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AGRICULTURAL EXTENSION IN KENYA: PRACTICE AND POLICY LESSONS

By

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Abstract

A consensus exists that extension services, if functioning effectively, improve agricultural productivity through providing farmers with information that helps them to optimize their use of limited resources. Variations in management practices and husbandry skills among small farmers in Kenya are very great. Tremendous poverty-reducing benefits could be reaped by bringing the production costs of the most inefficient farmers to mean productivity levels. Achieving these gains in maize production efficiency will depend on many factors, but extension is likely to be among the most important. Therefore, the costs to the nation of having an under-performing extension service – in terms of smallholder productivity, incomes, and poverty reduction, and the ability to survive or even thrive after the reduction in import tariffs as implied by impending COMESA and EAC trade agreements – are very high.

The objective of this study is to assess the range of alternative food crop and livestock extension services currently operating in Kenya, what works, what doesn't, and why. The report is fundamentally descriptive, providing knowledge on the nature of the existing extension providers, their characteristics, approaches employed and the challenges they face. Based on successful cases, we identify attributes that may be important for future discussions about extension service provision in Kenya and the role of the government in such a scenario. The study covered 16 districts representing the various agro-regional zones present in Kenya. It employed qualitative methods and focused on the private and public extension service providers. Discussions were also held with other stakeholder in the agricultural extension service realm about their experiences and perceptions of the existing extension systems and approaches.

The study highlights five (6) important findings: (1) private extension provision is generally skewed towards well-endowed regions and high-value crops. Remote areas and poor producers especially those growing low-value crops with little marketable surplus are poorly served. Non-profit private providers are targeting them. But their scope is limited. (2) The public extension service appears to be high-cost compared to private commercial and non-profit extension services. (3) Since public resources for extension are very constrained, it may make sense for public extension not to duplicate or overlap in the same areas that are being provisioned more efficiently by commercial and non-profit systems. This would leave more public resources for concentrating extension services for farmers in areas that are remote and poorly served by the commercial systems. (4) However, the commercial and non-commercial systems benefit from the presence of the public extension service. The alternative systems rely on public extension workers for training and appropriate management advice, so even if the public system was to withdraw to the more remote areas where private extension is unprofitable, it may be appropriate to institute some type of commercial contracting of public sector extension system staff so that the latter can impart needed skills and capacity building of the commercial extension systems. (5) The government should consider contracting the private sector to offer extension services in the disadvantaged regions. Contracting out extension services makes it possible to take advantage of all of the talent and experience existing in the field but does not eliminate a government role which, in addition to funding, ensures quality assurance, oversight, and provision of training and information to contracted services providers. (6) The weight of evidence suggests, in most cases, that private extension is not a substitute for public extension and the public sector should fund extension significantly but in ways that do not duplicate services already being provided by sustainable alternative extension providers.

Key words: Extension services, Privatization, Policy reforms, Kenya

1. Introduction

A general consensus exists that extension services, if properly designed and implemented, improve agricultural productivity (Romani Mattia 2003, Evenson and Mwabu 1998; Bindlish and Evenson 1993; Birkhaeuser et al 1991). The term “extension” is here understood to mean ‘advisory and other services’ that help rural families to make the best possible use of the productive resources at their disposal (Katz 2002). Agricultural extension services provide farmers with important information, such as patterns in crop prices, new seeds varieties, management practices with respect to crop cultivation and marketing, and training in new technologies. Extension services improve the knowledge base of farmers through a variety of means, such as demonstrations, model plots, specific training and group meetings. The exposure to such activities is solely intended to increase the ability of farmers to optimize the use of their resources and ultimately increase crops yields. In addition, ideal extension service provides feedback mechanism from the farmers to the research centers.

It has also been noted that even where technologies are relevant and available, smallholder farmers sometimes have no access to them (Fliegel, 1993). For this reason, extension systems and input distribution systems are mutually reinforcing – the contribution of extension to agricultural productivity growth depends on functioning input distribution systems and vice versa. Agricultural technologies are also rapidly changing. Farmers need to be made aware of what technologies work best, know how to use them, and generate effective demand for viable new technologies to provide signals to input distribution system to supply them (Davidson et al 2001).

The primary objective of this study is to assess the food crops and livestock extension service provision in Kenya with a broad aim of understanding what exists, what works and why. It seeks to expand knowledge on the nature of the existing extension providers, their characteristics, approaches employed and the challenges they face. Based on success cases, an attempt is made to delineate the fundamentals of ideal extension service system and the role of the government in such a scenario, with the aim of informing the implementation of the new National Agricultural Sector Extension Policy (NASEP). Given the importance of extension services, and the amount of resources invested in it, such a study is justified and very urgent.

The rest of the paper is organized as follows. Section 2 describes the data and methods generating our findings. Section 3 describes the evolution of agricultural extension in Kenya. Section 4 presents trends in government investment in agricultural extension. Section 5 analyzes the relationship between farmers' access to extension services, their use of improved crop technology, and crop productivity, using nationwide household survey data collected by the Tegemeo Institute. The various types of public, private, and NGO-based extension services operating in Kenya are described in Section 6, including a summary of their strengths and weaknesses. Section 7 presents the conclusions and policy implications of the study, and discusses areas for future analysis.

2. Data and Methods

This study employs qualitative and quantitative methods. It uses both primary and secondary data. First, discussions were held with stakeholders in the agricultural sector to get a clearer picture of the actors, perceived needs, gaps, and challenges of agricultural extension in Kenya. Next, qualitative primary data was collected from agricultural extension service providers in February 2006. These data was collected from 16 districts, chosen purposively to represent the various agro-regional zones present in Kenya. Interviews of extension providers covered the full range of approaches, crop enterprises supported, and points of entry at the value chain. The providers were interviewed using a checklist that covered various success indicators identified in the phase one stakeholders' interviews. The indicators included approaches employed; extension messages and sources; frontline extension workers qualifications; collaboration and synergies with other providers; and sustainability of the systems among others.

The paper also draws on nationwide household survey data collected in 2004 by the Tegemeo Institute in collaboration with Michigan State University. This survey covers 1,500 households in 24 districts and is considered representative of the diverse agricultural zones found in Kenya. For details of the survey design and sampling methods, see Argwings-Kodhek (1997). The paper further benefited from literature on best extension practices from some other selected countries, both regionally and internationally.

During the preliminary analysis, it turns out that most extension providers in Kenya are using farmer groups to advance their services to farmers. As a cases study to enable us

understand deeper farmer groups' formation and organization as well as the benefits and challenges associated with such groups, groups working with the Kenya Maize Development Program (KMDP) were interviewed. These groups were brought together by problems associated with the production and marketing of maize. It was through Cereal Growers Association (CGA) that access to these groups was made possible. The farmer groups survey covered groups in high potential maize zones districts of Trans Nzoia, Uasin Gishu, Nakuru and parts of Lugari. In Trans-Nzoia 13 groups were listed and 14 in both Uasin Gishu and Lugari. Randomly, a number of groups were selected for Focus Group Discussion (FGDs). The FGDs consisted of a cross section of members representing the officials, non-officials and gender. The interviews took place the first month of April 2006. Nakuru district was purposively added to capture the Farmer Marketing Federations (FMF). In total 18 farmer groups were visited. Of these, fifteen (15) were individual farmer groups while three (3) were Farmer Marketing Federations (FMF), formed out of the coming together of individual farmer groups.

3. Evolution of Agricultural Extension in Kenya

The importance of agricultural extension in relation to the fight against poverty has been underscored in the Strategy to Revitalize Agriculture (SRA) (Republic of Kenya, 2004). Extension is identified as a critical area that requires immediate action and is one among the six SRA first-tracked interventions. The declining effectiveness of the extensions service has been identified as a major factor that is hampering growth of Kenyan agriculture. In this regard, SRA has suggested reform of the extension service system in order to create more effective linkages between research, extension and farmers, who are the ultimate beneficiaries.

