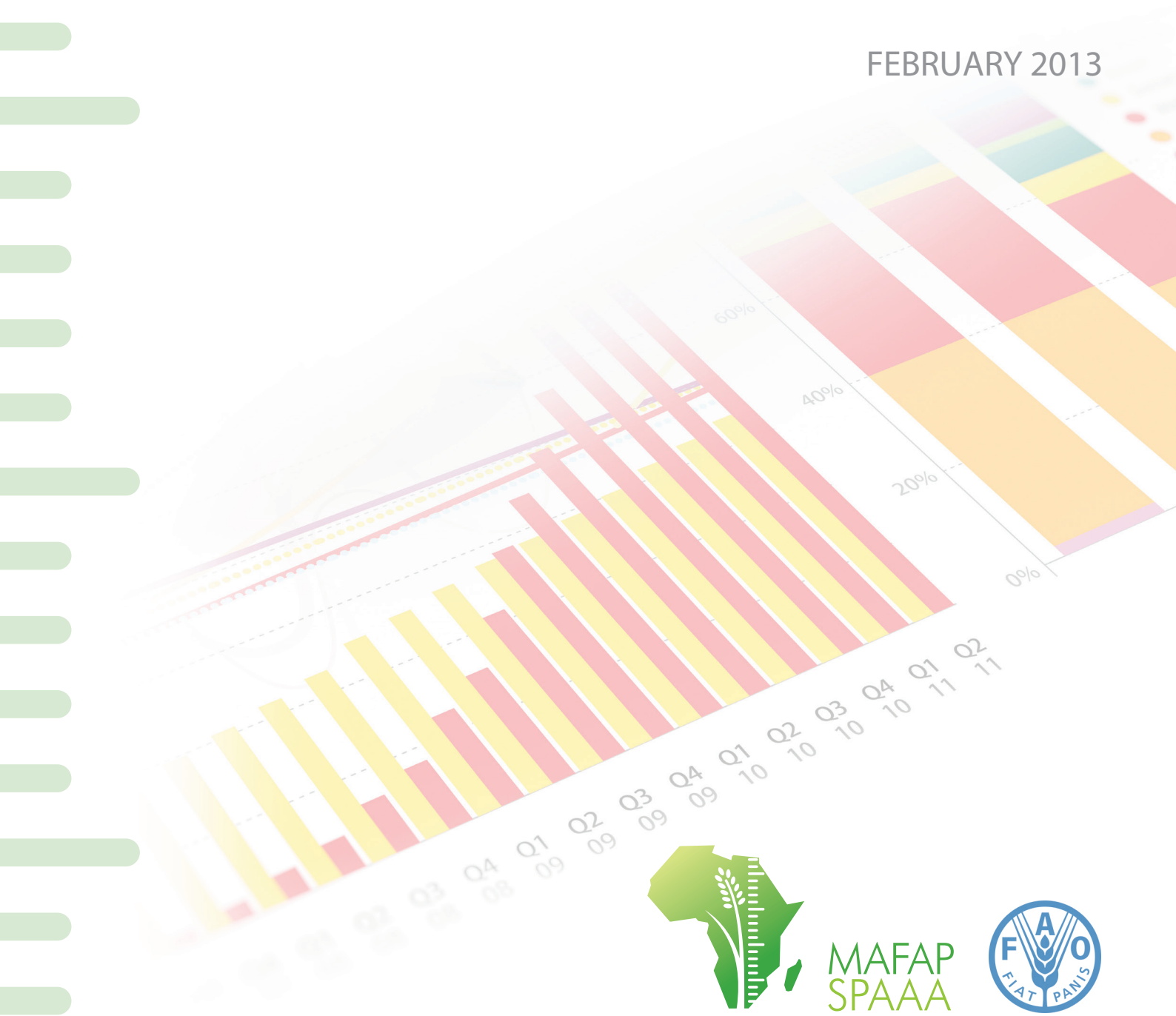
MONITORING AFRICAN FOOD AND AGRICULTURAL POLICIES (MAFAP)

REVIEW OF FOOD AND AGRICULTURAL POLICIES IN UGANDA 2005-2011

COUNTRY REPORT

FEBRUARY 2013



MAFAP
SPAAA

MONITORING AFRICAN FOOD AND AGRICULTURAL POLICIES (MAFAP)

REVIEW OF FOOD AND AGRICULTURAL POLICIES IN UGANDA 2005-2011

COUNTRY REPORT

FEBRUARY 2013

(DRAFT FOR COMMENTS)

MAFAP
SPAAA

Monitoring African Food and Agricultural Policies

Food and Agriculture Organization of the Unided Nations

Suggested citation:

MAFAP (2013). Review of food and agricultural policies in Uganda. MAFAP Country Report Series, FAO, Rome, Italy.

TABLE OF CONTENTS

TABLE OF CONTENTS 3
LIST OF TABLES 6
LIST OF FIGURES 8
ACRONYMS 11
ACKNOWLEDGEMENTS 13
EXECUTIVE SUMMARY 15
Key messages 15
Main Findings 17
Part 1. Context of food security and agricultural policies 27
Uganda in brief 27
Geographical context 32
Socio-economic aspects 34
Macro-economic performance 34
Performance of the agricultural sector and rural development 36
International trade 44
Major constraints to production 45
Agriculture and the environment 52
Other development indicators 54
Population 54
Poverty, inequality and employment 55
Review of the main food and agricultural policies 67
Key strategies and government priorities of agricultural and rural development 67
Overarching national policies 67
Main strategies and government priorities for agricultural and rural development 71
Agriculture sector budget process 73
Part 2: The effects of agricultural and food policies, public expenditure and aid 83
Incentives, disincentives and market development gaps 84
Abstract 84
Product selection 84
Methodology highlights 86
Leading indicators of the MAFAP project 91
Data requirements and Source 91
Caveats and limitations 94

MAFAP project indicators of incentives and disincentives 95
The agricultural sector indicators 97
Major imports 99
Major exports 108
Conclusions 139
Product-specific conclusions 139
Public expenditure and analysis 144
Abstract 144
Introduction 144
General trends in Uganda's public expenditure in support of agriculture 145
Composition of public spending in support of food and agriculture development 147
Role of aid in public spending on agriculture in Uganda 155
Conclusions 157
Coherence between incentives and government spending 159
Introduction 159
The Government of Uganda's main policy strategies 159
Conclusions 170
Part 3: Institutional constraints to agriculture development in Uganda 173
Introduction 173
Main features of the reforms of the agricultural sector in Uganda 173
Institutional constraints to agricultural production in Uganda 175
Conclusion 178
Part 4. Conclusions 181
Key Messages 181
Incentives, Disincentives and Market Development Gaps 181
Functioning of the value chains 185
Public expenditure and aid 186
Coherence of agricultural and food policies 187
REFERENCES 189
ANNEX 1: List of projects and programs included in the analysis of public expenditure 196
ANNEX 2: Summary of main methodological concepts 201
ANNEX 3: Data and data sources for public expenditure analysis 204
ANNEX 4: Data sources for the analysis of incentives and disincentives 206
ANNEX 5: Prices used for the analysis of incentives and disincentives 210

ANNEX 6: Observed Access costs from the farmgate to point of competition market used for analysis of incentives and disincentives 211

ANNEX 7: Adjusted access costs from the farmgate to point of competition market used for analysis of incentives and disincentives 212

ANNEX 8: Observed Access costs from the point of competition to border used in analysis of incentives and disincentives..... 213

ANNEX 9: Adjusted access costs from the point of competition to border used in analysis of incentives and disincentives..... 214

LIST OF TABLES

Table 1: Development and Performance Indicators (DPI) 28

Table 2: Growth rates of agriculture, industry and service sectors 2003/4 –2008/9 37

Table 3: Crop Area in Uganda (2008-2011) (000 ha) 39

Table 4: Production of food crops in Uganda 2008-2011 (000 tonnes) 40

Table 5: Major commodities consumed by the household and their relative contribution to calorie intake Uganda (2007) 40

Table 6: Production of cash crops, 2008-2011 (000 tonnes) 41

Table 7: Livestock numbers (thousand animals), 2004–2011 42

Table 8: Uganda's international imports and exports trade (2005-2010). 44

Table 9:. Proportion of farmers using agricultural inputs in 2006 (%) 47

Table 10: National land cover statistics (sq km) 53

Table 11: Population of selected age groups, 1969–2002 55

Table 12: Number and percent of Ugandans who are absolutely poor, insecure non-poor and middle class 55

Table 13. Gini coefficients for Uganda 1992–2010 56

Table 14. Per capita real consumption expenditure, (Real U Sh, 2005/06=100) 57

Table 15. Frequency of the leading causes of morbidity for children below 5 years of age, 2007-2011. 61

Table 16. Top ten causes of hospital-based mortality for all ages in 2010/11 FY 62

Table 17. Life expectancy at birth by census year 1969-–2002 62

Table 18. Trend of key primary education indicators in Uganda (2007–2010) 65

Table 19. Literacy rates for the Ugandan population aged 10 years and older 66

Table 20.Timeline of sector budget preparation process in Uganda 75

Table 21. Agencies under MAAIF 76

Table 22. Average value of production, exports and imports of the products selected in Uganda. 86

Table 23. Commodities included in each commodity aggregate for estimating the leader indicator.. 91

Table 24. Estimated commodity indicators at the farm gate in Uganda 96

Table 25. Estimated indicators of the commodity groups at the farmgate in Uganda..... 97

Table 26: Trends in tea production, exports and domestic consumption in Uganda, 2000-2010..... 115

Table 27. Importance of cotton exports in Uganda (2006-2011)..... 124

Table 28. Maize production, import and export of Uganda (2005– 2010) 129

Table 29: Meat consumption in Uganda (2010)..... 132

Table 30: Agricultural and rural development budget allocation and expenditure (billion U Sh)..... 146

Table 31: Actual public expenditures in support of the food and agriculture sector in Uganda (billion U Sh) 149

Table 32: Share of policy transfers and policy administration costs in total spending of MAAIF (%). 154

Table 33: Budget allocations versus actual spending in Uganda 155

Table 34: The driving factors for market incentives and disincentives in Uganda (and associated policy measures and public expenditures)..... 161

Table 35:. National road network length (km) in Uganda..... 165

LIST OF FIGURES

Figure 1. Planned and actual agriculture spending in total government expenditures in Uganda 18

Figure 2. Composition of public agriculture-specific spending, average 2006/07-2010/11 19

Figure 3. Composition of agriculture-supportive spending, average 2006/07-2010/11 19

Figure 4. Reference and producers' prices of seed cotton in Uganda (2005-2010) 21

Figure 5. Reference and producers' prices of tea leaves in Uganda (2005-2010) 21

Figure 6. Reference and producers' prices of rice in Uganda (2005-2010) 23

Figure 7: Map of Uganda 33

Figure 8: GDP contribution by sector in Uganda 34

Figure 9: Growth rates of gross domestic product (GDP) in Uganda (1999-2011) 35

Figure 10: Real GDP growth by sector (percent): 2007–2011 36

Figure 11: Traditional, non-traditional and total exports for Uganda (2005-2011) 45

Figure 12: Intensity of fertilizer use in East Africa (kg/ha) of arable and permanent cropland; 2000 and 2008) 47

Figure 13: Total area under permanent crop as a percentage of the arable land 53

Figure 14: Uganda population trends (1969–2012) and midyear (2012) projection 54

Figure 15: Trends of labour force in Uganda (2000-2010). 57

Figure 16: Urban population in Uganda 1980-2012 59

Figure 17: Net remittances in East Africa (2000–2010) 59

Figure 18: Infant and children under five-years-old mortality trends, 1995- 2011 61

Figure 19: Water produced by NWSC in Uganda, 2006/07 – 2010/11 63

Figure 20: Access to improved water sources in East Africa (2000–2008) in urban areas 64

Figure 21: Access to improved water sources in East Africa (2000–2008) in rural areas 64

Figure 22: A chart of policies, strategies and programmes in Uganda's agricultural sector since 1986. 70

Figure 23: MAAIF macro structure and linkages with stakeholders 76

Figure 24: MAFAP Methodology for measuring price incentives and disincentives of imported commodity 88

Figure 25: Agricultural sector's nominal rates of protection (NRPs) and market development gap (MDG) at the producer level (%), 2005 – 2010 99

Figure 26: Nominal rates of protection (NRPs) at the producer level for imports (%), 2005-2010 100

Figure 27: Rice area, production and consumption trends in Uganda (1990– 2010) 102

Figure 28: Nominal rates of protection for rice in Uganda (%), 2005– 2010 103

Figure 29: Nominal rates of protection for wheat in Uganda (%), 2005– 2010 105

Figure 30: Domestic production, import and exports of sugar in Uganda (2002– 2011) 106

Figure 31: Nominal rate of protection for sugar and sugarcane in Uganda (2005-2010) 108

Figure 32: Nominal rates of protection (NRPs) and market development gap (MDG) for exports at the producer level (%), 2005-2010 110

Figure 33: Recent trends in coffee production, exports and domestic consumption in Uganda 111

Figure 34: Nominal rates of protection (%) at the farmgate and point of competition for coffee in Uganda (2005-2010) 113

Figure 35: Trends of area, production and yields of tea in Uganda (1995-– 2011) 115

Figure 36: Nominal rates of protection (%) for tea producers in Uganda, 2005-2010 117

Figure 37: Trends of production, consumption and export of fish in Uganda (2000-– 2010) 118

Figure 38: Quantity of fish catches by Ugandan water bodies, 2008-– 2010 118

Figure 39: Nominal rates of protection for fish in the primary and export markets in Uganda, 2005–2010 121

Figure 40: Cotton lint and seed production trends in Uganda (1995–2010) 123

Figure 41: Nominal rates of protection for cotton in Uganda (%), 2005-2010 125

Figure 42: Nominal rates of protection (NRPs) and market development gaps (MDG) for food security commodities at producer level (%), 2005-2010 126

Figure 43: Nominal rates of protection (NRPs) and market development gap (MDG) for thinly- traded commodities at producer level (%), 2005– 2010 127

Figure 44: Maize area and production trends in Uganda (1990-– 2010) 128

Figure 45: Nominal rates of protection (%) for maize in Uganda, 2005-2010 131

Figure 46: Beef production in Uganda 2005– 2010 (thousands of tonnes) 132

Figure 47: **Nominal rates of protection (%) for beef in Uganda, 2008-2010** 134

Figure 48: Cassava acreage and production trends in Uganda (2005-2010) 135

Figure 49: Nominal rates of protection (percent) for cassava in Uganda, 2007– 2010 137

Figure 50: Nominal rate of protection (NRP) of the sector, imports, exports and food security, 2005–2010 138

Figure 51: Estimated market development (MDG) by commodity group (%), 2005-2010 139

Figure 52: Planned and actual agriculture spending in total government expenditures in Uganda .. 147

Figure 53: Composition of public expenditures in Uganda, 2006/2007– 2010/2011 148

Figure 54: Composition of public expenditures in Uganda: agriculture-specific spending, average 2006-2008 150

Figure 55: Composition of public expenditures in Uganda: agriculture-specific spending, average 2008-2011 150

Figure 56: Composition of public expenditures in Uganda: agriculture-supportive spending, average 2006– 2008 151

Figure 57: Composition of public expenditures in Uganda: agriculture-supportive spending, average 2008– 2011 151

Figure 58: Support to different categories of commodities 152

Figure 59: Support to individual commodities (average 2006– 2010) 153

Figure 60: Support to a group of commodities (average 2006-2010) 153

Figure 61: Average shares of aid in total spending in Uganda 2006/07– 2007/8 and 2008/09– 2010/11 (million U Sh) 156

ACRONYMS

ASDSIP	The Agricultural Sector Development Strategy and Investment Plan
ASL	Above Sea Level
ASWG	Agricultural sector working group
ATAAS	Agricultural Technology & Agribusiness Advisory Services
BFP	Budget Framework Paper
BMU	Beach Management Units
CA	The Constituent Assembly
CAIIP	Community Agricultural Infrastructure Improvement Project
CDO	Cotton Development Organization
CET	common external tariff
CMB	Coffee Marketing Board
COCTU	Coordinating Office for the Control of Trypanosomiasis in Uganda
COMESA	Common Market for Eastern and Southern Africa
CPI	Consumer Price Index
DDA	Dairy Development Authority
DPI	Development and Performance Indicators
DRC	Democratic Republic of Congo
DSIP	Development Strategy and Investment Plan
DWD	The Directorate of Water Development
EAC	East African Community
EIA	Environmental Impact Assessment
ERP	Economic Recovery Programme
EU	European Union
FY	Financial Year
GDP	Gross Domestic Product
GEF	World Bank, Global Environment Facility Trust Fund
GMO	Genetically Modified Organisms
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome.
IMF	International Monetary Fund
IMR	Infant Mortality Rate
IOE	the International Office of Epizootics
IOE	International Office of Epizootics
IPPC	International Plant Protection Convention for plant disease and health standards
JICA	Japanese International Cooperating Agency
LFPR	The Labour Force Participation Rate
LMB	Lint Marketing Board
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MAFAP	Monitoring and Analysis of Food and Agricultural Policies in Africa
MATIP	Markets and Agriculture Trade Improvement Projects
MFPED	Ministry of Finance, Planning and Economic Development
MoES	Ministry of Health
MOFPED	Ministry of Finance, Planning and Economic Development
MTEF	Medium Term Expenditure Framework ().
NAADS	National Agriculture Advisory Services
NAGRIC&DB	National Genetic Resource Information Centre and Data Bank
NARO	National Agricultural Research Organisation
NARO	National Agricultural Research Organization
NARS	National Agricultural Research Systems
NDP	National Development Plan

NEA	National Environmental Act
NEMA	National Environmental Management Authority
NES	National Export Strategy
NFNC	National Food and Nutrition Council
NTE	Non-Traditional Exports
NWSC	National Water and Sewerage Corporation
PEAP	Poverty Eradication Action Plan
PFA	Prosperity for All
PIP	Public Investment Plan
PLE	Primary Leaving Examination
PMA	Plan for Modernisation of Agriculture
PMB	Produce Marketing Board
PPA	Participatory Poverty Assessment
PRSP	Poverty Reduction Strategy Paper
RDS	Rural Development Strategy
SID	Society for International Development
SWG	Sector Working Group
SWG	Agricultural Sector Working Group
SWG	Sector working group (SWG)
TE	Traditional Exports
UBOS	Uganda /Bureau of Statistics
UBoS	Uganda Bureau of Statistics
UCDA	Uganda Coffee Development Authority
UCDO	Uganda Cotton Development Organisation
UNEP	United Nations Environmental Program
UNHS	National Household Survey

ACKNOWLEDGEMENTS

This first draft of the report is a product of a joint and collaborative work involved many people and institutions within FAO and partners in Uganda. This preparation of the report was coordinated and edited by Mohamed A. Ahmed (FAO) and Katie McGovern.

All work performed within the project MAFAP in Uganda has received support and contributions from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), Economic Policy Research Center (EPRC), National Agricultural Research Organization (NARO) and the FAO Representation in Kampala.

Data and information were collected by the project team MAFAP at MAAIF, NARO and EPRC. The local technical team worked under the direction of Robert Khaukha (MAAIF), Geofrey Okoboi (EPRC) and Stephen Ojangole (NARO). Additional data and assistance was provided by Dickens Ocen (Uganda Bureau of Statistics (UBoS)).

Emanuel Kimbowa (MAAIF) developed Part 1 with the assistance of Mohamed Ahmed (FAO) and Dickens Ocen (UBoS) and Isaac Shinyekwa (EPRC). Part 2 was prepared jointly by Mohamed Ahmed (FAO), Geofrey Okoboi, Isaac Shinyekwa and Dorothy Nampewo (EPRC) and Joanna Ilicic-Komorowska (EPRC).

The first draft of the Part 3 which is included as an additional topic of national interest was prepared by Isaac Shinyekwa (EPRC). Additional input was provided by Mohamed Ahmed (FAO) with assistance from Katie McGovern. The synthesis of the policy coherence was prepared by Mohamed Ahmed with assistance from several team members. The report conclusions were prepared by Mohamed Ahmed (FAO).

The MAFAP Secretariat and technical team provided substantial support and contribution in finalizing this draft of the country report for Uganda. The members of the team provided comments and valuable suggestions for improving the report. Keith Wiebe (FAO) reviewed the first draft of the report and provided valuable suggestions. The comments and suggestions provided by EPRC and NARO are acknowledged.

EXECUTIVE SUMMARY

MAFAP is implemented by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Organization for Economic Co-operation and Development (OECD) and national partners in ten countries, among which is Uganda. The MAFAP project aims to help African policymakers and development partners ensure that policies and investments in agriculture and rural development are evidence-based and fully supportive of agriculture, sustainable use of natural resources and strengthening food security.

From this perspective, the MAFAP project conducted a thorough analysis of agricultural and food policies; public spending; and incentives and disincentives for different commodities of economic importance. Criteria used in selecting the commodities for the analysis include their share in value of agricultural production; contribution to food security; contribution to export earnings; and contribution to reducing the agricultural import bill of the country. Based on these criteria, commodities analyzed comprise maize, cassava, fish, coffee, tea, cotton, wheat, rice and sugar. Some other important commodities such as banana and beans were not analyzed for lack of data.

The report offers results achieved with the implementation of a rigorous methodology for measuring the effects of agricultural and food policies and of public spending in agriculture and rural development. The report provides insight into the agricultural sector and rural areas of Uganda. It established a baseline to support the dialogue on agricultural and food policies in Uganda among key decision makers and with development partners.

The commodity analysis is designed to identify how the current policy environment affects agriculture through its influence on commodity markets. It is based on well-known simple indicators to measure the deviation of the commodity prices received by various agents in the domestic markets from an estimated ideal price in a distortion-free, competitive situation, referred to in this report as the *reference price*. The deviation is measured in monetary value per unit of marketed output (*price gap*) and in relative terms as a percentage of the reference price (*nominal rate of protection*). The *reference price* takes into account whether the commodity is an export, import or non-traded product in world markets, the marketing costs currently incurred, and all taxes or levies. According to this indicator, when the domestic price is equal to the reference price the domestic prices are consistent with comparative advantage of the country in producing the commodity. A domestic price above the reference price of the commodity suggests that producers are receiving transfers through the market or incentives due to existing policy or functioning of the value chain. On the other hand, producers are facing disincentives originating from policies or market factors when the domestic price is below the reference price. The analysis reported in this report is undertaken for the period 2005–2010.

Key messages

For the agricultural sector as a whole, the level of incentives for producers is highly variable over the years and between commodities. For the period 2005–2007, agricultural producers generally received prices lower than the reference prices, i.e., faced disincentives. The situation improved when world prices started to rise for most food commodities in 2007, as farmers received incentives in terms of higher producers' prices.

The duty imposed on some imports provides significant incentives to farmers. Producers' prices of imported commodities (sugar, rice and wheat) are significantly higher than the reference prices. Producers of these commodities thus received significant incentives, which represented a transfer from domestic consumers. These incentives are due to the import tariffs imposed on these commodities according to the East Africa Common External Tariff agreement. However, most of the benefit from the tariff protection is captured at the wholesale level, for example by sugar processors.

Despite the tariff on sugar imports, sugarcane growers generally even face price disincentives. The ultimate burden of the protection for producers, processors and traders of these commodities is borne by consumers in terms of high retail prices.

- **The incentives to rice producers may explain the progressive expansion of rice production in Uganda, especially during the period 2005–2010**. Over this period, when rice production increased by 42.5 percent. Combining this support with increased utilization of agro-inputs and sustainable soil management may help realize the ambitions of the National Rice Development Strategy to triple rice production in Uganda by 2016.
- **The processors and exporters of the traditional export commodities of Uganda are the primary beneficiaries of market liberalization and export promotion measures adopted by Uganda.** With the integrated processing and marketing activities of fish, cotton, tea and coffee exporters, processors receive prices that are close to the world prices, which reflect the comparative advantage of the country in producing these commodities. This represents a favourable environment for exporters.
- **Market liberalization and export promotion measures adopted by Uganda are not successful in eliminating disincentives to producers of export commodities.** During the period 2005–2007, producers of export commodities were receiving prices lower than the reference prices, i.e., facing price disincentives. However, these disincentives declined in magnitude to turn into relatively small but positive incentives in 2008-2009, before becoming negative again in 2010. This irregularity shows that producers' prices are weakly related to export prices, although cotton, tea and coffee are primarily export commodities. It appears that most of the incentives are captured at the wholesale level of the value chain, with mostly disincentives at the producers' level except during years of high world prices such as 2008–2009. Tea, cotton and fish producers are the most disadvantaged by current pricing mechanisms at the farm gate while coffee growers are in a much better situation.
- **Food producers generally receive prices below the reference price.** With the exception of higher levels of incentives linked to significant price increases during the 2008–2010 crises in food prices on international markets, the food security subsector (maize, cassava and beef) is characterized by disincentives to producers. This suggests weak price transmission between world and domestic prices, as is the case with beef, maize and cassava, which are thinly-traded or non-traded. However, domestic maize prices began to recover since 2008, resulting in net incentives to maize producers.
- **For all commodities, transportation costs represent significant marketing costs, given the poor transportation infrastructure and high fuel price in Uganda**. The cost of truck transportation in Uganda averaged US$ 0.15 per tonne-km for distances of 80 km or more in 2008. Transportation cost is more than double (US$ 0.33 per tonne-km) for shorter distances. Obviously, transportation

costs are highly related to the cost of fuel, which accounts for 68 percent of the vehicle operating costs. Therefore, taxes on fuel play a role in commodity transportation and marketing costs that is directly related to the extent of incentives or disincentives faced by farmers.

- **Except for imported commodities, the prevailing incentives and disincentives in commodity markets are due to factors other than government policies.** As Uganda has been pursuing a highly liberalized economic policy (a process that started in 1991) with minimum government intervention in commodity pricing, elimination of export taxes, and a free foreign exchange market, the prevailing structure of incentives and disincentives to producers cannot be attributed to government policy. The (dis)incentive structure apparently results from the poor functioning of the value chains of some commodities, poor market institutions and lack of market information, and high marketing costs –especially transportation costs– due to poor infrastructure and high fuel prices.

Public expenditures are an important policy instrument in Uganda's agricultural sector development. The sector has been allocated significant funds for general sector support. Although the current level of spending to agriculture and rural development meets the CAADP recommendations of allocating 10 percent of the overall budget to agriculture and rural development (including national resources and aid), as expressed in the 2003 Maputo Declaration, Government expenditure to MAAIF, the Ministry of Agriculture, Animal Industry and Fisheries (MAFAP's narrow definition of the agricultural sector) has stagnated at about 4 percent. In general, aid accounts for a large part of expenditures, raising questions about sustainability of support to the sector, while administrative costs represent a significant share in overall spending.

Main Findings

Public expenditure in support of agriculture and rural development occurs outside the agricultural ministries and institutions

Public expenditure in support of agriculture and rural development is an important policy instrument for Uganda's agricultural sector development, for the implementation of government strategies, and for development of the infrastructure necessary for agricultural production. In Uganda, many programmes under the Plan for Modernization of Agriculture (PMA) framework and the Rural Development Strategy (RDS) are managed by ministries that are not directly linked to agriculture. These include the Ministries of Finance, Planning and Economic Development; Energy and Mineral Resources; Works and Transport; Local Government; Water and Environment; Health; Education and Sports; Tourism, Trade and Industry; Gender, Labour and Social Development; Lands, Housing and Urban Development; and even the Office of the Prime Minister. All expenditures of these ministries have been examined and all expenditures in support of food and agriculture sector development have been included in the analysis.

In contrast, public expenditures in agriculture (agriculture-specific expenditures) in Uganda have been typically measured by taking into account those resources that were expended by agencies specifically responsible for agricultural matters. At the national level, these included the Ministry of Agriculture, Animal Industry and Fishery (MAAIF), which is the main government body responsible for agriculture, and four autonomous organizations: the National Agricultural Research Organization (NARO), the National Agricultural Advisory Service (NAADS) Secretariat, the Uganda Cotton Development Organization (UCDO) and the Uganda Coffee Development Agency (UCDA). At the local

level, agricultural expenditures are executed by District Agricultural Extension, NAADS and programmes under Non-sectoral Conditional Grant (NSCG).

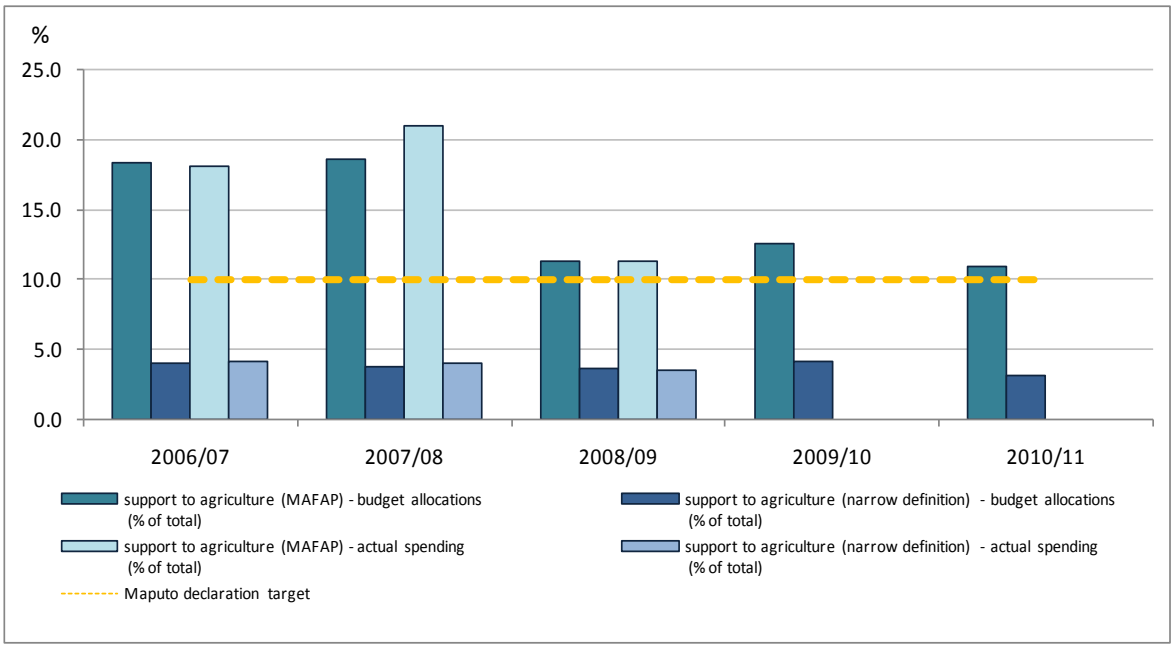
Public expenditure in support of agriculture and rural development has been declining

The agricultural budget allocations have declined from almost 17 percent of total government spending in 2006/2007 to about 11 percent in 2010/2011 (Figure 1). Actual spending in relative terms has also decreased significantly in 2008/2009.

Although the trends in relative terms show that the importance of agriculture in the total government budget is declining, the current level of spending still meets the CAADP recommendations of allocating 10 percent of the overall budget to agriculture and rural development (including national resources and aid), as expressed in the 2003 Maputo Declaration.

Government expenditure to the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) has stagnated at about 4 percent, which is far below the 10 percent target of the Maputo declaration. The decline in government expenditure on MAAIF may be related to increasing allocations to non-rural priority areas such as universal secondary education, national trunk roads, and national security. The decreasing trend in budget allocations to support food and agriculture may threaten the sector's development and hence Uganda's economic growth, since agriculture is a key sector in Uganda's economy.

Figure 1. Planned and actual agriculture spending in total government expenditures in Uganda

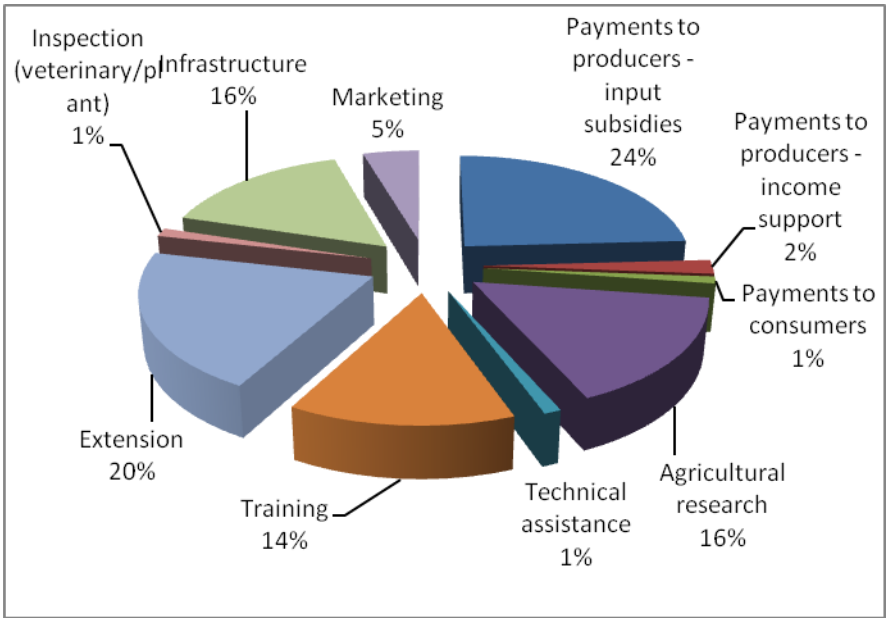


Agriculture-specific expenditure and expenditure in support of agriculture differ both in level and allocation

Agriculture-specific expenditures account, on average, for almost 39 percent of expenditures in support of food and agriculture sector development. Their importance in overall agricultural support grew from about 29 percent in 2006/2007 to 45 percent in 2010/2011. In terms of the level of spending, agriculture-specific expenditures almost doubled over the analyzed period, while agriculture-supportive expenditures increased only slightly.

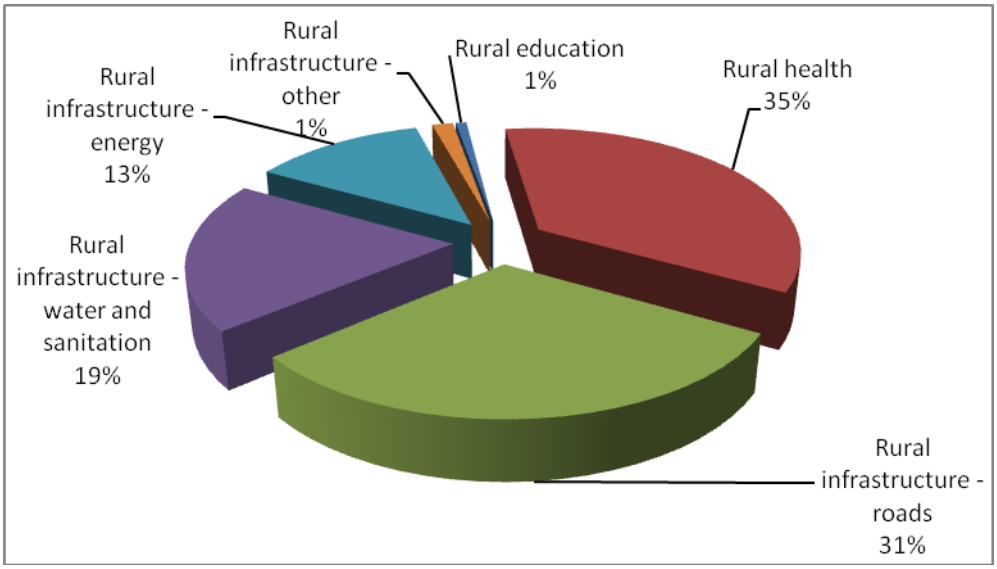
Input subsidies, extension services and agricultural research constitute the major transfers for agriculture-specific expenditure during the period of analysis (2006-2011) (Figure 2). This is followed by training activities (14 percent). Expenditures on marketing and other service represent a small share of agriculture-specific expenditure.

Figure 2. Composition of public agriculture-specific spending, average 2006/07-2010/11



The major share of agricultural supportive budgets was spent on rural infrastructure, particularly rural roads (31 percent) and rural health (35 percent). Rural education takes the smallest proportion of the budget, about 1 percent (Figure 3). This appears to be insufficient as farmers require basic education to understand clearly how to apply the extension services that are offered to them through different government programmes such as NAADs.

Figure 3. Composition of agriculture-supportive spending, average 2006/07-2010/11



Agriculture-specific expenditures can be allocated to the commodities which they intend to support

Each **agriculture-specific** expenditure measure has been attributed to an appropriate commodity or group depending on whether it supports an individual commodity (e.g. vegetable oil for the Vegetable Oil Development Project), a group of commodities (e.g. livestock for the Pan African Control of Epizootics Project) or all commodities (e.g. construction of feeder roads). Overall, expenditures on specific agricultural commodities have been increasing over the years. Expenditures in support of all commodities are by far the most important throughout the analyzed period. Support to individual commodities and support to groups of commodities account for only a small proportion of agriculture-specific spending. In terms of distribution over individual commodities, the government has focused more on promoting fish production, followed by vegetable oil and banana production. This is in contrast with the smaller support for the traditional cash crops such as coffee, cotton and tea.

The composition of public expenditures is just as important as the total level

Although the level of public expenditures in support of food and agriculture sector development in Uganda is above the Maputo declaration target, Uganda has not achieved the 6 percent growth objective for agriculture set by CAADP. The composition of public expenditures in support of agriculture could still be improved by allocating more expenditure to areas that may produce higher returns in the long run such as rural roads, research, and agricultural education and training. Investments in markets development and market institutions to facilitate producers' access to markets and market information have been relatively small.

The Government of Uganda has been successful in providing an enabling environment for the private sector to produce and trade competitively through the successive policy measures taken

Uganda has a highly liberalized domestic marketing policy for exports with minimal government interventions. The government is pursuing an export promotion strategy based on exchange rate liberalization, zero-rated duty and VAT exemption on exports, and no additional charges or levies. In addition, Uganda's exports qualify for preferential tariff rates in COMESA and EAC. Ugandan products to the European Union and USA markets are duty- and quota-free under the Cotonou Agreement (ACP–EU) and the African Growth and Opportunity Act (AGOA) respectively. However, these excellent policy measures have not led to consistent incentives for producers.

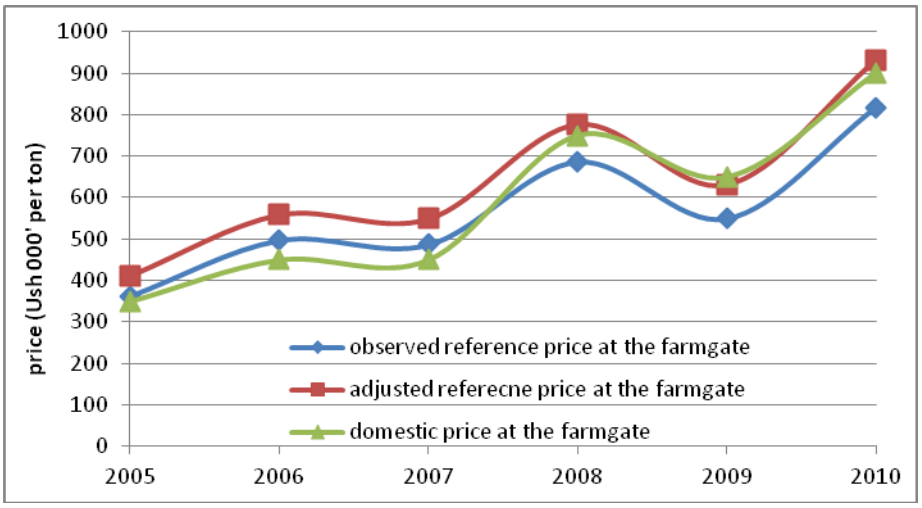
The policy environment favours exporters

Based on the government policy objective of diversifying and increasing exports, many export incentive measures have been introduced, creating an enabling environment for export promotion. With the integrated processing and marketing activities of fish, cotton, tea and coffee export, processors receive prices that are close to the world prices that reflect the comparative advantage of the country in producing these commodities. This represents a favourable environment for exporters.

The export promotion measures eliminate all major factors that would cause deviation of cotton prices at the point of competition from its reference prices (except the CDO tax on lint exports). However, the cotton pricing system, the most important policy measure directly affecting the

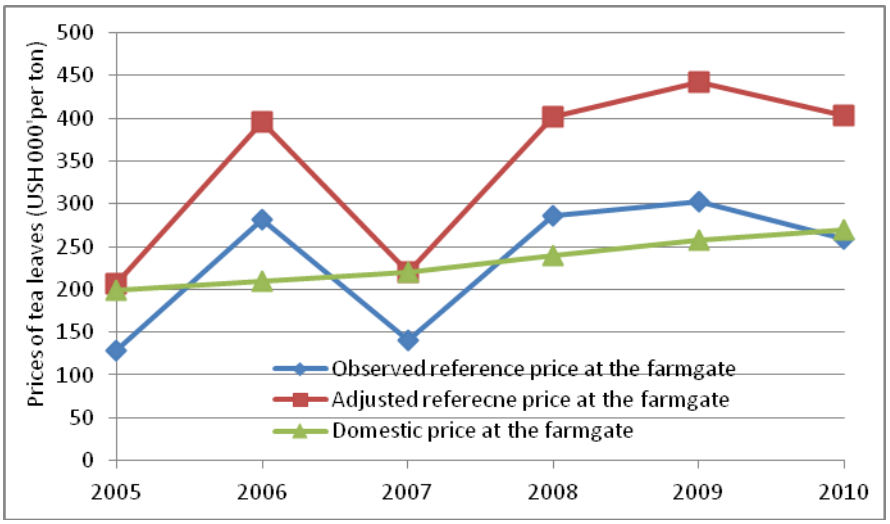
Uganda cotton sector, is creating disincentives for the farmers in most of the years (Figure 4). The incentives seen in some years suggest that the system of indicative prices is effective in protecting growers from negative shocks, as the pricing mechanism appears to be transparent. However, the disincentives in other years suggest that the system fails to reward producers when the prices are high in world markets. This system may need to be updated frequently by setting prices consistent with current world prices, or replaced by a more flexible system.

Figure 4. Reference and producers' prices of seed cotton in Uganda (2005-2010)



Similarly, the policy environment favours tea factories, while tea growers are subject to considerable price disincentives, with farmgate prices below the reference prices. Although the tea market at the wholesale level of the value chain is fully liberalized, producers' prices deviate significantly from the reference prices – prices paid to tea leaf producers were 28 percent below the reference price on average (Figure 5). The observed indicators (in main report) suggest that while tea factories are able to receive the full reference price, these incentives are not shared equitably along the value chain.

Figure 5. Reference and producers' prices of tea leaves in Uganda (2005-2010)



The structure of disincentives is similar in the case of fish as well. Domestic prices of Nile perch during the period 2005–2011 tended to deviate negatively from reference prices, resulting in price

disincentives for fishers. Among the traditional exports of Uganda, only coffee growers appear to receive consistent and increasing incentives in recent years with farm-gate prices close to or above the reference prices.

Producers of food commodities generally received incentives in recent years

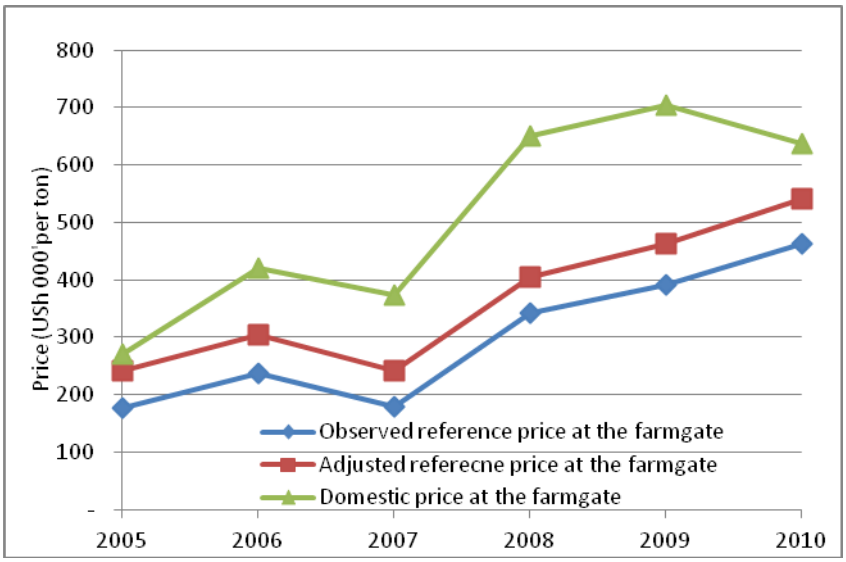
Prior to 2007, producers of food commodities such as maize and cassava received prices lower than reference prices, although the wholesale prices of maize in Uganda were generally higher than export prices to neighbouring countries. With the onset of the world food crisis in 2007–2008, producers began to receive price incentives translated into a domestic price above the reference price. Although quite variable, the incentives appear to be related to the high export prices during the world food crisis.

As the maize market in Uganda is highly liberalized, these changes in incentives cannot be attributed to policy measures; they are related to the functioning of the domestic maize market. There appears to be weak price transmission even between domestic markets. To realize a vibrant domestic and export market it will be necessary to develop efficient marketing mechanisms to facilitate price transmission to producers, which will enable smallholder farmers to benefit from possible high produce prices in regional and international markets.

Major agricultural import substitutes are protected by external tariffs

The incentives for producers of import commodities (sugarcane, rice and wheat) provided by the tariff on imports are consistent with the Government's broad objectives for import substitution. For example, the Government is attempting to promote rice production between 2009/2010 and 2017/2018 with the aim of increasing household food security and reducing household poverty through increased production of high-quality rice. As a result of an import duty of 75 percent or US $ 200 per tonne, rice growers are consistently receiving price incentives, although variable over time, averaging 74 percent above the reference price (Figure 6). The incentives to rice producers may explain the progressive expansion of rice production in Uganda, especially during the period 2005–2010. Over this period, rice production increased by 42.5 percent. Combining this support with increased utilization of agro-inputs and sustainable soil management may help realize the ambitions of the NRDS to triple rice production in Uganda by 2016.

Figure 6. Reference and producers' prices of rice in Uganda (2005-2010)



Although both wheat and sugar imports are also protected by the tariff, the incentives for wheat growers are much lower than for rice, while farmgate prices for sugarcane growers (outgrowers) appear to be below the reference price of sugar cane at the farm gate in most years. This implies that the protection offered to the industry through the import tariff does not trickle down to the sugarcane producers. This situation is in sharp contrast to the case of wheat and rice producers who do share the benefit of the import tariff with wholesalers –albeit in very different proportions. Unlike rice and wheat, sugarcane goes through a processing stage before going into the market. Moreover, the value chain for sugarcane is buyer-driven, giving more leverage to sugar factories, the sole buyers, in determining the producers' price. The protection arising from the high tariff for sugar imports appears to benefit only the sugar factories. Sugarcane producers gained only marginally, and recently the gains were eliminated. The ultimate burden of the tariff protection is borne by the consumers, who pay higher retail prices for sugar.

The Government of Uganda's main policy strategies and public expenditures are coherent but outcomes are not as expected

The ultimate objective of the Government of Uganda's policy is economic development and social transformation. To achieve these objectives, the Government of Uganda formulated and implemented successive strategies (Ssewanyana, Matovu and Twimukye, 2010). These policies have been successful in providing an enabling environment for the private sector to produce and trade competitively with minimal government intervention through pricing controls. Public expenditure in support of agriculture has been tailored to address key constraining factors in the sectors. Government objectives, policy measures and public expenditure in support of agriculture as the instrument to implement government policies and strategies have been largely consistent and coherent. However, the evidence suggests that more recently, the performance of the sector has been less impressive than was expected. Real growth in agricultural output declined from 7.9 percent in 2000/01 to 0.1 percent in 2006/07 (UBOS, 2009), before recovering to 1.3 percent and 2.6 percent in 2007/08 and 2008/09, respectively. For better performance of the sector, several issues need to be addressed to improve market efficiency and reduce the disincentives frequently facing producers.

High transportation costs increase the cost of marketing

Transportation costs have a direct effect on commodity prices. Except under strong competition, traders have tended to pass on their increased transportation costs to farmers and consumers, either in lower farmgate prices and higher market prices, or by not showing up at all in more remote areas. Either way, rural communities and agricultural producers have suffered worsened terms of trade. High transportation costs thus have reduced producers' incentives with the falling producers' share of retail or export prices.

Poor organization of value chains leading to marketing inefficiencies and lower producers' prices

The marketing chains of many commodities in Uganda are complex. For some commodities (maize, beef and beans), the commodity passes through several markets before reaching the wholesale or export market or consumers, while the marketing margins and costs increase with each transaction. The high marketing costs negatively impact producers' prices.

As agriculture in Uganda is dominated by smallholder farmers with limited land areas, the quantities marketed by individual producers tend to be small. For marketing to traders, this requires some stage of collection, assembly and packaging into larger volumes. This function is usually undertaken by rural traders in the primary village market. Even for commodities such as cotton, tea and rice, the primary markets include rural traders and processor agents.

Export promotion and producers' incentives

Despite the success of the export promotion strategy of the government in increasing volume and diversity of exports, a comparison of the nominal rates of protection at producers' and wholesale/ exporters' levels shows that for all export commodities except beef:

When commodity markets show disincentives, these are disproportionaly higher for producers than for wholesalers and exporters. This is evident in the more strongly negative nominal rates of protection for producers.

When the commodity markets suggest incentives, wholesalers and exporters appear to capture a large share of these incentives.

This suggests that benefits from the export promotion are skewed in favour of exporters and wholesalers, although producers also benefit to some extent. To the extent that producers' incentives are important for inducing productivity increases through adoption of improved technologies, improving product quality and increasing total production, the benefit from export incentives needs to be shared more equitably along the value chain.

Functioning of the commodity markets and price transmission

Commodity markets appear to be integrated with Kampala (the largest urban wholesale market for agricultural commodities in the country), but the degree of price transmission varies by crop and by market. While most markets are in a long-term relationship (are integrated), the degree of integration varies considerably. Despite this integration within the domestic market, the domestic

markets appear to be much less integrated with export markets. This is evident from the high variability and inconsistency of the price incentives over the years. The small and variable response of producers' prices to price signals from world markets is particularly harmful when prices in the world markets rise while producers' prices do not follow. The weak price transmission may be due to the time lag between the harvesting season, when producers mainly sell their produce, and the time when these commodities are prepared for export. During this time lag, world prices may change. Another important factor leading to weak price transmission is the poor market information available to farmers. DSIP is seeking to address this issue through dissemination of market information to relevant stakeholders.

Part 1. Context of food security and agricultural policies

This section presents and analyzes the development and performance indicators (DPI) common to all countries covered by the MAFAP project. The choice of a common group of indicators was to facilitate comparison between countries but also developments within the country over time (see Table 1 below).

Uganda in brief

Uganda has substantial natural resources, including fertile soils, regular rainfall, small deposits of copper, gold, and other minerals, and recently discovered oil. Agriculture is the most important sector of the economy, employing over 66 percent of the work force (UBoS, 2012). Coffee accounts for the bulk of export revenues. Since 1986, the government - with the support of foreign countries and international agencies - has acted to rehabilitate and stabilize the economy by undertaking currency reform, raising producer prices on export crops, and improving civil service wages. The policy changes are especially aimed at dampening inflation and boosting production and export earnings. Despite the impediments faced, the Ugandan economy has achieved an impressive recovery in growth during 2010/11 compared to the previous financial year (MoFPED, 2011). Growth in output was largely due to strong growth in the mining, construction and telecommunication sectors, a rebound in domestic demand, increased consumer spending and an expansion in credit extended to the private sector.

Over the years, Uganda's economy has experienced varying growth rates. The gross domestic product (GDP) grew by an average of 6.8 percent annually between 2000/01 and 2003/04, and increased by 8 percent annually over the period 2004/05 to 2007/08. The overall economic performance of Uganda as measured by Gross Domestic Product (GDP) for the fiscal year 2011/12 reflects a lower growth rate compared to 2010/11. However, in spite of this commendable economic performance, the country continues to face some challenges which have slowed economic growth and socio-economic transformation.

In spite of Uganda's economic recovery from the downturn of the 1970s and 1980s, its size and the country's per capita income is still very low compared to other economies in Africa and Asia. Nominal GDP per capita increased by 21.3 percent from 1 206 866 Uganda Shillings in 2010/11 to 1 463 961 Uganda Shillings in 2011/12. However, the relatively high economic growth which has been sustained since the early 1990 has contributed to a reduction in the levels of poverty. In 1992/93, 56 percent of the population was below the national poverty line; this dropped to 44 percent in 1997/98 and to 31 percent in 2005/06. The majority of the population living under the poverty line is located in the northern part of Uganda. This is largely attributed to the insecurity experienced in the region for over the past 20 years.

Approximately 80 percent of Uganda's population lives in rural areas, and 66 percent is employed in agriculture. Agriculture accounts for 24.1 percent of GDP and 51.9 percent of exports in 2010/11. Most of Uganda's agricultural sector consists of small-scale farming, and most production is done by households with small landholdings.

Table 1: Development and Performance Indicators (DPI)

Domains	DPI No	Development Indicators and Performance (DPI)	Latest available statistics for Uganda	Reference to Africa	Reference to the world
1 Macroeconomic performance	**DPI 1**	Share of agricultural value added/GDP (WBI)	2.7 (2011)	13.29% (2009) (Sub-Saharan Africa) (WDI)	2.76% (2009) (WDI)
	DPI 2	Growth rate of agricultural GDP (WBI)	0.7 percent (2010)	4.35% (2010) (Sub-Saharan Africa)	2.74% (2010)
2. Performance of the rural and agricultural sector	**DPI 3**	Share of agricultural land use (WDI)	69.9 (2009)	NA	NA
	DPI 4	Value of agricultural exports/total exports (FAOSTAT) (1000)	839 678 /4 086 685 (2010)	8.78% (2009)	7.56% (2009)
	DPI 5	Value of agricultural imports/exports (FAOSTAT) (1000)	583 625 /3 560 809 (2010)	13.08% (2009)	7.75% (2009)
	DPI 6	Share of small farms - less than 5ha	NA	NA	NA
3. Market inputs and constraints to industry development	**DPI 7**	Fertilizer use, kg/ha of arable land (WDI)	2.1 (2009)	10.46 (2009) (Sub-Saharan Africa)	122.13 (2009)
	DPI 8	Share of farms with a tractor (General Census of Agriculture 2004)	NA	NA	NA
	DPI 9	Average of Doing Business Index on the extent of credit information and legal rights index (WBI)	NA	NA	NA
	DPI 10	Share of paved roads/total road network (UBOS)	16.32 (2011)	18,3% (2004) (Sub-Saharan Africa)	45.02% (2004)
4. Environment and agriculture	**DPI 11**	Share of grassland/total area (FAOSTAT)	NA	30.62% (2009)	25.81% (2009)
	DPI 12	Deforestation rates (UNDP)	-33.4% (1990- 2008)	0.5% (2005-2010)	0.14% (2005-2010)
5. Population	**DPI 13**	Average growth rate of the population (WBI)	3.2% (2010)	2.5% (2006) (Sub-	1.15% (2006) (WDI)

				Saharan Africa) (WDI)	
	DPI 14	Birth rates (UBOS)	45.2/1000	37.44/1000 (2010)	19.59/1000 (2010)
		Mortality rates and birth rates (UBOS)	54/1000 (2011)	12.55/1000	8.18/1000
	DPI 15	Fertility rate (UBOS)	6.2 (2011)	4.94 birth / woman (2010)	2.46 birth / woman(2010)
6. Poverty, inequality and employment	**DPI 16**	Share of population living below the poverty line - less than US$ 1 per day (UBOS)	25% (2009/10)	NA	NA
	DPI 17	GDP per capita in PPP (WBI)	USD 1 275 (2010)	US$ 1 966 (2011) (Sub-Saharan Africa)	US$ 10 082 (2011)
	DPI 18	Gini coefficient (WBI)	44.3 (2009)	NA	NA
	DPI 19	Unemployment rate (UBOS)	3.6% (2009/10)	NA	NA
7. Urbanization and migration dynamics	**DPI 20**	Share of rural population to the total population (WDI)	86.7% (2010)	62.6% (2010) (Sub-Saharan Africa)	49.3% (2010)
	DPI 21	Growth of urban population (WDI)	4.4% (2010)	3.87% (2010) (Sub-Saharan Africa)	2.00% (2010)
	DPI 22	Net Migration Rate (UNPD)	(135,000) (2010)	-0.7 (2005-2010)	NA
8. Food security and socio-sanitary conditions	**DPI 23**	Human Development Index (UNDP)	0.446 (2011)	0.463 (2011) (Sub-Saharan Africa)	0.682 (2011)
	DPI 24	Rates of child mortality (UBOS)	90/1000 (2011)	129 (2009)	58 (2009)
	DPI 25	Rate of assisted births (WHO)	42.1% (2006)	47.7% (2005-2009) (Sub-Saharan Africa)	76.4% (2005-2009)
	DPI 26	Prevalence of under-nutrition (FAO)	16.4% (2010)	23% (2006-2008)	13% (2006-2008)

9.Education and gender	**DPI 27**	Gross enrolment rate in primary school (WBI)	121% (2010)	99.86% (2009) (Sub-Saharan Africa)	107.11% (2009)
	DPI 28	Adult literacy rate (WBI)	73.2% (2010)	61.6% (2005–2010)	80.9% (2005–2010)
	DPI 29	Index of gender inequality (UNDP)	0.577 (2011)	0.610 (2011)	0.492 (2011)
	DPI 30	Economic activity rate of women (UNDP)	52.6% (2009)	Woman: 62.9%, Man: 81.2% (2009)	Woman: 51.5%, Man: 78.0% (2009)

The share of agriculture in GDP was 51.1 percent in 1988 and 33.1 percent in 1997, declining further to 22.7-24.1 percent in 2007-2010/11. The sharp decline in the share of agriculture in GDP represents significant structural transformation in the economy. Whereas this is a positive development, the challenge is to ensure that this shift is at the same time accompanied by productivity in the agricultural sector, and value-addition in the industry and service sectors in order to absorb excess labour from agriculture.

Over recent years, agriculture has grown slower than other sectors. Between 1998 and 2002, agriculture grew at an average rate of 5.4 percent. However, from 2004 to 2008, the growth of the sector slowed markedly to average 1.1 percent. Compared to the leading service sector, the agricultural sector growth rate declined from 2.9 percent in 2008/09 to 2.1 percent in 2011/12. This slow growth has been largely unmatched by the structure of employment where two thirds of the economically active work in agriculture. The disappointing growth of the sector may therefore have significant implications for the livelihoods of the poor. This performance raises issues of productivity in the agricultural sector and the need for radical strategies to improve the productivity levels and modernize the sector.

The industrial sector was in a precarious state in the 1980's but has recovered well since then. The index of industrial production increased at an average annual rate of about 14 percent during the 1990s. In 2010/11, the industrial sector contributed about 27 percent of GDP with growth rate of 7.9 percent as compared to a growth rate of 6.5 percent the previous year, driven by stronger performances in the mining and quarrying, construction and manufacturing subsectors.

