of 58 SFFRFM depots and more than 600 ADMARC market units throughout the country, which serve as welcome input distribution or sales points for many farmers who are not served adequately by the private sector.

¹⁶ By 26th February over 110,000 seed coupons submitted by ADMARC and SFFRM had been received by the Logistics Unit, representing about 15% of total submitted coupons at that date.

¹⁷ Participants in agrodealer training programs have often been counted as functioning agrodealers, inflating the statistics somewhat because many who have been trained do not have functioning shops. Survey results and informant interviews suggest that the actual number of agrodealer shops is now less than 400. CNFA's active members running year-round shops currently number 160. AISAM worked with 66 agrodealers who participated in the seed voucher program this year, but the network is broader than that group.

Figure 7.1 Structure of the Malawi Fertilizer Sector

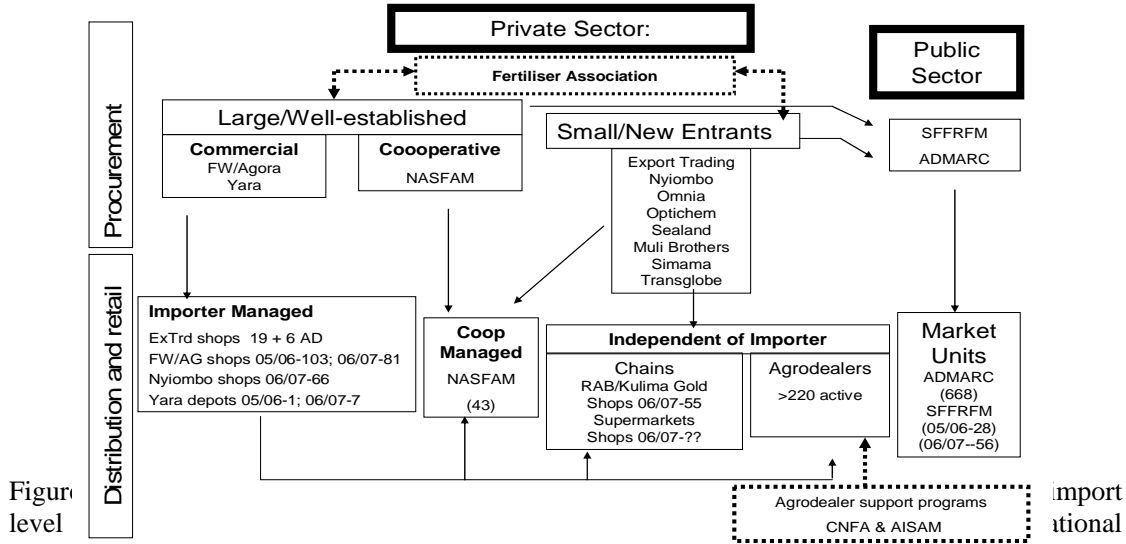
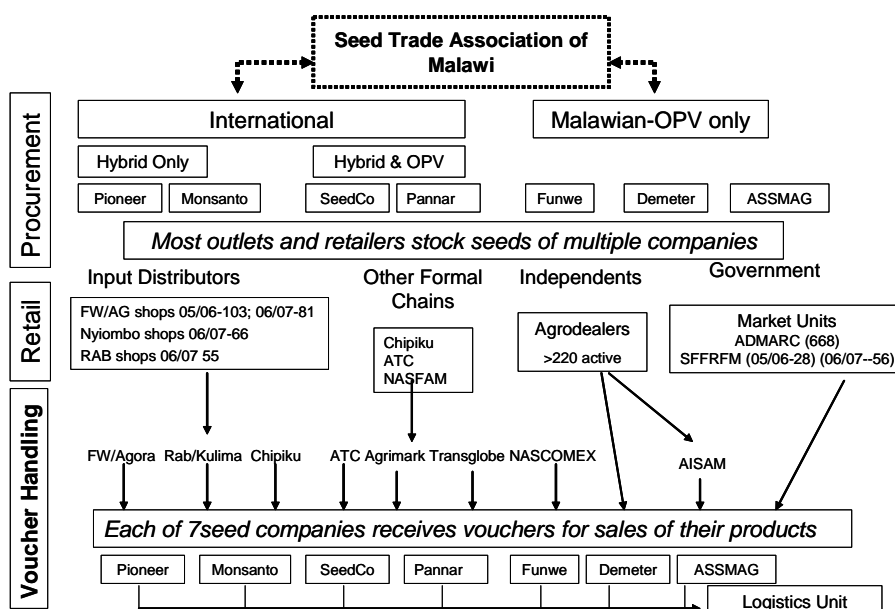


Figure 7.1 shows the structure of the Malawi Fertilizer Sector. There is substantial overlap between the seed and the fertilizer sectors at the distribution and retail levels. With the exception of some of the more under-capitalized agrodealers, most retail outlets selling seeds are also selling fertilizers. The Seed Trade Association of Malawi began operations in 2004 with the goals of enhancing communication between the sector and the Ministry of Agriculture, promoting their products, and ensuring that seeds sold to Malawian farmers are of good quality. The CNFA and AISAM networks support agrodealers for both their fertilizer and seed trade. Among the services offered are business management and product training (both organizations), credit guarantees (CNFA only), and periodic reports on market conditions (both).

Figure 6.2 Structure of the Malawi Seed Industry



6.2 Methods used in assessing subsidy program impacts on the input supply sector

For the purposes of this evaluation, we look at the input supply sector broadly, covering all the public and private actors mentioned in the seed and fertilizer sector diagrams presented above.¹⁸ Most of our analyses look at the impacts by type of actor, with a focus on the following groups:

- Importers with distribution networks (e.g., Farmers World/Agora, RAB¹⁹, Export Trading, Nyiombo)
- Importers with small or no distribution networks (e.g., Yara, Optichem, Optima, Sealand, Simama, Muli Brothers)
- Farmer cooperatives (NASFAM affiliates)
- Independent agro-dealers
- Government distributors, with occasional import activity (ADMARC/SFFRFM)

The analytical framework presented earlier in Figure 1.1 identified the following factors as potential indicators of the subsector's performance: volumes supplied and sold, profits, cash flow, confidence of the actors in the future, investments, innovations, and the development of new services.

¹⁸ The report also includes some limited observations about impacts of the program on demand for agricultural chemicals, but this was not a focus of the evaluation.

¹⁹ Strictly speaking, RAB does not import but orders through others such as Yara. Given its extensive network of retail outlets it fits better in this category than elsewhere.

For this preliminary report, we focus on an analysis of trends in sales by different actors over the past three years, with the objective of finding out which types of actors have experienced increasing/decreasing sales and their views about the factors driving these changes (subsidy, climate, local programs/projects, changes in personal situations, government policies, etc.).

As collecting quantitative information on profits across several years was not feasible, we collected information on perceptions about trends in profits from importers/distributors and retailers and combined this with information offered about the reasons for these changes to see how much credit the subsidy is given for the changes. We have also collected information about the impact of the subsidy program on costs and cash flow. This information does not speak directly to the issue of profit; but it helps us to understand the incentives and disincentives for importers, distributors, and retailers to participate should the program continue.

We assess confidence in the system with information about the entry and exit of different actors during the recent past, using entry as an indicator of confidence in the sector and exit as an indicator of declining incentives. Actors are also asked to identify the current and potential benefits of the program to themselves, to others in the input sector, to farmers, and to Malawian citizens in general.

Open-ended questions about the advisability of continuing the subsidy program and recommendations for improving it have contributed insights relevant to all of the key indicators mentioned above.

Information used in these analyses comes from (1) past reports on Malawi’s input sector (see list of references); (2) key informant interviews with fertilizer importers, seed producers and importers, administrators of ADMARC and SFFRFM; and (3) a survey of 271 retail outlets (of which 221 provided a full set of responses) in six districts.

The characteristics of the full population of input outlets for each of the six districts covered by the retailer survey and a description of the sample selected by type of retail outlet are presented in Table 6.1. From the proposed sample, we managed to conduct 91 interviews in the North, 100 in the Center, and 80 in the South. As a general rule of thumb, we over-sampled agrodealers because they tend to be a very heterogeneous group²⁰ and under-sampled ADMARC/SFFRFM outlets because they tend to be more homogeneous given their centralized management structure.

Table 6.1 Geographic distribution of retailers surveyed

Region	District	All retailers	Proposed sample	Comments
North	Mzimba	132 outlets total	50 outlets selected	Relatively good density of outlets.
	Rumphi	44	29	Relatively sparse density of retail outlets
Center	Kasungu	78	50	Relatively sparse density of retail outlets
	Lilongwe	140	50	Relatively good density of retail outlets
South	Blantyre	51	51	Relatively good density of retail outlets.
	Machinga	52	52	Relatively sparse density of retail outlets

²⁰ Over-sampling heterogeneous groups helps to get a better picture of general tendencies within the group whereas too few observations increases the risk of selecting atypical cases that may result in an inaccurate picture of the overall group’s characteristics.

6.3 Input supply and sales analysis

A key question issue for the private sector is whether this year's subsidy program helped them to get back on the path of increasing imports and sales that they had been experiencing before they were excluded from the 2005/06 subsidy program. Text Box 6.1 provides a few illustrations of the types of comments key informants offered on the question of how supply was affected by the voucher program.

Box 6.1 Selected Comments Concerning Program Impacts on Import and Sales Volumes

Fertiliser sector:

- *Subsidy has clearly increased fertilizer use; just look at the fields as you drive through the country side.*
- *The smallholder demand for fertilizer is 150,000 tons; the voucher program has completely displaced this demand.*
- *The key reason for the timely delivery of fertilizer to outlets and farmers this year was the large carryover stocks; next year it will be more difficult.*
- *We experienced stock outages early in the season due to late signing of contracts and late in the season due to diminishing stocks*

Seed sector:

- *The flexibility of the seed voucher removed a longstanding prejudice against hybrid seed promotion in Malawi and significantly increased hybrid sales.*
- *For seed suppliers, the flexible voucher reduces uncertainty in demand, giving us hope and the ability to plan.*
- *The subsidy provided farmers with an opportunity to experiment with new varieties and suppliers with an opportunity to convince farmers that their products are better than their competitors' products.*
- *Distribution of seed vouchers was delayed until ADMARC fertilizer was available; this reduced potential sales during the critical planting period.*
- *Seed sales at ADMARC were held hostage to fertilizer supplies; shops did not open to sell seeds if fertilizer was not in stock, reducing potential for increased seed sales.*

In general, respondents argued that the relatively low share of the market going to the private sector is a result of the following factors:

- (1) delays in getting the subsidy program designed and implemented caused farmers to delay commercial purchases that would normally have been made in June, July, and August;
- (2) when details of the subsidy became known and farmers learned they would not receive as much subsidized fertilizer as anticipated, it was too late to arrange for credit;
- (3) the large share of fertilizer purchased by the government for direct sales through ADMARC and SFFRFM and delays in signing contracts to permit private sector participation in the voucher program reduced incentives to import stocks beyond those needed to meet the subsidy distribution
- (4) farmers used subsidized fertilizer in lieu of rather than in addition to their normal purchases.

Points 1-3 above relate to program implementation and can be addressed through improved planning and better donor, government, and private sector coordination. Point 4 suggests a potentially serious weakness in the entire concept of a fertilizer subsidy program. Among actors in the fertilizer sector, there is a serious concern that the voucher/coupon system has displaced the commercial cash retail sales of fertilizer almost totally (Fertilizer Association official position statement, January 2007). Many in the sector believe that smallholder demand is a fixed amount of about 150,000 tons per year and that there is almost a one-to-one relationship between increases in subsidized or program fertilizer distributed to smallholders and the ensuing decline in commercial demand. If this assumption is true, it suggests that the subsidy program will not be able to accomplish its objectives of aggregate and sustainable growth in the use of improved seeds and fertilizer.

One interviewee presented sales numbers showing that displacement for their commercial fertilizer sales this year had been 95%. Many of their customers usually obtain fertilizer credit but failed to do so because they expected to receive vouchers. When they realized the vouchers were not available, it was too late to get credit. Our calculation is this year's displacement of commercial sales by subsidy sales was lower, at 52%.²¹ Nevertheless, this is still a high rate of displacement of commercial sales and does raise a question about the subsidy program's ability to meet its objectives. A similar estimate of displacement for the 2004/2005 ETIP program to distribute 25 kg of fertilizer and 5 kg of seed to 2.8 million households, showed a much lower displacement rate (11%), but this is largely due to the much smaller volume of subsidised sales – application of the methods used in Annex A to ETIP suggests that displacement accounted for a similar proportion of subsidised sales (46%).

Displacement is an important issue. However it is also important to recognise that within gross displacement of national sales there is likely to be switching of fertiliser use – between different types of farmers, between different crops, and between different geographic areas. We might thus expect the issuing of coupons and the uncertainty associated with the subsidy programme to cause some switching of the total national fertiliser use from small estates and better off smallholders to poorer farmers, and associated with that some switching from cash crops (particularly tobacco) to maize. Similarly the increased sales through ADMARC may have caused some switching from more remote to less remote areas. Against this, some better off farmers may have been able to buy some of the coupons or subsidised fertiliser bought with coupons, reducing the 'switching effect'. These issues will be investigated in the household survey.