Kenya's small farmers had traditionally benefited from two major types of extension systems. The first is the government extension system. Since independence, the ministry in charge of agriculture has played a leading role in agricultural extension services, focusing mainly on food crops. The government has tried a number of extension models and styles, including progressive or model farmer approach, integrated agricultural rural development approach, farm management, training and visit (T&V), attachment of officers to organizations, farming systems

approaches and farmer field schools (FFS). However, these approaches have emerged with varying levels of success.

The second type of extension system includes the commodity-based systems run by government parastatals, outgrower companies, and cooperatives. The commodity-based extension deals mainly, but not exclusively with commercial crops such as coffee, tea, pyrethrum and sisal. These extension services are deliberately motivated by profits, and tend to work well when both the firm and farmers clearly benefit from the extension expenditures. All aspects of producing and marketing a particular commercial crop are vertically integrated, spanning the whole range from research, advice, and material support given to farmers, to organizing marketing and even exports.

After the implementation of structural adjustment programmes (SAPs) in the 1980s, the Kenyan government came under considerable pressure to scale down their dominant role in national economies (FAO 1997). Kenya's agricultural extension budget together with extension staff numbers has plummeted significantly. Budgetary allocations for extension services have declined from about 6 percent of the overall annual government budget in the two decades after independence to less than 2 percent currently (Republic of Kenya 2005c). At the same time, the performance of the public agricultural extension service in Kenya was questioned and its effectiveness became a very controversial subject (Gautam and Anderson 1999). The traditional public extension system was perceived as outdated, top-down, paternalistic, uniform (*one-size-fits-all*), inflexible, subject to bureaucratic inefficiencies and therefore unable to cope with the dynamic demands of modern agriculture.

To respond to these challenges, the Ministry of Agriculture and Rural Development formulated the National Agricultural Extension Policy (NEAP) to guide improvements in delivery of extension services in 2001. The NEAP recognized the need to diversify, decentralize and strengthen the provision of extension services to increase their sustainability and relevance to farmers. The NEAP was meant to form the basis for all extension work within the government and in its interaction with other stakeholders in agricultural research and development. To operationalize the NEAP, the ministry prepared a National Agricultural and Livestock Extension Programme (NALEP) and NALEP Implementation Framework. The policy and the Implementation Framework (IF) have since then been criticized on the grounds they lacks clarity on who is responsible for specific aspects particularly for initiating and coordinating linkages

with other stakeholders (Republic of Kenya 2005c). The policy also is ambiguous on the specific roles of various actors in extension provision and particularly fails to specify how the private sector would be encouraged to play a stronger role in extension.

Consequently, the current extension system has been described as ineffective and inadequate and is considered key among the main cause of the poor agricultural performance of the agricultural sector (Republic of Kenya 2004 and 2005c). Thus there has been a desire to reform the public extension into a system that is cost effective, responsive to farmers' needs, broad-based in service delivery, accountable and with in-built sustainability mechanisms. There has also been a call for stronger involvement of stakeholders and beneficiaries at grass root level. Smallholder farmers not only require relevant advice to increase farm productivity, but need extension on a diverse range of rural development options including information on markets, value addition and other income opportunities too. An extension system that is not in touch with and does not significantly contribute to improving the lives of its clientele is now considered irrelevant.

As a result of these flaws in the public extension system, a third type of extension service has emerged: the privatized¹ agricultural extension initiatives provided by private companies, non-governmental organizations (NGOs), community-based organizations (CBOs), and faith-based organizations (FBOs). Extension is now broadly seen as a complex system where services are provided by a range of private and public sector entities. The larger context in which a mix of public and private services operates presents a new challenge with new potential roles and responsibilities for the public sector. In light of these policy challenges, the government has embarked on a decisive move to revise the national extension policy to reflect these realities and address the emerging challenges in the agricultural extension arena.

The philosophical thrust of the general privatization of agricultural extension services provision discourse has raised some issues. There are concerns regarding the private extension providers' approaches and how different they are from the monolithic public extension system that they intent to either complement or replace. There is also concern about the extension messages they propagate, levels of training of their personnel, and whether these private extension systems adequately reach small and poor farmers in remote areas. Whether it is

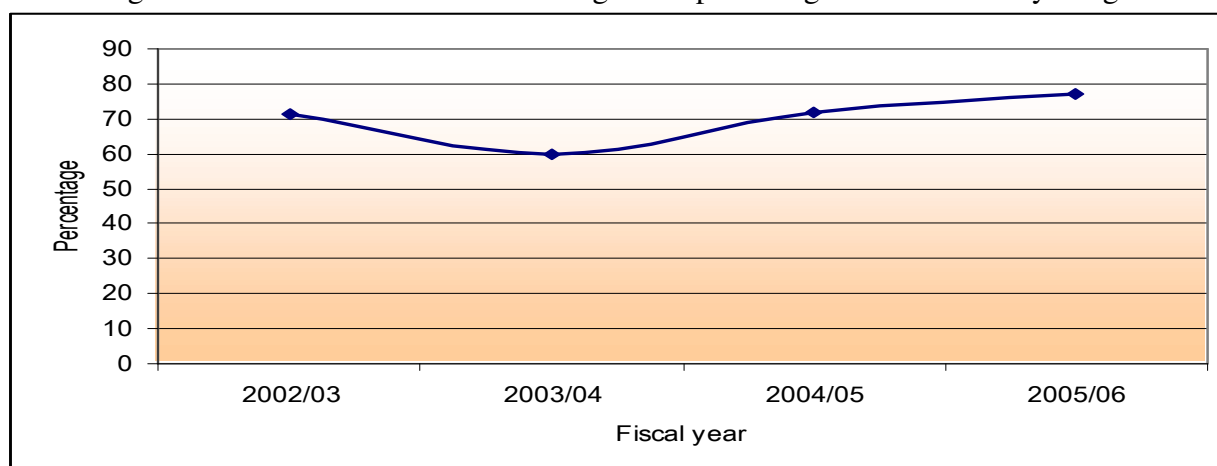
¹ Privatization is used in the broadest sense - of introducing or increasing private sector participation, which does not necessarily imply a transfer of designated state-owned assets to the private sector

prudent to operate parallel extension systems (public and private) has also been questioned. Under what circumstances does agricultural extension stop to be a public good -- can it be performed more efficiently by private agencies operating in private markets? In such a scenario, what should be the specific role of the government? On the other hand, on will inequities arise because not all individuals have access to resources to purchase privately supplied services? There are fears that the privatization of extension services may not provide the solution to agricultural problems, particularly where reaching smallholder and resource-poor farmers not engaged in growing commercial crops is concerned.

4. Government Investment in Agricultural Extension Service

Agricultural extension in Kenya is centralized and structure very hierarchical and bureaucratic. Budgeting and the flow of funds also are very hierarchical with district offices either receiving funds late or chronically short of funds for operations and maintenance. Figure 1 below shows the trend of the proportion of the Ministry of Agriculture budget taken by the extension and research services over the years. The high proportion of extension budget over the entire ministry's budget can be attributed to the renewed donor funding of development projects in Kenya.

Figure 1. Extension and Research Budget as a percentage of total ministry budget



Source: Data sourced from Ministry of Agriculture, Public Expenditure Review, 2006

Extension and research being a core function, has generally consumed the lion's share of the

ministry's annual budget averaging 70 percent. While this can be viewed positively, it is important to note its composition is worrying. The public expenditure review 2005 indicates that during the period between 2002/03 and 2005/06 over 43 percent of the total extension and research budget was transferred to KARI while 49 percent was consisted of recurrent budget going into paying employees salaries leaving very little (8 percent) for operations, demonstration plots, vehicle maintenance, and new equipment and vehicles (Table 1). From this scenario, it is easy to understand why most of the extension vehicles, except in places where public extension officers collaborate with private non-profit development agencies, are in a state of disrepair not to mention the unavailability of running expenses like fuel. While donor funds are mostly channeled to development expenditures, the sustainability of such funds is usually uncertain and unstable due to donors' changing policies and hence is not a sustainable long-term strategy for agricultural development financing.

