Investment and Employment in Agriculture and the Rural Sector in Uganda

Fred Opio
Milton Ayoki
William Odwongo

Institute of Policy Research and Analysis[1]

IPRA Working Paper 01

January 2002

[1] This work was undertaken with financial support of the International Labour Organisation under the project: Jobs for Africa: Poverty Reducing Employment Strategies for Sub-Saharan Africa (JFA-PRESSA Project). Any errors or omissions are ours alone. At the time this paper was written Dr. Fred Opio was Coordinator IFPI 2020 Vision Initiative (EA), Milton Ayoki was Research Fellow Institute of Policy Research and Analysis, and Dr. W. Odwongo was Director Plan for Modernisation of Agriculture (PMA/Uganda). Correspondence: IPRA, P.O. Box 7138 Kampala, Uganda. Email: milton.ayoki@ipraa.org

ACRONYMS AND ABBREVIATIONS

APSEC	Agricultural Policy Secretariat
BOU	Bank of Uganda
CMB	Coffee Marketing Board
HIS	Integrated Household Survey
HMS	Household Monitoring Survey
IFPRI	International Food Policy Research Institute
LMB	Lint Marketing Board
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MFPED	Ministry of Finance, Planning and Economic Development
NARO	National Agriculture Research Organisation
NEMA	National Environment Management Authority
NGO	Non-governmental Organisation
NMS	National Manpower Survey
PMA	Plan for Modernisation of Agriculture
PMB	Produce Marketing Board
UBS	Uganda Bureau of Statistics
Ug.Shs	Uganda Shillings

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Summary

Agriculture is still the dominant sector in the Ugandan economy, contributing about 42 per cent of total GDP (1998) and employing over 60 per cent of the total labor force, which comprises 80 per cent of the rural population. About 85 per cent of the population, who live in the rural areas, derive their livelihood from agriculture either directly, as smallholder subsistence farmers, or indirectly from rural off-farm activities, which in turn are driven by agriculture.

Available statistics suggests that of the total employment in agriculture, forestry and fishing, 89 % were in crop farming and the rest in "other agriculture" including livestock, poultry, etc. (IHS 1992/93). But, it is likely that employment in the coffee sub-sector, which contributes about 60% of the total export earnings, may have increased following the coffee recovery and boom of the early 1990s.

Agricultural production is carried out on a myriad of small farms, scattered all over the country, with a per capita land holding estimated at 1.14 hectares, but only 41 per cent of the cultivatable land is generally under cultivation. Nearly all these small holdings are rain-fed, employing family labor and hand hoe, and are characterized by low productivity. Current estimates suggest that there are about 3 million smallholder households in the rural areas, whose main economic activities include; crop farming as the predominant activity, followed by livestock keeping and fishing. But, array of economic activities such as brick-making, carpentry, tailoring, shop-keeping etc., are other alternative forms of employment available to the rural households.

Over the recent past, the population has increased markedly from about 16 million in 1991 to the present (2000) estimate of 22 million, and this has led to land fragmentation and low productivity. In several parts of the country, yields have decreased because of poor farming methods and lack of soil conservation practices.

Accelerated growth in agriculture can only be achieved, if there are increased investments in the sector by both the public and private sectors. This study provides a situation analysis of the current investment and employment in agriculture and rural Uganda aimed at providing appropriate policy recommendations for increased and sustained economic development in the rural sector. The study was conducted in two main parts. The first part comprised mainly a review of past agricultural sector performance and rural employment from available literature. The second part comprised detailed field surveys conducted in four districts – Bushenyi, Mukono, Kumi and Lira – to provide case studies for the policy recommendations. The key highlights of the study are summarised in the sections below.

Available information from Uganda Investment Authority (UIA) depicting the recent trends of planned private sector (medium to large-scale investors excluding smallholder farmers) investment in agriculture (between 1991 and 1997) estimates that only 20% of

licensed investments were intended for agriculture. It can therefore, be argued that current private sector investment levels in agriculture are insufficient for sustained and accelerated growth

Yet, Government has recognized that its main role is to provide an appropriate policy environment and economic and social infrastructure for increased private sector investment in agriculture. It is against this background that for the past decade the Government's main policy strategy has been to withdraw from direct production and distribution of inputs as well as other commercial activities in the sector. It is further recognized that the effectiveness of public and private expenditures on agriculture depends on complimentary expenditures in other sectors as well.

In terms of investment, despite lack of private sector interest, agriculture ranks top (IHS,1992-1995) in aggregate investment, followed by manufacturing, and lastly, mining and quarrying. Agriculture accounted for 96 per cent of total capital investment in the rural economy in 1994 and employed 92 per cent of the rural labour force, 47 per cent of which is family labour. There is little investment in farm machinery and tools, and capital formation is mainly in the form of land clearance, establishment of perennial crops and livestock.

Investment in agriculture and the rural areas has been hampered by a series of policy-induced distortions - structural and institutional constraints. However, in recent years, these distortions have been substantially reduced under the Economic Recovery and Structural Adjustment Programmes (ERSAP) of the late 1980s and early 1990s, which have contributed to a stable economic growth pattern averaging about 6 per cent per annum. Despite these developments, overall investment in agriculture has remained very low. Essentially, investment in agriculture in Uganda have been constrained, among others by:

- Absence of incentive framework for potential rural investors
- Poor access to land
- Low productivity and low return to factors of production
- Lack of capital, particularly, at the farm level
- Poor access to markets and poor infrastructure
- Effects of HIV/AIDS

There are also a number of contentious issues related to human capital investment and agricultural development in the rural areas. Rural population lacks technical and business skills, managerial and entrepreneurial skills. As such they remain static in their farm operations and off-farm investment activities. Higher level of education is believed to correlate well with higher levels of agricultural productivity. Hence, high illiteracy rate in the rural areas constrains smallholders' ability to participate effectively in the production process.

Likewise, the contributions of adults' labor to household income vis-a-vis direct investments in their education is another constraint to human capital investment and

development in the rural areas. It is not difficult to understand why adults in poor households have to work long hours on the farm, or in the house, thereby, sacrificing other earnings or educational opportunities. In Uganda, this is generally gender related, where girls are more involved in household activities, while boys are more involved in farm work at the expense of their educational attainment. This gender differentiation in work patterns as often argued, results in differences in educational attainment.

Given these constraints, the study findings demonstrate that most farm households are not able to expand their farm size and/or diversify farm enterprises. Hence, Government should provide conducive environment for farmers to borrow by; (i) institutionalizing micro-financial institutions; (ii) making credit accessible by all credit worthy borrowers (iii) promoting effective and efficient credit supervision; (iv) reviewing current interest rates, which must be commensurate with market interest rates (v) creating saving culture among the population (vi) promoting some form of input credit and contract farming.

The critical factors affecting employment opportunities are related to wage rates and productivity. When wages are too low most farm households would rather work on their farm even at low levels of incomes. Government should; (i) review wage rates and rationalize living wages across the board; (ii) ensure that farm inputs are available and easily accessible by farmers by privatizing input distribution; (iii) provide extension services to farmers to disseminate new skills and enhance productivity.

Current investment policy and environment in Uganda are not conducive to rural investment. The new Land Act is full of encumberances, such that potential investors are discouraged from investing in the rural areas. In addition, poor or lack of services and infrastructure (feeder roads, electricity and water) discourage investors. Government should create conducive environment and opportunities for rural investment by; (i) providing rural infrastructure (feeder roads, electricity, water etc.); (ii) reviewing the land act to make it attractive to potential rural investors (iii) promoting rural agro-processing industrialization and commercial growth centers; (iv) promoting and supporting commercialized and professional farming through the agricultural modernization program; (v) providing and promoting alternative markets for agro-products.

A review of the Government's medium term economic development strategies contained in the Poverty Eradication Action Plan (PEAP) and the Plan for Modernization of Agriculture (PMA), show that there are already credible plans for addressing most of the issues and concerns identified in from the current study. It is, therefore, further strongly recommended that Government should expedite and pursue rigorously the implementation of these plans.

Part One

REVIEW OF INVESTMENT AND EMPLOYMENT IN AGRICULTURE AND THE RURAL SECTOR IN UGANDA

1. Introduction

Agriculture is still the dominant sector in the Ugandan economy, contributing about 42 per cent of total GDP (1998) and employs over 60 per cent of the total labor force, which comprises 80 per cent of the rural population. About 85 per cent of the population, who live in the rural areas derive their livelihood from agriculture either directly, as smallholder subsistence farmers, or indirectly from rural off-farm activities, which in turn are driven by agriculture.

However, agriculture sector contribution to the economy has gradually declined from 61 per cent of the total GDP, employing 88 per cent of the labor force in 1963. In 1972, agriculture's share to GDP dropped to 52 per cent and increased slightly to 56 per cent in 1986, employing over 80 per cent of the total labor force[2]. Viewed from an expected normal economic growth pattern, this decline in the share of agriculture to GDP is reflective of a structural transformation in the economy, where other sectors are expected to make larger contribution to overall economic growth. However, what is not yet clear about this expected structural transformation is the fact that agriculture still employs a larger proportion of the labor force and over 85% of the population depend on it for their livelihood. This seems to suggest that overall structural transformation has not yet taken place. Further, the decline in the share of industry to GDP from 4 per cent in 1963 to 3 per cent in 1992, suggests that agriculture will for a while, remain the lead sector in the structural transformation process, employing the bulk of the population.

The absence of structural transformation suggests that there is lack of inter-sectoral shift in output and labor, which supports the commonly held view that the economy has not yet witnessed significant technological changes in all sectors. There is still excess labor force in agriculture, which could either join the industry and the service sectors or will otherwise remain unemployed or underemployed.

This view is further supported by the fact that 48% of the rural population living in absolute poverty are individuals, whose main income earning activity is agriculture (wage earners or cultivators). The challenge faced by the sector is to improve the incomes of about 3 million households, who are employed in agriculture, but are poverty stricken, as well as provide new employment opportunities for millions of rural and urban dwellers who prefer agricultural employment.

This study which was undertaken under the auspicies of the International Labour Organization (ILO) – Jobs for Africa Project – was, therefore undertaken to a situation analysis of the current investment and employment in in agriculture and rural Uganda and to make appropriate policy recommendations for increased and sustained economic development in the rural sector. The study was conducted in two main parts. The first part comprised mainly a review of past agricultural sector performance and rural employment from available literature. The second part comprised detailed field surveys conducted in four districts – Bushenyi, Mukono,

[2] Statistics Department, Ministry of Finance, Planning and Economic Development.
Although the proportional share in agriculture has decreased, the absolute numbers in the labour force has increased progressively.

Kumi and Lira – to provide case studies for the policy recommendations. The key highlights of the first part are presented in the sections below.

2. Agricultural Production and Rural Employment

Available statistics suggests that at the beginning of the 1990s, total employment in agriculture, forestry and fishing was 11.3 million persons (NHS 1993/94). Of these, 89 % were in crop farming and the rest in "other agricultural activities" including livestock, poultry, etc. Statistics on the breakdown of employment in the agricultural sector by sub-sectors is not available. It is likely that employment in the coffee sub-sector, which contributes about 60% of the total export earnings, may have increased following the coffee recovery and boom of the early 1990s.

Agricultural production is carried out on a myriad of small farms, scattered all over the country, with a per capita land holding size estimated at 1.14 hectares, but only 41 per cent of the cultivatable land is generally under cultivation (Table 1). Current estimates suggest that there are about 3 million small-holder households in the rural areas, whose main economic activities include; crop farming as the predominant activity, followed by livestock keeping and fishing. However, an array of economic activities such as brick making, carpentry, tailoring, shop-keeping etc., are other alternative forms of employment are potentially available to the rural households (Appendix 1).

The nature and type of agricultural production in the rural areas is usually categorized into seven main farming systems (Figure 1). These are described briefly below.

The Teso System – covering the districts of Katakwi, Kumi, Pallisa and Soroti is characterized by annual cropping, with millet and sorghum being the predominant cereal crops. The main oilseed crops include groundnuts, simsim and sunflower. With improved road network, cassava and sweet potatoes have in recent years become very important cash crops for sale to the urban areas. The main cash crop is cotton, whose production declined in the 1970s and 1980s due to poor markets and marketing infrastructures. Mixed agriculture is commonly practiced, with ox-cultivation becoming predominant again as a result of recent restocking efforts initiated by the government. Cattle rustling, which occurred in the region in the late 1980s had discouraged animal-drought farming system. The main system of livestock keeping in this zone is communal grazing

The Banana and Robusta Coffee System - is centered around the Lake Victoria Crescent and is devoted mainly to perennial agriculture with bananas and robusta coffee being predominant. The districts covered in this category include Jinja, South Iganga, Mukono, Mpigi, parts of Kampala, Southern Luwero, Mubende, Masaka, Hoima, Kabarole, and Bundibugyo. The other common crops grown include maize, beans, sweet potatoes, cassava, horticultural crops, tea and groundnuts. Tethering of cattle is common although under large-scale livestock keeping, various forms of intensive farming including zero grazing particularly in urban and peri-urban areas are practiced.

The Banana, Finger Millet and Cotton System – covering the districts of North Iganga, Kamuli, North Luwero, Masindi and Tororo is similar in several respects to the Banana and Robusta coffee system. The main difference between the two systems is that in the latter, annual cropping is more predominant and coffee production is less pronounced. The main cash crop is cotton, with finger millet, maize and beans being dual cash and food crops.