Uganda's population has continued to grow rapidly over time. It increased from 9.5 million in 1969 to 24.2 million in 2002 and projected at 34.1 million by mid 2012. Uganda's population growth rate is estimated at 3.5 percent and is the third highest rate of population increase in the world. The population of Uganda is increasingly becoming younger, with the proportion of children (under 18 years old) having increased from 51 percent in 1969 to 56 percent in 2002 (UBOS, 2012). The proportion of elderly people (60 years or older) on the other hand, decreased from 6 percent in 1969 to about 5 percent in 2002.

The total labour force in Uganda increased from 10.9 million people in 2005/06 to 13.4 million people in 2009/10, an increase of 23.0 percent (UBOS 2012). The overall unemployment rate was 3.6 percent in 2009/10. By status in employment, 79.4 percent of the working population in 2009/10 was self-employed. The paid employees constituted 21.7 percent of the work force in 2009/10 compared to 16.3 percent in 2005/06. The majority of the working population was engaged in agriculture. The agriculture sector employed 66.0 percent of the working population while by occupation, 60.0 percent of the working population were agriculture and fishery workers.

In the recent years, the quality of life of Ugandans has been improving through government provision of basic services. Malaria remains the leading cause of morbidity (with a morbidity rate of 48.2 percent). Maternal mortality rate (i.e. death per 100 000 live births) was 430 in the year 2010 down from 880 in the year 2000. Infant mortality (under five years old) rate as of 2010 stood at 137 compared to 157 in 2005. The prevalence rate of HIV/AIDS stands at 6.5 percent. Life expectancy in 2005 was 50.1 years and as of 2009, it had improved to 53 years.

Over the period of 2000 to 2010, the proportion of households with access to improved water sources increased from 68 percent to 74 percent. Latrine coverage at national level in 2010 stood at 69 percent of the total homesteads.

Access to improved water sources in rural areas in the year 2000 was 53 percent and in 2008 was 64 percent. There was an improvement of access to clean water from 85 percent to 91 percent in urban areas in the same period.

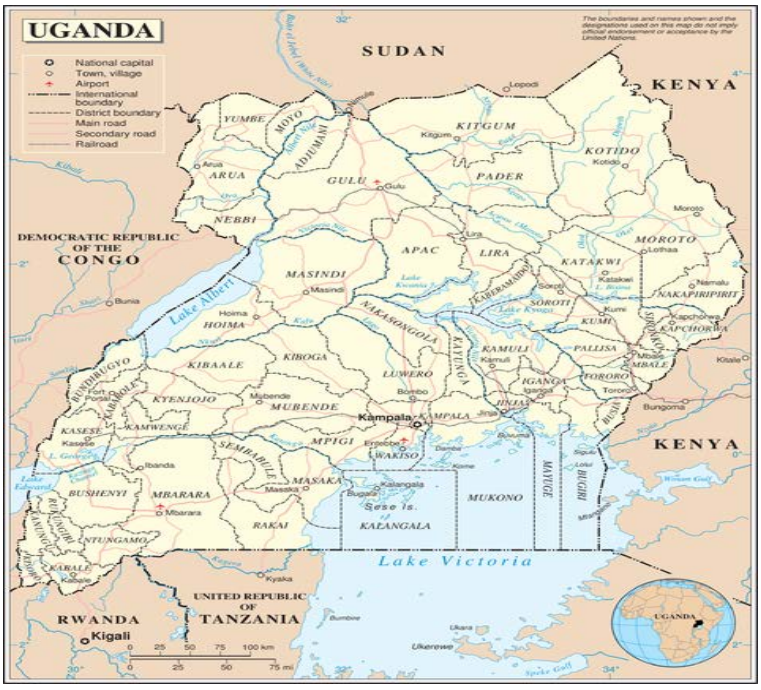
The proportion of the population above the age of 10 years old that is literate increased marginally from 69 percent to 73 percent between 2005/6 and 2009/10, an improvement which was shared equally by men and women. Primary school enrolment has been on a positive trend, increasing from 130 percent n 2002 to 133 percent in 2009 with 8.3 million children. Meanwhile, secondary education enrolment increased from 19 percent in 2005 to 28 percent in 2009. The ratios of primary pupils to teachers as of 2010 stood at 51:1, and the ratio of pupils to classrooms was 68. Overall, the literacy rate for 2005/6 was 69 percent for people aged 10 years and older. Further attention is required towards primary school completion rates.

Overall, the literacy rate among children aged 10 years and older was 73 percent in 2009/10. Between 2009 and 2010, enrolment in primary schools increased by 0.9 percent. In 2010, about 1.3 million pupils below 18 years old were orphans. About 490 000 pupils sat PLE in 2010 and of these 88 percent passed. The majority of students enrolled in higher institutions were males (UBOS, 2012).

Geographical context

Uganda is a landlocked country located in Eastern Africa ($0^{o}19'$ S and $32^{o}35'$ E) bordered by Kenya to the East, Tanzania to the south, Rwanda to the Southwest, The Democratic Republic of the Congo to the West and South Sudan to the north (Figure 7). The country has a total surface area of 241 550.7 km^2, of which 199 807.4 km^2 (83 percent) is land and 41 743.2km^2 (17 percent) open water and swamps. The elevation above sea level ranges from 620 meters (Albert Nile) to 5 111 meters.

Figure 7: Map of Uganda



Source: Wikipedia, 2012.

Uganda lies within the Great Lakes region of East and Central Africa. Uganda shares Lake Victoria with Kenya and Tanzania and Lakes Albert and Edward with the Democratic Republic of the Congo. Within its boundaries are lakes Wamala, Bunyonyi, Katwe, Nakivale, Mburo, Kyoga, George and Bisina. The three major rivers in Uganda are the Nile, Aswa and Kagera. There are many other smaller rivers and streams which drain into wetlands and then lakes or form tributaries and sub-tributaries to the major rivers.

Uganda's vegetation is mainly composed of savannah grassland, woodland, bush land and tropical high forests. There is a wide range of wetland habitats such as swamps, sandbanks, papyrus mats, rivers and vast expanses of water in Lake Victoria. These host an exceptional diversity of fauna and flora which among other considerations earned the country the accolade of "the Pearl of Africa".

Most of the country is fertile and well-watered. These have been significant factors in supporting Uganda as a predominantly agricultural country. The major crops include coffee, tea, cotton, maize, cocoa, bananas, cassava and potatoes. The livestock includes cattle, goats, sheep, pigs and poultry.

Uganda is divided into 111 districts and one city (the capital city of Kampala) across four administrative regions (see Figure 7). Most districts are named after their main commercial and administrative towns, known as "chief towns". Since 2005, the Ugandan government has been in the process of dividing districts into smaller units in order to prevent resources from being distributed primarily to chief towns, and leaving the remainder of each district neglected. Each district is further divided into counties and municipalities,[3] and each county is even further divided into sub-counties.

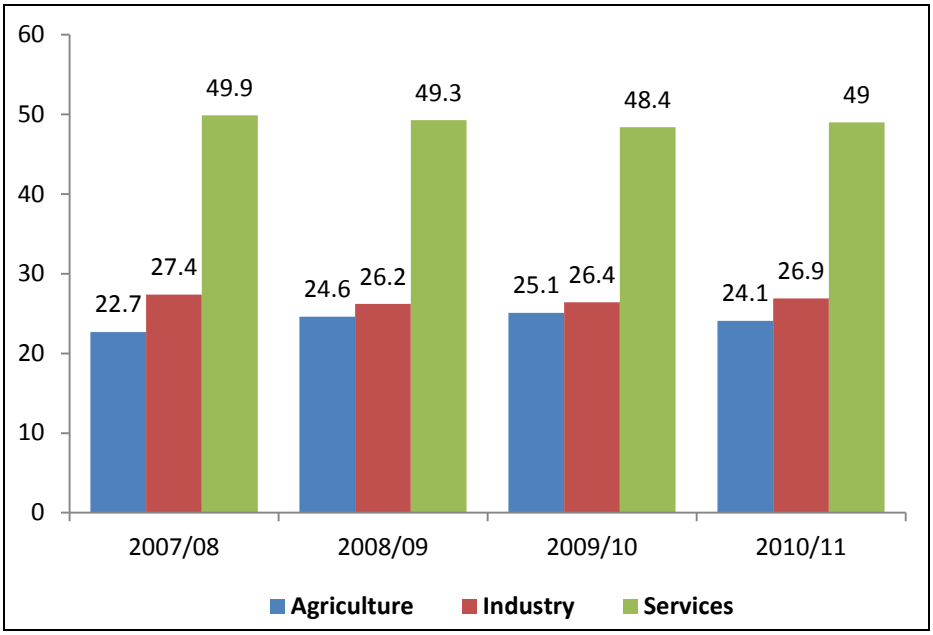
Socio-economic aspects

Macro-economic performance

The economic structure of Uganda, like other East African economies, is dominated by the agricultural sector. It is the main foreign exchange earner and also one of the largest employers. The services sector includes the public sector has been one of the fastest growing; the services sector contributes substantially to the country's GDP. Between 1997 and 2007, the services sector grew on average by 7.7 percent in Uganda (World Bank, 2008), the highest growth rate in the region. The manufacturing sector accounts for a low percentage of GDP compared to the service sector and agriculture sector. The manufacturing sector has registered modest growth during the last decade, for instance, the sector grew on average by 6.8 percent between 1997 and 2007 (World Bank, 2008). Figure 8 shows the trends in nominal GDP and real GDP growth rates for 2008/9 to 2010/11. Services – the economy's largest sector since 2001/02 – increased its share of GDP by just over half a percentage point to 49 percent during 2010/11, while agriculture and industry accounted for 24 percent and 27 percent respectively.

Over the past two decades, Uganda has experienced strong economic growth with positive per capita GDP growth since 1999 and stronger growth than the continent as a whole. Over the period of 1999-2011, the gross domestic product (GDP) grew by 5.5 percent to 6.9 percent with an average annual rate of growth of 5.45 percent (Figure 8).

Figure 8: GDP contribution by sector in Uganda



Source: Ministry of Finance, Planning & Economic Development (MFPED, 2012).

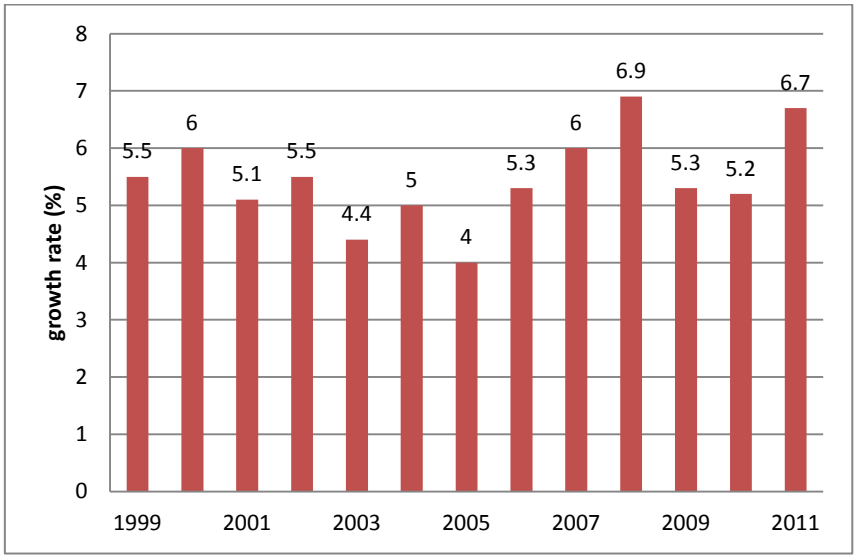
Growth in output was largely driven by strong growth in the mining, construction and telecommunication sectors. The recovery in output was largely attributed to a rebound in domestic demand, increased consumer spending and an expansion in credit extended to the private sector. There was a particularly strong demand for credit, which was channeled into investments in real estate, agriculture, trade, transport and telecommunications. In nominal terms, GDP measured at

market prices is estimated to have increased to U Sh 39 051 billion (US$ 15.564 billion1) during 2010/11, up from U Sh 34 908 billion (US$ 13.913 billion) in the previous year.

However, the economic growth rates were not equal across all sectors. Agricultural output increased by 1.3 percent in 2007/08 and 2.9 percent in 2008/09, before declining to 2.4 percent in 2009/10 and it is estimated that agricultural production decreased by 0.7 percent in real terms during 2010/11 (Figure 9). Apart from the sharp decline in the industrial sector performance recorded in 2008/09, the sector has expanded steadily at growth rates of 5.8 percent, 6.5 percent and 7.9 percent in the period 2008/09, 2009/10 and 2010/11, respectively (MFPED, 2012). The service sector recorded a higher growth rate compared to the agricultural and industrial sectors over the same period (Figure 9).

Agriculture is arguably the most important sector of the Ugandan economy (MAAIF, 2010). It contributes up to nearly 20 percent of GDP, accounts for 48 percent of exports (UBOS, 2008) and provides a large proportion of the raw materials for industry. Food processing alone accounts for 40 percent of total manufacturing. The sector employs 66 percent of the population aged 10 years and older (UBOS, 2012). Agriculture will be the key determinant in the country's efforts to reduce poverty in the immediate years ahead. Because more than two-thirds of Ugandans work in agriculture, development of the Ugandan economy is closely linked to transformation of the agricultural sector. Agriculture in Uganda is still characterized by low productivity, mainly as a result of poor inputs, undeveloped value chains, and low public and private investment in the sector (Ssewanyana, Matovu and Twinmukye, 2011).

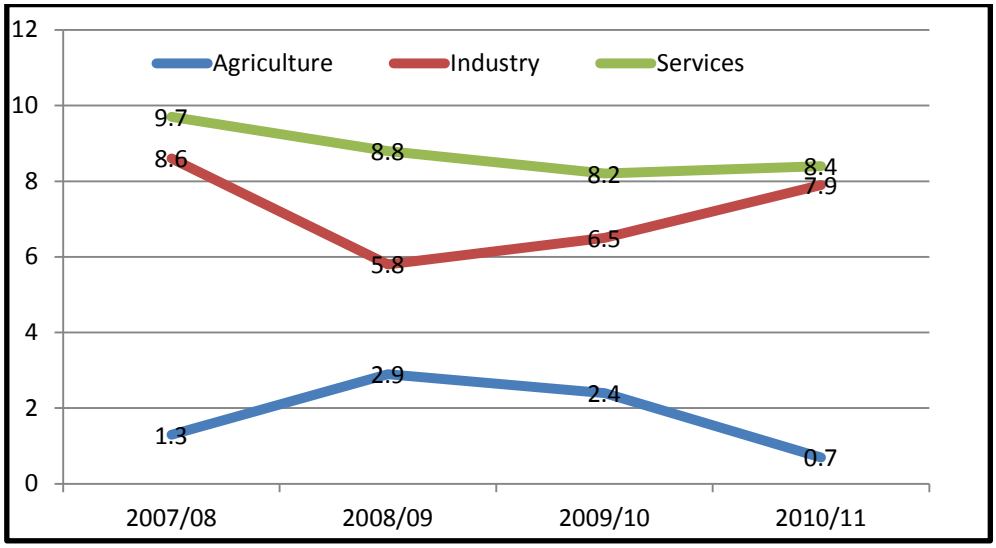
Figure 9: Growth rates of gross domestic product (GDP) in Uganda (1999-2011)



Source: IMF (2011). World Economic Outlook. IMF.

[1] Throughout this document, the 2011 average exchange rate of U Sh 2 509 per dollar is used to convert domestic currency into US dollars.

Figure 10: Real GDP growth by sector (percent): 2007–2011



Source: Ministry of Finance, Planning & Economic Development (2012).

Performance of the agricultural sector and rural development

Over the years 1987 to 2005, agriculture in Uganda performed well, growing at an average of 3.8 percent, faster than the population growth at that time. The sector was thus a major contributor to the success of Uganda's poverty reduction efforts in the 1990s. Relative to other countries (in the region and worldwide), Uganda's long-term agricultural growth trend has been impressive (World Bank, 2006). This long and sustained period of growth earned Uganda the distinction of being one of the most successful countries in terms of achieving high rates of poverty reduction. It also demonstrates the success of the policy framework adopted and maintained by Uganda - a conducive macro-economic policy environment and clear progress with stabilization and market liberalization.

However, the evidence suggests that, more recently, the performance of the sector has been less impressive than was expected. Real growth in agricultural output declined from 7.9 percent in 2000/01 to 0.1 percent in 2006/07 (UBOS, 2009), before recovering to 1.3 percent and 2.6 percent in 2007/08 and 2008/09, respectively (Table 2). This rate of growth has been below the population growth rate of 3.2 percent, implying that per capita agricultural GDP has been declining. It is also lower than the 6 percent growth target for the agricultural sector set by African Governments under CAADP.

Ugandans are fast shifting from agricultural investment to more lucrative activities such as construction and real estate. This is creating a short-term illusion of higher growth. Unless these activities are strategically planned to maximize productive ventures – for example road networks that open up trade with neighbours – over time, growth will begin to stagnate.

Agriculture exerts considerable influence on overall GDP Growth. While the share of agriculture in GDP has declined as industry has grown (evidence of structural transformation of the economy), it still made up 21 percent of the observed growth between 2001-2005 and also accounts for a significant proportion of growth indirectly through forward and backward linkages with the service and industrial sectors (World Bank, 2006).

As shown in Table 2, the decline in growth was evident in all the sub-sectors of agriculture. Given that 66 percent of all households in Uganda are engaged in agriculture,2 a declining performance matters greatly for their livelihoods and represents a setback in the drive to eradicate poverty and create wealth.

Table 2: Growth rates of agriculture, industry and service sectors 2003/4 –2008/9

Sector	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
Agriculture	1.6	2.0	0.5	0.1	1.3	2.6
Cash crops	7.3	-5.5	-10.6	5.4	9.0	1.7
Food crops	-1.5	-0.2	-0.1	-0.9	2.4	2.9
Livestock	4.7	3.0	1.6	3.0	3.0	3.0
Fisheries	9.6	13.5	5.6	-3.0	-11.8	-0.1
Forestry	-	6.5	4.1	2.0	2.8	3.2
Industry	8.0	11.6	14.7	9.6	9.1	3.8
Services	7.9	6.2	12.2	8.0	10.2	9.4

Source: UBOS (2009)

The overriding aspiration of Uganda's agricultural sector as stated in the vision and mission of The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is to progress into "a competitive, profitable and sustainable agricultural sector" and to "transform subsistence farming to commercial agriculture." The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) has prepared the Development Strategy and Investment Plan (DSIP) for the agriculture sector, covering the period 2010/11 to 2014/15. This DSIP consolidates and harmonizes all the existing parallel policy frameworks in the agricultural sector into one coherent plan. The DSIP sets the priorities for the five year period which are to be used as a basis for defining spending plans each year under the Medium Term Expenditure Framework (MTEF).

In Uganda, poverty eradication is also linked to improvement in agricultural production. Household surveys for the years 1992, 1999, 2002 and 2005 indicate that national poverty fell from about 60 percent in 1992 to 34 percent in 1999, rising again to 38 percent in 2002 and falling to 31 percent in 2005.

The fiscal year 1992/93 was a particularly bad year for agricultural production and corresponds to the highest measured poverty rate. The year 1999/00, which saw a large decline in the poverty rate, was the second in a row of three very good years of agricultural production. The year 2002/03 demonstrated positive but below average growth for the sector and this corresponded to the small rise in the poverty rate that year. These trends suggest that positive agricultural performance is strongly related to poverty reduction.

Production dominated by food sector

The agricultural sector of Uganda consists of five main subsectors, namely food crops, cash crops, fishing, livestock and forestry. The food crops subsector basically carries the agricultural sector contributing 14.6 percent to the national GDP in 2009/10 (MAAIF, 2010). Total cultivable land amounts to 16.7 million hectares, of which 32 percent is actually cultivated, one-third of it under perennial crops and the rest under annuals (Aggrey, 2009). Among the perennials, bananas

[2] Based on the 2005/06 Uganda National Household Survey see page 10 of the Agricultural Module

dominate, followed by coffee, sugar cane and tea. Food crops (cereals, root crops, pulses and oil seed) also dominate the annuals, followed by cotton and tobacco. Agricultural output comes almost exclusively from smallholders, most (80 percent) with less than 2 ha of land (Baffoe, 2000).

Food Crops

The food crop subsector consists of plantains, cereals, root crops, pulses and oil seeds. On the basis of acreage, cereals occupy 17 percent of the total area of food crops of which maize is the dominant crop occupying 63 percent of the cereals area followed by sorghum (Table 3). During 2011, the area under maize constituted 19.0 percent of the total area under selected food crops. Root crops, dominated by cassava, cover 13 percent of the acreage under food crops. In terms of the individual commodities, maize area was followed by banana with 979 000 ha (17.5 percent) and cassava with 822 000 Ha (14.7 percent). Over time, acreage of most food crops is relatively stable with area under some few crops (sorghum, rice and sweet potatoes) tend to expand over the period of 2008-2011.

Production of food crops tends to follow the same trends of crop acreage over the period of 2008-2011. For 2011, the tonnage for the different food crops increased from 2010 except for beans, cassava and sweet potatoes, which registered reductions of 3.6 percent, 10.1 percent and 9.5 percent respectively compared to the previous season (Table 4).

With smallholder farming dominating the agriculture in Uganda, most of the food produced is consumed at home with surplus marketed in local and district markets. The three most common types of disposition for cereal crops include sale, consumption and storage. The biggest percentage of maize production (40.5 percent) and rice production (54.5 percent) was sold while most of the finger millet (37.7 percent) and sorghum (46.9 percent) were consumed by the households.

Table 3: Crop Area in Uganda (2008-2011) (000 ha)

Crop	2008	2009	2010	2011
Plantain bananas (all Types)	919	942	978	979
Cereals				
Millet	196	192	167	172
Maize	1,052	942	1,032	1,063
Sorghum	285	340	355	364
Rice	68	86	87	90
Wheat	11	12	12	13
Root crops				
Sweet potatoes	427	463	442	450
Irish potatoes	1	35	36	37
Cassava	846	777	794	822
Pulses				
Beans	*651*	616	633	654
Field peas	30	42	28	28
Cow peas	17	28	24	25
Pigeon peas	26	31	32	33
Oil seeds and others				
Ground nuts	383	369	394	409
Soya beans	31	45	45	45
Sesame	165	192	198	203
Sunflower	183	195	207	221
Sugarcane				

Source: MAAIF and UBOS.

Table 4: Production of food crops in Uganda 2008-2011 (000 tonnes)

Crop	2008	2009	2010	2011
Plantain bananas	-	4 522	4 594	4 895
Cereals				
Millet	-	250	268	292
Maize	2 315	2 355	2 374	2 551
Sorghum	342	374	391	437
Rice	178	206	218	233
Wheat	19	20	20	23
Root Crops				
Sweet potatoes	1 794	1 943	1 987	1 798
Irish potatoes	147	162	167	180
Cassava	2 876	2 952	3 017	2 712
Pulses				
Beans	912	925	949	915
Field Peas	15	17	17	17
Cow peas	9	11	12	12
Pigeon Peas	10	13	13	13
Oil crops and others				
Groundnuts	230	258	276	327
Soya beans	22	27	27	32
Sesame	99	115	119	142
Sunflower				265
Sugarcane				

Source: UBOS/MAAIF (2012)

Plantains, cassava, sweet potatoes, maize and beans are considered the major food security commodities consumed regularly in Uganda. Table 5 presents the major food security commodities with their relative contribution to average daily intake in Uganda. Plantains, cassava and maize dominate the list of the major food security commodities with over 40 percent of the calorie intake.

Table 5: Major commodities consumed by the household and their relative contribution to calorie intake Uganda (2007)

Commodity	**Average calorie intake (calorie/capita/day)**	**Percentage contribution to total calorie intake (%)**
Plantains	348	17
Cassava	285	14
Maize	205	10
Sweet potatoes	190	9
Millet	122	6
Beans	109	5
Sugar	85	4
Wheat	79	4

Source: computed from data obtained from FAO ESS Food Balance Sheet (2007)

Cash Crops

Cash crops include coffee, tea, cotton and tobacco which are classified as the traditional exports of Uganda. Coffee is by far the most important cash crop in terms of production and export earnings. Over the period of 2008-2011, the quantity of coffee produced declined considerably (Table 6). Tea also performed poorly with a marked decline (28.4 percent) in 2011. Tobacco continued to register high procurement increments from 2009 although there was minimal increase (4.8 percent) in 2011.

Tea production in Uganda has fluctuated considerably over time. In the early 1970s, Uganda produced about 23 400 tonnes of tea from its 19b000 ha of with a productivity (yield) exceeding 1.2 ton/ha. Since then, production began to decline rapidly to as low as 1 533 ton by 1980 and 3 500 ton in 1988 when the government began the implementation of the Smallholder Tea Rehabilitation Project (STRP). Since then, the tea sector appears to slowly recover in terms of production resulting primarily from increasingly rising productivity as area under tea production is relatively stable. Production increased from 37 700 tons in 2005 to reach 49 182 tons in 2010 (Table 6).

The area under cotton cultivation has been fluctuating over the last three years (2008 – 2010). Cotton area decreased from 100 000 hectares in 2008 to 67 000 hectares in 2009, and then increased to 80 000 hectares in 2010 (MAAIF, 2011). The decline in acreage is attributed to decline in the cotton prices in 2008/9 season which affected farmers' incentives, severe drought during the June – August 2009, the ideal cotton planting window in Uganda, and a shift to the production of food crops due to high prices paid during that period (MAAIF, 2011).

For the four cash commodities, domestic consumption represents only small fraction of production. Domestic consumption of coffee in Uganda is relatively small ranging from 4-10 percent of production. As such, coffee is primarily an export crop. On the other hand, tea is consumed by the majority of the Ugandan population as hot beverage alone or with milk. However, domestic consumption is only a small fraction of total production. On average (2000-2010), Ugandans consume about 3 000 tons of tea annually which represents 7.5 percent of the average production.

Domestic utilization of cotton refers to the amount of cotton lint used by the domestic textile industry and seed processed into oils and animal feed. Over the years 2005to 2010, over 80 percent of the lint produced was exported, while only about 8 percent of the seed produced was exported over the same period of time. While the textile industry in Uganda consists mainly of small to medium sized with modest technology and low capacity (PMA, 2009), the seed processing companies appear to have a higher capacity. This partly explains the low domestic utilization of lint compared to the domestic utilization of seed.

Table 6: Production of cash crops, 2008-2011 (000 tonnes)

Crop	2008	2009	2010	2011
Coffee	218 781	195 871	166 968	191 371
Tea	45 680	48 663	49 182	35 194
Cotton	12 303	23 182	13 006	
Tobacco	29 040	18 846	27 138	28 444

Source: MAAIF (2011)

Livestock

Livestock production constitutes an important sub-sector of Uganda's agriculture, contributing about 9 percent of Gross Domestic Product and 17 percent of Agricultural Gross Domestic Product. Livestock production is a source of livelihood to about 4.5 million people in the country (UIA, 2009). Livestock and livestock products play a key role in raising incomes of households and providing a source of protein to many families.

According to analysis of poverty trends using the UNHS time series data (UBOS, 2007), households that include livestock in their enterprise mix tend to be less poor. Livestock is predominantly used for supporting rural households (80 percent owned by smallholders) with herd size of 5-100.

The livestock production system is an integral part of the agricultural system in many parts of the country. The greatest concentration of livestock is found in the "cattle corridor," extending from South-western to North-eastern Uganda. The Livestock Census estimates the national herd to be 11.4 million cattle, 12.5 million goats, 3.4 million sheep, 3.2 million pigs and 37.5 million chickens (UBOS, 2009). The data following the census showed a marked increase in the herd size of all species in Uganda (Table 7).

In economic value, cattle are considered the most important livestock, although other animals such as goats, sheep, pigs and poultry are equally important. Total cattle ownership is estimated to have increased by 54 percent since 2005. Nonetheless, current production levels in the sub-sector can still only meet half the domestic and regional demand. Cattle is the main source of meat in the country and is raised on rangelands which occupy 84 000 km².

Table 7: Livestock numbers (thousand animals), 2004–2011

Species	2004	2005	2006	2007	2008	2009	2010	2011
Cattle	6 567	6 770	6 973	7 182	11 408	11 751	12 104	12 467
Sheep	1 552	1 600	1 648	1 697	3 413	3 516	3 621	3 730
Goats	7 566	7 800	8 034	8 275	12 450	12 823	13 208	13 604
Pigs	1 940	2 000	2 060	2 122	3 184	3 280	3 378	3 496
Poultry	31 622	32 600	26 049	26 950	37 404	39 270	43 201	47 520

Source: MAAIF and UBOS (2012)

The potential for the export market is high and opportunities exist for the expansion of dairy and meat; hides, skins, and leather. Export of livestock products in Uganda is limited to raw and semi-processed hides and skins. Inadequate disease control and the absence of the relevant quality and processing infrastructure are some of the factors which limit the expansion of beef and dairy products exports. Perhaps the major opportunity for the future is that per capita domestic consumption of animal products is still well below the WHO and FAO recommendation. This suggests that, as economic growth continues in the country, consumption will rise and current investment in the industry will be justified.

There are however, several major constraints that need to be tackled if higher performance is to be realized. These include production constraints e.g. endemic disease, poor quality breeds and inadequate feed and water; marketing constraints arising from poor infrastructure and lack of information on opportunities for value addition; institutional constraints manifested in weak

enforcement of policies, laws, regulations and standards (leading to the spread of disease, substandard inputs and products in the market); insufficient research into livestock problems and opportunities; inadequate advisory and veterinary services; and lack of investment in productivity enhancement and value addition spheres that are beyond the capacity of ordinary farmers. Some of these dimensions are integrated in our measurement of additional disincentives and captured by the market development gap (MDG).

Fisheries

About 20 percent of Uganda's surface area is water and capture fisheries is one of the country's key industries. These bodies of water include: Lakes Victoria, Kyoga, Albert, George and Edward. There are also over 160 minor lakes and various rivers, flood plains and swamps that partly contribute to Uganda's fish production (Ikwaput, 2004). With these natural aquatic habitats, Uganda has huge fisheries resources potential for both capture fisheries and fish farming (aquaculture) production. Of all the fish species, Nile perch, Nile tilapia and Mukene are the major fish species of commercial importance in Uganda.

According to the Poverty Eradication Action Plan (PEAP), the fisheries sector contributes 6 percent of the national economy although only 2.4-2.6 percent is captured in the national accounts by the Uganda Bureau of Statistics (UBOS). At the same time, other studies including World Bank (2003) have indicated that it can go as high as 12 percent if properly valued (Ikwaput, 2004). On average, Uganda's fishery industry employs over 700 000 people involved in various activities ranging from: fishermen, fishmongers, fish transporters and boat builders. The rapid development of the industry has been a result from the political stability that the country has enjoyed over the years (Balagadde, 2003).

While exports increased dramatically after 1991, they then declined sharply, falling from a peak of 39 201 tonnes in 2005 to about 24 965 tons in 2008. This seems to be a consequence of declining catches, falling stocks and over-fishing. There are several issues that need to be considered:

- In addition to the formal market channels, a recent survey indicated that fish worth USD 33 million were exported "informally", much of it illegally, to the neighbouring countries of Democratic Republic of the Congo, Sudan, Kenya and Rwanda in 2006. This was 14 percent of all informally traded goods from Uganda in that year;
- Between 1991 and 2007, the number of people depending on the sector increased from 700 000 to over 1.2 million people;
- While catches from Lake Victoria are dwindling fast, the situation for the other lakes is even worse. Lake Kyoga catches have dropped from over 167 000 tonnes in the 1980s to less than 55 000 tonnes in 2006;
- Eight out of the 18 fish processing factories have closed and others are threatened with closure.

Since 2003, action has been taken to try to address these problems. Fisheries management has shifted from a "command and control" mode by the centre to a system based on recognizing the role communities can play. Co-management institutions have been put in place: e.g. Lake Management Organisations have been established on Lakes Kyoga and George and some 630 Beach Management Units (BMUs) have been established and legally recognised on both major and minor lakes. There are, however, many pressing challenges:

- inadequate knowledge on the status of fish stocks in all water bodies on the basis of which to establish sustainable levels of fishing;
- loss of biodiversity;
- inadequate facilities for seed multiplication and artificial propagation for restocking and stock enhancement;
- breeding and nursery grounds are not identified, mapped and gazetted;
- inadequate capacity of BMUs in fisheries management;
- the resurgence of water hyacinth and the emergence of new weeds;
- lack of species-specific management plans;
- prevalence of HIV/AIDS in the fishing communities;
- inadequate mechanisms for fishing communities to save and invest;
- lack of clear understanding on the economics of fisheries development; and lack of feeds to sustain real opportunities in aquaculture.

International trade

Export diversification increased total exports but the trade balance remains in deficit

The export sector of Uganda is dominated by few commodities that make the bulk of the country's export earnings and a large number of other commodities that makes marginal contribution to total exports. Since 2000, total exports of Uganda grew considerably and became more diverse. Agricultural exports contribute substantially to total exports of the country but the bulk of agricultural exports is primary commodities. Between 2005 and 2010, agricultural exports represented 38-52 percent and averaged 45 percent of total exports of Uganda (Table 8).

Table 8: Uganda's international imports and exports trade (2005-2010).

	2005	2006	2007	2008	2009	2010
Total export (000USD)	1 017 010	1 187 640	1 685 920	1 724 295	1 567 614	1 618 603
Total imports (000USD)	2 054 137	2 557 307	3 493 354	4 525 859	4 247 371	4 664 338
Trade balance (000USD)	-1 037,127	-1 369 667	-1 807 434	-2 801 564	-2 679 757	-3 045 735
Agricultural exports (000USD)	415 965	454 172	673 223	878 068	774 423	839 678
Agricultural imports (000USD)	366 307	396 392	476 638	629 319	542 352	583 625
Share of agricultural exports (%)	40.9%	38.2%	39.9%	50.9%	49.4%	51.9%
Share of agricultural imports (%)	17.8%	15.5%	13.6%	13.9%	12.8%	12.5%

Source: compiled from FAOSTAT trade data (2012).

The exported commodities are categorized into Traditional Exports (TE) and Non-Traditional Exports (NTE). The traditional exports include coffee, cotton, tea and tobacco while Non-Traditional Exports (NTE) includes commodities other than the four listed above. Figure 11 highlights the relative importance of each category in total exports between 2005 and 2011. Total exports grew considerably during this period from less than a billion in 2005-06 to over two billion in 2011.

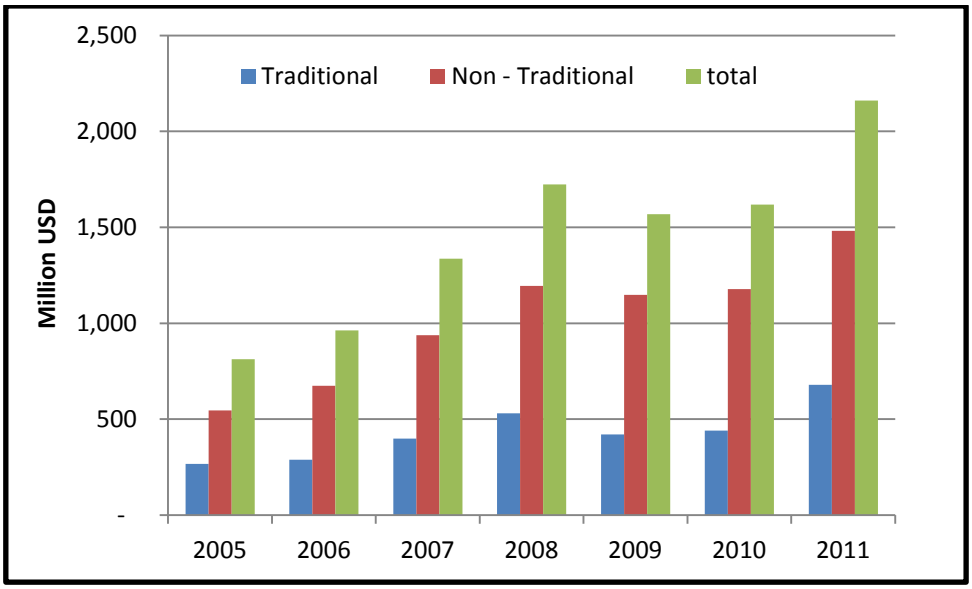
The share of TE in total exports foreign exchange earnings fluctuated between 26.8 to 32.9 percent over the period of 2005-2011. However, the value of traditional exports increased steadily from USD 0.267 billion in 2005 to USD 0.679 billion in 2011. Although its share to total export earnings declined

marginally, coffee remained the main foreign exchange earner for the country, followed by fish, tea and tobacco.

The export growth is mainly driven by the growth of the non-traditional exports which represents over two thirds of total exports (Figure 11). Among the major non-traditional exports are fish and fish products, maize, beans and other legumes and cattle hides but this category includes a large number of commodities each makes small contribution to export earnings. The government has continuously pursued market diversification strategies and export base widening. Increased effort has been directed towards processing of specific crops that previously contributed considerably to the total export value of coffee, tea, tobacco, cotton, maize and fish (MAAIF, 2010). These commodities have been targeted under the National Export Strategy (NES) for value-addition which could improve on the foreign exchange earnings.

However, despite the substantial growth of exports due to diversification of the exports, imports appear to expand faster, resulting in substantial and growing trade deficits for the country (Table 8). However, agricultural imports only represents small fraction of total imports ranging from 12.5-17.8 percent and averages only 14.3 percent over the period of 2005-2010. Among the major agricultural imports of Uganda are wheat, palm oil and sugar with a respective share of 24.9, 23.3 and 10.9 percent of agricultural import bill of the country. Others include rice, pulses, sorghum and fatty acids.

Figure 11: Traditional, non-traditional and total exports for Uganda (2005-2011)



Source: data compiled from MAAIF (2010) and UBoS (2012)

Major constraints to production

Despite its significant contribution to the economy, the agricultural sector, however, faces a daunting set of output-level challenges in its efforts to increase farmers' incomes. These include low levels of productivity across most enterprises; declining soil fertility coupled with low application rates of productivity enhancing inputs; high losses due to pests, vectors and diseases; over-exploitation of fish stocks; uncertain land rights leading to underinvestment in agricultural land; and the struggle to comply with increasingly demanding international quality standards for traded food and agricultural products (MAAIF, 2010).

Other challenge are associated with inadequate infrastructure for value-addition processes including marketing, storage and distribution, inadequate access and feeder roads; the high cost of doing business, uncoordinated efforts among public sector implementing agencies, poor quality of public investment in agriculture; inadequate institutional coordination and linkages, and capacity constraints in MAAIF to effectively address these issues (MAAIF, 2010). To the extent that these constraints affect commodity prices and marketing costs, MAFAP estimated indicators accounts for the impact of these constraints on producers' incentives and disincentives.

Input market constraints

Input markets in Uganda have been difficult to develop for a number of reasons. To begin with, the demand for agricultural inputs is highly variable in time and space. The demand for seed is highest when farmers are growing hybrids, whose seed must be replaced regularly. It is lowest when farmers are growing varieties whose seed can be saved from the harvest and replanted for several cropping seasons (MAAIF, 2010). In addition, the quality of seed in the market may be unknown as quality cannot be determined through visual inspection.

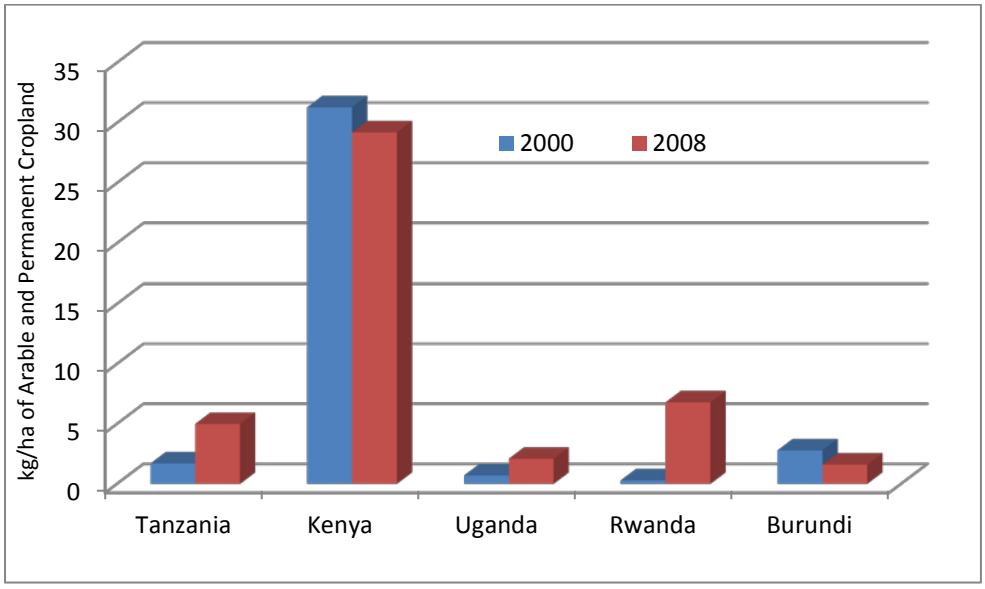
The low demand for fertilizer follows much the same reasoning: lack of knowledge, information asymmetries, liquidity constraints, risk and uncertainty of prices and crop response associated with climate conditions, and high opportunity costs. Profitability tends to weigh heavily in farmers' decisions because the cost of fertilizer often represents a large share of cash production costs (MAAIF, 2010). When cost factors and risk factors act in tandem, as they do in a rain-fed environment like Uganda, the impact on demand can be very significant.

Agricultural technology development

Uganda's agriculture is characterized by low yields and this is partly a function of low application of modern technology. Fertilizer use, for instance, at an average of 2.1 kg of nutrients per ha is among the lowest in the region and the world, compared to Kenya's 29 kg/ha, Rwanda's 6.8 kg/ha and Tanzania's 5.0 kg/ha (Figure 12) (SID 2012). The proportion of farmers using fertilizer is also low amounting to only 1 percent (Table 9).

The use of other improved inputs is also minimal (Table 9). For instance, only 6.3 percent of farmers use improved seeds, while only 3.4 percent use agrochemicals (SID, 2012). International experience shows that agricultural productivity has grown rapidly where modern varieties and fertilizers have been widely adopted (SID, 2012) and NARO is working on this type of improved technology. Since 2003, NARO has developed up to 218 improved varieties, breeds and prototypes for increased yields as a contribution to improve food security. Other productivity reducing constraints such as disease have also been addressed including maize streak virus, groundnut rosette virus, cassava mosaic virus; and coffee wilt disease while advances have been made in upland rice production (MAAIF, 2010), water management on smallholdings and small stock for women and children, new varieties of rice, apple and wheat, and hybrid sunflowers a verb is missing here. Despite the availability of these technological advances, adoption remains low.

Figure 12: Intensity of fertilizer use in East Africa (kg/ha) of arable and permanent cropland; 2000 and 2008)



Source: Society for International Development (SID) (2012)

However, the productivity gains have not been sufficient to either substantially raise the contribution of the agriculture sector to the economy or to meet the needs of the growing population. The capacity to develop new agricultural technology has to be improved and indeed will be critical to the future prosperity of the nation. Organic fertilizer and manure is, according to the World Bank (2006), associated with, on average, a 40 percent increase in production, all other factors held constant. Similarly, improved seeds increase production on average by about 21 percent (World Bank, 2006).

Table 9:. Proportion of farmers using agricultural inputs in 2006 (%)

Region/inputs	Improved seeds	Manure	Chemical fertilizer	Pesticide, herbicides, fungicides
Central	5.5	8.7	1.3	4.8
Eastern	11.9	4.1	1.1	4.7
Northern	7.6	0.5	0.7	2.6
Western	2.2	9.6	0.6	1.5
National	6.3	6.8	1.0	3.4

Source: UBOS (2007): UNHS 2005/06 Agricultural Module, April 2007

Agricultural technology delivery and adoption

Developing new technologies is one thing but having them adopted by farmers is another. This has been the challenge for agricultural advisory services in Uganda. Indeed, over the last ten years, there has been much debate about the appropriate approach, coverage and performance of the extension system; of ways to improve its quality and impact; of how to improve its linkage with research; and how to support rural people to be more effective in exerting demand on the service providers. This debate has taken place within the evolving context of the National Agricultural Advisory Services (NAADS) programme, an innovative extension delivery approach that targeted the development and

use of farmer institutions, and in the process empowered them to better procure advisory services and manage linkages with marketing partners.

Controlling pest, vectors, and diseases

Pests, vectors and diseases are perhaps the main cause of losses in the agriculture sector. Improved pest and disease control could therefore be a major contributor to increasing agricultural production and productivity. It will certainly be a pre-requisite to accessing international markets for virtually all commodities and products. According to the Livestock Development Programme of Ministry of Agriculture, Animal Industry and Fisheries (MAAIF), losses from animal disease are as high as US$ 86.3 million a year through morbidity (58 percent), mortality (30 percent), post-slaughter contamination (10 percent) and poor quality detection during milk processing (2 percent). In addition, the inability to control endemic disease outbreaks means that Uganda fails to meet international trade standards and so loses many market opportunities. Quality differences will be accounted for in estimating MAFAP indicators.

The problems with animal health are a function of poor trans-boundary and epidemic disease control; weak control of zoonoses,3 poor veterinary public health services; and vector borne diseases (RoU, 2010). These in turn follow from inadequate legislation, poor surveillance and reporting; poor command structure; and inadequately managed laboratories. Most of these problems flow from a lack of political will and a lack of funds.

The Animal Health Master Plan developed by MAAIF and the improving bio-security are inevitably high on the list of priorities. In the crop sub-sector, the main pest and disease challenges are (i) Coffee Wilt Disease (CWD), which started in 1993 and has destroyed about 56 percent or 160 million of the old Robusta trees, equivalent to some 1.5 million bags or about US$ 170 million; and (ii) Banana Bacterial Wilt (BBW) to which all banana cultivars are susceptible and which has an incidence of 70-80 percent in many plantations, with yield losses of 90 percent reported on some farms and a potential national loss estimated at a staggering US$ 360 million p.a. (World Bank, 2008).

It might also be noted here that, Uganda is host to the most dangerous and epidemic diseases of the world such as Ebola, Marburg, Tuberculosis, Rift Valley Fever and Anthrax. In addition, Uganda neighbours the vast Congo- Sudan-Uganda Albertine ecosystem which is the world's largest reservoir of known and unknown viruses. Given that at least 70 percent of the human and animal pathogens affecting animal production, public health, global trade and security are found in Eastern and Central Africa, the region is a risk incubator for both Africa and the rest of the world. Recent Ebola strikes paralyzed Uganda's business, tourism, and transport industries costing the country billions of shillings (millions of dollars). Biosecurity and the protection and defence of populations, farms, facilities and systems against dangers of deadly biological agents and disease germs is of major significance to public health and is the basic reason for the international sanitary standards of the WTO.

[3] A zoonosis is an infectious disease that is transmitted between species (sometimes by a vector) from animals to humans or from humans to animals

Degradation of land resources

Land degradation in Uganda is widespread, varying in intensity from one part of the country to another, depending on farming practices, population pressure, vulnerability of the soil to denudation and local relief. In 1991, studies estimated that soil erosion alone accounted for over 80 percent of the annual cost of environmental degradation representing as much as US$ 300 million per year (NEMA, 2004). In 2003, the annual cost of soil nutrient loss, due primarily to erosion, was estimated at US$ 625 million per year.

Land degradation is most pronounced in the dry lands of the cattle corridor where sustainable land management is threatened by overgrazing by local and mobile pastoralist herds, deforestation by excessive use of fuel wood resources and poor and inappropriate agriculture on marginal land. These threats are further exacerbated by low and unreliable rainfall, frequent drought and precarious water supply, seasonal fires, and endemic poverty, forcing people to destroy natural resources as a source of livelihood.

Dependence on rain-fed agriculture

Agriculture in Uganda is mainly rain-fed with limited irrigation. Due to a number of factors including climate change, there is now so much volatility in precipitation that rain-fed agriculture may not be enough to guarantee production from one season to another. Whenever there is drought, which is becoming more frequent, production falls dramatically. Uganda does not have a preparedness plans for adapting to these climatic changes and therefore remains exposed and vulnerable.

According to a study carried out by the Japanese International Cooperating Agency (JICA), potential irrigable area in Uganda is approximately 202 000 ha with 14 418 ha under formal irrigation and 67 000 ha under informal irrigation, much of it for rice.

The study indicates further that while the total renewable water resources in Uganda is over 66 km^3 only some 22km^3 is being utilized (for both small and large scale initiatives). There is, therefore, great potential to harness the available water in order to increase production and productivity.

Farm power constraints

The hand hoe is still the predominant means for land tillage and other secondary operations in Uganda's agriculture. The lack of more efficient farm power at the household level has a substantial negative impact on agricultural production and household food security. Many households respond to their shortage of farm power by scaling down their activities, by reducing the area under cultivation (by up to 50 percent) and by growing a limited range of crops. There is no doubt that the productivity of the labour-force is compromised by a lack of physical energy and poor quality tools (MAAIF, 2010).

In the past, the government operated tractor hire schemes but these ceased with the recognition of the high costs involved and inherent problems and change of MAAIF's mandate focusing on supporting a private sector led and market-oriented economy. At the same time, the old stock of draught animals had been lost to disease and cattle rustling.

There are many constraints to expanding mechanization in Uganda: e.g. uncertain economics of production, limited markets for outputs, limited access to financial services, lack of availability of

complementary inputs, and limited back-up and support for plant and machinery. These constraints need to be addressed if widespread mechanization is to be achieved.

Lack of agricultural finance

The ability of agricultural enterprises and rural households to invest in the long-term and make calculated decisions for risky income flows is partly shaped by the availability of financial services. Despite some development of financial services in Uganda, the majority of smallholders remain without access to the services they need to compete in the market and to improve their livelihoods. Access to financial services, in particular savings and credit products, would expand their opportunities for more efficient technology adoption and resource allocation. Financial constraints are more pervasive in agriculture and related activities than in many other sectors, reflecting both the nature of agricultural activity and the average size of firms.

There is thus a tremendous need for financial innovations that can place smallholder farmers on a ladder of ascending financial market access as well as for innovations that can complement financial services by managing the systemic risks that undercut their supply. The root of the problem is that lenders tend to offer only a limited menu of products, mainly with heavy collateral requirements. Wealthier farmers can obtain larger loans at lower cost from formal lenders because they can credibly pledge assets or future cash flows. Asset-poor households, by contrast, are limited to considerably smaller loans at much higher rates because they have to turn to lenders who must substitute costly monitoring for collateral. Poor farmers may also turn down loans, even if they qualify. This is because they are unwilling to bear the risk of losing collateral. While agricultural finance is not directly within the mandate of MAAIF, the ministry can contribute to reducing many of these concerns, and hence encourage investment and advocate for lowering interest rates (MAAIF, 2010).

Marketing and value-addition constraints

Marketing constraints arise mainly from poor infrastructure and lack of information on opportunities for value-addition. Serious constraints exist to successful marketing, realization of profits and thereby affordability of basic livelihood assets. Low and fluctuating prices resulting from seasonal fluctuations in the supply and demand for agricultural produce coupled by forced sale due to demand for cash to meet basic needs (health, education and food), do not allow farmers to strategically sell produces when prices are high. In many districts, ready markets are not available for sale of produce and purchase of inputs.

Long distances to produce markets, impassable roads and lack of affordable transport, especially in the rainy season, further hamper market access. High market dues for produce sales in general, licenses for fishers and traders, and livestock slaughter fees, relative to low incomes reduce market profits. Transportation cost and high market dues are accounted for in the market incentive/disincentives analysis reported in Part 2 of this report.

These constraints could be overcome by constructing communal collection facilities, organizing farmers groups to bulk market produce, creating a conducive environment for local trade, improving market facilities, improving rural marketing networks; developing strategies to eliminate exploitation by middlemen, access to marketing information; and reviewing the current local market

management, dues collection and tendering. All this can be monitored through PE analysis as MAFAP suggests.

Inadequacy of physical infrastructure such as feeder roads, communication facilities, power supply, education and health facilities, water supply and market infrastructure continue to constrain marketing of agricultural produce and investments in rural areas and are responsible for the high market transaction costs.

The availability of statistics regarding food crops and export crops is unsatisfactory. Producers' prices of even the major food crops is rarely collected and published officially. Many agencies are involved in the collection and dissemination of agricultural data and they are not well coordinated. Organizational and financial as well as managerial deficiencies are acute in most of these institutions. Also the potential users do not know the work of the various agencies.

Post-harvest losses, particularly for food crops, are very high, aggravating the food insecurity problem. In addition to timely harvesting, proper drying, protection from infestation with diseases and pests and storage are critically important and should be introduced. Today, few farmers have well-constructed storage facilities in rural areas. Off-farm storage facilities owned by traders, millers, processors, and exporters are generally lacking and this need to be addressed.

Despite evident potential for value-added products, the proportion of Uganda's agricultural commodities and products which is processed is believed to be no more than 5 percent (MAAIF, 2010). Increasing this is a challenge because of:

- Poor links between different stakeholders, producers and investors;
- Low capacity of farmers to participate in value chains;
- Inadequate market information to guide farmers in market-oriented farming;
- Inadequate quantity and poor quality of goods produced;
- Limited availability of limited access to equipment and machinery

Institutional constraints

The development of quality assurance standards in Uganda is governed by three international conventions, namely: the International Plant Protection Convention (IPPC) for plant disease and health standards; Codex Alimentarius Commission (CODEX) for food safety standards; and the International Office of Epizootics (IOE) for standards for animal health and animal products. However, a considerable number of laws, rules and legislations are now obsolete and need to be revised in the light of current conditions. Across the board, the review process is on-going but very slow. This is partly because the implementation of much of the legislation lies in the hands of several ministries or authorities with no proper co-ordination.

The current public capacity for ensuring quality assurance, regulation and food safety is very far from adequate. One pressing and topical concern is that the current Food Act does not provide for new technological developments in the food industry. For example, the safety of Genetically Modified Organisms (GMOs) foods, food additives and contaminants, packaging and other SPS requirements.

Agricultural growth, however, cannot be achieved by programmes and activities managed by the sector ministry and its agencies alone. Significant public investments in rural roads, railways,

electricity, and telecommunication infrastructure are needed if agricultural growth is to be achieved. The budgets for these sectors are implemented by other ministries implying a need for MAAIF to collaborate closely with these MDAs to rally support for other complementary investments.

Agriculture and the environment

Agricultural activities can have a major impact on land use, soil, water, biodiversity and the landscape. Specifically, there are a number of environmental issues in agriculture with significant implications on the performance of the sector in Uganda. These include:

- Land degradation including erosion, compaction and overuse. Productivity losses per year for maize from soil erosion have been estimated in some areas as high as 190 kg/ha/ i.e. a loss of U Sh 57 000 (USD 22.72) per ha per annum (MAAIF, 2010).
- Agro-chemical pollution of ground and surface water;
- Loss of forests and wetlands leading to loss of biodiversity;
- Increasing livestock numbers imposing pressure on rangeland ecosystems and water systems;
- Loss of biodiversity in agricultural landscapes through the introduction of non-native varieties;
- Expansion of agro-based industries (including fish processing) without an adequate regulatory framework leading to increased stress on soils, wetlands, and fisheries.

The 1995 Constitution and some of the subsequent legislation committed the Government of Uganda to the integration of environmental management in all its development programmes (National Environmental Act and Environmental Impact Assessment (EIA) regulations, 1998). These will be used as guides for future investment in the agriculture sector.

Ideally, ecosystems are supposed to be in balanced. However, according to IISD/UNEP (2004) report Uganda's ecosystems are under stress, principally as a result of deforestation, overfishing, species introductions, water pollution, biodiversity loss, wetland destruction, poaching, the rapid population growth that has persistently led to increased demand for human settlements and agricultural land. In the process, the quality, adequacy and diversity of the ecosystems have declined significantly.

Land use

Uganda has a total area of 241 550.7 km^2 of which open water and swamps cover 41 743.2 $km^2$and land covers the remaining 199 807.4 km2 (Table 10). Land for cultivation, pastures or both constitutes 75 percent of the total area. The remaining 25 percent is constituted by lakes, swamps and forestry zones. Of the 17 million hectares available as arable land, only about 5 million hectares are currently under cultivation, which constitutes less than 30 percent of total arable land.

Although the above indicates a very good scope for expansion of acreage under cultivation, land is increasingly becoming a constraint in some parts of the country particularly in the Kigezi area and southern and eastern regions, where population densities are high. Land is fairly evenly distributed throughout the country and the average landholding is 2.2 ha.

Table 10: National land cover statistics (sq km)

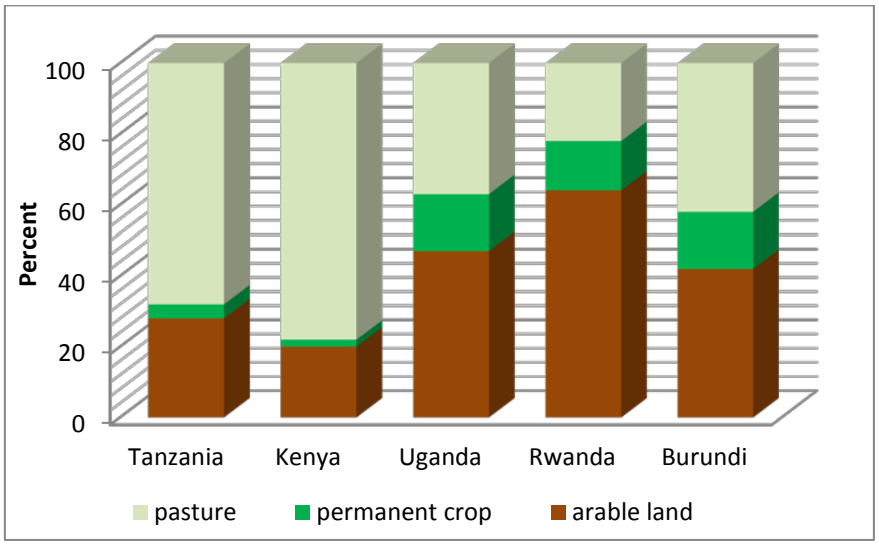
Type of land cover	1990	2000	2005
Built-up areas	365.7	365.7	365.7
Bush-lands	14 223.9	12 624.5	11 893.6
Commercial farmlands	684.5	684.5	684.5
Cultivated lands	84 010.0	94 526.7	99 018.6
Grasslands	51 152.7	51 152.7	51 152.7
Impediments	37.1	37.1	37.2
Plantations - hardwoods	186.8	153.3	138.6
Plantations - softwoods	163.8	80.0	121.5
Tropical high forest	9 242.1	7 581.7	6 866.9
Water bodies	36 902.8	36 902.8	36 902.9
Wetlands	4 840.4	4 840.4	4 840.6
Woodlands	39 740.9	32 601.4	29 527.8
Total	**241 550.7**	**241 550.7**	**241 550.7**

Note: The figures indicated in the above table are based on projections. Actual vegetation studies were undertaken in 1994 based on 1992 satellite imagery.

Source: UBoS (2012)

Among East African countries, Tanzania has the largest share of East Africa's arable land (41 percent) and pastures (46 percent). However, Uganda accounts for 44 percent of the region's land under permanent crops, ahead of Tanzania's 30 percent share. Within countries, it is interesting to note that Tanzania and Kenya have put less than 4 percent of their total land under permanent crops, in contrast to Uganda, Rwanda and Burundi, which have between 14 percent and 16 percent as shown in Figure 13 (SID, 2012).