Table 1. Analysis of actual extension and research services expenditures

	2002	2003	2004	2002	2003	2004	2005
	/03	/04	/05	/03	/04	/05	/06 ²
Salaries & Wages	49.1	48.5	52.1	49.3	47.9	52.2	43.9
O&M	8.0	7.7	5.3	8.4	8.3	6.1	10.1
Plant & Equipment	0.3	0.9	0.2	0.3	1.0	0.2	1.6
Transfers & Subsidies (Research)	42.6	42.8	42.4	42.0	42.8	41.5	44.4
Total	100	100	100	100	100	100	100

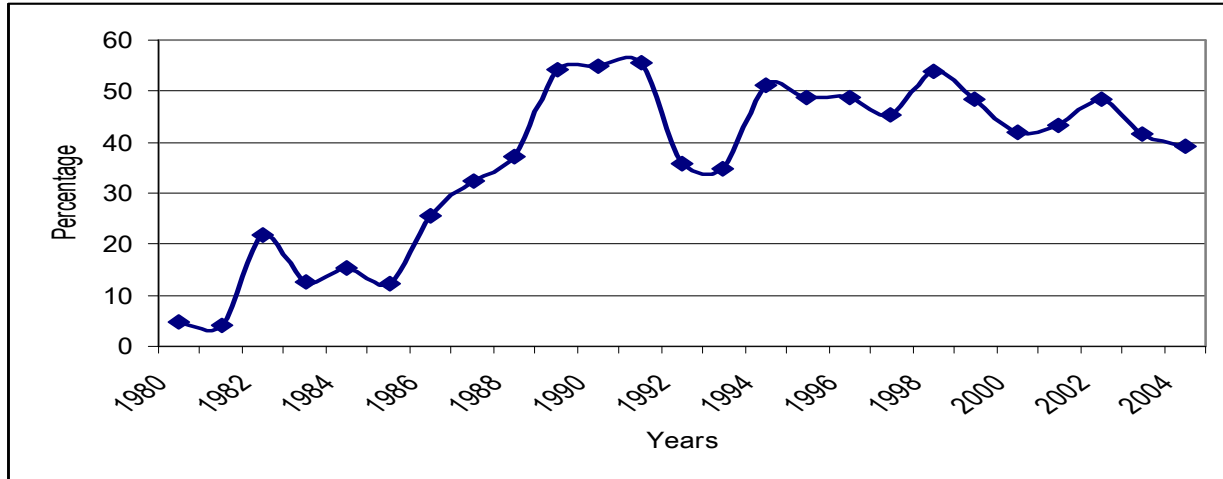
Source: Ministry of Agriculture, Public Expenditure Review, 2005

The number of extension staff has generally declined since 1994 (Figure 2). The decline in extension staff numbers is mostly due to retrenchment and a freeze in government employment within the ministry for over a decade now. Natural attrition, through retirement and deaths especially related to HIV/AIDS, has also adversely affected the quality and scope of public extension services. A significant proportion of senior staff is now near retirement age and will be retiring over the next three years. What is perhaps of most concern in regard to the extension services staff situation in the Ministry is that even if the hiring freeze were to be lifted today, it would take a number of years for the new recruits to gain the experience and insights of the staff they would be replacing. The ministry has responded by relaxing the tradition that each location or

² Printed estimates

division be staffed in a certain manner. Extension officers now cover more than one administrative location unlike the way it used to be. Recently, the ministry recruited 200 agricultural officers and posted them to the field.

Figure 2: Ministry of Agriculture percentage of extension over total staff numbers



Source: Republic of Kenya, Printed Estimates, various years

5. Extension services access and technology adoption

In this section, using Tegemeo Institute TAMPA household survey data and other available cross sectional data sets, we explore farmer access to agricultural inputs and services as well as technology adoption and productivity. Table 1 presents the relationship between households’ use of hybrid maize³ seed, inorganic fertilizer, distance to the nearest extension service as well as maize productivity per acre. Households using purchased hybrids together with fertilizer realized the highest productivities of 8.6, 12.3 and 10.3 and 90-kg bags per acre in 1997, 2000 and 2004 respectively. Those household that did not use hybrid seeds and inorganic fertilizers realized low maize productivities-2.1, 3.3 and 2.7 90-kg bags per acre in the same periods under consideration. Apparently, households closer to extension service providers used high yielding technologies and realized high yield than households far away from such services. While other factors most likely contribute to these relationships, the proximity to extension

³ Maize is used as a proxy for other crops because it is the country’s staple food crop and is grown widely across the country

services does appear to be correlated with small farmers' uptake of productivity enhancing technologies.

Another observation worthy mentioning is that those household that reported using both fertilizer and hybrid maize seed registered productivity increment of about 291 percent compared to those that did not use these productivity enhancing technologies over the panel period. Those that used hybrid seed without applying fertilizer registered 133 percent while those that used fertilizer on non-hybrid seed realized 88 percent increment in productivity.

Table 2. Input use, productivity and distances to extension service provider

Used Fertilizer	Used hybrid maize seed	2004		2000		1997	
		Yields	Extension	Yields	Extension	Yields	Extension
Yes	Yes	10.33	4.51	12.26	4.75	8.62	4.74
No	Yes	8.14	4.78	4.62	5.67	4.88	4.96
Yes	No	4.62	5.54	5.68	5.02	4.78	6.13
No	No	2.15	8.58	3.26	7.04	2.72	7.73
Total		7.87	5.26	8.66	5.38	6.66	5.38
Marginal increment in productivity (%)							
Yes	Yes	380.47		276.07		216.91	
No	Yes	278.60		41.72		79.41	
Yes	No	114.88		74.23		75.74	
No	No	0.00		0.00		0.00	

Source: TAMPA 1997, 2000 and 2004. Yields-90kg bags/acre, extension- distance in Km to nearest extension provider

Table 3 presents average distances between farmers' homesteads and where they can access both crop extension and livestock advisory services either private or public across the agro regional zones over the three panel periods. Distance to crop extension and livestock advisory services averaged about 5.4km and 4.4km respectively over the period. However, distances to extension services remain long in some regions. For example, rural households in Coastal lowlands are as far as 11.4km and 10.6km on average away from crop extension and livestock advisory services respectively. Distances to extension services in the Central region are basically low. It is worthy to note that areas characterized by long distances to agricultural extension are also associated with low maize productivity. This can be interpreted to mean either lack of extension at close proximity to households causes low agricultural productivity or agricultural extension agents are not keen to serve low productive areas.

In Table 4 we present data on average distances to public telephone and cell phone services, which a farmer can access to summon extension workers in case of an emergency. The distances to fixed telephone lines have remained high in some regions. Commonly, public telephone booths, which are relatively cheap to access compared to cell phones, are found in locational headquarters where in most cases these extension workers are based. Distance to mobile services which households can access was reported at about 1km in 2004. The introduction of mobile phone services is a new innovation which extension service providers may consider using to reach farmers. However, even though proximity to cell phone services is low, the cost of usage might be relatively high for low-income households to access.