Overall, those involved in fertilizer procurement and the major distributors who were able to redeem fertilizer vouchers saw their overall sales volumes increase significantly from last year's levels, but they did not recover to pre 2005/06 levels. Most did not reopen shops that were closed due to poor sales in 2005/06. For those who were not authorized to redeem vouchers (importers with limited distribution networks and all independent agro-dealers), sales remained low or non-existent. Some disposed of stocks by selling them to others participating in the voucher program. The agrodealers with no formal tie to a major distributor were only able to maintain a foot in the fertilizer sector if their primary activity was repackaging fertilizer and selling it in small packs to the many farmers who cannot afford to purchase 50 kgs.

The key difference between the seed and the fertilizer program was the more flexible nature of the seed voucher, which permitted a greater variety of retailers to participate and a greater variety of products to be sold. Suppliers of hybrid seed began strong promotional campaigns using the voucher program as a means of helping farmers to experiment with hybrids. Seed suppliers in

²¹ Calculated from table A1.1 as normal sales minus this year's commercial sales divided by normal sales.

general were very proactive in supplying both OPV and hybrids to a wide variety of outlets, often competing to get stocks into ADMARC and SFFRFM shops where they anticipated heavy traffic that would stimulate sales of their products. Agrodealers were not neglected, with many benefiting from supplier credit (sometimes, but not always, covered by a CNFA guarantee). Producers and distributors of hybrids felt that the flexible seed voucher had a very positive impact on their sales and represented an improvement over earlier government programs that have tended to favor OPVs. Of 178 retailers interviewed about maize seed sales, 65% reported moderate to large increases in sales over 2005/06 when ADMARC had a monopoly on distribution of subsidized quantities of OPV. By contrast, a much smaller share (20%) reported moderate to large declines. Participation in the sales growth was greatest for retailers in the formal distribution networks such as RAB, FW/Agora (90% reporting moderate to large increases) and the NASFAM network (80% reporting such increases). Results for agrodealers was mixed with 48% reporting good increases but 31% reporting moderate to large declines; this may be due to the low share (only 27%) of agrodealers interviewed who participated directly in the voucher program. As noted in Text Box 6.1, suppliers felt that decisions to hold up voucher distribution and seed sales until fertilizer was available at ADMARC shops had unnecessary negative impacts on aggregate seed sales as well as farmers' ability to plant early and benefit from the improved seed.

Suppliers interviewed in the seed sector did not raise the issue of vouchers displacing normal retail sales. At the retail level, 25% of those able to separate commercial and voucher sales, stated that voucher sales represented less than 75% of sales while 37% said vouchers accounted for 100% of sales. If we remove ADMARC/SFFRFM from that last calculation, however, only 19% reported 100% sales due to vouchers, suggesting that the commercial outlets did do a varied business in both cash and vouchers. Evidence that farmers redeeming seed vouchers bought more than the 400 MK bag of seed is relatively weak; 56% of retailers said this never happened and an additional 21% said it happened in fewer than 10% of cases where a seed voucher was redeemed. We do not have complete information on the mix of commercial and subsidized seed sales yet, but estimates of displacement for two companies for which data are available suggest rates similar to those for fertilizer, ranging from 36 to 44%. More complete data is needed, however, before drawing any firm conclusions.

In sum, most seed sector participants interviewed at the supplier and the retail levels were very pleased with the voucher system in terms of its impact on their sales volumes. Vouchers appear to have given hybrid sales a particularly good boost. Vouchers already processed by the LU show that hybrids account for 69% of subsidized seed volumes in the North, 78% in the Center and 70% in the South. If the fertilizer sector's pessimistic view of Malawi's potential to increase smallholder fertilizer use beyond 150,000 tons is incorrect, increased demand for hybrids could be the trigger that gets the demand moving. Such a scenario, however, would require policies and investments to keep maize demand and prices at a level that provides adequate incentives to intensify production.

6.4 Costs, cash-flow, and profits: recent trends and subsidy impacts

A recent IFDC report (2004) compares the dollar costs of importing urea in 1998 and 2003, arguing that despite sharply rising costs of procuring urea on the international market, Malawian importers were able to reduce the domestic handling costs and margins so that the selling price was \$7 per ton lower in 2003—not a gigantic reduction but given a 50% increase in the world market price of urea, a significant accomplishment. The lower dollar value of the domestic costs was due in part to currency devaluation (which also raised the urea procurement price) and in part to increased efficiency and competition.

Key informants have identified a number of characteristics of this year's input subsidy program that have contributed to increased costs for suppliers and could well reverse the trend toward declining costs if not rectified (see Text Box 6.2 for a sample of comments).

Box 6.2 Selected Comments Concerning Costs of Program Borne by Suppliers

Fertilizer sector:

- *Increased cost of carrying large supplies of fertilizer from 2005/06 to 2006/07 prevented us from stocking other inputs we normally stock (crop chemicals and tools).*
- *The GOM started the tender early and then canceled. This was a huge time waster and contributed to higher costs.*
- *Too much of the logistics chain is not under the control of the private sector; when imports come late ports and transporters are busy and prices rise.*
- *District level pricing for vouchers discourages distribution to remote locations by raising costs borne by those who want to expand delivery.*
- *We have lost money as a result of vouchers being rejected by the LU because our agents couldn't distinguish between the original and the duplicate copies; need fraud proof vouchers.*
- *The system used for maize vouchers should be applied to fertilizer as it would simplify the system and make it more flexible.*

Seed sector:

- *Late announcement of voucher value delayed repackaging, increased costs, and delayed delivery to farmers.*
- *Change in rules about redeeming seed vouchers after processing began increased costs.*
- *Reimbursement of seed vouchers is too slow (taking more than two months); at current rate we won't be finished until June or later, well after loans become due. This means increased financing costs.*

The most common supplementary costs that suppliers mentioned were costs associated (1) with tenders that were cancelled or not transparent in the award process, (2) with the late announcement of the program, (3) with hiring extra sales personnel, (4) with processing vouchers for redemption, and (5) costs of capital when voucher payments are not redeemed before credit becomes due. We discuss each of these costs below, describing their magnitude and relative importance at different levels of the supply chain.

The problems with the tendering process have been alluded to earlier (section 4.2) with initial tenders being cancelled, subsequent tender documents lacking critical information or having inappropriate validity periods, and changes in subsequent conditions (for example bagging requirements). We do not have specific estimates of costs directly associated with cancellation of tenders and inadequate information about the criteria that would be used for selection, but all importers complained of the problem. The issue seems to be more one of wasted staff time than cash outlays. For example, one firm mentioned having to make multiple visits to Lilongwe to get the initial seed tender officially cancelled so it could recover the deposit that it had tied up in the tender.

There are a variety of intangible costs associated with the 2006/07 tender process, perhaps the most important being the loss of private sector confidence that the government and donors can design an inputs program that can be implemented in a timely and efficient manner. The more tangible costs are the longer run ones associated with delays in placing orders and delivering inputs to farmers that resulted from the aborted tender process.

We also do not have specific 2006/07 examples of increased costs due to delays in the start of the program. As noted earlier, although suppliers had increased financing costs because of stocks carried from 05/06, the presence of these stocks dampened to some extent the costs that would have been incurred in placing orders for imports so late in the season. Normally, international

procurement prices will be lower if orders are placed before the orders from China and India, which come on the market in the September/October. Several distributors did note major increases in transport costs, largely due to increases in fuel prices, but also due to increased demand for trucks during a very small window of time. The government accommodated this increase in transport costs by revising the supplier redemption value upward.

The costs of hiring extra sales help were mentioned by many, but generally not viewed as a burden because it was in response to greater sales that would bring in more income. Long lines, caused in part by inadequate sales staff, led to tipping at all types of outlets and increased farmers costs in terms of time and cash. Levels of permanent staff per outlet differ by type of retailer, with 24% of government and 35% of agrodealer outlets having fewer than two permanent staff per shop. By contrast, the distributor outlets had fewer than 5% of outlets with such low permanent staff levels. Permanent staff will be lower for shops that are seasonal and those that sell small volumes. Some government outlets are seasonal and most agrodealers have small volumes, hence we might expect lower permanent staff for both categories. Of 71 ADMARC sales outlets interviewed in the retailer survey, 79% did hire temporary help, but in many cases the numbers of temps hired (usually 3 or fewer) does not appear to have been adequate given the large volumes distributed by ADMARC. More analysis of this data is needed to match sales volumes with staffing levels. Analysis of household data should also shed light on how well farmers were served at different outlets.

Interviews with fertilizer sector actors in early January revealed general satisfaction with the redemption process up to that point and praise for the work of the Logistics Unit. Some, however, were worried that the payments might slow down if the total cost (initial plus supplementary vouchers) exceeded the available budget. This appears to have been the case as subsequent reports received from the Logistics Unit mention the issue of slow payments:

So far the Logistics Unit has sent the Ministry recommendations for payment in connection with the programme totalling MK 9,392,487,546. At the date of the report, payments amounting to MK 4,303,757,862 are outstanding...Regrettably payments are falling even further behind. No payments have been made for almost three weeks (*report dated January 3, 2007*).

All fertilizer suppliers authorized to submit vouchers for redemption did suggest that the process needed to be simplified, but none had taken the time to estimate the processing costs or the impact that this would have on net returns. Costs of processing vouchers were the greatest problem for the seed suppliers. Two firms have made estimates of their costs per voucher. The two estimates are quite different and further consultation will be required for understanding how the calculations were made. One supplier is concerned that the processing costs may come close to wiping out the margin for OPV sales.

In addition to the processing costs, the issue of delayed payment appears to be much more of a problem in the seed sector than in the fertilizer sector. Payment delays are a function of delays in retailers submitting vouchers and delays in processing payments through the donor accounting system. In January ADMARC had not even begun to submit vouchers to suppliers. Interviews with a few ADMARC offices suggested that the major constraint was computer capacity and personnel. One office visited had one computer and one agent to enter the data for the entire ADMARC division. When asked if he needed more help, the manager replied: *No. Normally our agents don't have enough work so it is good that they will have something to keep them busy for a while*. This response shows evidence of not seeing the bigger picture in terms of problems posed for the private sector.²² Delayed payment has major implications for supplier cash-flow and finance costs. Already

²² Slow voucher submission by ADMARC for fertilizer is less of a problem than for the private sector because most of the fertilizer sold at government outlets was paid for in advance by the government. Seeds, however, were all on consignment leaving the supplier covering the financing.

in January, the typical three-month credit period for some suppliers had been exceeded. If the problem is not resolved, it could threaten seed supplies for the coming season. Some vouchers had not been paid a full two months after submission to the Logistics Unit. This appears to be the result of complex bookkeeping required for the seed subsidy account, because of the involvement of multiple donors with different requirements for documentation and payment authorization.

6.5 Confidence in the sector

Given that the input markets in Malawi were liberalized just over ten years ago, the number and diversity of actors is quite high, even at the import level where economies of size and scale often result in African input sectors characterized by a few relatively large firms and little effective competition. As the sector matures, there are good signs of increasing professionalism. Both the seed and the fertilizer sectors have created professional associations to lobby for members' interests and to hold their members accountable for maintaining high standards in product and service delivery. These associations have lobbied for inclusion in government and donor discussions of policies and programs that affect their businesses. A number of large firms as well as many smaller agrodealers are investing in public/private partnerships to conduct research and demonstration programs aimed at improving farmer knowledge and skills in using inputs as well as the economic returns to input use.

Although supplier confidence in the sector was at an all time low in 2005/06, there has been a rebound of confidence this year and most actors see the overall trends as positive. We use information about recent entries to and exits from the sector as an indicator of confidence in the sector's ability to grow and complement this with some qualitative information from retailers about future prospects.

At the procurement level, the fact that new importers have entered the fertilizer market in the recent past and seem to have survived 2005/06 is encouraging; many are talking of plans to build retail networks through linkages with agrodealers. A few cases of importers expanding depots and outlets in an effort to improve eligibility for participating in the voucher program were reported. While the arrival of new entrants makes the "old guard" a bit nervous about the potential for substandard products to enter the system (a legitimate concern that requires monitoring for all actors), the competition should push all in the sector to improve performance. There is also evidence of investment in the sector above and beyond the minimum required to survive (e.g., development of new products, funding for agronomic trials to develop more efficient and profitable fertilizer recommendations). This investment will remain timid until there is a clear medium-term program developed that promises policy stability with a fertilizer program that is acceptable to all stakeholders (government, donors, suppliers, and farmers).

Confidence is also growing in the seed sector, particularly for growth in the demand for hybrid seed. There was ample evidence of different actors spending advertising money to promote their products this year and selling at reduced costs to get the maximum advantage from the voucher program.

