

EVALUATION OF THE 2008/9 AGRICULTURAL INPUT SUBSIDY PROGRAMME, MALAWI

Report on Programme Implementation

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Andrew Dorward, Ephraim Chirwa, Rachel Slater

1. Introduction

This paper, part of a set describing different aspects of the 2008/9 agricultural input subsidy, reviews the processes of subsidy implementation, first describing the procedures and achievements in procuring and selling subsidised inputs, and then comparing this with information from different stakeholders to investigate access to and use of subsidised inputs by different beneficiaries.

Implementation of the subsidy programme involves a large number of complex and very significant logistical and organisational tasks with critical seasonal deadlines. Major tasks are shown in figure 1. This is a highly simplified summary, with a complex set of activities needed for the completion of each task. These are very large scale tasks requiring interactions between various stakeholders. In 2008/9 this involved selection of over 2.5 million beneficiaries from between 2.5 and 3.5 million registered farm households, printing and distribution of nearly 6 million coupons, and purchase and distribution of over 3.4 million bags of fertiliser and of nearly 2.6 million bags of seed – all to tight deadlines, to roughly 50% of Malawi’s farmers (a significant number of whom are illiterate or semi-literate) widely dispersed across the whole country, some in remote and poorly accessible areas, with the constant temptation and threat of fraud or theft of highly valuable commodities worth approximately MK40 billion (nearly US\$300 million) in total, with each fertiliser coupon worth more than 10% of annual household income for the more than 40% of the population below the poverty line.

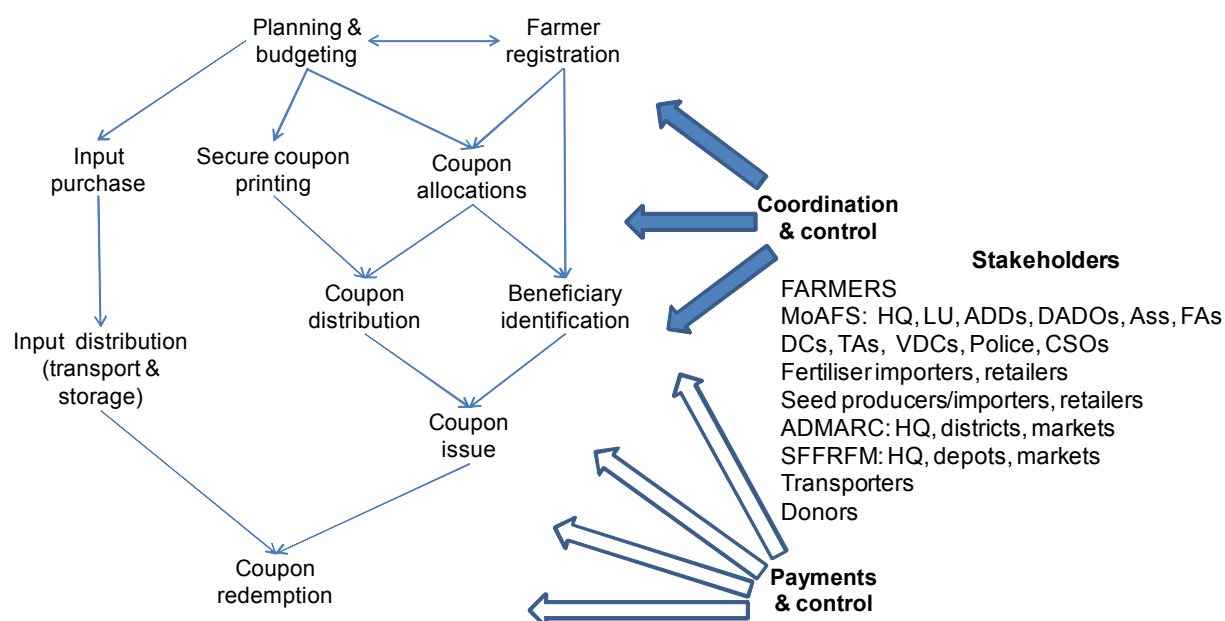


Figure 1. Major tasks in programme implementation

Information on implementation achievements is obtained from five major sources: implementation reports (predominantly the Logistics Units weekly reports and its annual report), focus group discussions conducted by the evaluation team with different stakeholders (Ministry of Agriculture and local government staff, retailers, and rural people) in 8 selected districts, the household survey conducted by the evaluation team with a sample of 1,982 households across 14 districts and representing all livelihood zones, a retailer survey conducted by the evaluation team with a sample of 230 retailers in 6 districts, and reports by other organisations on different aspects of subsidy programme implementation – notably the report by Chinsinga, 2009. We consider and compare information from these sources on the major tasks and stages of programme implementation in terms of input (seed and fertiliser) procurement, beneficiary identification and coupon distribution, and coupon redemption. It has not been possible to obtain information on disbursement or costs of subsidised grain storage and cotton chemicals, and these are not considered in this report.

2. Fertiliser procurement

In contrast to the two previous years, fertiliser procurement was entirely the responsibility of government as there were no retail sales of subsidised fertiliser procured by private companies.

Despite delayed parliamentary approval of the budget, planning and tendering for fertiliser importation and procurement for SFFRFM supplies was conducted earlier than in previous years, and bidding documents were issued in April 2008 for public opening in early June. A tender evaluation committee recommended awards in mid June. The actual awards were announced at the end of July 2008 (a little earlier than in previous years) for purchase of 137,831 MT which together with 32,847 MT from previous year stock held under the “buy back” scheme provided a total of 170,678 MT fertiliser available for the 2008/9 subsidy programme. Subsequent failure or delays in contract delivery led to new or extended contracts for fertiliser supply amounting to 185,728 MT (excluding the buy back), and final supply to the programme of 218,462 MT made up of 185,758 MT new procurement and 32,704 MT from the buyback (which was 143 MT less than anticipated). The breakdown of this by region and fertiliser type is given in table 1. This table shows that 88% of the new procurement was supplied by private importers and only 12% by SFFRFM. This represents a considerable increase in private sector imports over previous years – in both 2006/7 and 2008/9 private sector imports were just under 100,000 MT and just over 70% of imports. The figures reported above and in table 1 exclude a further 24,500 MT of fertilisers ordered for flood relief.

Table 1 Fertiliser procurement and availability by region and type (MT)

	Fertiliser	NPK	UREA	D Comp.	CAN	Total	% new supply
<i>Southern Region</i>	New procurement	30,770	37,706	1,708	1,728	71,911	
	Buy back stock	9,704	3,197	418	860	14,180	
	Sub total	40,475	40,903	2,126	2,588	86,091	
<i>Central Region</i>	New procurement	33,315	41,055	5,941	5,718	86,029	
	Buy back stock	5,443	856	1,722	0	8,020	
	Sub total	38,757	41,911	7,663	5,718	94,050	
<i>Northern Region</i>	New procurement	11,024	12,761	2,350	1,682	27,817	
	Buy back stock	4,176	6,091	221	16	10,504	
	Sub total	15,200	18,852	2,571	1,698	38,321	
<i>National</i>	New procurement	75,109	91,522	9,999	9,128	185,758	
	Buy back stock	19,323	10,144	2,361	876	32,704	
	Sub total	94,432	101,666	12,360	10,004	218,462	
	<i>New procurement</i>						
	SFFRFM supply	20,918	2,000	0	0	22,918	12%
	Private sector supply	54,191	89,522	9,999	9,128	162,840	88%

Source: Logistics Unit, 2009

Fertiliser deliveries began in August and continued through to January. Table 2 shows cumulative November and December deliveries, uplifts and sales of NPK as percentages of total deliveries, uplifts and sales (which commenced at the beginning of November). Thus by the end of November only 72% of final NPK deliveries had been received at Chirimba in the southern region, and only 75% of final NPK deliveries received at Chirimba had been uplifted from Chirimba to retail markets. These represented 77% of final Southern Region NPK sales. End of October figures are much lower. Since NPK is supposed to be applied as a basal dressing at planting time, and planting rains arrive in the Southern Region in late October or early November, deliveries of only 56% and 75% of NPK to retail markets by the end of October and November respectively have potentially serious consequences for timely planting and fertiliser application and hence yields if this delays sales. In 2007/8 much of the Southern Region received planting rains at the end of October. This was not the case in a number of areas in 2008/9, which did not receive planting rains until November.

Table 2. Timing of NPK fertiliser deliveries and sales

	October	November	December
Southern region			
Cumulative depot deliveries as % final*	51%	72%	95%
Cumulative depot uplifts as % final	56%	75%	92%
Cumulative depot uplifts as % final sales	57%	77%	94%
Cumulative sales as % final sales	0	50%	76%
Central region			
Cumulative depot deliveries as % final*	49%	70%	88%
Cumulative depot uplifts as % final	59%	78%	93%
Cumulative depot uplifts as % final sales	60%	78%	93%
Cumulative sales as % final sales	0	21%	79%
Northern region			
Cumulative depot deliveries as % final*	45%	58%	76%
Cumulative depot uplifts as % final	48%	53%	66%
Cumulative depot uplifts as % final sales	55%	61%	76%
Cumulative sales as % final sales	0	9%	43%
NATIONAL			
Cumulative depot deliveries as % final*	49%	69%	91%
Cumulative depot uplifts as % final	55%	72%	87%
Cumulative depot uplifts as % final sales	58%	75%	91%
Cumulative sales as % final sales	0	33%	72%

* Excluding buy back stocks

Source: Logistics Unit, 2009 and Logistic Unit weekly reports

The timing of fertiliser uplifting from depots to markets and of fertiliser sales are not determined only by the timing of fertiliser procurement and distribution, but also by the timing of coupon distribution and of the opening of markets. Indeed, late sales and limited secure storage capacity at markets prevented uplifting from depots, and sales delays therefore led to delays in uplifting, and this in turn led to storage problems at depots. We discuss the timing of sales later, but first note a number of other issues and ways that the tender process might be improved:

- Delays in award of tenders increase risks of price rises for those tendering, and since such risks will be built into tender prices, they tend to inflate prices. Risks were particularly high in 2008 as both fertiliser and fuel prices had been rising dramatically in the period leading up to the tender submissions. In the period June 2006/7 to June 2008/9 international urea prices

(bulk E Europe) increased by 265% (from just over \$200/mt to \$760), DAP prices increased by 340% (from just under \$270/mt to \$1,185) and oil by about 95%. In the same period average delivered fertiliser prices for the AISP rose by around 160% (from \$490 to \$1260/mt), and the difference between the international price and the delivered price for urea (representing a margin, transport and importation costs) rose by 78% (from \$280 to \$500/mt). Margins and margin increases are lower on prices averaged across urea and phosphate fertilisers, but precise figures are difficult to estimate due to lack of specific published international prices for 23:21:0 (a simple average of urea and DAP prices give a margin increasing by 15% from \$250 to \$290/mt over the same period – with a 10% fall in 2007/8).

- One might expect late contract awards to lead to some inflation of contract prices if international fertiliser prices are fairly stable. However international fertiliser prices peaked just about the time that the initial tenders were awarded. Urea prices rose by 20% from June to July 2008, and in September were still 10% above June prices. In October they dropped dramatically to 64% of June prices, with a further fall to 40% of June prices in November. Phosphate prices peaked earlier with international DAP prices in July only just above June prices, and in September they started falling, to 82% of June prices in October, and 52% in November. If later contracts led to new importation then, prices in these contracts might be significantly lower than the June tender prices. However if late contracts were looking for quick supplies, then this would call on private companies holding excess stocks in the country (as a result of lower than expected demand due, for example, to high prices and companies' late exclusion from contracts for retail supply subsidised fertiliser) and these stocks would have been imported earlier at higher prices. This would be consistent with the lack of any dramatic price changes between initial and later contracts.
- Late delivery of tendered supplies was common and posed problems to the procurement process. In order to reduce these problems tender contracts should include penalty clauses for late delivery of contracted amounts.
- Rapid payment of suppliers is important for reducing supplier costs and hence anticipated costs for future contracts. The rate of payment of invoices in 2008/9 was similar to that in 2007/8 when measured in terms of total outstanding invoice amounts as percentage of total invoices at the end of November, December, and January. However the high fertiliser prices in 2008/9 meant that outstanding amounts in MK were much higher in 2008/9 (MK3,500, MK3,690 and MK7,700 million for each month in 2008/9 as compared with MK1,595, MK1,190 and MK2,620 million for the same months in 2007/8).
- Delays in uplifting and sales could have been delayed by slow contracting of transporters for uplifting. Requests for bids were not issued until mid August and contracts were not awarded until early September. In the event this did not delay sales: late beneficiary selection and issue of coupons were more of a problem in many areas.
- Transit losses of fertilisers were generally recovered from transporters but the loss of MK 15,813,215 for 126MT was not recovered.
- Transport costs of MK 42,045,643 were incurred due to imbalances of 2,875 MTS between deliveries to depots and their sales requirements. These could have been avoided by earlier reconciliation of supplies and needs.

3. Seed procurement

As in the two previous years, seed procurement was entirely the responsibility of private seed companies. Seed companies negotiated with the government that farmers should be able to buy

seed with a seed coupon without any cash top up, and that these coupons would be redeemed by government for a price of MK 680/coupon. Seed companies were then responsible for stocking retail outlets (Agrodealers, input supply shops, and ADMARC and SFFRFM markets) with 2kg packets of hybrid seed or 4kg packets of OPV seed for redemption by farmers. Flexi vouchers could also be redeemed for cotton legume seed although supplies of legume seed were very limited.