Table 3. Distances to extension services (Km) and maize productivity across regions

	1997			2000			2004		
	Crops	Vet.	Yields	Crops	Vet.	Yields	Crops	Vet	Yields
ARZ									
Coastal Lowlands	9.6	8.9	1.9	12.4	12.2	3.5	12.3	10.6	2.3
Eastern Lowlands	5.5	5.2	2.2	4.6	3.9	3.4	6.0	4.8	3.3
Western Lowlands	6.7	6.2	2.9	7.7	2.5	2.7	6.5	5.4	2.4
Western Transitional	5.7	4.8	5.6	4.5	4.2	7.5	4.7	3.8	8.2
High Potential Maize	5.4	5.1	11.7	6.0	4.6	10.4	5.6	4.6	13.6
Western Highlands	5.3	3.4	5.6	5.2	3.0	11.8	4.8	3.4	6.1
Central Highlands	3.7	2.9	7.1	3.0	2.4	14.8	2.3	1.7	8.6
Marginal Rain Shadow	2.8	4.1	2.4	2.0	2.8	1.1	3.0	3.0	4.3
Total	5.4	4.8	6.7	5.5	4.1	8.7	5.3	4.3	7.9

Source: TAMPA 1997, 2000 and 2004; yields-90kg bags per acre

Table 4. Distance to telephone services

Agro-regional zones	Fixed line 1997	Fixed line 2000	Fixed line 2004	Mobile 2004
Coastal Lowlands	5.3	5.9	5.0	1.4
Eastern Lowlands	6.5	3.7	3.4	1.6
Western Lowlands	3.7	3.2	3.0	.7
Western Transitional	6.2	4.6	3.2	1.4
High Potential Maize	7.8	6.7	6.0	1.6
Western Highlands	3.6	4.3	3.8	.5
Central Highlands	3.1	2.0	2.6	.5
Marginal Rain Shadow	9.1	6.1	7.4	.5
Total	5.6	4.5	4.1	1.1

Source: TAMPA 1997, 2000 and 2004

Even though Table 4 reveals that distance to crop extension has generally remained the same over the years covered by the panel, a lot of changes as far as these distances are concerned may have happened to individual farmers. Probably, farmers moving shorter distances in 1997 may have been abandoned by extension service providers forcing them to walk long distances in search of extension services in 2004. The opposite is also possible- farmers who were far away from extension services in 1997 now accessing such services at close proximity. We use transition matrices to observe the proportion of households within the panel datasets that move from one extension distance range to another between 1997 and 2004. Of utmost concern is the percentage of households originally at short proximity to extension services that remains in that status (immobiles) compared to those who move over to longer distances brackets. Table 5 shows that out of those who were 2km and below away from crop extension services in 1997, 57 percent remained in the same distance bracket group in 2004. About 5 percent of that group was as far as over km away from extension in 2004. Conversely, out of the group that was above 10km away in 1997, 21 percent of them were in 2004 only 2km and below away from extension services.

Table 5. Distance to extension transition matrices (1997-2004)

		Distance to extension 2004						Total
		Km \leq 2	2<Km \leq 4	4<Km \leq 6	6<Km \leq 8	8<Km \leq 10	Km>10	
Distance to extension 1997	Km \leq 2	57.1	20.2	8.3	4.8	4.5	5.1	100.0
	2<Km \leq 4	34.2	36.2	13.6	5.3	4.3	6.3	100.0
	4<Km \leq 6	20.5	24.3	23.3	17.6	7.6	6.7	100.0
	6<Km \leq 8	26.3	22.9	21.2	11.0	11.0	7.6	100.0
	8<Km \leq 10	16.7	17.9	19.2	15.4	15.4	15.4	100.0
	Km>10	21.1	19.7	10.9	8.8	9.5	29.9	100.0
Total		35.8	24.8	14.3	8.8	6.9	9.4	100.0

Source: TAMPA 1997, 2000 and 2004

In Table 6 we present distances to extension services across income quintiles. The quintile groups are defined using household per adult equivalent incomes. We observe that relatively poorer households are further away from extension services compared to wealthier households. The 20 percent poorest were about 6km while the 20 percent wealthiest were 4.8km away from extension services.

Table 6. Average distances (Km) to extension services by income groups

Income Quintiles	1997	2000	2004
1 (lowest)	6.1	6.1	6.2
2	4.9	5.5	5.5
3	5.3	5.6	5.3
4	5.2	5.5	4.7
5 (highest)	5.4	4.7	4.6
Total	5.4	5.5	5.3

Source: TAMPA 1997, 2000 and 2004

In Table 7, we present mean production costs of monocrop maize production for 6 production technology categories found in Kenya and Uganda (based on Nyoro, Kiriimi, and Jayne, 2004). The 6 production cost categories are: (1) High potential maize-western Kenya, small scale, 1 ploughing, high fertilizer intensity; (2) High-potential-western Kenya, small scale, 2 ploughings, high fertilizer intensity; (3) High potential-western Kenya, medium/large scale, 2 ploughings, high fertilizer intensity; (4) Central-highlands Kenya, small scale, 1 ploughing, low fertilizer intensity; (5) Central-highlands Kenya, small scale, 1 ploughing, high fertilizer intensity, and (6) Uganda region, small scale, 2 passes, no fertilizer.

The salient point highlighted in this table is the range of production costs incurred by farmers in the same areas using the same technologies. For example, in production technology category 1 (PTC 1, which is the High-potential maize zone of Trans Nzoia, small-scale farmers using one plough pass and using over 50kgs of fertilizer per acre, Nyoro, Kiriimi and Jayne found that the most efficient third of these farmers had production costs of 413 Ksh per 90kg bag (excluding land rental costs). By contrast, the least-efficient third of these farmers had production costs of 1,611 Ksh per 90kg bag. Similar findings of a wide variance in production costs across farmers in all Production Technology Categories indicate that variations in management practices and husbandry skills are probably very great. Because the survey was designed to minimize differences in agro-ecology within regions, and production categories were stratified by technology type and intensity, the wide variation in production costs within production categories most likely reflects differences in management practices in the cultivation of maize. This result underscores the importance of appropriate extension messages.

Table 7: Mean Characteristics of Maize Monocrop System, According to Level of Production Costs per Bag and Production Technology Category

	----- Production Technology Category (PTC) -----						
	1	2	3	4	5	6	7
Lowest Production Cost Farmer Tercile:							
Production costs/bag ¹	413	424	472	364	452	334	268
Production costs/bag ²	568	562	596	434	569	457	341
Yield (Bags/acre)	20	23	25	15	17	10	23
Production costs/acre	7,475	9,671	11,052	5,361	7,641	3,314	6,189
Fertilizer use (kg/acre)	119	112	114	13	63	0	78
Medium Production Cost Farmer Tercile							
Production costs/bag ¹	692	645	931	713	686	493	407
Production costs/bag ²	923	821	1,139	971	844	558	466
Bags/acre	14	17	15	7	14	13	23
Total production costs/acre	9,383	10,978	13,854	4,690	9,594	6,185	9,338
Fertilizer use (kg/acre)	124	111	137	23	62	0	90
Highest Production Cost Farmer Tercile:							
Production costs/bag ¹	1,611	1,173	2,287	1,754	1,676	1,199	867
Production costs/bag ²	2,350	1,468	2,702	2,226	2,088	1,368	959
Bags/acre	5	11	8	5	8	6	13
Total production costs/acre	7,746	11,784	15,463	8,388	11,209	7,002	9,776
Fertilizer use (kg/acre)	91	121	125	31	88	0	98
Overall:							
Production costs/bag ¹ (for PTC)	940	753	1,230	973	938	670	514
Production costs/bag ² (for PTC)	1,331	957	1,479	1,249	1,167	818	589

Source: Tegemeo Maize Production Cost Survey data, 2003. 1:excluding land rental; 2: including land rental

Nyoro, Kiriimi and Jayne (2004) estimated that simply by bringing the production costs of farmers in the high production cost tercile to that of the mean in each PTC, the overall production costs for monocrop maize producers would decline from Ksh 851 to 630 per bag, and from Ksh 1007 to 752 per bag for intercrop maize producers. Achieving these gains in maize production efficiency will depend on many factors, but extension is likely to be among the most important. Therefore, the costs to the nation of having an under-performing extension service – in terms of smallholder productivity, incomes, and poverty reduction, and the ability to survive or even thrive after the reduction in import tariffs as implied by impending COMESA and EAC trade agreements – are very high.