The Northern System - comprising Apac, Gulu, Kitgum and Lira districts is characterized by a similar annual cropping pattern as that of the Teso system, with finger millet and sorghum as the predominant cereal crops. The main oilseeds are simsim, groundnuts and sunflower. Cassava and sweet potatoes are common mainly as food staples. It differs from the Teso system in that there is more pronounced use of communal manual labor and less use of animal drawn practice. Communal grazing of livestock is the most widely used system of cattle keeping.

The West-Nile System – covering the districts of Adjumani, Arua, Moyo and North-eastern Nebbi, formerly known as West Nile is similar to the Northern System in many respects. The main cash crops are cotton and tobacco. The other crops include simsim, finger millet, cassava and groundnuts,

The Montane System – found mainly around highland areas of Mt. Elgon and Mt. Ruwenzori, the highland areas of Bushenyi, Kabale, Mbale, Mbarara and Western Nebbi districts. These areas are characterized by high population densities (Table 1). Bananas and Arabica coffee and sometimes tea are the main cash crops. The major annual crops include maize, beans and sweet potatoes. Some temperate crops e.g. wheat, barley and Irish potatoes are widely grown. In Kigezi, sorghum is the main food crop.

Pastoral System - comprises Karamoja (Moroto and Kotido districts) and parts of Mbarara, Ntungamo, Rakai and Masaka districts. The system is characterized by cattle raring. However, pure pastoralism is disappearing in the Southwest. The main annual crops are millet, cassava, sorghum, beans and maize, with coffee and bananas being the major cash crops in the southern parts of the country.

Table 1. Rural Population and Land Availability by District

Region and District	Rural Population 1991	Cultivable Land Area (Km2)	Density 1991	Avge Area Cultivated per Person (ha)	Area Required for 1991 Population (Km2)	Percent Cultivable Land Used in 1991	Broad Soil Class
Central							
Mpigi	796	4406	181	0.38	3,025.00	68.00	I
Mukono	717	4061	177	0.38	2,727.00	67.00	II
Luwero	408	7986	51	0.38	1,550.00	19.00	II
Masaka	747	5542	135	0.34	2,540.00	46.00	II
Rakai	366	3500	105	0.34	1,244.00	36.00	III
Mubende	463	8963	52	0.32	1,482.00	17.00	II
Eastern				**Mean 0.36**			
Iganga	899	4489	200	0.33	2,949.00	66.00	III
Jinja	208	619	336	0.33	682.00	110.00	II
Kamuli	473	3694	128	0.33	1,551.00	42.00	III
Kapchorwa	112	1064	105	0.39	432.00	41.00	II
Kumi	225	2454	92	0.79	1,771.00	72.00	III
Mbale	645	2022	319	0.38	2,477.00	122.00	II
Soroti	384	8407	46	0.79	3,022.00	36.00	II/III
Tororo	842	3887	217	0.39	3,259.00	84.00	III
Northern				**Mean 0.46**			
Apac	454	4962	91	0.54	2,461.00	50.00	III
Arua	598	6578	91	0.26	1,525.00	23.00	III
Gulu	296	11321	26	0.53	1,578.00	14.00	IV
Kitgum	340	13536	25	0.53	1,812.00	13.00	IV
Kotido	181	10352	17	N/A			III
Lira	471	6950	68	0.54	2,553.00	37.00	III
Moroto	158	7540	21	N/A			IV
Moyo	168	4313	39	0.26	428.00	10.00	IV
Nebbi	292	2689	109	0.26	745.00	28.00	III
Western				**Mean 0.42**			
Bundibugyo	116	394	294	0.20	232.00		
Bushenyi	735	3559	207	0.25	1,838.00	59.00	III
Hoima	395	6633	60	0.32	1,248.00	52.00	III
Kabale	598	2353	254	0.29	1,710.00	19.00	II/III
Kabarole	741	7607	97	0.25	1,853.00	73.00	II/III
Kasese	343	1478	232	0.20	686.00	24.00	11/111
Masindi	275	5369	51	0.32	869.00	46.00	II
Mbarara	930	9477	98	0.17	869.00	16.00	II
Rukungiri	388	1391	279	0.29	1,618.00	17.00	III
				Mean 0.25	1,110.00	80.00	II/III
Total	**14764**	**167596**	**1.14HA/ Head**	**0.37**	**50,973.00**	**41.00**	

Source: Agricultural Sector Memorandum, 1993

3. Investment Patterns in Agriculture

Private Sector Investments: Accelerated growth in agriculture can only be achieved if there is increased investments in the sector by both the public and private sectors. However, available information from Uganda Investment Authority (UIA) depicting the recent trend of planned medium to large-scale private sector investment in agriculture (between 1991 and 1997) estimates that only 20% of licensed investments were intended

for the sector. This low priority given to the agricultural sector by the medium to large scale categories of private sector investors becomes more bleak, when it is viewed against the fact that the overall annual private sector investment rate for Uganda currently estimated at 16% GDP, for this category, is already low by international standards. It can therefore, be argued that current private sector investment levels in agriculture are insufficient for sustained and accelerated growth. Appendix 2 gives a list of potential private sector investment areas in rural areas as identified by UIA in 1997.

Public Sector Investments. It is now recognized by Government that its main role is to provide an appropriate policy environment and economic and social infrastructure for increased private sector investment in agriculture. It is against this background that for the past decade, the Government's main policy strategy has been to withdraw from direct production and distribution of inputs as well as other commercial activities in the sector.

It is further recognized that the effectiveness of public and private expenditures on agriculture depends on complimentarity in expenditures for other sectors. For instance, it is recognized that unless infrastructure, especially feeder roads is improved, no major changes will occur in rural areas. It is against this background that public expenditures on roads have been increased from Ug. Shs. 25.8 billion in 1994/95 to Ug. Shs. 76.6 billion in 1998/99 budget. It is also known that the speed of adoption of new technologies increases with the education of farmers, but the adoption rates are still very low and slow. Further improvement is only possible after farmers have attained the basic education to allow them use basic numeracy and literacy skills. Expenditures on primary education have, therefore been increased from Ug. Shs 115 billion in 1994/95 to Ug. Shs 250 billion in 1998/99 representing about 17.8 per cent of the total recurrent budget.

Direct public sector expenditures in agriculture during the last five years compares poorly with expenditures in other sectors (Table 2). In general, it may be recognized that, as a result of the above strategies, the proportion of direct public investments in agriculture has been reduced dramatically over the last few years. Public expenditures directed to the agricultural sector, which includes MAAIF, NARO and conditional grants for extension services delivered in the districts have declined from 9.6 per cent in 1986/87 to 2.5 per cent in 1994/95 to 1.8 per cent in 1998/99.

Table 2. Sectoral Classification of Government Expenditures

A: Current Prices (Shs. Billion)

	1994/95	1995/96	1996/97	1997/98	1998/99
Roads and works	25.80	27.20	53.90	42.60	76.60
Agriculture	14.40	9.00	10.80	11.20	17.50
Education	115.80	117.60	174.20	204.70	250.20
Health	38.30	40.00	50.10	48.30	66.90
Security	116.20	116.60	145.40	134.70	163.20
Law and Order	51.50	60.30	69.10	65.50	75.40
Economic Functions, Soc Services and Multisectoral	47.90	37.50	50.60	33.00	44.70
Public Administration	121.50	158.10	181.50	206.30	214.00
Interest Payments Due	47.30	54.30	55.70	77.17	83.20
TOTAL	578.70	620.60	791.30	823.47	991.70
Percentage shares	%	%	%	%	%
Roads and Works	4.50	4.40	6.80	5.20	7.70
Agriculture	2.50	1.50	1.40	1.40	1.80
Education	20.00	18.90	22.00	24.90	25.20
Health	6.60	6.40	6.30	5.90	6.70
Security	20.10	18.80	18.40	16.40	16.50
Law and Order	8.90	9.70	8.70	8.00	7.60
Economic Functions, Soc Services and Multisectora	8.30	6.00	6.40	4.00	4.50
Public Administration	210.00	25.50	22.90	25.10	21.60
Interest Payments Due	8.20	8.70	7.00	9.40	8.40

B. Constant Prices (Billion Shillings)

	1994/95	1995/96	1996/97	1997/98	1998/99
Roads and Works	31.70	31.10	57.20	42.60	73.00
Agriculture	17.70	10.30	11.50	11.20	16.70
Education	142.40	134.50	184.80	204.70	238.30
Health	47.10	45.80	53.20	48.30	63.70
Security	142.90	133.40	154.30	134.70	155.40
Law and Order	63.30	69.00	73.30	65.50	71.80
Economic Functions, Soc Services and Multisectora	58.90	42.90	53.70	33.00	42.60
Public Administration	149.40	180.80	192.60	206.30	203.80
Interest Payments Due	58.20	62.10	59.10	77.20	79.20
TOTAL	711.50	709.80	839.60	823.50	944.50
CPI Deflator, 1997/98=100	0.81	0.87	0.94	1.00	1.05
Annual growth rates					
Roads and Works		-1.90%	83.80%	-25.50%	71.20%
Agriculture		-41.90%	11.30%	-2.30%	48.80%
Education		-5.50%	37.40%	10.80%	16.40%
Health		-2.80%	16.20%	-9.10%	31.90%
Security		-6.70%	15.70%	-12.70%	15.40%
Law and Order		8.90%	6.30%	-10.70%	9.60%
Economic Functions, Soc Services and Multisectoral		-27.20%	25.20%	-38.50%	29.00%
Public Administration		21.00%	6.50%	7.10%	-1.20%
Interest Payments Due		6.80%	-4.80%	30.60%	2.70%
TOTAL		-0.20%	18.30%	-1.90%	14.70%

Source: Draft Estimates for Recurrent and Development Expenditure 1998/99

4. The Cooperative Movement and Agricultural Employment

The Co-operative movement in Uganda comprises the primary societies at the grassroots, which have affiliated themselves to the co-operative unions – usually at the district level. The co-operative unions, in turn, have affiliated themselves to national specialized co-operative organizations such as the Uganda Transport Co-operative Union which are then affiliated to the national co-operative organization – the Uganda Co-operative Alliance. While most co-operative unions have collapsed in the wake of competition arising from liberalization and privatization, the primary co-operative societies have generally tended to survive mainly because they are more community based and owned. They still have the potential of providing the platform for rural investment and job-creation. Among the current network of cooperative movement in Uganda, the primary cooperative societies cover most of the rural areas in Uganda.

There are about 5000 registered primary cooperative societies of, which over 1000 are still active, about 1500 are semi-active and the rest are dormant. Most of the societies are engaged in marketing of cotton, coffee and other agricultural commodities. The following points may be used to illustrate the comparative advantage of cooperative societies in rural areas:

- Primary cooperative societies own basic infrastructural facilities, such as office buildings, stores and equipment including weighing scales, safes, furniture etc. These facilities are located in strategic places in the rural areas to enable them to undertake various business transactions. Hence, these facilities provide societies with good potential for employment creation in rural areas.

- Primary societies have membership of rural families ranging from 100 to 300 and have good potential to increase their outreach to cover most rural people and widening their membership to include women, individuals, micro-enterprises etc. This arrangement is most useful for pooling together resources and agricultural produce in rural areas and thus exploits economies of scale.

- Primary cooperative societies already have established organizational and management set-up, governed by the cooperative society by-laws, which have the potential to develop and strengthen their capacity to undertake viable business transactions in rural areas and thus creating rural employment

However, the cooperative movement has certain basic weaknesses:

- With the breakdown in the marketing monopoly for traditional export crops during the 1970s and early 1980s, the basic facilities of the societies are in poor state and require significant rehabilitation.

- At present, most societies are faced with the problem of weak management due to lack of adequate motivation, inadequate training and in some cases lack of full time qualified managers and supporting staff.

- With the recent liberalization of marketing channels and trade for traditional export crops, and entry of private buyers of agricultural commodities in rural areas, most societies are losing their market shares, which is adversely affecting their financial viability.

5. Investment in Agriculture and Labor Productivity

Agriculture in Uganda is based on smallholder production with average farm size of about 1.5 hectares per household. Nearly all these smallholdings are rain-fed, employ family labour and hand hoe, and are characterized by low productivity. Over the years, the population has increased, and this has led to land fragmentation and low productivity. In several parts of the country, yields have decreased because of poor farming methods and lack of soil conservation practices.

Some national data provided on the structure of aggregate resource productivity by sector provide evidence suggesting declining productivity as an inherent feature of the growth process (economic growth). One would expect the contrary, unless there is net movement of resources (away) from agriculture to other sectors of the economy, which unfortunately has not been the case.

Recent survey by Agricultural Policy Secretariat (APSEC) shows a declining trend in returns to family labour for most food crops produced between 1994-97 (Table 3).