At the retail level there are still some problems. Distributors are not yet ready to expand the number of shops they own, but are considering ways to better support agrodealers. Many agrodealers are not doing well. Some simply do not have the knowledge and skills needed to market inputs effectively and should probably exit the sector. Others do have the skills, but capital is constraining.

The effect of the 2005/6 subsidy programme on the emerging independent agro-dealer network is illustrated by the number and volume of loans provided by suppliers against a CNFA guarantee. In the last year of the ETIP program (2004/5) a total of 6 input suppliers provided 44 loans amounting to MK 5.5 million. These loans helped recipients generate MK 22 million in retail sales. The following year (2005/6) the number of suppliers and loan volume fell by half, and retail sales by

recipients fell by a massive 73%. In the current year loans have remained at a similar level but sales recovered to 55% of their 2004/5 peak, most likely due to additional seed sales. Recognizing that recipients of CNFA loan guarantees are likely to count among the stronger independent dealers it is not difficult to imagine the impact on weaker ones.

Table 6.2 CNFA Guaranteed Loan Volumes from Input Suppliers to Independent Agro-Dealers

Loan Volume Indicators	YEAR				
	2002/3	2003/4	2004/5	2005/6	2006/7
Number of companies with guarantees	4	8	6	3	3
Number of credit guarantees approved (input suppliers)	42	50	44	21	24
Value of guarantees (MK million)	1.01	5.82	5.49	3.03	2.60
Value of sales supported by guarantee (MK million)	2.00	10.35	22.03	5.92	9.86

CNFA is optimistic that they will be able to address this constraint by obtaining increased donor support for their credit guarantee and training programs. This will only work if there is a more stable fertilizer policy and less volatility in the share of the market that the government assigns to public sector actors.

It is also useful to look at the confidence that other actors have in the input supply sector. Clearly there was a major breakdown in government confidence in the private sector that began in 2004/05 and reached its zenith in 2005/06. Interviews with key informants in the government suggest that the private sector has been able to restore some of that confidence with their performance this year. It is clear, however, that there continue to be high ranking civil servants in the government who remain very sceptical of the private sector and believe government can do a better job. Given political sensitivities, concerns about being able to respond in emergencies, and limited private sector reach to remote areas, the Government still has some legitimate reasons for promoting public/private partnerships in the input sector rather than turning full responsibility for input procurement and distribution over to the private sector. Until the private sector shows an ability to get outlets to the remote areas that are now served uniquely by ADMARC, it is difficult to envision an entirely private sector system. This reality was recognized by most suppliers and retailers interviewed: only a very few said they thought ADMARC should be replaced entirely by the private sector. The challenge is to develop a vision of what the public/private partnership should look like in 5, 10, and 15 years and work toward that vision jointly. Continued dialogue on this issue should build further confidence among all the actors.

6.6 Views on key strengths and weaknesses the subsidy program

Text Box 6.3 summarizes the most frequent responses received when we asked key actors in the system to identify the strengths and weaknesses of this year's voucher program. Many of the points

have already been mentioned elsewhere in the report, both in this section, which focuses on how the program affected the input sector, and in discussions of the program implementation.

The important message coming from our analyses thus far is that despite the implementation weaknesses this year most actors believe that the general concept of an input subsidy administered through the use of vouchers that can be redeemed by both public and private input shops is a good one. Very few respondents suggested that the program be ended or that the government go back to one of the earlier models (TIP, Starter Pack). Acknowledging their preference for the voucher program, however, suppliers continued to stress that stability in the broad design and implementation characteristics of the program is much more important to their performance than the type of program itself. Stability in the program characteristics over several years should reduce the amount of annual planning and consultation needed, ensure early announcements of tenders, and enable efficient, low-cost procurement.

Common recommendations for addressing the weaknesses in this year’s program offered by key informants in the input sector include:

- Using the more flexible seed voucher approach for both seed and fertilizer;
- Improving voucher distribution so that it is earlier (June/July when cash is available from sales of other crops) and the control is in the hands of agricultural staff and Village Development Committees;
- Reducing ADMARC/SFFRFM share of market (in a reasoned and predictable manner) and using saved resources to improve the quality of their services;
- Joint work by professional organizations and government to improve product quality monitoring and sanctions for violations;
- Further development of the agrodealer network while insisting on registration to maintain quality controls;
- Develop programs and activities that will sustain maize prices (including research and incentives for development of maize processing industries).

Box 6.3 Strengths and Weaknesses of the 2006/07 Voucher Program

Mentioned by Actors in the Input Supply Sector	
Strengths	Weaknesses
<ul style="list-style-type: none"> • <i>Very efficient Logistics Unit operations</i> • <i>Private sector was empowered</i> • <i>Constructive government, donor, private sector dialogue began</i> • <i>Use of government infrastructure to complement private sector</i> • <i>Payment for fertilizer vouchers was timely, at least at the beginning</i> • <i>Seed program left choice to farmers</i> • <i>Seed program presented marketing opportunity to private sector</i> • <i>Poor farmers were helped</i> • <i>Most input suppliers and retailers had better sales this year than last year</i> 	<ul style="list-style-type: none"> • <i>VERY late design and implementation</i> • <i>Poor tendering process (started early but then canceled); second round lacked transparency</i> • <i>Poor voucher design led to fraud and vouchers not honored by Logistics Unit</i> • <i>Low redemption value for fertilizer vouchers (especially for remote locations)</i> • <i>MK rather than US\$ redemption value increases supplier risk</i> • <i>Slow voucher processing by ADMARC/SFFRFM jeopardizes cash flow for seed sector</i> • <i>Weak institutions for monitoring product quality</i> • <i>Information campaign gave too much attention to fertilizer and did not provide clear understanding of who should get vouchers</i> • <i>In some cases voucher sales are simply replacing commercial sales rather than adding to them.</i>

7 Production and livelihood impacts

It is too early to provide any definite information on production and livelihood impacts as the harvest is not yet in, and still vulnerable to too much rain or (in the Centre and North) could still be damaged by an early end to the rains. Proper examination of production and livelihood impacts also requires gathering of information from the household survey and further focus group discussions to be conducted at the end of the season. Nevertheless it is possible to make some observations regarding possible impacts.

We note first of all the data provided in the recently released first round crop estimates. Preliminary though they are, as reported earlier section 5.1 and table 5.3, they suggest a 20% increase in the area under hybrids, and a 9% increase in the area planted under OPV. A bumper harvest is also predicted, of 3.1 million tonnes, although it is understood that first round crop estimates are often adjusted downwards in later rounds. However unless this estimate is adjusted downward by a very considerable amount, this year's harvest will be another record, higher than the previous record harvest of 2.7 million tonnes in 2005/6. Both good rains and the subsidy programme are expected to have contributed to this.

As with the 2005/6 subsidy, regression and agronomic models can be used to predict the impact of incremental fertilizer use to maize. As discussed earlier, there are major difficulties in estimating both incremental nutrient application to maize and the impact of extra nutrients on maize production. Using the approach described in Annex A, we estimate incremental fertilizer application to maize as around 70,000 tonnes (out of total subsidized maize fertilizers of 150,000 tonnes). Using the methods described in Annex B we estimate incremental production in 2006/7 as between 600,000 and 700,000 tonnes. Most of the regression estimates on which this is based explicitly account of the increase in 2006/7 in the proportion of maize area under hybrid maize, presumed to result from the subsidized seed programme. This is a very preliminary estimate and subject to wide margin of error as explained in Annex B. It is hoped that further work on this and results from the household survey to be conducted later in the year will allow more accurate estimates of incremental production.

A number of livelihood benefits were noted in focus group discussions or may be expected to occur in the coming season. These relate to lower prices of fertilizer meaning that people did not need to do ganyu to earn cash to buy fertilizer or might be able to afford to hire ganyu, with lower maize prices also reducing pressure on the need to look for cash. These changes should tighten labour markets and raise real wages, generally benefiting the poor and possibly also allowing more timely and thorough crop husbandry. Increased food stocks and reduced food prices should benefit those households which are normally food deficit producers, but will reduce the incomes of households that would normally be surplus maize producers.

8 Issues and preliminary recommendations

Three fundamental and interacting questions face policy makers and other stakeholders in reviewing this year's AISP:

- Should the programme continue?
- What complementary and competing policies and instruments are there?
- How could its implementation be improved to make it more efficient and cost effective?

We consider these questions below, but in addressing them it is important to have a clear understanding of the objectives of the programme, and of the means by which the programme is intended to achieve or promote those objectives.

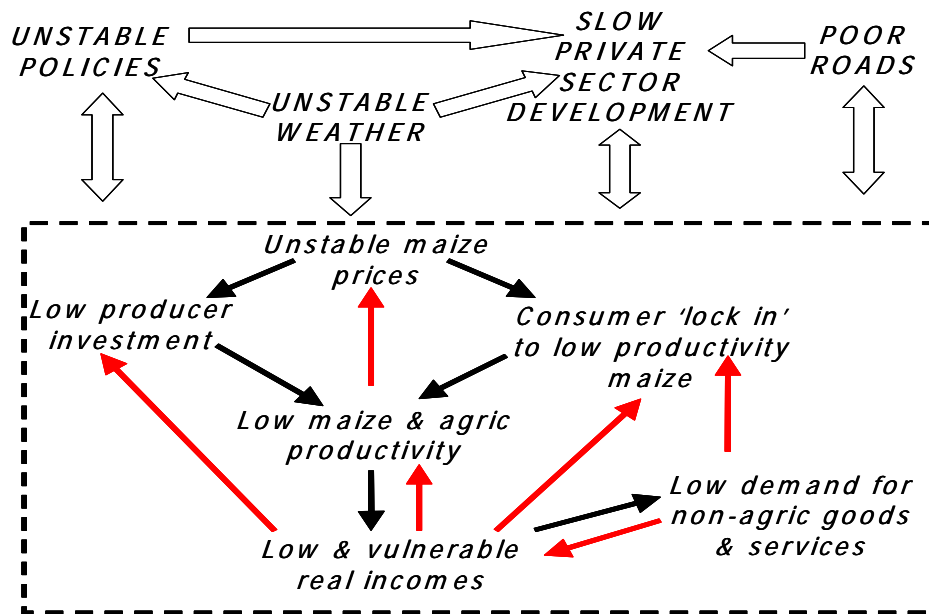
8.1 *What are (or ought to be) the subsidy programme objectives?*

The importance of but lack of clarity in the articulation and understanding of programme objectives was discussed briefly in section 4.1. It was noted that articulated objectives centred around improvement of land and labour productivity and production of both food and cash crops by cash constrained smallholder farmers, promotion of economic growth (and for some promotion of private sector development), and reduction in people's vulnerability to food insecurity, hunger and poverty. However it was also noted that there are different understandings of food security and food self sufficiency and differing emphases on national and household food security and self sufficiency. These different understandings have far reaching implications for questions about the benefits of the programme, about the way it should be implemented, about its scale and how and when it should be scaled down, modified and phased out.

It is critical that clear objectives be set for the way that the AISP is expected to contribute to long term economic growth and development, and that these objectives are used to guide the development of short and medium term objectives (related to poverty reduction and food security), and these in turn should guide decisions about the design and implementation of the programme and its interactions with other policies.

The analysis of the constraints to development in section 2.1 suggested a vicious circle of unstable maize prices inhibiting (a) net producers' investment in maize production, (b) net consumers' reliance on the market for maize purchases, and (c) poor consumers exits from low productivity maize cultivation. These in turn inhibit the growth of the non-farm economy. This vicious circle, illustrated in figure 8.1, is exacerbated by, among other things, unstable and changing policies, weather instability, poor road infrastructure, and constrained private sector development. At the heart of this are household, local and national vulnerability and poverty traps.