Figure 13: Total area under permanent crop as a percentage of the arable land



Source: SID, 2012

Other development indicators

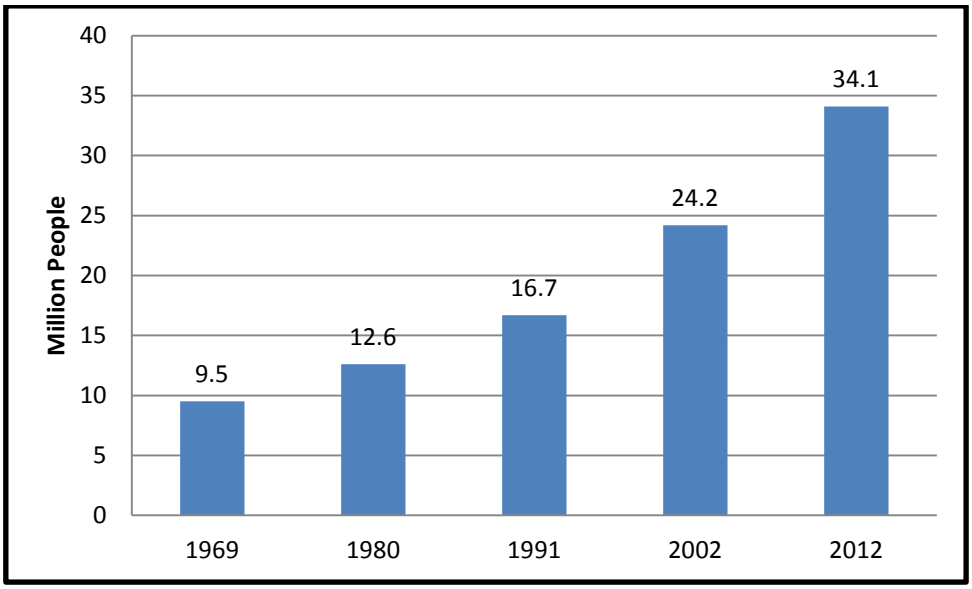
In addition to the above presented performance indicators which directly measure the performance of the agricultural sector in Uganda, other development indicators are important for understanding the performance of the economy to achieve welfare goals. These include population, poverty and inequality and food security.

Population

Uganda's population has continued to grow rapidly over time. It increased from 9.5 million in 1969 to 24.2 million in 2002 at an average annual growth rate of 3.2 percent. The population is projected to reach 34.1 million by mid 2012. Uganda's current population growth rate is estimated at 3.5 percent and is the third highest rate of population increase in the world. Figure 14 shows the population trends from 1969–—2012.

There are large differences in rural population densities across regions. Population densities are highest in the districts around Lake Victoria, and in the highlands of the Southwest, the country's most fertile areas. The Eastern region has the highest population density (using projections for 2000) with an average of 143 rural persons per square kilometer, and 535 persons per square in Jinja district, and 388 in Mbale. High population densities tend to coincide with good agricultural potential, high rainfall, and consequently those areas are mostly at risk from soil erosion.

Figure 14: Uganda population trends (1969–2012) and midyear (2012) projection



Note: Population reported for 1969 – 2012 is census midyear projection for 2012.

Source: UBOS 2012

The population of Uganda is increasingly becoming younger. The proportion of children (under 18 years) has increased from 51 percent in 1969 to 56 percent in 2002 (Table 11). The proportion of the elderly persons (60 years or more), on the other hand, decreased from 6 percent in 1969 to about 5 percent in 2002.

Table 11: Population of selected age groups, 1969–2002

Age category	Proportion of population (%)		
	1969	1991	2002
Less than 18 years old	51.4	53.8	56.1
18-30 years old	21.7	23.6	22.3
60 years or older	5.8	5.0	4.6

Source: Population Secretariat (2007)

Poverty, inequality and employment

The proportion of Ugandans living in poverty decreased from 56.4 to 24.5 percent between 1992-1993 and 2009-2010 (Ssewanyana, Matovu, and Twimukye, 2011) as shown in Table 12. This success means that there were over 23 million Ugandans above the poverty line in 2010. However, of this group, around 13 million are classified as "insecure non poor". These households were able to meet their basic needs but were insecure and vulnerable of falling into absolute poverty (MFPED, 2012).

There has been progress across all the regions of the country. Between 2005-2006 and 2009-2010 the largest improvements in welfare were in the central and eastern regions and West Nile. However, there remains very large variation across the country. In Kampala, 77 percent of the population is middle class while in the North East, 76 percent are poor. The findings of a Participatory Poverty Assessment (PPA) confirmed that there was significant progress. In 1990, the lack of a hand hoe or of an animal was perceived as key indicators of poverty. The same communities in 2011 reported the lack of an ox plough or mattress were the corresponding characteristics of poverty.

The recent Poverty Status Report (2012) revealed that 7.5 million Ugandans (about 25 percent) are classified as “poor,” while 10 million (about 33 percent) are considered to be within the "middle class." The proportion of the poor population has been steadily declining from about 56 percent in 1993 to 31 percent in 2005-2006 and 25 percent 2009-2010 (MFPED, 2012) (Table 12). The third Progress Report on Millennium Development Goals (MDGs) revealed that the first MDG (to halve the proportion of people living in poverty), has been achieved (MFPED, 2010).

Table 12: Number and percent of Ugandans who are absolutely poor, insecure non-poor and middle class

Year	1992/93	1999/00	2002/03	2005/06	2009/10
Absolutely poor (millions)	9.9	7.4	9.3	8.5	7.5
Percent below the poverty line	56.4%	33.8%	38.8%	31.1%	24.5%
Non-poor but insecure (millions)	5.8	9.6	9.6	11.0	13.2
Percent non-poor but insecure	33.4%	43.9%	39.9%	40.2%	42.9%
Middle class (millions)	1.8	4.9	5.1	7.8	10.0
Percent in the middle class	10.2%	22.4%	21.2%	28.7%	32.6%

Source: MFPED (2012).

Inequality based on the Gini coefficient

The Poverty Eradication Action Plan (PEAP) focused on the eradication of absolute poverty, but economic progress requires that more attention be paid to relative poverty. While objective measures of outcome inequality have not increased (Uganda's Gini coefficient was 0.426 in 2009-2010 compared to 0.428 in 2002-2003) (Table 13), perceptions of inequality are becoming more prominent on the policy landscape. This is in part because rising incomes has been matched by higher aspirations, and individuals now attach greater weight to their position relative to others.

The Gini coefficient is a measure of inequality in household consumption per adult equivalent. Based on 2009-2010, inequality of income as measured by the Gini coefficient stood at 0.426. Inequality was driven largely by urban areas. Inequality varies from a low of 0.319 in the Eastern region to a high of 0.451 in the Central region. Put simply, individuals in the Eastern region are the least unequal, while the most unequal individuals are in the Central region.

Table 13. Gini coefficients for Uganda 1992–2010

Years	1992/93	2002/03	2005/06	2009/10
Uganda	0.365	0.428	0.408	0.426
Rural	0.328	0.363	0.363	0.375
Urban	0.396	0.483	0.432	0.447

Note: Zero expresses perfect equality and one expresses maximal inequality.

Source: UBOS, UNHS various years and IHS 1992-–1993. (Poverty status report 2012).

Real consumption expenditure per capita

The 2009-2010 Uganda National Household Survey (UNHS) collected information on consumption and non-consumption expenditure of households. In nominal terms, the results indicated that per capita consumption expenditure increased from U Sh 41 300 (US$ 16.46) in 2005-2006 to U Sh 72 250 (US$ 28.80) in 2009-2010, representing a nominal increase of 75 percent. However, after deflating the nominal expenditure by Consumer Price Index (CPI), the results reveal that on average, the per capita expenditure increased from U Sh 40 550 (US$ 16.16) to U Sh 47 150 (US$ 18.79) or 16 percent (Table 14). The Northern region had the highest increase in real per capita expenditure with 32 percent. Proportionately, the Central region (excluding Kampala City) also recorded a 31 percent increase. The lowest increase (9.6 percent) was observed in the Eastern region. On average, the urban areas recorded a 20 percent increase in real per capita consumption expenditure while the rural areas recorded a 15 percent real increase.

The period 2005–2006 and 2009-–2010 was marked, on average, with slower growth in per adult consumption compared to 2002–2003 period. While the proportion of people living in poverty significantly declined, the reduction in the number of poor persons – in absolute terms – was not significant; and inequality of income worsened. In other words, while Uganda seems to have met the MDG target of halving income poverty target earlier than 2015, worsening distribution of income and high population growth, if not addressed, will be likely to reverse the trends.

Table 14. Per capita real consumption expenditure, (Real U Sh, 2005/06=100)

Region	2005/06			2009/10		
	Rural	Urban	Total	Rural	Urban	Total
Kampala	-	109 200	109 200	-	131 600	131 600
Central*	47 000	85 000	51 650	58 750	104 250	67 450
Eastern	29 000	64 700	31 800	32 950	57 900	34 850
Northern	19 000	36 500	21 500	25 750	53 000	28 400
Western	35 250	76 750	38 400	38 800	85 400	42 150
Uganda	**33 150**	**81 450**	**40 550**	**38 200**	**97 750**	**47 150**

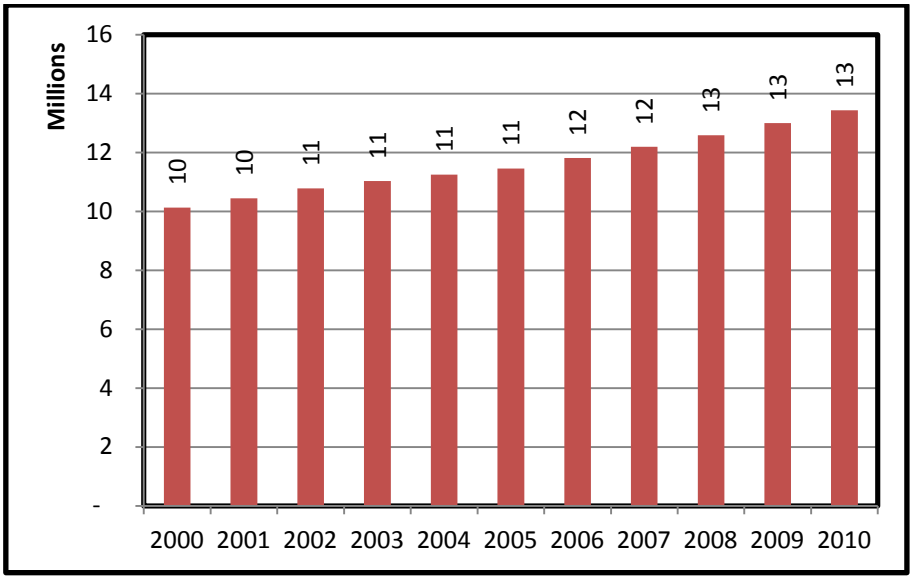
Source: UBOS 2012.

Employment

The economic growth achieved in Uganda over the last decade appears to be also associated with increased employment in the country. The total labour force in Uganda increased from 10.9 million persons in 2005-2006 to 13.4 million persons in 2009-2010, an increase of 23 percent (Figure 15) (UBOS 2012). The Labour Force Participation Rate (LFPR) increased from 82 percent in 2005-2006 to 91.5 percent in 2009-2010 (UBOS 2012). The overall unemployment rate was 3.6 percent in 2009-2010 while the urban unemployment rate was about 8.7 percent in 2009-2010. The increasing level of unemployment in urban areas is largely explained by internal rural-urban migration.

By status in employment, 79.4 percent of the working population in 2009-2'10 was self-employed. The paid employees constituted 21.7 percent of the work force in 2009-20-10 compared to 16.3 percent in 2005-2006. The results further indicate that nearly three quarters of the workforce had either primary level or no education. Only 6.8 percent of the work force had specialized training, that is, post primary. The majority of the working population was engaged in agriculture. The agriculture sector employed 66.0 percent of the working population (UBOS 2012).

Figure 15: Trends of labour force in Uganda (2000-2010).



Source: UBoS 2012

Migration and urbanization

Over the years, Uganda has been faced with dynamic and complex patterns of internal and external migration. The causes of external migration into Uganda can be linked to several factors including geopolitical, socio-economic, and a shared ethnicity. A major part of internal migration in Uganda has been the result of civil wars in Uganda in general and specifically to the 22-year-old war in northern Uganda. A smaller percentage of internal migration is due to inter and in-district migration due to land fragmentation and employment opportunity search. Other forms of migration are child and human trafficking in and outside Uganda. In addition, an unknown number of Ugandans have found their way out of the country as economic migrants and as refugees (Mulumba et al., 2009).

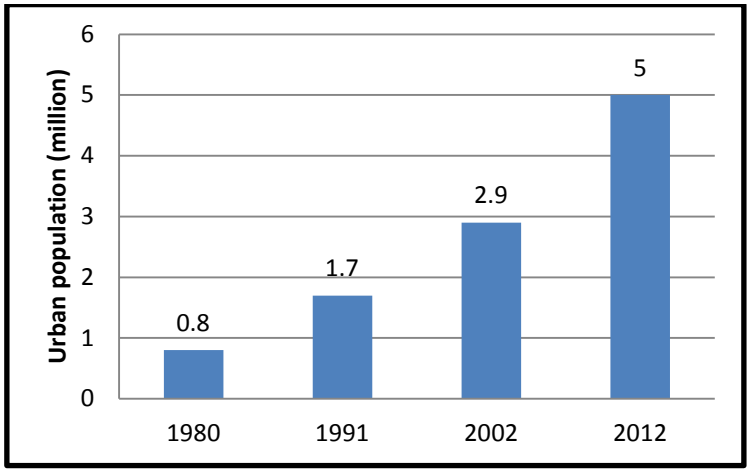
Over the last three decades, there has been a rapid urbanization in Uganda (Figure 16). Urbanization resulting from modernization trends and the general poverty in rural areas has affected household relations in three main ways. Firstly, the fact that both men and women have to go to work; secondly, the demand for domestic labour has been created; and thirdly, high rural poverty levels force desperate parents to send their children into urban areas to earn a living.

These processes have catapulted a rural-urban migration of boys and girls, pre-teens and adolescents (11-18) where they have been subject to domestic labour and other unclear forms of labour. Many children have been employed as domestic workers. Studies have indicated that there are about 2.7 million working children in Uganda, giving the overall participation rate of 34.2 percent (Guluma, 2008; ILO-IPEC, 2007).

In addition, industrialization processes have attracted occasional and seasonal labourers such as brick-layers, carpenters, builders, and porters who migrate to urban centres for a specified period of time after which they return to their homes in rural areas. Yet other forms of in-country migration include, for example, fostering children in the African extended family system and the practice of older parents moving to stay with their children in urban centres. Overall, there is little documentation on these processes.

Figure 16 shows that the urban population in Uganda has increased rapidly from less than 0.8 million persons in 1980 to 5.0 million persons in 2012, representing an increase of more than six times. This increase is mainly attributed to the creation of new urban administrative units, natural growth, demographic factors (excess of fertility over mortality) and rural to urban migration.

Figure 16: Urban population in Uganda 1980-2012



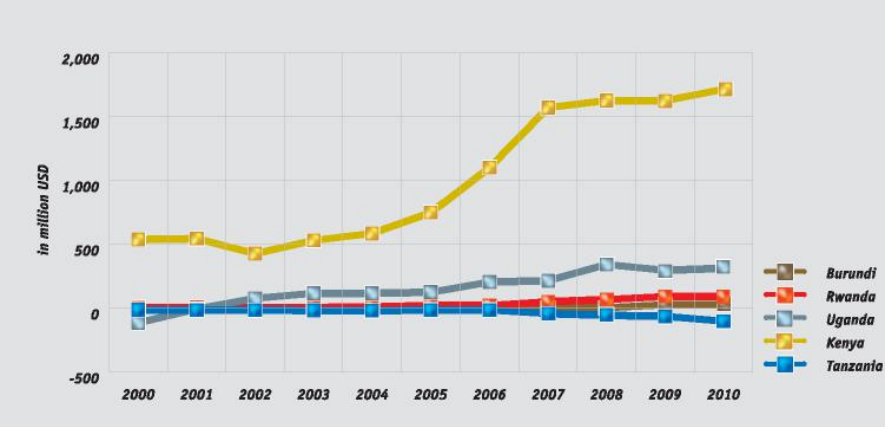
Source: UBOS 2012.

External migration is associated with remittances transferred back to the country. According to the World Bank and based on the IMF (International Monetary Fund) balance of payment statistics, total remittances to East Africa were US$ 2.8 billion in 2010. These remittance inflows are almost three times greater than the US$ 791 million received in 2000. Uganda received US$ 915 million or 32 percent of the total East Africa remittances (Figure 17) (SID, 2012).

Food security and health

In general, Uganda is food secure. Most people have enough food to eat and enjoy a varied diet. However, the food and nutrition security situation is unsatisfactory. SOFI (2012) estimated that 34.6 percent of Ugandans are undernourished. While the country's average caloric intake per person per day was 2 066 in 2002, it declined to 1 971 in 2005. In 2007, it rose to 2 247 calories remaining the highest in East Africa (State of East Africa Community 2012). Although the overall trend is still clearly positive, the average intake is less than the recommended daily calorie intake of 3 008 calories.

Figure 17: Net remittances in East Africa (2000–2010)



Source: World Bank estimates based on the International Monetary Fund's Balance of Payments Statistics Yearbook (2011)

With 50 percent of the population is currently under 15-years-old, the low scenario, at least every year there will be at least another million mouths to feed. Between 2006 and 2008, poor households in Uganda faced additional stresses due to food price increases, and experiencing cuts in their

purchasing power of between 10 to15 percent. Some households probably went hungry. It is sometimes suggested that rural Ugandans should be insulated from global price shocks because they still have a high level of food self-sufficiency, because rural and urban Ugandans consume a diverse array of staple foods, and because, as a land-locked country, Uganda has weak links with world markets (MMAIF, 2010).

However, as world prices for grains and rice increased, between October 2007 and October 2008, prices of every staple food in Uganda (except sweet potatoes) also increased substantially. As a result, consumers faced substantial reductions in purchasing power. Over this period, urban poverty increased by up to 3.6 percentage points over the 2005/6 baseline estimates, and the depth of poverty in urban areas increased by about 25 percent (MAAIF, 2010). Rural households also lost purchasing power. It seems that poverty increased 2.4 percentage points (about 7 percent more households in poverty). To the extent that households resolved this problem by eating fewer calories and the malnutrition level may have increased (MMAIF, 2010).

The irony about food security in Uganda is that most of the food-insecure live in rural areas where food is produced, yet they are net food buyers rather than sellers.

Only about 12 percent of households in Uganda are significant net sellers (IFPRI, 2008). In contrast, 66 percent of households are net buyers of food and rely on the market for more than 25 percent of the value of the food they consume. Even in rural areas, over 60 percent of households purchase more food, by value, than they sell. This implies that strategies to improve food and nutrition security must pursue enhancing incomes through on-farm and off-farm activities. Rural households need to increase their purchasing power (and, where possible, have food prices kept stable).

Agriculture's ability to generate income for the poor, particularly women, is more important for food security than its ability to increase local food supplies. An appropriate policy response is therefore a mix of mitigation and encouraging supply. In the medium-term, broad-based economic growth could be expected to lift many of these people out of poverty as their incomes begin to increase.

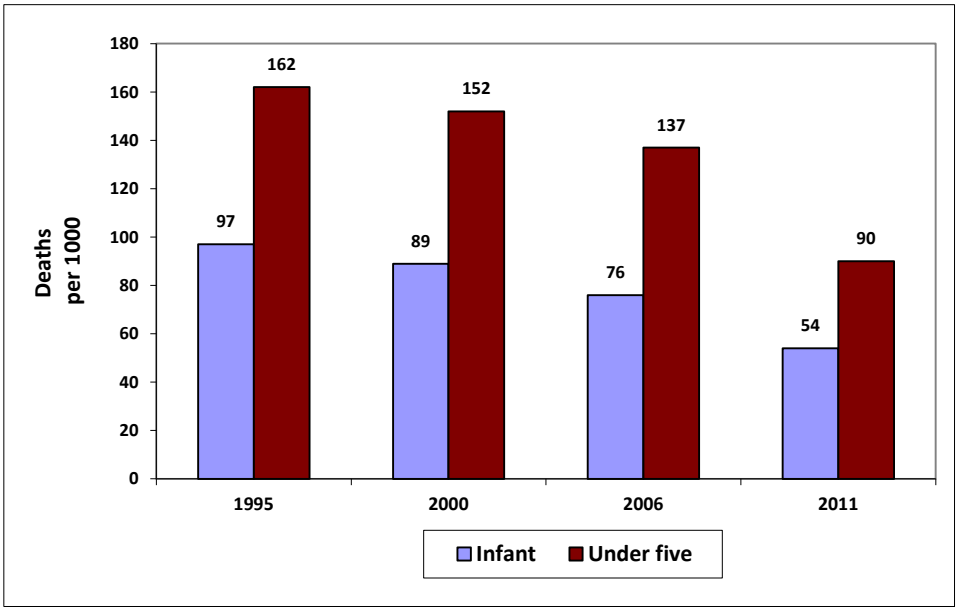
There has been a debate as to whether, as a consequence of the urgency of the food security situation, the development strategy should focus on food crops or exports crops. However, this is not a helpful formulation of the available options. Rather, it is necessary, given the current structure of the economy and the strategic importance of both the food and export crops, to focus on both the supply and demand sides (MAAIF, 2010). On the supply side, raising farm productivity highlights the role of agricultural technology (generation and dissemination), while improving market efficiency will involve enhancing incentives for producers through higher real producer prices. What is needed is balance and a downward pressure on real food prices. This requires an increase in productivity gains, improved marketing efficiency to lower prices for consumers and making Ugandan products more competitive.

Mortality

There has been a general improvement in mortality levels over time. Figure 18 shows the trend of Infant Mortality Rate (IMR) and Under Five Mortality over the period 1995 to 2011. The IMR declined from 97 to 54 deaths per 1 000 live births between 1995 and 2011, while the under five mortality declined from 162 to 90 deaths per 1 000 live births over the same period. The 2011 UDHS showed

that IMR is lower among children in urban areas as well as those born to educated and wealthier mothers.

Figure 18: Infant and children under five-years-old mortality trends, 1995- 2011



Source: Ministry of Health (HMIS) annual report 2011.

Morbidity

Table 15 shows that malaria is the highest ranked cause of morbidity during the last five years in Uganda, followed by cough or cold without pneumonia. In 2011, these two accounted for over 56 percent of all cases of morbidity down from 72 percent in 2010. The proportion of persons presenting with intestinal worms, skin diseases and pneumonia causes of morbidity slightly decreased in 2011.

Table 15. Frequency of the leading causes of morbidity for children below 5 years of age, 2007-2011.

Type of illness	2007	2008	2009	2010	2011
Malaria	33.6	26.1	48.5	48.2	36.2
No pneumonia- cough or cold	15.6	12.2	15.5	24.1	19.3
Intestinal worms	5.3	4.0	4.4	6.5	5.2
Skin diseases	3.3	2.7	2.9	3.8	3.2
Pneumonia	2.9	2.2	2.4	3.2	2.4
All others	39.3	52.8	26.3	14.2	33.7

Source: Ministry of Health, annual report (2011)

Health centre-based mortality by age group

A total of 13 761 health centre deaths were reported in 2010/11. Malaria was the top (20.9 percent) cause of mortality followed by AIDS (9.4 percent), pneumonia (7.8 percent), anemia (7.6 percent), and tuberculosis (3.9 percent). The highest mortality rate was for males older than 5-years-old (36.1

percent) followed by females over 5-years-old (25.1 percent), males under 5-years-old (20.2 percent) and females under 5-years-old (18.5 percent).

Among children under 5-years-old, malaria is the highest (27.2 percent) cause of mortality followed by anemia (12.1 percent), pneumonia (11.4 percent), prenatal conditions (7.8 percent) and septicemia (5.0 percent), (Table 16).

Table 16. Top ten causes of hospital-based mortality for all ages in 2010/11 FY

IPD Diagnosis	Under 5-years-old	Above 5-years-old
Malaria	27.16	16.99
AIDS	2.61	13.67
Pneumonia	11.37	5.58
Anaemia	12.10	4.74
Tuberculosis	0.90	5.74
Perinatal conditions(in newborns 0 to 28 days)	7.78	N.a
Septicaemia	4.99	1.42
Other types of meningitis	0.96	2.40
Respiratory infections (other)	2.72	1.26
Injuries and road traffic accidents	0.49	2.55
All others	28.93	45.66
Total	**100.00**	**100.00**

Source: Ministry of Health (MoH), Annual Health Sector Performance Report 2010/11.

Life expectancy

Life expectancy at birth is an estimate of the average number of years a person is expected to live if a particular pattern of mortality is maintained. Table 17 shows that the over-all life expectancy at birth from the 2002 census was 50 years. There was a gain of 2.3 years in life expectancy between 1991 and 2002. Males had a lower life expectancy (49 years) compared to their female counterparts (52 years).

Table 17. Life expectancy at birth by census year 1969-–2002

Census year	Male	Female	Total
1969	46.0	47.0	46.5
1991	45.7	50.5	48.1
2002	48.8	52.0	50.4

Source: Ministry of Health (MoH). Annual Health Sector Performance Report 2010/11.

Water supply

Water supplied in Uganda is either metered or unmetered.

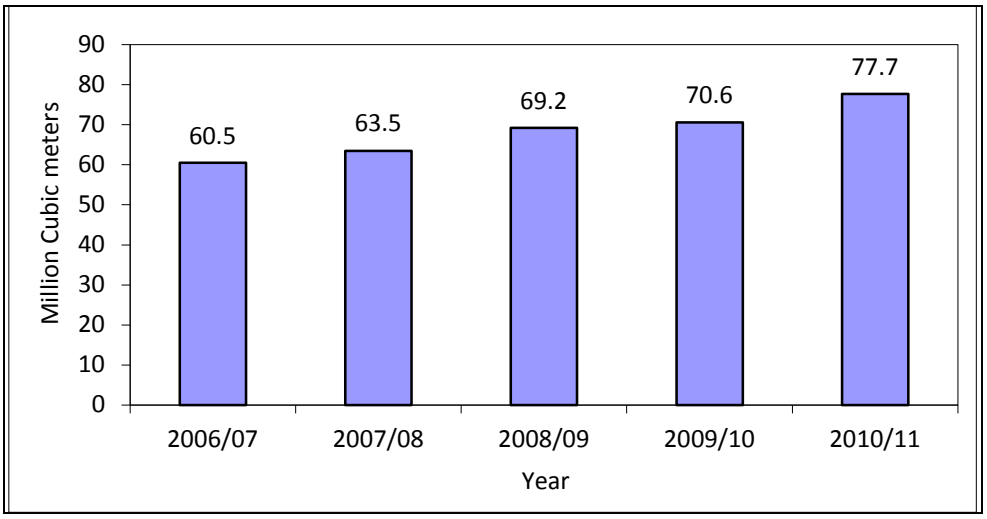
Metered water

National Water and Sewerage Corporation (NWSC) is the main provider of metered water in Uganda, with a total capacity of 318 842 m3 per day. NWSC operates in 23 towns, 19 of which have water treatment works. During 2010-2011, water production was 77.7 million cubic meters compared to 70.5 million cubic meters produced in 2009-2010 hence an increment of 7.2 percent (Figure 19). Mbarara and Mbale registered the highest increments in water production of 121.5 percent and 96.8 percent respectively. On the other-hand, Tororo, Masaka and Hoima registered declines of 40.5, 33.8 and 20.6 percent, respectively.

Unmetered water

The Directorate of Water Development (DWD) also supplies water especially in the rural areas and small towns through the provision of boreholes. Over the years, there has been a general increase in the amount of water supplied by DWD. In 2009/10, DWD supplied about 3.6 million cubic meters and in 2010/11, it supplied 3.9 million cubic meters with an increment of 11 percent. It is worth noting that the amount of water supplied to small towns has tripled since 2006/07.

Figure 19: Water produced by NWSC in Uganda, 2006/07 – 2010/11

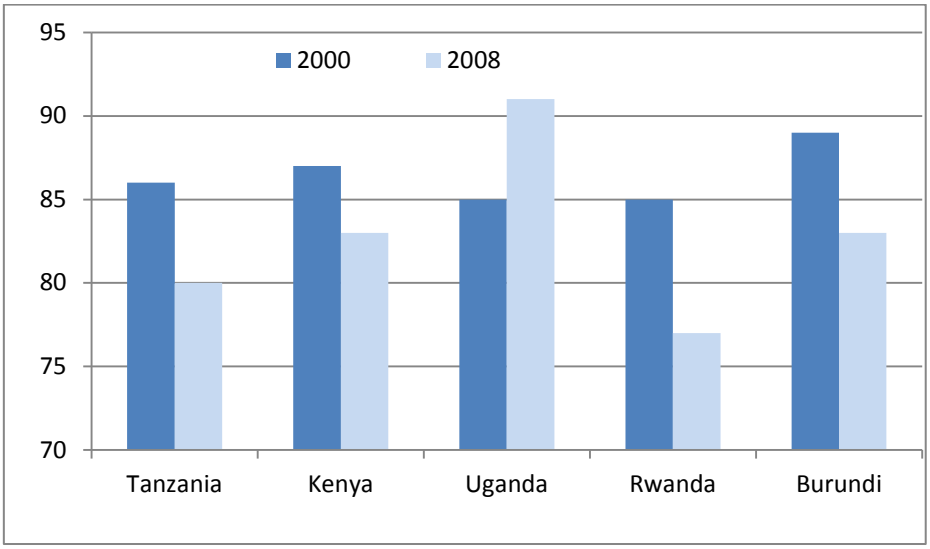


Source: UBOS 2012.

Access to clean water

In 2008, 91 percent of urban Ugandans had access to an improved water source, the highest in the region (Figure 20). Among countries belonging to the East Africa Community (EAC), Uganda was the only country to improve this indicator between 2000 and 2008. The other countries saw coverage fall from 85–87 percent to 77–83 percent. The sharpest decline was reported in Rwanda, which reduced urban coverage from 85 percent to 77 percent. Access to improved water sources in rural areas improved in Burundi, where it was the highest in the region in both 2000 and 2008, as well as in Kenya and Uganda (Figure 20). It was unchanged in Tanzania, and declined slightly in Rwanda from 64 percent to 62 percent.

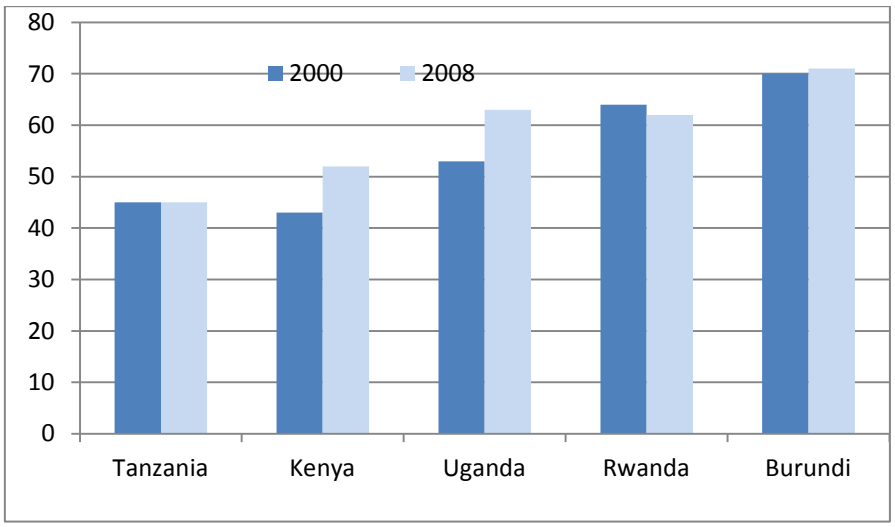
Figure 20: Access to improved water sources in East Africa (2000–2008) in urban areas



Source: SID (2012).

In December 2010, the African Development Bank (AfDB) approved the Lake Victoria Water and Sanitation Program that would cover four key areas: water, sanitation, solid waste management and institutional capacity-building. The main objective was to improve the water and sanitation services in the 15 selected towns around the Lake Victoria Basin. In addition to supporting pro-poor water and sanitation investments, the project hoped to reduce the environmental impact of urbanization in the Lake Victoria Basin. Lake Victoria is a major trans-boundary natural resource that is heavily utilized by its bordering countries for fisheries, transportation, tourism, water supply and waste disposal. Its outflow is an important component of the Nile. In response to rapid urbanization, and the exploitation of the natural resources and its relationship to livelihoods and poverty, the EAC formulated a framework to reverse the deteriorating conditions in the Lake (African Development Bank Group, 2010).

Figure 21: Access to improved water sources in East Africa (2000–2008) in rural areas



Source: SID (2012).

Education

The proportion of the population above the age of 10 years that is literate increased from 69 percent to 73 percent between 2005 and 2006 and 2009 and 2010, an improvement which was shared equally by men and women. Primary school enrolment has been on a positive trend increasing from 113 percent in 2007 to 133 percent in 2009 and stood at 8.3 million children (Table 18). Meanwhile, secondary education enrolment increased from 19 percent in 2005 to 28 percent in 2009. The ratios of primary pupils to teachers as of 2010 stood at 51:1 and pupil to classroom ratio was 68.

Table 18. Trend of key primary education indicators in Uganda (2007–2010)

Year	2007	2008	2009	2010
Total enrolment (000)	7 537	7 963	8 297	8 374
Enrolment of males (000)	3 779	3 987	4 150	4 179
Enrolment of females (000)	3 758	3 976	4 147	4 195
Number of primary teachers (000)	152	159	168	172
Number of primary schools	14 728	15 962	17 127	17 865
Total number of class rooms	104 899	114 441	121 212	144 916
Percent annual change in enrolment	2.5	5.7	4.2	0.9
Percent change in class rooms	2.3	9.1	5.9	19.9
Pupil to teacher ratio	57	50	49	49
Pupil to classroom ratio	72	70	68	58
Gross enrolment ratio	113	115	133	128
Gross intake ratio	129	137	168	160
Net enrolment ratio	93	95	108	96
Net intake ratio	57	59	73	70

Source: UBOS (2012)

Literacy

Literacy is the ability to read with understanding and write meaningfully in any language. Overall, the literacy rate among children aged 10 years and older was 73 percent in 2009/10 (Table 19). Between 2009 and 2010, enrolment in primary school increased by 0.9 percent. The majority of students enrolled in higher institutions were males (UBOS, 2012).

Table 19. Literacy rates for the Ugandan population aged 10 years and older

	2002/03			2005/06			2009/2010		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
All Uganda	77	63	70	76	63	69	79	66	73
Residence									
Urban	90	84	87	89	83	86	90	86	88
Rural	74	60	67	74	58	66	77	62	69
Region									
Kampala	94	91	92	92	90	91	95	90	92
Central	82	74	79	82	78	80	84	81	83
Eastern	72	54	63	71	56	64	75	60	68
Northern	72	42	56	74	45	59	77	52	64
Western	79	69	74	74	60	67	77	65	71

Source: UBOS (2012)

Gender

According to the Uganda 2002 Population Census, the agricultural sector employed a higher proportion of women (83 percent) than men (71 percent). At the same time, a substantial amount of women's time was taken up in providing care activities. Investments in improving smallholder agriculture can help women more than it would in most other areas of investments. A multi-country study by Blackden and Bhanu (1998) revealed that:

- In Kenya, if women farmers received the same level of agricultural inputs and education as men, their yields would increase by more than 20 percent;
- In Tanzania, reducing the time burden of women increased household cash incomes for smallholders by 10 percent, labour productivity by 15 percent, and capital productivity by 44 percent;
- In Zambia, if women could invest in agricultural inputs, including land, to the same extent as their male counterparts, total output could increase by up to 15 percent.

Two key constraints to women's participation in commercial agriculture in Uganda:

- With their uncertain relations to land and the limited returns available to them, women lack the incentive to undertake long-term investment
- With the lack of a level playing field, women prefer petty trading to agriculture and are deterred from agricultural investment.

These are areas where MAAIF can make a difference by regulating and promoting value for money services to all clients. If that could be done better, the benefit to women farmers would be enhanced and the total welfare gains would be significant. According to MoFPED (2008), a 1 percent improvement in productivity in agriculture in Uganda would not only disproportionately benefit women but also contribute an extra 0.4 percent growth in GDP.

Review of the main food and agricultural policies

Key strategies and government priorities of agricultural and rural development

The policy environment in Uganda is unique in liberalizing the economy to a great extent. The government focuses on providing public goods and creating an enabling environment for economic growth. For the last 25 years, a number of policies, strategies, and programmes that support the food and agriculture sector in Uganda have been put in place. This can be categorized into overarching national policies and specific agricultural and rural development initiatives. Since agriculture is arguably the backbone of the Uganda's economy, the two categories are highly inter-related. A summary of the policies, strategies and programmes implemented sine 1986 are presented in Figure 22.

Overarching national policies

The Economic Recovery Programme

The first round of reforms that affected the sector started in 1987 with the IMF/World Bank supported Economic Recovery Programme (ERP) (MFPED, 2000). The ERP that ended in 1992 had two major phases. The first phase of the ERP ushered in the liberalization policy that led to the deregulation of exchange rate controls and liberalization of trade including agricultural inputs and output.

The second phase brought in the Public Enterprise Reform and Divestiture Act of 1993 (privatization policy) that concentrated on public sector reforms and privatization of state-owned enterprises such as the Coffee Marketing Board (CMB), Lint Marketing Board (LMB), and Produce Marketing Board (PMB). -At their time of operation, these boards purchased and exported agricultural produce, provided farmers with extension services and inputs on credit. Institutional reforms in this phase also led to merging of what was then called the Ministry of Agriculture and Forestry with the Ministry of Animal Industry and Fisheries to form present-day Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

The Poverty Eradication Action Plan

Weaknesses in ERP led to the development of the Poverty Eradication Action Plan (PEAP) in 1997 as the country's 10-year (1997 – 2007) planning framework for accelerating growth, reducing poverty and promoting sustainable development. The PEAP 1997 was organized under four pillars or goals: i) macroeconomic policy, ii) institutional framework for poverty eradication, iii) policy framework to increase incomes of the poor, and iv) measures to improve the quality of life of the poor (MFPED 1997).

The PEAP 1997 was later revised to PEAP 2001 (MFPED 2001) following the introduction of the poverty reduction strategy paper (PRSP) initiative –which was similar in intent to PEAP, by the World Bank in 2000. The PEAP 2001 also had four pillars, but this, configured differently as: i) creating an

enabling environment for economic growth and structural transformation, ii) achieving good governance and security, iii) increasing the ability of the poor to raise incomes, and iv) improving the quality of life of the poor. The PEAP 2001 was later revised to PEAP 2004, into five pillars: i) improving economic management, ii) enhancing production, competitiveness and incomes, iii) improving security, conflict resolution and disaster management, iv) promoting good governance, and e) realizing human development. As a poverty reduction framework, the PEAP focused mainly on areas that would enhance rural incomes, such as agriculture, rural roads, education and health. In 2010, the PEAP was replaced with the 5-year National Development Plan (NDP) as a medium-term planning framework.

The National Development Plan

Uganda formulated the National Development Plan (NDP) in 2010 after the expiry of the PEAP in 2008. The NDP addresses structural bottlenecks in the economy aimed at accelerating socio-economic transformation that will deliver prosperity. The plan should be implemented between 2010 and 2011 and 2014 and 2015 after which it will be reviewed and revised.

The NDP is the overall planning framework for the country. It identifies priority investment areas that include physical infrastructure – energy, railway, waterways and air transport; human resource development; provision of critical technology inputs especially in agriculture; and promotion of science and technology.

The NDP identifies four different categories of sectors, namely: primary growth sectors, complementary sectors, social sectors and enabling sectors. The agricultural sector, including forestry, manufacturing, tourism, mining, oil and gas, is categorized among the primary sectors.

Although the agricultural sector is one of the primary growth sectors in the NDP, it is faced with a number of constraints that have impeded growth. As articulated in the NDP, these include weak policy, legal and regulatory framework; high risks and cost of investment; high cost and limited availability of improved farm inputs; limited human resource capacity; weak institutions and structures; traditional and cultural attitudes; poor performance of natural resources; inadequate physical infrastructure; absence of data and information; land tenure and access to farmland; standards, food safety and quality assurance infrastructure; inadequate meteorological services; inadequate pest and disease control; inadequate production and post-harvest facilities; limited extension support and weak value chain linkages.

Thus, the NDP designed and formulated strategies and interventions to address the above constraints including improving agricultural technology development; ensuring effective delivery of advisory services and improved technology; controlling diseases, pests and vectors, and enhancing productivity of land through sustainable land use and management of soil and water resources among others.

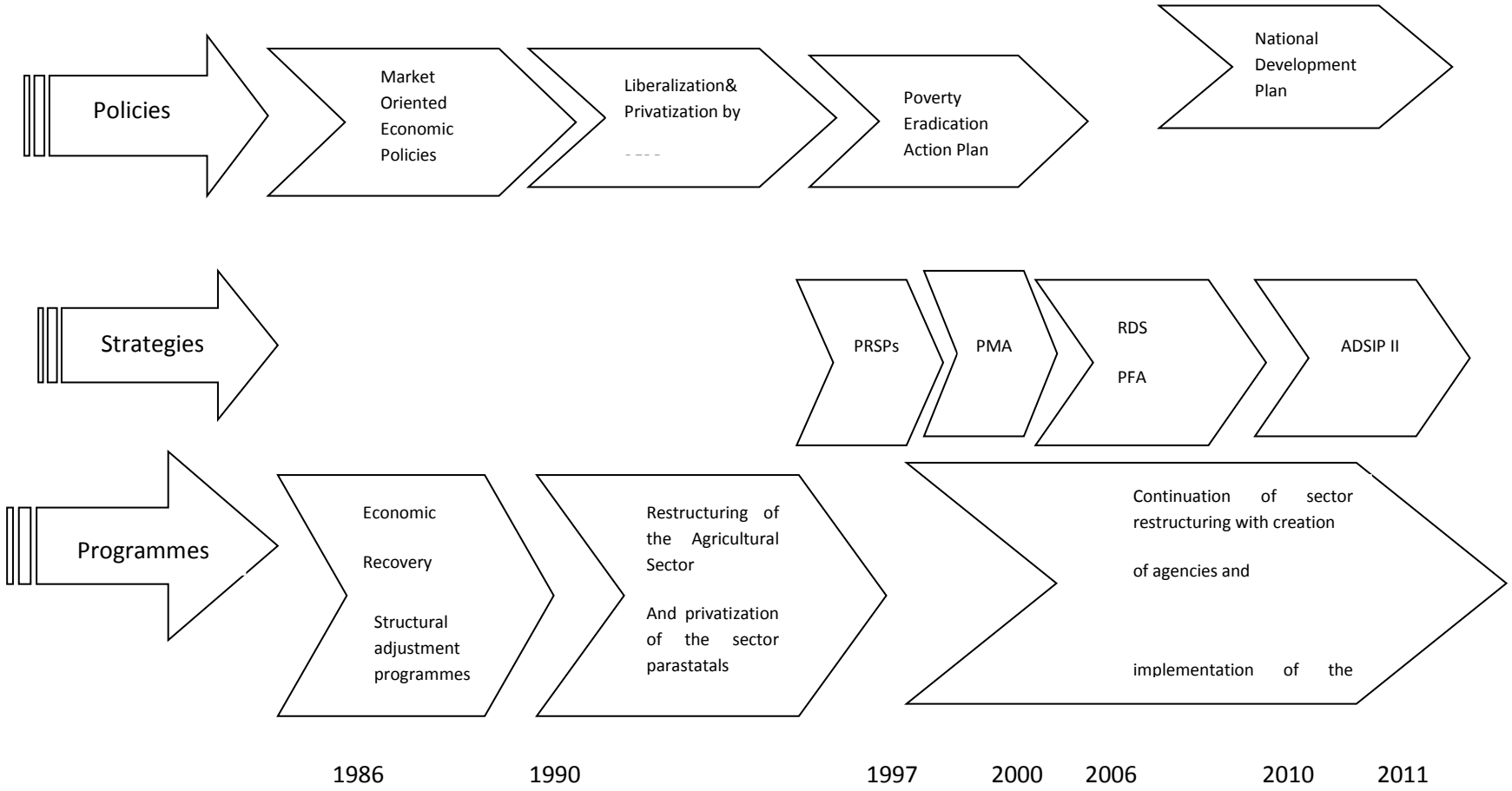
The NDP recognizes that the roles played by the PMA and the DSIP (which expired in 2008), identify their weaknesses and proposes actions, strategies and interventions which can address these to boost the agricultural sector further emphasising the agriculture in the overall planning framework for the country. Therefore, the agricultural sector is central in the NDP. However, the revised sectoral framework, the Agricultural Sector Development Strategy and Investment Plan (ASDSIP)

2010 articulates the objectives, strategies and intervention even more candidly. The ASDSIP provides detailed plans for implementation of priorities outlined in the NDP.

Public Investment Plan

The Public Investment Plan **(**PIP) consists of projects for implementing policies and priority actions identified in the national plans like the PEAP, PMA and NDP among others. The PIP largely aims at reviewing the previous projects to identify on-going and priority projects and to identify new initiatives that need to be put in place and in line with existing sector investment programmes.

Figure 22: A chart of policies, strategies and programmes in Uganda's agricultural sector since 1986.



Source. Authors.

PIP lists the government's highest priority for the next three years along with expenditure estimates for each project and the projects where donor funding is being sought during the planning period. The projects are categorized as: accountability; agriculture; economic functions and social services; education; health; justice, law and order public, administration; water; security and roads. Under agriculture, over 27 projects are being implemented.

Main strategies and government priorities for agricultural and rural development

The Plan for Modernization of Agriculture

The PMA was developed in 2000 as a framework and strategy to implement the second pillar of the PEAP 1997. The PMA had four main objectives, all of which were focused on improving the livelihood of agricultural households. The PMA has seven implementation areas: (i) research and technology development,(ii) National Agricultural Advisory Services (NAADS), (iii) agricultural education, (iv) rural financial services, (v) marketing and agro-processing, (vi) sustainable use and management of natural resources, and (vii) physical infrastructure.

To implement the PMA strategy, a secretariat was established to coordinate the various stakeholders in the agricultural sector and to implement all the areas highlighted in the PMA strategy. For all the years that the PMA has been in operation, however, only the first two areas of implementation were implemented through the National Agricultural Research Organization (NARO) and the National Agricultural Advisory Services (NAADS) secretariat.

Attempts to increase farmer access to financial services have not been very successful. The Marketing and Agro-processing Strategy (MAPS) was drafted and not implemented. Recently, the Ministry started implementing donor-funded projects such as the Community Agricultural Infrastructure Improvement Project (CAIIP) and the Markets and Agriculture Trade Improvement Projects (MATIP), which were geared towards improving rural roads and market infrastructure. The PMA as a secretariat remains in operation, but its area of focus has changed more to a planning than a coordinating directorate of multi-sector interventions in agricultural development.

The National Agricultural Advisory Services Programme

Effective implementation of the PMA strategy mainly started with creation of the NAADs programme in July 2001.The NAADS is a 25-year donor funded extension services and input subsidy delivery programme. The programme is now in the second phase of implementation, which started in July 2010 and ends in July 2015. The first phase was supposed to end in July 2007, but needed an extension until 2010 – as NAADS II was designed. Implementation of the first phase of NAADS was tainted with challenges partly compelling the government to consider other interventions such as the Rural Development Strategy (RDS) in 2005 and Prosperity for All (PFA) in 2006, aimed at reaching a wider spectrum of the rural population.

A review of NAADS I suggested a weak relationship between research institutions and extension agents in access to quality technologies and providing research-based advice to farmers in the country (World Bank, 2010). To strengthen this linkage, the Agricultural Technology & Agribusiness Advisory Services (ATAAS) Project, co-implemented by NAADS and NARO was designed as the NAADS II programme. The ATAAS is a 5-year project funded by the World Bank, Global Environment Facility Trust Fund (GEF), IFAD, the European Union, DANIDA and the Government of Uganda at a total project cost of USD 665.5 million over the five year project period (World Bank, 2010).

The objective of the ATAAS project is to increase agricultural productivity and incomes of participating households by improving the performance of Uganda's agricultural research and advisory service systems. The project will support key activities through five components namely:

(1) Developing agricultural technologies and strengthening the National Agricultural Research Systems (NARS);
(2) Enhancing partnerships between agricultural research, advisory services and other stakeholders;
(3) Strengthening the National agricultural advisory services;
(4) Supporting agribusiness services and market linkages; and
(1) Programme Management.

Rural Development Strategy

Uganda's policy has been dominated by the need to improve rural areas because the majority of the population live there and their livelihoods are rural-based. It is argued that without decisive and definitive intervention, rural areas will remain poor. It is against this background that government formulated the RDS to facilitate profound agrarian productivity. The main objectives of the RDS were to: (i) increase farm productivity of selected commodities produced by households; (ii) increase household outputs of the selected agricultural products; and (iii) promote value-addition and ensure a stable market for these agricultural products (MFPED, 2005). The RDS targeted the following components:

1. Provide support to farmers' groups, associations and cooperatives in order to increase their capacity;
2. Enhance rural micro-finance services provision;
3. Establish a community information system to report regularly on, for example, land holding and utilization, output of various enterprises in crop, livestock and fisheries sub-sectors;
4. Enhance market access for agricultural produce through active linkage of farmer groups and processors/produce buyers;
5. Facilitate the delivery of agricultural inputs through market mechanisms, including produce dealers and processor credit;
6. Increase agricultural productivity through demand-driven agricultural extension;
7. Improve agro-industrial development through enhanced support to research and development of agro-processing prototypes, and implementing appropriate processor-producer linkages; and
8. Support the Uganda National Bureau of Standards for quality control and assurance.

In 2005, the Uganda Cabinet decided to integrate RDS into the budget framework for the Financial Year (FY) 2005/06 and the Medium term Expenditure Framework (MTEF). This led to the identification of specific interventions and activities for Government action by the MAAIF. The outcome of this process identified the following interventions to focus on: (a) Integrated Support to Farmers' Groups; Micro-finance (savings and credit); (b) Community information systems; (c) Cotton subsidies; (d) Water for agricultural production (water stressed areas and rehabilitation of irrigation schemes (Doho in Tororo District); and (e)Water harvesting; and (f) NAADS roll out (Republic of Uganda, 2008).

RDS was developed in consideration of the various related macro-economic and sector-specific policies, strategies, programmes, such as the Revised Poverty Eradication Action Plan (PEAP, 2004); Plan for Modernisation of Agriculture; MAAIF Development Strategy and Investment Plan. Therefore, as a strategy the RDS sought to implement the existing policy frameworks, strategies and policies between 2005 and 2008.

The Government has produced the National Food and Nutrition Policy (MAAIF/MoH, 2003) and the National Food and Nutrition Strategy (MAAIF/ MoH, 2005). Work continues to implement these policies. The Cabinet is considering a legal and institutional framework, to be submitted to Parliament. This framework is described in a draft Food and Nutrition Bill that provides for the establishment of a National Food and Nutrition Council (NFNC). Once passed into law (as an Act of Parliament), the NFNC shall serve as the Apex Body for guidance and coordination of all food and nutrition issues in the country.

The Agricultural Sector Development Strategy and Investment Plan

In an attempt to prioritize investments in the sector, in 2010, the MAAIF launched a 5-year (2010/11 – 2014/15) ASDSIP. The "new" ASDSIP, which was a revision of the 2005/06 – 2007/08 ASDSIP, was formulated as one precondition to signing of the Comprehensive Africa Agriculture Development Programme (CAADP) –which is a continental initiative to increase economic growth in Africa through greater investment in agriculture. The revised ASDSIP was tailored on the NDP and has four programme areas of implementation that aim to promote private sector investment and raise productivity in the sector.

The DSIP focuses on four broad and mutually reinforcing investment programmes: enhancing agricultural production and productivity; improving access to and sustainability of agricultural markets; creating an enabling environment for investment in agriculture; and institutional strengthening in the agricultural sector.

Other related policy initiatives

During the implementation of agriculture specific reforms, Uganda also implemented a number of land reforms given the critical importance of land as resource for agricultural production, e.g. the Land Act of 1998.

Another policy that indirectly affects the functioning of the food and agriculture sector in Uganda include is the decentralization policy, which sets the framework within which central government ministries and departments work with local governments at the district level. Other policies in sectors such as education, health, and roads also affect the functioning of the food and agriculture sector but are not detailed in this report.

Agriculture sector budget process

The policies highlighted in foregoing discussion directly or indirectly influence resource allocation and expenditure in agriculture. Establishing agencies which are semi-autonomous from MAAIF, for example, gives these institutions power to even source and expend funds beyond that provided by central government. On the other hand, though the MAAIF mandate discourages it from actively engaging day-to-day implementation of production-related activities, the MAAIF heavily engaged in the design and implementation of off-budget project-related activities mainly funded by donors.

Budget formulation and implementation in Uganda is guided by a number of policy instruments including the Budget Act 2001, the National Development Plan 2010 (NDP), the Medium Term Expenditure Framework (MTEF) and the Poverty Action Fund (PAF). The purpose of the budget is to allocate public financial resources in priority areas to achieve government development goals. The Budget Act 2001 is the instrument that provides guidance to stakeholders in the budget formulation, management and review process, on how to go about their duties. The NDP 2010 specifies the priority areas of government investment while the MTEF provides a comprehensive and realistic medium-term resource framework within which detailed annual budget proposals are developed.

The PAF is a virtual fund, a mechanism that was created to strengthen orientation of the budget or prioritize resources towards poverty reduction.

The PAF is an integral part of the national budget, for which resources are prioritized to poverty reduction programmes/projects, including primary education, primary health care, water and sanitation, agricultural extension, and rural roads among others.

The guiding instrument in budget formulation at the sector level is the sector investment plan (SIP), which, in the case of MAAIF is the Agricultural Sector Development Strategy and Investment Plan 2010 (ASDSIP). As previously highlighted, the ASDSIP identifies the critical strategic areas of investment in the agriculture sector for achieving the national development objectives.

The process of budget formulation at the sector level follows the national budget cycle, which starts in October and ends in July (Table 20). The process starts with the annual budget strategy cabinet paper initiated by Ministry of Finance, Planning and Economic Development (MFPED), followed by a national workshop in which the national Budget Framework Paper (BFP) is presented to key stakeholders. The chronology of events and activities leading to the reading of the National Budget in June and the subsequent approval by parliament is illustrated in Table 22.

At the sector level, the sector working group (SWG), which, in the case of the MAAIF is the Agricultural SWG (ASWG,) is responsible for the budget process after receiving guidelines from MFPED. The guidelines include the MTEF budget ceilings. The budget ceilings are provided for both MAAIF and agencies that have separate budget votes on account. The agencies under MAAIF are semi-autonomous, established by acts of parliament, except the Plan for Modernization of Agriculture (PMA) Secretariat – which was originally setup as a temporary coordinating centre for the implementation the PMA strategy, but has now transitioned into some sort of additional planning arm of MAAIF. These agencies and their dates of establishment are shown in Table 21.

Table 20.Timeline of sector budget preparation process in Uganda

Timeline	Budget activity	Description of activity	Concerned institution
October	Cabinet retreat	Resource projections Issues and priorities Initial MTEF ceilings	Cabinet
October	National Budget Framework Paper (BFP) workshop	Guidelines for sector BFPs Outlook and priorities Initial MTEF ceilings	MFPED
November	Preparation of sector Budget Framework Paper (BFP)	Preparation of draft sector BFP including RTBs and DTBs for agencies Revision of MTEF allocations consistent with sector resource ceiling	MAAIF
December	SWG retreat	Ministerial consultations Preparation of preliminary cost estimates Finalization of sector BFP	MAAIF
January	Compile BFP	Preliminary sector estimates sent to MFPED Compile BFP Update MTEF allocations	MFPED
February	Compile BFP	Preliminary estimates sent to President Finalize BFP	MFPED
March	BFP to Cabinet	Cabinet reviews and recommends	Cabinet
April	Preliminary estimates to parliament	Parliament reviews and recommends	MFPED Parliament
May	Preliminary estimates to parliament	Parliament recommends estimates PER meeting Finalize national budget	Parliament MFPED
June	Budget reading	National budget read	MFPED
July	Budget approval	Parliament approves budget	Parliament

Source: Adapted from The Global Mechanism of the UNCCD (2007).

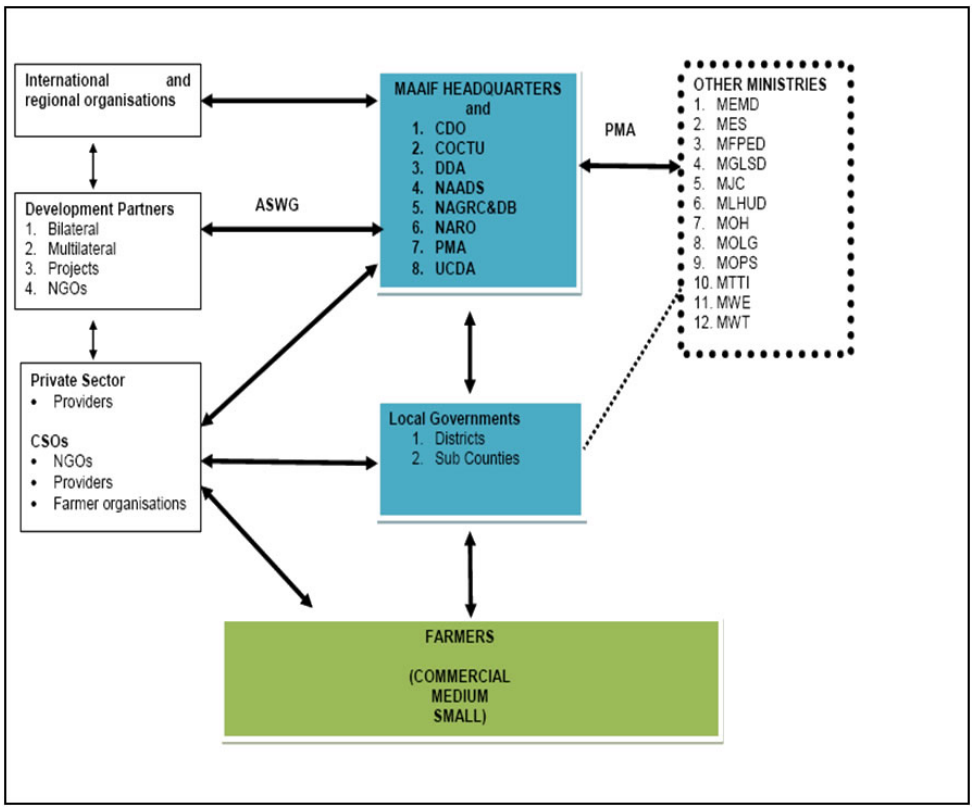
These agencies were created to work alongside the MAAIF as full-fledged institutions operating at both national and sub-national levels and with separate budget votes. The MAAIF was left to concentrate on agricultural policy formulation, support and supervision, sector planning, regulation, standards settings, quality assurance and sector monitoring and guidance. The present macro-structure of MAAIF and its linkages with other stakeholders in agriculture is shown in Figure 23.