6. Approaches to agricultural extension service provision

6.1 National Agriculture and Livestock Extension Programme (NALEP)

This is the main government extension program. It is implemented by the Ministry of Agriculture and supported by the government (NALEP-Gok) and Swedish International Development Agency (NALEP-Sida). The programme aims at enhancing the contribution of agriculture and livestock to social and economic development and poverty alleviation by promoting pluralistic, efficient, effective and demand-driven extension services to farmers and agro-pastoralists. The hypothesis behind this approach is that development agents should not do extension alone, but together with all other stakeholders in the area that could provide valuable inputs to the process in order to gain synergy effects. This cooperation should be sustained throughout the entire process. It involves the Shifting Focal Area Approach (SFAA) in which officers with specialized skills are deployed in an area to work with Frontline Extension Workers (FEWs) and farmers for a specific period (one year) before shifting to a new area. The degree of implementation of NALEP by the public sector depends on resource availability. The resources provided by NALEP-Sida have allowed better implementation than in NALEP-GoK areas. NALEP uses group approach where groups are formed within the focal areas that receive extension services for a whole year under NALEP-Sida, and then they are expected to continue their activities under the supervision of NALEP-GoK.

Table 6 presents an indication of the NALEP-Sida extension costs. It should be noted that these costs do not include the costs of government extension staff and offices where NALEP Sida operates. At the division and district level where the programme is implemented, Sida spends about KSh164 million and KSh 72 million annually. Sida spends about KSh 19 million and KSh171 million at the provincial and national headquarters. NALEP headquarter budget includes procurement of vehicles and equipment for the whole programme. Thus, factoring in the locational operating costs and administrative costs both at the divisional and district level, it cost NALEP-Sida about KSh288 per farmer per year. Generally, Sida is spending about KSh519 per farmer in a year.

Table 7. NALEP-Sida Annual Budget⁴

	KSh
Divisions	164,902,970
District HQs	71,358,030
Provinces	19,158,000
NALEP HQs	171,000,000
Grand Total	426,419,000
<i>Cost per farmer:</i>	
District and divisional budget	288
Provincial, district and divisional budget & below	311
Overall programme cost per year per farmer:	519

Results from the project reviews indicate that the approach reached only limited number of farmers (Republic of Kenya 2005c). Also, it was established that that people with higher education had benefited to a greater extent. Non-poor farmers benefited more than their poor counterparts since they had resources to invest and thus exploited the potential of the introduced technologies. The farmers who could exploit the project benefits are usually those who had access to other sources of income than farming. Also farmers with small pieces of land tended to benefit less. Poor farmers are risk averse and thus not willing to engage their meager resources to try new technologies, thus adopting ‘wait and see’ strategy. However, this approach was credited to have spillover in the form of improved food security situation even in the neighboring project areas. The NALEP-Sida operates within the government structure and insists that the existing government rules and regulations are complied with including reporting mechanisms to ensure accountability. Monitoring has focused on ensuring good transparency and consists of recording attainment of targets in terms of activities planned. However, the accountability is primarily to the government and donor rather than to the primary client (farmer).

6.2 ATIRI- Competitive grants for research outreach

To ensure that its technologies reached farmers, the Kenyan Agricultural Research Institute (KARI) embarked on the Agricultural Technology and Information Response Initiative (ATIRI) to empower farmers to make technology and information demands on agricultural

⁴ These costs do not include the costs of government extension staff and offices where NALEP sida operates

service providers. The initiative targets community-based organizations (CBOs) as beneficiaries or intermediaries (farmer organizations) facilitating member acquisition of appropriate technologies and information. Grants cover acquisition of technologies (for example, planting material), exchange visits to other farmers who have already adopted the technology, visits by the institute's staff, and other costs of observing, learning, and adopting technologies. Smaller grants are given preference over larger ones to expand the number of beneficiaries. The average grant was about US\$3,000. The initiative is working with 178 CBOs to cover 11,835 farm families. Experience has been quite positive: an example of success is the Shaza Women's Group in the Kwale district.

6.3 Private companies (Commercial)

Commercial extension initiatives have started providing extension services in areas where it is profitable like in high potential areas. It involves conveying information about and demonstrating the technologies that the company promotes such as hybrid seeds. Private companies are also co-finance major agricultural shows. With increased competition in the seed, agrochemical and dairy industry, firms have begun giving extension advice through stockists, demonstrations and field days. In the dairy sub-sector, companies and individual are advising farmers about feed, providing artificial insemination (AI) and veterinary services, and training farmers in hygienic ways of handling milk. Extension is now considered part of marketing strategy and private commercial companies are putting money in it. For example, a private company dealing in hybrid seed and agrochemicals reported spending about KSh3.3 million in a season on agricultural extension (Table 8). This translates to about KSh394 per farmer in a season.

Table 8. Private Company Extension Budget

Costs per season	KShs
Promotions	800,000
Samples	1,500,000
Adverts	50,000
Meetings and conferences	400,000
Outside	800,000
Total	3,550,000
Approximate cost/farmer/year	394

Box 1. Maize seed and agro-chemicals company

The company has influence on the way its products are marketed through field promotion using three own field extension staff. The company hires casuals to plant demonstration plots in two maize seasons. The casuals are hired for three months for about KShs7500 per month. In total, they normally have about 800 demonstration plots per season. In each demonstration plot, they use ½ kg of maize seed, 5kg of fertilizer and weed control chemicals. Then the company organizes about 90 farmer field days around the country. Ministry of Agriculture invites the farmers on their behalf. About 100 farmers attend each field day. Each field day costs about KShs5000 to organize. The field days are done when maize is cobbing. They invite other stakeholders especially agro chemical companies to promote their products during the field days. In certain cases they promote churches and organized farmer groups to set up demonstration plots. It is the intention of the company to train both the poor and non-poor farmers but in most cases, the non-poor takes up the technology faster. To adopt technology some initial capital investment is required. Thus, since the non-poor have money throughout the year, they are in a position to try new technologies.

Interviews with stakeholders indicated that private commercial companies are providing advice about production of profitable enterprises. Also, these commercial enterprises especially ones dealing in agricultural input supply are not keen on extending their services to marginal areas due to low returns. Some would pose: ‘if you one can make enough sales by the time you reach Nakuru (200km from Nairobi), why incur additional costs on poor roads taking inputs to Kapenguria and Lodwar about 600km from Nairobi? Besides, even in the areas where they reach, most of them are only interested in dealing with farmers that possess effective demand- not prepared to invest in building up the capacities of the very poor. These arguments suggest (but need to be shown empirically through future research) that the social benefit of providing extension services to farmers in remote areas exceed the profitability of private firms to provide these services. In such cases, if indeed the social benefits are high, there is a case for the public sector to intervene. This may indicate an appropriate division of labor for the public and private extension systems: allow the private systems to operate in areas where they have strong incentives to do so, and allow the public sector to undertake or facilitate a socially beneficial role of providing extension services in areas where the private sector is unable to do so.

6.3 Private non-commercial extension providers

Many Non-Governmental, Faith Based and Community based Organizations are currently providing farmers with agricultural extension services. Majority of them have

extension staff trained in relevant agricultural disciplines to certificate, diploma or degree level. Most extension service providers are promoting *commercialization* of small-scale agriculture. This involves communities identifying the crops that can grow in their area and the program assists them to produce such crops as a viable commercial enterprise. Training is also on marketing and *calenderization* (not to grow when every body is growing to avoid depressing output prices). For example Care-Kenya (Homabay) supported groups are now growing high value basmati rice, high oil content sunflower, grafted mangoes, and new high value crops like okra (for seeds) and industrial chili.



Photo 1: Beehives house in Vi Agro Forestry (Kitale) demonstration farm

Some extension providers adopt an integrated approach bringing in a host of activities. For example, Sacred Africa (Bungoma) has the projects geared towards increasing productivity, capacity building, marketing projects and research in agriculture. World Vision (Suba) interventions involve training farmers in the areas of agronomic practices, soil conservation,

grain and seed storage using indigenous technical knowledge (ITK) - storage of seeds, as well as high value horticultural crops (tomatoes, kales, watermelon, pawpaw and bananas) production along the lake Victoria shores. They also train farmers groups in goat rearing and livestock diseases control.