4. Coupon printing, allocation and distribution

The process of coupon allocation involved updating a register of all farm households, local (village) processes of selection of beneficiaries, allocation of coupons by district and within district by EPA, printing of coupons, distribution to districts, and issue of coupons to beneficiaries. These have to be coordinated as regards the determination of numbers of beneficiaries identified and of coupons to be printed and issued, and this needs to match input procurement.

Registers of farm households in all districts were updated and confirmed in the field from May to the end of August (with funding in arrears from DFID). This information formed the basis of an initial allocation of coupons in early September by district for maize and tobacco packages, the former comprising three coupons (for a bag of maize seed, NPK, and urea), the latter comprising two coupons (for a bag of D compound and of CAN). District allocations were subdivided by EPA and village using the farm family register in each district, and the EPA and village allocations were distributed to DADOs together with blank registration forms for entry of beneficiary names. This allowed beneficiary identification to start in late September, though a number of districts reported that this was hampered by lack of funds. Allocations within Districts did not generally follow the EPA and village allocations specified.

Beneficiary identification was conducted in public meetings facilitated by a multi stakeholder team including Ministry of Agriculture staff, religious leaders, VDC members, local government, police and civil society representatives. Beneficiary lists were compiled from this, by village and EPA, and these were then aggregated at district level and checked by the Logistics Unit against allocations before distribution registers were printed with beneficiary names by village and delivered to the Ministry of Agriculture Subsidy Coordinator (from late October to early December). However, further complications arose from subsequent substantial changes to district allocations in December and January. Table 3 shows the initial (September) and final (January) fertiliser and seed allocations by region (appendix 1 contains the same information by district).

As in previous years there is some unevenness between districts and regions as regards initial and supplementary allocations per household. Initial allocations of maize and tobacco fertiliser vouchers were relatively evenly distributed across regions, but the northern region got a larger per household allocation of supplementary vouchers. Mzimba, Thyolo, Mwanza and Mulanje districts had particularly high overall allocations of NPK and Urea vouchers per household. Supplementary allocations tended to balance out over - or under- initial allocations with the exception of Mzimba (where there was over compensation for an initial low per household allocation), Dedza and Lilongwe (where initial slightly low allocations were followed by very low supplementary allocations), Thyolo (where a large supplementary allocation followed an initial allocation that was already above the national average) and Nsanje and Chikwawa (where both initial and supplementary allocations of maize fertilisers were low due to lower emphasis on maize cultivation and fertiliser in those districts). A further 11,000 Urea coupons for issue to smallholder tea growers in Mulanje and Thyolo districts and 4,000 coupons each of NPK and Urea for issue to smallholder coffee growers in the Northern Region are not included in the above allocation.

Table 3 initial (September) and final (January) fertiliser and seed subsidy allocations

	Initial (September) allocation				Extra allocation (Dec, Jan)		Final (January) revised allocations	
	NPK, Urea (each)	Maize Seed	CAN, D comp.	Flexi -seed	NPK, Urea (each)	Maize Seed	NPK, Urea (each)	Maize Seed
Total vouchers								
Northern	166,526	166,526	43,208	135,275	153,856	32,370	320,382	198,896
Central	551,441	551,441	114,459	411,891	99,879	20,230	651,320	571,671
Southern	652,033	652,033	42,002	452,835	129,951	61,181	781,984	713,214
National	1,500,000	1,500,000	200,000	1,000,001	253,686	0	1,753,686	1,500,000
Total MT								
	(both)		(both)		(both)			
Northern	16,652.6	NA	4,320.8	NA	15,385.6	NA	32,038.2	NA
Central	55,144.1	NA	11,445.9	NA	9,987.9	NA	65,132.0	NA
Southern	65,203.3	NA	4,200.2	NA	12,995.1	NA	78,198.4	NA
National	150,000.0	NA	20,000.0	NA	25,368.6	NA	175,368.6	NA
Vouchers/farm family								
Northern	0.70	0.35	0.18	0.28	0.64	0.07	1.34	0.42
Central	0.70	0.35	0.15	0.26	0.13	0.01	0.83	0.36
Southern	0.81	0.40	0.05	0.28	0.16	0.04	0.97	0.44
National	0.82	0.41	0.11	0.27	0.14	0.00	0.96	0.41

National total includes unallocated vouchers excluded from regions

Source: calculated from Logistic Unit Final Report, Farm family database.

Actual coupon distribution and access depended on the implementation of the formal allocation processes described above and on access to any other coupons not reported in the above processes. An initial printing of coupons was compromised by the discovery in early November of a substantial security breach in coupon printing. New much more secure coupons were then printed for use in the Central and Northern Regions where coupon distribution had not yet started. Coupon allocations detailed in table 3 were then bundled up with beneficiary lists and despatched to districts, where they were rebundled by EPA and village. Very tight security measures were taken to prevent theft of coupons in this process. Multi stakeholder teams then went out to villages where beneficiary names were read out from the register and beneficiaries were given coupons in public meetings. However it is not clear how additional district coupon allocations (as detailed in table 3) were allocated to beneficiaries. The Logistic Unit Final Report states that (as in previous years) substantially more coupons than indicated under the formal allocations as detailed in table 3 above were printed and available for distribution.

5. Coupon redemption and input sales

Coupon recipients then took their coupons for redemption at retail outlets. Fertiliser coupons had to be redeemed at ADMARC or SFFRFM markets with the payment of MK800, but seed coupons could be redeemed without payment at agrodealers and other input sellers who had made arrangements with seed suppliers for seed coupon redemption, as well as at ADMARC or SFFRFM markets. Sales occurred when suppliers had stocks and beneficiaries had coupons, starting from early November and continuing into early February.

Reported fertiliser and seed sales are detailed in table 4.

Table 4 Subsidised fertiliser and seed sales

Region	Maize fertilisers* (MT)		Tobacco fertilisers * (MT)		Total * (MT)	Total** (MT)	Seed vouchers**	
	NPK	Urea	D comp.	CAN			Maize	Flexi
North	14,829	15,756	1,944	2,154	34,683	36,752	229,335	109,686
Centre	32,781	32,905	5,573	5,708	76,967	77,443	584,439	462,228
South	40,968	41,178	1,631	2,071	85,848	88,083	747,555	444,696
Total	88,578	89,839	9,148	9,933	197,497	202,278	1,561,329	1,016,610

*Fertiliser breakdown from weekly monitoring figures

**Other figures from Logistic Units Final Report

Two similar but different sets of sales fertiliser figures are presented. Fertiliser sales broken down by type of fertiliser are obtained from monitoring of market sales. Aggregate sales are calculated from deliveries to markets less end of season balances reported from markets. The former may be underestimated as a result of un-reported sales, while the latter may over report sales as a result of unreported balances. The true figure will therefore lie between the two.

With the seed coupons, farmers purchased 4532 MT of hybrid seed, 833 MT of OPV seed, and 435 MT of cotton seed, and they also redeemed 86 packs of bean seed, 9 packs of groundnut seed, and 221 packs of pigeon pea seed.

Table 5 compares coupon redemptions from table 4 with the coupon allocations reported in table 3. Some crossing of regional boundaries may have occurred between the Centre and North, but not with the South (as noted above the South was using different coupons). Over redemption of maize fertiliser coupons is observed in the South, and of seed coupons in all three regions. District breakdowns are not possible due to the significant number of vouchers issued without district identifiers.

Table 5 Coupon redemptions as % of allocations

Region	NPK & Urea *	CAN & D comp. *	Total fertiliser**	Maize Seed**	Flexi seed**
Northern	95.5%	94.8%	101.1%	115.3%	81.1%
Central	100.9%	98.6%	101.1%	102.2%	112.2%
Southern	105.0%	88.1%	106.9%	104.8%	98.2%
National	101.7%	97.8%	103.5%	104.1%	101.7%

*Fertiliser breakdown from weekly monitoring figures

**Other figures from Logistic Units Final Report (2009)

Logistics Unit security checks on redeemed coupons issued in the Central and Northern Regions detected just under 45,000 counterfeits (2%) and just over 12,000 with duplicate numbers (0.5%). We discuss later an alternative estimate of unrecorded and counterfeit coupons.

We consider in the following sections different stakeholders' perceptions of the implementation process, and estimates of coupon distribution to use of coupons by different categories of rural people.

6. Total coupon distribution

Total coupon disbursement and inputs sales as reported by the Logistics Unit were described above. We now compare these figures with estimates from the household survey. Table 6 gives estimates of total coupon receipts from the household survey.

Table 6 Household survey estimates of total coupon receipts

	Fertilisers, 2008/9			All fert. 2007/8	Seeds, 2008/9		
	Urea & 23:20	CAN & D Comp.	Total fert.		Maize Seed	Flexi - seed	Total seed
<i>1. Coupons received per hhold</i>							
Northern region	1.46	0.19	1.65	1.25	0.70	0.04	0.74
Central region	0.93	0.09	1.03	0.89	0.48	0.01	0.49
Southern Region	1.00	0.06	1.08	0.87	0.57	0.02	0.59
National	1.02	0.09	1.12	0.92	0.55	0.02	0.57
Lower 95% confidence limit	0.95	0.07	1.04	0.84	0.50	0.01	0.51
Upper 95% confidence limit	1.09	0.11	1.20	1.00	0.60	0.03	0.63
<i>2. Total coupons received, NSO/MVAC population est. ('000)</i>							
Northern region	445	59	504	371	213	13	226
Central region	947	94	1,057	886	496	10	506
Southern Region	1,168	76	1,258	992	668	28	696
National	2,540	224	2,794	2,235	1,369	50	1,419
Lower 95% confidence limit	2,331	167	2,556	2,011	1,216	29	1,245
Upper 95% confidence limit	2,748	281	3,032	2,458	1,523	71	1,594
<i>3. Total coupons received, MoA population est. ('000)</i>							
Northern region	697	92	789	580	334	21	354
Central region	1,458	145	1,627	1,365	764	15	779
Southern Region	1,616	105	1,740	1,372	924	39	963
National	3,734	330	4,108	3,285	2,013	74	2,087
Lower 95% confidence limit	3,427	246	3,757	2,957	1,787	43	1,830
Upper 95% confidence limit	4,040	413	4,458	3,613	2,238	105	2,343
<i>4. MoA Voucher allocations ('000)</i>							
Northern region	641	86	727	N/A	199	135	334
Central region	1,303	229	1,532	N/A	572	412	984
Southern Region	1,564	84	1,648	N/A	713	453	1,166
National	3,507	400	3,907	4,320	1,500	1,000	2,500
<i>5. MoA Voucher redemptions ('000)</i>							
Northern region	612	82	735	740	229	110	339
Central region	1,314	226	1,549	2,060	584	462	1,047
Southern Region	1,643	74	1,762	1,531	748	445	1,192
National	3,568	382	4,046	4,331	1,561	1,017	2,578

Sources: 2009 survey, MoAFS Farm Household Register, 2008 Preliminary census report, Tables 4 & 5.

Table 6 is presented in five panels. The top panel shows the coupons received per rural household estimated from the household survey. These estimates are then multiplied by the estimated number of farm families to calculate total coupons received by region and nationally. A difficulty arises, however, as a result of substantial differences between rural population estimates used by the National Statistical Office on the one hand and by the Ministry of Agriculture and Food Security on the other.

The NSO estimates of the total number of rural households are based on the 2008 census. Ministry of Agriculture and Food Security figures are derived from farm household registrations by agricultural field staff. There are very substantial differences between the two figures. NSO census figures adjusted using MVAC livelihood zone data give estimates of just under 2.5 million rural families outside peri-urban and urban and protected areas in 2008, while the Ministry of Agriculture and Food Security estimate is just under 3.7 million farm families (nearly 50% more than the census estimate). The second and third panels of table 6 therefore show two sets of regional and national coupon receipts, one calculated with NSO population estimates and the other calculated with Ministry of Agriculture and Food Security estimates. These are substantially different.

If the NSO population estimate is correct then this suggests a very significant number of 2008/9 fertilizer coupons did not reach the rural people for whom they were intended. If however the Ministry of Agriculture and Food Security farm family figure is correct then there is still a discrepancy between Ministry of Agriculture estimates of coupon redemption and the survey estimate, and the survey slightly overestimates total coupon allocations, but this is within the 95% confidence limits of the estimate. 2007/8 coupon allocations reported in the household survey were considerably lower than those reported for 2008/9, but are similar to those reported for 2006/7 (SOAS et al, 2008), and show a considerable discrepancy from those reported as disbursed by the Ministry of Agriculture and Food Security. There appears to be over-reporting of maize seed coupon receipts if MoAFS population estimates are used, but if we allow for likely confusion in reporting between maize seed coupons and flexi-coupons used for maize seed, then the combined figures are more consistent.

A very quick and limited indicative check on the differences in NSO and MoAFS population estimates was conducted in conjunction with the household survey, with a complete listing of households in three enumeration areas. Unfortunately it was not possible to compare numbers of households listed with those from the 2008 census or from the MoAFS farm register, due to differences in area boundaries. However the 2008 listing was compared with the 1998 census household count inflated by the district population growth from 1998 to 2008 for each site. The 2008 listing was just over 35% more than the listing predicted by the NSO figures (53% and 58% higher for two sites in the Southern region, and 7% higher for one site in the Central region). Although interesting, these results cannot be considered as having any statistical validity. We consider later evidence on the number of farm families from an analysis of coupon and fertiliser distribution, receipts, purchases and sales. This suggests that the number of farm families is unlikely to be more than 3.1 million. This suggests substantial diversion of coupons, which again is discussed later.