Table 21. Agencies under MAAIF

Agency	Year of establishment
Dairy Development Authority (DDA)	1990
Uganda Coffee Development Authority (UCDA)	1991
Coordinating Office for the Control of Trypanosomiasis in Uganda (COCTU)	1992
Cotton Development Organisation (CDO)	1994
Plan for Modernization of Agriculture (PMA) Secretariat	2000
National Genetic Resource Information Centre and Data Bank (NAGRIC&DB)	2001
National Agricultural Advisory Services (NAADS)	2001
National Agricultural Research Organization (NARO)	2005

Source: MAAIF (2010)

Figure 23: MAAIF macro structure and linkages with stakeholders



Source: MAAIF 2009

Under the decentralized system of government – within which the country is administered, the agricultural sector budget formulation also involves local governments (districts) that implement some of the sectors' programmes and projects. For example, in the agricultural sector, some aspects of agricultural extension services are provided by districts besides NAADS. Other services including regulatory services, quality assurance services, agriculture statistics and information, are provided by district production officials.

The budget formulation process is supposed to be open and participatory to include inputs from stakeholders such as the civil society and the private sector, besides government. In reality however, there is very little participation or inclusion of inputs from civil society and/or the private sector with regard to allocations in priority areas of investment (Stringer, 2007).

Rather than this, the major budgetary decisions are made based solely on the discussions between the MFPED, the World Bank, and the International Monetary Fund (IMF), according to the report by the Global Mechanism of the UNCCD (2007).

Land Policies

A comprehensive land-use policy was developed as matter of priority, from the Land Act (1998), the Constitution (1995), and other relevant laws. The 1995 Constitution sought to introduce a superior land tenure system for Uganda to replace the Land Reform Decree of 1975. The Constituent Assembly[4](CA) resolved to recognize four tenure systems that existed before the Land Reform Decree 1975 and recommended that:

1. All Ugandan citizens owning land under customary tenure may acquire certificates of ownership in a manner prescribed by the Government;
2. Land under customary tenure may be converted into freehold ownership by registration;
3. Any lease which was granted to an Ugandan citizen out of public land may be converted into freehold in accordance with law made by Parliament; and,
4. Lawful or bona fide occupants of Mailo land, freehold or leasehold land shall enjoy security of occupancy of the land.

Following this, the Government planned to introduce laws aimed at streamlining the tenure system in accordance with the provisions of Chapter 15 of the Constitution.

The Land Act recognizes the land rights of both land owners and bona fide occupants/squatters. In particular, the act recognizes the rights of sitting land tenants of 12 years or more. The act also set an annual land rent—*obusulu* at U Sh 1 000 (US$ 4.00). Although it was expected that the act, through guaranteeing the right of land tenants, was to spur investment on the land, some reports indicated that the act led to acrimonious relationship between landlords and tenants (Hunt, 2004). In addition, the Land Act does not address the issue of land ownership and inheritance by women and youth. Given the central role that women and youth play in agricultural production, the Government has not yet resolved this issue.

Commodity specific policies

To realize the sector vision and objectives as stated in the DSIP, factor productivity (land, labour, and capital) will have to be raised substantially. To achieve this, one of the major subcomponents to be implemented is the promotion of strategic enterprises. MAAIF has decided to support the development of specific value chains in addition to maintaining general support to agriculture. Accordingly, fifteen commodities have been selected under this sub-programme: these are traditional export crops (coffee, tea, cotton); cereals (maize, rice); fish; legumes (beans); tubers (cassava, Irish potatoes); livestock (dairy cattle, beef cattle, goats and poultry); fruits (citrus, pineapples, apples) and bananas.[5] The selection of the commodities was guided by the following criteria:

[4]The Constituent Assembly debated and passed the 1995 Uganda Constitution.

[5] The ten commodities analyzed under MAFAP are within these priority commodities.

- Returns to investment (profitability or gross margin analysis);
- Priority based on zoning criteria;
- Number of households involved in producing the commodity, and;
- Contribution to exports.

The selection of these fifteen commodities does not mean that other commodities are not important in the DSIP. In fact, one IFPRI study (2007), undertaken as part of the CAADP process, noted that to attain the agricultural growth target of 6 percent, the sector will require broad-based growth covering all major enterprises and therefore commodities.

Coffee, tea and cotton

Uganda liberalized its domestic Robusta coffee market in 1992. Since then farmers have been free to decide how and to whom to sell their coffee (Hill, 2010). Both internal and export marketing are regulated through The Coffee Regulations, 1994**,** a statutory instrument (Supplement No. 30 dated 16th November, 1994) which stipulate the requirements which have to be met including minimum standards of coffee traded at all post harvest levels within the coffee supply chain (Uganda Gazette, 1994). The Regulations provide for registration of players dealing in internal and export marketing of the coffee, inspection and quality control including issuance of quality certificates, grade analysis, mode of coffee export sales, publication of indicative prices of various grades of coffee to all sector participants, repatriation of foreign exchange, books, records and accounts, administrative guidelines, offences, penalties as well as arbitration in case of disputes between the sellers and buyers. It also provides for amendments in case the Regulations need revision (UCDA, 2012).

Consistent with its liberal trade policy, Uganda has emphasized that the coffee export sector remains as open as possible. Uganda has no coffee export taxes, charges or levies except the 1 percent fee on all coffee exports paid to UCDA. Given this observation, it is imperative that exporters of Uganda's coffee grain are largely regulated by the importing countries. Unlike the case for coffee, Uganda has yet to approve a national tea development policy which is currently in a draft form.

With the reforms, cotton research became a top priority. All research activities were transferred to the Cotton Research Institute, which has made numerous achievements. The GoU, through CDO, retained the function of providing seed to farmers but chemicals had to be purchased (Baffes, 2009). However, cotton seed for planting has never been free of cost to the farmer. The cost of seed, processing, packaging and distribution is factored in the minimum farm gate price announced by government (CDO, 2000).

As for other commodities in Uganda, cotton is not subject to export taxes except the 2 percent of export price levied by CDO to finance its activities. In some cases, commodities are subject to local taxes (cess) during market transactions. Such local taxes were not reported for cotton.

Rice

The Uganda National Rice Development strategy (NRDS) lays out Uganda's strategy for promotion of rice production between 2009/10-2017/18 with the aim of increasing household food security and reduce household poverty through increased production of high quality rice (MAAIF, 2009). The major strategies identified include strengthening the institutional framework; research, technology dissemination and capacity-building; production, multiplication and dissemination of certified seed; improving irrigation and water management; increasing utilization of agro-inputs and sustainable soil

management; improving post harvest handling, processing and marketing; mechanization; access to agricultural finance; and policy development. NRDS aims to more than triple rice production in Uganda from about 165 000 tons in 2010 to an anticipated 334 250 tons in 2013 and later to an anticipated 499 200 tons in 2018. MAAIF will take the lead in coordination, monitoring and evaluation of efforts in the implementation of the NRDS.

The most important policy measure affecting rice markets in Uganda is the East African Community (EAC) common external tariff (CET). The CET on rice is set at 75 percent ad-valorem duty or US$ 200 per ton, whichever is higher on rice imported from outside the region (PMA, 2009). The CET was supposed to be effected from 2005. Before CET, the tariff on rice imports was 25 percent in Uganda, 37.75 percent in Kenya and 27.75 percent in Tanzania.

Dairy sub-sector

The Government has liberalized the dairy sub-sector and the monopoly of sub-sector activities by the Dairy Corporation was removed. As a consequence, a number of private sector milk processing facilities started operating in several areas. In addition, through the Dairy Master Plan, The Government has been supporting interventions intended to develop the sub-sector.

Beef sub-sector

Government policies for the beef sub-sector are contained in the recently prepared Beef Master Plan. The Plan provides the framework for increased production of meat for both domestic and export markets, mainly through increased private sector investments. Of critical importance is the government's role in providing the necessary legal and regulatory frameworks as well as standards for meat quality and hygiene.

Fisheries sub-sector

The fisheries sub-sector is of strategic importance not only as a means on increasing household incomes but also as a critical item in fulfilling the nutritional needs of the family. In addition, it has been one of the fastest growing non-traditional exports and foreign exchange earners. The Government, therefore, is mainly promoting fish farming and fishing in Ugandan water-bodies using carefully selected public sector interventions. In this regard, MAAF provided support in the form of demonstration sites for improvement of landing sites and in establishing beach management units. There have been rigorous extension services to develop farm level commercial fish farming enterprises.

Trade policy

Since 1995, Uganda trade policies have been defined in the context of its overall economic development strategy. The government of Uganda adopted an Economic Recovery Program (ERP) in 1987. The focus of the ERP shifted in the late 1980's and early 1990's from economic growth and macroeconomic stabilization to structural reforms. Following a consultative conference organized by the government in 1994 to discuss the state of the economy, foreign trade has been viewed as an engine for economic growth. There has been intensification of export promotion since 1995.

Uganda's trade policy has been aimed at poverty reduction, promoting employment, economic growth and export diversification and promotion (particularly non-traditional exports). Vertical diversification is to be achieved through further processing of primary exports. Product incentive

schemes (e.g. duty and tax concessions) were made available to producers and exporters to promote the competitiveness of local products. It was envisaged that trade among developing countries was to be promoted through regional integration (e.g. COMESA, EAC)

With the progressive liberalization of Uganda's economy – a process which included trade – price regulation was abandoned as a trade policy tool. Both domestic and international trade in all agricultural products has since remained in private hands. There are no more state trading companies operating in competition with the private sector or acting as major buyers and guarantors of a minimum farm-gate price. Similarly, price control as a development and trade policy measure is no longer practiced by the government. There is neither export duties on agricultural products, nor has the government instituted any bans or other restrictions on trade in food commodities (World Bank, 2009). As such, all prices have been determined by the market. Nevertheless, this does not imply good functioning markets. This will be shown in the following part where incentives to production will be analyzed.

Import policies

Under the East Africa Community (EAC) Customs Union (CU), Uganda has harmonized all internal taxes with trade partners in the region. Uganda grants tariff preferences (on a reciprocal basis) to Burundi, Kenya, Rwanda and Tanzania under the Protocol on the Establishment of the EAC Customs Union and to members of the COMESA (COMPETE, 2010). The preferential bands applied by Uganda under COMESA are 0 percent, 4 percent, and 6 percent for inputs, intermediate goods, and final goods, respectively.

A value-added tax (VAT) is levied at a standard rate of 18 percent on the sale price of locally produced goods and services and on the customs-duty inclusive of c.i.f. value of imports (COMPETE, 2010). VAT is zero-rated for a number of goods and services including: seeds, fertilizers, pesticides and hoes, locally produced cereals and agricultural equipment. VAT exemptions apply to unprocessed food and other agricultural products and animal feeds. Companies with a turnover of below U Sh 50 million (approximately US$ 20 000) are exempted from registration requirements for VAT purposes.

Export policies

Consistent with its commitment to all liberal trade policy, Uganda has emphasized that the export sector remains as open as possible. Uganda has no export taxes, charges or levies. Given this observation, it is imperative that exporters of Uganda be largely regulated by the importing countries. Despite the fact that no policy per se discourages agricultural exports, exporters must have a fumigation certificate, a phytosanitary certificate, and a quality standards certificate.

Exchange rate policy

Of relevance to agricultural production, particularly exports, is the exchange rate policy implemented by Bank of Uganda (BOU). Uganda's BOU continued to pursue a flexible exchange rate policy regime, whereby it intervenes in the foreign exchange market primarily to dampen short-term volatility in the exchange rate (BOU, 2011). Dampening short-term volatility is important to avoid its possible adverse impact on trade.

MAFAP indicators try to consistently measure the impact of the various policies and expenditure. Some of these policies directly affect incentives/disincentives structures to the producers of the individual commodities while others are reflected in the patterns of public expenditures in support of agriculture. These will be discussed in Part 2 of this report.

Part 2: The effects of agricultural and food policies, public expenditure and aid

To attain specific development objectives, governments use policies to change the rules governing the economy as a whole (macro-economic policy), or those governing a particular economic sector (sector policies), in order to guide and modify the behaviour and decisions of agents operating in the economy. This can either be done by establishing a legal framework by which economic agents must abide (e.g. food quality or safety norms, property rights) or run the risk of legal prosecution or fines. Another approach is institutional reform or providing incentives or disincentives to certain types of behaviour via price and trade policies, input and output marketing policies, social policies (income transfers, safety nets, social security schemes) and finance policies.

Public expenditure, on the other hand, can be used to make goods and services available to the food and agriculture sector, to support the implementation of government policies and to facilitate the achievement of development objectives. This expenditure may, for example, include the provision of public goods through public investment in infrastructure, or provide private benefits, such as subsidies or income transfers.

To monitor government actions and ensure that these are consistent and contribute adequately to development objectives, it is therefore essential that the authorities be fully informed regarding the incentives or disincentives that the packages of policies they implement may provide to the economy, and regarding the consistency, efficacy and adequacy of the way in which they spend their public resources.

Some of the key questions that governments need to consider include the following:

- Do policies in place provide incentives for production, processing and marketing in key food and agricultural value chains, or do they penalize them?
- Who, in the most strategic value chains, benefits from the policies in place? Producers, processors, traders or consumers?
- Which policies should be changed so that the incentive structure in the food and agriculture sector comes closer into line with government objectives?
- Is public expenditure spent in a way that addresses the key issues faced by the food and agriculture sector? (i.e. what is the most efficient way to improve farmer incomes -- an input subsidy or investment in a road?). Is public investment focusing on key investment needs?
- Are policy incentives and public expenditure coherent or do they in some cases provide contradictory signals to the economy, resulting in wastage of precious public resources?
- Are public resources spent efficiently, or is an excessive share used for administration?

Incentives, disincentives and market development gaps

Abstract

Box 4. Summary of results by product group

The nominal rate of protection and associated market development gaps are estimated for selected commodities which represent major exports (coffee, tea, fish and cotton), major imports (wheat, rice and sugar) and major commodities considered important for food security (maize, cassava and beef). Given the economic policy of market liberalization and minimum government intervention in pricing of agricultural commodities, the estimated incentives and disincentives cannot be attributed to specific government policy measure except for the case of imports (rice and wheat) where the common external tariff of the EAC is imposed. The major causes for the reported incentives or disincentives are the characteristics of the value chains, functioning of the product markets and low levels of integration of domestic markets into world markets for some commodities.

- For the sector as a whole, the level of incentives has been highly variable over the years. The average observed nominal rate of protection of the entire period of 2005-2010 is zero, resembling a completely liberal policy environment.
- For exports, it appears that most of the benefits from export promotion policies are captured at the upper level of the value chain with limited incentives at producers' level except during the years of high world prices (e.g., 2008-2009).
- With the exception of changes in levels of incentives linked to significant price movements (during the crisis in food prices on international markets between 2008 and 2009), producers' disincentives are generally prevalent in the food security commodity sector.
- The pattern and magnitude of the indicators of thinly-traded commodities are very similar to those of the important food security commodities with high variability of farm level incentives over time. A market development gap of 6 percent to 14 percent is also persistent. Despite their low level of tradability, farm gate incentives seem to respond positively to high world prices that prevailed during 2008 and 2009 for most food commodities.
- Producers of commodities for which Uganda is a net importer receive significant incentives which represent transfer from domestic consumers. However, the level of these incentives is not constant over time with no clear trends. The incentives to

Product selection

Agricultural products were selected for analysis based on two key criteria. First, the products selected must represent a significant percentage of the total value of agricultural production and about 70 percent of agricultural output in Uganda. Second, the products selected must also be representative of different categories of products tradability or whether they are imported, exported, traded, or non-traded, as well as their relevance to food security.

Indeed, the products selected should represent at least 65 percent of total caloric intake in the country. Where applicable, products with high potential for use in promising or emerging value chains should also be taken into account. To ensure the relevance of indicators across the African continent, agricultural products representing a significant share of the total agricultural production value within their respective region or within Africa as a whole were identified for analysis in each country. In cases where domestic production exists, six of these regionally significant products were analyzed in all countries where the project MAFAP is implemented. These commodities include rice, maize, peanuts, beef, cassava, and plantains.

The data sources for the selection of products are:

- FAOSTAT production data for the value of total production in 2005–2010 in constant 2004-–2006 prices.
- FAOSTAT Trade data for value of imports and exports (2005–2010).
- FAOSTAT Food Balance for food intake data (2007–2009).

Based on these criteria, the products selected initially for the analysis of incentives/disincentives include maize, rice, beef, fish, cotton, tea, coffee, sugar, milk, wheat, beans, plantains and cassava. The value of production, exports and imports of these commodities are presented in Table 24. During the period of 2005–2010, these commodities represented 72 percent of total value of gross production, 79 percent of Uganda exports and 46 percent of the import bill of the country on average, according to data obtained from FAOSTAT (2012).

However, data limitations particularly price data imposed a major constraint on the analysis. For lack of producers' data and/or sound value chain analysis, plantains, and beans were not analyzed. The analysis focused on the following commodities: maize, rice, beef, cotton, fish, tea, wheat, cassava, and coffee. The analyzed commodities, dominated by the major exports (coffee, fish, tea and cotton) for which data is relatively available, are categorized in four categories:

1. Major exports represented by cotton, fish, tea and coffee.
2. Major imports represented by rice, sugar and wheat.
3. Major commodities considered important for food security, including maize, cassava, fish and beef.
4. Thinly or non-traded commodities which includes maize, beef and cassava.

Table 22. Average value of production, exports and imports of the products selected in Uganda.

Products	Average gross production value 2005-– 2010		Average exports 2004-– 2010 (US$)		2004– 2010 average imports (US$)	
	000 USD	%	000 USD	%	000 USD	%
Bananas and plantains	1 918 787	33.6%	303	0.0%	38	0.0%
Cassava	539 865	9.5%	264	0.0%	175	0.0%
Whole fresh cow milk	344 958	6.0%	4,355	0.6%	3 907	0.8%
Beef	334 192	5.9%	379	0.1%	185	0.0%
Beans	269 024	4.7%	8 410	1.3%	1 854	0.4%
Coffee	185 569	3.3%	261 277	38.8%	1 283	0.3%
Maize	179 466	3.1%	26 777	4.0%	11 526	2.3%
Fish	122 532	2.1%	104 332	15.5%	0	0.0%
Sugar	85 376	1.5%	32 763	4.9%	61 473	12.3%
Rice	49 729	0.9%	9 783	1.5%	23 553	4.7%
Tea	44 181	0.8%	51 337	7.6%	75	0.0%
Cotton	41 825	0.7%	25 640	3.8%	756	0.2%
Wheat	2 959	0.1%	4 846	0.7%	124 388	24.9%
Total (agriculture)	**5 709 746**		**672 588**		**499 106**	
Total (selected commodities)	4 118 461	72.1%	530 465	78.9%	229 211	45.9%
Total actually analyzed	1 500 318	26.4%	484 635	72.0%	161 941	32.4%

Note: Average values of production, export and imports are valued in 2004-06 constant prices.

Source: FAOSTAT, 2012.

Methodology highlights

MAFAP methodology seeks to measure market price incentives and disincentives to producers and other agents in commodity markets. The MAFAP indicators of incentives and disincentives estimated in this analysis are based on the law of one price, which is the economic theory that states there is only one prevailing price for each product in a perfectly competitive market. This law only applies in the case of homogeneous goods, if information is correct, and therefore free, and if transaction costs are zero. Thus, this analysis was conducted for goods that are either perfectly homogeneous or perfect substitutes in the local market in terms of quality, or, failing that, are simply comparable goods. Indicators calculated from reference and observed domestic prices will, therefore, reveal whether domestic prices represent support (incentives) or a tax (disincentives) to various agents in the value chain.

The analysis is based on the comparison between observed domestic prices and reference prices derived from commodity international (border) prices. Reference prices are calculated using the price of the product in the international market, which is considered a benchmark price free of the influence of domestic policies and markets converted into domestic currency at a given exchange rate. Two reference prices are estimated – observed and adjusted. Observed reference prices are those that would prevail in the presence of distortions from national policy measures (except tariffs)

and inefficiencies in the structure and functioning of domestic value chains, while adjusted reference prices are those that would prevail in the absence of these distortions.

Observed domestic prices are compared to reference prices at two specific locations along commodity value chains – the farm gate and the point of competition, where domestic products compete with identical products at world market prices. The approach for comparing prices at each location is summarized in Figure 24, using an imported commodity as an example. In this situation, the country is importing a commodity that arrives in the port at benchmark price, $\mathrm{P_b}$ (usually the unit value CIF price at the port of entry). In the domestic market, we observe the price of the same commodity at the point of competition, $\mathrm{P_{wh}}$ (usually the observed price at wholesale), and at the farm gate, $\mathrm{P_{fg}}$. We also have information on observed access costs, which are all the costs associated with bringing the commodity to market. These include marketing costs between the border and point of competition, $\mathrm{AC_{owh}}$, as well as between the farm gate and point of competition, $\mathrm{AC_{ofg}}$.

As illustrated in Figure 24, the benchmark price is made comparable to the observed domestic price at the point of competition by adding the access costs between the border and the point of competition, resulting in the observed reference price at the point of competition, $\mathrm{RP_{owh}}$. This takes into account all the costs of bringing the commodity to domestic market, which in effect, raises the price of the commodity. The reference price at the point of competition is further made comparable to the observed domestic price at the farm gate by deducting the access costs between the farm gate and the point of competition, resulting in the observed reference price at farm gate, $\mathrm{RP_{ofg}}$. This takes into account all the costs incurred by farmers and other agents in bringing the commodity from the farm to the wholesale market. Mathematically, the equations for calculating the observed reference prices at the point of competition (RP_{owh}) and farm gate $\left(RP_{ofg}\right)$ for an imported commodity are as follows:

$$RP_{owh} = P_b + AC_{owh}$$

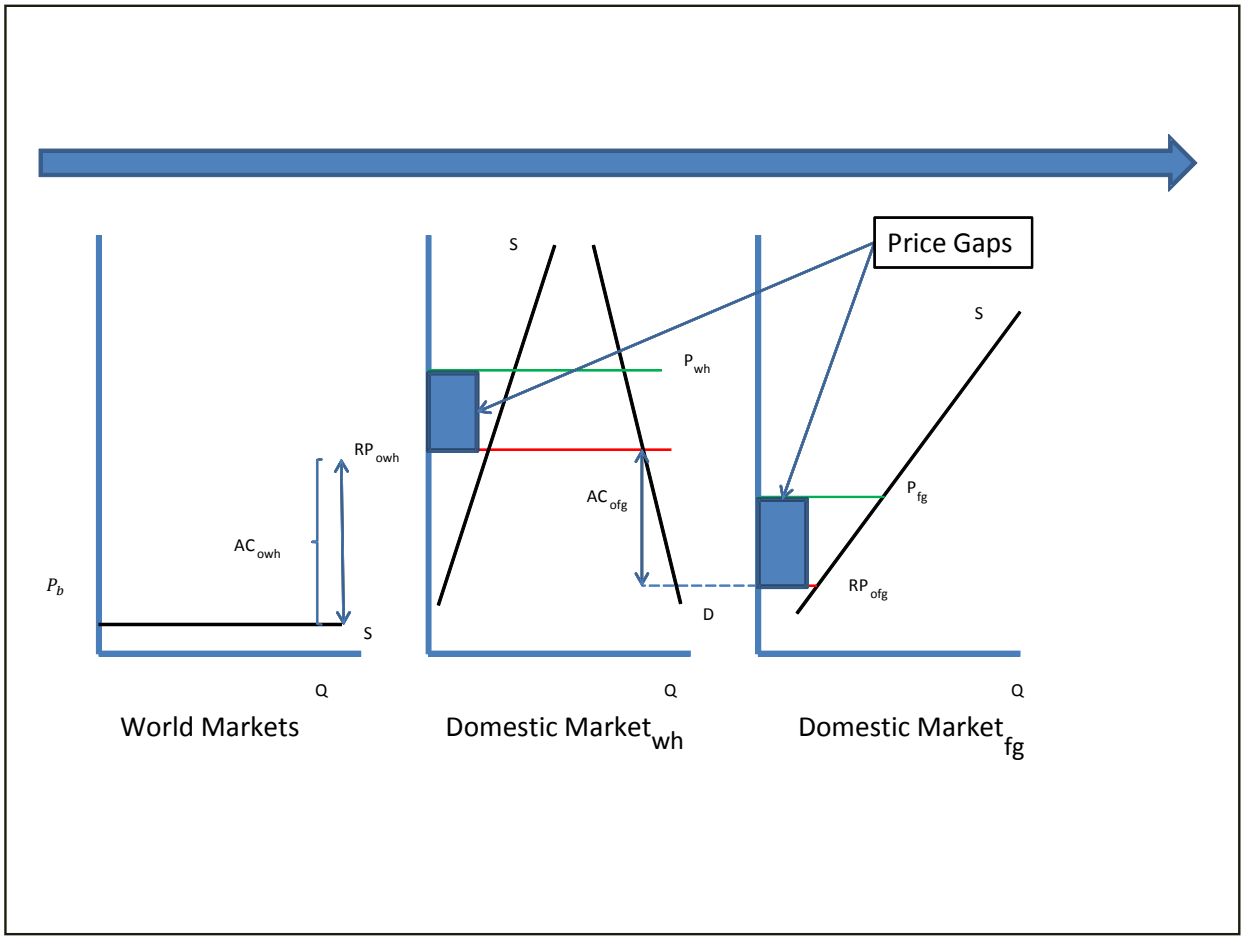
$$RP_{ofg} = RP_{owh} - AC_{ofg}$$

Where, AC_{owh} are the observed access costs from the border to the point of competition, including handling costs at the border, transport costs from the border to the wholesale market, profit margins and all observed taxes and levies, except tariffs, and P_b is the benchmark price. AC_{ofg} are the observed access costs from the farm gate to the point of competition, including handling costs at the farm, transport costs from farm to wholesale market, processing, profit margins and all observed taxes and levies.

The same steps described above and illustrated in Figure 24 is repeated using benchmark prices and access costs that have been adjusted to eliminate relevant market distortions due to exchange rate misalignments, imperfect functioning and non-competitive pricing in international markets and inefficiencies along domestic value chains[6]. The adjusted benchmark prices and access costs are thus used to generate a second set of *adjusted* reference prices in addition to the first set of the *observed* reference prices.

[6] Inefficiencies along domestic value chains may include government taxes and fees (excluding fees for services), and high profit margins captured by various marketing agents.

Figure 24: MAFAP Methodology for measuring price incentives and disincentives of imported commodity



Source: Author's own elaboration. Note: This graphical representation is for an imported commodity.

For exported commodities, the border is generally considered the point of competition, and the commodity benchmark price is usually the unit value FOB price (free on board). Furthermore, observed and adjusted reference prices at the point of competition are obtained by subtracting the access costs between the border and the point of competition since the exporter would have to incur these costs to bring the commodity to the border. Mathematically, the equations for calculating the observed reference prices at the point of competition (RP_{owh}) and farm gate $\left(RP_{ofg}\right)$ for an exported commodity are as follows:

$$RP_{owh} = P_b - AC_{owh}$$

$$RP_{ofg} = RP_{owh} - AC_{ofg}$$

The observed and adjusted price gaps at wholesale and farm gate are obtained, respectively, as the difference between the domestic prices at wholesale and farm gate and the observed and adjusted reference prices at each point. Observed price gaps capture the effect of trade policy measures directly influencing the price of the commodity in domestic markets (e.g. subsidies and tariffs) and actual market performance, while adjusted price gaps capture the effect of distortions resulting from market functioning in addition to the effect of government policy measures influencing domestic prices such as local taxes and levies.

Mathematically, the equations for calculating the observed price gaps at the point of competition (PG_{owh}) and farm gate (PG_{ofg}) are as follows:

$$PG_{owh} = P_{fg} - RP_{ofg}$$

$$PG_{ofg} = P_{wh} - RP_{owh}$$

where, P_{fg} is the observed domestic price at farm gate and P_{wh} is the observed domestic price at the point of competition. Similarly, the adjusted price gaps at the farmgate (PG_{afg}) and at the point of competition (NRP_{awh}) are estimated by the following equations:

$$PG_{awh} = P_{fg} - RP_{afg}$$

$$PG_{afg} = P_{wh} - RP_{awh}$$

A positive price gap, resulting when the observed domestic price exceeds the reference price, means that the policy environment and market functioning as a whole generates incentives (support) to producers or wholesalers. For an import, this could be due to distortions such as the existence of a tariff or excessive access costs between the border and the point of competition. On the other hand, a negative price gap results when the reference price exceeds the observed domestic price indicating that the policy environment and market functioning as a whole generates disincentives to producers or wholesalers. Again, for an import, this could be due to distortions, such as subsidized sales by the government to keep domestic prices low.

In general, price gaps provide an absolute measure of the market price incentives (or disincentives) that producers and wholesalers face. A price gaps at wholesale and farm gate can be expressed in relative terms by dividing it by the corresponding reference price and expressed as a ratio, referred to as the ***Nominal Rate of Protection (NRP)***, which can be compared across commodities and countries.

The observed nominal rates of protection at the farm gate (NRP_{ofg}) and wholesale (NRP_{owh}) are defined by the following equations:

$$NRP_{ofg} = \frac{PG_{ofg}}{RP_{ofg}} \; ; \; NRP_{owh} = \frac{PG_{owh}}{RP_{owh}}$$

Similarly, the adjusted nominal rate of protection at the farm gate (NRP_{afg}) and wholesale (NRP_{awh}) are defined by the following equations:

$$NRP_{afg} = \frac{PG_{afg}}{RF_{afg}} \; ; \; NRP_{awh} = \frac{PG_{awh}}{RF_{awh}}$$

If public expenditure allocated to any of the commodities analyzed is added to the price gaps at the farm gate when calculating the ratios, the ***Nominal Rate of Assistance (NRA)*** is generated. This indicator summarizes the incentives (or disincentives) due to policies, market performance and

public expenditure[7]. Mathematically, the nominal rate of assistance is defined by the following equation:

$$NRA = \frac{PG_{afg} + PE_{csp}}{RF_{afg}}$$

where PE_{csp} is commodity-specific public expenditure measured in monetary units per tonne.

Finally, MAFAP methodology estimates the ***Market Development Gap (MDG),*** which is the portion of the price gap that can be attributed to "excessive" or inefficient access costs within a given value chain, exchange rate misalignments and imperfect functioning of international markets. "Excessive" access costs may result from factors, such as poor infrastructure, high processing costs due to obsolete technology, government taxes and fees (excluding fees for services), high profit margins captured by various marketing agents, illegal bribes and other non-tariff barriers. Therefore, the total MDG at farm gate is comprised of three components – gaps due to "excessive" access costs, the exchange rate gap and the international market gap. When added together, these components are equivalent to the difference between the observed and adjusted price gaps at farm gate.

Similar to the price gaps calculated, the MDG is an absolute measure, which is also expressed as a ratio to allow for comparison across commodities and countries. Consequently, a relative indicator of the total MDG affecting farmers is derived by calculating the ratio between the total MDG at farm gate and the adjusted reference price at farm gate as follows:

$$MDG_{fg} = \frac{(IMG+ERPG+ACG_{wh}+ACG_{fg})}{RP_{afg}}$$

where, IMG is the international market gap, ERPG is the exchange rate gap, ACG_{wh} is the access cost gap at the point of competition defined as the difference between observed and adjusted access costs at the point of competition and ACGfg is the access cost gap at the farm gate defined as the difference between observed and adjusted access costs at the farm gate.

MAFAP provides indicators (NRPs, NRAs and MDGs) at both the commodity-specific and aggregate level in order to provide a more general picture. Therefore, farm gate level indicators for commodities are aggregated into relevant product groups as a means of presenting the results for agricultural sector as a whole or according to the trade status of the products analyzed and their importance to food security. Aggregate indicators were calculated as a weighted average based on each commodity's relative contribution to the total value of agricultural production. Mathematically, the formula for constructing aggregate indicators for product groups is as follows:

$$NRP_g = \frac{\sum_{i=1}^{i=n} NRP_i * PROD_i * RP_{fgi}}{\sum_{i=1}^{i=n} PROD_i * RP_{fgi}}$$

where, NRP_g is the aggregated NRP for a subset of n commodities, PROD is the volume of production and RP_{fg} is the reference price of the commodity at the farm gate. A more detailed description of the

[7] This indicator was not calculated for any of the commodities analyzed due insufficient data on public expenditure. However, it will be developed in the forthcoming reports, as the public expenditure analysis is improved and better data is made available.

methodology applied in this analysis is available on MAFAP's official website at www.fao.org/mafap-documents.

Leading indicators of the MAFAP project

MAFAP's principal indicator, the nominal rate of protection, is computed for the individual commodities. This indicator is used to estimate leading indicators for commodity aggregates and for the agricultural sector as a whole. The estimated leading indicators include:

- The nominal rate of protection for the agricultural sector (NRP_{agric}) which summarizes the overall indicator for all the commodities analyzed.
- The nominal rate of protection for imports (NRP_{imp}).
- The nominal rate of protection for exports (NRP_{exp}).
- The nominal rate of protection for non-or thinly traded commodities (NRP_{not}).

The nominal rate of protection for commodities essential to food security (NRA_{fs}) as defined in the selection of products.

The commodities considered in each of the aggregates are presented in Table 23. As Table 23 suggests, commodity aggregates are not mutually exclusive. In addition, the Market Development Gap is estimated for each of the three product categories and for the agricultural sector as a whole (MDG_{imp}, MDG_{exp}, MDG_{not}, and $MDGs_{ag}$).

Table 23. Commodities included in each commodity aggregate for estimating the leader indicator

Leading indicator	*Commodities included in the aggregate*
The nominal rate of protection for imports (NRP_{imp})	*Rice, wheat, sugar*
The nominal rate of protection for exports (NRP_{exp})	*Coffee, tea, cotton, fish*
The nominal rate of protection for non-or thinly traded (NRP_{not})	*Maize, beef, cassava*
The nominal rate of protection for products essential to food security (NRA_{fs})	*Maize, cassava, beef, fish*

Note: The nominal rate of protection for the agricultural sector (NRP_{agric}), which summarizes the overall indicator for all the commodities, is analyzed.

Data requirements and Source

Value chain analysis

For all products analyzed, it is necessary to identify the point of competition and the production area in order to obtain nationally representative wholesale and producer prices. It is also important to produce a detailed analysis of the marketing structure of each product studied. For some commodities (rice, maize, tea, coffee, cotton, livestock, etc.) several production areas exist, involving different marketing corridors. In this analysis, average producers' price in the major production area and average price at the point of competition are considered as representative.

The wholesale market in Kampala is considered the point of competition for maize, rice, cassava, sugar, and wheat. For processed export commodities (cotton, tea, coffee, beef and fish), the border point of export is considered as the point of competition. Details on the marketing corridors selected and analyzed are available in the technical notes written for each of the products selected on the project site MAFAP at www.fao.org/mafap-documents .

Benchmark prices

For export commodities, the most appropriate benchmark price is a Free On Board (FOB) unit value[8]. The FOB value may be either an annual average of a specific FOB quotation price, or the annual average unit value of exports of the commodity (i.e. total value of exports divided by total quantity). For maize cotton lint, cotton seed, fish and beef, the annual average unit value of exports of the commodity (i.e. total value of exports divided by total quantity) is used. For tea and coffee, the average Mombasa tea auction price for Ugandan tea and the average export price for coffee are assumed as the benchmark prices. This data is readily available from the annual reports of Africa Tea Brokers Limited and Uganda Coffee Development Authority, respectively.

For the commodities where Uganda is a net importer (rice), the most appropriate border price is the Cost, Insurance and Freight (CIF) value for imports9 into that country since imports are regular and of a reasonable quantity. The CIF value for rice imports is computed as the total value of imports divided by the total quantity.

The data for the quantity and value of exports/imports needed to calculate it is obtained from the statistical reports of Uganda Bureau of Statistics (UBoS) and the MAAIF. Additional sources of data used to verify the national data are the United Nations' Comtrade data and the Global Trade Atlas. The benchmark prices used in the analysis are presented in Annex 5.

Exchange rate

The exchange rate between the Ugandan shilling and US dollars are reported by UBoS (2012). These represent the observed exchange rate. Since Uganda is adopting free market foreign currency market, real (equilibrium) exchange rate is assumed to be equal to the observed exchange rate. For the years considered, this assumption is close to reality as exchange rate misalignment is likely to be minimal since the foreign exchange market in Uganda has been fairly liberal.

Domestic prices

Producers' prices especially for food crops (cassava, maize, beef and rice) are rarely collected and published officially in Uganda. This represented a significant challenge for estimating the MAFAP indicators described above. The analysis relied on a wide range of sources for such data and approximation based on available data.

For rice, cassava and maize, wholesale prices at the Kampala market are reported by the Regional Agricultural Trade Integration Network (RATIN) for 2005-2010. However, producer prices are unavailable. For these commodities, producer or farmgate prices data are obtained from various sources including value chain studies or computed indirectly as the difference between the wholesale price in the primary market and the access cost from the farm-gate to that market.

[8] FOB stands for Free on Board. It is the cost of an export good at the exit point in the exporting country, when it is loaded in the ship or other means of transport in which it will be carried to the importing country.

[9] CIF stands for Cost, Insurance and Freight. It is the landed cost of an import good on the dock or other entry point in the receiving country. It includes the cost of international freight and insurance and usually also the cost of unloading onto the dock. It excludes any charge after the import touches the dock, such as port charges, handling and storage and agents' fees. It also excludes any domestic tariffs and other taxes or fees, duties or subsidies imposed by a country-importer.

Livestock producers, middlemen and traders usually trade live animals which are processed into meat – carcasses – by processors at the slaughtering facilities. For lack of data on live cattle prices, the analysis is based on average prices of beef. Beef wholesale market in Kampala is assumed to be the point of competition. Producers' price of beef is approximated with by the annual average of prices in the primary markets in the main producing area adjusted by the relevant marketing costs as reported by Infotrade (2012).

For the major exports (fish, tea, coffee and cotton), price data availability is much better. For fish, prices received by boat transporters and prices paid by processors from 2005 to 2011, is expressed in terms of unit price of unprocessed (whole) fish and obtained from the Department of Fisheries Resources (FDR) at the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) of Uganda.

Tea is produced by smallholders (54 percent) and large scale estates with direct links to tea factories (46 percent). The weighted average of farmgate prices received by smallholders (54 percent) and large scale estates (2005-2011) were obtained from Mabale Growers Tea Factory Ltd. through personal communication. The weighted average of the two price series is considered representative farmgate prices of tea in Uganda. For coffee, the Uganda Coffee Development Authority publishes monthly producers' prices for the fair Average Quality (FAQ) coffee beans in its UCDA monthly reports.

For cotton, fish, tea, coffee and cotton, the point of competition is assumed to be the border as the processors of these commodities export directly and receive the full export prices (less applicable taxes and levies). The observed domestic price data used in the analysis was presented in Annex 5.

Observed access costs between the farmgate and the point of competition

The point of competition is defined as the wholesale market in Kampala for maize, rice, wheat, sugar, cassava and beef, the border for cotton, coffee and fish and the Mombasa auction for tea. The access costs to the point of competition are then computed according to the above definition.

Observed access costs between the farm and the wholesale market, defined as the sum of all marketing costs, profit margins and taxes and levies, are based on data from two principal sources: (i) data reported by the Bank of Uganda studies of the domestic resource costs of the major export commodities of Uganda, and (ii) data reported in specific commodity value chain analysis. Other sources of data include the data reported by World Bank (2009) for maize and Mabale Growers Tea Factory Ltd. for tea.

For maize, access costs cover marketing costs (storage, transportation, hired labour for loading and unloading, council cess, non-tariff measures) and profit margins. For all other commodities, access costs include also processing costs. In all cases, transportation costs represent a significant share of access costs.

None of the studies and data sources used to estimate access costs reported profit margins10. Observed profit margins earned by the relevant economic agents (traders, wholesalers, processers

[10] These studies did not account for profit margins for traders in estimating marketing cost and only dealt with cost of specific marketing functions such as loading/unloading, transportation, processing and packaging. Therefore, adding the profit margins does not overestimate access costs.

and exporters) were estimated as the difference between wholesale price and farmgate and the marketing costs incurred.

Except for tea for which the time series data is obtained, the access costs described above are only available for one to three years. The extrapolation of access costs to other years for which data is unavailable is done as follows. First, the nominal access costs for the years with available data are converted to real values using the Consumers' Price Index (CPI) (2011=100). The access cost in 2011 was computed as the average of the real access costs. Second, the access costs in years without observed data are calculated as the nominal values of the access costs of 2011, i.e., the access costs in 2011 are deflated using the Consumer Price Index for these years with 2011 as the base year. Estimates of the observed access costs between the farmgate and the point of competition for each commodity are presented in Annex 6.

Observed access costs between the point of competition and the border

Observed access costs between the point of competition and the border are estimated in the same way as those between the farmgate and the point of competition. Data is obtained from the same sources described above. Estimates of the observed access costs between the point of competition and the border for each commodity are presented in Annex 8.

Adjusted access costs

Adjusted access costs are derived directly from the observed access costs by netting out all cost elements of transfer nature (local taxes). Moreover, profit margins are adjusted to the lesser of 10 percent or the observed profit margin. The 10 percent is assumed to be the normal profit margin for all economic agents in the value chain. Estimates of the adjusted access costs between the farmgate and the point of competition and between the point of competition and the border for each commodity are presented in Annex 7 and Annex 9, respectively.

Caveats and limitations

The major limitation of the above analysis is related to uncertainty about price data especially at the farmgate for some commodities (maize and rice). Additional efforts are made to ensure data quality and to support partners in dialogue on investing in reliable national statistical systems. National statistical systems would provide great benefits for informed policy decisions. An additional effort is made to encourage partners to seek data from the private sector and other stakeholders.

In addition, the selected commodities are produced in many regions of the country where farmgate prices, transportation costs and other marketing costs vary significantly from one region to the other depending on the distance to wholesale markets and the quality of roads and transportation systems. In this analysis, we relied on simple average prices and access costs.

The major exports and imports have a specific well-defined chain through the Mombasa (coffee, tea, and rice) or Entebbe airport (processed fish and beef). However, exports chains of other commodities such as maize and beans are not well-defined and occur mostly through informal cross-border trade with neighbouring countries. As it is difficult to obtain sufficiently disaggregated price and access costs for trade in these commodities, the average FOB/CIF prices reported by UBoS are considered to be representative of benchmark prices. Export costs through the border post with Kenya (the major regional trade partner) are considered to be representative of access costs. In

addition, the reference point of delivery associated with the FOB/CIF prices (Kampala versus the border) for these commodities is not always clear from the data. It is assumed that the reference delivery point is Kampala since it is the largest wholesale market in Uganda, i.e. all exports/imports originate from or are delivered to Kampala.

With the small quantities often traded with neighbouring countries, the reliability of customs data may cause uncertainty in the analysis because it directly affects the magnitude of the estimated indicators. When reported data seems to be an outlier or erroneous, other sources of data such as the United Nations' Comtrade and the Global Atlas are consulted to verify the accuracy of the reported data.

It is important to note the sensitivity of the adjusted indicators to the assumptions of the alternative variables, namely adjusted access costs. While the exclusion of direct taxes and levies such as CES from adjusted access costs is straight forward as these represents some form of transfer from producers or other agents to the government, a normal profit margin of 10 percent is assumed in estimating adjusted access costs. This 10 percent is viewed as a reasonable level of profit for traders of the various commodities analysed here. Therefore, the validity of the adjusted nominal rates of protection and the market development gap depends on this assumption.

Finally, the FOB/CIF unit values of exports often used as benchmark prices are specific measures at the exit/entry point of the country. FOB is assumed to measure the cost of an export good at the exit point in the exporting country, when it is loaded in the ship or other means of transport in which it will be carried to the importing country. On the other hand, CIF includes the cost of international freight and insurance and usually also the cost of unloading onto the dock. It excludes any charge after the import touches the dock, such as port charges, handling and storage and agents' fees. It also excludes any domestic tariffs and other taxes or fees, duties or subsidies imposed by a country-importer. In both cases, it is not readily clear whether the custom recorded data adheres to these definitions.

MAFAP project indicators of incentives and disincentives

The estimated MAFAP indicators reported cover the period of 2005-2010[11] (except for beef where the indicators cover the period from 2008 to2010 due to a lack of domestic price data). The analysis includes indicators at both the farm gate and point of competition for whenever data is available. The estimated indicators of the individual commodities are summarized in Table 24 and the for commodity aggregates in Table 25 for two periods 2005-2007 and 2008-2010.

[11] It was possible to estimate the indicators for the period 2005– 2011 for most commodities with the results reported in the commodity technical reports. To keep this report consistent with other countries, only the indicators for 2005– 2010 are reported here.

Table 24. Estimated commodity indicators at the farm gate in Uganda

Commodity	Indicator	2005-2007	2008-2010
CASSAVA	AVERAGE OBSERVED NRP	-47.79%	14.43%
	AVERAGE ADJUSTED NRP	-54.00%	2.55%
	MDG	-13.50%	-10.24%
MAIZE	AVERAGE OBSERVED NRP	-12.82%	28.01%
	AVERAGE ADJUSTED NRP	-18.29%	21.75%
	MDG	-6.27%	-4.89%
BEEF	AVERAGE OBSERVED NRP	-	20.89%
	AVERAGE ADJUSTED NRP		-23.37%
	MDG	-14.68%	-15.67%
FISH	AVERAGE OBSERVED NRP	-16.88%	4.36%
	AVERAGE ADJUSTED NRP	-21.80%	-2.06%
	MDG	-2.52%	-1.93%
COFFEE	AVERAGE OBSERVED NRP	-5.65%	5.73%
	AVERAGE ADJUSTED NRP	-9.46%	1.15%
	MDG	-4.02%	-4.33%
TEA LEAVES	AVERAGE OBSERVED NRP	28.21%	-8.98%
	AVERAGE ADJUSTED NRP	-16.86%	-38.43%
	MDG	-7.65%	-7.22%
SEED COTTON	AVERAGE OBSERVED NRP	-6.86%	12.51%
	AVERAGE ADJUSTED NRP	-17.50%	-1.32%
	MDG	-11.41%	-12.27%
WHEAT	AVERAGE OBSERVED NRP	25.58%	-2.44%
	AVERAGE ADJUSTED NRP	11.53%	-11.20%
	MDG	-11.15%	-8.88%
PADDY RICE	AVERAGE OBSERVED NRP	78.98%	69.29%
	AVERAGE ADJUSTED NRP	35.14%	43.66%
	MDG	-15.94%	-9.80%
SUGAR CANE	AVERAGE OBSERVED NRP	6.23%	-0.48%
	AVERAGE ADJUSTED NRP	-14.10%	-17.97%
	MDG	-19.07%	-17.14%

Source: MAFAP

Table 25. Estimated indicators of the commodity groups at the farmgate in Uganda

Commodity	Indicator	2005-2007	2008-2010	2005-2010
Agricultural sector	AVERAGE OBSERVED NRP	-16.85%	11.58%	-2.64%
	AVERAGE ADJUSTED NRP	-23.01%	-5.58%	-14.29%
	MDG	-7.17%	-9.01%	-8.09%
Exports	AVERAGE OBSERVED NRP	-16.47%	3.62%	-6.42%
	AVERAGE ADJUSTED NRP	-19.77%	-0.29%	-10.03%
	MDG	-3.36%	-2.91%	-3.14%
Imports	AVERAGE OBSERVED NRP	37.18%	29.85%	33.52%
	AVERAGE ADJUSTED NRP	6.62%	7.78%	7.20%
	MDG	-16.95%	-13.19%	-15.07%
Food security	AVERAGE OBSERVED NRP	-23.48%	8.06%	-7.71%
	AVERAGE ADJUSTED NRP	-26.82%	-0.33%	-13.57%
	MDG	-4.34%	-7.70%	-6.02%
Thinly or non traded commodities	AVERAGE OBSERVED NRP	-21.44%	11.09%	-5.17%
	AVERAGE ADJUSTED NRP	-27.49%	-1.27%	-14.38%
	MDG	-7.93%	-10.99%	-9.46%

Source: MAFAP

Prevailing policy environment in the country needs to be taken into account in the interpreting the above indicators. During the period of the reported analysis, Uganda was pursuing a highly liberalized economic policy (a process that started back in 1991). Both domestic and international trade in all agricultural products since then has been carried out exclusively by the private sector. There are no state trading companies operating in competition with the private sector or acting as major buyers and guarantors of a minimum farm-gate price. Similarly, price control as a development and trade policy measure is no longer practiced by the government. All prices are determined by the market. In addition, the government pursues an export promotion strategy based on exchange rate liberalization, zero-rated duty and VAT exemption on exports, and no additional charges or levies. In addition, Uganda's exports qualify for preferential tariff rates in COMESA and EAC. In addition, Ugandan products to the European Union and USA markets were duty and quota free under the Cotonneou Agreement (ACP – EU) and the African Growth and Opportunity Act (AGOA) initiatives. As such, Uganda's exports were regulated by importers trade policies. This is outside the scope of the current analysis.

The agricultural sector indicators

The agricultural sector indicators are summary indicators derived as a weighted average of the indicators of all the commodities analyzed using the value of production of each commodity as a

wieght. The overall observed nominal rate of protection for the agricultural sector is initially negative (2005-2007) and is positive thereafter (Table 25) when world prices started to rise for most food commodities. This recent positive trend in the observed indicator is due to significant increase in producers' price of most commodities. The adjusted nominal rates of protection are generally negative in all years except 2008 (Figure 25) with an overall average of -14.3 percent. This suggests that aggregate agricultural prices at the farmgate are below the adjusted reference price suggesting prevalence of disincentives to producers.

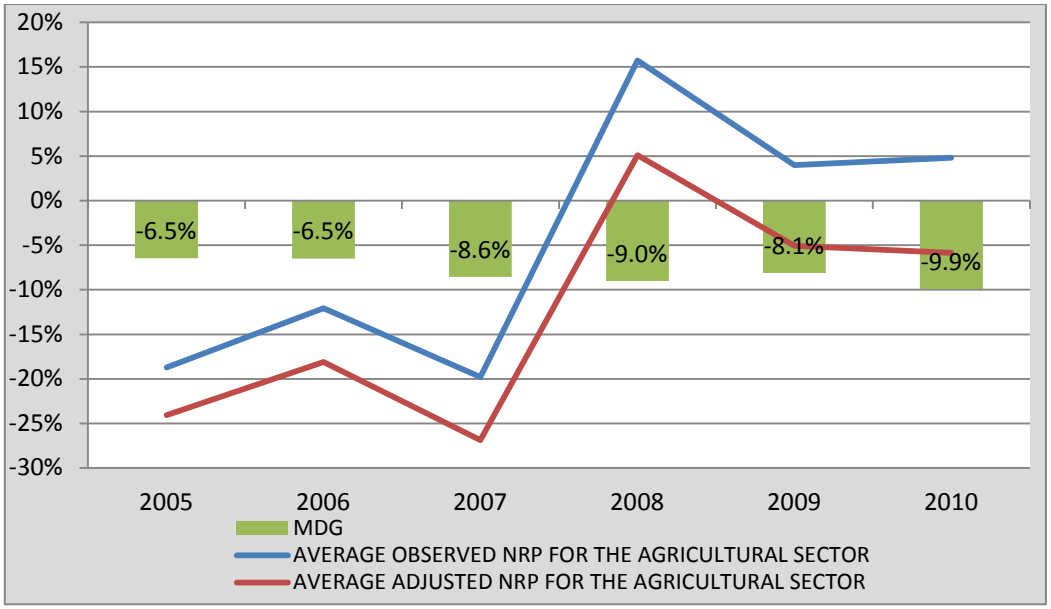
The deviation of the observed NRP and adjusted NRP is explained by the existence of a market development gap ranging from 6.5-9.9 percent and averaging 8.1 percent. This market development gap is due mainly to excessive profit margins and applicable local taxes (although low) at higher levels of the commodity value chains. These market development gaps are additional costs that farmers would be able to capture under a more competitive and efficient market functioning.

For the sector as a whole, the level of incentive is highly variable over the years. This reflects the relatively weak correlation between the domestic prices and world prices for commodities other than the traditional exports, specifically maize, cassava and beef. The average observed nominal rate of protection of the entire period of 2005 to 2010 approaches zero as disincentives in the first three years are cancelled by the incentives in subsequent years.

Clearly, the Government of Uganda has gone a long way in liberalizing the domestic agricultural markets and moving away from the direct and indirect taxation of exports. However, additional measures to ensure efficient functioning of product markets may be needed. For instance, measures to simplify the complex and lengthy value chains such as those of cassava, cattle and maize may reduce transaction and marketing costs and thus contributing to relatively higher producers' prices. Also, improving transportation infrastructure may reduce the presently high transportation costs due to poor rural roads and the presence of non-tariff measures.

The above general structure of incentives and disincentives within the agricultural sector as a whole does not reflect a consistent view of the situation for commodity groups (imports, exports and food security). This is because the pricing mechanisms, functioning of the value chain and specific policies vary significantly from one group to the other. The next sections provide detailed analysis of the incentives/disincentives for each commodity group.

Figure 25: Agricultural sector's nominal rates of protection (NRPs) and market development gap (MDG) at the producer level (%), 2005 – 2010



Source: MAFAP.

Major imports

The leading indicators for imports (2005-– 2010) are presented in Figure 26. The major imports of Uganda (rice, wheat and sugar) mainly originate from outside EAC and are subject to ad valorem tariffs at the point of entry to the EAC customs union (Chemonics International, 2010). The tariff rates for rice imports are US$ 200 per tonne or 75 percent of CIF price at EA port of entry whichever is higher, while the rate for wheat is set at 35 percent of CIF price at EA port of entry. Sugar imports for direct consumption have a duty of 100% or US $200 per tonne of CIF at EA port of entry, whichever is higher. The objective of the tariff structure from the perspective of the EAC is to encourage regional trade. However, the major imports of Uganda during the period of analysis are largely imported from outside the region.

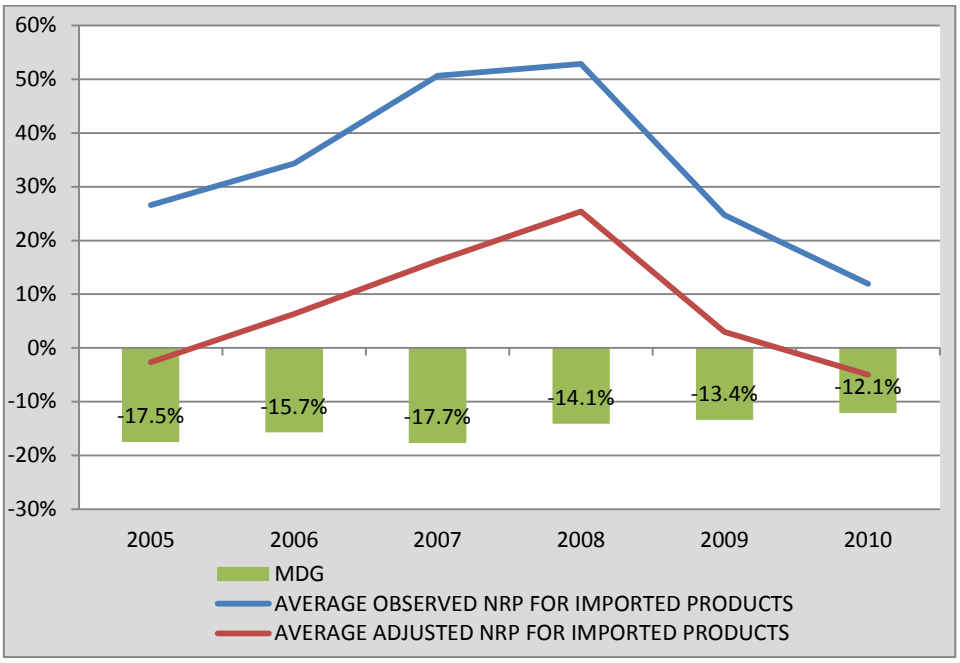
Nevertheless, the incentives provided by the tariff on imports are consistent with the Government's broad objectives for import substitution. For example, the Government is attempting to promote rice production between 2009– 2010 and 2017-– 2018 with the aim of increasing household food security and reducing household poverty through increased production of high-quality rice.

With the trade policy on these imports, both observed and adjusted nominal rates of protection for imports are positive averaging 33.5 and 7.2 percent, respectively (Table 25). This indicates that producers' prices are significantly higher than the reference prices in both cases. Accordingly, producers of these commodities received significant incentives (Figure 26) which represent a transfer from domestic consumers. The imports are characterized by relatively high level of market development gap (MDG) averaging 14.3 percent driven mainly by the excessive taxation imposed on sugar (excise tax and value added tax). These represented further incentives to producers that could be captured through improving marketing efficiency and reducing access costs.

However, the level of these incentives is not constant over time and has no clear trends. While the level of support increased significantly during the 2007– 2008 world food price crisis, it decreased

sharply again in the next year. The level of incentives for producers of import substitutes is apparently linked to world price volatility of these imports. However, these are special circumstances in world markets. There were exemptions granted to some products during that period, moreover the origin of imports may vary thus the effective tariff varies too. In addition to variability within the import category over time, the level of incentives and market development gaps vary significantly between commodities. This is due to the fact that tariff rate, the major driving factor of the incentives, varies from one commodity to another.

Figure 26: Nominal rates of protection (NRPs) at the producer level for imports (%), 2005-2010



Source: MAFAP

Rice

Production. Rice was introduced to Uganda by Indian traders as early as 1904, but did not gain popularity until the late 1940s (Wilfred, 2006). Rice production in Uganda picked up during 1950s. Rice producers were mostly focused at feeding schools, prisons, hospitals and World War II veterans. Today, rice has become a major food security crop as well as a cash crop in a number of districts in Uganda. Rice cultivation is increasing, especially with the introduction of upland varieties.

In 2003, the Government of Uganda introduced NERICA, a high yielding upland variety, as one of the strategies to eradicate poverty and increase food security. NERICA yields as high as 2.5 tonnes per ha under low input and 5.0 tonnes per ha or more under the high input production system (PMA, 2009). Rice production has successfully increased over the past seven years especially through the promotion of upland rice resulting in upland rice being grown on a wider scale. Since the introduction of NERICA, rice production has shown an upward trend both in acreage and in the volume of production (Figure 27).

From 1990 to 2010, the rice production and area increased at an annual growth rate of 4.02 and 3.71 percent, respectively. Most of the growth in production was the result of the area expansion rather than an increase in yield as the annual growth rate of the yield was limited (0.3 percent).

According to WARDA (2007), most of the increases in rice production came from extensive rather than intensive farming activities. Uganda's rice cultivated area and production have almost doubled since 2000 (Figure 27). Cultivated areas expanded from 72 000 ha in 2000 to about 113 000 ha in 2006 reaching 140 000 ha in 2010. Production has increased by almost 42 percent since 2006. Rice production has increased from 109 000 tonnes in 2000 to 162 000 ha in 2007 and 218 000 tonnes in 2010 (Figure 27).

Consumption. Rice has become a major food security crop as well as a cash crop in a number of districts in Uganda and its cultivation is increasing, especially with the introduction of upland varieties. Much of this demand comes from the urban markets that look for quality rice that competes with imported rice.

Unlike most of the food crops grown to satisfy household consumption and food security requirements, rice is consumed more in urban areas, where it is one of the major foodstuffs in homes, schools, hospitals and the army.