Figure 8.1 Vicious Circle of the Low Productivity Maize Production Trap



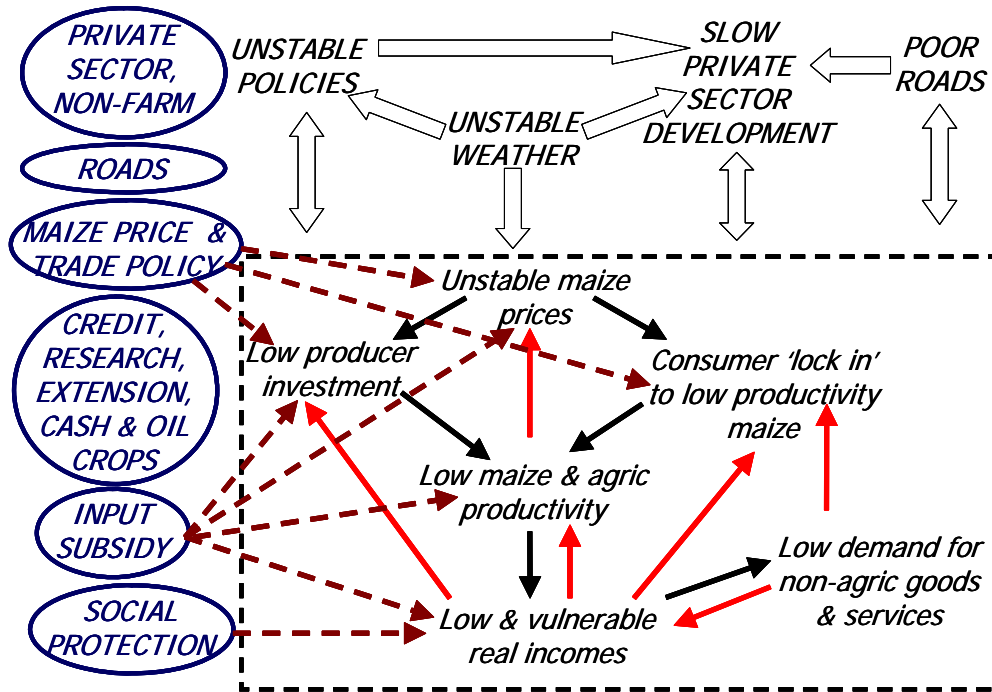
This analysis suggests that the maize input subsidy can make important contributions to providing lower (and perhaps more stable) maize prices and to raising maize productivity, with the paradoxical long run objective of encouraging less people to grow maize, but to grow it more productively. It is important, however, that the subsidy programme is supported by complementary policies that will make it more efficient in this: it cannot achieve the necessary changes on its own. Thus complementary policies are needed to prevent maize prices from rising in years of low harvest due to widespread poor rainfall, to provide social protection to stabilize and raise real incomes of the poor, and to promote agricultural productivity for cash and oil grain/ legume crops through research and extension and provision of credit for inputs. These policies do compete for resources, but with proper coordinated design and implementation should support each other. Thus an effective input subsidy implemented efficiently and consistently over a number of years with low displacement or crowding out of commercial sales has the potential to simultaneously contribute to increased agricultural productivity, increased real incomes for poor consumers (through reduced maize prices and through increased real wages arising both from this and from the stimulus to the rural non-farm economy that should follow). It will not, however, promote stable low maize prices unless (a) consistently implemented over a sustained period and (b) accompanied by consistent reliable policies that will augment domestic grain supplies in the event of a climatic shock (strategic grain reserves and/or imports and import finance). Similarly it should be more effective if accompanied by

- Social protection policies that protect people against other shocks and assist the productive poor to access matching funds
- Agricultural interventions promoting research and extension for maize and for other crops, and improved access to seasonal finance for other crops
- Road construction and policies promoting both growth of the non-farm economy and of the private sector (in agricultural and non-agricultural sectors).

- Policies promoting wider private sector development across the country
- Health and education investments to promote a flexible and productive population able to respond to and create new economic opportunities.

The importance of the input subsidy programme being part of a set of complementary policies is illustrated in figure 8.2.

Figure 8.2 Policies to Attack the Low Productivity Maize Production Trap



Viewing the subsidy programme in this way poses challenges and some hard questions about policy coordination and phasing, particularly regarding (a) maize markets and prices (as influenced by producer subsidies and trade policy) and (b) the processes of structural change which are essential for development and which the programme should be trying to promote.

- What are appropriate prices for maize that will (a) allow local real incomes and demand for local goods and services to increase so that poor deficit producers can concentrate on other more productive activities serving this demand but (b) give other farmers the incentive to produce a surplus? How will this differ between different areas and change over time? How should this relate to maize trade policy, and particularly export policy?
- How can the processes of development and structural transitions be managed consistently, allowing consumers and producers to have confidence in maize markets and promoting non-farm and private sector development to occur at different speeds in, for example, more and less remote areas?

These questions cannot be addressed in this report, but they have long term implications for the design of the subsidy programme (in terms of its scale, coverage and mode of implementation). They must therefore be borne in mind in considering immediate short and medium term decisions for 2007/8. Some of these issues are returned to in section 8.5.3.

It is also important to bear in mind the economic processes by which the input subsidy is intended to produce medium and longer term development, food security and poverty and vulnerability reduction benefits. The design and implementation of the subsidy and its coordination with other policies must constantly be related to its goals to promote increased real incomes of large numbers of the productive poor through (a) increased productivity of their own land, labour and capital, (b) lower purchase prices for maize linked to (c) increased local ganyu incomes through increased real wage rates and increased demand for agricultural labour, and (d) increased local horticultural, livestock and non-farm incomes due to increased local expenditure on non-staple food items.

8.2 *Is the Subsidy Programme Justified?*

The arguments presented above suggest that an effective and efficient subsidy programme implemented in the context of consistent agricultural and macro-economic management policies has the potential to drive growth forward out of the poverty trap in which many Malawians and the Malawian economy are currently caught. Extra importation of fertiliser is generally considered to be cost effective if it reduces the need for large imports of maize, but this only achieved if the weather is good enough (which it will normally but not always be) and still needs to be backed up by some policy for storing and/or importing maize and making it available at reasonable prices in years when the weather fails. These benefits also depend upon subsidised fertiliser leading to incremental use of fertiliser rather than displacement of commercial sales (allowing for questions about switching across farmers, crops and areas as discussed earlier). There mean that there are likely to be some benefits from progressive transfers of income to poorer people even with significant displacement of cash sales. There are also strong political arguments for the subsidy which has much popular support, but this is not a justification for the subsidy if alternative investments yield the Malawian people a better return on government investment, even if they are less popular.

Given these arguments justifying the subsidy programme, it is essential that it should be designed and implemented in a way that yields maximum benefits for the very considerable outlays involved. This depends upon (a) wider sustained policy consistency and management; (b) complementary policies, and (c) effective design and implementation – the programme should be low cost, of an appropriate scale and scope, and must promote rather than compete with and depress farmer and private sector investment in normal commercial sales of fertiliser. In the remainder of this report we set out some principles to guide the further development of the programme, and suggest specific recommendations to improve the programme in ways that are consistent with these principles.

8.3 *Implementation of the subsidy programme: Principles*

It is important to agree on broad principles for the programme which can be the basis for searching for and developing specific options for effective system design and implementation. The following principles are proposed:

1. Given Malawi's complex food security challenge an input subsidy programme is justified as outlined in the previous sections, and should seek to reduce national and household food insecurity, reduce poverty and vulnerability, and promote economic growth and diversification in the ways outlined earlier.

2. It is essential that the programme be implemented efficiently and effectively to ensure that the country gets the maximum benefit from this investment, and at as low a cost as possible.
3. The input subsidy programme is one of a set of policy instruments and programmes concerned with food security, agricultural and economic development, and social protection that needs to be designed and implemented in a coordinated way to promote food security and avoid excessive swings in food production and prices over time.
4. The programme should be targeted at smallholder farmers.
5. The programme should be designed and implemented with a view to the reduction and eventual withdrawal of the subsidy as its objectives are progressively achieved. This requires a joint vision of, and objectives for, agricultural input sector development that will promote public, private and civil society partnerships founded on mutual trust and accountability.
6. In pursuit of low cost, sustainable, effective and efficient achievement of its primary objectives, the programme should promote the development of a strong, competitive, and efficient private sector in fertiliser and other agricultural input supply. This will free up government capital and other resources (particularly skilled staff) for other critical uses that complement and enhance private sector effectiveness (e.g., road infrastructure, agricultural research). Effective quality control monitoring is also essential to maintain the integrity of the input supply sector to the benefit of all stakeholders.
7. The programme should be designed and implemented to minimise displacement of commercial input sales in order to (a) maximise the incremental benefits and efficiency of the programme and (b) reduce negative impacts of the programme on the commercial input sector.
8. In remote areas where volumes are small and access costs high, it is difficult for the private sector to serve farmers without some form of subsidy from government, and effective partnerships between the government and the private sector will be needed. In this there may be specific roles for state owned enterprises that complement rather than replace private sector activities.
9. Predictability, transparency and timely decision making and communication are critical for the programme to deliver benefits to smallholder farmers, leverage new investment by private sector agents (farmers, input suppliers and produce buyers), and lower costs in government purchase and delivery of goods and services.
10. It is important that some flexibility is built into the programme over time to respond to weather-induced fluctuations in food supply, as well as changes in farmer input demand that support crop diversification. A three year rolling programme, integrated into the government's medium term expenditure framework, could promote the necessary balance of predictability and flexibility.
11. Strict budgetary control is critical for programme sustainability and benefits, to avoid disrupting complementary planned investments in agricultural and other sector support programmes, and to facilitate macro-economic stability.

Bearing these principles in mind, we discuss in the following sections:

1. Ways in which the implementation of the subsidy programme as currently designed could be improved;
2. Potential innovations in programme design to increase effectiveness and reduce costs;
3. Further recommendations for innovations which could be tested in pilot programmes.

The most critical factor for improved programme effectiveness, common to all design options, is timely decision making and implementation. The report therefore later concludes (after the next two sections) by proposing a calendar for timely implementation of the 2007/8 programme.

8.4 Improvements within the current system

We consider ways in which the current voucher system could be improved with regard to coupon allocation and distribution, input procurement and distribution, and coupon redemption. We begin, however, with some broad recommendations for improvements across the system as a whole.

8.4.1 General system operation and management

1. Programme review and design must begin early and follow a calendar agreed with representatives of key stakeholders, including Government, private sector, civil society and donor partners. Adherence to an effective calendar will be greatly facilitated in the context of a 3-4 year agricultural input subsidy program framework. To ensure that subsidized fertilizer is incremental to commercial sales to the maximum extent possible, coupon distribution would ideally take place in April at the same time as farmers begin to receive income from tobacco sales. While this cannot be achieved for the 2007/8 program, in part to allow for re-design of the programme based on this year's experience, it should be possible in subsequent years. This is discussed further in the final section.
2. To ensure participation of all key players in the planning and execution of the 2007/8 program, and consistent with the basic principles laid out above, an agricultural input programme committee should be established as soon as possible. The committee should be small enough to be efficient, and comprised of representatives from the private sector (minimum 3), Government (ADMARC/SFFRFM, Ministry of Finance and Ministry of Trade), donors, farmers, civil society and one or two independent members of standing in the industry. The committee should be chaired by the Permanent Secretary of the Ministry of Agriculture and should meet regularly to ensure timely development and implementation of the programme.
3. Increased and earlier communication about the programme should accompany greater transparency and accountability to and involvement of stakeholders throughout the programme, for example in coupon allocation and distribution, in monitoring and coordination of input sales, and in the prevention of fraud.

8.4.2 Coupon allocation and distribution

A number of problems with coupon targeting and distribution have been noted in this report:

- The initial allocation of coupons between regions in proportion to maize area cultivated led to much greater allocation of coupons per grower in the North than the South. It is not clear that subsidised fertiliser will necessarily be more productive in the north than the south. What is clear, however, is that the greater concentration of people (and especially poor people) in the South means that the programme as implemented in 2006/7 provides lower direct assistance to poor households that need to purchase maize in that region. The focus on production in the north also increases marketing and transport costs in getting fertilisers to the North²³ and moving grain south to consumers.

²³ In 2006/7 average tender fertiliser price delivered to the SFFRFM depot in Luwinda (Mzuzu) was 6% higher than the price to Chirimba (Blantyre).

- Regional allocation of coupons in proportion to maize hectarage has not been consistently applied at lower levels of allocation and distribution (in district, EPA, village and household allocations), not has it been applied in supplementary allocations. Formal allocation and distribution at lower levels were commonly based on population, but supplementary district allocations appear to have responded to the strength of and demands from different stakeholder groups (including farmers, traditional authorities, district government officials, and politicians).
- In some areas there has been a lack of transparency about how many coupons were allocated to villages, leading to opportunities for individuals with powerful roles in coupon distribution to misappropriate coupons, and suspicions and rumours that significant numbers of coupons were being diverted before they reached farmers.
- Targeting criteria and systems within villages have not been clearly defined and have been highly variable, often putting more emphasis on reaching the poor, and often allocating coupons more equally than intended in programme design. This has meant that in some areas the programme has provided a subsidy with almost comprehensive coverage of a smaller entitlement²⁴
- High but subsequently unrealised expectations about the availability of and access to subsidised fertilisers discouraged cash sales as well as applications for credit for input purchases.
- Late distribution of coupons in many areas was a contributory factor in farmers' late access to fertiliser purchases and in congestion at selling points.
- Funds for districts to distribute coupons and monitor their use were distributed late and in limited amounts, with adverse effects on both the subsidy programme and other district activities.
- The issuing of supplementary coupons did not follow consistent criteria, involved some printing of coupons with duplicate serial numbers, was late, and led to large budget over runs.
- There was limited communication about the system for coupon distribution and access, about the numbers of coupons allocated to districts, EPAs, and villages, and about the criteria for people to access coupons.
- Malpractice in coupon distribution became a major focus of public and political interest, with widespread media attention.
- Further research is needed on the extent to which poorer households with land were unable to participate in and benefit from the programme due to shortages of cash. Focus group discussions suggest that in 2006/7 there were few social protection interventions assisting poorer people to obtain cash to participate in the programme when compared to 2005/6.