Table 3. Nominal and real returns to family labour for selected crops grown in Uganda during 1994 and 1997

Crops	*Nominal returns to family labour (Ug shs/man day)**			*Real returns to family labour (Ug shs per man day)*		
	1994	*1997*	*% change*	*1994*	*1997*	*% change*
Arabica coffee (improved)	1,741.00	12,340.00	608.79	621.10	4,170.00	571.49
Arabica coffee (unimproved)	1,227.00	8,361.00	581.42	7.70	2,300.00	29,771.43
Robusta coffee (present)	561.00	4,082.00	627.63	200.10	3,689.70	1,743.93
Robusta coffee (clonal)	2,334.00	9,606.00	311.57	832.70	1,235.40	48.36
Matoke (unimproved)		2,478.00			609.10	
Matoke (improved)	1,880.00	3,807.00	102.50	670.70	858.80	28.05
Cotton (tractor)	95.00	1,137.00	1,096.84	33.90	609.10	1,696.76
Cotton (ox-plough)	219.00	1,252.00	471.69	78.10	551.90	606.66
Cotton (hoe with spray)	518.00	1,091.00	110.62	184.80	312.90	69.32
Cotton (hoe without spray)	419.00	863.00	105.97	149.50	235.10	57.26
Maize (improved)	3,363.00	7,367.00	119.06	1,199.80	2,712.30	126.06
Maize (local)	947.00	3,391.00	258.08	337.90	959.50	183.96
Beans (improved)	4,142.00	4,233.00	2.20	1,477.70	1,291.10	(12.63)
Groundnuts (improved)	3,099.00	2,369.00	(23.56)	1,105.60	526.70	(52.36)
Simsim	1,730.00	1,336.00	(22.77)	617.20	545.40	(11.63)
Soybean	1,180.00	1,888.00	60.00	421.00	377.90	-10.24
Cassava	2,133.00	1,600.00	-24.99	761.00	452.60	-40.53
Sweet potato	2,759.00	3,120.00	-13.08	984.30	882.60	-10.33

- **1 US $ = 1,500 Ug shs**

Source: Agricultural Policy Secretariat, Bank of Uganda (1997) - *Economics of Crop and Livestock Production*

This is related primarily to decline in yields. However, decline in yields as reported was not well captured by the APSEC survey results. But higher labour gains in productivity were achieved in the cotton and coffee sub-sector, where oxen and ox-ploughs were used. The 1996 Integrated Household Survey (IHS) gives a physical output per person's annual labour in agriculture of shs 206,000, which is below annual per capita income - compared to Shs 1 million in trading activity (whole sale trade) and Shs 256,000 in food processing (Table 4).

Table 4. Employment and investment in rural Sector for major economic activities in (Money Value in '000 Ushs)

Industry	Persons engaged				Capital invested	Wages & other inputs	Output/ Person in '000 shs
	Pop	Paid	Unpaid	Total			
Crop farming	3,581,897	1,256,805	4,337,181	9,175,882	920,957,607	24,048,298	132.05
Other agric activities	854,227	78,270	717,887	1,650,384	191,600,984	31,184,250	74.22
Mining and quarrying	3,823	18	0	3,841	26,499	540	61.78
Production, processing,	25,809	10,490	9,761	46,060	4,260,114	28,923, 280	836.34
Manufacturing of	204,786	31,645	219,723	456,154	6,573,469	20,151,630	83.03
Other manufacturing	144,345	7,289	30,919	182,552	4,459,023	10,336,784	167.18
Construction	213	412	0	625	32,071	10,543	35.35
Repair workshops	15,739	1,034	3,066	19,839	508,555	920,237	190.77
Wholesale trade	198	168	4	369	258,160	99,206	1012.44
Retail trade	118,161	4,765	39,172	162,098	22,557,818	10,546,042	256.16
Hotels, restuarants,	47,438	9,465	22,511	79,413	6,447,116	39,865,401	729.1
Transport, comm., etc.	6,091	112	112	6,315	546,885	223,052	241.15
Other services	15,727	7,881	1,308	24,916	3,323,905	7,961,994	867.92
TOTAL	5,018,454	1,408,351	5,381,644	11,808,449	1,161,552,205	174,271,258	132.79

Source: *Statistics Department, Ministry of Finance, Planning and Economic Development (Uganda Household Survey).*

In terms of investment, agriculture sector ranked top (IHS,1992-1995) in aggregate investment, followed by manufacturing, and lastly, mining and quarrying. Agriculture accounted for 96 per cent of total capital investment in the rural economy in 1994 and employed 92 per cent of the rural labour force, 47 per cent of which was family labour. There has been little investment in farm machinery and tools, and capital formation is mainly in the form of land clearance, establishment of perennial crops and livestock.

The IHS data show that non-farm work provided on the whole, lower returns per hour of work than on-farm production or agricultural wage labour, at least for those activities whose access is not restricted by seasonality or capital investment (Table 5). Thus, the most common non-farm occupations (wage work in construction, petty trade, and preparation of food for sale) all provided lower returns per year than agricultural wage work.

More women than men were involved in agricultural wage labour, but as a secondary activity for the majority of those involved. This reflects the highly seasonal nature of agricultural wage employment and the consequent necessity of another source of income

beside farm labour. However, productivity growth would require adoption of high yielding technologies, which would require investment and credit facilities for farmers. Similarly, increase in area under crops would require extensive adoption of labour saving technology such as ox-ploughs. This would require on-farm investment on labour-saving cultivation technologies and purchase of draught animals.

Table 5. Uganda: Present and Projected Area, Yield and Production of Food Crops

6. Constraints to Investment in Agriculture and the Rural Sector

Investment in agriculture and the rural areas has been hampered by a series of policy-induced distortions, structural and institutional constraints. However, in recent years, these distortions have been reduced under the Economic Recovery and Structural Adjustment Programmes of the late 1980s and early 1990s, which have contributed to a stable economic growth pattern averaging about 6 per cent per annum. Despite these developments, overall investment in agriculture has remained very low. In the main, the major constraints to investment in agriculture in Uganda have been, among others:

- Absence of incentive framework for potential rural investors
- Poor access to land
- Low productivity and low return to factors of production
- Lack of capital
- Poor access to markets and poor infrastructure
- Effects of HIV/AIDS
- Absence of incentive framework for potential rural investors

There is no incentive framework to attract potential rural investors. While most of the industries in Uganda are agro-based, these are concentrated in urban areas, which are far from production units. The present investment code does not provide any special incentive to promote agro-based industries in the rural areas. Most of the incentives are restricted to investments far beyond the lending provisions of many commercial banks and hence not conducive to promotion and development of small-scale industries suited to the rural areas. And yet, the development of rural industries is an important pre-requisite for creating employment opportunities and development of the rural areas.

There is scope for investing in small-scale processing plants (processing sugar, fruits, vegetables etc.); and there is scope for the manufacture of livestock products, timber products and related product derived from agricultural raw materials. Hence, Government should provide adequate incentives for the private sector to invest in rural areas and encourage the development and employment opportunities in the rural areas.

- Poor access to land

Traditional land ownership has hindered the use of land over time and constrained land productivity. While per capita cultivatable land averages about 1.14 ha, the per capita cultivated land area is only 0.37 ha. In aggregate, this represents about 40 per cent of the available cultivatable land area (Table 1).

Various land laws have delineated land ownership, to the extent that potential investors find it difficult to access land. The Land Reform Law of 1975 nationalized all land and established a 99-year leasehold system to prior owners (EPRC, 1997). Meanwhile, customary ownership has also remained in force. These resulted in insecurity of tenure and prevented the development of a normal land market and frustrated investment

incentives. While the 1997 Land Act provides for the emergence of a uniform freehold system throughout the country in the medium to long term perspectives, this law is still constrained by several encumbrances (e.g. lack of title deed, registration etc.), which limit access to land by potential investors. A comprehensive study has recently been completed on the implementation of the 1997 Land Act. It is imperative that its recommendations are implemented expeditiously so as to encourage the easy land access to investors and also to promote the development of land markets.

- Low productivity and low return to factors of production

Crop yields in Uganda rank one of the lowest in Sub-Saharan Africa. Yields of most cereals are below 2.0 metric tons per hectare (Table 6). Similarly, yields of pulses and oil seeds also average below 1.0 metric tons. Root crops however, have fared better, averaging 8.0 metric tons per hectare, except sweet potatoes. These low yields suggest that agricultural productivity in Uganda is still very low. Table 7 provides comparative yield levels based on current production techniques compared to improved technology. Apart from millet and beans, yields of all food crops grown under present technologies are 50 per cent below those grown under improved technologies.

The return to factors of production (especially, land, labor and capital) is generally low. While, there are no recent data to confirm current factor productivity, available information suggests that return to capital is very low. And yet, most investors consider return to capital as the main indicator for investment incentive. It is therefore not surprising that agriculture has remained subsistence in nature in Uganda.

- Lack of Capital

Lack of investment finance and working capital are two major bottlenecks faced by smallholder farmers and private investors in agriculture. The absence of a viable and sustainable financial system has limited the scope of entrepreneurs to borrow and invest in agriculture. Moreover, the creation of a modern and dynamic productive agricultural sector requires high skills and technological uptake. But this requires capital as well. Agricultural credit is one of the elements needed by farmers to acquire farm inputs and other capital items. Besides, given the current low levels of savings, access to credit could enhance private entrepreneurs and farmers' ability to invest in farm development.

According to the Agricultural Policy Secretariat (APSEC), the main categories of rural and agricultural finance required by farmers and rural investors may be defined as depicted in Figure 2. In the Plan for Modernization of Agriculture (PMA), Government has decided to address the issue of rural finance provision through promotion of market based Community Based Organisations (CBOs) – also known as Rural Financial Intermediaries (RFIs) or Micro-Finance Institutions (RFIs). These have the comparative advantage to for micro-finance intermediation at the grassroots level compared to the formal commercial banks. In order to promote and guide their operations, a separate micro-finance institutions bill is being prepared under the leadership of BoU and it is scheduled to be enacted into law before the end of 2000.