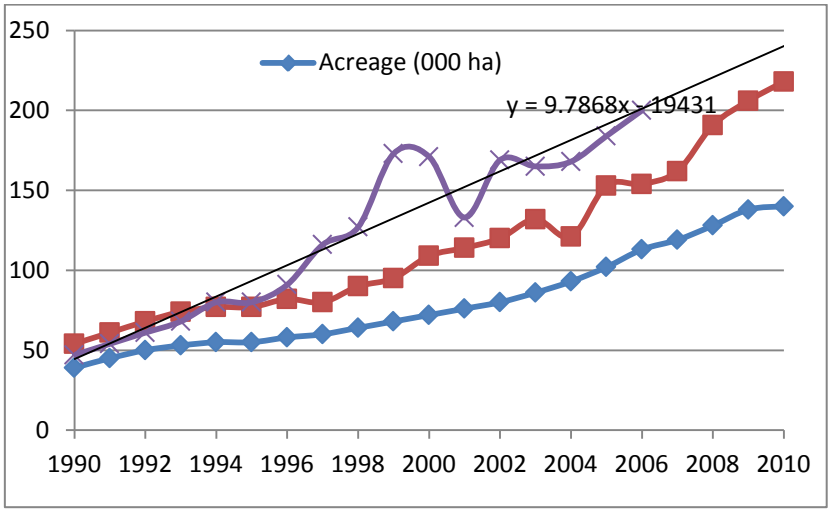
The demand for rice in Uganda increased significantly from 47 000 tonnes in 1990 to 200 000 tonnes in 2006 (PMA, 2009) at an average annual rate of about 9.8 tonnes (see Figure 27). If the demand continues to grow at this rate, the estimated demand for rice in 2010 may have reached about 250 000 tonnes in 2011. Since domestic production is still below the demand, Uganda may continue to be a net importer of rice in the short to medium-term. The increase in consumption of rice in Uganda is mainly attributed to changes in consumption patterns, population growth and urbanization.

Trade. Except during the early 1990s, Uganda is a net importer of rice and rice exports were insignificant. UBOS estimated local production at 58 percent and imports 42-– 48 percent of the national rice consumption (PMA, 2009). However, Uganda's rice imports dropped from 77 600 tonnes in 2000 to 33 000 tonnes in 2010 due to the increased domestic production.

Uganda imports rice mainly from Viet Nam, Pakistan and Tanzania, and Thailand. Viet Nam and Pakistan supply almost three-quarters of Ugandan imports of rice during this period. Together with Tanzania, the three countries supply 87.5 percent of Ugandan rice imports. Of the total milled rice that Uganda imports annually, 45 percent may be classified as "broken rice," due to its low cost (Wilfred, 2006).

Domestically, the rice marketing chain can be categorized in three levels. The primary stage involves farmers selling to village traders, millers or milling their rice at a fee for either sale, own consumption or for planting seed. The secondary stage consists of millers and urban traders, while the tertiary stage consists of urban wholesalers, importers and consumers. The tertiary stage also consists of rural or travelling consumers who buy from roadside markets and urban traders. Different market outlets charge a variety of prices, which differ a lot depending on processing, quantities offered, distances, and other factors (Wilfred, 2006). These factors tend to constrain efficient market exchanges among rice market participants.

Figure 27: Rice area, production and consumption trends in Uganda (1990– 2010)



Source: PMA (2009), MAAIF (2011)

Commodity indicators. The most important policy measure affecting rice markets in Uganda is the East African Community (EAC) common external tariff (CET). This CET on rice is set at 75 percent ad-valorem duty or USD 200 per tonne, whichever is higher on rice imported from outside the region (PMA, 2009). The immediate impact of the above tariff structure is depicted in Figure 28.

The tariff creates a wedge between the CIF price of imported rice and the landed cost of imported rice in Kampala. The wholesale market prices of rice, which is an average of imported and locally produced rice, adjust close to the landed cost of imported rice. The wedge between the wholesale price and landed cost depends on the share of imports in total supply of rice in the market. With the significant increase in domestic production and consequently reduced imports since 2005, this latter wedge started to widen. Therefore, the tariff, the cost of importation and the total quantity imported are the major determinants of the wholesale prices of rice in Uganda. Ultimately, these may be transmitted totally or partially to other markets, i.e., farmgate and retail markets.

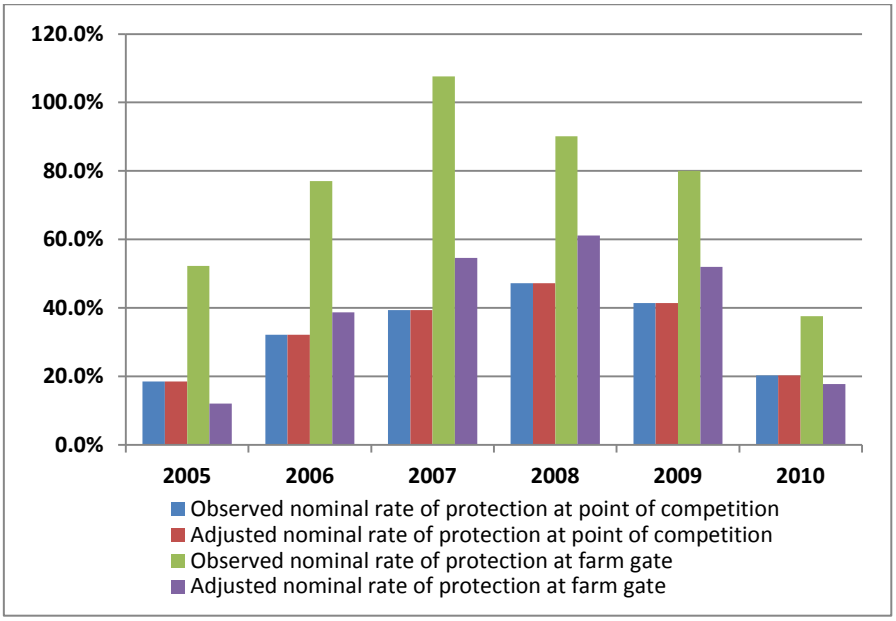
At the wholesale, the duty imposed on rice imports in Uganda provides significant deviation of the wholesale price in Kampala from the reference price. Consequently, the observed nominal rates of protection at wholesale are significant and positive ranging from 18.6 to 47.2 percent and average 33.2 percent. The decreasing trends of the nominal rate of protection in the recent two years may reflect the decreasing impact of the tariff as imports are progressively declining (Figure 28).

The protection at the wholesale level appears to be transmitted effectively for paddy rice at the farmgate. As a result, the observed nominal rate of protection for paddy rice is also positive and significant. The observed indicator ranges from 37.6 to 107.6 percent and averages 74.1 percent over the six-year period (Figure 28). The adjusted nominal rate of protection is much lower. It ranges from 12.1 to 61.2 percent and averages 39.40 percent over the same period. Unlike the wholesale level, the nominal rate of protection appears to follow a U-shape with a considerable decline since 2007. This suggests that the current tariff will not be a sustainable policy for producer protection as the domestic production continues to expand and imports shrinks.

According to the estimated indicators, rice producers and traders receive substantial support (incentives) and policy transfers. The support is mainly a transfer from consumers as the

government is not pursuing any type of subsidies to consumers offset the impact of high rice prices. The observed nominal rate of protection at the farmgate compares favourably, on average, with the tariff rate but observed NRP at the wholesale is much lower. This indicates that the tariff benefits rice producers more than traders. This may be due to the favourable prices received by rice producers selling directly to consumers and retailers in producing regions.

Figure 28: Nominal rates of protection for rice in Uganda (%), 2005– 2010



Source: MAFAP.

Wheat

Production

Wheat has been grown in the highlands of Uganda for many decades, although it has not become a major contributor to food consumption in rural areas. The overall production of wheat in Uganda is still low with acreage under the crop estimated as ranging from 9 000 hectares in 2004 and 2005; 10 000 ha in 2006 and 11 000 ha in both 2007 and 2008. The corresponding quantities produced were estimated at 15 000 tonnes in 2004 and 2005; 18 000 in 2006; and 19 000 in 2007 and 2008 (UBOS, 2009).

The main wheat growing areas in Uganda are the Southwest (Kabale, Kisoro and Rukungiri), the West (Kabarole, Kasese, Bushenyi, Mbarara, Kabale, Kisoro), the East (Mbale and Kapchorwa) and the West Nile/Nebbi region in north western Uganda (grown in small quantities) (Chemonics International, 2010). Farmers in these areas have taken an interest in wheat growing because it is well-suited for the physical conditions of these highlands and it is relatively unaffected by pest and disease outbreaks. Most importantly, however, they have been encouraged by the market where prices are more stable than other commodities.

Consumption

The consumption of wheat and wheat products has been growing rapidly. In 1990, the African Development Bank (ADB) estimated consumption at 50 000 tonnes. Of the amount produced, an

estimated 20 percent is consumed on the farm. Given the low estimated production, the bulk of domestic consumption needs are met from imports.

Trade

Most of the wheat produced in Uganda is consumed domestically. Although there may be some informal exports to neighbouring countries, this is not statistically significant and is not even captured in the UBOS survey of informal trade carried out in 2008. Between 2004 and 2008, Uganda imported between 349 000 and 264 000 tonnes of wheat (UBoS, 2009).

Uganda imports small amounts from the United States (Monetized wheat under PL 480, Title II (HRW)), Australia, Argentina, Pakistan, and Turkey. Small quantities of flour are also imported from Germany by bakeries as well as from Kenya.

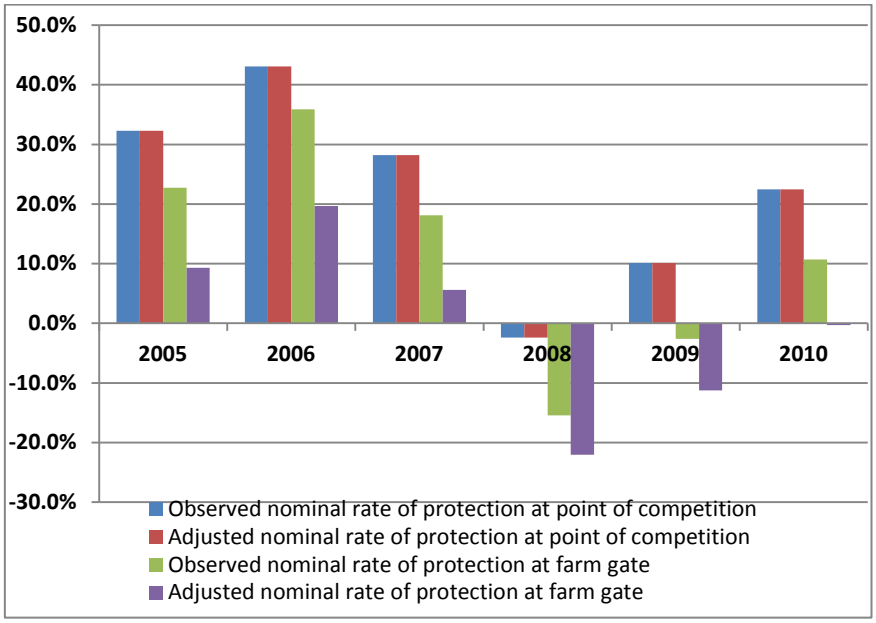
Farmers sell their crop to cooperatives (Kabale/Kisoro and Mt. Elgon), to private traders or directly to millers. The bulk of locally grown wheat is marketed through the cooperative unions. The initial buyers (non-millers) then sell to millers who mill and sell flour to wholesalers, large retailers such as supermarket chains, to bakeries and to some institutional consumers. The supermarkets and wholesalers sell to final individual and institutional consumers.

Commodity indicators

Unlike the case of rice, the duty imposed on wheat imports in Uganda provides only modest incentives to wheat farmers especially in recent years. During the period of 2005– 2010, the observed nominal rate of protection is negative in two of the six years, namely 2008– 2009. During these two years, the domestic farmgate prices stagnated although the border prices of wheat were significantly high. As a result, the observed nominal rate of protection at the farmgate average only 11.6 percent (Figure 29). Similarly, the adjusted nominal rate of protection follows the same patterns of the observed indicator.

At the wholesale level, traders appear to capture substantial benefits from the import duty ranging in most of the years (Figure 29) at an average nominal rate of 22.3 percent. As Figure 29 indicates, the policy incentives for wheat appear to be captured mostly by traders at wholesale level as compared to wheat producers. Moreover, the level of protection of wheat producers in Uganda is quite variable over time (Figure 29). This may reflect weak price transmission from wholesale markets to producers resulting from lack of market information.

Figure 29: Nominal rates of protection for wheat in Uganda (%), 2005– 2010



Source: MAFAP.

Sugar

Production

Uganda has good physical attributes for the successful production of sugar. Sugar cane production in Uganda dates back to 1924 when the first sugar factory was established in Uganda and East Africa. Cane productivity in Uganda may be ranked medium to low. Nucleus estate yields are normally higher than out-grower yields due to better agronomic practices. Typical nucleus estate yields range from between 83.3 and108.9 tonnes per hectare. Though yields remain low, short-term projections indicate anticipated growth in cane production for the three sugar plantations. The average sugar recovery ratios are also low ranging from 8.9 percent to 9.6 percent.

Uganda has three major sugar factories (Kakira, Kinyara and Scoul), producing over 90 percent of the total sugar production. Since 2002, when the country produced 165 963 tonnes of sugar, production more than doubled to reach 350 570 tonnes of sugar in 2011 (Figure 30). The sugar industry in Uganda is based on the sugar estate model. A sugar estate is a production unit consisting of a processing factory, a "nucleus estate" (plantation) on which sugar cane is grown by wage employees, and an area surrounding the nucleus estate where sugar cane is grown by independent farmers. These farmers may be formally contracted out-growers, or simply independent farmers who offer their cane on a spot market basis to the sugar company.

Formally contracted out-growers receive finance from the sugar firms in the form of in-kind credit for land preparation, seed cane, fertilizer, farm labour, harvesting, and transportation to the factory. In return, they are obligated to sell 100 percent of their cane production to the sugar estate and to allow the loan repayments to be deducted from the sale price.

The estate model is a directed value chain, with a lead firm that has significant buying power over its out-growers, where there are few opportunities for side selling, and where contracts are used to control production and ensure supply. In some areas, however, small-scale jaggery mill operators

compete for purchasing sugar cane. Jaggery is an unrefined form of sugar cane juice, which is used in Uganda for local alcohol production. When competition from jaggery mills increases, the value chain can move towards a balanced governance structure with increased opportunities for side selling.

The sugar industry employs about 21 749 persons on a permanent, contract and casual labour basis. Of these eighty to ninety (80–90) percent are members of the National Union of Plantation Workers of Uganda (NUPAWU) (Uganda Land Coalition, 2006). In addition, the sugar industry engages approximately 40 000 workers (both direct and indirect employment is considered, including out-grower farmers (Fashoyin *et al.*, 2004)).

Consumption

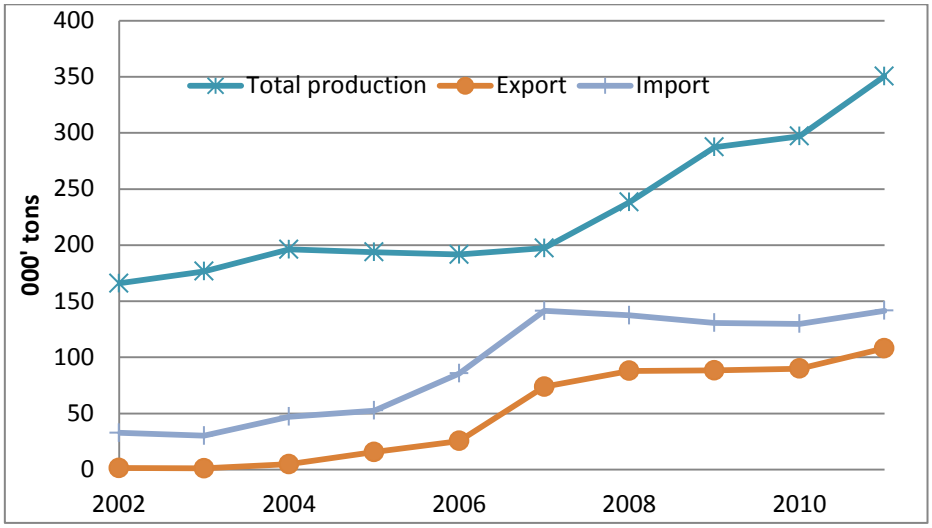
The per capita consumption of sugar in Uganda is exceptionally low. The domestic competitive advantage and the potential for increased demand in the domestic market indicate a strong potential for growth in the Ugandan sugar industry. Total annual demand is estimated at 242 000 metric tonnes (East African, 2007).

Trade and marketing

Domestically produced sugar, with reduced transportation and tariff costs, enjoys a competitive advantage over regional imports, and is protected by a 100 percent tariff on sugar imports from outside the East African Union. Although domestic production has been progressively increasing since 2002, it falls short of the domestic consumption (Figure 30). The deficit is closed by imports. However, some of the imported sugar is for re-exports. USCTA (2012) estimated sugar imports for direct consumption at 51 000 tonnes in 2008 and 72 895 tonnes in 2011. Uganda also exports sugar (Figure 30). It is not clear what form of sugar is traded. Nevertheless, Uganda is still a net importer of sugar.

The main value chain for sugar worldwide consists of cane production, milling, refining, and other value-addition activities such as food processing, and food retail until the sugar reaches the end users. In Uganda, the chain is largely restricted to the first three chain processes. The sugar used in the beverage industry and other food industries, including hotels, is largely imported (UBOS, 2006).

Figure 30: Domestic production, import and exports of sugar in Uganda (2002– 2011)



Source. Data from UN COMTRADE (2012) and USCTA (2012).

Commodity indicators

The sugar industry in Uganda is protected with a high tariff structure based on the EA common market tariff. The duty on direct consumption sugar is 100 percent or US$ 200 per tonne, whichever is greater. Sugar is also subject to excise and local taxes. Under such conditions, the nominal rate of protection at the wholesale level (the point of competition between domestic sugar and the imports) is expected to be positive. At the farmgate, the nominal rate of protection for sugar cane can be positive or negative depending on the extent of price transmission between the two levels.

The extent of net protection to the sugar industry given the existing cost structures and taxation is indicated by the observed nominal rates of protection at the wholesale and farmgate levels depicted in Figure 31. At the wholesale, sugar appears to receive significant protection ranging from 15.2 to 36.1 percent and averaging 26.7 percent (Figure 31). These incentives to sugar producers and wholesalers are potentially higher if excessive profit margin for importers, amounting to 23 percent of wholesale price, is reduced to a normal profit level under efficient market functioning without government taxation and levies.

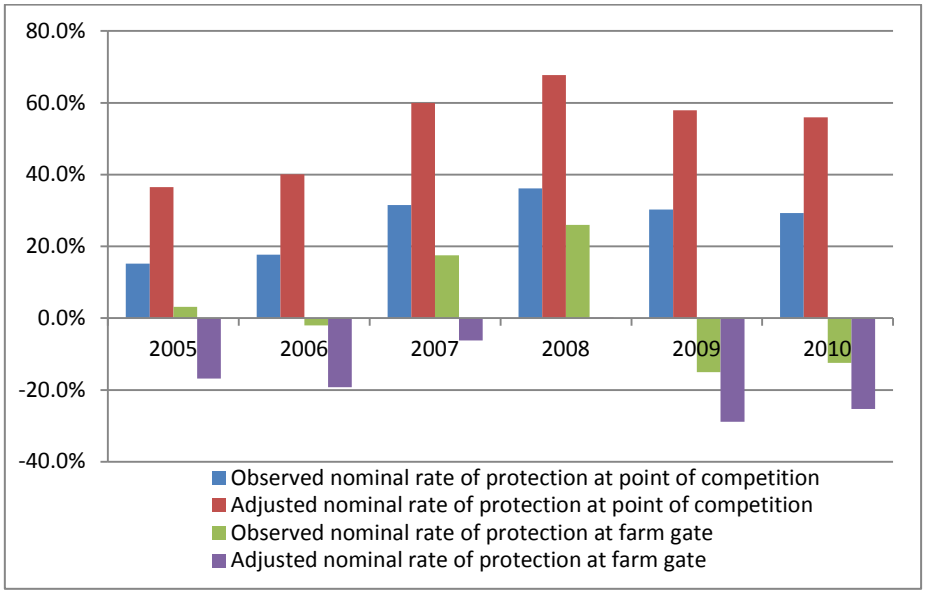
As depicted in Figure 31, even at the observed processing and marketing cost and taxes, sugar receives positive protection and incentives at the wholesale level. As it is evident from the estimated indicators, the level of incentives to the sugar industry is significantly lower than the tariff rate of 100 percent. This is because sugar imports represent about 40 percent of national consumption. Besides, industrial sugar which has much lower tariff rate of 10 percent may find its way to the market for direct sugar consumption. Also, quality of the domestic sugar is perceived to be lower as compared to imported sugar and consequently is sold at a lower price at both wholesale and retail levels. This quality premium is adjusted partially using the ratio of the retail price of domestic sugar and imported sugar.

Though the sugar industry is highly protected, the situation at the farmgate for sugar cane producers appears to be different. Farmgate prices for sugar cane growers (out-growers) appear to be below the reference price of sugar cane at the farmgate in most years given the present structure of the sugar industry including government taxes. Thus, the observed nominal rate of protection at the farmgate was negative for most years and averages only 2.9 percent (Figure 31).

Under efficient market performance with a reasonable level of profit margin for factories and no government taxes, sugarcane growers are generally taxed as the negative adjusted nominal rate of protection at the farmgate indicates. The adjusted nominal rate of protection ranges from -28.8 to 0.2 percent and averages -16.0 percent (Figure 31). This implies that the protection offered to the industry through the import tariff does not trickle down to benefit sugarcane producers. This situation is in sharp contrast to the case of wheat and rice producers who share some of the benefit of the import tariff with wholesalers. Unlike rice and wheat, sugar cane goes through a processing stage before going into the market. Moreover, the value chain for sugar cane is buyer driven giving more leverage to sugar factories, the sole buyers, in determining the producers' price.

The protection arising from the high tariff for sugar imports appears to benefit only sugar factories in Uganda. Sugar cane producers gain only marginally and recently the gains were eliminated. The ultimate burden of the tariff protection is born by consumers who pay higher prices for sugar at the retail.

Figure 31: Nominal rate of protection for sugar and sugarcane in Uganda (2005-2010)



Source: MAFAP

Major exports

The export sector of Uganda is characterized by a large number of commodities with most making a small contribution to total export earnings. Exports are classified as traditional and non-traditional. The major traditional agricultural exports of Uganda include coffee, tea, cotton and tobacco. Non-traditional exports include maize, fish, beef and cattle and beans[12]. However, there is an active cross-border informal trade with neighbouring countries in many other commodities but the quantities tend to be small and officially unrecorded.

The indicators for exports analyzed which include the major country exports (coffee, tea, cotton and fish) are presented in Figure 32 and Table 24. For the period of 2005– 2010, both the observed and adjusted nominal rates of protection for producers exhibited no clear trends. In fact, the two indicators are quite variable over time. At the beginning of the period (2005-2007), the two indicators were quite negative and high showing significant deviation of the producers' prices from their respective reference prices. However, this deviation declined in magnitude to turn into relatively small but positive incentive in 2008-2009 before becoming negative again in 2010 (Figure 32). For the period under consideration, the observed NRP and adjusted NRP averaged -6.4 and -10.0 percent, respectively. As such, the nominal rate of protection for export is generally negative on average indicating that producers of export commodities do not receive significant and consistent market price incentives. This means these producers are most often receive prices below the reference prices of their commodities that exceeded 20 percent in some years.

The deviation of the adjusted nominal rate of protection from the observed reflects the existence of a persistent market development gap averaging 3.1 percent. This gap is attributed to excessive profit margins at the wholesale and processors levels. This market development is relatively small

[12] Except for fish (which is a major export), other non-traditional exports are considered as thinly-traded commodities as the quantities exported represent only a small fraction of production.

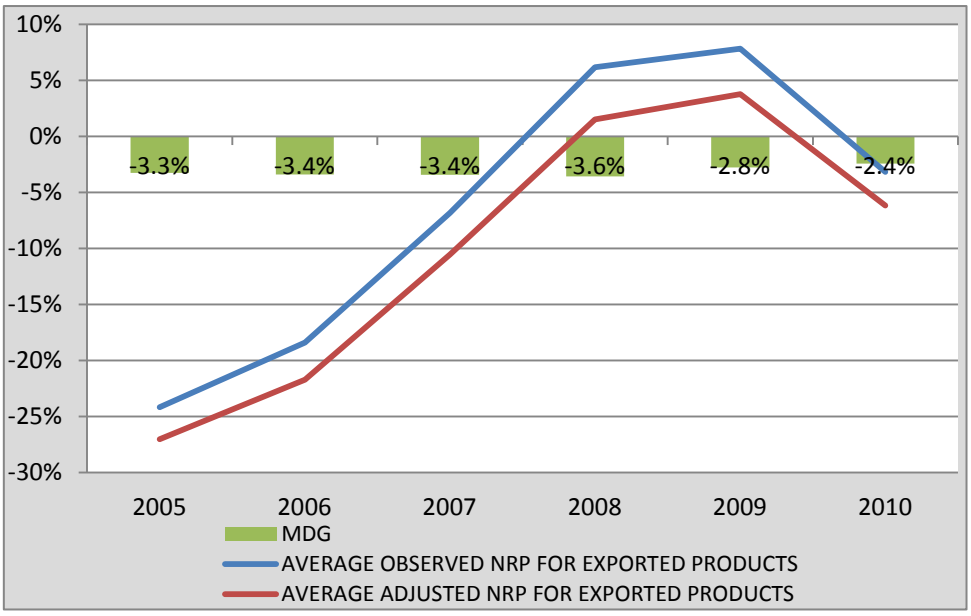
compared to the case of imports as exports in Uganda are subject to minimum local taxes and no export taxes.

Uganda has a highly liberalized domestic marketing policy for exports with minimum government interventions. In addition, the government is pursuing an export promotion strategy based on the exchange rate liberalization, zero rated duty and VAT exemption on exports, and no additional charges or levies. In addition, Uganda's exports qualify for preferential tariff rates in COMESA and EAC. Ugandan products to the European Union and USA markets are duty and quota free under the Cottoneou Agreement (ACP–EU) and the African Growth and Opportunity Act (AGOA) initiatives respectively.

Under these policy conditions, the nominal rate of protection is expected to approach zero at the border. Therefore, the incentives and disincentives suggested by the estimated indicators are attributed to the functioning of the marketing systems of the export commodities. The value chains of most of the export commodities analyzed here are buyer-driven and producers are largely price takers. Buyers, who are mainly processors or their agents, have better access to world prices and price information, given that the commodities are mainly for export. As such, processors and exporters have more leverage to maintain lower producers' prices than what would have prevailed in relatively more competitive markets.

Based on the government policy objective of diversifying and increasing exports, many export incentive measures have been introduced, creating the enabling environment for export promotion. With an active export market, domestic prices are expected to move in favour of commodity producers through competitive markets and eliminate market inefficiencies. This, in turn, will lead to eliminating market disincentives at producers' levels. However, this doesn't seem to be the case for the major Ugandan exports. Given the above analysis, it appears that most of the incentives are captured at the upper level of the value chain with mostly disincentives at the producers' level except during years of high world prices (e.g., 2008-2009). In the following section, the incentives and disincentive at the two levels are compared for individual commodities.

Figure 32: Nominal rates of protection (NRPs) and market development gap (MDG) for exports at the producer level (%), 2005-2010



Source: MAFAP.

Coffee

Production

Coffee continues to play a leading role in the economy of Uganda, contributing 18 percent of the export earnings between 2000 and 2010. Though large scale coffee producers are gradually emerging, the coffee sub-sector is almost entirely dependent on about 500 000 smallholder farmers, 90 percent of whose average farm size ranges from less than 0.5 to 2.5 hectares (UCDA[13], 2012). The coffee industry employs over 3.5 million families through coffee related activities.

Two types of coffee (Arabica and Robusta) are grown in Uganda in the ratio of 1: 4. Robusta coffee is grown in the low altitude areas of Central, Eastern, Western and South-eastern Uganda up to 1 200 meters above sea level. Arabica coffee is grown in the highland areas on the slopes of Mount Elgon in the East and Mount Rwenzori and Mount Muhabura in the South-western region (1 500-2 300 m above sea level). Coffee farmers in Uganda use a low input system, and producer households strongly rely on family labour.

Uganda produced, on average, 2.4 percent of total world production during the period 2006-2011 (International Coffee Organization (ICO), 2009). Figure 33 presents the recent trends in coffee production in Uganda. During 2009, marketed production was 195 871 m/tonnes, an equivalent of 3.3 million 60 kilogramme bags of coffee (MAAIF, 2010). This consists of 153 822 tonnes of Robusta coffee and 42 050 tonnes of Arabica. Overall, there was a decline of 14.3 percent in the quantity of coffee procured in 2010 as compared to 2009 due to a big decline (20.5 percent) in the production of Robusta coffee, which is grown more often than Arabica.

[13] The Uganda Coffee Development Authority (UCDA) is the coffee regulatory body of Uganda.

Consumption

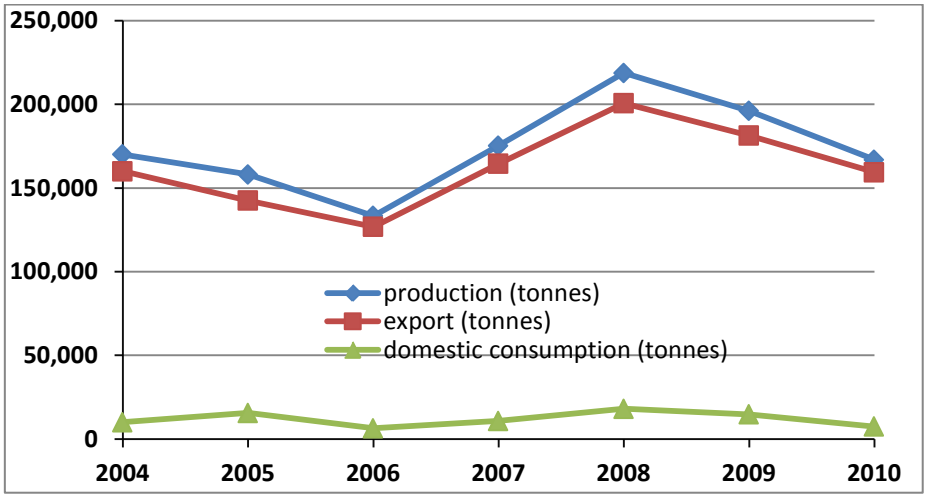
Domestic consumption of the commodity in Uganda is relatively small ranging from 4-10 percent of production. As such, coffee is primarily an export crop. Although promotion of domestic consumption has figured prominently in the UCDA Annual Reports, its objective is not clear.

If the objective of increasing domestic consumption (currently estimated at about 7 500 tonnes) is to enhance rural incomes, this is unlikely to be achieved because domestic coffee processors will pay the same price as exporters and hence producers will receive the same price regardless of whether their coffee is consumed in Kampala, Rome or Beijing (Baffes, 2006). On the other hand, if the objective is to counter declines in international prices of coffee by reducing Uganda's supply to the international market, attainment of that objective is also questionable. Given Uganda's relatively small coffee market, even large increases in domestic coffee consumption will not have any significant impact on global consumption and hence no effect on world prices.

Trade

Uganda ranks fourth after Burundi, Ethiopia and Honduras in terms of contribution of coffee exports in total export earnings in the period 2000-2010 with an average share of 18 percent during this period (ICO, 2012). The post 1997 coffee price decline has had a negative effect on production and exports (Baffes, 2006). However, production kept declining until 2006 even when prices recovered and has recently declined (see Figure 33). However, despite the declining foreign earnings compared to the mid-1990s, coffee remained the main foreign exchange earner for the country. Its share in total export earnings declined marginally from 17.9 percent in 2009 to 17.5 percent in 2010.

Figure 33: Recent trends in coffee production, exports and domestic consumption in Uganda



Source: UCDA monthly reports (various issues), MAAIF (2011) and FAOSTAT (2012).

The European Union is the main market for Uganda coffee exports accounting for over 70 percent of total exports followed by Sudan importing over 10 percent of Ugandan coffee and USA with 3 percent of coffee exports of Uganda (UCDA, 2011). However, the export market of Uganda is quite diverse with a total of 16 importing countries. The export market is controlled by 29 national and multi-national companies with ten companies controlling about 85 percent of the export market. The leading company (Ugacof (U), Ltd) controlled 15 percent of the coffee exports in 2011 (UCDA, 2011). The top ten importing companies held a market share of 73.4 percent in 2011.

The domestic value chain of coffee is quite simple. After coffee harvest, farmers usually sun-dry the red cherry on the farm and sell their coffee as Kiboko (dry cherry). Most coffee sales are made at the farmgate to small traders who act as aggregators either for bigger independent traders or for exporters and their agents (Hill, 2010). After milling, the Kiboko traders occasionally sell directly to exporters but more often they sell at the mill to "FAQ" traders, who then sell to the exporters' district depots or to the exporters' yards in Kampala.

Commodity indicators

Under the liberalized economic policy, there is no explicit trade policy in Uganda in the form of tax or subsidy on exports including coffee. The only applicable tax on coffee is a charge of 1 percent of export price by Uganda Coffee Development Authority on coffee exports. Under such conditions, the results should logically indicate a zero nominal rate of protection.

Most of Ugandan coffee is exported directly by coffee processors and therefore there is no active domestic wholesale market. In such case, the point of competition is the border. The processors/exporters receive the full export price equivalent of the world prices depending on the point of delivery. Therefore, the observed nominal rate of protection is zero at the point of competition while the adjusted nominal rate of protection reflects 1 percent tax on export prices charged by UCDA on all coffee exports. This is expected since there are no other direct policy interventions which may lead to deviation of producer prices from their corresponding reference prices (Figure 34).

The observed nominal rate of protection can be interpreted as the tax rate on coffee for the different market participants since quantitative restrictions are not imposed in this case. In other words, coffee producers appear to receive prices very close to what they would have received in world market given all the currently observed market access costs. This situation is consistent with the liberalization policy.

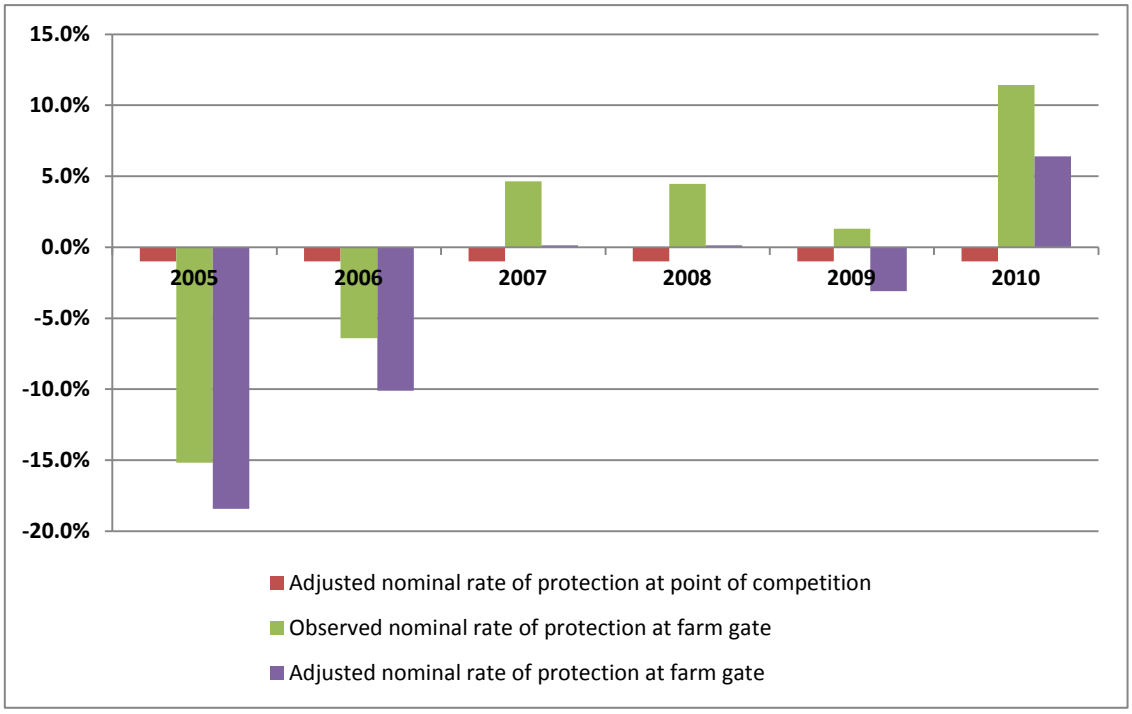
However, the situation for coffee farmers is slightly different. Given the current profit margins which are generally low for processors and exporters, coffee growers began to receive some slight price incentives in recent years since 2007 as indicated by the observed nominal rate of protection (Figure 34). Nevertheless, the adjusted nominal rate of protection is generally negative.

The coffee industry is also characterized by relatively low level of market development gap averaging 4.1 percent (Figure 34). Factors contributing to the market development gap at the farmgate include: high transportation costs of coffee from Western Uganda to Kampala, and the high processing costs and inefficiencies in the trading chain of coffee. The cost of truck transportation in Uganda averaged US$ 0.15 per tonne-km for distances of 80 km or more in 2008 (World Bank, 2009). This cost more than doubled (US$ 0.33 per tonne-km) for shorter distances. Obviously, transportation costs are highly related to the cost of fuel which accounts for 68 percent of the vehicle operating costs (World Bank, 2009). Therefore, taxes on fuel play a role in determining commodity transportation costs and hence producers' prices.

In some years, the cost of coffee processing is quite high. For example, exporters had losses in 2008/09 due to the increased cost of processing and low export prices (BoU, 2011). However, Baffes (2006) argued that there is not much to be done to reduce marketing and processing costs. This is because both transportation and processing costs are already at the lowest possible level and profit

margins on per unit basis are extremely low. This may explain the low level of price disincentives to producers of coffee.

Figure 34: Nominal rates of protection (%) at the farmgate and point of competition for coffee in Uganda (2005-2010)



Note. The observed nominal rate of protection at the point of competition is not shown because it equals zero.

Source: MAFAP.

Tea

Production

Uganda is the third leading producer and exporter of tea (45 000MT) in Africa after Kenya (295 000MT) and Malawi (55 000MT) (MAAIF, 2010). Tea produced in Uganda is a medium quality tea primarily used in blends with premium quality teas, such as those from Kenya (MTTI, 2006). The crop is grown by large estates (46 percent of production) and small growers (small estates and out-growers) producing 54 percent of the tea. The out-growers contribute 28 percent of the total production of tea and tea estates contribute 72 percent (MAAIF, 2010).

The current trend in Uganda is smallholder growth. Tea appears to be very attractive to smallholders, and providing work and income throughout the year. Tea requires little investment, and the risk of disastrous crop failure is fairly low (Oxfam, 2002). The tea industry employs over 62 000 people, supporting more than 500 000 dependants in Uganda. The country has 12 tea processing and exporting companies operating 21 processing factories (Bank of Uganda, 2011).

Tea covers an area of only about 10 percent of the suitable fertile land for tea estimated at over 200 000 ha countrywide (UGTA, 2012). It is largely grown along the Lake Victoria Crescent and lower slopes of the Rwenzori Mountains as well as above the Western Rift Valley. Tea production in Uganda has fluctuated considerably over time. Since the 1970s, production began to decline rapidly

to as low as 1 533 tonnes by 1980 and 3 500 tonnes in 1988 when the government began the implementation of the Smallholder Tea Rehabilitation Project (STRP). Since then, the tea sector slowly recovered in terms of production resulting primarily from increasingly rising productivity (Figure 35) as area under tea production is relatively stable. Production increased from 37 700 tonnes in 2005 to reach 48 663 tonnes in 2009 before declining to about 40 800 tonnes in 2010.

Despite the successful recovery of the tea industry, there are a number of challenges facing the tea industry in Uganda including: a lack of active tea research, increasing cost of energy, labour shortage, the high cost of transportation to Mombasa, and auction price fluctuations (Independent, 2010). Clearly these challenges lead to inferior tea quality and consequently lower export prices, higher production costs and price uncertainty. This erodes profitability and incentives to producers and investors.

Consumption

Tea consumed domestically is either branded by the respective processing factories or by private buyers who purchase the tea and brand it for local consumption. Small quantities of mostly branded imported specialty tea are also sold in supermarkets.

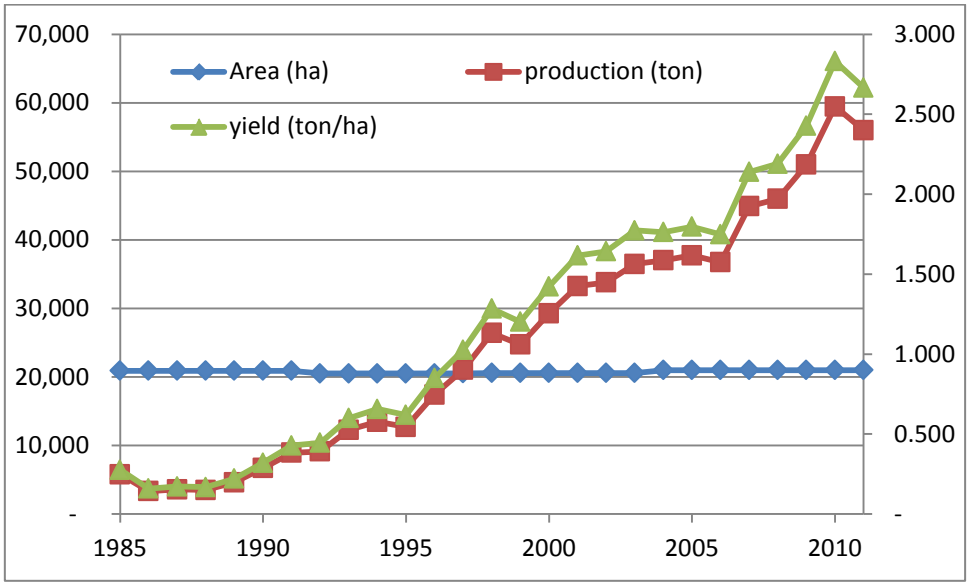
Data on domestic consumption of tea in Uganda is unavailable. However, estimating domestic consumption of nationally produced tea as the difference between annual production and exports reveals that domestic consumption is only a small fraction of total production. On average (2000-2010), Ugandans consume about 3 000 tonnes of tea annually which represents 7.5 percent of the average production (Figure 35).

Trade

Tea is the third foreign exchange earner after coffee and fish and is one of the crops under the strategic export program started in 2001/2002. Uganda is the third leading producer and exporter of tea after Kenya and Malawi. According to MAAIF (2010), Uganda's share of tea exports on the global market is 2.8 percent and needs to increase to 5 percent (80 000MT). In 2010, tea attained a market share of 4.2 percent of the total export earnings, with a significant increase in export receipts estimated at US$ 68.3 million (MAAIF, 2011).

During the last decade, Ugandan tea exports have grown steadily by more than 40 percent from 30 477 tonnes in 2001 to 53 178 tonnes in 2010 (Table 26). This growth trend is apparently stimulated by the implementation of the liberalization policy reforms including the removal of the Uganda Tea Authority monopoly on exports, valuation of export proceeds at the market exchange rate and liberalization of export marketing. Ugandan tea is exported through the Mombasa auction, which markets to worldwide destinations. Ugandan tea auctioned through Mombasa is branded and re-exported as Kenyan tea according to Bank of Uganda (2011).

Figure 35: Trends of area, production and yields of tea in Uganda (1995-– 2011)



Source: Data from UGTDA (2012).

The tea value chain in Uganda, generally similar to tea value chains in other countries, is characterized by few players. The tea supply chain begins in a smallholder farm or a plantation, where the tea leaves are grown and plucked. Small farmers sell their crops to middlemen, plantations and or to "bought leaf" factories i.e. factories that buy up the raw tea (Oxfam 2002). According to Odoch, 2008, once tea leaves are harvested, they are then either transported to leaf factories in the case of smallholders, or processed in the factory on-site in the case of large plantations. In most cases it is the factory that collects the leaf directly from the smallholder. The buyer collects the tea from designated leaf collection sheds.

Table 26: Trends in tea production, exports and domestic consumption in Uganda, 2000-2010

Year	production (tonne)	export (tonne)	consumption (tonne)	export %
2000	29 282	26 338	2 944	10.1%
2001	33 255	30 477	2 778	8.4%
2002	33 789	31 109	2 680	7.9%
2003	36 475	34 069	2 406	6.6%
2004	37 018	35 000	2 018	5.5%
2005	37 734	33 071	4 663	12.4%
2006	36 726	32 699	4 027	11.0%
2007	44 913	43 638	1 275	2.8%
2008	45 978	45 158	820	1.8%
2009	50 982	47 920	3 062	6.0%
2010	59 449	53 178	6 271	10.5%
average	40 509	37 514	2 995	7.5%

a. Domestic consumption is estimated as the difference between production and exports.

Source: UGTA (2012).

About 70 percent of Uganda's tea is sold through auction in Mombasa, and 20 percent through direct sales, while the remainder is sold locally. Mombasa auction, the major tea auction in Africa, was initiated in 1956 in Nairobi on a very small scale under the auspices of the East African Tea Trade

Association (EATTA) and moved to Mombasa in 1969 (EATTA, 2012). The auction system is still the main price discovery point for tea trade; however, significantly, there are no future markets for tea (Foodnet, 2002).

Commodity indicators

Like other exports, the tea sector in Uganda is characterized by minimum government intervention in terms of pricing and trade policies. The government's role is mainly restricted to quality regulations and production. As such, MAFAP indicators are expected to reflect price gaps resulting from market functioning and the impact of international price fluctuations rather than policy impacts. While nominal domestic farmgate prices for tea in Uganda has been increasing slowly over the period of 2005– 2010, auction prices have fluctuated considerably. In particular, Mombasa auction prices for Ugandan tea, used as the benchmark prices, were quite low in 2005 and 2007 averaging US$ 1.16 and US$ 1.22/kg, respectively. The observed indicators at the farm gate level were positive. These two years were considered here as exceptional cases unrelated to neither the domestic market functioning or government policies but rather these were related to fluctuation in the world market price for tea. The interpretation focuses on the indicators in other years.

More than 70 percent of Uganda tea exports are marketed directly by tea processors at the tea auction in Mombasa, Kenya. Therefore, the Mombasa auction represents the point of competition. Thus, the nominal rate of protection for all years approaches zero since processors receive the full price at the auction taking into account the marketing costs at the auction.

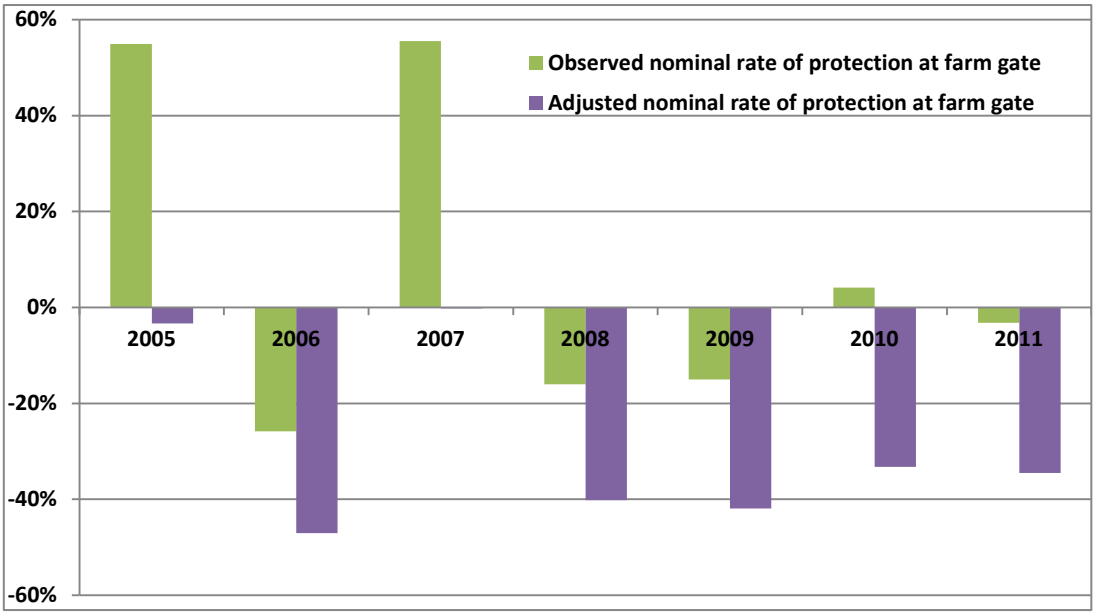
This explains the tendency of the tea industry to vertically integrate tea production, processing and marketing activities. Indeed, the analysis suggests that marketing tea at the Mombasa auction provides much higher incentives to tea factories compared to direct sale at the factory since export profit margins will be captured as an additional return to the factory.

Although the tea market at the upper level of the value chain appears to fully liberalized, producers' prices often deviate significantly from the equivalent world price as the negative nominal rate of protection suggests (Figure 36). With the exception of 2005 and 2007, the observed nominal rate of protection ranges from -25.8 percent to 4.1 percent. When profit margins along the value chain are adjusted to normal levels (10 percent), the adjusted nominal rate of protection is negative throughout the period of analysis. On average, prices paid to tea leave producers were 27.6 percent below the reference price. The observed indicators suggest that while tea factories are able to earning high profit margins by selling at the auction, these incentives are not shared equally along the value chain.

Tea is considered to be a buyer-driven value chain, where tea producers have few options for selling their product. Analysis suggests that factories are able to transfer price disincentives to producers. However, tea factories face considerable market risk resulting from the normal price fluctuations at the auction. Besides, tea factories can determine farmgate prices in any season purely based on price expectations at the time of sale of the processed tea. In addition, the tea processing industry is facing increasing costs of processing and transportation due mainly to the rising cost of energy in Uganda. Since for a given auction price, the increasing costs means lower profit margins for factories, factories have chosen to remain competitive by lowering or resisting increases in farmgate prices.

The above results need to be viewed within the policy context in Uganda. Uganda's international trade regime is highly liberalized, and most products are imported or exported without quantitative or origin restrictions (Chemonics International, 2010). There are no known formal charges that are directly levied on tea, apart from the costs of certain services and documentation that the exportation process may require, including costs for verifying conformity with quality standards. As such, the estimated nominal rates of protection at the farmgate cannot be related to government intervention or policy but rather as a result of the functioning of the market. These gaps are partly attributed to the existence of market development gaps due mainly to excessive marketing margins at processing and exports. The MDG ranges from 6.5 to 8.5 percent.

Figure 36: Nominal rates of protection (%) for tea producers in Uganda, 2005-2010



Note. The indicators at the point of competition are not shown because these equal zero.
Source: MAFAP.

Fish

Production

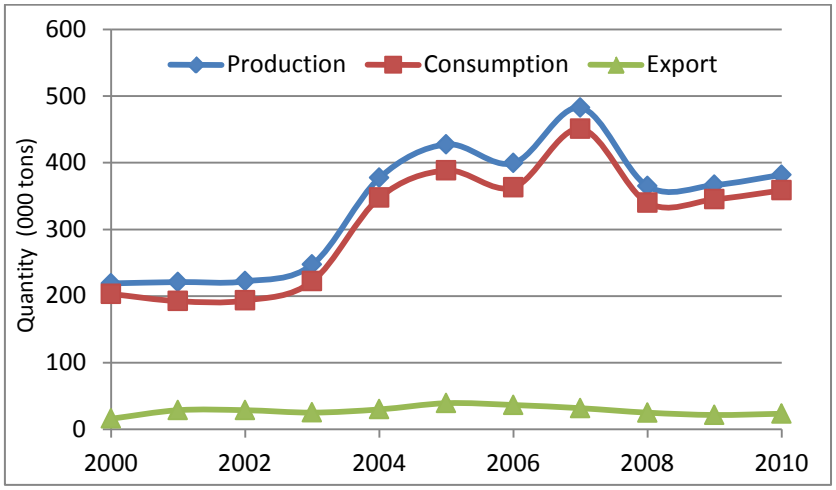
Uganda is endowed with many aquatic resources covering about 18 percent of the total surface area and the major water bodies. These include: Lakes Victoria, Kyoga, Albert, George and Edward, in addition to over 160 minor lakes and various rivers, flood plains and swamps that partly contribute to Uganda's fish production (Ikwaput, 2004). With these natural aquatic habitats, Uganda has huge fisheries resources potential to both capture fisheries and fish farming (aquaculture) production.

Fisheries and related activities from the production systems (natural aquatic habitats) to marketing and export trade significantly contribute to Uganda's economic growth in terms of revenue and employment. According to the Poverty Eradication Action Plan (PEAP), the fisheries sector contributes 6 percent of the national economy although only 2.4 to2.6 percent is captured in the national accounts by the Uganda Bureau of Statistics (UBoS). Other studies including from the World Bank (2003) have indicated that fisheries can contributes as much as 12 percent of the Ugandan national economy if properly valued (Ikwaput, 2004). On average, Uganda's fishery industry employs over 700 000 people involved in various activities ranging from: fishermen, fishmongers, fish

transporters and boat builders. The rapid development of the industry has been a result from the political stability that the country has enjoyed over the years (Balagadde, 2003).

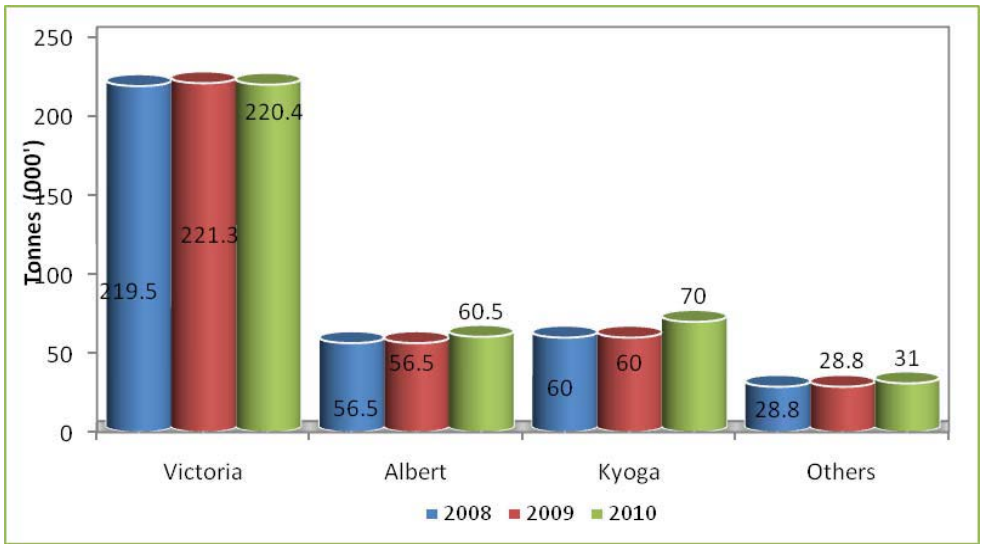
Since the mid 2000s, fish production in Uganda has increased rapidly. Total fish production reached close to 0.5 million tonnes in 2007 but declined recently to 0.38 million tonnes in 2010 (Figure 37). The production level of 2010 represents about a 74 percent increase over the level of 2000. Despite this variability, there is substantial potential for fisheries in Uganda. Of all the fish species, Nile perch, Nile tilapia and Mukene are the major fish species of commercial importance in Uganda. Lake Victoria contributes nearly half of the national fish production followed by Kyoga, Albert, Edward and lastly George (Figure 37).

Figure 37: Trends of production, consumption and export of fish in Uganda (2000-– 2010)



Source: MAAIF (2010, 2011); FAO - Fisheries and Aquaculture Information and Statistics Service (2012) and Nyombi and Bolwig, 2004.

Figure 38: Quantity of fish catches by Ugandan water bodies, 2008-– 2010



Source: MAAIF, 2011.

Consumption

The population in the proximity to major water bodies has a higher consumption of fish than those in areas far from the major water bodies. In both cases however, income levels and access could be considered major factors of fish consumption distribution in Uganda. Generally, the areas in the central region (Kampala, Entebbe, Jinja, Mukono, Tororo, Busia, and Masaka), have relatively higher fish consumption because fish supply and quantity is regular and because the levels of income are relatively higher than in the rural areas. However, access may not be the decisive factor in fish consumption. As stated above, tribal and cultural traits may influence fish consumption despite access to fish.

The fish eating communities also have fish species eating preferences. For example, among the common captured fish species from the water bodies in Uganda, Nile tilapia is the most preferred species and is consumed the most. However, Nile perch is not common for the local consumption in Uganda because of its relatively high price and its high export demand.

Between 2000 and 2010, the estimated domestic and regional consumption of fish captured in Uganda averaged 309 481 tonnes (Figure 39) representing over 90 percent annual fish caught. Fish contributes 40 to 50 percent of the total animal protein intake of Ugandans who have a strong culture for fish consumption (Nyombi and Bolwig, 2004). The retail price of fish has risen steadily in recent years. For example, the retail price of fresh Nile perch has increased from U Sh 4000/kg in 2008 to U Sh 9000/kg in 2011 (DFR, 2012). The retail prices of other species such as tilapia have seen similar trends.

Marketing and trade

Since Uganda started exporting fish and fish products to the international markets in 1991, there has been a gradual increase in terms of both volume and value from 1991 to 2005 (DFR, 2012). Since then, a drastic decrease in both volume and value of capture and exports has been witnessed. This was accompanied with the closure of some fish processing plants in the country leaving others to operate at 30 percent of installed capacities (DFR, 2012). This has prompted the Government of Uganda to encourage fish processing factories to invest in aquaculture (fish farming) for sustainability of their plants.

Despite the high potential for fish capture and the high production level, fish exports are quite low representing less than 10 percent of the annual catch (see Figure 39). Nevertheless, fish exports generate substantial revenue averaging nearly US$ 124 million over the last five years (2006-2010). During the same period, fish exports represented 6.6 to 15.2 percent of all agricultural exports. Other estimates of fish exported and un-recorded to neighbouring countries (DRC, Kenya, Rwanda and Tanzania) may be as high as US$ 80 million per year (DFR, 2012). With open access to the water bodies in Uganda and East Africa as a whole, domestic and regional fish trade is quite common.

Uganda is among the countries allowed to export fish and fishery products from both capture (2001) and culture fisheries (2010) to the European Union (EU) countries (DFR, 2012). Apart from the EU, other regions that import Ugandan fish and fishery products include Australia, Middle East, United States, Egypt and South East Asia (DFR, 2012).

In the domestic markets, a marketing chain for Nile perch has developed on Lake Victoria where fishers sell their fish to middlemen who in turn sell it to agents and eventually to fish processing plants (Collinson, et al 2005). Although the flow is from fishermen to factories via middlemen and agents, there are still some fishermen who may still sell their fish directly to the agents or to factories. Transport boats operated by middlemen buy fish from fishermen in the remote landing sites (mainly in Lake Victoria islands) and sell to the main land landing sites or directly to factories where factories have their own landing sites adjacent to their factory premises (Collinson, et al 2005). Most of the factories have their approved landing sites on the shores of Lake Victoria. At the landing sites, prime quality fish (grade A) is sold for processing factories while what is left is sold is later in the local market.