While most of the private non-commercial extension providers rely on the government research institution such as KARI for technologies, others have established links with private companies as well as international research centers such as International Centre for Research in Agro forestry (ICRAF) and International Centre for Insect Physiology and Ecology (ICIPE). A good example is the Catholic diocese of Homabay, which is working closely with International Maize and Wheat Improvement Centre (CYMMIT) for maize, International Potato Center (CIP) for orange fleshed potato, and International Crops Research Institute for the Semi Arid Tropics (ICRISAT) for ground nuts. Currently, working relations with International Institute Tropical Agriculture (IITA) for cassava are being established.

While in the past most extension providers focused mainly on production, currently, the private sector extension providers are going beyond production to support value addition activities and link farmers with output markets. Supported farmer groups are now producing dried chips, backed sweet potatoes, crunches, chapattis and cakes; peanut butter from groundnut, sunflower oil; milling orange-fleshed sweet potato and producing, honey hygienic handling, packaging and labeling; maize sorting, moisture content measurement, grading, bulking and control of pests; yoghurt making; preserving vegetables; and tomato jam making.

Some development agents are supporting farmer groups with credit. For example, four groups in Suba district have been supported to start small-scale irrigation. They were given a loan of Kshs 160,000 seed money (no profit) to buy a portable irrigation pumps, pipes and sprinklers by Care (Kenya). Other extension providers are encouraging farmer groups to mobilize savings. In most cases, training is offered for free. But when it comes to farm inputs and livestock, farmers meet the entire cost or cost share with the development agent. For example, in basmati rice interventions Care-Kenya (Homabay) source for planting materials on cost recovery system, whereby the farmers would either pay actual price on delivery or pay thrice the purchase price after harvest.

Most of the non-commercial extension agents are collaborating with the public sector extension workers. Thus, unlike before, the public sector collaborates with other development

agents offering extension services. Many of the development agencies consider government extension workers as well trained and with some facilitation have the potential to further their (development agencies) interests. This reduces costs on the part of the private non-commercial extension providers – no need to hire full time extension specialist (free riding). All they need to do is to offer them lunch and transport, and in some cases ‘top up’ their salaries and then the development agencies supervise them.

However there has been some conflict where some extension providers give out materials (e.g. seeds, goats, heifers, etc) for free while others strongly advocates of cost recovery. This leads to high expectations by the community and confused clients. There have also been incidents of ‘hijacking of groups’, and competition for groups. Competition as development agents strive to out-do each other was reported. However these conflicts are now being addressed in district stakeholders’ forums where providers subscribing to different development principles are allocated different areas to operate in- this can only work under the assumption that these areas are separated by veil whereby communication between the two targets groups does not exist.

Extension costs vary from one provider to the other and depends on distances traveled and the kind of activities an extension provider is involved in doing. Table 9 gives the cost breakdown of a non-profit private sector provider over one week during the peak season. Of course these costs are not uniform through out the year. During the slack seasons field activities are reduced. This cost excludes extension staff salary (government staff) and administration overheads. The average cost per week to reach 25 farmers costs KSh2292 that translates to about KSh91 per farmer in a week. Another provider estimated extension service provision per farmer at KSh167.

Table 9. Private non-commercial extension provider weekly budget

	KSh/week
Extension staff imprest lunch- 180 per day x 5 days	900
Communication in the field	500
Transport costs-8 litres per week (8x74 per litre) per week	592
Stationery	300
Total	2,292
Farmers reached in 5 days- 25 farmers	
Cost of seeing one farmer	91

Box 2: Catholic Diocese of Homabay

The diocese runs two agricultural and food security programmes, namely, agricultural and environment program (AEP) and agricultural commercialisation program (ACP). AEP operates in five districts: Homabay, Migori, Rachuonyo, Kuria and Suba. It has a target of 10,000 households aiming at improving food security among resource poor farmers in the program area. AEP has the following components: livestock improvement, grain storage, micro finance, marketing and sustainable agriculture. Agricultural commercialisation program (ACP) is in Homabay and Suba districts. It focuses on the marketing of selected crop/commodity and grain storage. Group membership may overlap even with AEP. The programme starts with a needs assessment. It uses group approach consisting of 5-15 members known as solidarity groups-SG, which then form umbrella body (about 100-250 farmers). Each interest grouping has a committee while at the umbrella body is managed by a farmer committee. The umbrella body consists of various interest groupings undertaking a variety of activities e.g. producer, marketing and microfinance and savings mobilization (*bengi*) groups. AEP also has a component of social reintegration- working together with parents of mentally challenged and normal children with the aim of boosting their food security and social reintegration to avoid stigmatisation. The programme is engaged in various enterprises.

Livestock improvement- promotion of exotic/local dairy goat and local poultry. They have also established a multiplication site where farmers can bring their goats for fattening and multiplication and after they are sold, part of the proceeds goes to offset the operating costs.

Grain storage- Promotion of smallscale storage silos for grains, which reduce damage from attack by large grain borer.

Micro finance- Promote savings mobilization along the structure of solidarity groups. They run three types of accounts: savings, share and business. Through their shares pool, farmers can access emergency loans. Loans are collectively guaranteed.

Marketing- links farmers to markets for the crops that have been identified for supported.

Value addition- building capacity for value addition. Some groups are processing sunflower oil, peanut butter (groundnut), and milling of orange-fleshed sweet potato which are rich in vitamin A.

Sustainable agriculture- promotion of organic farming, agro forestry and soil conservation.



Photo2: Small scale grain silo promoted by Catholic Dioceses of Homa Bay

For sustainability, most extension providers have a phase-out plan. This involves staff reduction, encouraging groups to merge so as to create economically viable units, and letting group leaders take up some management roles. From the onset, they let the community know the project duration and allow community members assume key responsibilities in running of the groups. Promotion of cost sharing/cost recovery approaches right from the project inception assists in enhancing farmers' project ownership. Other providers encourage groups to form CBOs to carry on with the work. Formed groups are given training in resource mobilization and use as well as linking them with service providers and markets.

Box 3. Kenya Maize Development Programme

Kenya Maize Development Program (KMDP) covers Bungoma, Trans Nzoia, Uasin Gishu, Nakuru, Bomet, Kisii and Nyamira districts. This is a consortium of partners that have support maize farmers to carry out various functions along the value chain. They are:-

- Fips Africa – production promotion
- Kenya Agricultural Commodity Exchange (KACE) – market intelligence to the farmers
- Grain Growers Association (CGA) – capacity building and group formation to encourage collective marketing of maize
- ACIDI VOCA- coordinating agency- offers useful training to farmer groups, e.g. farming as business, power of attitude change.

KMDP believes consistency (same message); input availability; and right quantities enhance technology adoption. Adoption also depends on the expected gains-if promising, then adoption will be high. If expectation not met, it becomes exceedingly hard to convince the farmers to adopt another technology. Through on farm demonstrations, KMDP promotes new seed and chemicals technologies in partnership with the manufacturing companies. This involves identification of inputs and packaging them into smaller packages for trials- if it works, farmers move to larger quantities because farmers are risk averse. The aim is to assist farmers evaluate different seed and fertilizer types. One seed variety is treated to different fertilizer types thus empowering the farmer to choose seeds and fertilizers for their respective regions (research). They ask the companies whose products they are promoting to package the product into smaller package to make it easier for farmers to try on their farms. After demonstration they organize with the stockist to stock these products to ensure that the products are available when demanded- no need to promote a product which farmers can not access.

Occasionally, they host stockists and chemical producers' annual forum for networking and for chemical producers to get to talk about their products and demonstrate how they are used to stockists. These forums enable the stockists strike deals with suppliers thus facilitating availability of stocks to farmers.

Where this non-commercial extension provider and government relationship is working according to the government stated standards and principles, this collaboration could be regarded as a form of cost sharing- the government paying extension workers basic salaries while the development agencies meet their field expenses. The formation of divisional and district stakeholder forums have greatly improved understanding of interaction between stakeholders in

providing better services to farmers. Those interviewed appreciated the stakeholder forum initiative aimed at bringing together stakeholders in agricultural sector to exchange information, plan jointly, harmonize approaches and share resources is making agricultural service delivery more efficient and effective. However, most of are accountable to their donors with little reference to their clients (farmers) while others are accountable to the district stakeholder forum.