Figure 2. Categories of Rural Finance

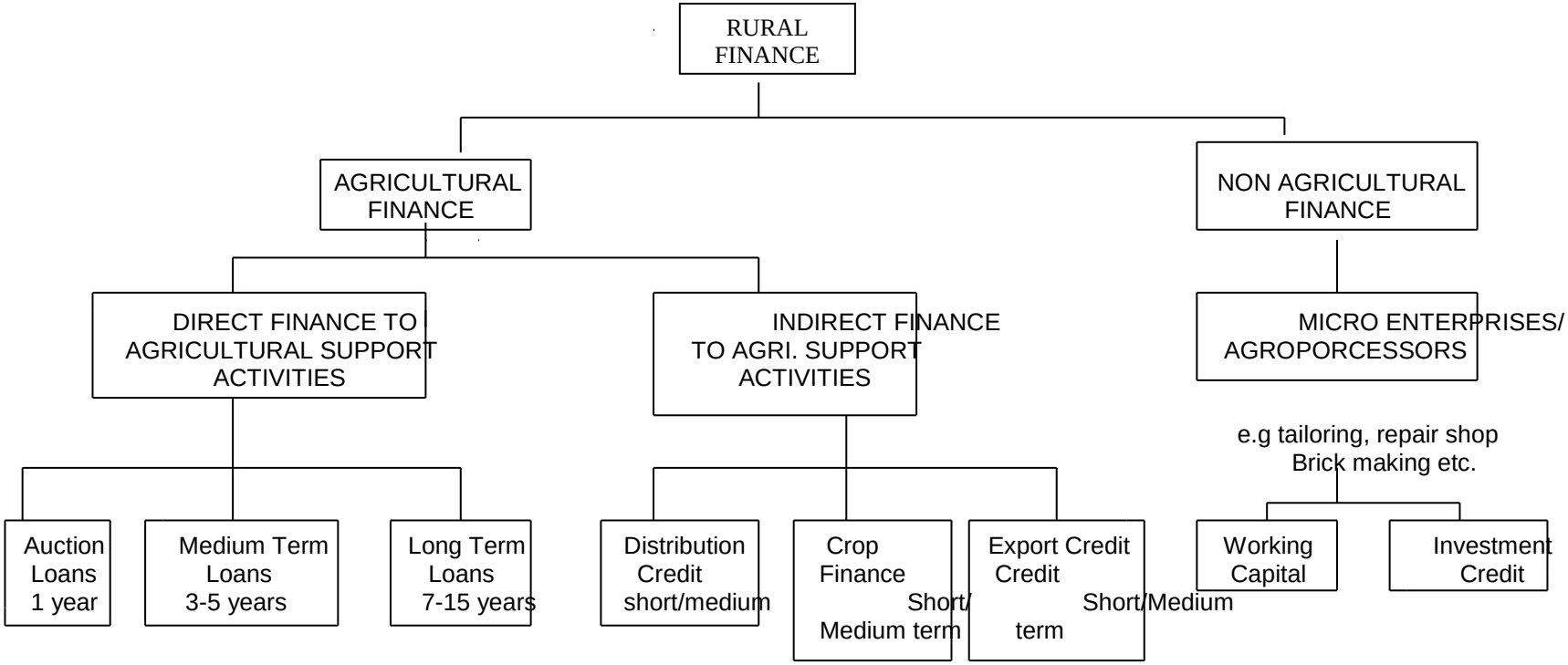
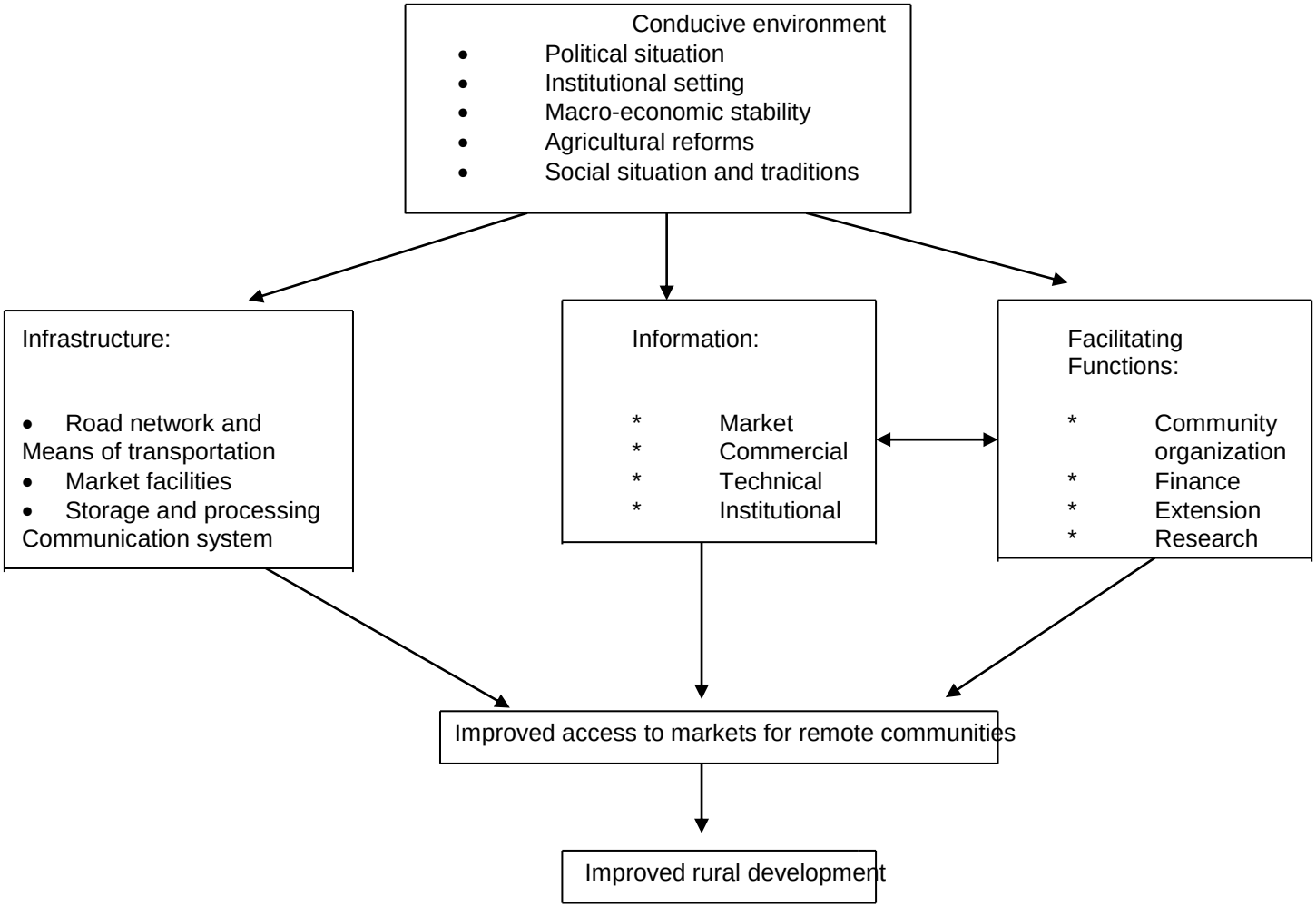


Figure 3. Community Access to Marketing Opportunities: A Framework



- Poor market access and infrastructure

Access to markets for agricultural commodities is the main draw back to investment in agriculture. Even though it is possible to increase agricultural productivity, it would not be economically attractive to invest in agriculture without first establishing viable markets. Lack of infrastructure (feeder roads, utilities etc) in rural areas has also limited the scope of entrepreneurs to invest in agro-processing to create markets for agro-products. Meanwhile, access to export markets has also been constrained by low quality of many agricultural products, which are not able to compete at the international markets. This in turn has discouraged private investors from investing in agro-processing industries and/or exporting agro-products.

Figure 3 which is derived from a study carried out in selected districts in Uganda in 1999 by the Natural Resources Institute (NRI) of the United Kingdom and APSEC, provides a framework for community access to marketing opportunities, which could be used to improve market access in general. It recognises a holistic approach to development of market access involving interventions in several key areas by both the private and public sectors. Also it has built-in facilitating factors, namely; market information, infrastructural network and elements of conducive environment, necessary to facilitate market access. Government's provision of access roads to rural areas as well as generating market information for public sensitization could significantly improve market condition in rural areas. All the key elements depicted in the figure will be comprehensively addressed during the implementation of the PMA.

- **Effects of HIV/AIDS**

Agriculture and the rural sector are susceptible and vulnerable to AIDS, which impacts on labor availability and productivity and leads to deterioration of household health and food security. Smallholder farm families in particular, have limited resources to cope with these epidemic and therefore, require support from government and other development agencies to boost their coping strategies and avoid becoming overly dependent.

Although statistics on the impact of HIV on agriculture are rather scanty (or scarce), there are indications that on average farm households' labour force may have been reduced by about 20 per cent as a result of HIV/AIDS (NEMA Status Report 1999). This translates to lost productive days of about 180 person-days per household per year. Hence the productive capacity of a farm household is significantly reduced.

Yet, despite the high incidence of HIV/AIDS, many policy makers still view it as a medical or health problem only, rather than a development problem. This will in the long run undermine social welfare and rural development progress so far attained, if no sustainable mitigation strategies are implemented soon.

To this effect, an integrated approach to sensitize the public and hence reduce the incidence of HIV/AIDS and its consequences should be initiated in the rural areas as well. The Government must however be commended for its effort in educating the public through the mass media, but such programs appear to impact mainly on the urban rich who have communication means. Public awareness should not be limited

to the media alone, but through other means as well, such as public gathering, use of local council administration at the grassroots and so on, to increase awareness.

Table 6. Present and Projected Area, Yield and Production of Cash Crops

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Table 7. Average yield under current and improved technology

Crops	Present Technology	Improved Technology	% Differential
1. Bananas	5,000.00	12,000.00	58.00
2. Cassava	8,800.00	18,000.00	51.00
3. Sweet Potatoes	4,000.00	8,500.00	53.00
4. Maize	1,500.00	2,800.00	46.00
5. Sorghum	1,200.00	2,500.00	52.00
6. Millet	1,000.00	1,650.00	39.00
7. Beans	800.00	1,000.00	20.00
8. Groundnuts	550.00	1,123.00	51.00

Source: MAAIF/NARO

7. Impact of Investment in Agriculture on Environmental Degradation, Agricultural Sustainability and Employment.

There is an alarming conflict of interest and competition between increasing environmental degrading and the pressing need to increase investment in agriculture to increase food production and reverse agricultural stagnation. Agriculture contributes directly to the economy by providing food, income, foreign exchange and employment for the population. The extent to which agriculture can provide all these and contribute to sustained economic growth depends on its ability to expand production. This requires increased productivity, intensification and expansion of area under cultivation. And yet, these are land-based activities, which invariably affect the environment. Hence, the key issues related to the impact of investment in agriculture on the environment include, among others:

- Soil degradation
- Agro-chemical usage
- Low technological inputs and poor management

- Soil degradation

The main causes of soil degradation include soil erosion, loss of soil fertility, poor methods of cultivation, changing land use patterns and increasing population pressure.

Poor cultivation practices through over-cultivation, continuous cropping (soil mining), and destruction of conservation structures, result in poor soil structures which are vulnerable to erosion and overall environmental degradation. Increasing population pressure is the main cause of poor practices, while demand for higher incomes and uncontrolled extensive cultivation for commercial agriculture have resulted in over-cultivation at the expense of environmental degradation (NEMA, 1998).

Fragile ecosystems such as wetlands and hilltops, when cropped without adopting soil conservation measures may lead to loss of plant and animal biodiversity. Cultivation of seasonal swamps in Eastern and Northern Uganda, which traditionally have been used for grazing in the past and have been converted to paddy rice fields, has rendered the area unproductive as the soil pH becomes acidic due to poor management. While continuous cropping without fallow or with shorter fallow periods has led to soil degradation and infertility.

Commercialization of agriculture has encouraged bush clearing, which has exposed large tracts of land to soil degradation through rapid loss of organic matter. Mono-cropping practices, which is characteristic of commercial agriculture accompanied with intensive use of agro-chemicals, if not handled properly, will lead to soil contamination, while improper tractorization may also, in future, lead to soil compaction and poor soil structures.

Several measures are needed to mitigate the impact of investment in agriculture on the environment. Legal and regulatory measures such as laws on the use of wetlands and hilltops should be put in place. The National Environmental Management Authority (NEMA) has established guidelines for the use of wetlands and hilltops. These needs to be enforced. The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) should come up with practical policy option that could promote proper husbandry practices and encourage soil conservation practices as the country embarks on the implementation of the PMA.

- Agro-chemical usage

While agriculture in Uganda is still based on low agro-chemical input usage, use of fertilizers, pesticides, fungicides and herbicides is increasing. As the demand for higher yields increases, more agro-chemicals will have to be used. These inputs are not always used properly because of high illiteracy and lack of farming skills among farmers, which if not checked will lead to massive soil and water contamination.

And yet, under the liberalization policy, many commercial farmers have begun to invest into the use of agro-chemicals to boost yields. A 1997 report of the USAID funded IDEA project suggested that many flower farms around Lake Victoria had adopted intensive use

of agro-chemicals and since these farms are located in the shores of the Lake, there is a high risk of contaminating the water table and the Lake itself.

A number of measures should be put in place to mitigate the effects of agro-chemicals on the environment. An integrated approach to promote safe use of agro-chemicals could be adopted involving MAAIF, NARO, NEMA and NGOs. Use of organic manures and bio-fertilizers being promoted by Makerere University as well as adoption of agro-chemical-neutral plant genetic resources could be encouraged. As these measures are more labor intensive, they would promote labor use and create employment opportunities. Increase in yields would lead to more output and income, which are consistent with the Government policy of poverty eradication and improving the quality of life in rural areas.

- Low technological input and poor management

Adoption of appropriate technologies is constrained by lack of farmers' skills and their inability to purchase such technologies due to low incomes and poor access to credit. Hence, agricultural productivity has remained low as a result of over dependence on rudimentary technology and family labor, which has exacerbated poverty and under-employment in the rural sector.

Weak farmer-extension-research linkages have been a major draw-back in imparting knowledge to farmers. In the absence of extension services, farmers have continued to practice traditional techniques at the expense of proper husbandry. The age-old shifting cultivation practices are still commonly practiced in various regions of Uganda. This has often resulted in low yields and serious environmental degradation.

Farmer-extension-research linkages need to be improved to promote and encourage use of appropriate technologies. Training of farmers at district farm institutes should be re-initiated to educate farmers and raise their awareness in regard to new technologies and husbandry practices through agricultural shows and field demonstrations.

- Agricultural Sustainability issues

Issues about agricultural sustainability and environment degradation hover around (1) what production systems should be proposed to farmers and when should high input versus low input systems be promoted and at what environmental cost, (2) will farmers want to invest in the productivity and sustainability intervention and how should these interventions be designed to maximize adoption rates and (3) what are the effects of policy on the patterns of investments in agriculture.

- **The issue of what production systems to propose to farmers?**

The concern that the introduction of high-input systems may further degrade the environment is based on the direct static effects of the environment. In reality, higher-

input systems perform better than low traditional systems. Intensification of production would reduce pressure on the cropping of vulnerable or marginal lands, while higher incomes would reduce poverty, produce growth linkages and provide capital for investment in soil conservation.

Indeed, Uganda offers a higher potential for agricultural intensification, especially where soil types and topography are suitable for high-input systems. Both East and Northern regions of Uganda are ecologically suited for agricultural extensification and intensification systems, provided that sustainability measures are given high priority. These will augment productivity and create employment opportunities for the rural households.

- **Will farmers want to invest in productivity and sustainability interventions?**

Innovation is a necessary condition for the sustainability of high-input systems to sustain modified traditional systems. One of the main investment requirements in this regard is in "water harvesting" for dry areas, which may include tied ridges, irrigation channels or bands of laterite to hold water. Although these may not be very efficient, effective use of household labor might suffice. But given that household resources are limited for a sustainable practice to be adopted, farm households would do better if they diversified their earning sources as well. Off-farm employment to utilize household labor may offer a better alternative use of family labor, which gives the household regular income compared to investing on on-farm activities only. Hence, it is important to consider opportunity costs across sectors and capital constraints facing farm households in designing sustainability investments for farm households in Uganda.

- **What are the effects of policy on the patterns of investment on agriculture?**

Special emphasis is often put on direct investments in resource conservation due to the problems of externalities, capital constraints and short planning horizons of farm households. But Government can influence household investment patterns through policies that affect: (1) net returns to transaction costs, via price policy, (2) the stability of investment climate and (3) financing of farmer-extension-research linkages to avail stock of innovations and encourage adoption.