Commodity indicators

Fish prices have been characterized by numerous fluctuations due to a variety of factors (especially variability of supply and demand for export processing). The processing industry has influenced market prices at various landing sites (Ikwaput et al., 2004). Fish destined for export processing has generally attracted slightly higher prices than fish sent directly to domestic and regional markets. Kaelin and Cowx (2002) noted that the current fish trade on Lake Victoria is a major constraint to greater benefits accruing to fishing communities.

Under current arrangements, the fish buyers not only determine the price but also use the perishable nature of fish as a negotiating tactic to keep the price low. Nevertheless, domestic prices have recently been increasing for the major types of fish.

MAFAP indicators for fish are estimated at the primary markets at landing sites[14] and the border (point of competition). Both the observed and nominal rates of protection at the primary fish markets are generally negative except in 2008-2009 when the domestic prices of fish increased significantly[15] (Figure 39) due to low catches. The observed NRP ranges from -23.5 to 10.1 percent and averages –6.3 percent. In contrast, the adjusted NRP ranges from -27.9 to 3.2 percent and averages -11.9 percent (Figure 39).

The indicators in the primary market suggest that fish prices at the landing sites are often below the reference prices. These results are inconsistent with the increasingly competitive market for Nile Perch and other fish in Uganda. As many of the processing factories are operating below full capacity due to insufficient supplies and the global demand for Nile perch is increasing, the competition for fish at the domestic market is expected to increase incentives to fishermen. The competition is evident in the rising prices of fish at this market level. In fact, the price of fish destined to processing plants increased from U Sh 2 370 in 2005 to U Sh 7 888 per kg in 2011. The fact that fish perishes and the buyer-driven nature of the market are main drivers for the indicated disincentives at the primary fish market in Uganda.

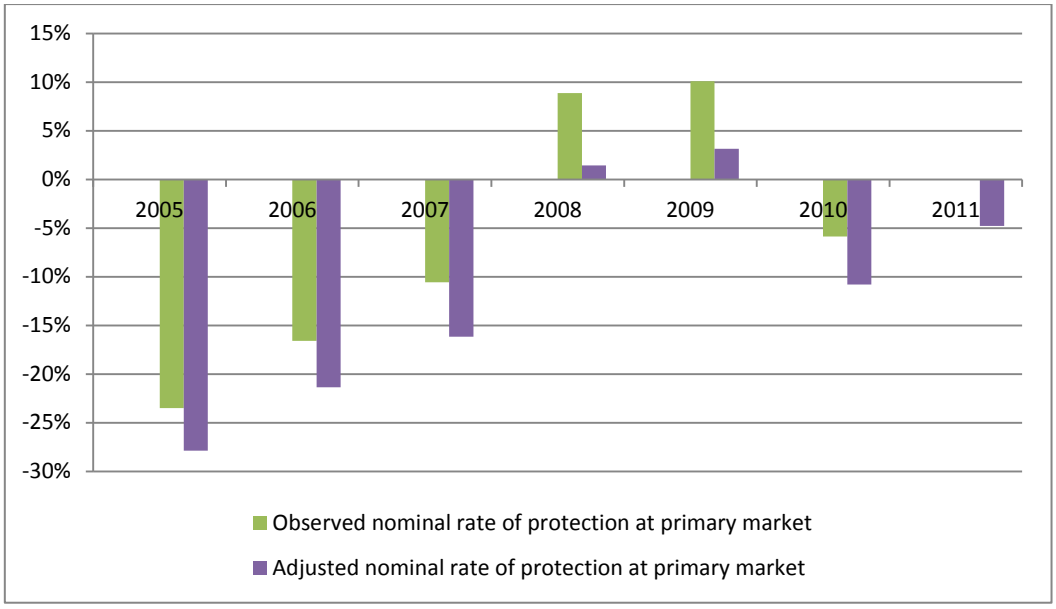
[14] At the primary markets located at lakes' landing sites, fish is sold by both fishermen and boat transporters (who purchase fish from the fishermen who reside at the lake). Buyers of fish at the primary markets include wholesale traders, processing factories and consumers.

[15] Note the declining production (catch) in 2008 depicted in Figure 31.

In contrast, processors who export directly receive full export price at the point of competition. Both the observed and adjusted nominal rates of protection are, by definition, zero. This is consistent with the liberalization and export promotion policy pursued by the government of Uganda. Compared to the primary market, export market appears to be operating efficiently from the point of view of policy effects.

Uganda pursues a liberalized economic policy with minimal policy measures such as export taxes or restrictive trade measures. Local taxes on fish exports are minimal. The role of the Department of Fisheries Resources (DFR) at MAAIF of Uganda retains setting and enforcing standards and regulations for practices pertaining to fisheries (FDR, 2012). As such, the above market incentives cannot be attributed to policy interventions. Rather, these incentives are the results of demand and supply forces in the global and domestic fish market.

Figure 39: Nominal rates of protection for fish in the primary and export markets in Uganda, 2005– 2010



Note. The nominal rates of protection at the point of competition are not shown because it equals zero.
Source: MAFAP.

During the period of analysis, the export prices of processed Nile Perch almost doubled increasing from US$ 3.648 per kg in 2005 to US$ 7.12 in 2011 (UBoS, 2012). In addition, the demand for fish exports is stimulated by the dramatic increase in regional export markets to neighbouring countries in recent years together with lifting of the ban of fish export to EU countries in 2000 (DFR, 2012). As a result, the fish processing industry expanded but most factories are operating at less than 40 percent of their capacity (DFR, 2012). This is due to decreasing catches particularly from Lake Victoria caused by low stocks, overfishing and expansion in neighbouring countries sharing the lake. With the increased demand and the reduced supplies, the price of fish in Uganda has inevitably been rising. The burden of this increase is ultimately born by domestic consumers in the form of high retail prices.

Cotton

Production

Cotton was introduced in Uganda by the British in the early twentieth century, perhaps simultaneously with the introduction of the crop into Sudan and Kenya. Uganda cotton is a rain fed annual crop of medium staple, grown using low input, low output methods mainly by small scale farmers with an average of 1.2 acres (PMA, 2009). The use of fertilizers and pesticides is limited. It is grown at less than 1 500m, above sea level, and requires a rainfall regime of over 800 mm/annum. It competes mainly with annual food crops. It was grown mainly in the North, East and South East of Lake Kyoga, and in the Kasese area in the West (CDO, 2000). Yields varied between 200 and 450 kg/ha of seed cotton. Cotton has a fairly long growing season of 6–7 months.[16] It is usually planted in May and June and harvested in November or December.

The ecological zones which grow cotton are the Northern and Eastern dry areas, which grow the variety SATU (Serere Albar Type Uganda) and the Southern and Western wet areas which grew the variety BPA (Bukalasa Pedigree Albar) (CDO, 2000). Due to the liberalization of marketing since 1994, SATU, which is a shorter and coarser fibre, fetched a lower price than the BPA variety, which is longer and smoother. Farmers were therefore reluctant to continue planting SATU (CDO, 2010). Uganda farmers now grow only BPA cotton stocks but SATU lines are being maintained at SAARI, purely for research.

The production of cotton lint and seed in Uganda is variable over the years due to various factors including weather conditions, price expectations and provision of farm inputs. Following an upward trend between 1998 and 2004, production declined from 18 981 tonnes of lint and 35 400 tonne of seed in the 2005/06 season to about 13 006 tonnes of lint and 27 840tonneof seed in 2009/10 season (Figure 40). Baffes (2009) argues that the fundamental problem with Uganda's cotton sector is its low profitability, which reflects the displacement of cotton by food crops.

The area under cotton cultivation has been fluctuating over the last three years (2008–2010). Cotton area decreased from 100 000 hectares in 2008 to 67 000 hectares in 2009, and then increased to 80 000 hectares in 2010 (MAAIF, 2011). The decline in acreage is attributed to a decline in the cotton prices in the 2008/2009 season. This price decline affected the farmers' incentives. Furthermore, there was a severe drought in Uganda from June to August 2009, during the ideal cotton planting time in Uganda. Moreover, there has been a shift to the production of food crops due to high prices paid during that period (MAAIF, 2011).

Domestic utilization

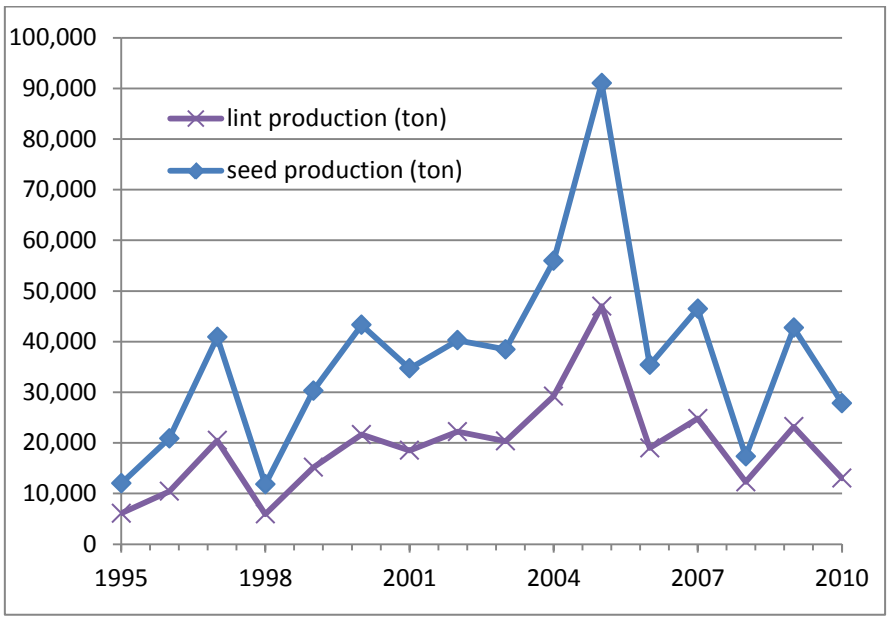
Domestic utilization of cotton refers to the amount of cotton lint used by the domestic textile industry and seed processed into oils and animal feed (the difference between what is produced and what is exported). Over the years 2005 to 2010, over 80 percent of the lint produced was exported,

[16] Because cotton is planted and harvested in one year but marketed in the following year, official statistics are reported with reference to both years. For example, 2005/2006 refers to production season of 2005 and marketing season of 2006. In this note, reference to a single year always refers to the marketing year since prices quoted here are valid for that marketing period.

while only about 92 percent of the seed produced was utilized domestically over the same period of time.

While the textile industry in Uganda consists mainly of small to medium sized factories with modest technology and low capacity (PMA, 2009), the seed processing companies appear to have a higher capacity. This partly explains the low domestic utilization of lint compared to the domestic utilization of seed. Uganda has five privately-owned cottonseed processing companies located in or close to Kampala (Baffes, 2010). Cotton seeds, oil, and meal are all tradable commodities. Seed prices are market determined and depend mostly on the size of the cotton crop (Baffes, 2010).

Figure 40: Cotton lint and seed production trends in Uganda (1995–2010)



Source: Data from CDO (2012).

Trade

With the low share of domestic utilization of cotton lint, Uganda is net exporter of cotton. It is considered as one of the four traditional exports of the country. Traditional Ugandan exports also include a coffee, tea and tobacco. Although cotton exports were variable during the last five years (2006-2011), lint exports contributed 1.2 to 3.9 percent of the total export revenue of the country and 2.5 to 12.7 percent of the revenue generated from the traditional exports (Table 27). Cotton lint exports contributed about US$ 86 million in 2011 (BoU, 2012).

Ugandan cotton lint exports are destined to several countries in Europe, Asia and Africa. The major importer is Singapore (55 percent) followed by Switzerland (23 percent) and the United Kingdom (17 percent). China, Kenya and Tanzania are minor importers of Ugandan cotton. In contrast, Kenya is the only country where exports of cotton seed are reported. With the low export earning value, seed exports seem to represent the unutilized surplus by the seed processing industry.

In the domestic market, farmers sell seed cotton to ginneries through ginnery commissioned agents, farmers' groups or other traders who sell to ginneries. The point of sale of seed cotton is usually the ginnery or ginnery store located in the production area. Seed cotton is largely procured by

commission agents working on behalf of ginners. Most of the total lint produced was exported mainly to the United Kingdom, Switzerland, Portugal, Kenya, Rwanda, Singapore and Turkey. Pricing of lint is usually based on the world price in Liverpool. Ginneries generally sell lint on a FOT (free on truck) basis. The reference point for transport costs is Kampala /Tororo.

Table 27. Importance of cotton exports in Uganda (2006-2011)

	2006	2007	2008	2009	2010	2011
Quantity of lint export (tonne)	18 480	16 230	7 960	17 888	11 891	25 587
Value of export (000 US $)	20 474	19 571	13 214	23 186	19 919	86 010
Value of export as % of total exports (%)	2.10	1.50	0.80	1.50	1.20	3.90
Value of export as % of traditional exports (%)	7 10	4.90	2.49	5.52	4.52	12.67

a. Traditional Ugandan exports include coffee, cotton, tea and tobacco.

Source: UBoS (2011) and BoU (2012).

As it is important that the ginnery retains enough seed for planting requirements, each ginnery must retain a quota of 300 tonne at the beginning of the season (December/January) for treatment by the CDO at designated ginneries (Foodnet, 2002). The treated seed is distributed to farmers for the new season's plantings. While the ginnery owns the resulting cotton seed separated during the ginning process, the levy by the UGCA to cover the cost of supplying the farmer with planting material is factored into the farmgate price.

Commodity indicators

Similar to the other traditional exports of Uganda, cotton ginneries sell cotton lint directly at the point of competition (reference point is Tororo or Kampala) to importers. As such, they receive the full export price which is based on the world price in Liverpool less the applicable tax paid to CDO (2% of export price). Consequently, the observed nominal rate of protection is, by definition, zero while the adjusted nominal rate of protection is almost constant reflecting the export tax charged by CDO (Figure 41). These estimates are consistent with the liberalization policy for exports and represent an optimal level of incentives to exporters free of any distortions that could be caused by government policy.

At the farmgate, the observed and adjusted nominal rates of protection were quite variable. While it was generally negative in 2005-2007 averaging about 7 percent, the observed nominal rate of protection is positive in 2008-2010 reflecting a modest improvement in producers' incentives (Table 25; Figure 41). However, the adjusted nominal rate of protection is generally negative throughout the period of analysis except in 2009 (Figure 41) when the government advanced a price subsidy for growers.

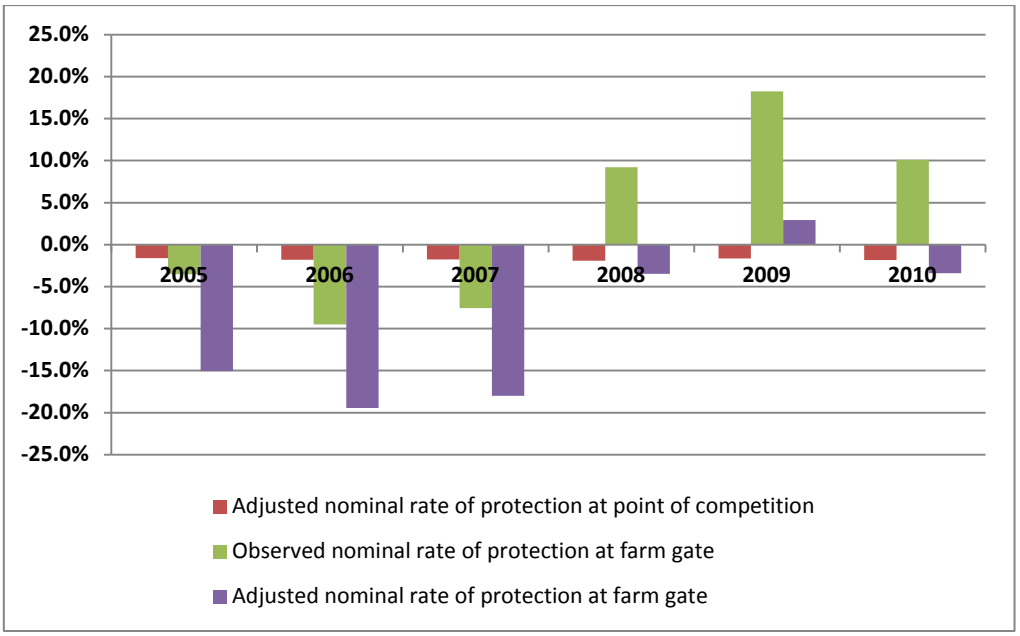
The seasons with negative indicators are associated with the highest levels of profit margins for ginneries and exporters. Therefore, the observed disincentives to producers in these years are due in part to the excessive profit by exporters and ginners themselves above what can be considered as normal profit. This means that the price increase may not trickle down to cotton farmers since they sell their cotton early in the season at the announced price. This indicates significant disincentives to cotton growers. Combining this result with Baffes (2009) argument that the fundamental problem

with Uganda's cotton sector is its low profitability, this explains the decline trend of cotton production since 2005 (see Figure 40).

Besides the excessive profit margins at the ginning and export level, the cotton pricing mechanism may also explain the price disincentives at the farmgate. Although CDO sets the indicative prices at 60 to70 percent of the Cot Look A, the indicative price represents a ceiling that prevents growers from gaining from changes in world prices within the season

The current seed cotton pricing mechanism failed neither to reward farmers when export prices increase since the indicative price becomes a price ceiling in this case nor to protect ginneries when world prices of lint decline. For both, this represents a significant source of risk. The CDO may consider establishing a cotton price stabilizing fund to cater for, among other things, the gap between the indicative price and the actual ruling world price to replace the indicative prices, i.e., the farmgate price of seed cotton to be determined by the market. The fund, then, provides a price subsidy to growers when the world price falls below a reasonably established price floor.

Figure 41: Nominal rates of protection for cotton in Uganda (%), 2005-2010



Note that the observed nominal rate of protection at the point of competition is zero.

Source: MAFAP.

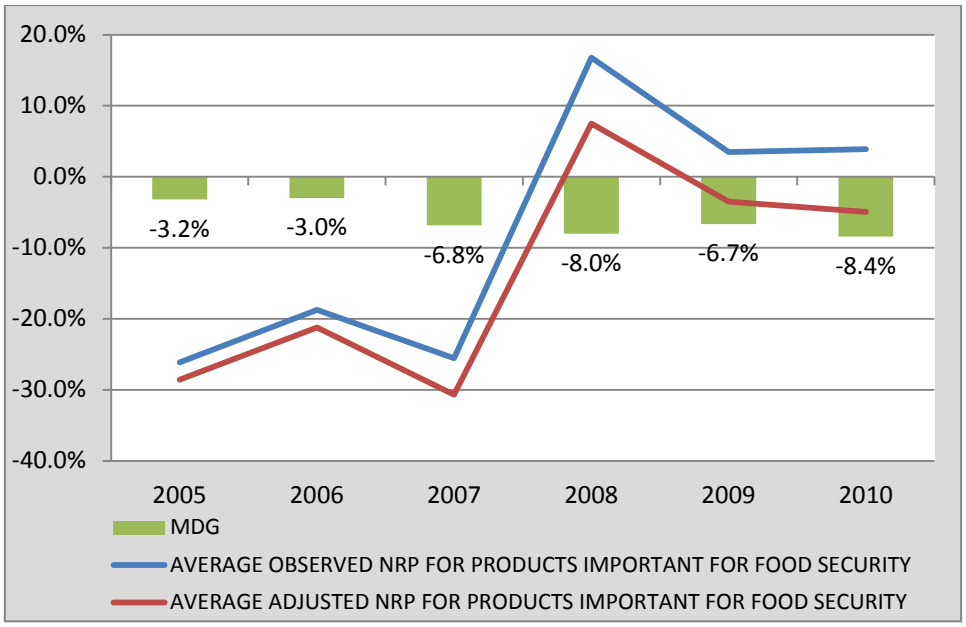
Commodities important for food security

Unfortunately, most of the major food security commodities in Uganda were not yet analyzed for lack of sufficient price data. These include beans and plantains (*Matooke*). However, maize, cassava, fish, rice, wheat and beef are also important for food security representing 35 percent of average per capita total caloric intake. In this report, we represent commodities important for food security by maize, cassava and beef and fish. Although wheat and rice are important for food security but were not included here and were analyzed as imports. Among the commodities important for food security, cassava is non-traded, maize and beef are thinly traded (based on the percent of the commodity production traded internationally) while fish is a major export. As such, this category is quite diversified with respect to tradability of the commodities.

With the exception of changes in levels of incentives linked to significant price movements during the crisis in food prices on international markets between 2008 and 2010, producers' disincentives are generally prevalent in the food security subsector as measured by the observed nominal rate of protection (Figure 42) with domestic prices below the reference price. This typically represents the trends of the observed indicator at the farmgate for maize and fish.

The adjusted nominal rate of protection for the food security commodities is generally negative throughout the period of analysis except in 2008. This indicator ranges from -28.6 percent in 2005 to 7.5 percent in 2008 and averages -13.6 percent. This in sharp contrast to imports with clear incentives to producers but very similar to the exports since food security commodities also include commodities that are considered as exports (fish and maize). Both the observed and adjusted indicators are characterized by substantial variability over time with no consistent trend. This suggests weak price transmission between the world and domestic price as is the case with beef, maize and cassava which are either thinly-traded or non-traded. As such, the incentives to producers of the commodities in this group appear to be driven by the domestic demand and supply.

Figure 42: Nominal rates of protection (NRPs) and market development gaps (MDG) for food security commodities at producer level (%), 2005-2010

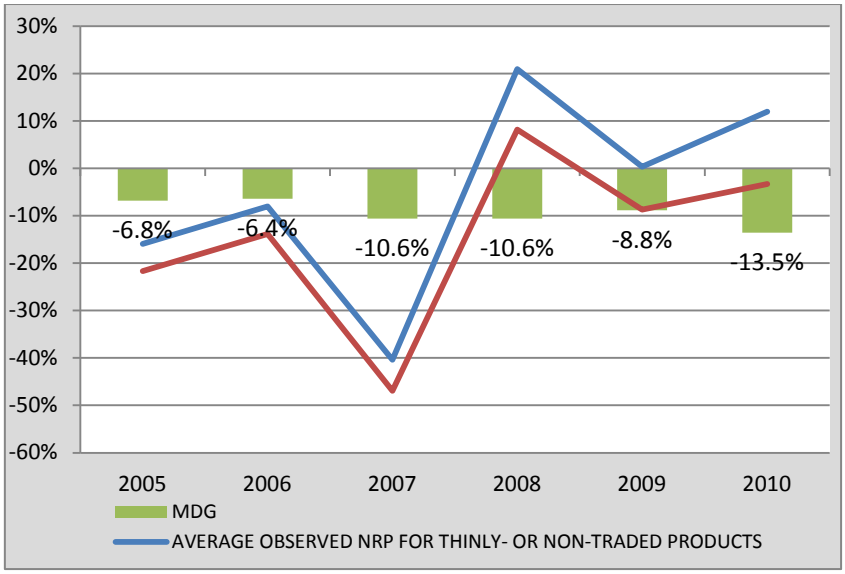


Source: MAFAP

Thinly-traded and non-traded commodities

Among the commodities important for food security are relatively thinly-traded (namely maize and beef) and non-traded, such as cassava. Figure 43 shows the indicators for these commodities. The pattern and magnitude of the indicators of thinly-traded commodities are very similar to those of the important food security commodities with high variability of farm level incentives over time. The observed nominal rates of protection were positive in 2008-2010 driven by the high values for maize in these years. A market development gap of up to 9.5 percent is also persistent. Despite their low level of tradability and the generally weak price transmission in Uganda, farmgate incentives seem to have responded positively to high world prices during 2008 to 2009 for most food commodities.

Figure 43: Nominal rates of protection (NRPs) and market development gap (MDG) for thinly- traded commodities at producer level (%), 2005– 2010



Source: MAFAP

Maize

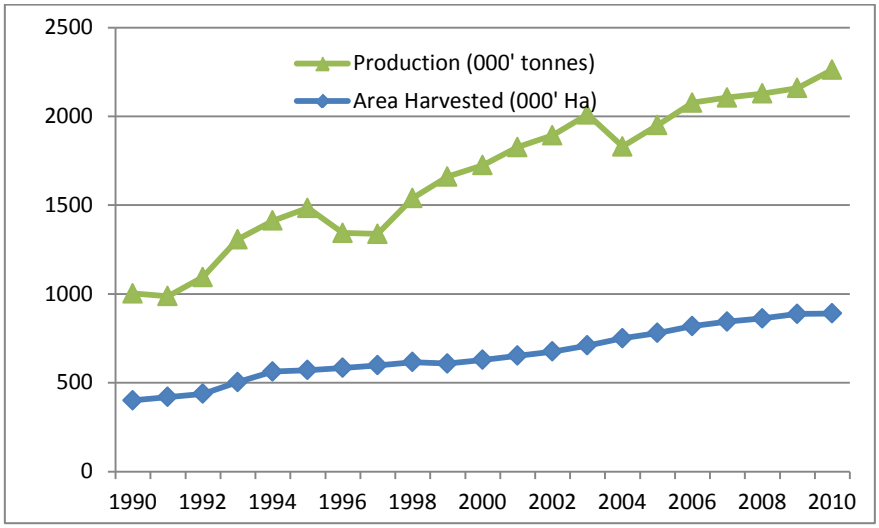
Production

Maize is widely grown in Uganda and forms an important part of the farming system, particularly in Eastern Uganda. The main production agro-ecological zones are in the west, east, north and southeast Uganda (NRI/IITA, 2002). The Eastern region accounts for over 50 percent of annual production (USAID, 2010). The crop is cultivated on about 1.5 million hectares of land. In terms of area planted, maize is the third most cultivated crop after banana (Matoke) and beans. In some regions of the country, the crop has now become a staple food, replacing crops like sorghum, millet, cassava and banana.

While production is influenced by climate patterns, farmers' planting intentions in excess of subsistence requirements are largely influenced by price levels. Overall output tends to fluctuate accordingly. The country has the potential to produce up to 7.5 million metric tonnes utilizing the current area under maize by utilizing improved varieties and crop management technology (AATF/NARO, 2010). However, this has never been achieved largely due to various production constraints including low soil fertility, lack of improved maize varieties, erratic rainfall patterns and drought stress during some seasons. Maize production is generally characterized by low yields, which result in high unit costs and thus low returns.

Over the last two decades (1990-2010), both maize area and production in Uganda increased dramatically (Figure 44). Harvested areas increased from about 0.4 million hectares in 1990 to 0.65 million hectares in 2001, and reached 0.89 million hectares in 2010 (FAOSTAT, 2011). Similarly, production more than doubled during the same period, i.e., from 0.57 million tonnes in to 1.37 million tonnes in 2010. Clearly, most of the production increase is the result of area expansion rather than yield improvement as crop yield stagnated at around 1.5 t/ha in recent years (FAOSTAT, 2012).

Figure 44: Maize area and production trends in Uganda (1990-– 2010)



Source: FAOSTAT (2012).

Consumption

While maize has been grown for a long time in Uganda, nonetheless, unlike in neighboring countries (Kenya, United republic of Tanzania, etc), it does not form a major part of the population's traditional diet, but is grown primarily for income generation, rather than for food security. However, the growing cost of traditional staple foods (such as cooking bananas locally called Matooke) has had the impact of increasing maize consumption, especially in urban areas. Kampala alone accounts for about 50 percent of the formal trade in maize (USAID, 2010).

The domestic market for maize in Uganda is estimated at 350 000 to 400 000 tonnes per annum (Foodnet, 2002). In 2007, domestic consumption remained at 400 000tonneout of a national availability of approximately 638 000 tonne (USAID, 2008). Maize is consumed in various forms – grilled or whole, as a cake [Posho, or Ugali], or as porridge – especially in urban centres. Over 70 percent of the maize is consumed as food, and about 10 percent is used as animal feed (maize bran). There is also increasing demand for value-added products (maize flour, poultry feeds, etc.) especially in urban centres where maize is gaining importance both as a major food item and for income generation.

Marketing and trade

The value chain of maize tends to be complex and involves multiple and complex transactions. According to USAID (2010), the World Bank (2009) and PMA (2009), the main channels for the commodity flow include (i) from farmers (farmgate) to agents, traders, or village markets in rural areas; (ii) from rural markets to secondary markets in regional towns such as Iganga, Bugiri and Sironko; (iii) from urban markets to major buying centres outside the district and (iv) from urban and rural markets to export markets dominated by cross-border trade with neighbouring countries. Each one of these channels involves a number of key players.

Table 28 presents maize production, import and export of Uganda (2004-2010). According to the data on official exports, Uganda exported 8 to 12 percent of its maize production between 2004 and 2010. However, informal (unofficial) maize exports may far exceed the formal (official) exports.

According to Bank of Uganda (2011), the value of informal maize grain and flour exports to neighboring countries in 2009 and 2010 were estimated at US$ 36.67 and 45.83 million, respectively. In contrast, the value of formal maize grain exports in the same years were US $29.07 and 38.21 million, respectively (MAAIF, 2010).

Uganda's maize export market is mainly regional, comprised of markets within Eastern and Southern Africa, the Democratic Republic of Congo and Southern Sudan. Exports of maize to Kenya alone more than doubled from 2004 to 2008 (MAAIF, 2010). Uganda's export potential for maize is estimated between 200 000 and 250 000tonneper year (USAID, 2010). Nonetheless, the country has only managed to formally export half of this amount, reflecting a low level of penetration into the regional markets due to the poor rural road network, and limited business exposure (USAID, 2010).

According to USAID (2010), internal procurement and trade in maize along Uganda's eastern and southern borders with Kenya and Rwanda, respectively, remains brisk, as high demand for maize in the neighbouring countries increased the follow of maize from production centres in Uganda. Trade in maize to these markets is entirely informal. Maize is sold across borders through Mutukula for Tanzania, Busia for Kenya, and Gatuna for Rwanda. Of all the five neighbouring countries, Kenya dominates the informal export destinations followed by DRC, Southern Sudan, Rwanda and Tanzania.

Table 28. Maize production, import and export of Uganda (2005– 2010)

	2005	2006	2007	2008	2009	2010
Production (000 metric tonnes)	1 170.00	1 258.00	1 262.00	1 266.00	1 272.00	1 373.00
Imports (000 metric tonnes)	78.79	59.526	42.54	N/A	N/A	N/A
Formal exports (000 metric tonnes)	90.36	118.49	107.08	66.67	94.44	166.25
Formal export as a percent of production	7.72%	9.42%	8.48%	5.27%	7.42%	12.11%

N/A = data not available.

Source: FAOSTAT, 2011 and MAAIF (2011).

Commodity indicators

Maize wholesale prices in Uganda appear to vary considerably over time due to supply and demand factors. For example, the nominal wholesale price in Busia increased from U Sh 334,357.4 per ton in 2007 to U Sh 836,561.1 per ton in 2010. This price movement is not necessarily linked to world price movement. Wholesale prices of maize in Busia are often above world prices as during the period of 2008-2011. This price movement in the wholesale price directly influenced the measured indicators at the wholesale market. The observed rates of protection for maize at the wholesale in 2005-2007 were negative ranging from -9.2 to -12.5 and averages 12.44 percent (Figure 45). These were significant disincentives to wholesalers apparently captured by exporters. However, with the inception of the world price crisis in 2008 and the rise in food prices, wholesale prices of maize in Uganda began to increase significantly. As a result, the observed nominal rate of protection was positive averaging 31.5 percent. Clearly, this represents significant incentives to wholesale traders.

The observed nominal rate of protection masks significant market and policy distortions including local taxes, non-tariff barriers and excessive profit margins. These distortions create a wedge between the observed and adjusted nominal rate of protection. As Figure 45 shows, the adjusted

price gaps are smaller in magnitude as compared to observed gaps. This means the disincentives are larger and incentives are smaller when these distortions are netted out.

Both the observed and adjusted nominal rates of protection at the farmgate follows the same patterns of the wholesale indicators with negative trends during the period of 2005-2007 and positive patterns during 2008-2010 (Figure 45).After several years of price disincentives where farmers were receiving a price below the reference price till 2007 and as a result of rising world prices, maize producers began to receive price incentives in form of a price higher than the reference price at the farmgate. However, these price incentives are highly variable over the years.

At the farmgate, market costs appear to be somewhat excessive due to excessive profit margins as a result of the long value chain with too many intermediaries and local taxes. In contrast to the indicators at the wholesale level, the negative nominal rates of protection at the farm gate are larger in absolute terms and the positive indicators are smaller (Figure 45). In other words, maize producers seem to bear greater share of the burden of price decline and yet gain less than equitable share of price increase. This indicates that maize producers are disadvantaged in both cases. The fewer but larger traders, millers and exporters of maize in urban centres are likely to have access to better market information than farmers and rural dwellers and thus more control on prices. Smallholder farmers tend to market small quantities of maize and may have limited market power to negotiate the prices. In addition, monopolistic behaviour can be attributed to market power in the export market (export market controlled by few powerful traders).

At both wholesale and farm gate levels, the observed nominal rates of protection are highly correlated with the wholesale prices. Maize prices in Uganda, particularly in the eastern region, have also a long-term equilibrium relationship with prices in Nairobi, the major export market (World Bank, 2009) indicating some degree of market integration. However, despite this integration, price transmission may be slow which explains the variability of price gaps. In other words, changes in export price of Ugandan maize do not translate with the same degree to wholesale and farm gate levels. In addition, maize price volatility is cited as on the main constraint to traders creating uncertainty and makes the value chain inefficient through creation of speculators who collude to artificially depress or raise the prices (PMA, 2009). If this occurs at the high level of the chain, farmers and traders will bear the burden of price volatility.

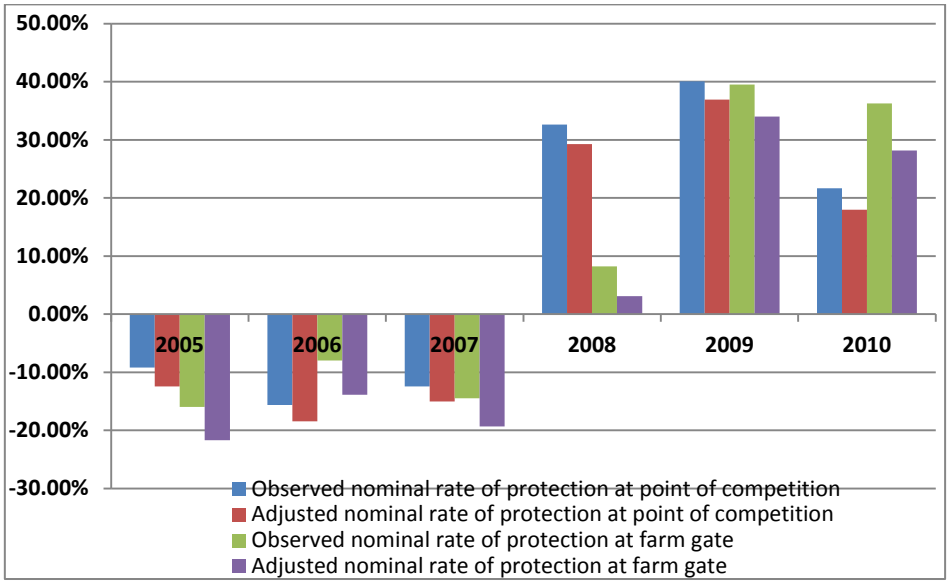
With a highly liberalized maize market in Uganda, minimal government intervention in price setting, insignificant direct taxes on maize marketing and liberalized foreign exchange market, the above results suggest the presence of significant market development gap. Some of the factors that may explain the deviation of the wholesale and farm gate prices from their equivalent reference prices may include:

i. The complexity and length of the maize value chain in Uganda with many agents involved increases transaction costs and thus reduces farmgate prices.
ii. Since the majority of producers are small-scale farmers, maize is often sold by producers in small quantities of poor quality at low prices (PMA, 2009).
iii. Poor conditions and lack of adequate storage facilities result in significant post harvest losses at various stages of the supply chain (World Bank, 2010). Although Uganda does not currently have quality standards for maize exports, exporters must conform to quality standards of the importers and other buyers such as WFP.

iv. Dominance of large scale traders and exporters of maize who have emerged over the years may lead to a monopsonistic behaviour and the concentration of market power.

v. High transportation costs due to poor rural roads and the presence of non-tariff measures.

Figure 45: Nominal rates of protection (%) for maize in Uganda, 2005-2010



Source: MAFAP.

Beef

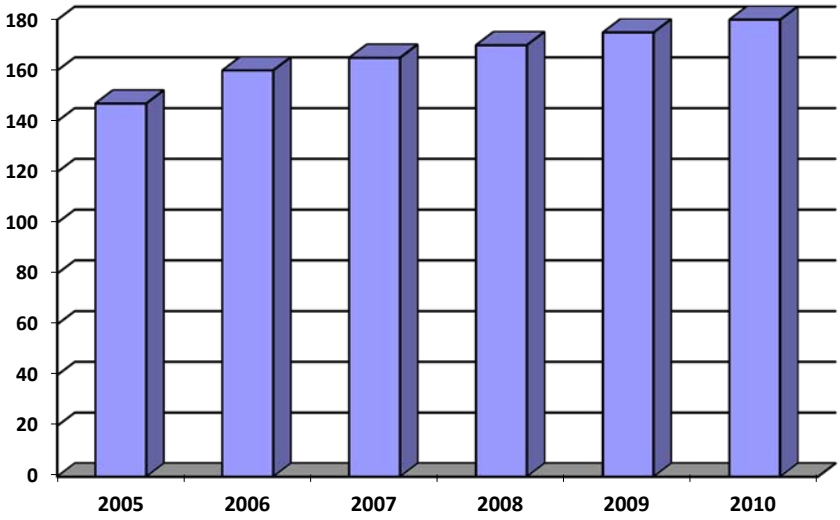
Production

Livestock production constitutes an important sub-sector of Uganda's agriculture, contributing about 9 percent of the Gross Domestic Product and 17 percent of the Agricultural Gross Domestic Product. Livestock production is a source of livelihood to about 4.5 million people in the country (UIA, 2009). In economic value, cattle are considered to be the most important livestock although other animals such as goats, sheep, pigs and poultry are equally important. Cattle are the main source of meat in the country and are reared on rangelands which occupy 84 000 km². The greatest concentration of livestock is found in the "cattle corridor," extending from South-western to North-eastern Uganda. The indigenous breeds account for about 95 percent of the national herd/flock of which the Ankole (50 percent) longhorn breed is most dominant. The annual production of livestock products has recorded progressive growth since 2004. Beef production in 2008 stood at 200 743 MT, an 8 percent increase from 147 552tonnein 2004 *(*MAAIF 2009) (Figure 46). Beef production in Uganda uses predominantly indigenous breeds (INFOTRADE, 2011). However, beef production is apparently not increasing enough compared to the rate of growth of the human population. This is due to constraints such as animal diseases, poor feeding, use of poor breeds and breeding methods.

Consumption

There are different approaches to determining the actual per capita meat consumption, either from the primary production side (minus exports plus imports), from the slaughter statistics, or from the consumer side according to a household survey. Slaughter statistics are always incomplete, because not all slaughters are recorded.

Figure 46: Beef production in Uganda 2005– 2010 (thousands of tonnes)



Source: Department of Animal Production and marketing, MAAIF, 2012

The turnoff rate (off take rate) for cattle in Uganda is estimated at 12 percent (MPMPS, 1998) and an additional 3 percent consumed at farm/household level. The demand for livestock products, including beef, has steadily been rising due to changes in social and economic structure of the population, urbanization and population growth. The current *per capita* availability of meat stands at 12.1 kg, of which beef constitutes 6.3 kg (Table 29), as compared to 50 kg of meat recommended by FAO and WHO (Greenbelt Consult Limited, 2006). This consumption is relatively low. According to the 1992/1993 National Household Survey, the per capita consumption of beef in rural areas is about half that found in urban areas.

Table 29: Meat consumption in Uganda (2010)

Species	Total number slaughtered	Equivalent weight of carcass (tonnes)	Full "carcass" weight (kg)	Human population	Per capita consumption (kg)
Beef	2 084 000	312 580	150.0	35 000 000	6.3
Pigs	1 885 000	113 100	60.0	35 000 000	3.2
Goat	2 750 000	32 100	11.7	35 000 000	0.9
Sheep	648 000	9 072	14.0	35 000 000	0.3
Poultry	37 500 000	48 750	1.3	35 000 000	1.4
Total		**332 622**			**12.1**

Note: FAO calculates carcass weight and not meat without bones.

Source: FAOSTAT (2010).

Marketing and trade

Beef and cattle exports are limited because of the prevalence of diseases, lack of an export-standard abattoir and the high national market demand (MAAIF, 2011). Access to export markets of livestock and livestock products requires significant investments to meet veterinary requirements largely intended to protect the importing country's animal and human populations. Generally, compliance with international or regional standards is often achieved by developing countries at a great cost.

At the export level, Uganda's performance in livestock and livestock products is still dismal (Greenbelt Consult Limited, 2006). Presently, Uganda exports very small quantities of live animals and hides and skins. Nevertheless, Uganda's livestock export earnings have grown in recent years from an estimated US$ 5.75 million in 2004 to about US$ 10.4 million in 2008 (UIA, 2009).

There seems to be increased informal and formal exports of meat products and live animals from Uganda to regional markets. In addition, there are exports of processed meat exported by "Fresh Cuts" to the UN troops in South Sudan, DRC and Somalia. Uganda is not exporting as much as what is commensurate with the large livestock population existing in the country. This is because of the difficulties in complying with international sanitary and phytosanitary requirements. These difficulties notwithstanding, Uganda is a net exporter of livestock products and live animals internationally.

The traditional value chain for beef and cattle in Uganda starts at the farmgate when the farmer decides to sell an animal. Middlemen collect animals at the farmgate or animal markets and bring them by truck to bigger cities or to the capital Kampala (MAAIF, 2011). Costs of that transaction include the loading fee at animal markets, transportation, movement certificate from the local veterinary and the lairage fee at the abattoir.

Commodity indicators

As with the case for thinly-traded and non-traded commodities in Uganda, price data for beef at all levels is scarce. The analysis below is based on limited data for only three years (2008-2010). Despite the limited contribution of livestock and livestock products to export earnings of Uganda, its export of processed beef has been receiving lucrative prices in recent years as exporters are exploiting niche markets in neighbouring countries and peace-keeping missions in the region. The observed nominal rate of protection is initially positive in 200-2009. As export prices rise and domestic producers' prices remain stagnant in 2010, these initial observed incentives to cattle producers were eroded with the observed nominal rate of protection declined to about 2 percent (Figure 47).

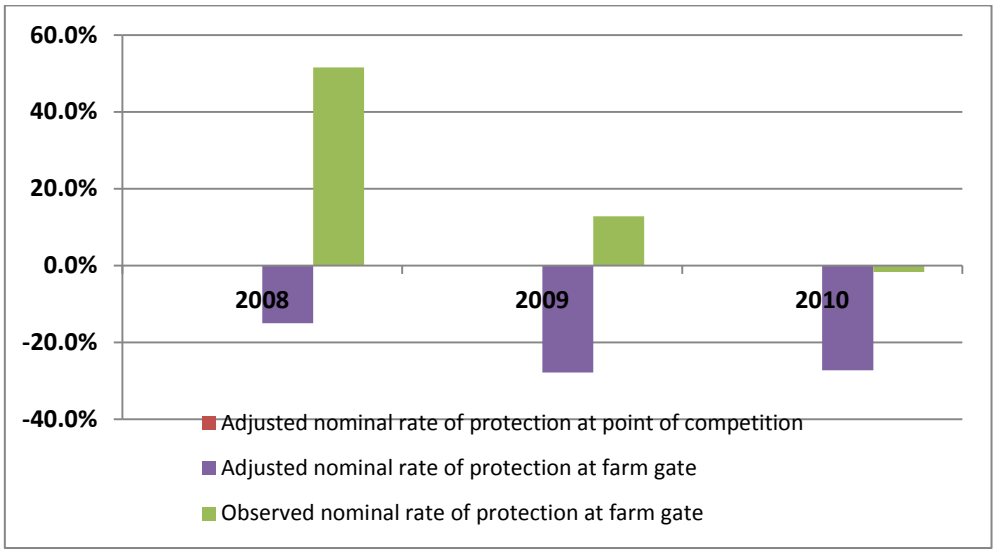
However, when adjusted for taxes and excessive profit margins, the adjusted nominal rate of protection was negative ranging from -15.0 to -27.8 percent (Figure 47). The principal reason for the divergence of the observed and adjusted indicators is the excessive taxes charged on cattle at the primary, secondary and tertiary markets as well as local authority fees on cattle movement. In addition, accumulated profit margins at each marketing stage, particularly at meat processing which is estimated at 18 percent, are quite high. Taking these inefficiencies into consideration, cattle producers are, in reality, receiving prices disincentives as these additional margins reduce the producers' prices.

As with the case for other processed exports (e.g., fish), beef processing is integrated with marketing and export. Therefore, beef processors receive the full export price at the point of competition (border). As such, the observed and adjusted nominal rates of protection are, by definition, zero.

As for other exports, the liberalized market incentives at the point of competition are not necessarily similar to those at the producers' level. While processors/exporters are benefiting from the export promotion measures to realize the full border price for their meat exports, cattle producers are taxed as the result of the excessive taxes and levies and profit margins. The main driving factors for the disincentives at the farm gate for cattle is the long value chain, excessive taxation and fees on

movement of cattle from production areas to regional markets, high processing costs and excessive profit margin at the export level. All these factors tend to depress producers' price.

Figure 47: **Nominal rates of protection (%) for beef in Uganda, 2008-2010**



Note that the observed nominal rates of protection at the point of competition are zero.
Source: MAFAP.

The deviation of the domestic prices from reference prices can also partly be explained by the existence of a market development gap that creates an access cost gap at farmgate. This market development gap is due to local taxation, non-tariff barriers such as bribes, fees and levies and excessive profit margins as well as the long and complex value chain. All of these are transfers from marketing agents and producers to the government and/or private individuals.

Cassava

Production

Cassava is one of the most important staple foods in Uganda, predominantly grown as a staple crop by subsistence farmers on plots averaging 1–3 acres. Uganda is among Africa's six largest cassava producers. According to existing production data, national cassava production was estimated at 5.5 million tonnes in 2004/2005, decreasing slightly to about 5 million tonnes in subsequent years (FAOSTAT, 2012) (Figure 48). In terms of production value, cassava comes only second to plantains in Uganda, although it is increasingly facing competition from other crops, especially maize and wheat. It is estimated that 60 percent of the cassava produced is used for subsistence consumption, with only 40 percent going to the markets (COMPETE, 2010). Eastern Uganda is the main source of cassava in Uganda, followed by the north and western parts of the country.

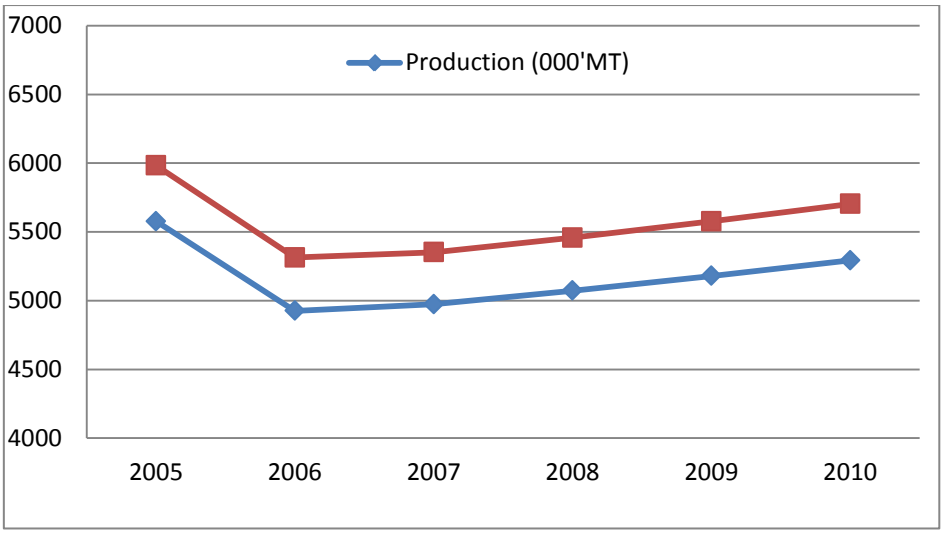
Cassava contributes approximately 11 percent (US$ 537.4 million) to the value of Uganda's agricultural production (UBOS, 2011). However, being a largely a subsistence and "non-traded" crop, cassava is valued more for its contribution to rural food security than for its foreign exchange earnings or import substitution contribution to the national economy.

Consumption

In Uganda, cassava is consumed more in rural areas than towns. Nonetheless, the flour also plays a major part in urban diets, and remains one of cheapest sources of carbohydrates, thus suiting the food budgets of the urban poor. Although cassava is becoming increasingly commercialized, its transition from subsistence to commercial crop is happening at a much slower pace compared to other crops like maize and potatoes.

In Uganda, preference is usually given to the sweet varieties of cassava, with the bitter-tasting varieties commonly dried and milled into flour. The bulk of the cassava is peeled and sliced into "chips." which are milled into flour (COMPETE, 2010).

Figure 48: Cassava acreage and production trends in Uganda (2005-2010)



Source: FAOSTAT (2012).

Marketing and trade

It is estimated that 40 percent of the cassava produced in Uganda goes onto the market (Foodnet, 2002). Cassava is traded in the form of fresh roots, dried chips and flour. The major wholesale and retail market outlets are located in the capital Kampala. These are mainly supplied with dried cassava from the Eastern region (e.g. Pallisa and Kumi districts), and fresh roots from the West (e.g. Masindi, Kigumba, and Bweyale). Other supply centres for dried cassava reaching the Kampala market are Soroti, Apac and Lira. The Kampala market usually experiences a scarcity of cassava chips in the wet season, during which supplies are sourced from as far as the Paidha district in Northwest Uganda. There are claims, as well, of limited imports of cassava trickling into the country from Tanzania and Democratic Republic of Congo (DRC) although these largely go unrecorded.

Uganda's cassava exports are quite marginal, given that the bulk of production is used to meet the domestic demand. Occasionally, wholesale traders in the Eastern town of Jinja supply small quantities of cassava flour to the North-eastern parts of DRC via the town of Arua. This is prompted by the spontaneously high food prices in that region. According to the URA, cassava exports peaked in the period 2007–2008 (20 506 MT worth US$ 1.9 million), most of this cassava went to Southern Sudan and Eastern DRC. Another export route exists to Kenya via Tororo town, although quantities

involved are rather trivial. Considering that Uganda produces enough cassava for domestic consumption, the country's imports of cassava are quite negligible if any.

Given the informal nature of trade in cassava and the insignificant volumes involved, data on cassava exports and imports is quite scanty. But even for years when some indication of cassava imports and exports is given, volumes are quite trivial (less that 0.5 percent of total production). As such, cassava can be considered as non-traded although some informal trade with neighbouring countries may exist.

The main market channels involve cassava farmers, village assemblers, district level wholesalers, urban wholesalers, and urban retailers who sell the final product to the consumers. Other actors include travelling traders and millers that convert the dried cassava chips to flour.

In major towns such as Jinja and Kampala, there are a number of specialist businesses who combine cassava flour milling with wholesaling. These are efficiently run operations with millers purchasing their produce either directly from village assemblers (via agents) or from travelling traders. The average weekly turnover is usually 10 to 15 MT, and milling losses do not exceed 2 percent. These wholesalers sell cassava flour to retailers who in turn sell it to consumers (Compete, 2010, Foodnet, 2002).

Commodity indicators

Despite the importance of cassava for food security and its high contribution to the value of agricultural production in Uganda, accurate data on cassava is scarce similar to other thinly traded and non-traded commodities such as beans and plantains. The analysis of the cassava indicators is partial covering the period of 2007-2010. While the wholesale market at Busia is assumed to be the point of competition, farmgate price is assumed to be the average price in the main district markets in the Eastern region of Uganda, the major producer of cassava. The indicators at the wholesale level and farmgate are presented in Figure 49.

Since it is a non-traded commodity, cassava has no relevant border price in Uganda. In this case, the prices of its close tradable substitute, maize, adjusted by the relative prices of the two commodities is used as the benchmark price for cassava.17 The wholesale prices of cassava seem to be correlated to some extent with the domestic prices of maize. This is evident to some degree in the estimated indicators reported in Figure 49. As may be expected for a non-traded commodity like cassava with high transportation costs, the indicators are quite variable over time.

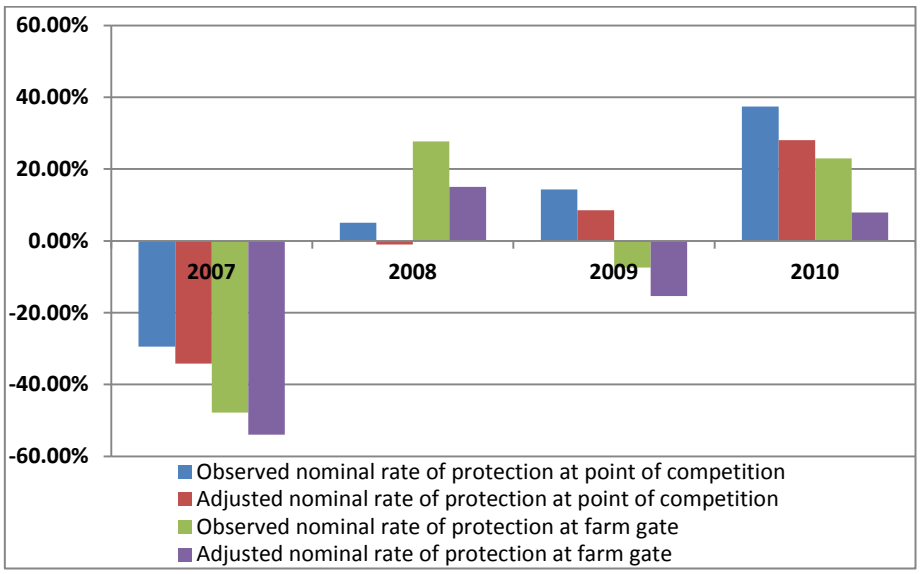
Wholesale indicators (observed and adjusted NRP at the point of competition) appear to follow an upward trend following the domestic wholesale price trend. The observed NRP at this level increased from -29 percent in 2007 to reach 37.5 percent in 2010. Over this period, it averaged 6.8 percent. Similar trend is exhibited by the adjusted NRP but the average over the period is almost zero. This upward trend of the wholesale indicators is due mainly to the rising food prices in Uganda since the

[17] The export (FOB) price of maize is adjusted by the ratio of cassava price to maize price at the retail level to reflect consumers' preferences. The adjustment ratio averages 0.8. This means that consumers are willing to trade 1 kg of dry cassava for 0.8 kg of maize grain. The high relative price is ratio is not surprising given the importance of cassava in the traditional diet of Ugandans compared to maize.

world food crisis began in 2008. This may also reflect improved marketability of cassava in Uganda. In contrast, both observed and adjusted nominal rates of protection at the farmgate were negative in 2007 and 2009 and positive in 2008 and 2010 (Figure 49). Accordingly, there appears to be a lack of price transmission between wholesale and primary markets of cassava.

The above results indicate that the market provides a modest level of incentives for cassava traders when the prices of other food is high such as in 2008 and 2010 when domestic prices of maize and other foods followed the world price trends. However, it seems that cassava prices are depressed when the prices of its substitutes are low in the domestic market as in 2007. Hence under such conditions, the market exhibits disincentives for cassava at the wholesale and farmgate levels. This is not surprising since cassava is considered to be an inferior substitute to maize in urban areas and to plantains in many other parts of rural Uganda. Moreover, transportation costs to consumption centres are relatively high given its market prices. Investment in cassava processing, e.g., cassava flour, in producing areas may reduce its marketing cost especially costs related to transportation and consequently improve its producers' prices.

Figure 49: Nominal rates of protection (percent) for cassava in Uganda, 2007– 2010



Source: MAFAP

Sub-sectoral comparisons

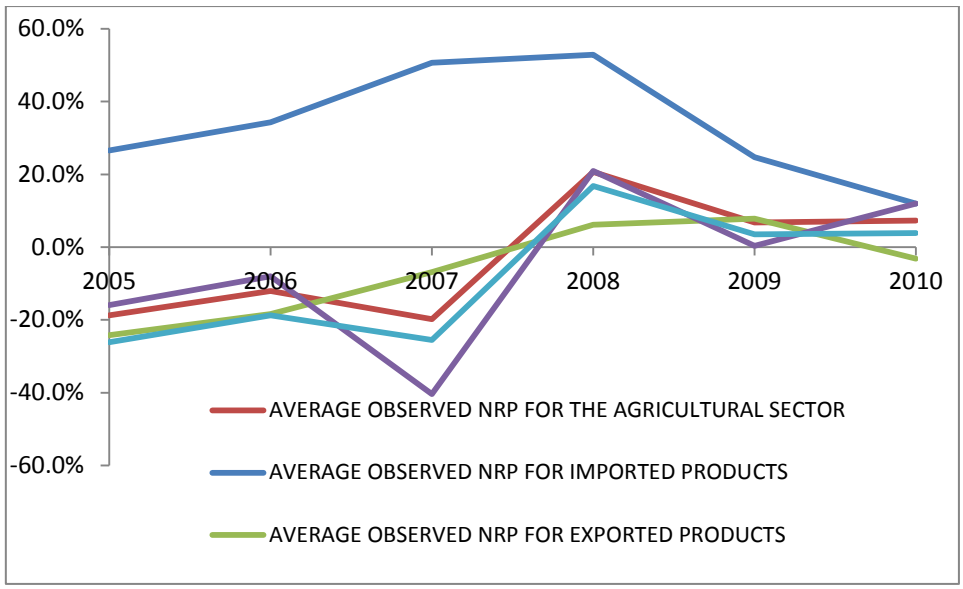
Based on the estimated adjusted nominal rate of protection, the pattern of incentives and their time trends are very similar for all commodity groups (agricultural sector, exports and food security) except imports. Imports category is the only category associated with a protective trade policy in Uganda, namely import tariff for imports originating from outside EAC. For these commodities, producers' incentives persisted for the entire period of analysis with the highest levels during 2007 and 2008 characterized by rising domestic producers' prices of rice and wheat. This was clearly achieved through the import tariff imposed in rice and wheat imports.

The producers of the major export commodities generally receive disincentives as the indicators are frequently negative (Figure 50). Even when the indicators are positive, the level of price incentives is much lower than other commodity groups. With the exception of the earlier years (2005-2006), the major export commodities appear to be priced close to their true value in the world market

(reference price). Generally speaking, the export promotion measures introduced by the government of Uganda seem to create the enabling environment for competitive pricing for Ugandan exports in the world market. This is very important for efficient resource allocation within the sector.

The food sector and the thinly-traded commodities appear to benefit from the high prices during the high prices driven by the world food price crisis of 2007– 2008. The variability of the disincentives over time reflected weak integration of the domestic market into world markets or at least slow or lagging response to price signals. Nevertheless, market power concentration at the upper level of the value chain, the level of producers' disincentives is relatively high reaching as high as 16 percent of the equivalent world price for the sector as a whole (as in 2010). For individual commodities, the corresponding size of the disincentives is even more alarming. These extreme levels tend to deprive producers of significant share of the world market prices.