6.4. Farmer groups as key intermediaries in extension

Extension systems face challenges in delivering information services to large numbers of smallholder farmers scattered over wide, sometimes inaccessible, areas. Farmer groups make extension services more accessible to small-scale farmers by providing economies of scale in service delivery and a mechanism for producers to express their demands for services. Working with farmer groups may enable extension programs to reach more farmers and rural households (increasing efficiency), facilitate participation in extension activities (increasing effectiveness), and develop human resources and social capital (increasing equity). Farmer groups help extension reach members but more importantly, serve to organize demand for extension services. They enable members to participate in defining objectives and needs, provide feedback to help programs deliver more relevant services, become more accountable to clients, and establish a base for co-financing and eventual self-financing of services. The farmer group role entails facilitating delivery of services, providing services to members or financing services.

Farmer group approach has become popular with most extension providers in Kenya. Extension provider organizations either start these groups or groups that had been in existence before. Farmer groups generally draw members from between a village to locational level. Most of the groups visited have been in existence for less than 5 years, while a few others were in existence for slightly longer duration. In some cases, development agents initiated most of the farmer groups' formation. Other groups were in existence prior to the arrival of the agency although not necessarily dealing in agricultural activities (merry-go-rounds). On average, groups have 15 members. About two thirds of the groups had membership increasing from the time the group was registered to the present. On average 50 percent of the members were women. Formation of some farmer groups is based on a common interest- centered on enterprise of

interest (common interest groups-CIGs or solidarity groups (SGs) e.g. growing of mushrooms, beekeeping or saving and credit schemes.

Farming Systems Kenya (Nakuru) has initiated another innovation of bring together farmer groups to form a federation with the core business being the collective marketing of farmers produce in Nakuru and Uasin Gishu districts (Box 4). Apart from collective marketing of farm produce, the FMFs also practice joint purchase of farm inputs. This gives them the opportunity to exploit economies of scale through the huge orders placed for large number of farmers resulting in discounts from the suppliers. This coming together of groups has enhanced linkages with the extension service providers and also easier access to Micro-Finance Institutions (MFIs). Groups of farmers can access crop production credit payable within four seasons at 10% interest.

Box 4. Farmers Marketing Federations (FMF)

Farming Systems Kenya (FSK) has shifted from the individual group approach to development to group approach and currently to the Farmers Marketing Federation (FMF) approach. The FMF approach brings together several groups on average of 5-10 groups with a membership of 100-1,000 farmers. FSK has initiated formation 30 FMFs from 450 groups with total membership of about 10,000 farmers in Nakuru district. In Uasin Gishu district, about 3,000 farmers in 150 groups have been clustered to form Kesses FMF. FMF have greatly reduced the cost of services per farmer and also reaching out to more farmers in a shorter duration.

Table 10. Farmer Marketing Federation extension cost

	KSh/week
Fuel and maintenance	3,500
Extension staff	2,500
Training materials	1,500
Telephone	250
Total	7,750
Assuming a group as 100 members	
Cost of seeing one farmer	77.5

All the groups have some joining conditions. Prospective members are required to read the groups constitution and to pledge to abide by the laid down conditions by signing the

registration forms. For one to apply for group membership, one was required to be a practicing farmer either owning a farm or renting land. Joining members are required to pay a registration fees ranging between Ksh15 for smaller groups to about Ksh200 for the larger groups. Farmer groups participating in agricultural trade required farmers to contribute shares. Shares price ranged from 20 Ksh to 1000 Ksh payable either in cash or kind through agricultural out contribution. Groups had a set minimum as well as maximum number of shares that one could hold. All the groups had a written constitution since it is a registration requirement by the Ministry of Culture and Social Services.

All groups surveyed had in place an elected management committee consisting of 5 executive committee members and four co-opted committee members. The executive committee members included a chairman, vice chair, secretary, vice secretary and a treasurer. Although most groups did not have specific positions for either male or female members, it was apparent the gender equity was being exercised to a fairly high degree. Most groups ensured that there was representation for both sexes and this was reflected in their management committees. Some of the groups have in place additional sub-committees set up to manage specific activities. For example, the marketing subcommittee deals with searching for markets for bulked produce as well as procurement of farming inputs, loan sub-committee is mandated to assist the group in looking for sources of credit and negotiating the credit terms on behalf of the group members while the training sub-committee takes care of seminars, organize farmer visits, seed variety testing, visits to agricultural shows and demonstrations. Most of the groups hold frequent meeting with their members ranging from weekly to every three months. Special meetings are called if there is pressing issue such as an unscheduled training. The frequency of meeting also depended on intensity of other farming activities competing for the farmers' time.

Some of the benefits associated with group membership include:

- More accessible and affordable to provide extension services.
- Better input prices resulting from joint input procurement. Because of bulk purchase of farm inputs, groups got discounted prices (factory gate prices in certain cases).
- Better commodity prices because of bulking and collective marketing. Farmers empowered to negotiate for better prices because of the bulked produce.

- Stabilization of out put prices in areas where the groups have started input shops, thus avoiding exploitation by middle men
- Storage of farmers' produce in centralized points making it easy to market.
- Economies of scale associated with joint transportation of produce to the markets.
- Through these groups farmers now have a forum for sharing information on good production practices, market information, and networking with other farmer groups.
- Groups have also been trained on how to benefit from seasonal commodity price variations by timing their produce sale to coincide with optimum commodity prices.
- Through coming into groups the farmer groups are attracting agricultural credit especially from micro finance institutions, which require no collateral but instead mutual guarantee. Some of the groups have gone further and are negotiating with AFC for loans. Savings mobilization through contribution of shares, periodic contributions and table banking.
- Dividends paid from profits generated by income generating activities managed by the group.

Using TAMPA data we attempt to show empirically the benefits associated with group membership. While causality is again not implied, we find that group members are closer to extension services compared to non-members (Table 10).

Table 11. Group membership and distance to extension services (Km)

Group Membership	2000		2004	
	Crop	Livestock	Crop	Livestock
Non-Members	6.7	5.6	6.4	5.3
Members	5.1	3.7	4.9	4.0
Total	5.5	4.1	5.3	4.3

Source: TAMPA 2000 and 2004

In Table 12, we show the social economic status of group and non-group members in TAMPA 2000 and 2004. It is apparent that groups' membership attracts relatively wealthier members of the society. Distribution of those reported to be group members in the two periods is

skewed towards high income groups while that of non-members is skewed towards lower income groups.

Table 12. Group membership and incomes

	2000		2004	
	Members	Non-members	Members	Non-members
1 (lowest)	15.8	35.0	16.6	30.1
2	18.9	24.0	19.0	23.3
3	21.4	15.2	20.1	19.9
4	22.0	13.1	22.3	13.0
5 (highest)	22.0	12.7	22.0	13.7
	100	100	100	100

TAMPA 2000 and 2004

7. Conclusions and Policy Implications, and Areas for Future Analysis

1. Even holding constant agro-ecological zone and production technology, there are wide variations in farmers' costs of production. Variations in management practices and husbandry skills are probably very great. This result underscores the importance of appropriate extension messages. Simply by bringing the production costs of farmers in the high production cost tercile to that of the mean in each PTC, the overall production costs for monocrop maize producers would decline from Ksh 851 to 630 per bag, and from Ksh 1007 to 752 per bag for intercrop maize producers. Achieving these gains in maize production efficiency will depend on many factors, but extension is likely to be among the most important. Therefore, the costs to the nation of having an under-performing extension service – in terms of smallholder productivity, incomes, and poverty reduction, and the ability to survive or even thrive after the reduction in import tariffs as implied by impending COMESA and EAC trade agreements – are very high.

2. Private extension provision is generally skewed towards well-endowed regions and high-value crops. Remote areas and poor producers especially those growing low-value crops with

little marketable surplus are poorly served. Non-profit private providers are targeting them. But their scope is limited. To improve their lives, poor people need more services that go beyond production.