It should be noted that the way policies actually influence markets, inter-sectoral opportunity costs and hence the choices of households are quite complex. Various factors such as market de-regulations, exchange rates and interest rates all play a significant role. Bottlenecks and controls resulting from market regulations may create thinner markets and greater price fluctuations, which render investment in agriculture less attractive. And high interest rates due to underdeveloped capital markets may encourage farm households to shorten their investment planning horizons and probably discourage sustainability investments.

Governments need to be guided by outcome of policy research to effectively encourage sustainable investment at the household levels.

8. Constraints to Human Capital Investment/Development in Rural Areas

There are a number of contentious issues related to human capital investment and agricultural development in the rural areas. Rural population lacks technical and business skills, managerial and entrepreneurial skills. As such they remain static in their farm operations and off-farm investment activities. Higher level of education is believed to correlate well with higher levels of agricultural productivity. Hence, high illiteracy rate in the rural areas constrains smallholders' ability to participate effectively in the production process.

Likewise, the contributions of adults' labor to household income vis-a-vis direct investments in their education is another constraint to human capital investment and development in the rural areas. It is not difficult to understand why adults in poor households have to work long hours on the farm, or in the house thereby sacrificing other earnings or educational opportunities. In Uganda, this is generally gender related, where girls are more involved in household activities, while boys are more involved in farm work at the expense of their educational attainment. This gender differentiation in work patterns as often argued, results in differences in educational attainment.

Absence of recent studies of this nature in Uganda has limited the scope of this review. But available related studies of the same nature in the Philippines suggests that even young girls between the age of 10-14 years, do spend one third as much time as their mothers on household activities and nearly twice as much as boys of the same age category (IFPRI, 1998). But boys spend five hours more than girls working on the farm and other related activities. The time spent at school is the most important activity. Girls spend about 10 per cent more time in school than boys. There is a tendency for boys from low-asset households to spend less time in school and more time on agricultural employment than boys from higher-asset households. The older they become (15-19 years), the more pronounced gender differentiation becomes. Household wealth tends to become an important factor in determining time allocation. Older girls spend one-half times as much as their mothers in household activities and three times as much as boys. Similarly, older boys spend three times as much as girls on on-farm activities and three-quarters time as their fathers working on off-farm employment

It can be concluded that younger adolescents make significant contribution to family welfare by helping with household activities and farm work, but do spend more time in school than working at home or on the farm. But, the extent to which these become pronounced depend on the level of asset ownership. Asset unavailability seems to be the major constraint determining the level of investment in human capital and development in rural areas.

9. Agricultural Reform and Investment Effects on Agricultural Performance, Employment and Poverty Reduction

- **Effects on Agricultural Performance**

The agricultural sector experienced negative growth rates (averaging - 2% per annum) in 1970s and early 1980s, from positive growth rates averaging 10 per cent in the 1960s. Studies attribute this to civil strife, economic mismanagement, disintegration of public infrastructure and services, lack of private sector investment, scarcity of foreign exchange for importation of agricultural inputs, and the collapse of the emerging commercial agriculture. With the breakdown of the industrial and service sectors, the agricultural sector virtually returned to subsistence production.

Following the Structural Adjustment Policies and Economic Recovery Programmes (ERP) of the late 1980s and early 1990s (aimed at restoring macro economic stability and promotion of economic growth by creating conducive and enabling environment for private sector investment), the agricultural sector has continued to realize positive rates of investment annually. The Government has now targeted in its Plan for the Modernization of Agriculture (PMA), an annual growth rate averaging about 6 per cent, but between 1992 and 1999, annual agricultural growth rate had averaged about 4 per cent only.

Available evidence suggests that the impressive growth rates achieved during these periods of rehabilitation were in effect recovery from very low base and near stagnation in agriculture (APSEC 1996). Indeed, the total area under crops and total production for food and export crops has not exceeded the 1960s and 1970s peak levels. There is supporting evidence about significant decline in per capita food availability particularly in the case of cereals, pulses and oilseeds in view of the growing population (APSEC; 1994, 1997).

- **Effects on Employment and Poverty in Rural Areas**

In agriculture, the reform focused on rehabilitation of the infrastructure for traditional exports (coffee, cotton, tea and tobacco); development of non-traditional exports; removal of physical, technical and institutional constraints to investment in agriculture; liberalizing agricultural market[3]; removal of restrictive tariff and non tariff barriers, particularly those for agricultural inputs; abolition of taxes on agricultural exports and strengthening the provision of research and extension services. The measures implemented also included institutional reforms resulting in privatisation and divestiture of public enterprises. The monopolies held by marketing boards - the Coffee Marketing Board (CMB), Lint Marketing Board (LMB) and Produce Marketing Board (PMB) were removed to allow private sector involvement, and prices to be determined by market forces.

[3] The marketing of agricultural produce was liberalised, export taxes and other market distortions were removed, and regulatory and promotional agencies were introduced for key export crops, quality control and market information dissemination.

In theory, the reforms were supposed to bring about increased competition and farmers' share in international prices and favorable overall terms of trade for traditional and non-traditional export crops. Whether this has been achieved is debatable, though some proponents of liberalization claim that these have improved significantly and suggest further that the decline in absolute poverty recorded between 1992/93 and 1996/97 might be attributed to this development.

Over the years, the percentage of those who are poor or living below the poverty line has declined from 56% in 1992 to 44% in 1997. But among the unemployed, poverty has increased from 60% to 62% in the same period.[4] This clearly demonstrates that the incidence of poverty in Uganda directly relates to the country's unemployment situation. Poverty in rural Uganda is pervasive, especially in small villages where opportunity for employment is limited.

Major reasons for rural unemployment as discussed in the literature include the virtual absence of the "lead" investment projects, which provide substantial employment opportunities, and the dislocations of normal economic activity due to the widespread civil disturbances that has occurred during the two decades of civil strife and economic mismanagement. The findings from the 1992-1995 household monitoring survey (HMS) show that about 46 per cent of the rural population were below the minimum level of consumption expenditure necessary to meet basic needs.

But, between 1992/93 and 1997 the urban areas witnessed a 43% reduction in poverty as opposed to 18% in rural areas. The rural/urban disparity is attributed to market access and employment opportunities. Also, the recovery of coffee sub-sector, experienced during the same period seems to partially explain the rural output growth and the decline in poverty levels. Output levels in other sector stagnated during the reform. This explains why households in the food sub-sector experienced only modest rates of poverty reduction compared to those producing cash crops. It has been argued that the group of farmers who benefited most from liberalisation are those who produce cash crops. This group were about as poor as the average farmer in 1992, but are now better off. The farm gate price for coffee are now about 80% of the realized world price compared to 20% prior to the liberalization of the sector in 1992, and farmers are paid in time.

Poverty in the rural sector is indeed rooted in low employment and productivity in the farm sector. Land available to absorb the growing labour force is shrinking with increasing population growth. Both the land/labor ratios are declining (Table 1). Studies on poverty in Uganda[5] identify some of the key features of rural poverty. The poor have large numbers of dependants relative to working adults. The ratio is much greater among female-headed households. The working adults within these poor households are less educated and skilled. They own few physical assets, particularly livestock, because of

[4] MFPED - Background to the Budget 1999/2000

[5] See for example, Uganda Participatory Poverty Assessment Report; Uganda Poverty Status Report; and Appelton (1999).

low savings and constrained access to credit. These factors translate into a low level of employment and earnings, and hence low living standards.

The poor are also more vulnerable to employment and income risks, especially since agriculture, which is the principle source of income, is strongly covariate with low and variable rainfalls. Most other incomes sources are positively and closely linked to agriculture and hence total household income is highly variable.

These observations imply that most of the new additions in agricultural employment, which apparently is about 11 million persons have occurred in the cash crop sub-sector (Integrated Household Survey 1992/1993). Again, in the rural sector, large numbers may be defined as employed (according to survey criteria) although they may be earning only meagre incomes from irregular casual work opportunities. Available statistics indicate average agricultural wage of Uganda shillings 738 (US$ 0.51) and 674 (US$ 0.46) per person per day for men and women respectively (MFPED, 1996). Employment opportunities available in the urban sector and in the agricultural estates could be more regular and more income generating than in the rural sector.

10. Major Institutions Involved in Agricultural and Rural Employment Promotion

Based on the National Manpower Survey (NMS, 1989), agriculture, forestry and fishing sub-sectors employed 30,578 persons, which was 8 per cent of the total employment in the formal sector of Uganda's economy. About 60 per cent of the workers in this sector were employed in establishments, which were owned by Government.

Agricultural parastatals employed 3,844 (12.8 per cent) while private establishments employed 7,700 (25 per cent) individuals, and co-operatives employed 769 persons (2.3 per cent). About 40 per cent of the workers were hired in large estates employing 250 people or more. About 81 per cent of the enterprises employed from 50 workers and above. There is no clear indication as to what degree and in which direction the fortunes of different sectors have changed since 1989, especially after privatization of government parastatals and liberalizing the economy. Available evidence seems to suggest that rates of employment have declined for parastatals and the co-operatives, but increased for private establishments.

With rehabilitation and expansion of the estates (most of them in the early 1990s), employment significantly increased in the estates sub-sector. The well-known estates are the sugar and tea estates. Sugar sub-sector comprising mainly of three (3) factories and estates are Kakira and Lugazi near Jinja and Kinyala near Masindi. The tea sub-sector comprises (i) joint ventures estates between the Government and the private sector[6] (ii)

[6] with 51 and 49 per cent ownership respectively, but managed by the private companies: Tamteco and Uganda Tea Growers Corporation.

Out-growers estates[7] employing over 11,000 registered out-growers owning a total of 9,440 hectares of tea. (iii) 39 private tea estates[8] (and 15 factories).

In addition, there are several schemes scattered all over the country, for example, Kibimba and Olweny rice schemes in Tororo and Lira respectively, Ongom Citrus in Lira, Ongino Citrus and Kibuku Irrigation Schemes in Kasese, etc, and large farms, which employ 100 workers and above per enterprise. Besides labor employment in production sector, agriculture based processing industries provide employment prospects to both skilled and unskilled laborers. For instance, currently there are about 278 coffee factories in the country of which about 49 are owned by co-operative unions. Employment in this sector is likely to improve due to growth in the level of investment in agricultural processing.

Available estimates suggest that at least 70 per cent of the population in rural areas have some form of employment. Yet, the weighted average poverty incidence indicates that 44 per cent of the rural population live in absolute poverty, including those in some form of employment. These results defy the general expectation that the lower the incidence of poverty the lower the unemployment ratio. The reason is that in the rural sector, large numbers may be defined as being employed (according to survey criteria) although they may earn only meagre incomes from mostly irregular work opportunities. From the point of poverty reduction, further research is required to understand the problems of unemployment among the rural sector labor force. Data in the National Poverty Status Report on the incidence of poverty suggests that opportunities available in urban and estate sectors could be more regular and more income generating than in the rural (informal) sector.

[7] There are 9 tea estates and 5 factories (additional three, under construction) managed by Uganda Tea Growers' Corporation (UTGC). Accounts for 42.9% of the tea produced in the country.
[8] Accounts for 42.4% of total tea produced.

Part Two

EMPLOYMENT AND INVESTMENT IN AGRICULTURE IN UGANDA

Case Studies of Bushenyi, Mukono, Kumi and Lira Districts

Part I of this report provided the past status and performance of the agricultural sector in Uganda focusing on employment and investment in agriculture and the rural sector. Part II focuses on case studies of a sample of four districts, stratified on regional basis, to provide basic information on investment and rural employment. The selected areas were in the districts of Bushenyi in Western Uganda, Mukono in Central, Kumi in Eastern and Lira in Northern Uganda. These districts were also chosen to represent some of the major farming systems subsequently used to compare investment and employment in the rural sector in various parts of Uganda (Figure 1). The results derived from surveys of the case studies are presented in the following sections.

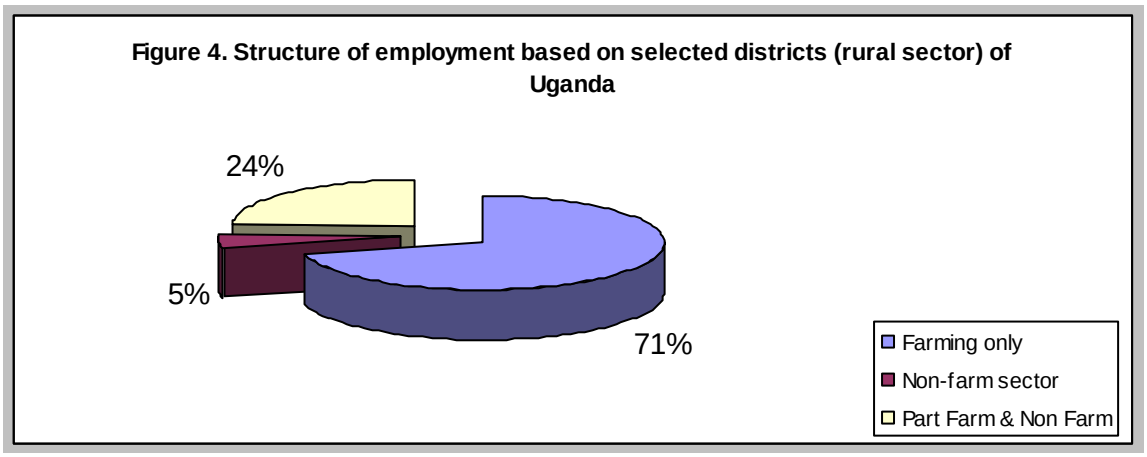
11. Determinants of Agricultural employment in the rural sector

Estimates of the level of employment in the selected case study districts confirm the general contention that a large proportion of the farm household labor force is employed on own-farm activities. Over 70 per cent of the household labor is employed directly on farm activities (Figure 4 & Table 8). But when on-farm and off-farm agricultural activities are aggregated, up to 95 per cent of the farm household labor force is found to be employed in agriculturally related activities, while, non-farm activities accounted for about 5 per cent only (Table 8).