In the FGD's, coupon numbers in 2008/9 were reported as higher and lower than 2007/8 in different districts (Lilongwe in particular was noted as having a lower allocation – and this is borne out by the low allocation per household in appendix 1). In the community survey a small (3%) fall in total coupon allocations in sample villages was reported overall, but this was not distributed evenly across regions, with reported coupon receipts rising by 7% in the southern region, and falling by 10% and 20% respectively in the north and centre. However the proportion of households estimated as receiving coupons was lower by about 10% in the North and Centre, but about the same in the South. In the household survey respondents indicated that the number of coupons had increased in 2008/9 (as indicated in table 6 above), but at the same time a more general view was that the number of coupons was declining (see table 12 below). It is possible that in addition to differences in changes between areas, some of the divergent views may be the result of differences in treatment and perception between initial and supplementary coupon allocations.

7. Coupon targeting

Tables 7 and 8 provide some information about the distribution of coupons within the rural population. Table 7 shows the proportion of households receiving different numbers of fertiliser

coupons, and the mean number of coupons received by those households receiving coupons, for different categorisations of households. A number of points of interest arise from this.

- Nationally 65% of households are estimated to have received one or more maize fertiliser coupons, and across all categories this does not drop below 54%. As with the 2006/7 survey, community leaders consistently report a lower percentage of households as recipients.
- Many households (36%) are only receiving only one coupon. As with the 2006/7 survey, this is less common in the north. This is discussed further below.
- Although significant proportions of households in all the categories identified below receive coupons, receipt of coupons does vary across categories and seems to be higher for households in the northern region and for male headed households (though the different here appears to have declined since 2006/7), to increase with increasing food security, and to increase with increasing subjective welfare status. Conversely it is lower for female headed households and for less food secure and for households with lower subjective welfare.

Table 7. Fertiliser Coupon receipts by region, gender & age of head, and food security & subjective welfare status

Coupons	Sample size	Urea and/or 23:20					Mean/ recipient	CAN and/or D Comp.					Mean/ recipient
		0	0.5	1	2	>2		0	0.5	1	2	>2	
North	380	28%	0%	14%	50%	8%	2.03	87%	0%	7%	6%	0%	1.52
Centre	719	35%	3%	39%	20%	3%	1.42	93%	0%	5%	2%	0%	1.27
South	883	33%	2%	37%	24%	3%	1.49	95%	1%	3%	1%	0%	1.26
National	1982	33%	2%	36%	25%	3%	1.52	93%	1%	4%	2%	0%	1.32
Male headed	1459	34%	2%	34%	26%	4%	1.55	93%	0%	4%	2%	0%	1.36
Female headed	523	32%	3%	41%	22%	2%	1.45	93%	1%	4%	2%	0%	1.19
Working age head	1530	35%	2%	35%	25%	3%	1.53	93%	0%	4%	2%	0%	1.33
Elderly head	435	28%	4%	38%	0%	30%	1.49	95%	1%	3%	2%	0%	1.26
Maize for 0-3 months	195	43%	3%	38%	16%	1%	1.32	94%	2%	3%	1%	0%	1.01
Maize for 4-7 months	753	30%	4%	41%	25%	1%	1.40	94%	0%	4%	2%	0%	1.39
Maize for 8-10 months	449	27%	2%	35%	31%	5%	1.60	91%	1%	5%	3%	0%	1.32
Maize for >10 months	434	36%	1%	30%	28%	6%	1.77	93%	1%	3%	3%	0%	1.33
Poor	391	40%	5%	38%	17%	1%	1.31	95%	0%	4%	1%	0%	1.09
Ovutika	745	30%	3%	36%	28%	3%	1.50	93%	1%	4%	2%	0%	1.27
Ovutikilako	518	30%	2%	38%	26%	5%	1.56	93%	0%	3%	3%	0%	1.53
>=wapakatikati	298	36%	1%	28%	28%	7%	1.80	91%	6%	3%	0%	0%	1.33

Some of these differences are explored further in table 8 which shows mean gender of household head, land ownership, asset ownership, food security and subjective welfare. There is a general trend for means of variables associated with wealth to rise among households receiving more coupons – a situation also observed in the 2006/7 survey. An additional aspect of this in the 2009 survey is that the most significant differences are found between households with 0.5 to 1 coupons and those with more than 1 coupon – there are either higher means or more variation among households with zero coupons. One may hypothesise from this that the redistribution of coupons which leads to households getting one coupon is from poorer households and/or to poorer households – and in the second aspect may be more effective in targeting poorer household than the formal distribution process.

This observation raises important questions about targeting and coupon allocation and distribution processes, to which we now turn.

Table 8 Mean Attributes of Households by number of Fertilizer subsidy coupons Received, 2008/9

	Fertiliser Coupon numbers per hh					Sig.
	Zero	0.5 to 1	1.5 to 2	More than 2	All	
% hhold female headed	1.26	1.31	1.24	1.17	1.27	*
Owned Area in ha	1.16	1.09	1.48	2.17	1.27	**
Value durable assets (MK)	19,621	15,630	20,340	28,111	18,702	
Value Livestock assets (MK)	18,689	22,947	41,807	58,946	28,699	*
Total Value livestock & durable assets (MK)	38,150	38,098	61,590	87,058	47,025	*
Subjective score of hh food consumption over past 12 months	1.5	1.5	1.6	1.7	1.5	*
Subjective score on welfare	2.3	2.2	2.5	2.8	2.3	**
Month after harvest that maize ran out	7.2	7.1	7.9	8.6	7.4	*

*= one or more differences significant at p=0.05, ** = one or more differences significant at 0.01

Since 2006/7, targeting criteria have placed more explicit emphasis on the provision of coupons to more vulnerable households – emphasising child headed, female headed or orphan headed households, those infected or affected with HIV and AIDS, guardians or carers of vulnerable people, being resource poor Malawians and owning land. However continuing difficulties are faced in applying these criteria to targeting. We discuss these difficulties in terms of processes and outcomes.

In the focus group discussions, respondents reported that the provision of a targeting guidance booklet (covering process and criteria) was a valuable tool for open meetings. There were, however, significant difficulties in applying these as the targeting criteria remain wide, perhaps too wide to be a useful tool for allocating coupons. In Zomba, communities were asked to identify those unable to purchase unsubsidised inputs, caregivers for orphans, the elderly, widows or women-headed households, the disabled and those that will not sell the coupon after receiving it. There were many people in the villages who fitted these criteria, but very few of them were able to get coupons. *“when we say ‘the well to do’ here in the village, that group is very small while the rest are poor and poorest...so what we are complaining about is that only a few proportion of the vulnerable group get coupons...what will the others do?...this is why we have said we did not have enough food during this season because people did not harvest very well last season...it would have been better if all the vulnerable we select get coupons”*(Women’s Focus Group Discussion, Zomba, March 2009). Some people recognise the tensions (contradictions) in the targeting criteria but others do not. Thus in Karonga, criteria identifying labour-constrained vulnerable groups were in use together with criteria identifying those with productive capacity. A significant difficulty arises in identifying poorer, more vulnerable who can also afford the redemption fee for coupons.

Fundamental difficulties in targeting therefore arise because of

1. ambiguities, tensions and contradictions among different targeting criteria, related to
2. difficulties in clearly establishing measures for applying these criteria, both of these being related to
3. large numbers of households apparently deserving of coupons relative to the number of coupons available.

8. Allocation and distribution processes

An important innovation in 2008/9 was the introduction of 'open meetings' during the registration and distribution process. The introduction of open meetings appears to have had two objectives:

- a) To ensure that AISP beneficiaries (and non-beneficiaries) are adequately informed about the operation of the AISP and have realistic expectations; and
- b) To include households in the targeting process, removing targeting power from TAs and village headmen and giving it to the community itself.

On the whole the response to the use of open meetings to inform people about the project was positive. In Karonga and Kasungu, it was argued that the open meeting allocation and open meeting distributions helped in reducing struggles and conflicts since people were more aware of how things were being done. However, even where open meetings reduced tension, they did not necessarily mean that village members actively took place in targeting. Often, community participation in targeting decisions was actually limited as a village development committee (usually made up of village headmen and elites) selected beneficiaries from the list of registered households. For example in Chikwawa a focus group discussion with women revealed that they had no understanding of how decisions were reached about who in their village was included in the AISP, and they had not participated in targeting decisions.

It appears from the FGD information that a key factor of the success of open meetings was whether coverage had increased or decreased compared to the previous year. In Lilongwe targeting was difficult because allocations were reduced. However separation of registration from distribution was helpful because it allowed time for people to find out where they stood.

Progress made in targeting the main / first set of allocated coupons was significantly undermined when supplementary coupons were allocated. A worryingly high proportion of respondents reported that supplementary coupons were being distributed based on the choices of traditional leaders, and in other cases, by politicians. In Karonga, respondents indicated and accepted the fact that there were supplementary coupons but they said that these coupons followed a more political channel than the first coupons, coupons distributed by political figures like MPs, party chairpersons and mainly targeting their supporters and party sympathizers.

Chinsinga (2009) reports similar tensions and difficulties, noting that the use of open meetings was widely recognised as improving matters, but also that many problems remained as regards targeting criteria (as noted above), inadequate coupons relative to need, and significant inclusion and exclusion errors relative to targeting of more vulnerable households. Procedural difficulties arose due to lack of systems for accountability and raising grievances, and some reported corruption among stakeholders involved in implementing the programme.

Difficulties with the process are highlighted by mixed views about who should benefit from the programme, even among rural people. These are illustrated by different views put forward by focus group discussion participants in Chikwawa, who disagreed about whether more productive or more vulnerable households should be targeted with the following arguments:

- *'Coupons should go to the poorest of the poor.'*
- *'It should target everybody because if the well do are sidelined they will not offer ganyu to the poor hence the poor will not be able to purchase fertiliser and seed.'*
- *'They should give some to the well to do, the not so well to do and poor. This will help the poor to see how the others are doing in terms of farming.'*

- *'If the coupons are few they should target female headed households especially those looking after orphans. They should also target the elderly.'*
- *'No, they should target only those who are going to use the coupons because the poor have no money. They will just keep it.'*

A key lesson from this is one that goes beyond the implementation of the AISP. There is a range of programmes in Malawi that span agriculture and social protection that are unclear about the implications of labour-constraints in households for poverty and vulnerability. In some programmes the rationale for targeting is based on an argument that the poorest in Malawi have no labour, whilst others target the poor on the basis that they have productive potential. Without clarity, targeting will continue to result in dissatisfaction and the linkages between different programme will remain contradictory.

Observations in the FGDs and reported by Chinsinga on the coupon allocation and distribution systems are supported by survey respondents' observations summarised in tables 9 and 10, which show respectively the proportion of households reporting particular coupon allocation and distribution processes in their villages, and the relative importance of different stakeholders in these processes.

Table 9. Frequency of coupon allocation and distribution methods by coupon type

Coupon type	Region	Open meeting for:		Subsequent redistribution	Supplementary allocation
		allocation	Distribution		
Fertilizer voucher	North	88%	99%	41%	52%
	Central	71%	97%	56%	7%
	South	88%	95%	32%	8%
	Total	81%	96%	43%	12%
Maize seed voucher	North	88%	99%	24%	32%
	Central	72%	96%	37%	2%
	South	89%	97%	26%	8%
	Total	82%	97%	31%	8%
Flexi seed voucher	North	72%	80%	12%	14%
	Central	66%	86%	31%	1%
	South	58%	63%	14%	3%
	Total	63%	75%	21%	4%

Table 9 suggests that open meetings were widespread for initial allocation and (particularly) distribution of fertiliser and maize seed coupons – they were less common but still widespread for flexiseed coupons. Subsequent redistribution (by the community after external distribution according to the register) did occur in a significant proportion of cases, particularly in the central region (this matches the extent of households reporting receipt of one coupon, though the regional pattern of occurrence differs). There was little awareness of subsequent supplementary allocations except in the north – this might be due to greater transparency and or a greater proportion of supplementary coupons issued in the north. Redistribution and supplementary allocations were also less common for flexiseed coupons. The same question was asked in the community survey with similar responses as regards the widespread use of open meetings for coupon allocation and distribution. Subsequent redistribution of fertiliser coupons was however considered to be less important in the north (reported in only 22% of communities) and more important in the Centre and South (where it was reported in 78 and 89% of communities respectively). This regional pattern is more consistent with the pattern of households reporting receipt of one coupon, though suggests a higher level of sharing than is reported.

Table 10 shows that agricultural extension staff are perceived to be important in meetings for allocation (particularly in the South, and less in the Centre) and almost universally play an important role distribution of coupons. However they are not perceived to be much involved in subsequent distribution or in supplementary allocation (except in the North where they were present and played an important role in 40% of the responses). The importance of VDC members varies with roughly equal responses across 'playing an important role', 'being present but unimportant', and 'not being present at allocation and distribution meetings' - although they were almost universally present at distribution meetings in the north they were not considered to play an important role. Headmen/TA's were generally present and played an important role in allocation and distribution meetings (particularly in the South and least in the Centre). Where redistribution occurred (most commonly in the Centre) they generally played an important role in it, and this was particularly the case in the Centre and South. Local politicians were not considered important in any of the four processes (but were reported as marginally more involved in allocation and distribution meetings in the South). 'Others' (police and other officials) are seen as important in the distribution meetings in just under 50% of responses. Respondents in the community survey reported greater involvement of village headmen in the allocation of supplementary coupons in the Centre and South.