²⁴ This has meant that in many villages many households received 1 fertiliser coupon with or without a maize seed coupon, in contrast with the intention that some (targeted) households should receive 5 coupons (2 for tobacco fertilisers, 2 for maize fertilisers, and 1 for maize seed), some should receive 3 coupons (2 for maize fertilisers, and 1 for maize seed), and a substantial number should receive no fertiliser coupon and perhaps 1 maize seed coupon.

We propose a number of modifications to the current system of coupon allocation and distribution to address these issues:

1. All activities in the process of coupon allocation and distribution must be started much earlier – district allocations, EPA allocations, ordering of coupon printing, communication about the subsidy programme, despatch of coupons to districts, despatch of funding to districts, distribution to villages and distribution within villages. This is necessary if fertiliser purchases are to occur in October, but it will be argued later that there are potential benefits in aiming for and achieving much earlier subsidy sales.
2. Coupon allocations at all levels (to districts, EPAs and villages) should be determined by, and be proportionate to, the numbers of smallholder maize and tobacco growers rather than maize or tobacco cultivated area. This method of coupon allocation should increase production benefits in areas where there is more food insecurity, provide direct benefits of increased food production to more poor (but productive) households, reduce grain transport and marketing costs to the areas with most food insecure people, and lead to minor reductions in fertiliser transport costs²⁵. In addition to these important economic benefits it would be a more transparent system of allocation, more easily explained to, understood by and justifiable to the public. It would also be more consistent with common practice of allocating coupons to villages in proportion to their population, and would better match the geographic distribution of potential beneficiaries.
3. Clearer beneficiary targeting criteria need to be developed and communicated through the local government system. These should be consistent both with the programme objectives and with local understandings of differences between people's livelihoods and entitlements. This is extremely difficult, and we therefore argue later (in section 8.5) that it may well be better to target smallholder farmers as a whole in a comprehensive smallholder agriculture input subsidy programme for 2007/8.²⁶
4. Social protection programmes that enable poorer households to earn cash, similar to those implemented in 2005/6, would expand the proportion of the productive poor who qualify to obtain and use subsidized fertilizer and reduce the (as yet unquantified) incidence of coupon sales due to cash constraints.
5. There are strong arguments for conducting pre-registration to identify coupon recipients before coupon distribution, with public listing of beneficiaries and of the coupons they are to receive. This would increase transparency and accountability in the process of coupon allocation, and assist beneficiaries and non-beneficiaries in planning their cash allocations and purchases of unsubsidised fertiliser. There are also strong potential synergies with social protection interventions to enable poorer households to earn cash for fertiliser purchase, as early pre-registration for coupon beneficiaries could be linked to registration for public works programmes.
6. There should be further investigation of and lesson learning from the successful development of local mechanisms and examples of good practice in increasing transparency and accountability in coupon distribution (see point 8 below).

²⁵ With the volumes and prices of budgeted fertiliser quantities in 2006/7 this would have been of the order of 1% or MK 0.5 million.

²⁶ Other reasons for implementing a comprehensive system alongside wider system changes are presented in section 9.5 but if these wider system changes are not considered appropriate for 2007/8 there may nevertheless be a strong case for introducing comprehensive targeting within the current system.

7. Critical attention needs to be paid to coupon design and security features. It seems that having a triplicate system (the original coupon, a detachable duplicate for the beneficiary, and a book copy) is unnecessary. It is reported that the existence of the detachable duplicate led to some confusion and attempts at fraud. Control of serial numbers has also been a problem this year, and it should be a matter of concern that some of the supplementary vouchers were printed by a different company from the printer of the original coupons. Attempts at fraud are likely to become more sophisticated as the programme continues, and greater attention should be paid to preventing fraud.
8. The influence and involvement of Traditional Authorities in coupon distribution at local level should be eliminated where this is still significant. The involvement of VDC sub-committees, assisted by Ministry agricultural staff, could facilitate a more transparent and equitable allocation when combined with clear mechanisms for tracking and publicising of all coupon issues to districts, EPAs and villages.
9. There should be early, widespread and clear communication by radio and public meetings about the coupon allocation and distribution system, and about people's reasonable expectations under the programme.
10. A public relations strategy should be developed for managing information to the press. This should ensure that the strengths and achievements of the coupon allocation and distribution programme are publicised before and alongside the inevitable news stories about abuse of the system.
11. There must be formal controls on the issue of supplementary coupons. They should preferably be eliminated or, if it is desirable to maintain some flexibility, then they should be costed in the initial budget and held back from the initial allocation, with strict adherence to the budgeted quantities. No additional coupons should be printed after the approved programme quantity has been fulfilled.

8.4.3 Input procurement & distribution

A number of problems with input procurement and distribution have been noted in this report:

- The single biggest cause of procurement and distribution difficulties was late and piecemeal decision-making about overall program design. Among the consequences of late procurement were late and non-delivery to SFFRFM depots, congestion and long lines of farmers waiting for inputs (with wastage of farmers' time and increased opportunities for 'tips'), stock outages, and late and hence less productive use of fertiliser.
- Concern was expressed about tender requirements (for example period of validity), lack of clarity in award procedures, changes in tender requirements, and unpredictability in award fulfilment leading to higher private sector and ultimately government costs..
- Additional costs for importers/distributors were associated with voucher redemption, cancelled tenders, and slower than usual cash recovery which necessitated extending loans.
- Additional costs to retailers were mostly in hiring extra sales help to deal with peak demand and bureaucratic procedures. There were also some problems with financing costs increasing due to late seed voucher reimbursements.
- ADMARC operations at unit markets were hindered by staff shortages due to the small proportion of budgeted funds actually allocated.

- SFFRFM encountered significant procurement delays resulting from difficulties encountered by their chosen supplier. Costs were increased due to late payment by government for fertilizer procured on loan by SFFRFM at commercial bank interest rates.

Recommendations:

1. To enable timely decision making and procurement by both private sector and public entities Government needs to make, at the earliest possible opportunity, an announcement concerning two key features of next year's program. First Government needs to announce the indicative quantity of fertilizer to be covered by the subsidy program in 2007/8, and second indicate the share of that total that government intends to procure and distribute through its own outlets. In the interests of national food security the parliamentary budget approval process should recognize and accommodate this requirement for early announcement.
2. Once Government has announced the programme scale and the share it will seek to supply to farmers on its own account, private sector importers and distributors should make their own arrangements for fertilizer procure for retail distribution to coupon beneficiaries. The private sector would continue to submit tenders in response to the procurement needs of SFFRFM.
3. Expansion of the share of subsidized fertilizer imported and distributed by the private sector is warranted, with a commensurate reduction in the shares directly imported by SFFRFM, and distributed by ADMARC and SFFRFM. Resources liberated by this reduction should enable ADMARC and SFFRFM to strengthen service provision in remaining locations through adequate staff numbers and training, and reliable stocking of complementary agricultural inputs for maize seed and fertilizer (e.g., crop storage chemicals). The ability of ADMARC to improve service even with a smaller network will be contingent on government making approved budget allocations available on time.
4. The rate of expansion in the share of subsidized fertilizer and seed distributed by the private sector should depend in part on credible commitments to expand retail coverage in poorly served areas of the country. This commitment can be met through new or re-activated distributor outlets, but even more cost effectively through expansion and integration of independent agro-dealers located away from major trading centers into the commercial input supply chain.
5. A separate and rapid review of government's tendering process is needed to ensure clarity in the criteria for tender selection, adoption of appropriate international industry standards for tender validity and conditions, and clear mechanisms for establishing and handling potential or actual non-fulfilment. Criteria for tender selection must address the need to balance cost considerations with maintaining competition in the market in a transparent way. There should be a transparent separation of government and SFFRFM tendering processes.
6. The implementation of rigorous auditing procedures for all stakeholders in the system. This should involve
 - spot-checks on coupon distribution processes and outcomes, and on sales of subsidised inputs under the programme.
 - rigorous and substantial end of sales auditing of subsidised sales by both parastatal and private sector agencies.

There should be strong penalties for organisations which either participate in fraudulent activities or fail to have proper procedures and penalties for preventing fraud by their employees.

7. Expansion of the private sector share while further improving performance will require other measures to ensure integrity of the supply chain. Specific measures include:
 - a. Finalization of statutes for the new fertilizer association;
 - b. Establishment of an agreed code of business conduct for fertilizer association members;
 - c. A licensing system for agro-input dealers that will provide necessary safeguards while allowing them to participate as distributors in the programme;
 - d. Review of fertilizer integrity testing procedures and public dissemination of results;
 - e. Prompt payment by government with assured timely access to foreign exchange to minimize currency risk (or allow tenders and payment in US dollars
 - f. Allowance for currency exchange movements in reimbursement of vouchers.
 - g. The fertiliser and seed associations should collect information from their members about annual sales, imports and stocks, and publish aggregate information to promote transparency and improved coordination within the fertiliser and seed industries.

8.4.4 Coupon redemption

The majority of the problems encountered by beneficiaries and distributors that have been documented in the report (e.g., lengthy queues at outlets, stock shortages, tipping) can be resolved to a high degree by timely programme implementation, by better communication and by improvements in coupon design, allocation and distribution and in input procurement and distribution as recommended above.

The requirement to sort coupons by location and serial number prior to submission to the Logistics Unit was a significant administrative burden at a peak time for both the private and government sector resulting in increased costs and, in the case of ADMARC and SFFRFM unit markets, may be a contributory factor in lengthy delays in submission. In discussions with the Logistics Unit it has been determined that the sorting step can be dispensed with in subsequent years, and the option to print coupons with a bar code for more rapid processing investigated. In future coupons can be submitted to the Logistics Unit for validation by unit market without sorting by serial number.

A simpler systems point of sale system should be developed to dispense with the need to attach a separate cash receipt to each coupon.

Multiple donors with different accounting procedures resulted in delays to the reimbursement of seed vouchers. If multiple donors are to be involved in supporting the same programme component it will be important to harmonize and/or provide adequate administrative support to facilitate implementer adherence to procedures.

8.5 *The Type, Scale and Scope of the Subsidy Programme: Proposals for System Modifications*

8.5.1 Type of fertiliser subsidy

Broad debates in Malawi about different types of fertiliser subsidy have centred around a choice between general price subsidies and targeted subsidies with limited quantities to be accessed by specific beneficiaries and, where there is targeting, whether this should be achieved through coupons distributed by local government or through farm clubs. The term 'universal' subsidy is

frequently used in debates about these choices, but since this term has different meanings in different contexts, it can often confuse debates and is avoided in this report.

A Ministry of Agriculture document setting out the concept of the 2006/7 coupon scheme clearly presented the arguments in favour of a targeted coupon scheme. These arguments are, in our view, very strong. If there is to be any significant subsidy on fertiliser prices, then the costs of applying this subsidy across all fertiliser use (or all uses of particular types of fertiliser) will be very high, and will be very difficult to control as lower prices will fuel both domestic demand and cross border leakage. A coupon system, on the other hand, can be used to limit the cost of the programme (by limiting the number of coupons). It can also be much more cost effective in meeting a specific policy goal, if there is appropriate targeting to intended beneficiaries and controls to stop leakage.

With regard to distribution by local government or through farm clubs, there is an existing local government structure that reaches all rural farming households in Malawi. This is not the case with farm clubs, and although these were in the past an effective vehicle for the administration of subsidised fertiliser on credit, their reach was generally limited and most of these clubs have disbanded. Attempts to create a large scale network of clubs for distribution of coupons or fertilisers would be very costly in terms of time and human resources. It is also unlikely to be as effective as the existing local government systems (though as is clear from this report there are ways in which the local government system needs to be and can be improved). In addition, distribution using local government structures will help in strengthening the decentralisation process.

The arguments for the targeted coupon system, implemented through local government, are very strong, and have been articulated very well in a Ministry of Agriculture paper of April 2006. These arguments have not to our knowledge, however, been widely publicised or advanced in a public debate. The Ministry should engage with the media (radio and newspapers) in a major debate about the best form of subsidy programme, about its objectives, and about ways in which the public can help to make it more effective (for example through encouraging transparency and vigilance).

8.5.2 Modifications to the coupon system

If a coupon system is to be adopted, a second set of choices concern the scope of the programme (in terms of who – or what kind of people - it should reach) and its scale (in terms of both how many people should benefit and the scale of the benefit to each).

In sections 4.3 and 8.4.2 significant problems associated with inconsistently applied base allocation of coupons in proportion to maize hectareage, lack of transparency about coupon allocations to villages, inconsistent and limited targeting, and large-scale issuing of supplementary coupons were noted.

In order to address these problems we propose that the subsidy programme be modified so that it achieves comprehensive coverage of all smallholder farmers with allocations at all levels determined by numbers of smallholder farmers rather than maize or tobacco hectareage. This would be coupled with a lower subsidy per beneficiary household as compared with 2006/7, to keep the total budgeted cost approximately constant.