Table 8. Employment in the rural sector (in percentage)

District	Farming Only	Non-farm Activity	Part farm & non-farm
BUSHENYI	50.0	11.0	39.0
KUMI	86.0	2.0	11.0
LIRA	86.5	5.2	8.3
MUKONO	62.8	0.0	37.2
Average (for 4 districts)	71.3	4.8	23.9

Farm production is therefore the dominant activity demanding the use of most of the household labor in the rural sector (Figure 4).



However, to meet labor demand on the farm, it was found that it is sometimes necessary to hire outside labor. To determine the chances (probability index) that the farmer will hire labour or not, multivariate logistic estimates were made from a set of simple logistic equations.

HL = f(c, dv, fs, K, sb, w)……(1)

where:

HL = Hired Labour
c = credit availability
dv = farm enterprise diversification
fs = farm size
K = volume of capital availability
sb = side-business
w = wage rate

A single equations logistic model, which estimated the probability that a farmer hired labour (that is, the likelihood of hiring labour on the farm on the basis of a function of a vector of a number of variables) can then be written as:

$$\text{Prob (HL)} = \frac{e^{B_o + B_1 X}}{1 + e^{B_o + B_1 X}}$$

$$= \frac{1}{1 + e^{-(B_o + B_1 X)}}$$

$$\equiv \frac{1}{1 + e^{-z}}$$

where

$$Z = \beta_o + \beta_1 c + \beta_2 dv + \beta_3 fs + \beta_4 K + \beta_5 sb + \beta_6 w \ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)^9$$

Table 9 provides the probability indices based on a number of parameters associated with the farmer's decision making. These parameters included credit, farm size, level of farm enterprise diversification, volume of capital investment, presence of a side-business and wage rate.

The chances (represented by probability indices) that a farmer will hire labour to work on his farm, if he/she has access to credit was estimated to be 0.38 or 38 per cent. But if he is denied credit, the chance that he/she will not hire labour is 0.958 or 96 per cent (Table 9). This suggests that without credit, farmers are not likely to hire labour. But the decision to hire labour or not also depends on farm size. Farmers with large farms, averaging 7 (6.94) hectares have no option but to hire labor. The odds in favor of hiring labor are 1.126 or more than 100 per cent. This suggests that large farm operators have no options, but must hire labour.

[9] The contribution of each of the individual variables in the model is determined by using R statistics. A positive R value indicates that as the variable increases in value, so does the likelihood of the event (chance of employing labour on the farm), the opposite is true. Small value for R indicate that the variable has a small partial contribution to the model.

Table 9. Maximum likelihood estimates of logistic equation for the probability of employing labour (on the farm) by farm household

Variable	Parameter estimates	Probability index	Asymptotic standard errors
Credit received by household	-0.9581***	0.3836	0.2246
Farm diversification (cash & food crops, livestock etc.)	-0.6676***	0.5129	0.1947
Farm size	-0.1201*	1.1277	0.2323
Size or volume of capital invested	-1.2247***	0.2938	0.2389
Presence of side businesses	-0.0237	0.9766	0.2102
Wage rate	-5.6451	0.0035	
Constant	-6.2618		

*** significant at 1% probability
* significant at 10% probability

The more diversified the farm is (i.e. the more different farm enterprises are on the farm), the higher the probability that the farmer will hire labour because, production of several enterprises demand more labour. Hence, the chance that the farmer would hire labour on the farm is also higher, represented by a probability of 0.5129 or 51 per cent. The chances that the farmer would hire labor to work on the farm also depended on the size or volume of capital. With sufficient capital, the chance of hiring labor is 0.2938 or 29 per cent. This suggests that capital is an important determinant is deciding whether to hire labor or not, although farm enterprise diversification was high in the farmers' priority order, when hiring labour.

While these factors (c, dv, fs, K) were found to be statistically significant, other factors, such as "presence of side-business" and "wage rates" were not statistically significant, but important in the farmers decision making process (Table 9). The probability that the farmer would hire labour, if he has a side-business was 0.9766 or 98 per cent. As expected, side-business is important because it supplements farm income and acts a source of capital. With additional capital therefore, he is able to pay for labour on his farm. Besides, most off/non-farm activities compete for the same (family) labour used on farm. Farmers therefore, compensate for the divested labour by hiring. This suggests further that lack of cash to hire labour is the major limiting factor constraining farm investment and on-farm labor employment.

These findings do not only confirm that farm households are rational, but suggests further that employment and investment on the farm are a function of labour availability and capital. But access to credit is the major determining factor influencing the decision of farm households to hire labour. As access to credit is constrained, many farm households cannot afford to invest more on the farm, diversify farm enterprises and hire labour. In this respect, they resort to using family labour and restricting their farm investment to rudimental farm tools and equipment rather than expanding farm size and introducing new farm enterprises. This in turn, has affected the productivity of small farms and level of farm incomes, but may have encouraged non-agricultural activities and off-farm employment in some parts of the country.

- Credit, agricultural wage and employment in the rural sector

As indicated earlier, hiring farm labor is constrained by lack of access to credit. Table 10 shows that only 24 per cent of farm households in the selected districts have had access to credit, while 70 per cent have not. The main sources of credit are micro-finance institutions/NGO and project related loans. Banks and cooperative societies, which are the mandated financial institutions to provide credit, have played very remote roles in credit provision. Hence, given the credit squeeze, a few farm households who are able to hire labour, do so under constrained wage conditions.

Table 10. Percentage access to credit by source

	BUSHENYI	KUMI	LIRA	MUKONO	Average
No credit	53.0	85.0	65.6	83.3	70.2
Some Credit	43.0	11.0	27.1	13.7	23.7
Non reported cases	4.0	4.0	7.3	3.0	4.6
Source of credit					
Association	1.0	0.0	0.0	0.0	1.00
Bank	2.0	3.0	4.2	1.1	2.55
Church	0.0	1.0	0.0	0.0	1.00
Co-operatives	6.0	0.0	0.0	3.2	2.30
Groups	2.0	0.0	0.0	0.0	0.50
NGOs/ Micro Finance Institution	4.0	3.0	5.1	6.4	4.60
Projects	26.0	2.0	17.7	2.1	11.90
National Association (UNFA)	1.0	0.0	0.0	0.0	1.00

Table 11 suggests that although casual labour is common, over 85 per cent of the farmers who hire, pay casual labour very low wages, averaging Ug.Shs.3,000 (US$ 2.00) per day. Permanent or contract workers receive even lower wages. Over 70 per cent of farmers indicated that they pay their workers Ug.Shs.10,000-30,000 (US$ 7.00 – $20) per month and only 19 per cent paid higher wages. Apart from Lira district, farm wages do not exceed Ug.Shs.50,000 per month (about US$30). However, in Lira district, over 40 per cent of farmers indicated that their wage rates exceeded UG.Shs.50,000. It should be noted that one of the study site in Lira included the area, where there is a rice project and farm workers in the project area received higher wages, which appears to have influenced wage rates in the area.

Table 11. Contract and casual employment and agriculture wage in selected districts (%)

1. Casual Labour (Ug shs)	**DISTRICTS**			
1 US $ = 1,500 Ug shs	*Bushenyi*	*Kumi*	*Lira*	*Mukono*
Less than 1000	5.90	19.00	25.00	6.30
1000 - 1500	29.40	71.40	38.90	18.80
1501 - 3000	41.20	9.50	25.00	56.30
3001 - 5000	11.80	-	8.30	18.80
5001 - 10000	11.80	-	2.90	-
10000+	-	-	-	-
Payment in kind		*	*	
2. Contract/ permanent labour (Ug shs)				
Less than 10,000	9.50	-	-	-
10,000-30,000	57.10	100.00	40.00	85.70
30,001-50,000	33.30	-	20.00	14.30
Above 50,000	-	-	40.00	-
Total				
3. Permanent Labour**				
** Permanent labour - only three cases reported (Bushenyi above 50,000 one case, Kumi between 30,000 and 50,000 one case, and Lira less than 30,000 one case)				

*Notes: Figures computed as ratio of those hiring labour NOT as percentage of the total sample per district. * Payment were in kind. These took the form of beer and food for work in Lira and Kumi (valued at Shs 600 to 1,600.*

- Non-agricultural employment in the selected districts

The scenario in the non-agricultural sector provides very interesting information on employment opportunities in the rural sector. Table 12 indicates that there are several non-farm employment opportunities available to farm households, but these opportunities are not evenly distributed throughout the selected districts. The districts of Mukono and Bushenyi have wider range of employment opportunities than Kumi and Lira. However, the only common employment opportunities available throughout the selected districts were local brewing, bicycle transportation (*bodaboda*), general services and retail shopping (Table 12). This reflects the strong association between non-farm rural employment and infrastructure development. Lira and Kumi lag behind Bushenyi and Mukono in terms of infrastructure.

Brewing of local drinks, which is mainly a female dominated activity, accounts for up to 20.8 per cent of the household non-farm labor use. Bicycle transportation, commonly known as *bodaboda* (the name derived from bicycle use for border crossing), accounts for 14.1 per cent of household labor use. *Bodaboda* transportation on the other hand, is a male dominated activity, operated mainly by young males, who are energetic and more effective in peddling. There are of course other means of transportation in use, which were not captured by the study. General service and retail shopping, which have become common employment opportunities in the rural areas, account for 13.3 and 12.8 per cent of the household labour use respectively. Although few households have sufficient capital to establish retail shops, this has become a major source of supplementing household incomes.

Table 12. Employment pattern in non-farm sector in the selected districts

	Percentage employment by enterpreneurship					Average No. of employees per enterpreneurship				
Sector	***Bushenyi***	***Mukono***	***Kumi***	***Lira***	***Average***	***Bushenyi***	***Mukono***	***Kumi***	***Lira***	***Average***
Construction	20.00	4.80		20.00	14.93	7	3	-	3	4
Quarrying	6.70	4.80			5.75	3	-	-	-	-
Carpentry	20.00	4.80			12.40	2	2	-	-	2
Brick making	13.30	19.00			16.15	18	9	-	-	14
Produce trade	6.70	4.80		10.00	7.17	2	3	-	3	3
Transport (Bodaboda)	6.70	4.80	35.00	10.00	14.13	1	2	-	4	2
Tailoring	6.70	4.80			5.75	5	5	--	-	5
Hair care	6.70				6.70	2				
Retail shopping	6.70	14.30	10.00	20.00	12.75	1	1	-	1	1
Butchery	6.70	4.80			5.75	1	1	-	-	1
Local brewery	18.00	14.30	30.00	20.00	20.58	-	2	1	-	1
Grinding mill		4.80	10.00	10.00	8.27	-	14	3	4	7
Fish trading		4.80	5.00	5.20	5.00	-	1	2	-	1
Cattle trade			20.00	10.00	15.00	-	-	1	1	1
Service	15.30	14.30	12.10	13.50	13.80	-	1	1	1	1

Other regular non-farm employment opportunities in some of the districts include site construction, quarrying, carpentry and brick making. These are popular in Bushenyi and Mukono, while cattle trading and grind milling is popular in Kumi and Lira districts. Produce trade is more dominant in Lira, but both Bushenyi and Mukono districts also featured well. Employment opportunities such as tailoring, hair care, butchery and fish trading are also available in some of the selected districts, but do not occupy much of the household labor time (Table 12).

It is interesting to note that on average, most of the entrepreneurships require few employees. Apart from brick making, tailoring and grain milling, which employ on average 4, 5 and 7 persons per enterprise respectively, most of the enterprises require 1 or 2 employees only (Table 12).

In the main, the nature and type of non-farm employment opportunities differ from district to district. There are fewer employment opportunities in Kumi and Lira compared to other districts from the study areas. This suggests that, the fewer non-farm employment opportunities are available, the more household labour is left redundant or unemployed.