Table 10. Importance of different stakeholders in coupon allocation and distribution methods

<i>Stakeholders</i>		Open meeting for:		Subsequent redistribution	Supplementary allocation
		Allocation	distribution		
<i>agric. extension staff</i>	North	1.96	1.10	2.54	2.14
	Central	2.18	1.14	2.74	2.94
	South	1.54	1.26	2.64	2.89
	Total	1.86	1.19	2.67	2.83
<i>vdc members</i>	North	1.61	1.67	2.42	2.29
	Central	1.98	1.97	2.42	2.91
	South	1.75	1.77	2.58	2.90
	Total	1.84	1.85	2.49	2.84
<i>headman/ta</i>	North	1.45	1.49	2.40	2.19
	Central	1.70	1.60	2.01	2.88
	South	1.34	1.29	2.43	2.86
	Total	1.50	1.45	2.24	2.79
<i>local political leaders</i>	North	2.89	2.87	2.95	2.96
	Central	2.83	2.76	2.94	2.99
	South	2.62	2.59	2.89	2.98
	Total	2.74	2.69	2.91	2.98
<i>Other</i>	North	2.42	1.94	2.70	2.89
	Central	2.66	1.89	2.68	2.97
	South	2.54	1.97	2.79	2.95
	Total	2.58	1.93	2.73	2.96
<i>Scores</i>	<i>1 = present and important</i> <i>2= present but not important</i> <i>3 = not present</i>				

Table 11 presents answers to questions where respondents were asked to score the extent to which particular types of household were more or less likely to gain coupons. The results show no clear perceptions of particular target or beneficiary groups. No strong differences were observed between the perceptions of people in different areas, or between male and female headed households (although there is a greater tendency for respondents in the North and a lower tendency in the South and among female respondents to suggest that more disadvantaged people have a greater chance of getting coupon). Community survey respondents were also asked which particular groups

of people were intended beneficiaries. Poorer and female headed households and those with orphans were generally considered as intended beneficiaries, particularly in the south and north. These findings are consistent with the pattern of coupon receipts reported by households (as summarised in tables 7 and 8), with the focus groups discussions, and with Chinsinga's findings.

Table 11 Likelihood of getting coupons

	Region			Household head		Total
	North	Central	South	Male	Female	
Poor people	1.70	1.74	1.83	1.75	1.86	1.78
Female headed households	1.80	1.93	1.91	1.88	1.97	1.91
More productive farmers	2.17	2.17	1.98	2.11	1.99	2.08
Households with orphans	1.77	1.85	1.88	1.83	1.92	1.85
Better off households	2.33	2.26	1.99	2.17	2.05	2.14
Civil servants and teachers	2.51	2.27	2.09	2.23	2.11	2.20
VDC members	1.86	2.08	1.76	1.92	1.88	1.91
Elderly / sick people*	1.03	1.29	1.59	1.37	1.59	1.46
Chiefs/ headmen & their relatives*	1.34	1.00	1.00	1.03	1.00	1.02

Scores: 1 = more likely; 2= no difference; 3 = less likely

* These categories were volunteered by 13% and 1% respectively of respondents as 'other categories' and were generally only mentioned by respondents who considered them to be more likely to get coupons.

9. Perceptions on total coupons and systems over time

It was reported earlier that the focus group discussions suggested that the open meetings in 2008/9 were generally considered to have been an improvement over previous methods. Table 12 shows respondents' perceptions of different aspects of programme implementation over the four years of its implementation.

Table 12 . Scoring on different programme elements by year & alternative targeting systems

	2005/6	2006/7	2007/8	2008/9
Number of coupons	2.96	3.02	3.07	3.16
Timing of distribution	2.73	2.73	2.56	2.01
Methods of coupon distribution	2.89	2.94	2.97	2.81
Criteria for coupon allocation		2.95	2.92	2.83
Coupon allocation targeting the poor (100kg fertiliser)				2.42
Coupon allocation targeting the productive (100kg fertiliser)				3.88
Coupons for all households with half the amount (50kg fertiliser)				2.69

Scores : 1 = very good; 2= good; 3 = not good not bad; 4 = bad; 5 = very bad

Rising scores for the number of coupons indicate a perception that the number of coupons is falling. This perception appears to be strongest in the central region and (unsurprisingly) among households who did not receive coupons in 2008/9 (not shown in the table), while in the south there is a perception that the situation has been improving or remaining constant. Falling (and low) scores for the timing of coupon distribution indicate a perception that this has improved over the four years, particularly in the south and centre in 2008/9. Views on changes in methods of coupon distribution and criteria for allocation are mixed. Although there is no clear overall impression of improvement

or deterioration, there is a perception in the Centre that this has deteriorated (except in 2008/9), while in the north and South it is considered to have improved somewhat. It may be difficult to separate concerns about methods from overall numbers of coupons – those who did not receive coupons in 2008/9 reported a perception of decline in approval of methods and criteria for coupon allocation, particularly in 2008/9.

As regards alternative targeting of poor or productive households, or a smaller but universal package, targeting the poor receives the most approval, closely followed by smaller package provided to all households. Both these are scored more highly than those experienced over the last four years, while focussing on productive households is considerably less popular than systems implemented in the last three years. Female headed households and those who did not receive coupons in 2008/9 express a stronger preference for these methods. Given the difficulties with targeting discussed earlier, it is not clear how targeting of the poor could be achieved

In the focus group discussions there were mixed views on whether coverage ought to be increased by decreasing coupon size to cover 25 kg instead of 50 kg bags. Many argued that, since there is already dilution, reducing bag size further would have a serious effect on yields. Others suggested that, given that so many people who met the targeting criteria were excluded, smaller bags would be fairer.

10. Access to coupons and timing

Just over 5% of fertiliser coupons were reported as being obtained with some payment (the same as reported in the 2006/7 survey but lower than the 14% reported by Holden and Lunduka, 2010). Reported sources of such fertiliser included TAs and headmen (approximately 20% of cases), agricultural staff (5%), VDC members (20%), traders (10%), and others - mainly fellow farmers (45%). Reported prices varied dramatically, with MK100 to 200 paid to agricultural staff and higher prices to others (with a median of MK2,000, but higher and lower prices also reported – Holden and Lunduka, 2010, report a median price of MK2,500). Community survey respondents reported higher prices for coupons being bought, 4,500MK to 5,000MK in the North and Centre but around 1500MK in the South. These prices were considerably higher than prices reported for the 2007/8 season (400MK to 500MK in the South, 1,000MK in the North and 2,500MK in the Centre, and MK1,500 reported by Holden and Lunduka, 2010).

An important aspect of access to coupons is the timing of their distribution. As reported earlier (see table 12), timing of coupon distribution was considered to have improved in 2008/9, particularly in the South and Centre. Specific information on the time of coupon receipt was collected from survey respondents and in the community survey. Community survey respondents reported a greater proportion of communities receiving the first distribution of coupons in the first of November in 2008/9 in the South (63% compared with 49% in 2007/8), a greater proportion receiving coupons by the end of November in 2008/9 in the Centre (84% compared with 68% in 2007/8), but a slightly lower proportion receiving coupons by the middle of December in 2008/9 in the North (63% compared with 69% in 2007/8). Timings for 2008/9 reported by the household survey are a little later, with 69% and 65% of coupons received by the end of November in the South and Centre respectively, and 68% by the end of December in the North. These include coupons distributed in the first and second rounds are earlier than reported in the 2006/7 survey (equivalent figures were 54%, 49% and 45%).

The overall story from the qualitative evidence in the Focus Group discussions was that in most places the distribution of coupons was timely. Most beneficiaries had coupons before or as the rains began. The main exceptions to this were districts, or parts of districts, where allocations were

reduced and the community refused to participate in targeting (because the allocation had been reduced and so many people would be excluded despite meeting the targeting criteria).

An important implication for timing is that, because many households have to resort to ganyu or work on public works programmes in order to get the cash required to redeem their coupon, the poorest households need to receive their coupon sooner to give them time to find and complete work:

'Others only got fertiliser in January or even February. They just went to ADMARC to get their seeds in December because the seed was for free and then they waited until they could get money to buy fertiliser' (Women's Focus Group Discussion, Lilongwe, March 2009)

Timely distribution was not however found everywhere. Participants in Karonga said that coupons were distributed in December which they considered late because by this time planting rains had already come and some people recycled maize seed while those who had some money bought unsubsidised seed. The qualitative evidence suggests, however, that whilst there are numerous examples of fertiliser and seeds not being available, these are a) not found across whole districts, indicating idiosyncratic rather than systemic failures in the system or b) associated with the availability of specific products.

11. Coupon use and redemption

The vast majority of fertiliser coupons are reportedly used to buy fertilisers – 97% for maize fertilisers and 94% for tobacco fertilisers (though only 90% of tobacco fertiliser coupons in the Centre). The balance was given away to neighbours or relatives (1% of maize fertiliser coupons) or sold (4% tobacco fertilisers in the Centre) and not used (2% of maize and tobacco fertilisers in the centre and south, 4% of tobacco fertilisers). For 4% of fertilisers a secondary use was identified as 'given away to neighbours or relatives'. Almost all the maize and cotton seed coupons were used to buy seed (94%), the balance being not used (all of the cotton seed) or given away. Only 12% of cotton chemicals coupons were used to obtain chemicals (none in the centre), the balance being given away. 80% of flexi-coupons were reported to be used for obtaining seed, the balance being given away or unused (15%).

Reasons for not redeeming coupons varied with the type of coupon and region, and for maize fertilisers and maize seed very small numbers were not redeemed. For maize fertilisers reasons for not redeeming coupons were fairly evenly divided between coupons being lost or stolen, there not being stock, lack of money, and other reasons (for example administrative difficulties or sickness). With tobacco fertilisers the dominant problem was lack of supply of inputs – of CAN in the centre. Lack of chemicals in stock was the overwhelming reason given for not using the cotton chemical coupons and for 80% of the 20% of flexi-coupons not used. The very limited reports of coupon selling (also reported by Holden and Lunduka, 2010) provide a lower estimate of selling than found in the community survey, where it was considered not to occur at all in only 80% (70% in the central region), with it occurring 'rarely' in just over 15% of communities and 'commonly' in 7% (16% in the Centre). Chinsinga reports that although some selling of coupons was found in most areas, the practice was less widespread than the previous year, and beneficiaries were more likely to sell inputs once they had been redeemed.

Focus group discussions emphasised that selling of coupons was the only option for poor people who could find any way to raise the cash needed to redeem coupons. In Karonga, for example, it was reported that some people sold coupons because they couldn't find the money to redeem it while others sold it because they did not have any use of it – for example some not growing crops

received coupons. Coupons were reported as costing about MK4,000 and MK5,000 (consistent with community survey information presented earlier).

The focus group discussions also suggested that there appear to be gender differences in the sale of coupons with sale being carried out mainly by men. It was proposed in a number of women's focus group discussions that it would be better for women to be receiving coupons on behalf of their households because it would then be assured that the coupon will be used for its intended purpose, and cases of coupon selling would be reduced. It may also be the case that more men than women sell coupons because it is risky and women tend to be more risk averse.

Of the inputs obtained with coupons, the vast majority were reported to be used on the respondents' plots. None were reported sold, and small numbers of respondents reported holding over maize seeds (OPV and hybrid) for the next crop. 1% of maize fertiliser obtained through coupon redemptions were reported as shared with others. Chinsinga however reports more common sale of subsidised inputs by beneficiaries either to meet immediate subsistence needs or (in areas like Salima and Chikwawa) because they did not consider that their soils needed fertilizer. As noted later, examination of low price fertiliser purchases and reported fertiliser use suggests that between 10 and 20% of inputs are resold or shared among smallholders.

Coupon redemption is affected by costs of redemption (in terms of input prices, side payments, time spent waiting and travelling, and other travelling costs) and by the ability and willingness of beneficiaries to incur those costs.

In the household survey, 14% of maize and tobacco fertiliser coupons were reported to require payment of 'tips' for redemption above the official 800MK redemption price (this compares with 20% reported in 2006/7). Reported extra payments ranged from 50MK to over 1,000MK, with the most common (5% of all coupons) being 200MK (a total cost of 1,000MK for redemption and 'tip'). Virtually no extra payments were reported for other coupons.

Community survey respondents suggested a greater occurrence of the need for farmers to pay 'tips', particularly in the Centre, with their 'often' being required in 37% of communities (49% in the centre and only 18% in the north), 'seldom' being required in 19% of communities, and 'never' being required in 44% of communities (32% in the Centre and 65% in the North). Overall a median tip of 200Mk per bag was reported, with a higher figure of 450MK in the Centre. As compared with 2007/8, the reported frequency of tipping has hardly changed but a very significant reduction is reported in the North and an increase in the Centre. The same median of 200MK per bag was reported across the country as a whole and in the South, but a lower figure of 100MK was reported for the North and the median for the Centre was higher than in the rest of the country, but at 300MK per bag not as high as in 2008/9. Focus group discussions also suggested that the payment of bribes to redeem inputs was more widespread than is suggested by the survey results. Focus groups suggested that this was closely related to problems of queuing, as will be discussed later. Chinsinga also reported 'tips' of 200MK to 800MK per bag of fertiliser being demanded by some ADMARC staff (with those unable to pay being required to wait two or three days before they were served); extortion of cash from beneficiaries by criminal elements to 'facilitate' input acquisition; and organised theft through tricking farmers.