There are a number of potential advantages to this system:

- To some extent it is merely accepting what is already happening in many villages.
- It provides a transparent system of allocation which is easily understood and can easily be explained and justified to the public. It also extends benefits to a much larger proportion of the smallholder farmers. The system can also be applied consistently at all allocation levels from region to district, EPA and village.

- It does away with difficulties in targeting within villages, which was inconsistent and sometimes not transparent, and led to opportunities for and sometimes suspicion of misappropriation of coupons by those involved in their distribution.
- It could reduce pressures for supplementary coupon issues and therefore support better budgetary control.
- As noted earlier, coupon allocation according to number of households should also increase direct and indirect benefits where there is food insecurity, and reduce grain transport and marketing costs.

To address some potential difficulties arising with this system and to take full advantage of the benefits listed above, we propose four further modifications:

- the subsidy should be extended to include all smallholder farmers, not just maize growers, but without additional allocations to cash crop growers and with a lower subsidy per recipient to keep the overall budgeted cost roughly similar to that of 2006/7;
- farmers should have more choice of inputs and fertiliser bag sizes to buy at subsidised prices;
- coupons should be given a nominal face value approximately equal to the subsidy they represent; and
- when redeemed by input sellers the fixed face value should be augmented by a district/EPA specific 'location premium'.

These proposals are inter-related and explained below.

Extension of the subsidy to include those growing other crops apart from maize and tobacco requires that coupons can be exchanged for a wider variety of fertilisers and seeds. This would allow farmers to choose inputs appropriate to different crops grown in different areas and appropriate to their own specific needs. Even in maize growing areas this should have benefits in promoting more flexibility, equity and efficiency in farmers' use of inputs, and maize inputs may be varied more to match local soil requirements, for example as recommended by the Maize Productivity Task Force in the mid 1990s. Farmers could also make their own judgements on what inputs to buy for use on tobacco, cotton, rice, cassava, groundnuts or other legumes²⁷.

Reduction in the subsidy per household will provide incentives to the private sector to supply additional package sizes to the current package of 50kg of NPK, 50kg of urea and a seed pack. Not all households will be able to afford the significantly greater cash top up required to purchase these bags and the 50kg packages may provide more fertiliser than some households need if they have very small plots of land. These problems can be addressed by allowing coupons to be redeemed for 25kg fertiliser bags.

Redemption of coupons for a variety of different inputs and fertiliser bag sizes will not work with the 2006/7 system of a standard cash payment to accompany fertiliser specific coupons. This difficulty can be overcome by giving coupons a clearly specified redemption value. Farmers would then submit the coupon as part payment for the input(s) of their choice, making up the rest of the price of the input(s) with their own cash.

²⁷ It is worth noting that farmers will do this to some extent anyway – for example by applying 'maize fertiliser' to other crops. In such situations it may be more efficient to let them actually buy the fertiliser best suited for that crop.

Fixed face value vouchers present potential problems in that input distribution costs are higher in more inaccessible and remote areas. For political and economic and social development reasons the Government has in the past provided higher subsidies in these areas to maintain constant input prices across the country. A fixed face value voucher system can be made consistent with policies to subsidize access in remote areas by one of two approaches:

- 1) Providing farmers in remote areas a higher fixed value coupon while allowing distributors to establish the price of inputs in remote areas (i.e. the value of the coupon being higher in more remote areas to recompense farmers for the higher prices in such areas or the higher costs of transporting purchased inputs to those areas) or
- 2) Government setting an announced nationwide standard price for subsidized inputs included in the subsidy programme and then compensating distributors for the higher delivery costs.

The first approach allows variable retail prices for inputs across different locations according to the delivery costs in these locations, and a the face value of coupons issued to farmers also varying across different areas. Within each outlet, however, subsidized and unsubsidized inputs should have identical prices.

The second approach provides fixed nationwide (pan-territorial) retail prices for *subsidized* inputs and, with appropriate setting of the location premia (see below) for more remote districts, an incentive for private retailers to service more remote districts (as in the 2006/7 programme). Prices of unsubsidized inputs would be different from subsidized inputs at any given outlet, since government would be providing a subsidy on transport costs for subsidised inputs, in addition to the subsidy provided by the face value of the coupon.

Implementation of the first approach would involve calculating a location premium for different areas and adding this into the value of the voucher so that beneficiaries in more remote locations will receive coupons with a higher total value than beneficiaries in more accessible locations. The difference in coupon value will enable smallholders in remote locations to buy the equivalent quantity of inputs despite the higher input prices. The 'location premium' would be made up of two parts - additional transport and handling costs into each district (also calculated using a similar system to that used in 2006/7), and additional transport and handling costs into EPAs within each district, varying for a limited number of 'EPA remoteness categories'. Since the premium would be dependent on transport costs it would not be affected by differing prices for different fertilisers. Coupons issued within each EPA would be identified by district (as in 2006/7) and additionally by the EPA remoteness category.

Implementation of the second option would involve Government agreeing with private retailers a 'district supply price' for each input which would vary between districts and be made up of a 'base cost of supply' to regional depots (calculated using a similar system to that used in 2006/7) and a 'location premium' allowing for additional transport and handling costs into each district (also calculated using a similar system to that used in 2006/7). Farmers purchasing an input under the subsidy programme would present to the retailer a coupon with cash to give a total face value matching the standard retail price. Government reimbursement for coupons would then be district supply price for the input supplied (varying with district and EPA remoteness category) less the face value of the coupon.

Both these systems use face value coupons and seek to provide some form of pan territorial pricing. The use of face value coupons has many potential advantages. It makes the value of the subsidy more transparent and should make farmers more aware of the value of the coupons they are provided with. This should reduce the extent to which recipients will sell them cheap (farmers

selling coupons for prices of as low as MK200 were reported in some focus group discussions, while prices of MK1500 were reported in the press in trading centres). Cheap sales of coupons make trade in coupons potentially highly profitable and should thus increase incentives for better off farmers to try to purchase them instead of making normal cash sales. Face value coupons could therefore reduce displacement of commercial sales. In the limited numbers where sales do occur (as they always will), the clear specification of redemption values should encourage recipients to sell them at a higher value, and thus provide the bulk of the cash transfer to the recipient rather than to traders or buyers of coupons. The face value system is also closer to a cash system, and hence should allow greater competition and easier eventual transition to a market system.

The first system should be preferred as (a) it is a more transparent system and (b) EPA specific location premia can be used to provide private sector distributors with incentives to supply inputs to more remote EPAs within districts. EPA specific location premia are not possible with the second system as with this EPA specific location premia could only work if farmers were only allowed to redeem their coupons in the EPA of issue: this is not practicable. Both systems should retain the current regulation of coupons only being redeemable in the district of issue.

8.5.3 Determining the scale of the programme

We now briefly return to consider the question of scale. Discussion in this section so far has focussed on scale in terms of the number of beneficiaries, with a suggestion that numbers should increase to comprehensive coverage of the smallholder sector. There was also brief mention that the size of the subsidy per household should be reduced to maintain a roughly constant national budget. Viewing the issue of scale from the national perspective, there are two major considerations that need further examination: the direct costs of the programme and the impact of the programme on maize production.

With regards to direct costs, fertiliser prices have risen substantially since the beginning of 2007, by about 25%, and this needs to be factored into decisions about scale. If farmer payments of MK950 per bag of fertiliser were to be maintained for 150,000 tonnes despite this price rise then this would lead to an increase in fertiliser costs of roughly MK2.7 billion, from MK8.4 billion (calculated from actual costs this year) to roughly MK11.1 billion. If the budget were to be maintained at MK8.4 billion with the same volume of fertiliser but with these fertiliser cost increased, then this would lead to an increase in farmer contributions from MK950 per fertiliser bag to just under MK1,870.²⁸

If flat rate vouchers were issued to all farm households, with 3.28 million farm households according to Ministry of Agriculture figures, then with an overall budget of MK8.3 billion this would mean fertiliser coupons having an average face value of around MK2500 per household. If each household wanted 50kg of fertiliser then they would need to top this up with about MK2,100 each²⁹.

This examination of scale looks at the issue from the cost side. It should also be examined from the perspective of incremental maize production. If the programme were to operate with increased efficiency in terms of reduced displacement of commercial sales, then the production impact from the subsidised fertiliser would rise. This should also happen if there is increasing use of hybrid seed. How much maize should Malawi aim to produce in a good year? Experience with the large 2005/6

²⁸ These calculations assume exactly the same costs structure as in table 5.4, except that seed coupon redemption costs are omitted, and all costs are assumed to vary in proportion to scale.

²⁹ With a fixed budget of MK8.3 billion, farmer contributions would need to rise above MK950 to just under MK1200 even if there were no fertiliser cost increase, because if all farm households took 50kg of fertiliser this would require 164,000tonnes of fertiliser.

and the expected large 2006/7 harvests make this a highly pertinent question, and it is very difficult to make a judgement – but clearly there must be a limit and if displacement of commercial sales was reduced and hybrid maize seed increased then in good years a subsidy on 150,000 tonnes of fertiliser will probably produce more maize than is needed. However these two years are unusually good, and decisions need to be made looking at longer term average rainfall conditions, recognising that low stable prices are needed in years with lower rainfall – acute food security problems in the past have been associated with simultaneous reductions in fertiliser use and rainfall.

8.6 *Longer term options*

There are a number of important potential innovations that can improve the cost effectiveness of the agricultural input subsidy programme, or increase the indirect benefits generated by it. Detailed appraisal of these innovations is beyond the scope of the current study, but provision for such appraisal and the subsequent design of pilot programmes, should be planned for at an early stage.

Many actors in government and the private sector believe that current recommended fertilizer formulations may not be the most cost effective, and that a shift from blanket to more area specific fertilizer recommendations could lead to increased profitability for farmers. Specifically, the formulation 23:21:0 +4S is relatively costly compared to alternative formulations of NPK. A complete NPK formulation would also be appropriate to many areas where Potassium deficiency is becoming evident. Additional potential trace element deficiencies include manganese. A wealth of on-farm and on-station research data collected over the past decade has yet to be exploited to improve and adapt recommendations to the diversity of agro-ecological conditions in Malawi. The proposed agricultural input programme committee could establish a sub-committee to rapidly assess this work and make recommendations.

The profitability of chemical fertilizer use depends very much on soil physical qualities (organic matter, topsoil depth, presence of hoe pans, porosity). A wide range of conservation practices are available to prevent soil erosion and degradation, and improve soil qualities, that would increase crop response to chemical fertilizer in the longer term. Farmers often lack the incentives to invest in conservation practices that do not have an immediate benefit. One way to provide such an incentive would be to provide farmers who commit to participation in a 3-4 year program with an additional input voucher.

The use of smart cards in place of coupons is a potential innovation that could reduce transactions costs and the potential for fraud. The technological options and their ability to spread into rural areas are constantly increasing, while costs are falling. Such cards are already in use by the commercial sector and under pilot testing for social protection programs. Their issue to smallholder farmers as part of a comprehensive input subsidy programme would be a major ‘one off’ task presenting many challenges, but it offers potential low cost solutions to a wide variety of problems related to prevention fraud, the pan territorial face value systems discussed above, and the integration of commercial and subsidised sales. The introduction of appropriate smart cards also offers very substantial wider benefits to rural people beyond the subsidy programme - in terms of agricultural finance, micro finance, remittances, and deepening of the financial sector. with The potential contribution of smart cards as part of the agricultural input subsidy program warrants further and thorough investigation.

The use of national ID cards offer an alternative approach to reduction of fraud in coupon issue and use. This must be part of a wider policy decision which has wider ramifications beyond the subsidy programme.

8.7 *Implementation of the subsidy programme: Decision scheduling*

We conclude by discussing timing of decisions and actions. Some are needed urgently for timely implementation of the 2007/8 programme, while there are other decisions regarding longer term programme development which do not need to be addressed in the short term – but a timetable is needed to ensure that they are addressed in time for the 2008/9 season for example. The need for timely decision making is especially great because the large allocation of supplementary coupons in 2006/7 has resulted in lower than usual carryover stocks among private sector importers. Decision makers will also need to factor in recent volatility and significant price increases in urea and phosphate fertilizers that will result in a smaller quantity of subsidized fertilizer available for the same budget outlay compared to 2006/7. Table 8.1 sets out a proposed calendar for key annual decisions and actions in the subsidy programme. Since this report is being presented at the beginning of March and makes some recommendations with significant start up costs, it will not be possible to adhere to the ideal schedule of activities this year. Separate schedules are therefore specified for 2007/8 (allowing for these factors) and for subsequent years.