12. Investment in agriculture and non-agriculture

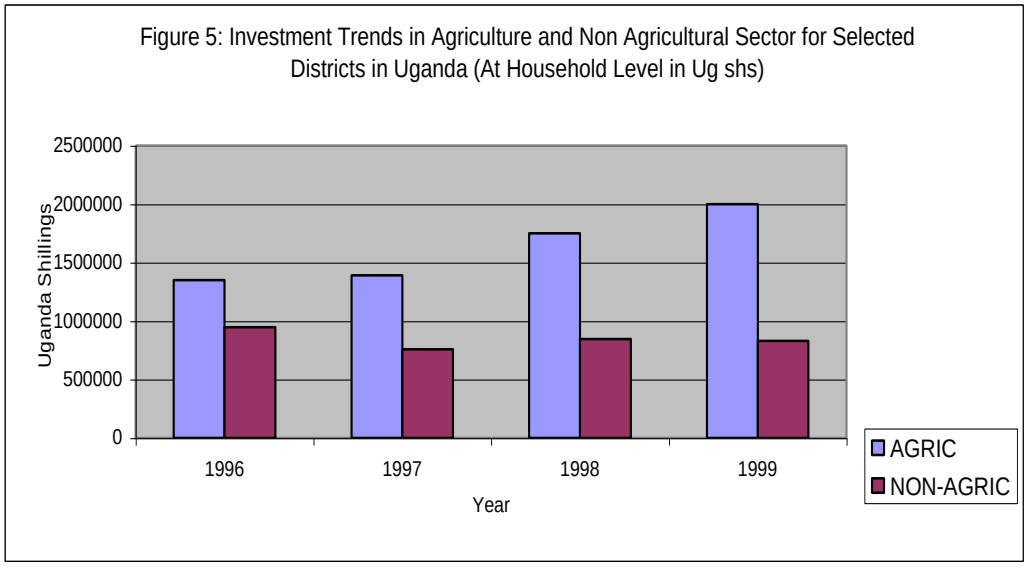
- **Investment in agriculture**

Surveys from selected districts confirm a similar household investment pattern in agriculture and non-agricultural sector as that of employment. Table 13 and Figure 5 show that from 1996 to 1999, investment in agriculture increased by 32 per cent, while that of non-agriculture declined by about 20 per cent. In the selected districts, apart from Bushenyi, investment in agriculture has increased significantly. In Bushenyi, there is a

disproportionate marginal increase in investment in both agriculture and non-agriculture sectors. Produce trading, retail shopping and local brewing are the major investment areas (Table 13).

Table 13. Investment Trends in Agriculture and Non-agricultural Sector in Selected Districts of Uganda (at Household Level Ug shs)

District	1996		1997		1998		1999	
	AGRIC	***NON-AGRIC***	***AGRIC***	***NON-AGRIC***	***AGRIC***	***NON-AGRIC***	***AGRIC***	***NON-AGRIC***
BUSHENYI	203628	74850	104221	77385	147106	44185	169663	98500
KUMI	1436094	30970	1551568	3190	1810642	16531	2248929	13919
LIRA	2802319	3441146	2628276	2463021	2810955	2506615	3142793	2506615
MUKONO	994567	312815	1331138	544810	2299135	883084	2508118	767294
Aggregate (4) districts	**1349051**	**947953**	**1392202**	**757710**	**1749474**	**845523**	**1999587**	**830613**
% change			3.20	-20.07	25.66	11.59	14.30	-1.76



Farm household allocative behavior is influenced by capital availability. The mean land area, labour and capital allocation of 3.86 ha, 694.4 person days and Ug.Shs. 37,119.96 (US$ 24.74) respectively, suggest that farm households allocate limited resources to farming, because they are constrained by capital to expand their farm activities. Capital labor ratio is low, suggesting that the return to labour is very low, but the capital/land ratio is moderate (Table 14). In general, the maximum capital investment at the farm level was estimated at Ug. Shs. 2,128,100 (US$1,418.73), employing 2,544 person-days of labor on 24.3 hectares of land. In the absence of any agricultural activities, at least 101 person-days were allocated to some form of activities. This indicates that even the landless households are engaged in some form of off or non-farm activities.

Table 14. Allocation of resources (land, labour and capital investment to agriculture at household level

Resource	Mean	Minimum	Maximum
Land (Ha)	3.86	-	24.30
Labour (man days)	694.30	101.00	25,444.00
Capital (Ug shs)	37,119.96	-	2,128,100.00

Mean capital **:** labour ratio = Ug shs 53.50/manday
Mean capital **:** land ratio = Ug shs 9,616.57/Ha

- Investment in non-agricultural sector

Investment in the non-agricultural sector is variable. Table 15 indicates that at various investment levels in non-agriculture, labor use differ significantly from district to district. In Mukono, given Ug. Shs. 1.0 mill.(US$ 666.70) of capital investment, labour requirement is only 187.3 person-days. In Lira and Kumi, at capital investment varying from Ug. Shs of 1.0 – 5.0 mill, labor requirement was about 470 and 214 person-days respectively. But, at higher levels of investment ranging from Ug. Shs 5.0 – 10.0 million, labour requirement in Lira increased to 873 man days, but any increase in investment to Ug Shs 20 million, labour requirement would peak to 1,240 person-days. This suggests further that labour requirement in the non-agricultural sector is also responsive to capital investment.

Table 15. Investment level in non-agriculture and corresponding labour usage in selected districts (man-days)

INVESTMENT LEVELS (Equivalent Ug shs)	BUSHENYI	KUMI	LIRA	MUKONO
Below 1,000,000				187.30
1,000,000 – 5,000,000		470.00	214.200	
> 5,000,000 – 10,000,000	3.86		873.00	
> 10,000,000 - 20,000,000*				
Above 20,000,000			1240.00	

*Investment within this range negligible

13. Household farm and non-farm incomes

Household farm and non-farm incomes also vary from district to district. Table 16 shows that apart from Lira and Bushenyi, most households derive their incomes from agriculture. In Lira, farm households are better-off from non-farm sources, especially from side businesses and other non-farm sources than incomes from agriculture (Table 16). While farm households in Bushenyi appear to have more non-farm employment opportunities, they do not derive significant incomes from any of the sources, although they have marginal benefit from non-farm sources.

Table 16. Average Household Income in Agriculture and Non-Agriculture in selected districts (Uganda)

District	Total Household Income (Ug Shs)	Income from Agriculture	Income from side businesses	Income from fishing	Income from forestry
BUSHENYI	461,129	178,652	236,347	0	8,030
KUMI	506,900	470,825	33,366	2,260	0
LIRA	2,217,025	740,793	1,433,937	8,219	34,375
MUKONO	1,805,444	965,922	777,272	1,617	737

Table 17 suggests further that the levels of farm household incomes are low. Over 60 per cent of farm households earn Ug. Shs 500,000 (US$ 333.33) or less. In Bushenyi and Kumi over 70 per cent of farm households earn Ug. Shs 500,000 or less compared to 52 and 38 percent from Lira and Mukono respectively. It should be noted that, differentiation in household income levels, are explained by the type of employment opportunities often available to the farm households. Side-business appears to provide better income source than any other sources except in Kumi and Mukono, where agriculture is the dominant source of income (Table 18). In Mukono, coffee and sugar cane are the major income earners, while in Kumi sweet potatoes and sunflower are the best source of income. In Lira, cotton is the major income earner, but returns from cotton do not compare favorably with coffee.

Table 17. Range of Household Income in the surveyed district in Uganda (Percent)

Range (Ug Shs)	BUSHENYI	KUMI	LIRA	MUKONO
Below 100,000	33.0	32.0	30.2	11.6
100,001 – 300,000	28.0	25.0	10.4	15.8
300,001 – 500,000	14.0	17.0	11.5	11.6
500,001 – 1,000,000	7.0	13.0	17.7	26.3
1,000,001 – 10,000,000	8.0	13.0	28.1	32.6
Above 10,000,000	0.0	0.0	2.1	2.1

It therefore seems rational that farm households in Lira are not dependent on agriculture as their major income sources. In Bushenyi, the scenario is rather different, as there are no major enterprises generating significant incomes (Table 18). Of the four main crop enterprises, banana is the best income earner, providing Ug. Shs. 80,300 (US$ 54.00) from two acres (0.81 ha) only. Millet provides such a low level of income that, it is difficult to rate it as a cash crop. However, it is interesting to note that despite a wider range of non-farm employment opportunities and low farm incomes from agriculture, farm households in Bushenyi still prefer to invest and work more on the farm than

elsewhere. This is probably due to poor conditions of employment in the non-farm sector in Bushenyi compared to Lira, where non-farm employment is more favored.

Table 18. Average Crop Area Per Household (in first season of 1999) and Income Earned*

District	Crops	Acreage 1 Plot = 0.5 Ha	Number of hired workers	Income in Ug Shillings
BUSHENYI	Banana	2	1	80,300
	Beans	1	1	46,780
	Sweet potato	1	1	19,326
	Millet	1	3	5,000
	Coffee	1	2	75,130
KUMI	Sweet potato	2	7	204,556
	Cow pea	3	0	21,333
	Cassava	2	7	23,571
	Ground nuts	3	7	111,650
	Sorghum	2	-	-
	Sunflower	2	7	173,280
LIRA	Simsim	2	4	66,000
	Beans	2	1	66,286
	Millet	2	3	61,871
	Cassava	2	-	150,000
	Cotton	2	9	180,236
MUKONO	Banana	1	1	151,985
	Sweet potato	1	1	66,054
	Beans	<1	-	53,868
	Coffee	2	2	666,377
	Pineapple	<1	-	297,000
	Sugar cane	1	1	421,433
	Tomatoes	<1	-	376,000

- - Major crops only

Coffee harvesting and sales occurs mainly in the second season

Table 19 shows the return to labor for a few selected commodities. Rice, despite its high demand for labour, provides the highest return to labor of Ug. Shs. 806.97 (US$0.54) per man day.

Table 19. Returns to labour for selected crops grown in Uganda in 1999

Crops	Returns to labour Ug shs/person day
Coffee	3,702.09
Cotton	502.19
Rice	806.97
Sunflower	606.85
Soybean	1,777.70
Simsim	1,125.00
Maize	916.67
Banana	777.78
Groundnut	2,154.32
Cassava	416.66
Sweet potato	1,032.45
Beans	87.85
Millet	167.96

Sunflower and cotton generate moderate returns to effort of Ug.Shs. 606.85 (US$ 0.40) and Ug. Shs. 502.19 (US$ 0.33) per person-day respectively. Millet and beans generate

very low returns to labor, but as major staples, their returns may have been misrepresented by the information provided by the households, as they may not have considered their subsistence component as income.

In the non-agricultural sector, a number of activities were identified and ranked as better income earners. Table 20 suggests that grinding mill enterprise, site construction and brick making ranked the best income earners respectively. However, oil milling and beverage (local brewing) making were also rated as high-income earners. However, the major limiting factors affecting non-agricultural enterprises are both high capital and labour intensive requirements, hence many farm households are not able to invest in such enterprenuership.

Table 20. Overall ranking of non-farm income sources

Activity	Average No. of persons employed	Average income earned per household in	Rank
Carpentry	3	160,000	6
Saw mill	3	56,000	7
Grinding mill	2	1,986,000	1
Oil mill	10	1,180,000	4
Brick making	5	1,316,666	3
Bakery	1	*	8
Brewing		960,000	5
House construction	12	820,000	2

* Income per unit negligible
1 US $ = 1500 Ug shs

Part Three

CONCLUSIONS AND RECOMMENDATIONS

14. Policy Focus on Agriculture

Evidence from the literature reviewed and the results of the case studies described in part two of the current document demonstrate that most of the rural households derive a greater proportion of their earnings from farming and only little proportion from secondary occupations. Given that many of these secondary occupations do not fall in the public sector or organised sector (e.g. estates), there appears to be very little that government can do through interventions such as increasing wage rates and so on. In other words, direct interventions on wage determination are not likely to help the poor, most of whom earn their living in the informal sector. However, public policy can assist the present and potential wage earners by ensuring a policy environment that does not discriminate against labor-intensive technologies.

There is a range of other occupations and activities, which may require direct and indirect assistance to reduce unemployment as well as increase the diversity in income sources. The prominent categories among these include occupations related to brick making, carpentry, salesmanship, quarrying and related works.

The above results demonstrate that the Government's medium term strategy of modernizing agriculture which is the main economic activity of the bulk of the Ugandan population, is one of the most credible and practical ways of eradicating mass poverty and improving the quality of life in rural Uganda. The key issues that have emerged from the present study and their policy implications on PMA implementation as well as rural development in general are briefly described in this section of the report.

- **Emphasis on education**.[10]

By making the rural population more literate, communications and flow of information are facilitated; both of which make the market economy more efficient; and the cost of transactions is reduced.

Emphasis on agricultural curriculum in education and policy environment that discriminate against the poor, such as the recent structural, institutional and fiscal reforms in the civil service (retrenchment), public service delivery (paying for cost of service), taxation, financial service etc., have constrained poor people's capacity to invest in human capital.

Special efforts are now being made under affirmative actions to get more women into training programs and positions where they can accumulate human capital. Universal primary education (UPE) has also led to increased enrolment in rural areas. But whether UPE will be able to achieve the intended objective has been the subject of debates within the political, civic and academic circle. Creditability of the UPE is questioned on the

[10] Income is earned not only on physical capital, such as machinery and buildings, but also on human capital - the acquisition of skills, training and education. An investment in education today is likely to increase one's productivity and his income in future.

ground of quality and implementation. Forgetting about UPE for the time being, the challenge lies with designing interventions such as manpower development, motivation and credit programs that are in line with a clientele that has had very little formal education.