Table 13 presents summary data on reported distances to buy inputs, time spent buying inputs, and costs for transport and miscellaneous expenses. This does not show major differences between regions. The greater distances to markets and larger differences in distances to ADMARC and private selling points tend to be in less populous areas and are thus masked in aggregation at national and regional levels. Distances to actually redeem coupons were greater where inputs were not stocked in the nearest outlet. Distances to the nearest private sector outlet were somewhat greater than distances to ADMARC/SFFRFM, particularly in the northern region. The lower time

travelling and waiting for inputs in the north is difficult to explain. Key informants in the community questionnaire suggested that distances were larger (median 8km, mean 10 km overall for ADMARC outlets and median 10km, mean 15 km overall for private company outlets and). Times, expenses and distances reported for 2008/9 were all higher than those reported for 2006/7.

Table 13. Reported distances to buy inputs, time spent buying inputs, and costs for transport and miscellaneous expenses.

	Hours travel & waiting		Transport and misc expenses (MK)		Distance to nearest ADMARC (km)		Distance to nearest private selling point (km)	
	mean	median	mean	median	mean	median	mean	median
Northern region	11	8	347	200	6	5	16	11
Central region	18	9	352	200	7	6	14	10
Southern Region	17	9	251	150	12	4	15	6
National	17	9	304	200	9	5	14	8
2006/7: National	13	7	247	150	7	5	7	5

Community survey respondents reported on the frequency of stock-outs for different inputs, and these are summarised in table 14.

Table 14. Mean scores on frequency of stock outs by input by region

	Fertiliser				Seed				
	23:21	Urea	D comp.	CAN	Hybrid	OPV	Beans	Gnuts	Soya
North	1.45	1.29	1.52	2.00	1.29	2.00	NA	1.27	NA
Centre	1.82	1.41	2.29	2.19	1.34	1.81	2.88	2.81	2.66
South	2.01	1.99	1.73	1.74	1.11	1.06	NA	NA	NA
All	1.84	1.66	1.93	1.97	1.23	1.71	2.52	2.32	NA

Mean scores: 1 mostly available; 2 somestock outs; 3 frequent stockouts

Source: Community survey

'Some' or 'frequent' stockouts are noted overall for all inputs with the exception of hybrid seed. Particular difficulties were reported for D comp and CAN in the Centre, for 23:21 and Urea in the South (which also had a higher incidence of stock-outs in 2006/7), and for legume seeds. Focus group discussions noted similar shortages: for CAN and D compound and for legume seed. 23:21:0 was also reported as scarce. This was often associated with difficulties in restocking – fertiliser would come once to a market and then not be replenished. This was sometimes exacerbated by the use of particular centres for all farmers from specific areas – while this appeared to improve coordination of coupon distribution, it all limited farmers' ability to move around to source supplies from other markets. This varied with different systems being adopted in different areas. Choice of hybrid seed variety as also limited in some areas – but nevertheless some beneficiaries tried new seeds that they found to be successful. Some respondents suggested that problems with availability were due to the reduced number of outlets where coupons could be redeemed because of the exclusion of the private companies, and this also exacerbated queuing problems.

As noted earlier, focus group discussions and Chinsinga related the incidence of 'tips' and inflated fertiliser prices to the existence of queues, with queues being both a cause and result of demands for 'tips' (as queues encouraged some farmers to offer and sales staff to demand 'tips' for rapid service, and demands for 'tips' which were not met led to farmers waiting for late service). Queues were associated with limited availability of some inputs. About 75% of outlets suffered from

frequent major queues (a similar proportion to that found for ADMARC and private sector suppliers in 2006/7) An important point about queues is that their impact is greatest on poor people, as for some the additional payments to overcome the queues and limited time available made it impossible to redeem coupons. Similar points are made by Chinsinga who states that nevertheless stakeholders generally considered that there were fewer input redemption problems as compared

Finally we consider how households who received coupons found the cash needed to redeem them. Table 15 summarises reports by recipients of coupons in the household survey, though problems of fungibility often make it difficult to identify precisely how a cash expenditure is financed. The table shows that most households used general savings and ganyu was also important. Investigation of differences by household characteristics shows variation in the relative importance of different sources, with greater reliance on gifts by female headed households, and falling dependence on savings and rising reliance on gifts and ganyu for more food insecure and lower welfare households. The same applies to a lesser extent to reliance on public works programmes and safety nets.

Table 15 Primary sources of cash for input purchase by region, gender & age of head, and subjective welfare & food security status (% coupon recipient households)

	savings	loan	gift	pwp/safety net	ganyu	other
North	83%	0%	4%	0%	7%	6%
Centre	79%	1%	4%	2%	11%	3%
South	73%	3%	5%	1%	13%	5%
National	77%	2%	4%	1%	11%	4%
Male headed	81%	2%	2%	1%	11%	4%
Female headed	66%	3%	11%	1%	13%	6%
Poor	60%	5%	9%	3%	19%	5%
ovutika	76%	2%	5%	1%	12%	4%
Ovutikilako	86%	1%	1%	0%	8%	3%
>=wapakatikati	84%	0%	3%	1%	6%	7%
Maize for 0-3 months	59%	5%	9%	2%	21%	4%
Maize for 4-7 months	75%	2%	4%	1%	13%	4%
Maize for 8-10 months	84%	1%	3%	1%	9%	2%
Maize for >10 months	81%	2%	5%	1%	5%	7%

Source: AISS

Focus group discussions reported similar ways in which people accessed cash to redeem their coupons – and also selling livestock (like chickens, goats and pigs), selling maize they were storing, and remittances from children. Remittances were important but only for a limited number of beneficiaries.

Income from safety nets was important for those who got access to safety nets – mostly public works in the form of road construction for MASAF. Both men and women got access to safety nets, but only limited numbers (less than 20 households) in any given villages were selected to participate. Households usually received 10 or 12 days of work each year and were paid K200 / day. Over the last two years, some public works had shifted payment type. In Mzimba, participants were paid in-kind (a bag of fertiliser and a some seed) in 06/07 whilst in 07/08 they received cash (K2,400 for 12 days of work). It was not clear whether this was a explicit attempt to make safety net income help

poor households get cash to redeem their coupons (sometimes public works took place before coupon distribution, and sometimes after) or whether this was part of a broader trend towards cash rather than in-kind payments among various social protection programmes in Malawi.

There were other examples of safety nets, including food distributions by WFP and NGOs, and school feeding programmes. Households that benefitted from these safety nets still faced the problem of getting access to cash. They frequently resorted to the (distress) sale of small livestock.

There were very few examples of households accessing credit to help them redeem coupons. In Phalombe, World Vision was offering credit to support fertiliser purchase but local officials expressed concerns that, because they were an international NGO, defaulting rates would be high.

Whilst respondents recognised the importance of safety nets in providing cash that could be used to redeem coupons, they cautioned against linking the AISP **targeting** to safety nets. They argued that this was only a feasible strategy if coverage of safety nets was higher. There were good reasons to link **timing** of safety net provision with the AISP and to continue to make safety net payments in cash rather than in-kind. This would result in vulnerable groups being empowered financially through the safety net programme to enable them to purchase subsidised inputs. This then requires that safety net programmes should be taking place in good time before coupon distribution so that people have the money when receiving the coupons and also have time to plan on how they will buy the inputs. Timely payment for safety net work is then doubly important.

The timing of the safety net programme, not just of payment, is also important: if it is out of step with the AISP it has limited positive effect:

This [the safety net] comes in bad time because it came when people were suppose to be taking care of their crops in the garden. The poorest suffered a lot because most of them they do not share their time properly and because most of the time they do not eat so they feel weak, so its hard for them to go in the afternoon to farm, some instead they go to do ganyu to find food for their households. The averaged mostly do not go got these programmes because they know they have money they can buy whatever they want at anytime (Men's focus group discussion, Zomba, March 2009).

In the absence of safety nets, the poorest farmers have difficulties in participating in the programme. As one respondent noted

The [AISP] program targets the poorest but the poorest have problems in even getting the K800 to buy the 50kg bag of fertilizer. Most of them could rather buy maize with that K800 to seed their families. Some farmers who received the coupon were not able to buy fertilizer up to now, their crops will go without fertilizer this year. The government should put in place other programs during the rainy season that could provide money for the poorest farmers so that the can be able to buy fertilizer.

Beyond safety nets, there were three other outcomes:

- First, as was common in 2006/07, participants said that for those people who could not find money to redeem the coupon but still wanted to buy inputs, they could look for someone who had enough money to redeem the coupon and then share the bag in half. Others in similar situations just sold the coupon to buy food or drink beer
- Second, when attempts to get cash were not always successful some coupons simply went unused.
We still have them. We have no money to buy fertilisers. We only got the seed because it is free. We do not know anyone who managed to buy a bag of fertiliser (Women's Focus Group Discussion, Chikwawa, March 2009)
- Finally, as noted earlier, for other poor people who could not get their hands on cash, selling was the only option.

12. Input purchases and use

Respondents' reports of input purchases allow estimation of total subsidy and unsubsidised acquisitions. Table 16 presents these estimates for 2007/8 and 2008/9, and compares subsidy purchases with those reported by the Logistics Unit. As with estimation of total coupon distribution (see table 6), different estimates are obtained with NSO and MoAFS estimates of rural households and for 2008/9 the fertiliser sales estimates obtained using the MoAFS farm family estimates appear to be broadly comparable with recorded subsidy sales. However more detailed examination of the figures shows internal discrepancies with higher (MoAFS) estimates of farm family numbers. These discrepancies are not so great for 2007/8, but even with MoAFS farm family numbers the estimated 2007/8 subsidy sales are substantially below (75% of) recorded sales. Receipt of fertiliser coupons reported by respondents in 2007/8 was also 75% of MoAFS allocations (see table 6).

The discrepancies between years may be explained either by failures of recall when respondents were asked in May/June 2009 about coupon allocations and fertiliser purchases in October to December of 2007, and/or by significant leakage of coupons and subsidised fertilisers away from smallholders in 2007/8 – more than in either 2006/7 or 2008/9. Unsubsidised fertiliser sales, however, are reported to have fallen from 2007/8 to 2008/9, consistent with high fertiliser prices. This does not suggest that farmers' recall bias is a major cause of the low 2007/8 estimates of subsidised purchases. The change in unsubsidised fertiliser sales should also not be due to higher 2008/9 displacement of unsubsidised by subsidised sales, as subsidised fertiliser volumes were lower and distribution of coupons earlier in 2008. Attention should not be paid to changes in tobacco fertiliser volumes by themselves as there are very high margins of error around these estimates.

It should be noted that unsubsidised purchases include purchases (and indeed gifts) from neighbours, relatives, traders, and the local market as well as from ADMARC, SFFRFM, private input suppliers companies and agro-dealers. In 2008/9 traders, relatives/ neighbours, local markets, ADMARC/SFFRFM and private companies accounted for 20%, 8%, 9%, 16% and 46% respectively of reported unsubsidised acquisitions, with broadly similar proportions reported in 2007/8. However if we distinguish between low and high price acquisitions in 2008/9 (where low price is less than 150Mk/kg, with much of this expected to be reselling of subsidised fertilisers) then the share of traders, relatives/ neighbours, and local markets rises by about 10% points while the share of ADMARC/SFFRFM and private companies fall to 7% and 25% respectively. Private companies account for 53% of higher (standard) price sales. Low price unsubsidised acquisition amounted to just under 40% of all unsubsidised acquisition and just over 31% of reported subsidised acquisition – these figures are higher (just over 70% and just under 40% respectively) in the South. The extent of low price sales may give some indication of the extent of reselling of subsidised inputs, but it should be noted that reselling of subsidised inputs leads to potential double counting across subsidised and unsubsidised acquisition if farmers acquire subsidised inputs and then share them or sell or give inputs, rather than coupons, to others. Comparison of reported fertiliser purchases and reported use suggests that purchases and receipt by smallholders of gifts and resold subsidised fertiliser represent 28% of total subsidised fertiliser purchases by smallholders (Holden and Lunduka, 2010, estimate just under 15%, but estimate higher trade in coupons, with a similar figure of around 30% of total smallholder subsidised fertiliser use coming from coupons received by others).

Turning to consider seed sales, survey estimates of total subsidised purchases of hybrid seed based on MoAFS population estimates are broadly consistent with Logistics Unit reports for both 2007/8 and 2008/9 (for 2008/9 LU reports lied between survey estimates based on NSO and MoAFS population estimates). There are however very low survey estimates of OPV use, it is not clear why. Estimates of other seed sales are not shown in table 16 as variation between sample areas as regards seed availability for legumes and cotton makes survey estimates highly variable. There is significant unsubsidised acquisition of legume and local maize seed among farmers.