Figure 50: Nominal rate of protection (NRP) of the sector, imports, exports and food security, 2005– 2010



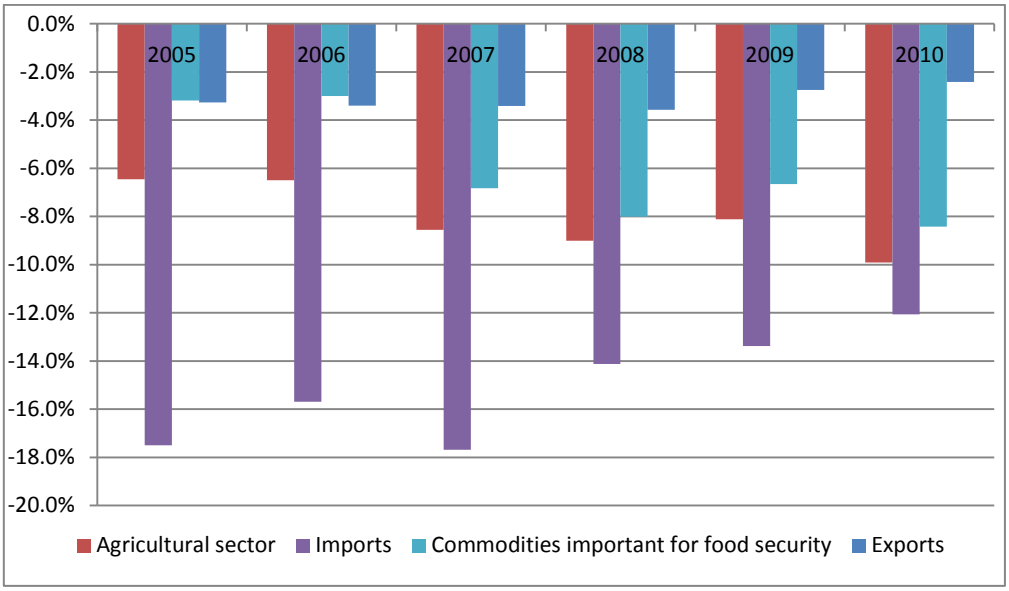
Source: MAFAP.

A market development gap of varying size appears to persist among all commodity groups (Figure 51). For imports, the market development gap is the highest due to the high cost of freight from Mombasa to Kampala at the wholesale and excessive taxes and profit margins on import. The market development gap within the imports is particularly driven by the MDG in rice and sugar. For the imports, the market development gap causes high retail prices for consumers and lower prices for producers. This is because the market development gap at the wholesale level for imports tends to increase the cost of imports.

For exports, the market development gap tends to lower producers' prices as it represents an additional cost for marketing of the goods but it is relatively low compared to other commodity groups. The excessive profit margin at the processing and wholesale levels is the principal cause of the market development gap for exports as export are affected by minimal taxes. The market development gap within the food security commodities ranks second in relative magnitude to imports. This is driven mainly by the poorly structured value chain of maize, beef and cassava and the excessive local taxation and levies on these commodities. The long value chains of maize, beef and cassava result in accumulation of excessive profit margins at each point of trade of the

commodity. For the agricultural sector as a whole, the MDG is estimated to range from 6.5 to 9.9 percent and averages 8.1 percent of the adjusted reference price at the farmgate. This means farmgate price may increase by up to 10% if the underlying causes of the MDG are eliminated.

Figure 51: Estimated market development (MDG) by commodity group (%), 2005-2010



Source: MAFAP

Conclusions

Product-specific conclusions

Rice

The estimated price gaps and associated nominal rates of protection for rice in Uganda indicate substantial incentives for producers and wholesalers. This support is due to the adoption of the common external tariff on rice imports from mainly Asian countries. However, the level of support at the farmgate level indicated by the nominal rate of protection is lower than the tariff in most years. This may be due to the market development gap caused by the high profit margins of traders and transportation costs from production to consumption markets. Therefore, producer support can be enhanced further by resolving these key issues affecting all aspects of the marketing chain.

Maize

The estimated price wedges and associated nominal rates of protection indicate substantial disincentives to maize producers and wholesalers in Uganda. This is especially evident during years of low export prices (2007 and 2010). Given that the maize market is highly liberalized in Uganda, the main issue does not concern policy, institutional, and regulatory matters, but relates to the lack of an efficient maize marketing infrastructure. The existing price gaps are mainly due to a market development gap rather than a policy effect. This key issue affects all aspects of the marketing chain, and if resolved, could have a significant influence on the improvement of farmers' incomes and their move towards commercial agriculture. Furthermore, the reform of the maize sector, driven by private sector innovation and initiatives, has the potential to contribute significantly to the country's economy, in terms of rural and urban employment and incomes, poverty alleviation, and foreign exchange earnings.

Coffee

Given that coffee is a relatively high value crop, the price gaps, although negative, do not seem to be excessive in most years. Consequently the implied negative rates of protection have been relatively low, especially in recent years. These levels of taxation represent a market development gap rather than policy or regulatory constraints. This is expected since the coffee industry in Uganda has undergone major reforms since the early 1990s.

These reforms have been successful. The coffee market is completely liberalized. The producers' share of export prices has increased significantly. Entrepreneurial activity increased enormously as the number of active exporters increased substantially. Thousands of small traders have entered the industry and contributed to competition in the market. Most importantly, the poverty reduction impact on households in the coffee-growing regions is well documented.

Fish

At lake landing sites in Uganda, representing the primary and wholesale market for fish, domestic Nile perch prices during the period of 2005– 2010 tend to deviate positively from export (world) prices as indicated by the high positive observed nominal rates of protection. As Uganda has liberalized its economic policy, there are no known policy measures to influence domestic fish prices other than the minimal local taxes and marketing levies. These price gaps are likely to be due to factors not related to agricultural or economic policies. Rather, the analysis suggests that demand factors and the existence of market power in the fish market partly explain the gap between the observed domestic market prices and export prices.

Apparently, processors and exporters are willing to pay a price higher than the reference price in order to obtain enough fish for achieving higher capacity for the factories. This is the result of the competition within the processing industry itself and between the processing firms and domestic consumers. In doing so, processors are willing to share some of the expected profit with boat transporters. This practice is likely to have been motivated with the high profitability level in the processing business characterized by low processing costs. While the beneficiaries from this competition are the boat transporters, the burden of high prices is ultimately born by domestic consumers. The analysis cannot establish whether some of the benefits are trickling down to fishermen.

Tea

Due to the liberal international trade regime in Uganda with minimum quantitative restrictions or direct levies on exports, the tea industry in Uganda appears to have largely avoided market disincentives by selling tea directly at tea auctions in Mombasa. As such, the industry received a price that reflects the value of Uganda's tea in the world market at a minimum costs given the current cost of processing and marketing (exportation) cost. Although the tea industry does not receive any form of policy support (incentives), this situation is likely to encourage efficient functioning toward cost reduction and improved product quality to increase profitability.

However, the tea industry appears to pass its increased costs and risks to tea growers in order to maintain competitiveness and high profitability. Due to low producer prices compared to equivalent world prices, the estimated indicators suggest considerable disincentives at the farmgate. These price disincentives may explain the slow expansion of tea growing in Uganda. This is detrimental to

tea production in Uganda leading to low productivity and quality and reducing incentives to growers for adopting new technologies. This will, in turn, negatively impact the tea industry.

While government intervention to support tea growers through pricing intervention is unlikely given the current policy in Uganda, the government may consider some measures to support smallholder producers. This is especially important given the potential expansion in tea production from these producers.

The measures to support smallholders include strengthening growers' organizations and establishing institutions to disseminate market information and indicative prices for producers (like the Uganda Coffee Development Authority).

Cotton

Cotton pricing in Uganda is the most important policy directly affecting the cotton sector and influencing farmers' incentives. A number of studies indicated the strong response to price incentives to cotton growers in Uganda. The objective of the current cotton marketing system, administered by CDO, is to assist cotton growers in receiving a higher share of world prices of lint. The positive observed price gaps and nominal rates of protection at the farmgate suggest that the system of indicative prices is apparently effective in protecting growers from negative shocks as the observed price gaps and nominal rates of protection appears to be transparent. However, the negative adjusted price gaps and nominal rates of protection suggest that the system needs to be updated frequently to have prices that are consistent with world prices.

Frequent updates on the indicative prices will mean higher prices for growers when world prices increase and thus limiting the ability of both exporters and processors to extract above normal profits from growers. On the other hand, this may also result in lower farmgate prices when world prices decline. In this case, some form of a stabilization fund supported by levies on cotton sales may need to be introduced.

Beef

Domestic beef prices during the period of 2008– 2010 deviated negatively and positively from export (world) prices as indicated by the high positive and negative price gaps and nominal rates of protection. As Uganda liberalized its economic policy, there were no known policy measures to influence domestic beef prices other than local taxes and marketing levies. These price gaps were likely to be due to factors not related to agricultural or economic policies. Rather, the analysis suggests the existence of a development gap in the beef and livestock market partly explained by the gap between the observed marketing costs and margins - access costs - and a reasonable estimate of these costs that reflect the opportunity cost of livestock and beef marketing. Possible factors related to lack of symmetrical market information for both buyers and sellers of livestock and market power. The analysis also suggests poor integration of the beef markets in Uganda with world markets.

Consistency of policy objectives and impacts

Rice

The Government of Uganda developed an ambitious strategy for the development of the rice sector. The NRDS aimed to more than triple rice production in Uganda by 2018. The market incentives to rice producers have encouraged a remarkable increase in rice production over the last decade but

mainly through area expansion. As domestic production increases, imports will decline and the impact of tariffs on market prices will diminish, s reducing the level of protection currently enjoyed by rice producers. To compensate farmers for the reduced level of price incentives, the government of Uganda needs to promote increased utilization of agro-inputs and sustainable soil management, to raise the currently low rice yields of 1.38 to 1.56 tonne/ha.

The case of rice import tariff represents the impact of specific policy incentives on agricultural production. The incentives to rice producers may explain the progressive expansion of rice production in Uganda especially during the period of 2005– 2010. Over this period, rice production increased by 42.5 percent. Combining this support with increased utilization of agro-inputs and sustainable soil management may help realize the ambitions of the NRDS aims to more than tripling rice production in Uganda.

Maize

Though generally the Government of Uganda has been implementing private sector friendly policies, its specific policy on agriculture and maize remains unclear (USAID, 2010). There are no known incentives for farmers to increase production and no attempts to ensure that farmers receive an economic return for their efforts. This results in wildly fluctuating prices for farmers (USAID, 2010). International trade in maize is largely liberalized. As such, the generally market disincentives resulting from market development gap to maize producers are inconsistent with government strategy of achieving prosperity for all through production, value-addition, agro-processing, and improved marketing. Improved marketing will reduce the market development gap.

Major exports

While the government of Uganda provides a wide range of incentives to diversify and increase agricultural exports and privatized the marketing system, this does not appear to translate into consistent incentives over time to producers. Due to the poor functioning of the marketing system in the country, high transportation costs and poor integration of many of the domestic markets into regional and world markets, domestic prices especially at the farmgate often respond weakly to world market prices. As a consequence, market price incentives are often due to domestic market forces of supply and demand.

Effects on consumers

For all the commodities analyzed except rice, wheat and sugar which represent highly protected imports, the price deviation from world prices at both farmgate and factory gates tend to vary over time as related to market factors rather than regular policy effect. In this context, incentives to producers or wholesalers (positive deviations) represent a transfer from domestic and world consumers and/or the government to producers. Conversely, disincentives (negative deviations) represent transfers in the opposite direction.

Given the low level of domestic consumption of coffee, tea and cotton as a percent of national production and the low level of incentives and disincentives for these commodities, there appears to be limited impact of considerable transfers from consumers to producers or vice versa. The transfers in the form of price deviation from world prices at both farmgate and factory gates for the three commodities tend to switch between consumers and producers.

Fish consumers appear to have received considerable transfers from fishers at lakes landing sites although this has reversed only in 2008-2009. As such, consumers are now receiving net transfers from fishermen and other traders through the market. Despite these transfers, retail prices of fish are still rising in Uganda. Other possible factors to explain the rising price of fish may include the rising prices in international markets, increased domestic demand for fish and the increased competition for Nile Perch and other exportable fish species between domestic consumers and processors/exporter.

Beef, cassava and maize consumers in Uganda are receiving a similar pattern of transfers ranging from small positive transfers (subsidy) in some years to negative transfers (tax) in others. The markets of these commodities appear to be characterized by long value chains, weak price transmission from world markets and thin trade (mostly informal).

Positive and considerable transfers from consumers to producers, however, are apparent in the case of imported commodities originating from outside the EAC. The highest transfers were in the case of rice averaging 73 percent with modest transfer (10 percent) in the case of wheat. These transfers are due to the external import tariffs imposed on these commodities. Import tariffs are meant to protect producers by raising the cost of imports but this also lead to high prices paid by consumers at the retail. The government is, currently, not pursuing any type of subsidies to consumers to offset the impact of high rice prices.

Value chain organization

The major traditional export commodities of Uganda including coffee, tea, cotton and fish require some degree of processing. These commodities share a similar value chain characterized by being buyers-driven as producers has limited options to sell directly or indirectly to processors/factories. Despite this monopsonistic market structure at the farm level, these commodities have a relatively lower disincentive level compared to other commodities (maize and beef). The value chains of these commodities tend to be more organized with fewer marketing agents. Moreover, prices in world markets seem to transmit to the farm level more efficiently.

Rice represents an import commodity that requires milling. Rice shares some of the characteristics of the above commodities except that local trade is more common. In addition, rice farmers receive substantial incentives through import tariff of the US$ 200 per tonne or more. It is the only analyzed commodity that consistently receives incentives. The rice incentives cannot be attributed to the organization of the value chain but rather to the government tariff policy.

Maize and cattle marketing is characterized by a significantly long value chain with village traders, assemblers and middlemen playing a significant role in moving the commodity from production areas to major wholesale centres. Assembly is a particularly important function in these types of value chains as traded quantities by producers tend to be small. This may be a common feature for a large number of agricultural commodities produced by smallholder farmers in Uganda. While the role of these traders is important, the long value chain tends to erode farmers' incentives. The commodity often goes through a number of markets before reaching the final consumers in urban centres. In addition to the cost of transport and loading and unloading costs, profit margins in each market are likely to reduce the price received by producers at the farm gate.

For all commodities, transportation costs represent significant marketing costs given the poor transportation infrastructure and fuel cost in Uganda. The cost of truck transportation in Uganda averaged US$ 0.15 per tonne-km for distances of 80 km or more in 2008 (World Bank, 2009). Transportation cost more than doubles (US$ 0.33 per tonne-km) for shorter distances. Obviously, transportation costs are highly related to the cost of fuel which accounts for 68 percent of the vehicle operating costs (World Bank, 2009). Therefore, taxes on fuel play a role in determining commodity transportation and marketing costs which is directly related to the extent of incentives/disincentives received by farmers.

Public expenditure and analysis

Abstract

Box 5. Summary of results of the analysis of public expenditure and aid

Uganda is an agricultural-based economy; therefore public expenditures are an important policy instrument in Uganda's agricultural sector development. In terms of support, the sector has been allocated significant amount of funds for general sector support. However, the composition of spending may not be optimal because:

- Aid accounts for a large part of expenditures raising questions about sustainability of support to the sector.
- Administrative costs have an important share in overall spending.

Introduction

Public expenditures in agriculture in Uganda have been typically measured by taking into account those resources that were expended by agencies specifically responsible for agricultural matters. At the national level, these included the Ministry of Agriculture, Animal Industry and Fishery (MAAIF), the main government body responsible for agriculture and four autonomous organizations: National Agricultural Research Organization (NARO), the National Agricultural Advisory Service (NAADS) Secretariat, the Uganda Cotton Development Organization (UCDO) and the Uganda Coffee Development Agency (UCDA). At the local level agricultural expenditures are executed by District Agricultural Extension, NAADS and programs under Non-Sectoral Conditional Grant (NSCG).

Much of the expenditures that are important for the agricultural sector may occur outside the agricultural ministries and institutions. In the case of Uganda, many programmes under the PMA framework and the RDS are managed by ministries that are not directly linked to agriculture. Among the most important ones are the Ministry of Finance, Planning and Economic Development, Ministry of Energy and Mineral Resources, Ministry of Works and Transport, Ministry of Local Government, Ministry of Water and Environment, Ministry of Health, Ministry of Education and Sports, Ministry of Tourism, Trade and Industry, Ministry of Gender, Labour and Social Development, Ministry of Lands, Housing and Urban Development and even the Office of the Prime Minister. All expenditures of these ministries have been examined and all the expenditures in support of food and agriculture sector development have been included in the analysis (see Annex 1 for a full list of expenditure measures covered in the analysis).

Classification and disaggregation of public expenditure

Many expenditures of greatest relevance to agricultural development, in terms of their ability to expand the production frontier, may not be specific to agriculture, but could fall into other categories. Moreover, support can be provided in several different ways. Support to agricultural producers may be provided via reduced input prices (e.g. a fertiliser subsidy), cost sharing for fixed capital (e.g. machinery), revenue foregone by the government (tax concession), reimbursement of taxes or charges or services in kind (e.g. delivery of extension services). Agriculture-specific support to the sector more generally may be provided via spending on agricultural education, research, marketing of agricultural goods, irrigation etc. Some policies, which benefit agriculture, may be even more general, such as expenditures on rural infrastructure, rural education or rural health. Although the latter are not sector specific, they may be sector supportive. In order to capture all public expenditures in support of the food and agriculture sector, the following classification is used:

A broad distinction between policies that are: agriculture-specific, agriculture supportive and non-agricultural expenditures.

Within the agriculture-specific category, a distinction between support to producers and other agents in the value chain, and general sector support. The agents in the value chain include farmers (producers), input suppliers, processors, consumers, traders and transporters.

The detailed classification of support follows the OECD's principle of classifying policies according to their economic characteristics i.e. the way they are implemented, which provides the basis for further policy analysis (OECD, 2008). The particular categories, however, should be designed to reflect the types of policies applied in African countries. Likewise, the categories proposed in Annex 2 have been elaborated based on the experience of various agencies, including FAO (e.g. FAO, 2006), working on public expenditures in developing countries (for a comprehensive overview, see MAFAP, 2010c). Further, drawing on the OECD's experience, the classification proposed aims at distinguishing, to the extent possible, policies providing private goods as opposed to public goods, given their different economic effects.

General trends in Uganda's public expenditure in support of agriculture

Table 30 shows the budget allocation and actual expenditure towards agriculture and rural development in Uganda for the five fiscal years from 2006/2007 to 2010/2011. The total approved budget[18] in the sector grew by 17 percent, in nominal terms, from 2006/2007 to 2010/2011 reaching U Sh 991 billion (Table 28). The total actual spending has grown even more: it increased by 34 percent from 2006/2007 to 2010/2011 reaching U Sh 1 045.3 billion. Results indicate that growth in actual expenditure was twice that in budget allocation. This implies that the government of Uganda has not only remained committed to remitting the funds as budgeted but also in some instances surpassed the allocation. The growth in budget allocation or actual expenditure towards agricultural and rural development is compared with growth of the national budget allocation. It is clear that there is a high discrepancy in growth in the national budget allocation (96 percent) vis-à-vis

[18] Total agricultural expenditures (budget allocations and total spending) include both policy transfers in support of agriculture and policy administration costs. They include funding from national resources and from foreign aid.

the in growth in budget allocation towards agricultural and rural development (17 percent). Perhaps the low growth in budget allocation towards agricultural and rural development compared to other sectors partly explains the weak performance of the agricultural sector compared to the services and industrial sectors.

Table 30: Agricultural and rural development budget allocation and expenditure (billion U Sh)

	2006/07	2007/08	2008/09	2009/10	2010/11	Percent change 2006/07-2010/11
Agriculture and rural development budget allocation	848.6	1019.6	754.6	988.2	991.0	17
Agriculture and rural development actual spending	778.4	919.5	695.5	1168.4	1045.3	34
National budget allocation	4 610	5 470	6 650	7 850	9 030	96

Source: MAFAP based on MFPED database, 2011

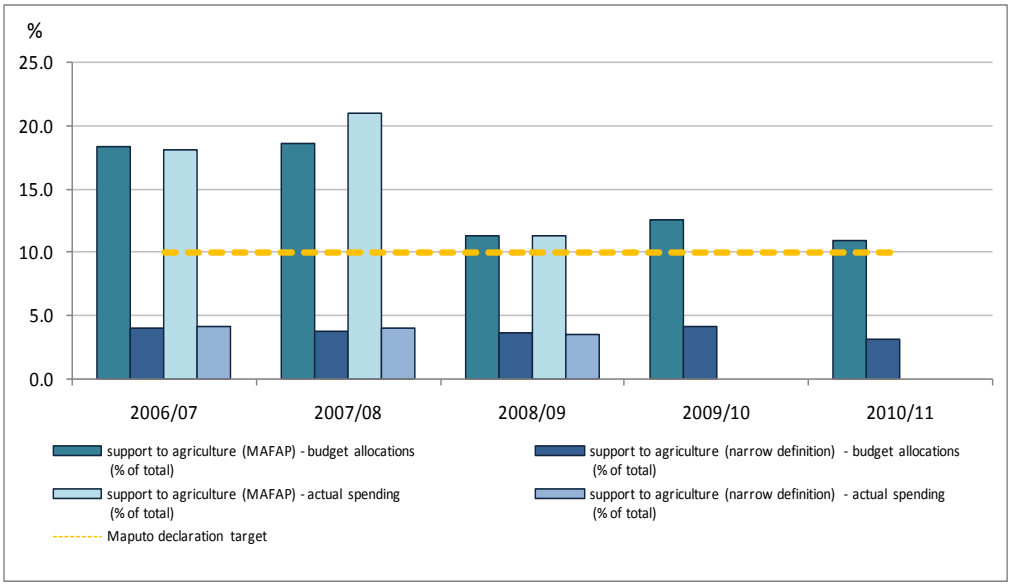
In relative terms, however, the agricultural budget allocations have declined from almost 17 percent of total government spending in 2006/2007 to about 11 percent in 2010/2011 (Figure 52). Actual spending in relative terms has also decreased significantly in 2008/2009[19].

Although the trends in relative terms show that the importance of agriculture in the total government budget is declining, the current level of spending meets the CAADP recommendations of allocating 10 percent of the overall budget to agriculture and rural development (including national resources and aid), as expressed in the 2003 Maputo Declaration.

Government expenditure to the Ministry of Agriculture, animal industry and fisheries-MAAIF (MAFAP's narrow definition of the agricultural sector) has stagnated at about 4 percent, which is far below the Maputo declaration target of 10 percent. The decline in government expenditure on MAAIF may be on account of increasing allocations to non-rural priority areas such as universal secondary education, national trunk roads, and national security. The decreasing trend in budget allocations to support food and agriculture may threaten the sector's development and hence Uganda's economic growth since agriculture is a key sector in Uganda's economy.

[19] The data on the total government actual spending for the two most recent years was not available when drafting this report.

Figure 52: Planned and actual agriculture spending in total government expenditures in Uganda



Source: MAFAP

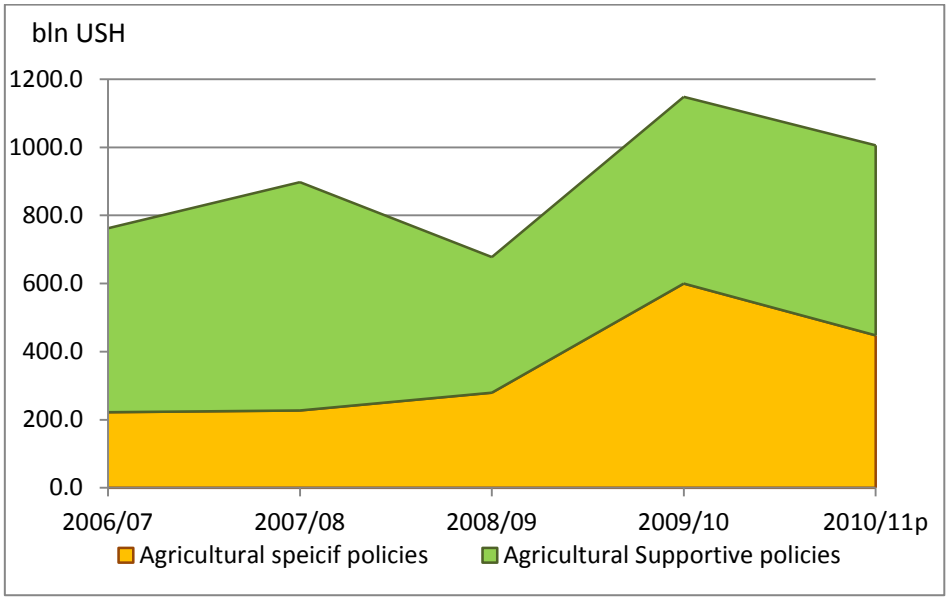
Composition of public spending in support of food and agriculture development

Data collected at the country level allows for a good disaggregation of expenditures, funded from national resources and foreign aid, allocated to the agricultural sector. About 170 projects and programmes were indentified and classified into the MAFAP classification as outlined in the project methodology (MAFAP, 2010). Collected data cover the 2006/2007 to 2010/2011 period. However, for many of the expenditure measures, data was missing for the most recent year. In such cases, estimation methods were applied provisionally, until the most recent data can be obtained from the country.20 The results are shown in Table 31.

Agriculture-specific expenditures account, on average, for almost 39 percent of expenditures in support of the food and agriculture sector development. Their importance in overall agricultural support grew from about 29 percent in 2006/2007 to 45 percent in 2010/2011. In terms of the level of spending, agriculture-specific expenditures almost doubled over the analyzed period, while agriculture-supportive expenditures increased only slightly. This indicates that policies that are specific for agricultural development are given less attention as opposed to agricultural supportive sectors (Figure 53).

[20] The full database is available upon request.

Figure 53: Composition of public expenditures in Uganda, 2006/2007– 2010/2011



Source: MAFAP.

Input subsidies, extension services and agricultural research take up a bigger proportion of transfers for agricultural specific policies as analyzed in the two periods (2006-– 2008 and 2008– 2011) (Figures 54 and 55). This is followed by training activities which take up to 17.6 and 12 percent for the period 2006– 2007 and 2008-– 2011 respectively. In this category however, expenditures on technical assistance carry the least share of 0.3 and 1 percent in the two analyzed periods. This may have negative implications on absorption of extension services.

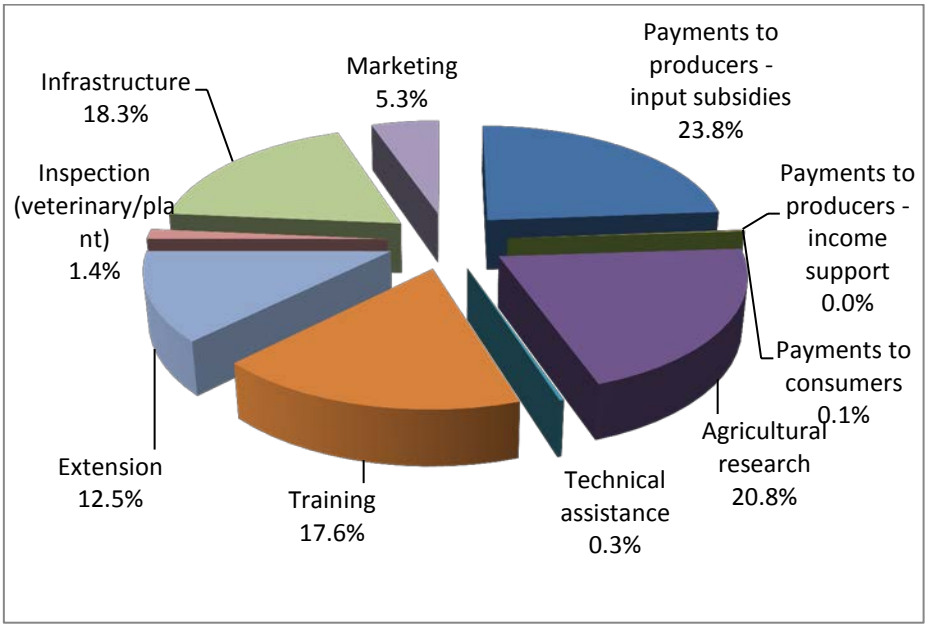
Table 31: Actual public expenditures in support of the food and agriculture sector in Uganda (billion U Sh)

	2006/07	2007/08	2008/09	2009/10	2010/11[a]
I. Agriculture specific policies	222.0	227.1	279.3	600.0	447.8
I.1. Payments to the agents in the agro-food sector	61.7	45.8	78.8	176.1	120.6
I.1.1. Payments to producers	61.4	45.5	78.4	170.7	114.1
A. Payments based on output	0.0	0.0	0.0	0.0	0.0
B. Input subsidies	61.3	45.4	78.4	159.8	100.4
B1. Variable inputs	27.1	33.0	53.7	142.8	87.3
B2. Capital	25.3	10.6	23.1	13.0	9.5
B3. On-farm services	8.9	1.8	1.5	4.0	3.6
C. Income support	0.1	0.1	0.0	10.9	13.7
D. Other	0.0	0.0	0.0	0.0	0.0
I.1.2. Payments to consumers	0.3	0.4	0.4	5.4	6.5
E. Food aid	0.1	0.1	0.1	4.8	6.2
F. Cash transfers	0.2	0.2	0.3	0.5	0.3
G. School feeding programs	0.0	0.0	0.0	0.0	0.0
H. Other	0.0	0.0	0.0	0.0	0.0
I.1.3. Payments to input suppliers	0.0	0.0	0.0	0.0	0.0
I.1.4. Payments to processors	0.0	0.0	0.0	0.0	0.0
I.1.5. Payments to traders	0.0	0.0	0.0	0.0	0.0
I.1.6. Payments to transporters	0.0	0.0	0.0	0.0	0.0
I.2. General sector support	160.3	181.3	200.5	423.9	327.2
I. Agricultural research	34.8	58.5	32.6	88.0	73.2
J. Technical assistance	0.6	0.5	0.8	2.1	6.4
K. Training	42.4	36.7	49.1	56.9	48.8
L. Extension	26.2	29.9	54.9	161.8	111.3
M. Inspection (veterinary/plant)	3.7	2.5	3.6	24.3	4.5
N. Infrastructure	35.7	46.4	43.3	71.6	69.1
Roads	10.6	13.5	21.0	26.5	24.8
Irrigation	6.7	13.3	11.1	23.5	24.1
Others	18.3	19.7	11.2	21.6	20.2
O. Storage/public stockholding	0.0	0.0	0.0	0.0	0.0
P. Marketing	16.9	6.8	16.3	19.2	13.8
R. Other	0.0	0.0	0.0	0.0	0.0
II. Agriculture supportive policies	540.4	670.6	398.3	548.4	558.1
S. Rural education	3.1	3.1	6.6	5.8	5.4
T. Rural health	142.6	242.7	165.5	199.4	243.8
U. Rural infrastructure	393.7	424.0	225.4	342.4	308.9
Roads	251.7	323.8	87.4	126.6	85.2
water and sanitation	74.0	57.5	80.8	139.6	137.6
Energy	60.6	35.2	55.3	66.4	76.8
Other	7.5	7.5	1.8	9.8	9.2
V. Other	0.9	0.9	0.8	0.8	0.0
III. Total expenditures in support of food and agriculture sector (policy transfers)	762.4	897.7	677.6	1148.3	1005.9

a. Provisional estimate

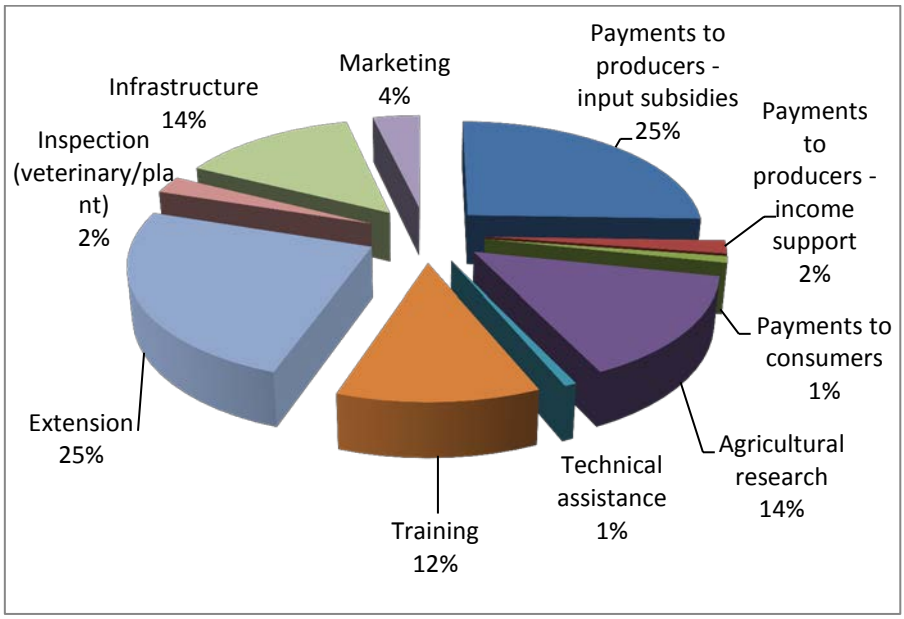
Source: MAFAP.

Figure 54: Composition of public expenditures in Uganda: agriculture-specific spending, average 2006-2008



Source: MAFAP.

Figure 55: Composition of public expenditures in Uganda: agriculture-specific spending, average 2008-2011



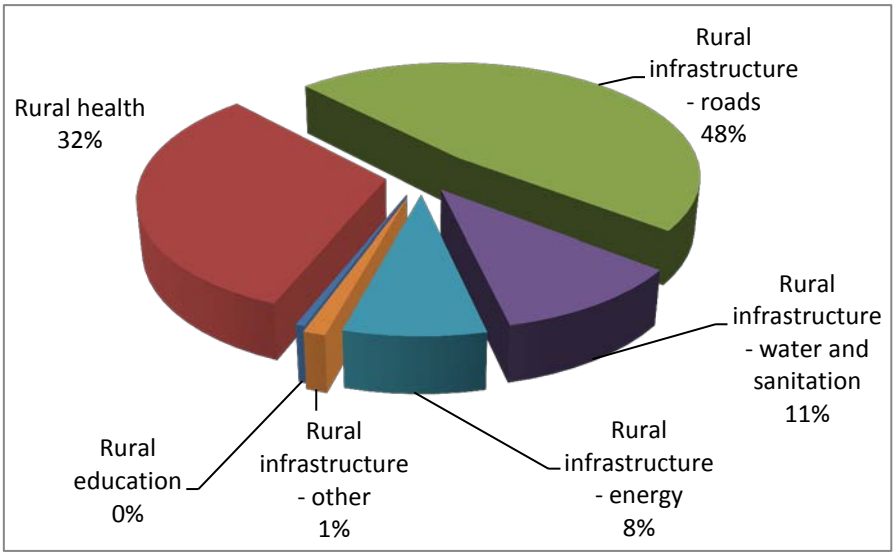
Source: MAFAP.

On the other hand, a large proportion of agricultural supportive policies was spent on rural infrastructure particularly rural roads and rural health, with 48 and 32 percent respectively during the 2006 to 2008 financial periods. The trend in public spending on agricultural supportive polices has changed in the recent years (2008–2011) with rural health taking up 41 percent of the budget compared to 20 percent that is spent on rural roads in the category of agricultural supportive policies.

Rural education takes the least proportion of the budget of approximately 1 percent in both time periods (see Figures 56 and 57). This may have negative implications on agricultural productivity as

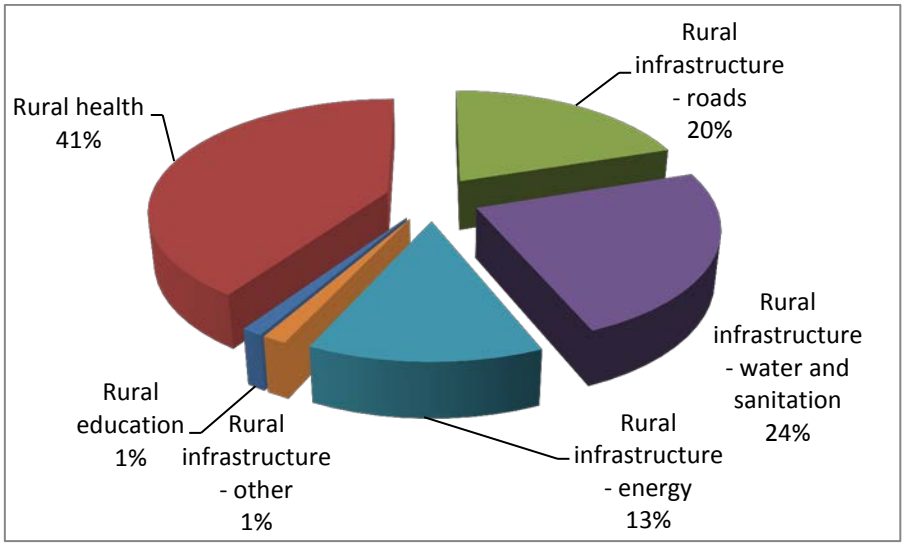
farmers require basic education to clearly understand how to apply the extension services that are offered to them through different government programs like NAADs.

Figure 56: Composition of public expenditures in Uganda: agriculture-supportive spending, average 2006–2008



Source: MAFAP.

Figure 57: Composition of public expenditures in Uganda: agriculture-supportive spending, average 2008–2011



Source: MAFAP.

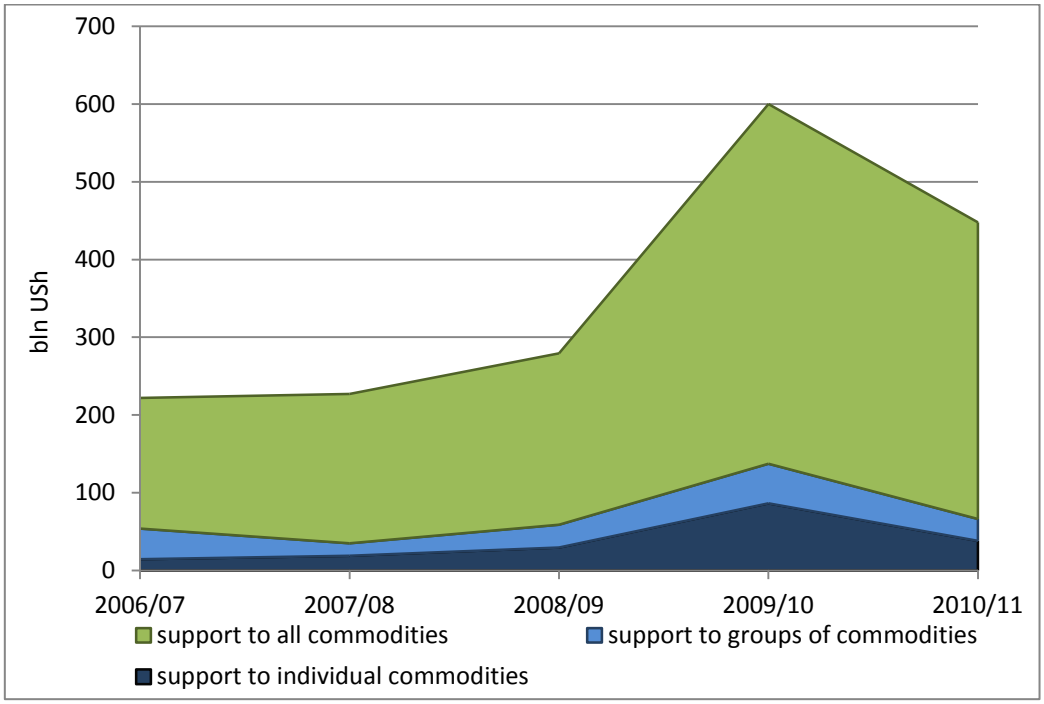
Agriculture-specific expenditures can be also separated into commodities which they intend to support.[21]

[21] Agriculture-supportive expenditures, by definition, are not intended to support production of any particular commodity and hence are considered as not specific to agricultural commodities.

Each expenditure measure within that category has been attributed an appropriate commodity depending on whether it supports an individual commodity (e.g. vegetable oil for Vegetable Oil Development Project), a group of commodities (e.g. livestock for Pan African Control of Epizootics Project) or all commodities (e.g. construction of feeder roads).

Overall, expenditures on specific agricultural commodities have been increasing over the years as indicated in Figure 58. Expenditures in support of all commodities are by far the most important throughout the analyzed period. Support to individual commodities and support to groups of commodities account for only a small proportion of agriculture-specific spending.

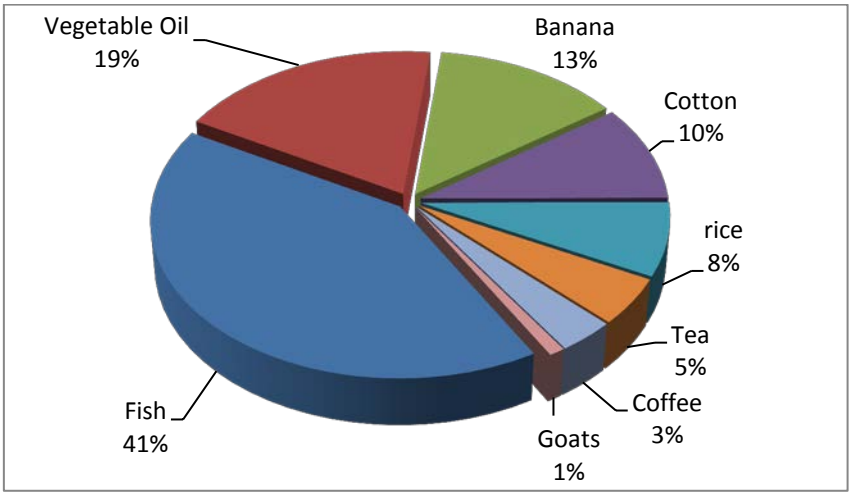
Figure 58: Support to different categories of commodities



Source: MAFAP based on MFPED database, 2011.

In terms of distribution of individual commodities, the government has focused more on promoting fish production, followed by vegetable oil and banana production. This is in contrast with the support for the traditional cash crops such as coffee, cotton and tea (see Figure 59). This trend of support may be attributed to the fact that government is channelling the country's efforts into promotion of fish and banana exports as a way of diversifying its export base. This may be attributed to the contribution that fish makes to foreign earnings and the potential if well harnessed, and the challenges the sector is facing due to the deplorably deteriorating fish stocks. The large allocation to vegetable oil is explained by the current heavy investments in establishing palm oil firms on Kalangala Islands. Finally, Uganda is investing a lot of funds into the development of banana flour as a way of adding value to the crop to increase government revenue and household incomes.

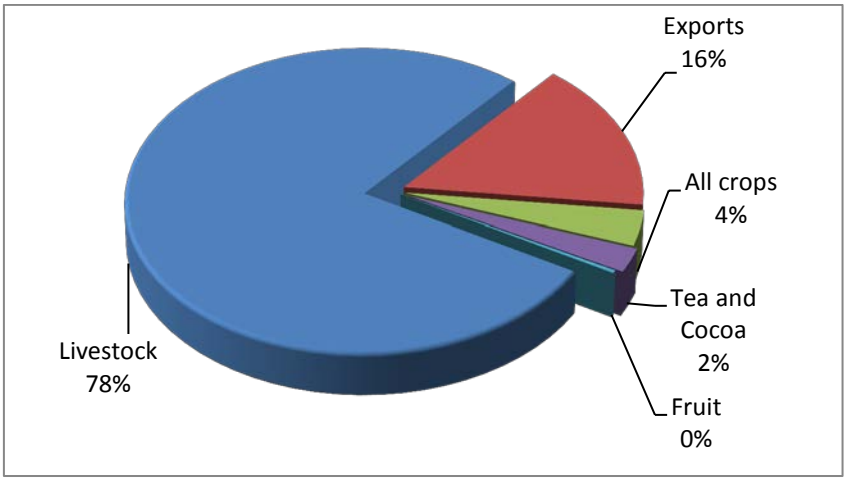
Figure 59: Support to individual commodities (average 2006– 2010)



Source: MAFAP.

On the other hand, figure 60 indicates that livestock development constitutes 78 percent of the total expenditures of the support that goes for a group of commodities. This is mainly due to the many projects that have been designed to develop livestock production especially in the cattle corridor and northern Uganda. Following the return to peace in the region, the government embarked on resettlement of the population. One major activity was restocking of cattle, which explains this expenditure. Overall, most public expenditures aim to provide public services and investment, with a strong focus on infrastructure, particularly agriculture supportive, but also training, extensions services and research.

Figure 60: Support to a group of commodities (average 2006-2010)



Source: MAFAP

A large part of funds is allocated to policy administration costs and, based on the calculations done for MAAIF, there seems to be an imbalance between the share of these costs and the share of policy transfers in the total expenditures. The proportion of administrative costs to the total Ministry of Agriculture budget has been increasing for the period 2006 to 2011 (Table 32). The administrative costs averaged a proportion of 20 percent during this period with the exception of 2009/2010, which had only 10 percent. This trend in administrative costs has implications on actual policy transfers that directly impact on implementation of agricultural policies.

This is because although administrative costs enhance and enable programmes' implementation, these costs do not translate into real outputs.

Further, most of these administration costs are dedicated to wages, while only a small proportion to operational costs. This significantly constrains the effectiveness of certain expenditures. For example, extension services or training can be provided effectively only if extension or training officers have sufficient resources for travelling to communities where services are needed (World Bank, 2010).

Table 32: Share of policy transfers and policy administration costs in total spending of MAAIF (%)

	2006/07	2007/08	2008/09	2009/10	2010/11[p]
Administration costs	17	21	21	10	23
Policy transfers	83	79	79	90	77
Total agricultural budget	100	100	100	100	100

Source: MAFAP.

Actual spending may vary significantly from the budgeted amounts, particularly in those developing countries, where budgets significantly depend on donors' disbursements and that operate a cash budget system as it is the case in Uganda. The 2010 Public Expenditure Review of the World Bank indicated that among the expenditures managed by MAAIF, actual spending deviated significantly from the approved budgets and was, on average, lower than planned for the following reasons (World Bank, 2010):

- The extent to which budget allocations misjudged the true requirements
- Readjustments in announced budget allocations
- Funds that were not released due to revenue shortfalls or unforeseen calls on available funds
- The untimely release of funds required for seasonally determined uses caused by limited cash flow

Data collected for the MAFAP project give a much more positive picture (Table 33). The overall rate of actual spending was around 90 percent from 2006/2007 to 2008/2009 and for the two most recent years it was above 100 percent suggesting that more funds were spent than initially foreseen in the budget. Even more surprisingly, the rate of planned expenditure versus actual spending was higher for the funds covering core sector support (policy transfers) than for funds covering policy administration costs. Given that the latter come mostly from the recurrent budget, they are expected to have a better disbursement rate than policy transfers that mostly come from the development budget and therefore are subject to more problems with disbursement of allocated funds.

The conclusions based on MAFAP data are quite different from the findings of the World Bank. This may be partially explained by the fact that the MAFAP database covers many more ministries than the World Bank study which uses the traditional definition of the agriculture sector (see section 2). Further, MAFAP data on actual spending may not be accurate, particularly for the most recent years. Actual spending data for the most recent fiscal years are often based on initial estimates or missing entirely. As mentioned before, those missing data on actual spending for 2010/2011 were replaced

by estimates. This may result in an overestimation of actual spending and therefore, the conclusions need to be revisited once more accurate data will be available.

Table 33: Budget allocations versus actual spending in Uganda

billion U Sh	2006/07	2007/08	2008/09	2009/10	2010/11[p]
Total agricultural budget					
Budgeted amount (billion U Sh)	848.6	1019.6	754.6	988.2	991.0
Actual spending (billion U Sh)	778.4	919.5	695.5	1168.4	1045.3
Actual as a share of budget (percent)	92	90	92	118	105
Policy transfers					
Budgeted amount (billion U Sh)	831.1	996.6	729.0	966.4	951.4
Actual spending (billion U Sh)	762.4	897.7	677.6	1148.3	1005.9
Actual as a share of budget (percent)	92	90	93	119	106
Administration costs					
Budgeted amount (billion U Sh)	17.5	23.1	25.5	21.8	39.6
Actual spending (billion U Sh)	16.0	21.8	17.9	20.1	39.5
Actual as a share of budget (percent)	91	94	70	92	100

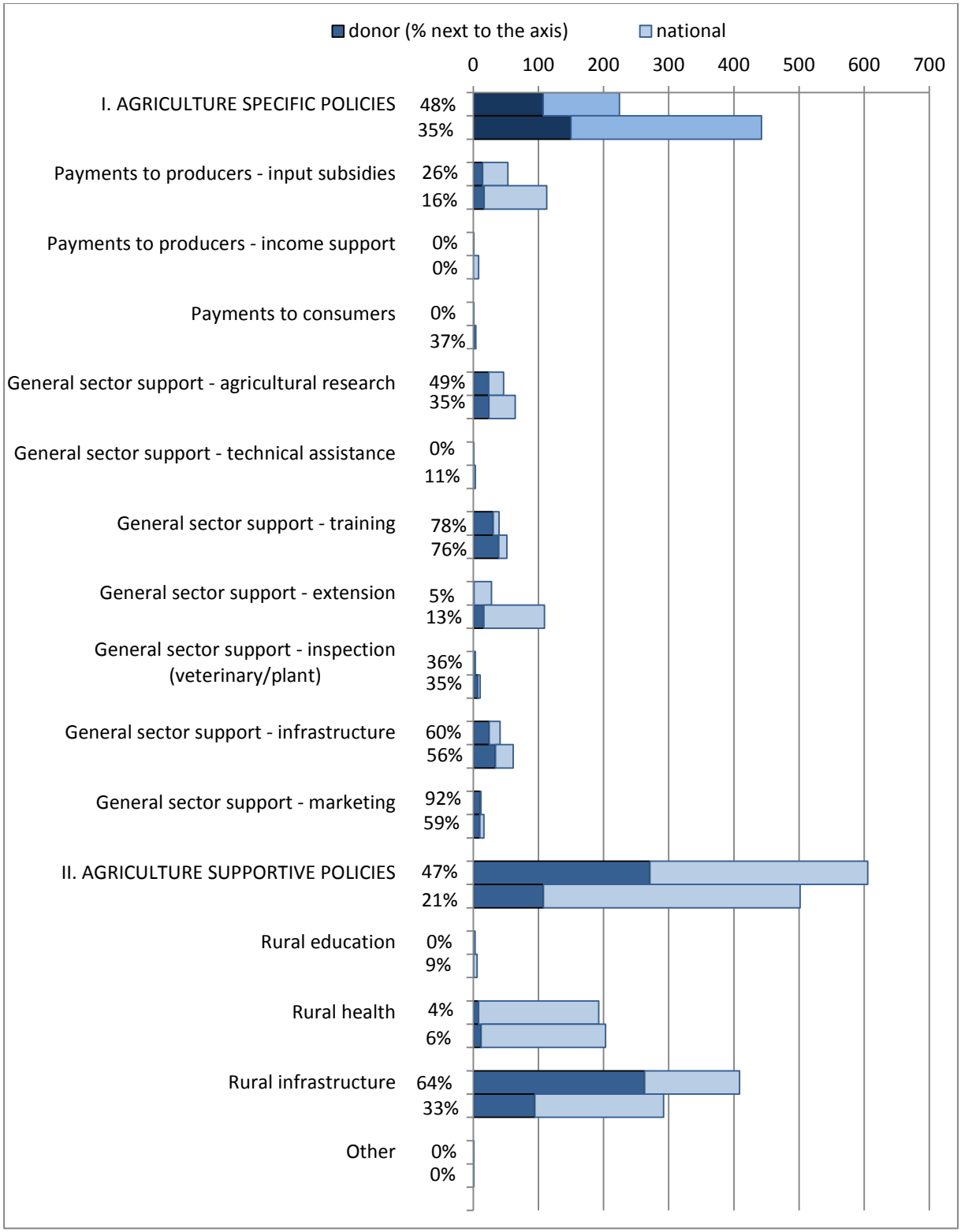
Source: MAFAP based on MFPED database, 2011.

Role of aid in public spending on agriculture in Uganda

The contribution of donor aid in Uganda's agricultural development varies in both agricultural specific polices and agricultural supportive polices. Donor aid contributes a bigger proportion to agricultural specific polices of about 57 percent compared to the 38 percent contribution to agricultural supportive policies (Figure 61).

Within the agriculture specific expenditures, donor aid contributes mainly to training, marketing and infrastructure. Additionally, based on the available data, it is interesting to note that donor financing seems to increasingly target agricultural infrastructure under the category of agricultural specific policies. This pattern of expenditure seems to be favourable for agricultural development if it is backed up by other policies.

Figure 61: Average shares of aid in total spending in Uganda 2006/07– 2007/8 and 2008/09– 2010/11 (million U Sh)



Note: The upper par refers to 2006/2007-2007/2008 and the lower par to 2008/2009-2010/2011.

Source: MAFAP

On the other hand, rural infrastructure receives the biggest contribution from donor aid among the agriculture supportive policies. Further analysis of expenditures on rural infrastructure in this category indicates that donor aid is channelled through different projects that are designed within the main stream national budget. The projects mainly focus on building and rehabilitating rural roads. The projects are funded from different donor sources across ministries. It's important to note however, that, among the agricultural supportive policies, donor funding for rural education is almost insignificant.

Generally, aid provided by donors to the government of Uganda seems to be consistent with overall government's objectives. Nonetheless, there are some differences in priorities. For example, while government priority is structural transformation through development of agriculture, infrastructure and manufacturing, the donors are implementing the PRSPs priorities which focus on poverty reduction. The main shortcoming in this kind of arrangement is that divergences in priorities may contradict the long-term government development objectives.

Additionally, proper coordination between donor funded projects and the Ministry of Agriculture still remains a challenge in terms of implementation. This arrangement may negatively impact on the efficiency of the Ministry of Agriculture to extend support to sectoral development. Clearly, donor funded projects play an important role in Uganda and whether overall, donors' contribution to investments in support of agriculture is indeed coherent with Ugandan government's policy objectives, depends crucially on how large they are and how they are spent.

Conclusions

Although the level of public expenditures in support of the food and agriculture sector development in Uganda is above the Maputo declaration target, Uganda has not achieved the 6 percent agriculture growth objective set by CAADP.22 This may occur for a number of reasons.

First, the composition of public expenditures in support of agriculture could still be improved. The composition of public expenditures is just as important as the total level. There may be trade-offs between spending in different categories (for example spending on rural infrastructure versus subsidies for seed and fertilizer) and there may be complementarities (for example between spending on extension services and the development of infrastructure that would enable farmers to get their output to the market). Although the overall observed pattern of spending is consistent with government objectives with the majority of public expenditures aimed at the provision of public services and investment, there seem to be an imbalance between particular categories of spending.

The high investments in infrastructure and expenditures on extension services can bring benefits via lower transaction costs and improved farmer's access to markets. High support to rural development can provide off-farm employment opportunities, while research, training and extension services can help farmers to improve their productivity and help adopt more environmentally-

[22] The 10 percent of budget allocation to agriculture and rural development agreed under the Maputo declaration was established as mean to achieving the 6 percent of growth in the agricultural sector.

friendly production methods.[23] On the other hand, there are relatively few investments in construction of markets and on-farm irrigation and no expenditures on storage. Similarly, there are very little expenditures on veterinary/inspection services that are necessary to accompany pest and disease control efforts at the farm level.

According to the World Bank (2010), this has led to wastage of a significant amount of resources spent on on-farm livestock disease control, since they proved to be completely ineffective without accompanying general sector measures, such as investments in veterinary labs to improve disease detection.

Furthermore, there are no policy measures improving access to credit for poor farmers. Although there are investments facilitating development of financial institutions in rural areas under the rural finance pillar, these are not accompanied by measures that make lending to poor farmers attractive (see also DANIDA/OPM, 2005).

Moreover, there is a rapidly increasing budget for provision of subsidies on inputs. Between 2006/2007 and 2009/2010 budgeted expenditure on input subsidies has almost quadrupled. Although in 2010/2011 it decreased, it was still more than two times higher than at the beginning of the analyzed period. It is important to note that, officially, input subsidies were abolished. Nevertheless, subsidized inputs are distributed through other channels, particularly agencies providing extension services (World Bank, 2010). Although input subsidies may be an important policy instrument to stabilize producers' incomes in developing countries in the short run, they should not compromise the allocation of resources to those categories of spending that will improve the incomes over the long run (for a in-depth discussion, see OECD, 2012 and Brooks and Wiggins, 2010).

Furthermore, a large part of funds is allocated to policy administration costs and, based on the calculations done for MAAIF, there seems to be an imbalance between the share of these costs and the share of policy transfers in the total expenditures. Most of these administration costs are dedicated to wages, while only a small proportion to operational costs. This may significantly constrain the effectiveness of certain expenditures. For example, extension services or training can be provided effectively only if extension or training officers have sufficient resources for travelling to communities where services are needed.

Addressing these issues will be crucial for improving performance of expenditures in support of the food and agriculture sector development. However, whether addressing these problems will be reflected in improved agricultural growth will depend also on other factors of growth, which cannot be fully derived from public spending.

[23] Several recent studies concluded that investments in agricultural R&D bring much better outcomes in terms of agriculture growth and poverty reduction. See SOFA (2012) for an overview of studies on comparing the impact of different types of agricultural expenditures and investments.

Coherence between incentives and government spending

Introduction

The results of the commodity market incentives and public expenditure in support of agriculture in Uganda can be understood through the government's agricultural policies objectives. These objectives are set within several frameworks and over a time period as presented in Section 1. Agricultural policies are considered to be a series of decisions and policy measures aimed at being consistent with overall objectives. The major issue is to what extent these measures and associated patterns of public expenditure address the factors that determine producers' incentives.

A study of agricultural policy coherence of the Global Donors Platform for Agricultural and Rural Development (Wiggins et al., 2011) showed that the real risk of inconsistency lies in the proliferation of policies, projects and programs that are subsequently cancelled and are not sorted according to priority. In Uganda, unlike in many other countries, the various government policies, measures and programs over the last 25 years have evolved successively and therefore, the risk of inconsistency is minimal.

Therefore, the main questions in addressing the issue of policy coherence are:

a. What are the main government strategies introduced and implemented in Uganda?

b. What are the main driving factors of agricultural and rural development in the country identified with the MAFAP analysis?

c. Have the measures and policy decisions been coherent with global policy frameworks and have they addressed the main driving factors in the country?

This part will present the main governmental strategies from 2005 to 2010 and then link the MAFAP results (price incentives and public expenditures) to analyze whether the adopted policy measures have been coherent with global objectives, and whether they seem to have targeted the driving factors in agricultural and rural development in the country.

The Government of Uganda's main policy strategies

The ultimate objective of the Government of Uganda's policy is economic development and social transformation. To achieve these objectives, the Government of Uganda formulated and implemented successive strategies (Ssewanyana, Matovu and Twimukye, 2010). These strategies include the Economic Recovery Program introduced in 1987, the Poverty Eradication Action Plan (PEAP, (1997), the Plan for the Modernization of Agriculture (PMA) and the latest National Development Plan, described in Section 4 of this report.