3. The public extension service appears to be high-cost compared to private commercial and non-profit extension services. Since public resources for extension are very constrained, it may make sense for public extension not to duplicate or overlap in the same areas that are being provisioned more efficiently by commercial and non-profit systems. This would leave more public resources for concentrating extension services for farmers in areas that are remote and poorly served by the commercial systems.

4. However, it is clear that the commercial and non-profit systems benefit from the presence of the public extension service. The alternative systems rely on public extension workers for training and appropriate management advice, so even if the public system were to withdraw to the more remote areas where private extension is unprofitable, there would still need to be provisions made for the commercial extension and public extension services to learn from each other, coordinate messages, and mutually support each other. It may be appropriate to institute some type of commercial contracting of public sector extension system staff so that the latter can impart needed skills and capacity building of the commercial extension systems.

Contracting out extension services makes it possible to take advantage of all of the talent and experience existing in the field but does not eliminate a government role which, in addition to funding, ensures quality assurance, oversight, and provision of training and information to contracted services providers. The government should retain the responsibility for establishing criteria for use of funds, quality control, and M&E, while private entities provide services, define specific objectives for each locality, train extension staff, develop appropriate extension methods, and conduct M&E studies.

5. The productivity of the extension service, whether public or private, depends on a productive agricultural research system. Extension messages depend on having a viable technology or management practice to share. This underscores the synergistic importance between agricultural

research and extension, and the need to devote adequate public funds for both in order for smallholder farmers to thrive.

6. The universities and other colleges have a role to play as far as equipping extension workers with relevant scientifically-derived messages is concerned. These institutions need to fine-tune their curriculum to meet the needs of the emerging realities in the privatized agricultural extension service. The government has a role of providing the technical expertise on agricultural issues and as thus should be available when called upon by other providers. It should serve as the final reference or arbitrator of conflicting extension information. To play this role properly, the government need to:

- Attitudinal change- should look at the private sector as co-workers, out to complement their activities and not as competitors. Should understand with other players, the work is made easier unlike when it used to be alone.
- Retrain its extension workers on current technology and keep them abreast of emerging technologies- some of them are recommending inputs that were phased out long time ago! Technologies are changing swiftly and thus need for capacity building from time to time.
- Keep the extension workers energized and motivated- some of them lack confidence. The government should ensure that extension workers do their work by providing necessary resources and right tools to do their jobs.

7. Policy challenges: the existence of chronic rural poverty, despite abundant natural resource wealth, has created a sense of urgency for improving the productivity and competitiveness of agricultural sector in Kenya. Small farmers not reached by public and private services. Larger farmers feel the extension agents have nothing to offer. Research stations claim to have many new technologies "on the shelf," that are not being adopted by the farmers. Experience has shown that no single extension model is universally relevant, and situation-specific models need to be developed. Challenge is looking for innovative ways of passing these technologies efficiently and effectively to farmers, ensuring that farmers receive relevant information while avoiding past mistakes.

8. We concur with many other analysts who have concluded that private extension is not a substitute for public extension and the public sector will continue funding extension significantly (Sulaiman et al 2005, Alex et al 2002).

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Appendices: Learning from other developing countries

Appendix 1: Uganda- Extension Decentralization, Privatization, and Reform

The National Agricultural Advisory Services (NAADS) project, part of the Plan for Modernization of Agriculture, is based on strong government commitment to decentralization and private sector development. Its objective is to improve the productivity and livelihoods of farmers, by establishing a relevant and responsive contract-based agricultural advisory service. This involves the transforming of the existing publicly-delivered national level extension service to a decentralized, largely farmer-owned, private sector advisory services system. Components of the project are:

- Advisory and information services to farmers. NAADS provides funding and training for initiatives from farmers groups, working in conjunction with local government, to contract for private agricultural advisory services.
- Technology development and linkages with markets. NAADS provides funds to farmers to contract researchers to work with them in their fields on technology and market development and adaptation.
- Ensuring quality of services. NAADS funds the development of a regulatory framework and service standards for service providers.
- Promotion of private sector institutional development. NAADS provides limited funding on a competitive basis for retraining and technical upgrading for service providers. In addition, the project provides a comprehensive package of benefits, including training, which will enable public sector extension providers to transition to employment in the private sector.
- Program management, monitoring, and evaluation. NAADS establishes and supports national and district level entities to coordinate, monitor, evaluate, and administer the project.

The project philosophy, consistent with the government vision, includes:

- *Independence and flexibility.* The NAADS board is a small and semi-autonomous unit. It is not housed within either the Ministry of Agriculture or the National Agricultural Research Organization.
- *Further decentralization.* Responsibility and funding for agricultural advisory services are being moved from the district level to the sub county and farmer level.
- *Contracting out services.* The government has decided to give districts strong incentives to reduce the number of extension providers employed as civil servants, in favor of contracting the services of agricultural advisers.
- *Cost sharing.* The government has decided to institute, at a gradual and deliberate pace, the requirement that farmers and local governments pay part of the cost of the project.

Sixteen districts, which cover a total of 224 sub counties, are in a pilot phase of the NAADS project. Organized into local groups some 8,000 farmers participate collectively in decision making processes. The framework developed for extension services provides a strategic base for rural information and communication services. Farmer control of resources provides and strengthens previously weak linkages to the research system, makes technologies more accessible, and facilitates the use of farmer innovations and local knowledge. The private sector advisory partners have begun to register as

companies and eventually extension services will be completely privatized. Current extension workers, who will soon become private sector service providers, are involved in retraining to match their skills with what is required by private sector advisory services.

Lessons Learned and Issues for Wider Applicability

- Participation of local professionals, such as policymakers, researchers and extension agents and beneficiaries throughout the project planning and implementation stages is of critical importance.
- A responsive training program must be established for the staff of the extension system.
- Flexibility is required to meet the needs of a heterogeneous population of beneficiaries. When the delivery of extension services has been limited to one delivery mechanism this has often been difficult to achieve. Enabling sub counties and beneficiaries to contract with any qualified institution or entity to deliver advisory services will permit great flexibility in the types of delivery mechanisms that might be employed.

Source: World Bank 2004

Appendix 2: Contracted extension services in Chile

Contracting of private extension service providers in Chile was introduced in 1978. Evaluations report positive results from contracted services, and there is no support for return to a system of government service provision. Until 1983, farmers with potential for commercial development were provided with vouchers to use in purchasing extension services. Limitations associated with this system led to a more demand driven program, with farmer organizations proposing defined projects for commercialization and modernization of small-farm agriculture. As Beynon et al. 1998 reports, for contracted extension programs to be successful, the following lessons have been learnt in Chile:

- Design different programs to serve different categories of farmers and different program objectives.
- Decentralize program design and contracting to regional and municipal (district) levels to expand participation of farmers.
- Expand market orientation and marketing services within programs.
- Provide good technical support services and training to contracted extension agents.
- Establish good evaluation and monitoring systems at the national level.

Source: Beynon et al. 1998

Appendix 3: Delivery and financing mechanisms of extension services

Service	Main type of good	Major delivery mechanisms		Main financing mechanism	
		Public	Private ^a	Public	Private ^a
Farm advisory services (generic)	Public	Yes	Yes if contracted	Yes	No
Farm advisory services (farm-specific)	Private	Yes	Yes, preferred	Yes for small farmers and with cofinancing	Yes, preferred
Farmer training	Toll	Yes	Yes	Yes	Yes
Integrated pest management advice	Public	Yes	Yes, if contracted	Yes	No
Market price info. (individualized services)	Toll	No	Yes	No	Yes
Market price information services (mass media)	Public	Yes	Yes, preferred	Yes	Yes
Environmental conservation information services	Public	Yes	Yes, if contracted	Yes	No
Irrigation water management advice	Common pool	Yes	Yes, farmer organization preferred	Yes	Yes, if cofinanced
Farmer organization development assistance	Common pool	Yes	Yes	Yes	Yes
Advice on control of major contagious diseases	Public	Yes	No	Yes	No
Product quality certification for export markets	Private	Yes	Yes	No	Yes, preferred

Source: Word Bank (2004)