Table 16 Household survey estimates of total input purchases

Input purchases	Subsidised (redeemed with coupons)						Unsubsidised (purchased without coupons)						Total					
	Fertiliser			Seed			Fertiliser			Seed			Fertiliser			Seed		
	Maize	Tobacco	Total	Hybrid	OPV		Maize	Tobacco	Total	Hybrid	OPV		Maize	Tobacco	Total	Hybrid	OPV	
2008/9																		
Kg per hhold	47.8	4.3	52.0	1.8	0.0		38.2	5.5	43.7	2.1	0.0		86.0	9.7	95.7	3.9	0.1	
Lower confidence limit	43.7	3.0	46.7	0.8	0.0		28.5	3.3	31.8	1.7	0.0		72.2	6.3	78.5	2.5	0.0	
Upper confidence limit	51.8	5.5	57.4	2.8	0.1		47.9	7.6	55.5	2.5	0.0		99.8	13.1	112.9	5.3	0.1	
Total '000MT, NSO pop. est	119.3	10.6	129.9	4.6	0.1		95.5	13.7	109.1	5.3	0.1		214.8	24.3	239.1	9.8	0.2	
Lower confidence limit	109.1	7.4	116.6	2.0	0.0		71.2	8.3	79.5	4.3	0.0		180.3	15.8	196.1	6.3	0.0	
Upper confidence limit	129.5	13.8	143.3	7.1	0.2		119.7	19.0	138.7	6.3	0.1		249.2	32.8	282.0	13.4	0.3	
Total '000MT, MoAFS pop.	175.4	15.6	191.0	6.7	0.1		140.3	20.1	160.4	7.7	0.1		315.7	35.7	351.5	14.4	0.2	
Lower confidence limit	160.4	10.9	171.4	3.0	0.0		104.7	12.3	116.9	6.3	0.0		265.1	23.2	288.3	9.2	0.1	
Upper confidence limit	190.4	20.3	210.7	10.5	0.2		176.0	27.9	203.9	9.2	0.2		366.4	48.3	414.6	19.6	0.4	
LU Recorded sales ('000MT)	178.4	19.1	197.5	4.5	0.8													
2007/8																		
Kg per hhold	42.6	1.9	44.5	0.7	0.0		37.5	11.0	48.5	1.7	0.0		80.0	12.9	92.9	2.4	0.0	
Lower confidence limit	38.2	1.2	39.4	0.6	0.0		26.0	2.6	28.6	1.4	0.0		64.3	3.8	68.0	2.0	0.0	
Upper confidence limit	46.9	2.6	49.5	0.8	0.0		48.9	19.5	68.4	2.0	0.0		95.8	22.1	117.9	2.8	0.1	
Total '000MT, NSO pop. est	106.3	4.7	111.1	1.7	0.0		93.6	27.5	121.1	4.3	0.0		199.9	32.3	232.2	6.0	0.1	
Lower confidence limit	95.5	3.0	98.6	1.4	0.0		65.0	6.4	71.4	3.5	0.0		160.5	9.4	170.0	4.9	0.0	
Upper confidence limit	117.2	6.5	123.6	2.0	0.1		122.1	48.7	170.8	5.1	0.1		239.3	55.1	294.4	7.0	0.1	
Total '000MT, MoAFS pop.	156.3	7.0	163.3	2.5	0.0		137.5	40.5	178.0	6.3	0.1		293.9	47.5	341.4	8.8	0.1	
Lower confidence limit	140.4	4.4	144.9	2.1	0.0		95.6	9.4	105.0	5.1	0.0		236.0	13.9	249.9	7.2	0.0	
Upper confidence limit	172.2	9.5	181.8	2.9	0.1		179.5	71.6	251.1	7.4	0.1		351.8	81.1	432.8	10.3	0.2	
LU Recorded sales ('000MT)	193.0	23.6	216.6	2.9	2.6													

Finally in our consideration of input use, table 17 shows the percentage of fertiliser coupons of different types by the crops the fertiliser was used on. Almost all subsidised 'maize fertilisers' were used on maize (slightly above 50% on hybrid maize) but only about 50% of subsidised 'tobacco fertilisers' were applied to tobacco, the remainder being applied to maize.

Table 17 Use of fertiliser by crop and coupon type

	23.21.0+4S	Urea	CAN	D Compound
Local maize	46%	41%	29%	13%
Hybrid maize	51%	57%	37%	24%
Burley tobacco	2%	1%	34%	63%

13. Technical advice

Proper use of subsidised seed and fertiliser is an important determinant of the impact of the AISP. Table 18 compares reported receipt of advice from field assistants by survey respondents categorised in different ways. The percentage of respondents reporting receipt of advice in the 2006/7 season is somewhat lower than in the survey conducted in 2007 (14% compared with 22%) but a higher proportion of the advice was perceived as useful (over 60% as compared with 50%), with the result that the percentage of farmers reporting receipt of useful advice is similar across the two surveys (9% in 200/9 as compared with 11% in 2006/7).

Table 18 Receipt and quality of technical advice from Field Assistants by coupon recipient by region, gender & age of head, and subjective welfare & food security status (% households)

	All households				Fertiliser coupon recipients				Maize coupon recipients			
	% hh with advice	Scoring of advice	% hh with advice	Scoring of advice	% hh with advice	Scoring of advice	% hh with advice	Scoring of advice	% hh with advice	Scoring of advice	% hh with advice	Scoring of advice
North	31%	3.3	32%	3.3	32%	3.4	34%	3.3	34%	3.5	36%	3.4
Centre	10%	3.3	10%	3.3	13%	3.4	12%	3.4	13%	3.4	12%	3.5
South	14%	3.2	14%	3.2	17%	3.2	16%	3.3	18%	3.3	17%	3.4
National	14%	3.2	14%	3.3	17%	3.3	17%	3.3	19%	3.4	18%	3.4
Male headed	16%	3.2	16%	3.2	19%	3.2	19%	3.3	19%	3.2	19%	3.4
Female headed	11%	3.4	10%	3.4	11%	3.4	11%	3.4	16%	3.4	15%	3.6
Poor	10%	3.0	8%	3.0	12%	3.3	9%	3.5	16%	3.4	13%	3.6
ovutika	14%	3.3	14%	3.4	16%	3.4	16%	3.3	18%	3.5	17%	3.4
Ovutikilako	17%	3.3	18%	3.2	20%	3.3	20%	3.4	20%	3.4	21%	3.4
>=wapakatikati	17%	3.2	19%	3.3	21%	3.3	22%	3.4	22%	3.5	23%	3.5
Maize for 0-3 months	7%	2.7	7%	3.0	9%	2.7	9%	2.9	11%	2.5	10%	2.6
Maize for 4-7 months	14%	3.3	14%	3.4	15%	3.4	15%	3.5	18%	3.6	17%	3.7
Maize for 8-10 months	17%	3.2	17%	3.2	20%	3.2	19%	3.3	19%	3.2	19%	3.3
Maize for >10 months	15%	3.3	16%	3.3	19%	3.4	19%	3.3	22%	3.5	22%	3.4

Scores: 1= useless; 2= not very useful; 3= average; 4=useful.

Table 18 shows important variation in receipt of advice by different types of household, with female headed, food insecure and lower welfare households receiving less advice. Differences in perceptions of the quality of advice are mixed. Recipients of coupons appear to receive more advice.

Chinsinga notes that farmers and extension workers considered extension messages are to be satisfactory, but that while farmers requested extension worker visits there are large numbers of vacant extension posts and that in response the MoAFS is introduce more pluralistic and demand driven extension services in collaboration with other stakeholders.

14. Diversion

It is extremely difficult to obtain estimates of diversion of coupons and inputs. These issues are difficult to gather objective information about, although complaints about corruption are common. As discussed earlier in section 8, the lack of transparency in coupon allocation, especially of supplementary coupons, when combined with excess demand for coupons leads to perceptions of and complaints about corruption and diversion of coupons even in situations where these may not be warranted.

Ideally the scale of diversion of coupons could be determined by comparing the number of coupons issued against the estimated number of coupons received by households. However as was clear in information in table 6 and discussion in section 6, the divergence in estimated number of households between the NSO census and the MoAFS farm registry makes this very difficult. Thus with the NSO farm family estimate it appears that 2.8 million fertiliser coupons were received by smallholder farmers in 2008/9 against a recorded allocation of 3.9 million, leading to an estimate of 1.1 million 'missing' coupons (28% of those issued, with nearly 50% missing in 2007/8). However with the MoAFS farm family estimate it appears that 4.1 million fertiliser coupons were received by smallholder farmers in 2008/9 against a recorded allocation of 3.9 million, leading to receipts exceeding issues by 5%, while in 2007/8 24% of those issued were not received by smallholders.

Information presented in section 9 and table 16 does, however, allow more detailed examination of these very important issues. This information is used to trace out and estimate volumes and flows of coupons and fertilisers using the framework shown in figure2.

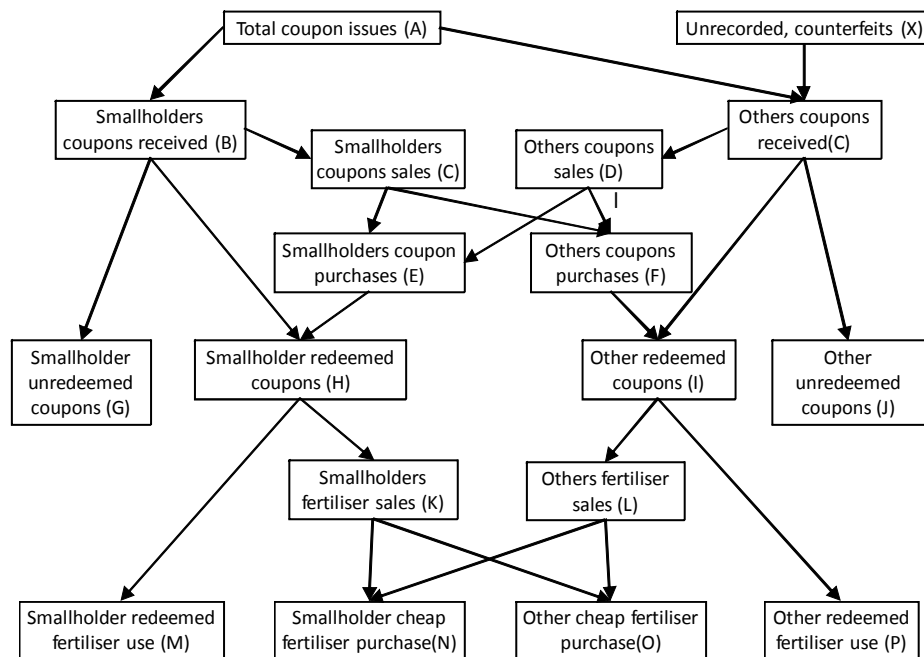


Figure 2 Framework for estimating flows of coupons and subsidised fertilisers

Table 19 Estimated volumes of coupon and subsidised fertiliser disbursement and purchases

Farm families	2008/9			2007/8		
	Low (NSO)	Medium	High (MoAFS)	Low (NSO)	Medium	High (MoAFS)
Coupons ('0000)						
Recorded issues (from MoAFS and Logistics Unit) – A	3,907	3,907	3,907	4,320	4,320	4,320
Received by smallholders, excluding purchases - B	2,654	3,278	3,903	2,123	2,622	3,121
Redemptions Total (from Logistics Unit) - H+I	4,000	4,000	4,000	4,331	4,331	4,331
Smallholders – H	2,682	3,313	3,944	2,146	2,650	3,154
Others (by subtraction) - I	1,318	687	56	2,185	1,681	1,177
of which Unrecorded / counterfeit – X	204	231	257	100	121	142
Fertilisers (MT)						
Total subsidy sales (from Logistics Unit) - H+I	200,000	200,000	200,000	216,553	216,553	216,553
Smallholder redemption & use - M	116,029	143,312	170,596	92,815	114,617	136,419
Smallholder low price purchases - N	42,549	52,553	62,556	47,229	58,325	69,420
Total smallholder use - M+N	158,578	195,865	233,152	140,044	172,941	205,839
Others' low price / redemption use - O+P	41,422	4,135	-33,152	76,509	43,612	10,714
Coupons						
Recorded issues (from MoAFS and Logistics Unit) – A	100%	100%	100%	100%	100%	100%
Received by smallholders, excluding purchases - B	68%	84%	100%	49%	61%	72%
Redemptions Total (from Logistics Unit) - H+I	100%	100%	100%	100%	100%	100%
Smallholders – H	67%	83%	99%	50%	61%	73%
Others (by subtraction) - I	33%	17%	1%	50%	39%	27%
Unrecorded / counterfeit	5%	6%	7%	2%	3%	3%
Fertilisers						
Total subsidy sales (from Logistics Unit) - H+I	100%	100%	100%	100%	100%	100%
Smallholder redemption & use – M	58%	72%	85%	43%	53%	63%
Smallholder low price purchases – N	21%	26%	31%	22%	27%	32%
Total smallholder use - M+N	79%	98%	117%	65%	80%	95%
Others' low price / redemption use - O+P	21%	2%	-17%	35%	20%	5%

Table 19 provides a summary of the main elements in figure 2 for three different population scenarios: 2.5 million farm families (as measured by the NSO 2008 census), 3.1 million farm families, and 3.7 million farm families as reported by MoAFS. For each population scenario in 2008/9 and 2007/8, estimates are shown of coupons disbursed, received and redeemed, and of subsidised fertiliser sales and purchases, by smallholders and 'others' (these encompass private companies, parastatals, traders, local officials and leaders, etc.). The estimates are derived from a detailed analysis following the framework in figure 2, and drawing on information presented in section 9 and table 16. The legend shows the source and derivation of figures, and capital letters refer to the framework in figure 2.