Table 8.1 Proposed calendar for key annual decisions and actions in the subsidy programme

Action/Decision	2007/8 programme	Subsequent years
Establish Input Subsidy Programme Committee	Immediate (mid-March)	N/A
Review scale of programme and negotiate private and public sector shares	immediate	February
Announce programme scale and share decisions	mid-April	End Feb
Finalize programme modalities (target group, coupon design, processing etc)	end-April	Mid-Mar
SFFRFM tender documents issued	end April	End Feb
Pre-registration campaign	Mid April - July	Feb - Mar
SFFRFM tender awards	End June	April
Awareness campaign	May - July	March – May
Coupon Distribution	July - Aug	April - May
Coupon Redemption	July – Dec	April - Dec
Coupon Processing and Payment	July - Jan	April - Jan

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Annex A: Estimating the extent of displacement of commercial sales by subsidised fertiliser

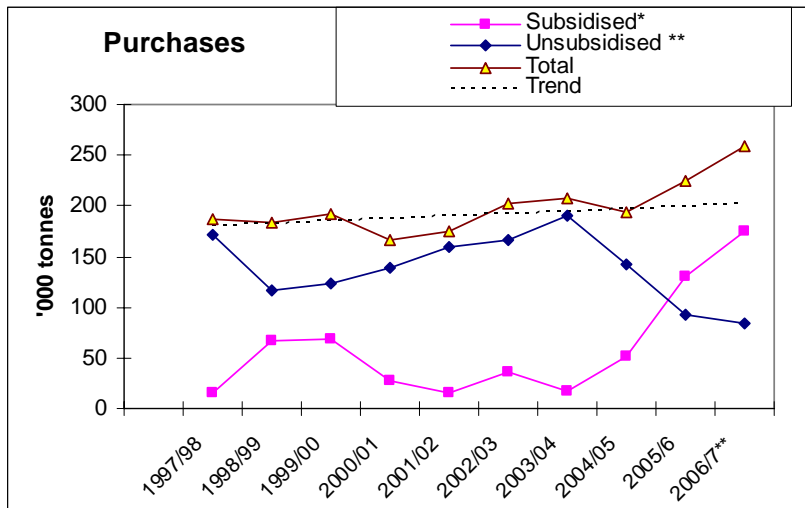
Introduction

If there is significant displacement (that is substitution of commercial unsubsidised sales by subsidised sales) then this seriously undermines the efficiency of fertiliser subsidies as a means of increasing total fertiliser consumption and hence production. This annex presents a brief formal analysis of the likely extent of this displacement in the 005/6 and 2006/7 seasons

Estimation of the counterfactual: the ‘normal level of commercial sales’

Figure 2.3 presents information on subsidized and unsubsidized sales, as in table 2.3 and figure 2.2 in the main text, but with the addition of a trend line estimated by regressing total sales from 1997/98 to 2004/5 against time. 2005/6 and 2006/7 were excluded from the regression because in those two years there was (a) a significant subsidy, and (b) a sharp increase in total fertilizer sales. Sales in 2005/6 and 2006/7 are 24,000 and 57,000 tonnes respectively above the trend line.

Figure A1.1 Subsidised, Unsubsidised and Total Purchases / Sales 1997/8 to 2006/7



The regression estimation of the trend line shows that total sales have been relatively constant over time (see table A2 at the end of this annex for information on the regression estimates). This suggests that over the period 1997/98 to 2004/5 total sales were relatively constant, despite some quite large subsidy programmes in some years, and therefore that there is significant displacement.

The extent and nature of displacement were investigated further by examining the relationship between unsubsidised sales and subsidised sales, to test the hypothesis that unsubsidised sales are strongly affected by subsidy sales. In determining the effect of subsidised sales on unsubsidised sales it would be desirable to take account of the effects other variables on unsubsidised sales. These might include fertiliser prices, crop prices, income per capita, and variables representing the density of sale outlets. Unfortunately this is not possible due to (a) lack of data for some variables and (b) the very short data series (due to structural change in the mid 1990's and data difficulties) and hence limited degrees of freedom.

Unsubsidised sales were regressed against a time variable and linear and quadratic functions of subsidised sales, for both 1997/98 to 2006/7 and 1997/98 to 2004/5 (the latter attempting to

investigate the relationship with Starter Pack /TIP subsidies but without the larger 2005/6 and 2007/7 subsidies). In each case the primary objective was to estimate a base figure for what unsubsidised sales would be without any subsidised sales, but the general relationship between subsidised and unsubsidised sales is also of interest.

Highly significant negative coefficients were found between subsidized and unsubsidized sales, with a weak positive relationship between time and unsubsidized sales ($p=0.12$ to 0.2). As expected, a positive quadratic relationship was found between subsidized and unsubsidized sales, but this was relatively weak ($p=0.1$ to 0.18). Table A3 at the end of this annex contains information on the regression estimates.

The core result from the regression analysis is the estimate of commercial sales in the absence of subsidized sales (we shall term this counterfactual the ‘natural level of commercial sales’). The estimates from different regression models range between approximately 185,000 to 205,000 tonnes, with the estimate for the 2006/7 season being a little higher due to the estimated small trend of increasing total sales. Two other factors that need to be taken into account in estimating the natural level of commercial sales are the effects of fertiliser price increases and low tobacco prices.

- For the 2005/6 season there was an approximate 20% rise in fertiliser prices, and this can be expected to have led to reduced demand for commercial sales and hence a fall in natural level of commercial sales. There is no empirical information on the size of this fall in demand but demand for fertiliser for maize production could be expected to be relatively inelastic. If elasticity of demand is taken to be 0.5 this would mean a 20% rise in price would lead to a 10% fall in commercial sales in the absence of any subsidy. This would also apply to the 2006/7 season.
- Very low tobacco prices were experienced in recent years. This is also likely to have depressed demand for fertiliser for tobacco in the 2005/6 and 2006/7 production seasons.

Table A1 below sets out estimates of displaced and incremental sales for all fertilisers derived as described above. The natural level of commercial sales is estimated at 170,000 to 175,000 tonnes, which is a little higher than estimates of around 160,000 made by various experts. Displacement is high, at 55% and 60% of subsidised sales in 2005/6 and 2006/7 respectively. The lower part of Table A1 takes the calculations further, to estimate overall displacement and incremental sales for maize fertilisers. To achieve this, displacement of maize fertilisers is assumed to be proportionate to maize fertilisers’ share of total subsidy sales (displacement shares are thus assumed to be constant across different fertilisers). Displacement rates are by assumption then the same as calculated for all fertilisers. Given recent low prices of tobacco and possible effects of the subsidy on switches across farmer types, crops and areas (as discussed in the ain text) , this may not be a valid assumption, in which case displacement of fertiliser use on maize may be lower than gross displacement across national fertiliser use.

Table A1 Estimates of Displacement and Incremental Sales, 2005/6 and 2006/7
(MT)

	Subsidy Sales	'Natural' commercial sales			Actual commercial sales	Displaced sales	Incremental sales
		Regression Estimate	price effect -10%	final Estimate			
All fertilizers							
2005/6	130	190	19	171	93	78	52
	<i>% of subsidised sales</i>					60%	40%
2006/7	170	195	19.5	176	84	92	78
	<i>% of subsidised sales</i>					54%	46%
Maize fertilizers							
2005/6	110					66	44
	<i>% of subsidised sales</i>					60%	40%
2006/7	150					81	69
	<i>% of subsidised sales</i>					54%	46%
Note: displacement of 'maize fertilizers' assumed to be proportionate to maize fertilizers' share of total subsidy sales, i.e. with displacement shares constant across different fertilizers. In fact maize displacement may be lower.							

Further issues

This analysis raises a number of issues and questions that need to be taken further in subsequent stages of the evaluation.

- Do displacement rates vary between maize and tobacco fertilizers?
- How are these findings explained when evaluations of starter pack and TIP suggested that displacement was very small (Nyirongo, 2005)?
- How is displacement occurring?
 - Is it the result of smallholders buying less unsubsidised fertiliser and substituting it with subsidised fertiliser?
 - Are these the same smallholders who replace commercial purchases by subsidised purchases, or are better off smallholders buying less commercially, while poorer smallholders are using more subsidised fertiliser?
 - Is it the result of estates buying up subsidised fertiliser cheaply and reducing their commercial purchases?

Some of these issues will be investigated using data from the household survey, where it is hoped it will be possible to examine the extent of both incremental fertiliser use and of transfer effects as a result of the subsidy, and their production and welfare impacts.

Table A2 Regression Estimates for the trend of total sales over time

Multiple R	0.452366		R ²	0.204635	
Adjusted R ²	0.072074		S.E.	13.01704	
Observations	8				
ANOVA	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig. F</i>
Regression	1	261.5708	261.5708	1.543707076	0.260422
Residual	6	1016.66	169.4433		
Total	7	1278.231			

	<i>Coefficient</i>			
	<i>s</i>	<i>S.E.</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	177.0832	10.14279	17.45901	2.26443E-06
Time (1-10)	2.495571	2.008573	1.24246	0.2604224

Table A3 Estimates from different regression models estimating unsubsidized sales

1. All years; quadratic					
Multiple R	0.95372223		R ²	0.9095861	
Adjusted R ²	0.86437915		S.E.	12.7889251	
Observations	10				
ANOVA	df	SS	MS	F	Sig. F
Regression	3	9872.518	3290.839468	20.12049	0.001561
Residual	6	981.3396	163.5566053		
Total	9	10853.86			
	Coefficients	S.E.	t Stat	P-value	
Intercept	177.843673	13.54557	13.1292852	1.2E-05	
T	2.64104969	1.853573	1.424842561	0.204078	
Subs	-1.1778348	0.332513	-3.54222469	0.012186	
SubsSq	0.00277449	0.00185	1.499653804	0.184368	
2. All years; linear					
Multiple R	0.93578659		R ²	0.84018126	
Adjusted R ²	0.87569654		S.E.	13.8830428	
Observations	10				
ANOVA	df	SS	MS	F	Sig. F
Regression	2	9504.686	4752.342945	24.6569	0.000677
Residual	7	1349.172	192.7388779		
Total	9	10853.86			
	Coefficients	S.E.	t Stat	P-value	
Intercept	162.3199	9.48399	17.11514843	5.7E-07	
T	3.39965315	1.93577	1.756228153	0.122475	
Subs	-0.7024461	0.108969	-6.44630226	0.000351	
3. Excluding 2005/6 and 6/7: linear					
Multiple R	0.88158972		R ²	0.77720044	
Adjusted R ²	0.68808062		S.E.	14.1146427	
Observations	8				
ANOVA	df	SS	MS	F	Sig. F
Regression	2	3474.789	1737.394736	8.720848	0.023431
Residual	5	996.1157	199.2231381		
Total	7	4470.905			
	Coefficients	S.E.	t Stat	P-value	
Intercept	173.766937	15.08651	11.51803164	8.65E-05	
T	2.59215143	2.198605	1.178998501	0.291441	
Subs	-0.9222201	0.242211	-3.80751010	0.012532	
4. Excluding 2005/6 & 6/7: linear, no trend variable					
Multiple R	0.84573075		R ²	0.7152605	
Adjusted R ²	0.66780391		S.E.	14.5661898	

Observations	8				
ANOVA	df	SS	MS	F	Sig. F
Regression	1	3197.862	3197.861845	15.07189	0.008149
Residual	6	1273.043	212.1738861		
Total	7	4470.905			
	Coefficients	S.E.	t Stat	P-value	
Intercept	186.87887	10.52028	17.76368092	2.04E-06	
Subs	-0.9612838	0.24761	-3.88225344	0.008149	

Annex B: Estimating aggregate subsidy impacts on maize production

Introduction

Aggregate annual maize production in Malawi is determined by a range of factors, the principle ones generally recognised to be rainfall, nitrogen fertilisation application, land under maize, and the proportion of land under hybrid maize (refs eg Conroy, Carr, Sanchez, Conway and Venables). Estimation of the relationship between these variables and maize production is, however, difficult, because of the complex nature of the interactions between these variables and of their individual relationship with yield, variation across Malawi, difficulties in obtaining reliable data, and the effects of other largely unobservable factors such as the timing of planting, weeding and fertiliser application which may vary significantly from year to year (plant density is another important determinant of yields but is less likely to vary so much from year to year). Estimation of the impact of fertiliser subsidy is further complicated by displacement and substitution effects, whereby it is difficult to establish the incremental fertiliser use on smallholder maize production as some subsidy sales displace commercial sales which would have happened without the subsidy.

In an attempt to gain some indication of gross and net aggregate impacts of the 2005/6 and 2006/7 subsidies, an attempt was made to estimate the relationship between national maize production and fertiliser use, taking account as far as possible of the issues identified above.

Methods

Three methods may be used to estimate subsidy impacts: (a) a 'regression approach' using calculations from equations which estimate the production response to nitrogen, (b) a 'residual approach' where production response to other variables is estimated, and the difference between the estimate and the actual is attributed to the subsidy, and (c) a biological approach where the nitrogen response is estimate from agronomic information. The second of these approaches places too much reliance on the quality of regression estimates and of crop estimates, and cannot be relied upon. We therefore do not use it.