- **Increasing Agricultural Labor Productivity and Resource Availability**

Transforming the agricultural sector through increased labour productivity will result in increased output, reduction in production costs, which will in turn, maintain downward pressure on real food prices. Improved food security and low food prices mean reduced expenditure on food. Savings from food can then be spent on products from other sectors such as manufacturing and service sectors leading to increased demands for goods and services and expansion of employment in these sectors. Increased growth in off-farm employment will eventually lead to a reduction in the percentage of the labor force employed in agriculture. Higher incomes, both on and off-farm will stimulate activities in trading, processing, marketing and transport throughout the economy contributing to general economic growth. Increased agricultural productivity improves inter-sectoral movement of labour and capital thus contributing to expanding investments in the whole economy.

The analysis of the past performance of the agricultural sector clearly demonstrates three main lessons to be taken into consideration while determining the future pattern of agricultural development. Firstly, agricultural growth has resulted mainly from the rapid increase in production of food crops for a resurgent domestic market and export market. Secondly, the increase in food production has resulted mainly from expansion in area cultivated, while yields of the major food crops have remained stagnant and in some cases declined. Thirdly, the international markets for Uganda's traditional export crops have become more competitive than in the early 1970s and Uganda has limited world market prospects for its food crops.

Most of these policy constraints in the agricultural sector have been removed. Based on the above lessons of the recent performance of the sector, the future focus of the sector to achieve accelerated growth should therefore concentrate on the following:

(i) Raising yields by developing and promoting the adoption of high yielding technologies through strengthened agricultural research and extension delivery mechanisms.
(ii) Generating and adopting appropriate labour-saving technologies for expansion of acreage under cultivation.
(iii) Promoting increased diversification of agricultural exports through production of high value-added commodities; and
(iv) Creating efficient and competitive systems for processing and marketing of agricultural commodities.
(v) Developing rural financial markets to provide easy access to credit for smallholder farmers to invest in agricultural production.
(vi) Developing infrastructure such as rural roads, communication links etc. to reduce transaction costs, develop marketing linkages and improve efficiency.

These are the main challenges to be overcome during the PMA implementation and succcess in these areas will have a most significant impact on rural employment creation and eradication of mass poverty by 2017, as envisaged in the GoU's all embracing development strategy – the Poverty Eradication Action Plan (PEAP).

- **Environmentally Sustainable Agricultural and Rural Sector Investment and Product Diversification**

Increased production and productivity should contribute to food security and poverty eradication without degrading the environment. It is estimated that the cost to the national economy due to environmental degradation represents between 4 and 12 percent (Slade and Weitz, 1996). It takes the form of biodiversity loss, deforestation, soil erosion, water contamination and water weed (hyacinth). Therefore, if one attributes these degradations to activities in the agricultural sector, then agricultural sector alone is responsible for 86 per cent to 91 per cent of the environmental degradation, in monetary terms.

Appropriate land use system[11] needs to be developed and enforced. The national, district, sub-county, parish and village participatory land use plans is already provided for in the National Environment Statute of 1995. Bringing the plans to bear with an appropriate land use policy that should be developed as recommended by the recent 1997 Land Act Implementation Study, will improve land use for the benefit of all. Complementary to the land use plans is the preparation of district, sub-county, parish and village-level environment action plans as provided for under the National Environment Statute of 1995.

- **Rural Finance Policies**

The results of the case studies in the four districts clearly demonstrate that investment and employment in agriculture in Uganda is constrained by lack of capital and credit accessibility. Most farm households are not able to expand the farm size and/or diversify farm enterprises because they lack capital. Although, labour is a constraint to diversifying farm activities, it could be hired if credit was accessible. Hence, most farm households do not bother to hire labor, but prefer to use family labour and sometimes hire-out family labour for non-farm activities, if such opportunities exist. These conditions create many policy implications.

On the basis of the above, it is strongly recommended that Government should provide conducive environment for borrowing, by;

(i) institutionalizing micro-financial institutions
(ii) making credit accessible by all credit worthy borrowers
(iii) promoting effective and efficient credit supervision
(iv) reviewing current interest rates and, which must be commensurate with market interest rates
(v) creating saving culture among the population.

[11] It is believed that Uganda's natural resources, particularly land, are being utilised wastefully.

(vi) Promoting some form of input credit and contract farming

- **Employment opportunities and productivity enhancement.**

The critical factors related to employment opportunities include wage rates and productivity. Most farm households would rather work on their farm even at low levels of income, because off-farm wages are not conducive. The opportunity cost of hiring-out family labour is sometimes too high compared to working on the farm, given that wages are so low. Hence many farm households cannot afford to buy food for their families.

Government should;

(i) review wage rates and rationalize living wages across the board
(ii) ensure that farm inputs are available and easily accessible by farmers by privatizing input distribution
(iii) provide extension services to farmers to disseminate new skills and enhance productivity
(iv) ensure policy environment that does not discriminate against labour-intensive technologies.

- Investment in agriculture and non-agriculture

Current investment policy and environment in Uganda are not conducive to rural investment. The new Land Act is full of encumbrances, such that potential investors are discouraged from investing in the rural areas. In addition, poor or lack of services and infrastructure (feeder roads, electricity and water) discourage investors.

Government needs to create conducive environment and opportunities for rural investment by:

(i) providing rural infrastructure (feeder roads, electricity, water etc.);
(ii) reviewing the land act to make it attractive to potential rural investors;
(iii) promoting rural agro-processing industrialization and commercial growth centers;
(iv) promoting and supporting commercialized and professional farming through the agricultural modernization program;
(v) providing and promoting alternative markets for agro-products.

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Appendices

Appendix 1. Investment opportunities in rural areas

a) Income Generating/Value Added Agricultural Production Enterprises

- Traditional export crops (coffee, cotton, tea and tobacco)
- Food crops (cereals, bananas, root crops, oil seeds, pulses)
- Export oriented horticultural enterprises (floriculture, tropical fruits and nuts, vegetables, vanilla, spices etc)
- Livestock enterprises (poultry, dairy ranching, small ruminants, pig-keeping, bee-keeping etc)
- Fisheries (fishing, fish-farming, crocodile farming)

b) Inputs and Service Related Rural Commercial Enterprises

- Agro-service centres (tractor/equipment, oxen hire service units);
- Seed multiplication and distribution (registered/seed growers, seed processing and trading activities)
- Wholesale and retail input distribution; (farm supply shops, input traders, dealers in tractor equipment etc)
- Manufacturing/repair of agricultural implements: (workshops, artisans, after sale service workshops:
- Veterinary medicine dealers, veterinary clinics and livestock input traders.

c) Agro-processing and Marketing Enterprises

- Food processing – maize, rice and other cereal processing mills, fruit juice products, canning, oil extraction, animal feed mills, tanneries, cashewnut processing, processing of livestock and fish products, etc;
- Milk collection/cooling centres, butcheries
- Manufacturing of consumer goods based on local raw materials;
- Produce marketing centres, societies, private buyers, etc.

d) Rural Infrastructure Commercial Service Enterprise

- Feeder road repairs and maintenance work contractors/workshops;
- Brick making, masonry, wood workshops, carpentry, metal works, saw mills, and construction related enterprises;
- Rural markets/marketing enterprises;
- Transport operators;
- Tailoring;
- Repair garages/workshops/blacksmiths;
- Rural-retail traders; (consumer goods etc)
- Storage, including cold storage

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Source: Agricultural Policy Secretariat, 1996

Appendix 2. List of agricultural sector investment opportunities

Production and Processing of Non-Traditional Crops

(i) Production and export of cereals (e.g maize, rice, millet, sorghum, wheat,, barley and pulses);
(ii) Production and export of pulses (e.g. bean, lentils, soya beans, cow peas and field peas); production and export of pulses
(iii) Oil seeds, (e.g sunflower, simsim (sesame), castor seed, groundnuts, cashewnuts).
(iv) Fresh and preserved fruits (e.g avocado, strawberries, passion fruits, pineapples, mango, papaya and bananas).
(v) Fresh and preserved vegetables, (e.g asparagus, mushrooms, courgettes, french beans, okra, and aubergines).
(vi) Fresh, dried and ground spices, (e.g cardamom, chillies, garlic, cinnamon, coriander, turmeric, black pepper, ginger and vanilla)
(vii) Vegetable oils: soya bean oil, sunflower oil, groundnuts oil, corn oil, cotton seed oil, castor seed oil, sesame oil, margarine and peanut butter.
(viii) Essential oils including ginger oil and cardamon oil,
(ix) Plants/orchids/flower: ornamental and cut flowers including roses and carnations.
(x) Sericulture (Silk), (e.g mulberry, silkworm, cocoon and silk yarn).
(xi) Seeds (for planting), e.g fruit seeds vegetables seeds and flower seeds.

Production and Processing of Traditional Export Crops

(i) Coffee nurseries/new plantations,
(ii) Coffee roasting and packaging,
(iii) Coffee by-products based industries
(iv) Cotton wool processing/blending,
(v) Cotton seed processing,
(vi) Cotton by-products based industries
(vii) Tea processing and packaging
(viii) Tea by-products based industries
(ix) High quality tobacco processing
(x) Cocoa rehabilitation and expansion
(xi) Sugarcane by-products based industries

Production and Processing Based on Livestock

(i) Dairy farming
(ii) Ranching (cattle, goats, sheep, pigs)
(iii) Poultry (chicken, Peking duck and ostrich)
(iv) Processing of dairy and livestock products
(v) Bee keeping (honey and wax)
(vi) Hides and skins
(vii) Leather processing
(viii) Cattle horns/tips
(ix) Preserved meat
(x) Crocodile/skin/meat

Production and Processing Based on Fisheries

(i) In-shore fish farming
(ii) Fish processing
(iii) Prawn farming
(iv) Eel farming

Forestry

(i) Agro-forestry
(ii) Industrial charcoal
(iii) Mechanical pulp
(iv) High value wood
(v) Laminated particle board
(vi) Cement bonded particle board
(vii) High value wood products
(viii) Activated carbon
(ix) Small wood products
(x) Activated carbon
(xi) Small wood products
(xii) Boxes, crates and cartons

Opportunities Based on Wetlands and Irrigated Farming

(i) Wet lands developed for tourist attractions
(ii) Small scale irrigated farming
(iii) Medium-large scale irrigated farming

Agricultural Machinery and Equipment

(i) Ox-equipment
(ii) Tractors and their implements, small capacity 10-20 hp, medium capacity 20-35 hp, big tractors 35-55 hp
(iii) Irrigation equipment, water tanks pumps pipes and spare parts
(iv) Storage facilities and equipment
(v) Other machinery and equipment, milking machines, spare parts and other supporting equipment.

Source: Uganda Investment Authority, 1997

Appendix Table 1. Employment Patterns in the Non-farm Sector (Bushenyi District -Western Uganda)

Sector	Percent Contribution	Cash payments (in shs) to different categories of employee			Average No. of employee Per entrepreneurship
		Casual/day	*Contract/month*	*Permanent*	
Construction	20.0	2,500		25,000	7
Quarrying	6.7	30,000			3
Carpentry	20.0			35,000	2
Brick making/laying	13.3	2,000	55,000	40,000	18
Produce trade	6.7	2,000	20,000		2
Transport (bicycle)	6.7			60,000	1
Sewing (tailoring)	6.7			16,000	5
Hair care	6.7			30,000	2
Retail shop	6.7				1
Butchery	6.7		30,000		1

Appendix Table 2. Employment Patterns in the Non-farm Sector (Mukono District -Central Uganda)

Sector	Percent Contribution	Cash payments (in shs) to different categories of employee			Average No. of employee per entrepreurship
		Casual/day	*Contract/month*	*Permanent/month*	
Construction	4.8	3,000		25,000	3
Bicycle repairs	4.8		20,000		1
Carpentry	4.8	1,000			2
Brick making/laying	19.0	4,500	60,000	25,000	9
Produce trade (coffee)	4.8			35,000	3
Water transport (boat)	4.8		30,000	60,000	2
Sewing (tailoring)	4.8	500		16,000	5
Service (nursery sch.)	4.8		40,000		3
Baking	4.8			24,000	1
Maize mill	4.8			40,000	14
Brewing	14.3	3,000	34,000		2
Fish trade	4.8	1,000			1
Canteen	14.3			35,000	1
Butchery	4.8		35,000		1

Appendix Table 3. Employment Patterns in the Non-farm Sector
(Lira District - Northern Uganda)

Sector	Percent Contribution	Cash payments (in shs) to different categories of employee			Average No. of employee per entrepreurship
		Casual/day	***Contract/month***	***Permanent/ month***	
Welding & fabrication	20	3,000		65,000	3
Produce trade	10	5,000		30,000	3
Transport (pick up/lorry)	10			140,000	4
Drug shop	10			80,000	3
Grinding mill	20			50,000	4
Hotel	20			20,000	2
Retail shop	10			20,000	1

Appendix Table 4. Employment Patterns in the Non-farm Sector
(Kumi District - Eastern Uganda)

Sector	Percent Contribution	Cash payments (in shs) to different categories of employee			Average No. of employee per entrepreurship
		Casual/day	***Contract/month***	***Permanent/month****	
Processing (Ram press)	5.0	1000			3
Brewing	30.0	1000			1
Retail shop	10.0	1000			1
Grinding mill	10.0		30,000		3
Fish trade	5.0	1000			2
Bicycle hire (bodaboda)	30.0	1000			1
Wheel barrow service	5.0	1200			1
Cattle trade	5.0		35,000		1

* No case of permanent labour reported