The key point to note from table 18 with regard to 2008/9 are as follows:

- First, for 2008/9 the estimated use by others (not smallholders) of subsidised fertiliser (that is fertiliser originally redeemed using coupons and then either used directly by the purchaser or sold on at a low price) is negative for the scenario with MoAFS farm family estimate. This arises because we are able to estimate the purchases of low price fertiliser by smallholders, and with large numbers of smallholders these purchases together with smallholders' use of fertilisers redeemed with their own coupons exceed the total volume of subsidised fertiliser sales. The medium estimate of farm families allows only very small use of subsidised fertiliser by others, but this rises to 40,000 MT (21%) with the NSO census estimate of farm families. This would suggest that there are likely to be between 2.5 and 3.1 million farm families.
- There are estimates of substantial leakage of coupons, as smallholders receive only 68% to 84% of coupons officially issued in 2008/9 (if we consider a maximum of 3.1 million farm families).
- There are substantial numbers of unrecorded or counterfeit coupons in circulation, with a minimum of 160,000 (5% of officially recorded issues) in 2008/9 (this compares with 45,000 recorded by the Logistics unit and excludes unrecorded or counterfeit coupons that were not redeemed)
- Turning to consider fertiliser sales, a large part of fertiliser purchased by non-smallholders with coupons are sold to smallholders at lower prices than unsubsidised commercial sales (40,000 to 50,000 MT, 20 to 25% of subsidy sales), with the subsidy benefits being shared between the smallholders and the 'others' who have acquired the coupons.
- Overall between around 30% and 40% of subsidised fertiliser sales are estimated to benefit non-smallholders through diversion of coupons.
- In 2008/9 up to 20% of subsidised fertiliser sales did not reach or benefit smallholders.
- The losses to the programme and to smallholders in terms of purchases of lower priced fertiliser are smaller than would be inferred from consideration of leakage of coupons alone, since resale of coupons or subsidised fertiliser to smallholders gives them some (reduced) share of subsidy benefits. Nevertheless the estimated losses to smallholders and the government are very large if this analysis is correct. With an average full price of MK175,000 per MT of fertiliser, losses of MK159,000 and MK84,000 per MT of diverted subsidised fertiliser used by others and by smallholders, and a coupon price of MK2000, a rough estimate of the total value of these losses in 2008/9 amounts to between MK4 and 9.3 billion (roughly 11 to 25% of the total programme cost - see section 15 below depending upon the number of farm families, these numbers are based on 3.1 and 2.5 million farm families, estimates would be lower with a larger number of farm families). Equivalent estimates for 2007/8 are MK4.7 to 6.5 billion (roughly 33 to 45% of the total programme cost) but these are more likely to be affected by errors of recall.

Substantially more coupons were issued in 2007/8, the number of unrecorded / counterfeit coupons was lower and there were greater stocks of subsidised fertiliser for sale. However it appears that there was substantially greater diversion of coupons, leading to lower purchases by smallholders and greater volumes of diverted fertiliser, although as noted above 2007/8 estimates are more likely to be affected by errors of recall.

This analysis is highly significant as it gives some indications both of the number of farm families and of the scale of diversion that may be associated with the programme, and of the relationship between these. It thus raises very important issues that need to be addressed in taking the programme forward to enable it to deliver the very high benefits that it offers to smallholder farmers and the wider economy - a key issue here is the need to resolve the differences between NSO and MoAFS figures on the number of farm families (it is understood that this is being addressed). These issues will be returned to in later analysis of the impact of the programme, but we note here that the analysis also informs estimation of the extent to which the fertiliser subsidy displaces commercial sales, as we can expect low rates of displacement for smallholders redeeming subsidised fertilisers with their own coupons, intermediate rates of displacement for smallholders purchasing of low price fertilisers redeemed by others, and higher displacement for others who have illegally obtained coupons for their own use or for sale to commercial farmers or urban households.

15. Programme costs

Overall costs of the programme are difficult to estimate due to failure to document the administrative costs borne by the MoAFS and other organisations involved in the implementation of the subsidy. The available figures therefore reflect the documented costs of the programme; the true costs may be understated by as much as 10 percent. Nonetheless, it is evident from the financial data that the programme has been characterized by substantial cost over-runs. In 2007/08, the budget for the subsidy programme was US\$82.1 million (6.7 percent of national budget), but actual expenditure was estimated at US\$115 million (8.9 percent of the national budget). The initial budget for the subsidy programme in the 2008/09 budget was US\$139.1 million and this was revised upwards in the fiscal year to US\$210 due to increased cost of fertilizers. These budgetary provisions represented 60 percent and 70 percent of the MoAFS total budget allocation. Fertilizer prices leading to the 2008/09 season nearly doubled and to maintain the quantities of fertilizers in the programme, this became a necessary additional cost. In addition, Government decided to extend the subsidy to other cash crops including smallholder tea and coffee, and this led to increased quantities and costs to the programme. The documented actual expenditure on the AISP in 2008/09 is US\$271.7 million. This figure excludes the cost of implementing the programme by SFFRFM, ADMARC the Ministry of Agriculture and other field agencies, cost of printing vouchers, and bank charges on the 2007/08 'buy-back' stock arrangement. Rather than ignore these costs we have introduced an estimate of these costs to be equivalent to 20% of the 2008/09 recurrent budget of the MoAFS budget net of the subsidy. This takes account of the way that most of the operations of the MoAFS are focused on the implementation of the subsidy programme at least in the first two to three months of the agricultural season. Although not all MoAFS activities in this period are concerned with the subsidy programme, the majority are, and there are other costs outside this period, as well as ADMARC/SFFRFM administration and overhead costs and the costs of field agencies involved in coupon allocation and distribution. These estimated costs, estimated at US\$10.1 million, may therefore be considered conservative.

Figure 3 presents the trends in the cost of the agricultural input subsidy since the 2005/06 agricultural season. The extent of over-expenditure in the subsidy programme is apparent from 38 percent above the budget in 2006/07 to more than 87 percent above the budget in 2008/09. The recorded costs are also 25 percent above the revised estimate cost of the 2008/09 programme as reported in the 2009/10 fiscal budget. The substantial out of budget expenses in the 2008/09 programme can be attributed to substantial increases in the fertilizer prices and the expansion of the programme to cover smallholder tea and coffee farmers. According to the budget documents, the original plan for the programme was to procure 170,000 metric tonnes of fertilizers but in the course of the year an additional 72,000 metric tonnes were procured to accommodate the extension of

coverage to smallholder tea and coffee farmers (GOM, 2009). Logistics Unit figures reported earlier put additional purchases at just under 48,500 metric tonnes for the subsidy programme plus 24,500 for flood relief, making a total of just under 73,000 metric tonnes. The inclusion of cash crops such as coffee and tea was more politically motivated; 2009 being an election year smallholder tea and coffee farmers lobbied during the year to benefit from the subsidy programme on grounds of the substantial increase in the cost of fertilizers.

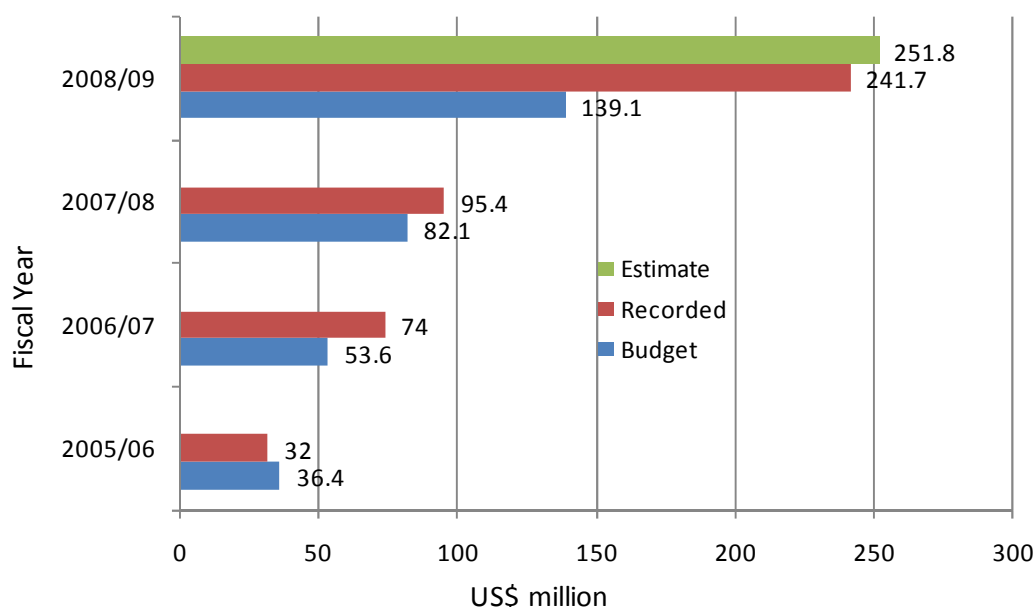


Figure 3 Trends in Agricultural Input Subsidy Costs, 2005/06 – 2008/09

Note: All costs are net of farmers redemption.

Sources: Logistics Units reports; Dorward and Chirwa (2009)

The first part of table 20 shows the cost structure of the 2008/09 subsidy programme covering only recorded costs. There are also many other unrecorded or unattributed direct costs of the subsidy programme including the operating costs of MoAFS and other government officials involved in the implementation, SFFRFM and ADMARC, cost of maintaining ADMARC markets, the cost of printing coupons and bank charges on the 2007/08 ‘buy back’ arrangement. The extent of some of the unrecorded costs is also a concern of some of the project implementers. At district level, members of staff in the implementation of the programme are drawn from several government ministries including agriculture, community development, forestry, education and health. Some of the departments also provided vehicles towards the implementation of the subsidy programme. As one of the District Agricultural Development Officers in the Central Region put it:

“The programme should continue but it needs a lot of resources. The funding that we get [for administration] is not enough to cover everything. We still owe huge sums of money in allowance to those who participated, especially the police. We owe them over MK1 million. We have just paid MK0.8 million. This exercise is expensive: it involves vehicles, fuel, allowances. But the programme should continue because it is

better than the government having to import maize. Importing maize can be very expensive.”

As noted earlier, it has not been possible to obtain information on costs of subsidised grain storage and cotton chemicals and these are not included in table 20.

Donors contribute to the subsidy directly and through budget support. The direct support constitutes 14.1 percent of the estimated total costs and cover costs of seeds, logistic unit operating costs and computer equipment support to ADMARC. Donors also support the subsidy indirectly through budget support. According to GOM (2009: Budget Statement), the increased costs of fertilizers in the 2008/09 programme ‘was mostly financed by increased budget support from donors notably DFID, European Union, and the African Development Bank’.

Table 20 Cost and Financing of the 2008/09 AISP

Description	Malawi Kwacha
Recorded costs	
Seeds - flexible vouchers	733,654,720
Seeds – maize	1,026,098,420
Fertiliser - "Buy back" from 2007/08	3,482,982,390
Fertiliser - new supplies\	33,268,171,569
Transport Costs	1,293,749,348
Logistics Unit operational costs	33,868,647
Computers for ADMARC	9,081,742
Total recorded costs	39,847,606,836
Less: Farmer redemption due	3,236,445,440
Unused stock for buyback	2,775,922,782
Net recorded Costs	33,835,238,614
Estimated other costs*	
Fertiliser buy back bank costs	87,074,560
Ministry of Agriculture operations	1,100,000,000
ADMARC/SFFRFM overheads	176,780,275
Voucher printing	20,000,000
Other agencies' field costs	32,000,000
Total estimated other costs	1,415,854,835
Total net costs, recorded and estimated	35,251,093,449
Funding	
Direct Donor Support	5,285,685,919
Government of Malawi	29,965,407,530

* Actual figures for these items are not known. Bank charges on the buy back arrangement are estimated at 2.5% of value of the stock (and compare with MK55 million in 2006/7). We estimate that MoAFS operational costs on the subsidy are equivalent to 20% of the recurrent MoAFS expenditure budget (net of subsidy) as MoAFS operations are largely but not exclusively focused on the subsidy implementation for at least three months in an agricultural season. SFFRFM and ADMARC overheads are estimated at 0.5% of fertiliser sales value (this is probably an under-estimate, but it is very difficult to determine an appropriate figure). Voucher printing is increased by 33% from 2006/7. Field costs paid to other agencies involved in coupon allocation and distribution based on FGD information from one district. Outstanding costs of retrieving fertilizer from unit markets (not recorded by April 2009) are not estimated. Communications and monitoring and evaluation costs excluded.

Source of recorded costs: Logistics Unit Final Report 2009

16. Conclusions

Implementation of the subsidy programme in 2008/9 in many ways followed approaches of previous years. Significant changes in 2008/9 were the exclusion of the private sector from retailing of subsidised fertilisers and the introduction of open meetings for coupon allocation in villages. We briefly review here the major conclusions arising from earlier information and discussion in this report.

Systems for fertiliser and seed procurement, distribution and sales are considered in more detail in a separate report on the input supply sector. We note here greater reliance on the private sector for importation and earlier fertiliser import tendering in 2008/9, but continuing difficulties with late tender awards and some non- and late deliveries. Despite this there were still difficulties in holding stocks due to late opening of sales from unit markets, linked to late distribution of coupons. These difficulties were exacerbated by the exclusion of the private sector from participation in retail sales of subsidised fertilisers, and further exacerbated by the lateness of the decision to do this. Nevertheless some reduction in late deliveries for sale through ADMARC / SFFRFM compared with the previous year is to be commended. Lack of legume seeds was a major constraint to the programme contributing to more diverse cropping.