Two different functional forms were used in estimating regression relationships between annual maize production and fertiliser: a linear and quadratic production functions with interaction terms and a Cobb Douglas production function. To reduce collinearity between variables where many variables were increasing with time, aggregate yield was taken as the dependent variable, and fertiliser use as nitrogen per ha, but there was still significant collinearity between some variables (as shown in later tables). Cobb-Douglas functions were estimated using natural logarithms of the variables. Both of these functional forms allow for diminishing marginal returns (and indeed negative returns) to nitrogen and rainfall – the former is less likely than the latter, as discussed below. Although the Cobb Douglas provides a better theoretical description of the need for interactions between variables, these can be adequately described by interaction terms in linear and quadratic functions. There is therefore no clear theoretical reason for choosing either functional form.

Using the 'agronomic method', rough average fertiliser response rates can be considered as 10 kg grain per incremental kg of N on local maize, 15kg on OPV and 20kg on hybrid (Carr, pers comm.). There are however difficulties in determining how incremental N is applied across different varieties – it is likely to be applied disproportionately to hybrid maize. An average figure of 15kg was used (Carr, pers comm.). This could be expected to improve with greater use of hybrid maize seed. The agronomic method takes no account of the effects of good or bad rainfall. Later fertiliser application will lower the ratio.

Data and variables

The following variables and data sources were used:

Annual national maize production: Ministry of Agricultural crop estimates of maize production were used. All these methodological issues regarding the production of these figures, they are generally reckoned to give the most reliable available estimates of aggregate maize production, and are widely used.

Rainfall: The relationship between rainfall and maize production is complex, as too little or too much rainfall at different times of year can depress maize production relative to an optimal rainfall pattern, and rainfall also interacts with fertiliser in its effects on yield. A Malawi Maize Production Index (MMPI) has recently been developed by the World Bank (Hess and Syroka) for potential use in weather based index insurance. This takes account of estimated soil moisture balances needed and available for maize at different stages of growth to calculate index based local and hybrid maize yields. The yield index does not take account of possible damaging effects of too much rain causing flooding or insufficient sunshine restricting crop growth or grain production. There are some years (for example 2000/1) when such conditions led to very low production across Malawi.

Fertiliser use: A number of difficulties are faced in obtaining reliable information on fertiliser use. First, it has been difficult to obtain national statistics on fertiliser sales. For the 1972/73 to 1990/91 information was taken from Darudec (1991) cited by Conroy (1993) for annual sales to smallholders. This information is considered to be relatively reliable (although though no doubt these sales include some leakage to estates and will also be affected by cross border leakage), but there are considerable difficulties in knowing how much of this fertiliser was applied to maize. For the period 1991/92 to 2003/4, widely used figures produced by IFDC were available for quantities of each type of fertiliser by year. Initially it was not clear if these figures are for imports or sales, and since there have been substantial carry over stocks between some years (for example 2004/5 to 2005/6) this presented a significant data problem. Consultations with former members of staff of the IFDC project in Malawi determined that the IFDC data are for sales not imports. Data on annual imports and sales in for 2004/5 to 2006/7 were collected directly from major fertiliser importers and suppliers. Most suppliers were not able to provide this information broken down by type of fertiliser.

For all fertiliser data from 1991/92 onwards there is no information on the breakdown between sales to estates and smallholder, and as with the earlier data, no information on applications to maize within the smallholder sector (other major crops using fertiliser in the past having been rice, cotton and tobacco, with the scale and importance of fertiliser use on these crops having varied considerably over time, with cotton use, for example, having fallen since the 80's and tobacco use having increased since the mid 1990s). Over the period 1972/73 to 2006/7 there have also been some substantial changes in predominant types of fertiliser applied to maize, notably the replacement of 20:20:0 as basal dressing by 23:21:0 (4S) from the 1988/89 season onwards, and the replacement of sulphate of ammonia as top dressing by urea (with increases in CAN and DAP) over the period 1983/84 to 1987/88. To address difficulties regarding how much fertiliser was applied to smallholder maize, Nitrogen content of each fertiliser type was calculated and total quantities of nitrogen from the major maize fertilisers used as the measure of fertiliser use (these fertilisers being 20:20:0, 23:21:0 (4S), sulphate of ammonia, urea and CAN). It is recognised that there are significant difficulties with this approach as some of these fertilisers are used in significant amounts on other crops within and outside the smallholder sector, and the relative extent of these uses have changed over time. To allow for the particular division in data between 1990/91 and 1991/92 (the earlier data being only smallholder sales, the latter being total sales or imports) a break variable was investigated but found not be significant.

Total and hybrid maize areas: Ministry of Agricultural crop estimates of maize areas were used.

Other variables: Other factors that might affect smallholder maize production include generally declining soil fertility over time due to mono-cropping of maize and insufficient nutrient (particularly nitrogen) replenishment, changing poverty levels (affecting people’s ability to mobilise and use labour for timely planting and weeding of maize). To attempt to provide some allowance for these factors’ effects on maize production, two further variables were used in the regression analysis: first a time trend, and, second, to capture the effects on people’s welfare of a poor harvest in the previous season on timely planting and weeding, per capita maize production in the previous season (calculated from total annual maize production as above divided by total population of Malawi). No attempt was made to introduce any variables allowing for timing of fertilise application.

Estimating the impacts of the 2005/6 and 2006/7 Subsidy programmes

Both methods (a) and (c) require estimation of the incremental fertiliser application to maize resulting from the subsidy – it is widely recognised that the provision of a subsidy replaces some commercial fertiliser sales, so that the incremental fertiliser use resulting from the subsidy is equal to the total quantity of subsidised fertiliser less the ‘displacement’ of commercial sales by subsidised sales. The estimation of incremental fertiliser use is discussed in Annex 1, and figures taken from there of 44,000 and 69,000 tonnes of incremental fertiliser use on maize in 2005/6 and 2006/7 respectively, equivalent to approximately 15,000 and 24,000 tonnes of nitrogen.

Tables showing descriptive statistics and estimates of coefficients with different models are appended. A major difficulty arises because of correlation (or multi-collinearity) between hybrid maize area and nitrogen use. This makes it very difficult for models to separate out the impacts of increased hybrid area from the impacts of increased nitrogen. Difficulties are also presented by the negative correlation between nitrogen rate and previous season production per capita, and positive correlation between time and nitrogen use and hybrid area. More sophisticated modelling may be able to address some but not all of these issues.

Incremental production estimated with the different methods is shown in the table B1.

Table B1. Alternative estimates of incremental production from the subsidy programme

	('000 MT)	
	2005/6	2006/7
Model		
L1***	431	893
L2***	330	737
L3***	155	346
L4***	293	655
C1**	223	318
C2**	186	320
Agronomic*	246	394

Notes: There is no allowance for possible changes in total maize area induced by the programme

* no explicit or implicit allowance for changes in OPV or hybrid areas

** implicit allowance for changes in hybrid areas

*** explicit allowance for change in % hybrid area in 2006/7

The different models and approaches yield a wide range of estimates of incremental production from the subsidy in each year, and this demonstrates the difficulty in making reliable estimates of incremental production resulting from the subsidy programme. All estimates agree that the 2006/7 maize seed and fertiliser subsidy impacts on production are very much higher than those of 2005/6 (the increased hybrid area is an important factor in this), but determining precise estimates of the increment resulting from the subsidy programme is difficult. The agronomic estimates ignore the effect of increased area under hybrid in 2006/7 which is presumably a result of the subsidised hybrid seed. It also ignores the effects of other possible benefits of subsidised fertiliser even if it is displacing cash sales – for example households not having to go for *ganyu* to earn the cash to buy fertiliser, or having more cash to employ *ganyu* for weeding. We therefore very tentatively conclude that for the purposes of immediate estimates the subsidy of fertiliser and maize seed has yielded an increment of between 300,000 and 400,000 tonnes of incremental maize production in 2005/6, and between 600,000 and 700,000 tonnes of incremental maize production in 2006/7³⁰. Such a wide margin of error in the estimates is very unsatisfactory, and it is hoped that further work on this and results from the household survey to be conducted later in the year will allow more accurate estimates of incremental production.

³⁰ Taken at face value these estimates may seem to suggest very high returns to incremental N. However as discussed in Annex A, incremental fertiliser use on maize may be greater than gross incremental fertiliser use, due to switching, and there may also be other ways in which access to subsidised fertiliser allow farmers to improve their crop management.

Regression Estimates

Linear / quadratic production functions

Descriptive Statistics

	Mean	Std. Deviation	N
TotYield	1.1592	0.297	22
LocalWRI	0.889	0.155	22
HybridWRI	2.33	0.373	22
NitRate	0.0247	0.00676	22
Hybrid%Ar	0.210	0.112	22
Last Prodn per capita	0.179	0.0494	22
time	11.50	6.494	22

Correlations (n=22)

		TotYield	LocalWRI	HybridWRI	NitRate	Hybrid%Ar	Prev Prod /capita	time
TotYield	Pearson Correlation	1	.653(**)	.629(**)	.333	.462(*)	-.328	.221
	Sig. (2-tailed)		.001	.002	.130	.030	.136	.323
LocalWRI	Pearson Correlation	.653(**)	1	.945(**)	-.119	-.036	-.022	-.059
	Sig. (2-tailed)	.001		.000	.599	.874	.923	.796
HybridWRI	Pearson Correlation	.629(**)	.945(**)	1	-.060	.019	-.147	.007
	Sig. (2-tailed)	.002	.000		.791	.932	.514	.977
NitRate	Pearson Correlation	.333	-.119	-.060	1	.814(**)	-.619(**)	.823(**)
	Sig. (2-tailed)	.130	.599	.791		.000	.002	.000
Hybrid%Ar	Pearson Correlation	.462(*)	-.036	.019	.814(**)	1	-.403	.808(**)
	Sig. (2-tailed)	.030	.874	.932	.000		.063	.000
Last Prodn per capita	Pearson Correlation	-.328	-.022	-.147	-.619(**)	-.403	1	-.409
	Sig. (2-tailed)	.136	.923	.514	.002	.063		.059
time	Pearson Correlation	.221	-.059	.007	.823(**)	.808(**)	-.409	1
	Sig. (2-tailed)	.323	.796	.977	.000	.000	.059	

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Model L1: Dependent Variable: TotYield, Adj R² = 0.76

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-2.409	0.860	-2.800	0.013
HybridWRI	2.780	0.865	3.215	0.006
Hybrid%Ar	1.813	0.547	3.314	0.005
time	-0.036	0.010	-3.499	0.003
HybWriSq	-0.609	0.215	-2.839	0.013
NitRateLoc	72.190	24.441	2.954	0.010
NitRateHyb	-18.402	9.535	-1.930	0.073

Model L2: Dependent Variable: TotYield, Adj R² = 0.729

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-1.913	1.052	-1.818	0.087
LocalWRI	6.135	2.745	2.235	0.039
NitRateHybAr	77.091	16.455	4.685	0.000
time	-0.027	0.010	-2.772	0.013
LocWriSq	-3.089	1.709	-1.807	0.088

Model L3: Dependent Variable: TotYield, Adj R² = 0.567

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	-.167	.275	-.607	.551
HybridWRI	.479	.115	4.177	.001
NitRateHybAr	36.174	11.284	3.206	.005

Cobb Douglas production functions

Descriptive Statistics

	Mean	Std. Deviation	N
LnYield	.1123	.28487	22
LnLocWR1	-.1366	.19930	22
LnHybWR1	.8318	.18884	22
LnNRate	-3.7433	.30615	22
LnHyb	-1.7685	.74427	22
LnPrev	-1.7618	.30937	22
LnT	2.2032	.82216	22

Correlations (n=22)

		LnYield	LnLocWR1	LnHybWR1	LnNRate	LnHyb	LnPrev	LnT
LnLocWR1	Pearson Correlation	.733(**)	1	.943(**)	-.160	-.152	.018	-.165
	Sig. (2-tailed)	.000		.000	.477	.500	.935	.462
LnHybWR1	Pearson Correlation	.747(**)	.943(**)	1	-.107	-.089	-.101	-.091
	Sig. (2-tailed)	.000	.000		.637	.694	.655	.686
LnNRate	Pearson Correlation	.222	-.160	-.107	1	.834(**)	-.578(**)	.854(**)
	Sig. (2-tailed)	.322	.477	.637		.000	.005	.000
LnHyb	Pearson Correlation	.244	-.152	-.089	.834(**)	1	-.419	.864(**)
	Sig. (2-tailed)	.274	.500	.694	.000		.052	.000
LnPrev	Pearson Correlation	-.345	.018	-.101	-.578(**)	-.419	1	-.403
	Sig. (2-tailed)	.116	.935	.655	.005	.052		.063
LnT	Pearson Correlation	.121	-.165	-.091	.854(**)	.864(**)	-.403	1
	Sig. (2-tailed)	.592	.462	.686	.000	.000	.063	

** Correlation is significant at the 0.01 level (2-tailed).

Model C1: Dependent Variable: LnYield, Adj R² = 0.614

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	0.195	0.489	0.399	0.694
LnHybWR1	1.176	0.206	5.716	0.000
LnNRate	0.284	0.127	2.234	0.038

Model C2: Dependent Variable: LnYield, Adj R² = 0.666

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
LnNRate	0.236	0.044	5.333	0.000
LnHybWR1	1.197	0.195	6.129	0.000