Difficulties with coupon security were encountered with the initial printing, requiring a second printing of more secure coupons, which appears to have been successful. Improved security features were not accompanied by the introduction of bar coding, which could be used for improving both security and tracking of coupons. *The evidence of substantial diversion of coupons requires urgent further attention to improving security features for coupons and/or the introduction of other systems (for example using electronic cards).*

There has been a continued increase in the share of coupons allocated to the Southern region and coupon allocation across the Centre and South is now much more equitable in terms of coupons received per household, but is still high in the North. This has important targeting implications as regards the focus of the programme and should also affect displacement of unsubsidised sales by subsidised sales. This will be examined in more detail in a later report, but analysis of 2006/7 fertiliser use suggests that displacement is lower among poorer households and since the incidence of poverty is higher in the south, greater allocation of coupons to the south has the potential to reduce displacement and hence increase the effectiveness of the programme. This is discussed further in the separate report on subsidy impacts.

As in previous years, the issue of a second round of 'supplementary' vouchers lacks transparency and is difficult to track. This is evident from both analysis of programme implementation and the perceptions of different stakeholders in rural areas. Thus while the introduction of open meetings for allocation and distribution of initial fertiliser and seed coupons is widely reported and commended, rural people were much less aware of processes involved in the issuing of supplementary vouchers. Greater involvement of MoAFS staff in coupon distribution is also commended. Problems remain, however, with lack of transparency and accountability regarding both the total allocation of coupons *to* areas/communities and their allocation *within* areas/communities. These are inevitably linked, and more transparency about the total allocation of coupons *to* areas/communities could significantly improve trust, transparency and accountability in the allocation of coupons *within* areas/communities. *A universal allocation of smaller entitlements to 50kg of fertiliser is recommended to improve targeting and transparency and to reduce diversion.*

With the elimination of the tobacco fertilisers subsidy and a likely smaller number of farming households (2.5 to 3.1 million) this would lead to a subsidy for a total of 125,000 to 155,000MT of fertiliser – close to disbursements in 2005/6 and 2009/10 and a very significant amount, much greater than prior to 2005/6.

Estimation of the diversion of coupons and subsidised inputs from intended smallholder beneficiaries to others is rendered difficult by the lack of agreement between the NSO and MoAFS on the number of farm families in the country. It appears that MoAFS overestimates the number of farm families to some extent (but the scale of this is not clear) and that there is significant diversion of coupons, and some use of counterfeit or unrecorded coupons. *Current plans to resolve the discrepancies in farm family estimates must urgently be pursued as this has important implications not only for the AISP, but also for other government services if the census has underestimated the national population. Effective controls and auditing procedures are also needed to prevent and, where it happens, identify and punish fraud. The use of a universal subsidy linked to some form of identify card could provide an effective means to control diversion and subsidy volumes.*

Targeting of coupons continues to be an important issue. This affects the dynamics of coupon allocation and distribution, use of coupons, benefits from coupon use, and as noted above, displacement. There is continuing lack of clarity and consistency in the application of the targeting criteria used, though their formulation, communication and application appears to have significantly improved since 2006/7. This is evident from focus group discussions and from survey data which, as in 2006/7, show that though the poor are not excluded from receiving coupons, they are less likely to receive coupons than less poor people. There are also concerns that targeting is leading to dissatisfaction and conflict within rural communities. Among rural communities and different stakeholders there continue to be diverse views regarding the best way to address this. *As noted earlier there are strong arguments that there could be significant gains from a universal access to coupons for 50kg fertiliser per household (as already practiced in many areas through redistribution). This has the potential to reduce exclusion errors, targeting costs, displacement and intra-community conflicts, and to improve transparency and accountability without adversely affecting incremental production and benefits.*

The vast majority of recipients report that they use their coupons to buy inputs and use the inputs on their own crops. However FGDs and stakeholders consider sales of coupons and of subsidised inputs to be more prevalent, particularly the latter. Analysis of reported household purchases suggests that smallholder purchases of resold subsidy fertilisers are between 10% and 20% of smallholder subsidised input purchases. As in previous years, many coupon recipients faced stock-outs, queues and demands for extra payments or 'tips' when redeeming coupons, particularly for fertilisers. There is some evidence that distances to stockists, time spent redeeming inputs, and payment of 'tips' all increased in 2008/9 as compared with 2006/7. Some stakeholders and focus group discussion link this to the lack of private sector involvement in retail sales of fertilisers. *Reliance on ADMARC and SFFRFM as the sole distributors of subsidised fertilisers increases the risks of poor services to subsidy beneficiaries. Private sector distribution of subsidised inputs should be re-introduced with stringent agreements and monitoring and audit systems to control irregularities in both parastatal and private sector outlets.*

Whereas 80% or so of male coupon recipients and less poor coupon recipients rely on savings to finance coupon redemption, 66% of female and 60% of poor recipients can rely on savings, with ganyu, safety net programmes and gifts all being more important for poorer recipients. Focus group discussions emphasise the challenges that poor households face in finding the money to redeem coupons, and the way that these problems are exacerbated by demands for redemption 'tips', particularly when there are queues at markets. *There is continuing need for safety net programmes'*

coverage, targeting and timing to better complement the AISP so that they both (a) help poor recipients to redeem coupons and (b) prevent poorer recipients from being disqualified from coupon receipt (on the grounds of inability to redeem coupons).

A relatively low proportion of households and recipients (14 and 18% respectively, higher in the north) report that they receive advice from field assistants on fertilisers and new varieties. These low rates of contact with field assistants may affect the efficient use of inputs by smallholder farmers. *Increased attention should be given to investments to complement access to subsidised inputs with access to technical advice.*

Costs of the programme have increased dramatically due largely to high prices for fertilisers in 2008/ and to increases in subsidised fertiliser volumes from 2005/6 to 2007/8. There is a consistent tendency for actual costs to exceed budgeted costs, for the same reasons. The trend in increasing fertiliser costs together with falling coupon redemption prices also implies that the level of the subsidy to farmers continues to increase. It has not been possible to obtain information on the full costs of the programme. *Improved systems are needed for controlling fraud (diverted and counterfeit coupons) and the release of extra coupons, for auditing systems, for cost control, and for determining and implementing the appropriate scale of the programme and subsidy rates. These are related to targeting systems, the involvement of the private sector in subsidised seed and fertiliser sales as discussed above.*

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Glossary of Acronyms and Terms

ADD	Agricultural Development Division
ADMARC	Agricultural Development and Marketing Corporation
agro-dealers	Small scale private input retailers
AISAM	Agricultural Input Suppliers Association of Malawi
AISP	Agricultural Input Subsidy Programme
AISS	Agricultural Input Subsidy Survey
AU	African Union
Bomas	District administrative / commercial centres
CNFA	Citizens Network for Foreign Affairs
CPI	Consumer Price Index
DfID	Department for International Development

Dimba	Wetland cultivated in the dry season
EU	European Union
FEWSNET	Famine Early Warning System Network
FAO	Food and Agriculture Organization of the United Nations
Ganyu	hired casual labour
GDP	Gross Domestic Product
GOM	Government of Malawi
IHS2	Integrated Household Survey (2004)
IMF	International Monetary Fund
LU	Logistics Unit
MASAF	Malawi Social Action Fund
MK	Malawi Kwacha (MK140 to the US\$)
MOAFS	Ministry of Agriculture and Food Security
MRFC	Malawi Rural Finance Company
MVAC	Malawi Vulnerability Action Committee
NASFAM	National Smallholder Farmers Association of Malawi
NEPAD	New Economic Partnership for African Development
NFRA	National Food Reserve Agency
NGO	Non-Governmental Organization
NPV	Net Present Value
NSO	National Statistical Office
OPV	Open pollinated varieties (of maize)
PRSP	Poverty Reduction Strategy Paper
RBM	Reserve Bank of Malawi
SFFRFM	Smallholder Farmers' Fertilizer Revolving Fund of Malawi
SGR	Strategic Grain Reserve
TIP	Targeted Inputs Program

Appendix 1: Voucher allocations by district

District	Initial (September) allocation				Extra allocations			Final (January) allocation		Farm hh (2008)	Final vouchers/hh		Extra vouchers/hh	
	NPK, Urea (each)	Maize Seed	CAN, D compound	Flexi seed	NPK, Urea (each)	Maize Seed	NPK, Urea (each)	Maize Seed	NPK, Urea (each)		Seed	NPK, Urea (each)	Seed	NPK, Urea (each)
Chitipa	25,259	25,259	8,541	14,238	4,691	610	29950	25,869	1.19	0.80	0.186	0.012	0.186	0.012
Karonga	21,831	21,831	3,207	16,988	12,041	460	33872	22,291	1.13	0.65	0.401	0.008	0.401	0.008
Rumphi	26,400	26,400	12,180	14,790	7,331	4,250	33731	30,650	1.27	0.86	0.277	0.080	0.277	0.080
Likoma	640	640	0	595	1,621	40	2261	680	2.15	0.61	1.542	0.019	1.542	0.019
Nkhata Bay	21,896	21,896	200	15,787	8,251	670	30147	22,566	1.08	0.69	0.296	0.012	0.296	0.012
Mzimba	70,500	70,500	19,080	72,877	119,921	26,340	190421	96,840	1.48	0.66	0.931	0.102	0.931	0.102
Kasungu	79,618	79,618	25,470	55,074	21,491	2,910	101109	82,528	1.04	0.70	0.220	0.015	0.220	0.015
Mchinji	62,500	62,500	17,560	41,732	8,701	700	71201	63,200	0.97	0.71	0.118	0.005	0.118	0.005
Ntchisi	30,000	30,000	14,080	25,138	6,081	900	36081	30,900	0.81	0.63	0.137	0.010	0.137	0.010
Dowa	68,700	68,700	24,500	40,411	9,291	2,210	77991	70,910	0.82	0.58	0.097	0.012	0.097	0.012
Nkhotakota	24,784	24,784	715	20,602	12,751	3,670	37535	28,454	1.03	0.67	0.350	0.050	0.350	0.050
Salima	34,500	34,500	1,102	24,080	6,261	1,680	40761	36,180	0.96	0.71	0.147	0.020	0.147	0.020
Lilongwe	118,789	118,789	20,818	113,542	22,221	5,640	141010	124,429	0.64	0.54	0.100	0.013	0.100	0.013
Dedza	65,050	65,050	5,039	51,573	5,731	1,750	70781	66,800	0.67	0.56	0.054	0.008	0.054	0.008
Ntcheu	67,500	67,500	5,175	39,739	7,351	770	74851	68,270	1.07	0.77	0.105	0.005	0.105	0.005
Balaka	40,841	40,841	2,820	27,446	6,128	70	46969	40,911	0.94	0.68	0.122	0.001	0.122	0.001
Mangochi	50,088	50,088	4,920	64,896	28,690	21,090	78778	71,178	0.63	0.55	0.230	0.085	0.230	0.085
Machinga	62,315	62,315	4,657	44,583	12,132	1,140	74447	63,455	0.85	0.61	0.138	0.006	0.138	0.006
Zomba	74,387	74,387	8,510	54,066	12,941	110	87328	74,497	0.88	0.65	0.131	0.001	0.131	0.001
Chiradzulu	55,359	55,359	4,596	25,482	4,883	200	60242	55,559	1.34	0.90	0.108	0.002	0.108	0.002
Phalombe	71,273	71,273	5,784	25,795	4,403	431	75676	71,704	1.66	1.07	0.097	0.005	0.097	0.005
Mulanje	69,093	69,093	978	54,121	15,062	4,060	84155	73,153	1.05	0.79	0.188	0.025	0.188	0.025
Thyolo	88,302	88,302	2,942	49,437	34,712	29,720	123014	118,022	1.41	0.96	0.397	0.170	0.397	0.170
Blantyre	83,661	83,661	5,565	40,370	5,464	80	89125	83,741	1.24	0.86	0.076	0.001	0.076	0.001
Mwanza	21,802	21,802	875	10,211	344	30	22146	21,832	1.74	1.26	0.027	0.001	0.027	0.001
Neno	12,868	12,868	355	8,609	4,050	4,050	16918	16,918	1.13	0.85	0.270	0.135	0.270	0.135
Chikwawa	11,074	11,074	0	30,615	738	110	11812	11,184	0.20	0.35	0.012	0.001	0.012	0.001
Nsanje	10,970	10,970	0	17,204	404	90	11374	11,060	0.37	0.46	0.013	0.001	0.013	0.001
Unallocated	130,000	130,000	331	0	-130,000	-113,780	0	16,220						
Total North	166,526	166,526	43,208	135,275	153,856	32,370	320,382	198,896	1.34	0.70	0.643	0.068	0.643	0.068
Total Centre	551,441	551,441	114,459	411,891	99,879	20,230	651,320	571,671	0.83	0.62	0.127	0.013	0.127	0.013
Total South	652,033	652,033	42,002	452,835	129,951	61,181	781,984	713,214	0.97	0.72	0.161	0.038	0.161	0.038
Total All	1,500,000	1,500,000	200,000	1,000,001	253,686	1	1,753,686	1,500,001	0.96	0.68	0.138	0.000	0.138	0.000