The Economic Recovery Programme (ERP) was followed by a series of other reforms aimed at restoring macroeconomic stability to provide a favourable environment for economic growth and private sector development (Republic of Uganda, 2010). The key reforms included deregulation of exchange rate controls, trade liberalization, changes in tax and fiscal policy geared towards improving revenues and restraining expansion in government expenditures, while maintaining a strong focus on economic recovery and growth. The reforms made space for the private sector with the abolition of marketing boards, the privatization of parastatals and the establishment of the Uganda Investment Authority.

As a poverty reduction framework, the Poverty Eradication Action Plan (1997-2007) focused mainly on areas that would enhance rural incomes such as agriculture, rural roads, education and health. The National Development Plan (NDP, 2010) which was recently formulated in 2010 addresses the structural bottlenecks in the economy aimed at accelerating socio-economic transformation that will deliver prosperity.

The priority investment areas identified in the NDP include physical infrastructure (energy, railway, waterways and air transport), human resource development, provision of critical technology inputs especially in agriculture and promotion of science and technology. Furthermore, the Public Investment Plan consisted of projects for implementing policies and priority actions identified in the NDP.

On the other hand, the key strategies for agricultural and rural development were developed in line with the national strategies with a specific focus on agriculture. For instance, PMA was developed to implement the second pillar of the PEAP which is the institutional framework for poverty eradication. NAADS is created for effective implementation of one of the pillars of the PMA strategy. The ATAAS project was developed to strengthen the linkage between research institutions and extension.

The Government of Uganda introduced the Rural Development Strategy (RDS) to facilitate profound agrarian productivity with the objectives of increasing farm productivity of selected commodities produced by households, increasing household outputs of the selected agricultural products and promote value addition and ensure a stable market for these agricultural products (MPPED, 2005). In 2005, the RDS was integrated in the budget framework for the financial year 2005/2006 and the Medium term Expenditure Framework (MTEF). As such, the government policy framework for agriculture and rural development during the period of the undertaken analysis (2005-2010) would be coherent with the government expenditure framework.

Though its implementation started in 2010/2011 after the period of the undertaken analysis, the Agricultural Sector Development Strategy and Investment Plan (ASDSIP) was tailored on the NDP with four programme areas of implementation aiming at promoting private sector investment and raising productivity in the sector. These four programme areas are enhancing agricultural production and productivity, improving access to and sustainability of agricultural markets, and creating an enabling environment for investment in agriculture and institutional strengthening in the agricultural sector.

The effects of major decisions and policy measures

Another necessary step in order to assess whether the government has had coherent agricultural policies is to identify driving factors for the agricultural and rural sector in Uganda. Such an approach helps to understand policy gaps for the most important value chains in the country, and to relate these gaps with policy measures and public expenditure.

Driving factors in Uganda's value chains

A number of driving factors have been identified and presented in Table 34, presented along MAFAP results in terms of incentives and public expenditure. The most important driving forces that have been identified are analyzed with regard to MAFAP results in terms of incentives and public expenditure.

Table 34: The driving factors for market incentives and disincentives in Uganda (and associated policy measures and public expenditures)

Product or product group	Incentives/disincentives *What are the price incentives/disincentives for producers? What are the costs/gains that market inefficiencies represent for producers?*	*What are the key factors or issues driving incentives/disincentives for production?*	Policy *What policy measures and objectives are related to these driving factors?*	How much of *public spending are allocated to the issue/commodity?*
All products	Average Observed NRP =-0.3% Average Adjusted NRP = -8.6% MDG =-5.6%	• High transportation costs due to high fuel costs, tax on fuel, and poor infrastructure, especially in rural areas. • Concentration of profit margins among intermediaries along the value chain.	• Improve the quality of Uganda's physical infrastructure by prioritizing investment in energy, railways, waterways and air transport (strategic objective in the NDP). • Expand the rural infrastructure network, including appropriate structures, to reduce post harvest losses (DSIP).	• 48% of agriculture-supportive public expenditure goes to rural infrastructure. • 15% of agriculture-specific public expenditure goes to infrastructure.
Imports	Average Observed NRP = 55.4% Average Adjusted NRP= 48.0% MDG= 4.8%	• High domestic prices.	• Import tariff of 75% on imports from outside EAC as part of the EAC common market	• Budgetary revenue from import duties
Rice	Average Observed NRP = 72.9% Average Adjusted NRP= 39.3% MDG= -12.5%	• Poor organization and complexity of the value chain. • Small quantities produced by individual farmers due to small acreages with production by individual farmers too small to make tradable volumes to attract big-volume buyers. • Lack of product differentiation for domestic rice. • Small mills, lacking graders and de-stoners, produce lower quality rice that cannot sufficiently compete with the quality of imported rice.	• Promote mechanization for increased rice production (DSIP). • Strengthen the marketing capacity of producer groups and co-operative societies (DSIP).	• JICA supports two projects under MAAIF: Dissemination of NERICA and Improved Rice and Sustainable Irrigated Rice Production in Eastern Uganda.
Wheat	Average Observed NRP = 11.6 Average Adjusted NRP = 0.2 MDG = 10%	• Wide fluctuation of prices and lack of competition. • Low level of production technology resulting in low yields.	• Strengthen the marketing capacity of producer groups and co-operative societies (DSIP). • Promote the use of high quality inputs, planting and stocking materials (DSIP)	N/A

Sugar	Average Observed NRP = 2.9 Average Adjusted NRP = -16.0 MDG = 18.1%	• Excessive taxes on producers (excise, VAT and local levies) • Low farm gate prices for sugarcane		
Exports	Average Observed NRP= -1.4% Average Adjusted NRP= -16.2% MDG = -11.9%	• Low export prices received, as exports are mostly primary commodities with limited value addition. • Elimination of export taxes and market liberalization favours exporters. • Lack of organization among small-scale producers and the large number of intermediaries participating in the market.	• Promote value-addition (DSIP). • Promotion of exports and market liberalization policies (the Investment Code as administered under the Income Tax Act 1997). • The measures to support the productive sectors of the economy to trade at both domestic and international levels (under trade policy). • Build the capacity of existing farmers' organizations to engage in collective marketing (DSIP). • Strengthen the marketing capacity of producer groups and the co-operative societies (DSIP).	• Only 4% of agricultural specific public expenditure is spent on marketing. • Spending on training is strong (13%) which should contribute to better organization among small-scale producers.
Coffee	Average Observed NRP = -1.3% Average Adjusted NRP = -14.2% MDG = -15.9%	• Production and quality shocks resulting from pest and disease outbreaks. • High variability in prices paid to producers by traders transporting coffee from Uganda to Mombasa for exports, which has resulted in the perceived need for a domestic price determination point through the institution of a coffee auction in Kampala.	• Reduce losses through improved control of pest vectors and diseases (DSIP). • Disseminate market information to relevant stakeholders (DSIP). • Coffee Regulation Act (1994).	• Coffee is individually targeted by only 0,4% of agricultural-supportive public expenditure, and by 3% of public expenditure going to individual commodities.
Cotton	Average Observed NRP = 18.6% Average Adjusted NRP = -14.4% MDG = -3.8%	• A weak seed distribution system, inadequate extension support, small acreages and pest attack. • Post harvest losses due to the lack of adequate storage facilities. • The indicative price appears to be binding, serving as a price ceiling. This is in conjunction with the perceived price risk: when the world price falls, ginners must cover the gap between the	• Improve farmers' access to relevant information, knowledge, technology and high quality inputs (DSIP) • Promote the use of high quality inputs, planting and stocking materials (DSIP) • Expand the rural infrastructure network, including appropriate structures, to reduce post harvest losses (DSIP). • Disseminate market information to relevant stakeholders (DSIP).	• Cotton is individually targeted by only 1% of agricultural-supportive public expenditure, and by 10% of public expenditure going to individual commodities. • 16% of agriculture-specific public expenditure is devoted to research, which should help boost cotton productivity,

		indicative price and the actual price based on current prices. • Research on cotton is weak because it is understaffed and underfunded.	• Enhance the contribution of agricultural research to sustainable agricultural productivity, competitiveness and economic growth (DSIP).	along with 22% on extension and 16% on training.
Tea	Average Observed NRP = -0.5% Average Adjusted NRP = -32.1 MDG = -45.2	• Poor market organization and regulation due to poor organization or coordination among producers and no regulation in the industry. • The negative price premium for Ugandan tea due to its low and inferior quality, resulting largely from the lack of tea research.	• National Tea Development Policy prepared as a draft yet to be passed. • Promote the use of high quality inputs, planting and stocking materials (DSIP)	• Tea is individually targeted by only 0.5% of agricultural-supportive public expenditure, and by 5% of public expenditure going to individual commodities.
Fish	Average Observed NRP = -8.6% Average Adjusted NRP = -14.0% MDG = 3.3%	• Rising domestic prices for fish resulting from the commercialization of fisheries and development of industrial export oriented trade. • Lack of marketing organizations to protect fishermen from middlemen price control.	• Build the capacity of existing farmers' organizations to engage in collective marketing (DSIP). • Strengthen the marketing capacity of producer groups and co-operative societies (DSIP).	• Fish is a high priority, being targeted by 4.4% of agricultural-supportive public expenditure, and by 41% of public expenditure going to individual commodities.
Thinly-traded	Average Observed NRP = -0.8% Average Adjusted NRP = -4.0% MDG = -1.8%	• The long and complex value chains for thinly- traded products erodes farmers' share of the price. • Weak integration of domestic markets into international markets.	• Build the capacity of existing farmers' organizations to engage in collective marketing (DSIP). • Strengthen the marketing capacity of producer groups and co-operative societies (DSIP). • Disseminate market information to relevant stakeholders (DSIP).	• 48% of agriculture-supportive public expenditure is allocated to rural infrastructure. • 15% of agriculture-specific public expenditure is allocated to infrastructure. • Also, very little is spent on marketing, 4%, with no direct payments to processors, although these two sectors are essential for improving thinly-traded products production.
Maize	Average Observed NRP = -24.3% Average Adjusted NRP = -27.9% MDG = -1.0%	• High volatility and low producers' prices of grain maize due to lack of access to markets and market information. • The low level of marketable surplus from farmers raises the costs of doing business by adding intermediaries. • Poor quality maize produced by farmers.	• Strengthen the marketing capacity of producer groups and cooperative societies (DSIP). • Disseminate market information to relevant stakeholders (DSIP). • Expand the rural infrastructure network, including appropriate structures, to reduce post harvest losses (DSIP).	N/A

Beef	Average Observed NRP = 4.9% Average Adjusted NRP= 1.9% MDG = -2.1%	• Poor marketing outlets and infrastructure and lack of cold storage points for smallholders • The poor quality of raw beef due to poor feed quality. • Small size of processing operations and lack of diversification in beef products produced. • Difficulties and cost of complying with sanitary and phytosanitary measures limiting access to world markets (SPS) requirements.	• Strengthen the marketing capacity of producer groups and co-operative societies (DSIP). • Improve the capacity for regulation and enforcement, especially in safety standards and quality assurance across crops, livestock and fisheries (DSIP).	• Livestock appears to be a high priority in the country, and is targeted by 7.2% of agricultural-supportive public expenditure, and by 78% of public expenditure going to groups of commodities. • However, low investment in processing and marketing facilities (4% for marketing, 0% for processing) are hindrance for livestock trade.
Cassava	Average Observed NRP = -1.1 Average Adjusted NRP = -11.6 MDG = 10.7%	• Traditional production technology traditional, with virtually no use of purchased inputs. • inefficiencies in the marketing chain (such as transport bottlenecks and repeated transactions) • Cassava mosaic remains a major constraint to cassava producers	• Strengthen the marketing capacity of producer groups and co-operative societies (DSIP). • Expand the rural infrastructure network, including appropriate structures, to reduce post harvest losses (DSIP). Promote value-addition (DSIP).	N/A

Note: NA means no relevant information is available.

Source: Authors.

High transportation cost increases the cost of marketing

Transportation costs have a direct effect on commodity prices. Unless competition is strong, traders tended to pass their increased transportation costs on to farmers and consumers; either in lower farmgate prices and higher market prices, or by not showing up at all in more remote areas. Either way, rural communities and agricultural producers suffered worsened terms of trade. As such, high transportation costs reduced producers' incentives with the falling producers' share of either retail or export prices.

Uganda is a land locked and hilly country. This agrarian country depends on oil imports through Kenya's Mombasa port. Under such conditions, it is not surprising that transportation costs are high in the country. Fuel represents a high share of vehicle operating costs. In addition, transportation is heavily taxed in Uganda. In such a rural economy, this brings a tax burden on farmers (World Bank 2007). According to the same source, vehicle operating costs are 50 percent of total transport costs in Uganda, which is far above the global benchmark of 30 percent.

Uganda also has a poor national network of paved roads. While the total national network of roads is expanding rapidly in recent years, the percentage of paved roads appears to be declining (Table 35). For instance, paved roads represent only about 16 percent of the total road network in 2011, down from 27 percent in 2007. Unpaved roads under the country's climate and topographical conditions increase vehicles operating costs and drive transportation costs up. The expansion in road infrastructure is apparently not keeping pace with the economic growth of the country.

Table 35:. National road network length (km) in Uganda

	2007	2008	2009	2010	2011
Total paved	2 848	2 968	2 989	3 112	3 264
Total unpaved	7 652	7 532	17 011	16 888	16 736
Total national network	10 500	10 500	20 000	20 000	20 000
paved (in percent)	27.12	28.27	14.95	15.56	16.32

Source: UBoS (2012).

Although a reduction of transaction costs at all levels of the marketing chain will help improve farmer incentives and market efficiency, improving rural access to markets by reducing the costs of rural transportation may have a higher impact on producer prices. The successive policies in Uganda recognized transportation constraints for imports and exports. The main PMA document recognized poor roads and transportation as a major constraint, linking it to poverty. Poor roads and transportation are considered some of the poor people's concerns (Government of Uganda, undated). The National Development Plan considers inadequacy of physical infrastructure (roads, rail, electricity and air transport) as the forth constraint to a transformed Uganda society to a modern and prosperous country. The plan stated that transport costs remain a significant trade barrier, equivalent to effective protection of over 20 percent and imposes an implicit tax on exports of over 25 percent (Government of Uganda, 2010). As a result, the cost of doing business in Uganda is high, undermining economic competitiveness.

To address the constraint of inadequate infrastructure, the NDP re-emphasized the following strategic actions for increasing stock and improving quality of public physical infrastructure:

1. Continue to improve the stock and quality of national roads, district roads and community access roads.
2. Improve the stock and quality of roads infrastructure, including connectivity and safety within Greater Kampala metropolitan area.
3. Improve rail transport and haulage to connect Uganda to sea ports subsequently lowering the cost of transportation.
4. Improve the water and air transport infrastructure and services.

Public expenditure in support of agriculture also recognized the importance of rural infrastructure. In the category of agricultural supportive policies, rural infrastructure development and rural health have taken a large share of expenditures under this category. Further analysis of public investments in rural infrastructure indicates that the Government has invested in programmes such the community agricultural investment and improvement programme (CAIIP) – designed specifically to develop rural feeder roads and the markets for agricultural improvement programmes (MATIP) – designed to develop agricultural markets in all urban councils of Uganda. These expenditures can result in benefits for an enabling environment for agricultural development, well-developed market centres for agricultural produce, easy accessibility to the market centres and a healthy labour force by providing basic health facilities of farmers in rural areas. These public investments are well aligned to government objectives geared towards improving access to and sustainability of markets for agricultural produce.

Although rural infrastructure constitutes 15 percent of the agriculture-specific policies, a bigger proportion of this is spent on establishing of irrigational related infrastructure followed by construction and rehabilitation of the road infrastructure particularly rural feeder roads. Special focus by government was establishing and rehabilitating the already existing feeder roads in rural areas. This is seen in the Government's continued public investments in rural infrastructure through designing different projects and programmes such as the feeder roads rehabilitation of northern Uganda, transport rehabilitation feeder roads project and the community agricultural investment and improvement programme (CAIIP) among others-designed specifically to develop rural feeder roads.

The CAIIP programme is of particular interest because it contributes over 50 percent of expenditures under the rural roads sub-category of the agriculture specific policies. The programme is funded by both government through development expenditures and donor support. However, this programme does not cover the entire country. This leaves most of the feeder roads in Uganda in a state that does not favour access to agricultural market centres. Because of the inaccessible market centres, farmers end up spending more money on transportation of agricultural products to market centres, which is hence a disincentive to agricultural production.

Obviously, the constraint is well-recognized and strategic interventions are placed high on the policy agenda. Moreover, public expenditure to resolve the transportation problem is allocated from both national and donors resources. Uganda now needs to consider selected public infrastructure investments, especially for electricity and road transportation. Although there are efforts by the Government to invest in rural electricity through the rural electrification programme, but more

emphasis should focus on rural towns with growth potential, Greater Kampala, and trading routes, to reduce the costs of external trade.

Poor value chain organization leading to marketing inefficiencies and lower producers' prices

As described in the previous chapter, the marketing chain of many commodities in Uganda is complex. For some commodities (maize, beef and beans), the commodity passes through several markets before reaching wholesale, export market or consumers. Naturally, the marketing margins and costs increase with each market transaction of the commodity. The high marketing costs negatively impact producers' prices.

As agriculture in Uganda is dominated by smallholder farmers with limited land areas, the quantities marketed by individual producers tend to be small. For marketing to traders, this requires some stage of collection, assembly and packaging into larger quantities. This function is usually undertaken in the primary market at the village level by rural traders. Even for commodities such as cotton, tea and rice, the primary markets include rural traders and processor agents. Fish passes from fishermen located in the lake to processors and wholesalers through boat transporters, factory agents and traders. Although these market participants play an important role in providing access to farmers to market their surplus, this comes at the cost of lower farmgate prices. In the value chain, smallholder farmers seem to be the most affected by the long chain since they have little or no control over the pricing of their products (MAAIF, 2009).

"Market access" implies that the key players in the marketing chain, including farmers, processors, inputs suppliers and other service providers have sufficient information. Several value chain studies (MAAIF (2009), PMA (2009)) reported that producers are often disadvantage by inadequate market information.

The importance of market access and organizing the value chain has been generally recognized. The vision for improving market access has been developed under PMA as "increased and sustainable supply of and demand for competitive processed and non-processed agro-products on domestic regional and international markets." The Rural Development Plan emphasized improving value chains for agricultural commodities (Government of Uganda, 2010; pg. 60). There also has been a large number of value chain studies conducted over the last decade covering the major commodities of Uganda (cotton, rice, coffee, maize, wheat and other staples).

The problem is addressed more intensively in the Agricultural Sector Development Strategy and Investment Plan (DSIP). DSIP recognized that there very little market infrastructure in the target areas, linkages are weak, and there is not much information-sharing between producers and buyers. DSIP thus proposed the following activities:

- Increase understanding among farmers and local traders of markets.
- Strengthen the marketing capacity of producer groups and co-operative societies. A deliberate effort should be made to include groups of women and children. Assist potential traders and processors in assessing business opportunities.
- Rehabilitate rural infrastructure, such as community access routes, markets, storage, water points, and crushes.

Obviously, the above activities encompass other objectives besides the addressing the constraint most related to value chain organization. However, DSIP activities are apparently directed toward collective marketing through farmers' groups and cooperative. Beside DSIP, the National Trade Policy proposes "encouraging bulk marketing and adherence to commodity standards through, inter alia, Cooperative Societies and Area Marketing Cooperative Enterprises and Farmers' Groups" as a policy action (MTTI, 2007).

Generally, input subsidies, training, extension and agricultural research take up the largest proportion of agriculture-specific policies. This indicates government's will to improve value chain organization since the extension programme includes organizing farmers into groups, and then production techniques are passed on to the groups.

However, there are still issues to do with marketing of agricultural products due to poorly-developed market centres and the entire value chain to marketing of agricultural products.

The Government has continued to invest in marketing. However, the 5 percent allocation to marketing under the agriculture-specific policies still remains low. Other challenges are related to drought problems arising out of the climate change. Although the Government has shown commitment to help irrigation by supporting rural infrastructure, this support still remain low. Agricultural production remains low to date and hence there are low yields from agricultural produce by farmers.

Export promotion and producers' incentives

With the introduction of the Economic Recovery Program in 1986, Uganda initiated market and trade liberalization and export promotion measures focusing on export-led growth, with the Government providing an enabling environment for the private sector to produce and trade competitively. The main objective of export incentives in Uganda was to compensate exporters for the infrastructural inadequacies and the cost of bureaucratic inertia. According to Uganda Exports on Line (2009), the most important export promotion measures include the following:

- The foreign exchange regime is fully liberalized and exporters are entitled to retain 100 percent of their foreign exchange earnings accruing from their export transactions.
- There are no taxes charged on exports (zero rated). This is meant to reduce costs for the exporters and to make exports from Uganda more competitive.
- Support of global economic integration with membership of COMESA and EAC. In addition, Ugandan products enter the European Union and USA markets duty and quota free under the Cotonneou Agreement (ACP – EU) and the African Growth and Opportunity Act (AGOA) initiatives respectively.
- All exports of goods and services are zero-rated for VAT. However, exporters are required to be VAT registered. This enables them to re-claim VAT expended on all inputs used in the process of producing and processing exports.
- Exporters are allowed to draw back up to 100 percent of duties paid on materials inputs imported to produce for export.

As a result of these measures, the number of products exported by Uganda has risen substantially from 11 in 1986, to 21 in 1990 and averaged over 50 since 2004 (World Bank, 2007). Although still natural resource-based, several non-traditional exports have involved product processing, nudging

the export basket towards higher technology exports. However, formal trade statistics present only a part of the export story. A significant volume of informal cross-border trade is not captured in the formal statistics. Over a period of 6 months, about US$ 27 million worth of goods were informally exported, while about $8 million worth were imported (World Bank, 2007). Of these, 71 percent of the exports and 36 percent of the imports were agricultural goods. Among exports, the main commodities were maize, beans, fish, bananas, and other cereals.

Despite the success of the export promotion strategy of the government in increasing level and diversity of exports, the comparison of the nominal rates of protection at producers' and wholesale/exporters levels reveals that for all exports except beef:

1. When commodity markets reveals disincentives, the disincentives are disproportionately higher for producers than for wholesale and exporters. This is evident in the negative and higher nominal rate of protection for producers (see the Figures in Section 5).
2. When the commodity markets suggest incentives, wholesalers and exporters appear to capture a larger share of these incentives.

This suggests that benefits from the export promotion are skewed in favour of exporters and wholesalers, although producers also benefit. In other words, the benefits from export promotion are not shared equally between commodity producers and exporters.[24] To the extent that producers' incentives are important for inducing productivity increases through adoption of improved technologies, improving product quality and increasing total production, the benefit from export incentives needs to be shared more equally along the value chain.

In addition to supporting the traditional cash crops such as coffee, cotton and tea, the Government is taking up initiatives to diversify its export base by boosting production and value addition of other individual commodities such as fish, vegetable oil, banana and livestock. A significant amount of public expenditures are channelled to these commodities in the form of value addition, inspection activities and training to farmers with the main aim of diversifying exports from Uganda. However, despite these initiatives by the government, other challenges like access to credit and assurance of the best quality product still exist. These challenges are disincentives for farmers' to participate and maximize gains from investing in these commodities.

Functioning of the commodity markets and price transmission

According to World Bank (2007), commodity markets appear to be integrated with Kampala (the largest urban wholesale market for agricultural commodities in the country), but the degree of price transmission varies by crop and by market. However, while most markets are in a long-term relationship (are integrated), the degree of integration varies considerably. For example, Masindi achieves the highest degree of instantaneous price transmission for maize, beans and groundnuts, but not for matoke. Jinja, Iganga and Mbale also have good integration for maize. Mbale is well connected for beans and groundnuts as well. This pattern shows a high degree of integration with

[24] For most formal exports, exporters receive 100 percent of the border prices as there are no taxes or fees on exports. However, producers receive less than the equivalent border price of the goods.

markets in the East, a major thoroughfare and marketing corridor to Kenya. These markets are in close proximity to Kampala.

Despite this integration, the domestic markets appear to be less integrated with export markets. This is evident from the high variability and inconsistency of the nominal rates of protection over the years. In other words, producers' prices are less responsive to price signals from world markets. This is particularly harmful when prices in the world markets rise while producers' prices do not adjust. The weak price transmission may be due to the time lag between harvesting season when producers mainly sell their produce and the time when these commodities are prepared for exports. During this time lag, world prices may change. Other important factors leading to weak price transmission is the poor market information available to farmers. DSIP is seeking to address this issue through dissemination of market information to relevant stakeholders (MAAIF, 2010).

Conclusions

The Government of Uganda has been successful in providing an enabling environment for the private sector to produce and trade competitively through the successive policy measures taken. However, there are several issues that need to be addressed to further improve the market efficiency and reduce the disincentives frequently facing producers.

The main challenge is to improve rural infrastructure and market access. Despite the government's efforts to develop and rehabilitate rural feeder roads and improve market infrastructure through programmes like CAIIP and MATIP as earlier alluded to, these programmes are not implemented country-wide. Therefore further investments in rural infrastructure would be instrumental in realizing the maximum benefits to both the farmers and the Government as a whole. This is an important and consistent theme emerging from the analysis of producers' incentives for all commodities.

Since transportation costs are an important determinant of marketing margins, improving rural infrastructure will lower marketing margins and serves the dual purpose of lowering retail prices and raising farmgate prices. Increasing marketing efficiency through improved and simplified value chain organization and improving producers' access to markets and price information symmetry will improve producers' incentives.

Benefits resulting from the measures aiming at promoting and diversifying exports should be shared equally along the value chain and in favour of commodity producers. This is important for realizing productivity increases as a combination of higher yields through improved technology and shifts in farm and crop enterprises to higher-valued activities.

Analysis of the policy coherence of public expenditures in agriculture and government priorities indicates that:

- There is consistency in government funding to support strategic sectors in general, such as fish, banana, vegetable oil and livestock as part of the government's strategy to diversify the export base for Uganda.
- There is significant public expenditure for projects supporting development of rural infrastructure, especially roads-rural feeder roads, off-farm waters schemes/irrigation and energy for production. Furthermore, there is a significant government effort to develop

market infrastructure through programmes like the Markets for Agricultural Improvement Programme (MATIP). This indicates the government's commitment to develop infrastructure linked to facilitating agricultural development.

- Much as access to credit is necessary for development, there are still some challenges linked to access to credit within the agricultural sector. Poor coordination of the institutions within the sector remains a challenge in service delivery.

Part 3: Institutional constraints to agriculture development in Uganda

Introduction

Well-organized governance and institutional architecture are prerequisites for the good performance of any sector. In the agricultural sector in Uganda, many institutions and structures have overlapping mandates and blurred lines of accountability. This challenge constrains the performance and development of the agriculture sector. The Government of Uganda needs to address this challenge as a priority. Without addressing this challenge, the institutional weaknesses may undermine programme implementation (Republic of Uganda, 2010).

A review of the development progress of many economies in the world over the past few decades has revealed that countries which have achieved growth did so through diverse policies and institutional arrangements. The Barcelona Development Agenda 2004 noted that there was no single set of policies that guaranteed sustained growth. Countries should identify their most binding constraints to growth and address them through microeconomic and macroeconomic policies. Removing these constraints could have a positive socio-economic impact.

Analysis of constraints to growth in Uganda have revealed that Uganda's public sector management and administration is characterized by weak policy, legal and regulatory frameworks; weak institutional structures and systems; weak civil society and civic participation; inadequate data and information; inadequate standards and weak quality infrastructure; limited social protection and support systems; and weak management of environment and climate change (Republic of Uganda, 2010). This weak public sector management has led to low absorption of public funds and poor delivery of services (World Bank, 2011).

In the early 1990s, Uganda implemented a number of reforms in the agricultural sector. In 1992, the country liberalized agricultural marketing and dismantled the former Marketing Boards (for example, the Coffee Marketing Board (CMB) and the Lint Marketing Board (LMB)). The objectives of agricultural sector reforms were well-intentioned: to increase farmers' incomes by reducing taxation of the sector; dismantle the producer boards and replace them with autonomous (marketing) agencies in order to increase the share of the products price received by farmers. Agricultural sector reforms also encouraged private sector investment in agriculture (Premium Consulting Limited, 2006).

Institution strengthening is important for fostering growth in agricultural sector and implementation of the agricultural reforms in Uganda. The objective of this chapter is to review the institutional constraints to agricultural production in Uganda, though building on literature showing that institutions are important for agricultural development (de Laiglesia 2006; Fan et al. 2004; Kijima et al. 2011).

Main features of the reforms of the agricultural sector in Uganda

Prior to the National Resistance Movement (NRM) government in 1986, the state played a major role in Uganda's agriculture. The role of the state ranged from providing extension services to delivering inputs and credit. MAAIF had an expansive agricultural extension-services system that focused on

promoting the major cash crops for export such as coffee, cotton, tea, and tobacco. The rationale for widespread state involvement was that the cash crops were cultivated mainly by smallholder farmers who needed substantial support. The agricultural system was also helped by a cooperative movement which was effective in extending credit in kind (for example through tractor-hire services, and the supply of equipment and pesticides). The cooperatives recovered such in-kind credit through the sale of produce.

In the 1990's, Uganda's agricultural system's reform agenda tried to address inefficiencies. Firstly, it was argued (Premium Consulting Limited, 2006) that the system (marketing boards) depressed farmgate prices by paying farmers very small proportions of the world price received. This reduced incentives to producers and discouraged investments by large scale agricultural producers. Second, the extension system was supply-led —allocating resources based on quantities, which is more expensive and inefficient for the government. Third, payment for crop delivery was often delayed. This late payment led to mistrust by farmers in Uganda and other African countries (Wiegstral et al. 2007).

The reforms beginning in the early 1990s did not address the difficulties of the state-led agriculture within the former framework of state-guided development. Instead, the reforms sought to introduce agricultural sector liberalization. The existing institutions at the time (such as the MAAIF; District Agricultural Officers; and Producer Cooperatives), had difficulty implementing the new order (Bategeka, Kiiza, and Kasirye (2012). Liberalization involved dismantling the then existing extension services system. It also involved dismantling the CMB, the LMB and the rules governing production, marketing, and distribution of agricultural output.

On the other hand, a number of autonomous agencies were set up to implement pro-market reforms within the liberalized environment. For instance, the Uganda Coffee Development Authority (UCDA) was established to monitor the coffee market as well as to ensure coffee quality. Other institutions that were created included the National Agricultural Research Organization (NARO) in 1992; the Cotton Development Organization (CDO) in 1994; and the Dairy Development Authority (DDA) in 1998.

A unique feature of the new sector agencies was that nearly all the agencies were created by Acts of Parliament. This meant that they were independent accounting units that received budget allocations directly from the national budget. As such, they reported to the Auditor General and Parliament and not the Ministry of Agriculture. This impeded the ability of MAAIF to coordinate their activities since the centres of accountability were in the Ministry of Local Government. Some of these agencies (such as UCDA and CDO) were given statutory powers to levy fees on produce for the development of the sector.

Liberalization also involved removing state controls. It allowed prices to be determined by the market. The Government of Uganda anticipated that by allowing market forces to determine output prices, the farmers would get a higher share of the farmgate price compared to the days of the cooperative movement when the government fixed the prices of agricultural produce. Liberalization helped maximize incentives for agricultural production. The expectation was that agriculture would become attractive to investors. In the input market, liberalization meant allowing increased competition in the supply of inputs. Here too, it was anticipated that competition would drive down the prices of inputs, thereby making the inputs affordable to farmers.

With the creation of autonomous sector agencies, the role of MAAIF was agricultural policy formulation, support supervision, sector planning, regulation, standard setting, quality assurance, sector monitoring, and guidance (MAAIF 2010: 29). This new role constrained MAAIF from providing vital services directly to farmers. However, some of these services were undertaken by MAAIF's subsidiary agencies which did not cover all crops. For instance, institutions such as the Uganda Coffee Development Authority (UCDA) and the Cotton Development Organisation (CDO), which are commodity-based institutions, took up additional product development functions outside their mandate (such as seed multiplication). Other institutions such as the National Agricultural Advisory Services (NAADS) responded to the changing environment by taking up additional functions beyond the extension services such as credit provision (World Bank 2010)[25].

There were weak linkages between the sector agencies (for example between UCDA and the National Agricultural Research Organisation (NARO)) to deal with the coffee wilt disease (Bategeka, Kiiza, and Kasiry, 2012). NARO is mandated with agricultural research but it is poorly resourced to deal with the challenges such as the wilt disease that for coffee. Coffee is .important to protect since it is Uganda's main foreign exchange earner. (Baffes, 2009).

Although the private sector was expected to take over aspects of production previously undertaken by the government such as seed multiplication of improved crop varieties, this did not occur (Bategeka, Kiiza, and Kasirye, 2012). The inability to attract private investment is partly explained by the fact that these services are public goods. These problems are important constraints to improved agricultural performance in Uganda.

The reforms were based on the pro-market approaches and private sector promotion in particular. With the reforms, the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) became less involved in direct production activities and producer boards were abolished. The former producer boards, which were major sources of credit to farmers, were abolished. This meant that farmers had to rely on the traditional commercial banking system. This necessitates the importance of strengthening credit institutions to support farmers' credit needs.

Institutional constraints to agricultural production in Uganda

This section presents an institutional view of Uganda's agricultural constraints. In previous analysis, attention is drawn to the institutional obstacles to agricultural production in Uganda. It is pointed out that the complicated institutional arrangements are the major constraint to agricultural development. The agriculture sector's institutional arrangement is critical for efficient and effective delivery of sector goals. The following paragraphs outline the institutional obstacles in Uganda.

Land tenure

The main economic rationale for land reform lies in the inverse-farm productivity relationship of greater efficiency outputs for smaller farms (Kariuki and Samuel, 2011). Efficient use of factor inputs (such as labour) is frequently cited as one of the reasons for small farms' efficiency outcome. Equity considerations can also create the need for land reform, especially in countries where a significant proportion of the population relies on agriculture for its subsistence.

[25] The NAADS mandate was to address demand driven extension services and not to provide credit services.

The inappropriate land tenure system is one of the most important obstacles to agricultural production in Uganda. Despite the abundance of land, there is a mismatch in land ownership and use. Those that own the land do not use it; and those that use the land do not own it (Bategeka, Kiiza, and Kasirye, 2012). Landlords often own huge chunks of land but do not actively use the land for agricultural production; in contrast, farmers typically own only small holdings of land (Bategeka, Kiiza, and Kasirye, 2012).

Ineffective governance adversely affects Uganda's land tenure system. For example, taxes on idle land compel holders of that land to utilize it productively or sell it to those who are willing and able to use land for wealth creation. Yet imposing such taxes has proven politically sensitive. Furthermore, Uganda has a unique system of land tenure which encompasses overlapping land rights. The registered rights of landlords typically conflict with the usufruct rights of bona fide tenants or squatters on the same piece of land.

Although Uganda has enacted a number of land laws[26] during the implementation of agricultural reforms, these laws fall short of a fundamental land reform, which the country needs to substantially boost agricultural production.

Indeed, contemporary Uganda has not had far-reaching land reforms. Instead of implementing radical agrarian reforms, Uganda has embraced the pro-market "willing-seller, willing-buyer" or property rights model of land reform which is characterized by challenges such as idle land.

Balance between food security and export promotion

The current policy and institutional framework for agriculture development seldom factors food security into the agricultural development strategy. This implies that food security should be a major priority for MAAIF (Bategeka, Kiiza, and Kasirye, 2012).

According to IAASTD (2008), trade liberalization in the absence of basic national institutions and infrastructures can lead to long-term negative effects on poverty. Agricultural exports may improve a country's balance of payments, but do not ensure food security or buffer an economy from volatile international food prices. Some developing countries with large export sectors have achieved aggregate gains in gross domestic product, yet the small-scale farm sector has not necessarily benefited. In the poorest countries, the small-scale sector is a net loser under most trade liberalization scenarios. These distributional impacts call for policy differentiation, such as special and differential treatment and non-reciprocal market access under the Doha work plan (IAASTD, 2008).

Since both export promotion and food security objectives can be achieved successfully under the liberalized market policies, more support to smallholder food crops particularly cassava, plantains and beans may be needed. This can be achieved through introduction of improved and high-yielding varieties, processing and value-addition for cassava and plantains, pest control and improving the marketing system in favour of producers.

[26] Uganda land Act 1998 and subsequent amendments, the Uganda National Land Policy 2011.

Coordination of agencies

In Uganda, the delivery of pubic agricultural services is led by MAAIF. Yet, most of the services are delivered by several autonomous agencies. MAAIF operates 12 departments under four divisions: animal resources; crop resources; fisheries; and policy, planning, and support services. It is through these four directorates that MAAIF undertakes its role of "agricultural policy formulation, support supervision, sector planning, regulation, standard setting, quality assurance, sector monitoring, and guidance" (MAAIF 2010: 29).

In addition to the departments, the public agricultural system also has eight semi-autonomous sector agencies namely: the Uganda Coffee Development Authority (UCDA); the Cotton Development Authority (CDO); the Dairy Development Authority (DDA); the Plan for Modernization of Agriculture (PMA) secretariat; NAADS; NARO; the National Genetic Resource Information Centre (NAGRIC); and the Coordinating Office for the Control of Trypanosomias in Uganda (COCTU).

Some of the above sector agencies (such as UCDA, CDO, and NARO) were set up by Acts of Parliament, and implemented the first-wave market reforms within the liberalized environment. The statutory agencies are not just self accounting; some of them (like UCDA and CDO) collected statutory levies which were spent at source. With no direct control of the sector policies or how the agencies used revenues from levies, the MAAIF's oversight and coordination functions were weak.

Institutional strengthening within the sector

The Ministry of Agriculture, Animal Industry and Fisheries consists of MAAIF headquarters and seven "semi-autonomous" agencies. MAAIF headquarters consists of two commodity-based directorates (Animal Resources and Crop Resources) each with three departments, two stand-alone departments (for planning and finance and administration) and three other specialist units. The agencies are NARO, NAADS, the Uganda Coffee Development Authority (UCDA), the Cotton Development Organisation (CDO), the PMA Secretariat, the Dairy Development Authority (DDA), the National Genetic Resource Information Centre and Data Bank (NAGRIC&DB), and the Coordinating Office for the Control of Trypanosomiasis in Uganda (COCTU).

There seems to be weak institutional linkages between MAAIF and sector agencies, and also among sector agencies. MAAIF only appoints the boards of directors of the agencies; the managers of these agencies report to their respective boards. Each agency, operating at both national and sub-national levels, is responsible for the execution of approved plans and resources in their budgets, leaving MAAIF headquarters to concentrate on agricultural policy formulation, support and supervision (especially of local governments), sector planning, regulation, standard setting, quality assurance and sector monitoring and guidance.

Part of the problem with regard to coordination also revolves around the uncertain relationship between MAAIF headquarters and its semi-autonomous agencies (Bategeka, Kiiza, and Kasirye, 2012). The legal framework that specifies these relations is not always consistent and a common perception is that, by delegating specific functions to its agencies, the ministry has relinquished control over these functions, which is not the case.

Another problem is that the responsibilities for implementation of various MAAIF activities are often shared among more than one institution. This does not necessarily reflect a duplication of effort but is simply because some activities are undertaken by more than one institution. In this situation, a

specific level of coordination is required which should necessarily be provided by MAAIF headquarters. There is a need for engagement with other sectors and institutions and coordination mechanisms should be improved.

The Agriculture Sector Development Strategy and Investment Plan (DSIP) addressed these weak linkages and coordination by helping to strengthen the institutions. DSIP's interventions are concentrated in programme areas where public spending can impact increased agricultural productivity, improved market access and a functioning enabling environment. It is clear, however, that without the appropriate institutional arrangements to implement these programmes, the delivery of results will be difficult. Therefore, the focus is on ensuring that sector institutional structures and systems are in place and optimally configured to achieve impact. To realize the vision of functioning sector institutional structures and systems, programs will be implemented with the goals of: strengthening MAAIF and related agencies (MAAIF should be appropriately configured and equipped); MAAIF headquarters might be more central and efficient if relocated to Kampala; and, the productivity of sector personnel should be improved (MAAIF, 2010).

Conclusion

In conclusion, agricultural production in Uganda has been constrained by institutional difficulties such as coordination weaknesses within the sector. For Uganda's agricultural future, strong collective will and creativity are needed to develop new institutional governance arrangements that can generate and implement agricultural policies. These agricultural policies should prioritize the small-scale farm sector; rural livelihoods; national food security; public good focused agricultural research agenda; and the protection of sustainable management of natural resource base.

The government may consider increasing investment in the development of rural areas, livelihoods and farming enterprises in the tropics. Food security should be promoted to meet domestic demand. The new institutional governance arrangements should create institutions that provide value-addition in agricultural and food systems and distribute benefits fairly and equitably along the chain.

Furthermore, Uganda's institutional skills and capacities to negotiate international trade, macro-level policy changes and cross-sectoral linkages should be strengthened. The government should build new collective security mechanisms for food stock management at local, national, regional and international levels (IAASTD. 2008).

Notwithstanding the challenges, there are also many important opportunities in the sector and this DSIP outlines how the Government of Uganda can use these opportunities. It provides a "roadmap" to guide the government, the private sector, farmers' organisations, other civil society stakeholders and development partners to make public interventions that will help meet the key objectives of growth, food security and poverty reduction in the agricultural sector. As such it is a combination of policies and programmes around which stakeholders can build a consensus and then mobilize the resources needed. The DSIP is based on a vision of the future which is to have "A Competitive, Profitable and Sustainable Agricultural Sector."

Agricultural growth, however, cannot be achieved by programmes and activities managed by the sector ministry and its agencies alone. Significant public investments in rural roads, railways, electricity, and telecommunication infrastructure are needed. The budgets for these sectors are

implemented by other ministries implying a need for MAAIF to collaborate closely with these MDAs to rally support for other complementary investments.

The DSIP's development objectives are to increase rural incomes and livelihoods, and improve household food and nutrition security. The DSIP's immediate objectives are: to sustainably enhance factor productivity (land, labour, capital) in crops, livestock, and fisheries; develop and sustain markets for primary and secondary agricultural products within Uganda, the region and beyond developed and sustained; develop a favourable legal, policy and institutional frameworks that facilitate private sector expansion and increased profitability along the entire value chain, and; help MAAIF and agencies to function as modern, client-oriented organizations within innovative, accountable, and supportive environments.

Investments under DSIP have been packaged under four programmes representing the key areas of opportunity: (i) enhance production and productivity; (ii) improving access to markets and value-addition; (iii) create an enabling environment, and, (iv) strengthen the institutions in the sector.

Achieving the DSIP objectives entails promoting private sector investment and raising farmer productivity. This will be done through establishing a policy framework to create the enabling environment for farmers, entrepreneurs and investors to make informed and value-enhancing decisions. In addition to appropriate policies, creating an enabling environment includes investing in the efficient and effective delivery of core public goods and services that are the mandate and functions of MAAIF. These include: agricultural research; agricultural advisory services; pest and disease control; regulatory services; promoting value chain development; policy formulation and planning; improving use of water for agricultural production, and; supporting and supervising service delivery by local governments.

The underlying logic is that if long-run productivity can be improved, through existing or new enterprises, and farmers can be helped to move “up” the value chain by public investments in value-addition activities, then rural incomes and livelihoods and general prosperity will rise. At the same time, parallel but associated investments around staples and basic foods, usually with a different target group, will deliver improved food security at the household level. The agricultural sector will then move towards greater profitability and an improved capacity to compete (MAAIF, 2010).

Part 4. Conclusions

Key Messages

Since 1986, the Government of Uganda – with the support of foreign countries and international agencies – has acted to rehabilitate and stabilize the economy by undertaking currency reform, raising producer prices on export crops, and improving civil service wages. The policy changes were especially aimed at dampening inflation and boosting production and export earnings.

These initial reforms were followed by policies involving careful sequencing and determined implementation including The Poverty Eradication Action Plan, The National Development Plan, the Public Investment Plan, the Plan for Modernization of Agriculture, the Rural Development Strategy and the Agricultural Sector Development Strategy and Investment Plan. Despite the impediments faced, the Ugandan economy has achieved an impressive recovery in growth over the last two decades.

In spite of Uganda's economic recovery from the downturn of the 1970s and 1980s, its size and the country's per capita income is still very low compared to other economies in Africa and Asia. GDP per capita increased amounts to U Sh 1 206 866 (US $ 481.01) in 2010/2011 and U Sh 1 463 961 (583.48) in 2011/2012. However, the relatively high economic growth which has been sustained since the early 1990s has contributed to a considerable reduction in poverty levels. The percent of the population below the national poverty line decreased from 56 percent in 1992/1993 to 44 percent in 1997/1998 and decreased even more to 31 percent in 2005/2006.

Uganda has substantial natural resources, including fertile soils and regular rainfall. Agriculture is the most important sector of the economy, employing over 80 percent of the work force. As the only surplus producer in the region, surrounded by countries facing a structural deficit in staple crops, (maize, beans and possibly bananas and other crops), Uganda is in a unique position to exploit its comparative advantage in growing these crops. Uganda is a land locked country with high transportation costs for imports and exports. Uganda needs to exploit its advantage to compete against imports from outside the region through developing a highly-efficient marketing system.

In this context, it is essential to ensure that the agricultural and food policies and expenditures provide clear signals to support decisions by producers that are consistent with national policy goals. It is also essential to measure the consistency between the objectives of these policies, the measures being adopted and their resulting effects.

Incentives, Disincentives and Market Development Gaps

Market incentives, disincentives and market development gap are measured and analyzed for nine agricultural products (maize, rice, beef, cotton, cassava, tea, coffee, fish and wheat), representing

26 percent of the total value of agricultural production,[27] 72 percent of the value of exports and 32.4 percent of the imports in the country. These products are grouped into four categories:

- exports: cotton, tea, coffee and fish;
- imported products: rice, sugar and wheat;
- thinly or non-traded traded products: maize, beef, and cassava, and;
- key products for food security: maize, beef, fish, cassava, rice and wheat.

MAFAP indicators are based on the comparison between domestic prices at farmgate and wholesale and the reference prices, which are estimated by using the price of the product in the international markets.

Reference prices are those that producers would obtain in the absence of national policies affecting the price levels and deficiencies in the structure and the functioning of the product's domestic value chain. These indicators are estimated at two levels: an observed and adjusted level.

In the observed level, the reference prices measures the price that producers or traders of the commodity would receive in the world market of the commodity given the existing marketing costs, margins and any taxes. In the adjusted level of MAFAP indicators, the reference prices are adjusted to eliminate any distortions found in the market supply chain (for example, taxes or levies and excessive profit margins of economic agents). In other words, the observed indicators measure the level of incentives and disincentives given the existing functioning of the value chain and government policy on commodity transactions while the adjusted indicators measure the level of incentives and disincentives in absence of any distortions caused by market agents (such as monopoly power) or government policy (such as taxes).

During the period of the reported analysis, Uganda was pursuing a highly liberalized economic policy (a process that already started back in 1991). Both domestic and international trade in all agricultural products since then has been carried out by the private sector exclusively. There are no state trading companies operating in competition with the private sector or acting as major buyers and guarantors of a minimum farmgate price. Similarly, price control as a development and trade policy measure is no longer practiced by the government. All prices are determined by the market.

In addition, the government is pursuing an export promotion strategy based on exchange rate liberalization, zero-rated duty and VAT exemption on exports, and no additional charges or levies. However, the major imports of Uganda (rice, wheat and sugar), originating from outside the EAC, are subject to ad valorem tariffs at the point of entry to the EAC customs union. Under such policy environment and in an efficient and well-functioning output market, the nominal rate of protection for imports should approximate the tariff rate (effective rate of tariff) and zero for other commodities (exports, thinly-traded or non-trade commodities). The latter case reflects the case of neither price incentives nor disincentives where all market agents (producers, wholesalers,

[27] The aim was to analyze commodities that represented 70 percent of the total value of production. The analysis is constrained by the unavailability of the data for three commodities: plantains, milk and beans (contributing 33.6 percent, 6 percent and 4.7 percent of the value of production, respectively).

processors and exporters) receive prices that differ only by efficient transport and processing costs. However, the estimated MAFAP indicators suggest that this not the case.

Over the period from 2005 to 2010, the observed indicators suggested that the agricultural sector as a whole was receiving generally highly variable incentives over most of the years with high disincentives in 2007 and 2010. However, the observed indicators masked substantial inefficiencies in the existing marketing systems leading to excessive profit margins for traders, processors and exporters, leading to high marketing costs. These distortions represented net disincentives in the agricultural sector in most years (with the exception of 2009–2010). Specifically, these distortions are the direct causes of a significant market development gap within the agricultural sector in Uganda estimated at 16 percent of the reference price at the farmgate.

Within the agricultural sector, the pattern and nature of producers' incentives vary between commodity groups depending on the level of the development of the value chain and existing policies. Producers of imports, specifically rice and wheat, are generally highly-protected due to the import tariffs imposed on imports of these two commodities.

Unlike wheat and rice producers who receive minimal processing, sugar producers are taxed heavily with noticeable levels of disincentives as indicated by the negative adjusted nominal rates of protection despite the relatively high level of tariffs for sugar. Overall, producers' prices for imports are significantly higher than they would otherwise be, as a result of the tariff protection. Accordingly, producers of these commodities receive significant incentives which represent a transfer from domestic consumers to producers.

For the analyzed exports, which include the major country exports (coffee, tea, cotton and fish), the observed nominal rate of protection is relatively small representing a positive deviation from reference prices of 10.8 percent. However, this pattern does not take into account the excessive profit margins at the export level and the variability of incentives between export commodities and over time. When the excessive profit at export margins at the export level are adjusted, producers of export commodities were systematically receiving disincentives as indicated by the negative adjusted nominal rates of protection throughout the period of analysis except 2010. These efficiencies deriving the deviation of the adjusted nominal rate of protection from the observed reflects the existence of a persistent market development gap averaging 12 percent of reference price at the farmgate.

Within the export group of commodities, producers' incentives are driven by the high level of incentives in the fish market stimulated by the high and progressively rising prices of fish in the domestic market. This is caused by the increased competition between processing factories for high quality fish at landing sites, the competition between domestic consumers and processing factories, and the low supply in recent years. The demand for fish is apparently increasing due to increased domestic demand caused by rising incomes and urbanization in Uganda and the increased world demand for Nile Perch. As a result, the domestic price of fish is increasing. Unlike fish, producers of cotton, coffee and tea received net disincentives throughout the period of analysis as indicated by the adjusted nominal rate of protection. The export sector as a whole is facing a substantial level of market development gaps resulting from excessive profits at the processing and export level.

The excessive profit margin at the processing and export level increases the price gap between the farmgate price that farmers receive and the market price that processors and exporter receive (known as the farm-export price spread). If this price spread is reduced, farmers can receive higher farmgate prices, while keeping the market price constant. This can be achieved by reducing the transportation and transaction costs of trading through investing in transportation infrastructure and developing competitive market institutions.

There is substantial variation of incentives within the commodities considered important for food security over time with no clear trend. For instance, producers received significant incentives in terms of prices above the reference price at the farmgate in 2006, 2008 and 2009. The average nominal rate of protection was positive (10.9 percent) over the period of analysis.

However, the patterns of incentives within the food security commodities also vary significantly between commodities depending on their tradability. The imports within this group (wheat and rice) are highly protected as stated above. Beef and fish are characterized by relatively high domestic prices with producers generally receiving incentives. However, for thinly-traded good such as maize, high levels of disincentives to producers average 25 to 28 percent of the world price. For non-traded goods such as cassava, producers generally receive a modest level of incentives in years with high prices of its close substitute commodities (maize).

It should be noted that in the period studied (2005–2010), which was the most recent from the viewpoint of data availability, was particularly turbulent due to the world food crisis of 2007–2008 with market fundamentals being challenged and price trends subject to significant fluctuations. However, the impact of the food crisis was transmitted to the domestic markets with some delay in the form of high domestic prices in 2008–2009. This has spelled large differences in the pattern of incentives and disincentives especially for food commodities which made unravelling of the causes of incentives and disincentives more complicated.

The market development gaps (MDGs) measure the extra costs for market access, including the rents, and more generally, the inefficiencies in the functioning of the value chain for the product. In order to obtain a comparable ratio between products and countries, these cost gaps are compared to the reference price at the farm.

It can be observed that producers of all products are generally affected negatively by market development gaps, whatever their trading status, and regardless of their status from the point of view of incentives and disincentives resulting from the effects of explicit policies (such as trade policies and pricing policies).

An average MDG rate of -18 percent is observed in the period. This rate represents the average additional disincentive at the producer level because of implicit constraints in infrastructure facilities, rigidities and market imperfections. It should be noted that imported products (rice, wheat and sugar) reveal the highest level of market development gaps (40.1 percent of the world price) attributed mainly to the high level of MDG associated with sugar industry. This is a particular concern for products subject to international competition, which therefore suffer severe handicaps in terms of price competitiveness.

Since there are no export duties, export restrictions, or administrative barriers to inter-regional movement of goods that would explain the negative and positive deviation of the indicators for exports from zero, the nominal rates of protection are attributed to factors other than government policies including the functioning of the product market. The major drivers of these deviations include the following:

- High transportation costs due to high fuel costs, tax on fuel, and poor infrastructure, especially in rural areas.
- Concentration of profit margins among intermediaries along the value chain.
- Low export prices received, as exports are mostly primary commodities with limited value addition.
- Lack of organization among small-scale producers and the large number of intermediaries participating in the market.
- The long and complex value chains for thinly-traded products erodes farmers' share of the price.
- Weak integration of domestic markets into international markets and slow price transmission from world markets to domestic markets.

There are already policy measure to address these issues, particularly those identified in the Agricultural Sector Development Strategy and Investment Plan (ASDSIP).

Functioning of the value chains

The major traditional export commodities of Uganda include coffee, tea, cotton and fish. This requires some degree of processing and share a similar value chain characterized by being buyer-driven, as producers have limited options to sell directly or indirectly to processors and factories. The value chains of these commodities tend to be more organized with fewer marketing agents. Moreover, the prices in world markets seem to transmit to farm level more efficiently.

Maize and cattle marketing is characterized by a significantly long value chain with village traders, assemblers and middlemen playing a significant role in moving the commodity from production areas to major wholesale centres. Assembly is a particularly important function in this type of value chain as traded quantities by producers tend to be small. This may be a common feature for a large number of agricultural commodities produced by smallholder farmers in Uganda.

While the role of these traders is important, the long value chain tends to erode farmers' incentives. The commodity often goes through a number of markets before reaching the final consumers in urban centres. In addition to the cost of transport and loading and unloading costs, profit margins in each market are likely to reduce the price received by producers at the farm gate.

For all commodities, transportation costs represent significant marketing costs given the poor transportation infrastructure and fuel cost in Uganda. The cost of truck transportation in Uganda averaged USD 0.15 per ton-km for distances of 80 km or more in 2008 compared to USD 0.11 and USD 0.12 per tonne-km in Kenya and Tanzania, respectively (World Bank, 2009). These costs more than double (US$ 0.33 per tonne-km) for shorter distances. Obviously, transportation costs are highly related to the cost of fuel which accounted for 68 percent of the vehicle operating costs (World Bank, 2009). Therefore, taxes on fuel played a role in determining commodity transportation

and marketing costs which were directly related to the extent of incentives and disincentives received by farmers.

Public expenditure and aid

Uganda is an agricultural-based economy. Agriculture provides a significant contribution to the national economy in terms of contribution to the national output, employment, export earnings and food security. Therefore, public expenditure in support of the sector is an important policy instrument in Uganda's agricultural sector development. In terms of support, the sector has been allocated a significant amount of funds in form of general sector support. The total approved budget in the sector grew by 17 percent, in nominal terms, from 2006/2007 to 2010/2011, reaching U SH 991 billion. The total actual spending has grown even more: it increased by 34 percent from 2006/2007 to 2010/2011 reaching U SH 1 045.3 billion.

Results indicate that growth in actual expenditure was twice that in budget allocation. This implies that the Government of Uganda has not only remained committed to remitting the funds as budgeted but also, in some instances, surpassed the allocation. The current level of spending meets the CAADP recommendations of allocating 10 percent of the overall budget to agriculture and rural development (including national resources and aid), as expressed in the 2003 Maputo Declaration.

However, there is a high discrepancy in growth in the national budget allocation (96 percent) vis-à-vis the growth in budget allocation towards agricultural and rural development (17 percent), when the growth in budget allocation or actual expenditure towards agricultural and rural development is compared with growth of the national budget allocation. Perhaps the low growth in budget allocation towards agricultural and rural development compared to other sectors partly explains the weak performance of the agricultural sector compared to the services and industrial sectors.

Agriculture-specific expenditures account for, on average, almost 39 percent of expenditures in support of food and agriculture sector development. In terms of the level of spending, agriculture-specific expenditures almost doubled over the analyzed period, while agriculture-supportive expenditures increased only slightly. This indicates that policies specific for agricultural development are given more attention as opposed to agricultural supportive sectors.

In terms of distribution of individual commodities, the government has focused more on promoting fish production, followed by vegetable oil and banana production. This is in contrast with the support for the traditional cash crops such as coffee, cotton and tea. This trend of support may be attributed to the fact that the government is channelling the country's efforts into promotion of fish and banana exports as a way of diversifying its export base. This may be attributed to the contribution that fish make to foreign earnings and the potential if well harnessed, and the challenges the sector is facing due to the deteriorating fish stocks.

Foreign aid plays a significant role in expenditure in support of agriculture. However, the contribution of donor aid in Uganda's agricultural development varies in both agricultural specific polices and agricultural supportive polices. Donor aid contributes about 57 percent of agricultural specific polices compared to 38 percent of agricultural supportive policies. Within the agriculture specific expenditures, donor aid contributes mainly to training, marketing and infrastructure.

Additionally, donor financing seems to increasingly target agricultural infrastructure under the category of agricultural specific policies. This pattern of expenditure seems to be favourable for agricultural development if it is backed up by other policies.

Coherence of agricultural and food policies

The ultimate objective of government policy is economic development and social transformation. To achieve this objective, the Government of Uganda formulated and implemented successive strategies (Ssewanyana, Matovu and Twimukye, 2010). These strategies included the Economic Recovery Program introduced in 1987, the Poverty Eradication Action Plan (PEAP, 1997), the Plan for the Modernization of Agriculture (PMA) and the latest National Development Plan.

The Government of Uganda also introduced the Rural Development Strategy (RDS) to facilitate profound agrarian productivity with the objectives of increasing farm productivity of selected commodities produced by households, increasing household outputs of the selected agricultural products, and promoting value-addition and ensure a stable market for these agricultural products (MPPED, 2005).

In 2005, the RDS was integrated in the budget framework for the financial year 2005/2006 and also into the Medium term Expenditure Framework (MTEF). As such, the government policy framework for agriculture and rural development during the period of the undertaken analysis (2005-2010) would be coherent with government expenditure framework. Though its implementation started in 2010/2011 after the period of the undertaken analysis, the Agricultural Sector Development Strategy and Investment Plan (ASDSIP) was tailored on the NDP with four programme areas of implementation aiming at promoting private sector investment and raising productivity in the sector.

The allocation and actual spending of public expenditures in support of agriculture was consistent with government priorities and strategies, in general. Government funding was allocated to support strategic sectors such as fish, banana, vegetable oil and livestock, as part of the Government's strategy to diversify the export base for Uganda.

There is also significant public expenditure for projects supporting the development of rural infrastructure, especially roads-rural feeder roads, off-farm waters schemes/irrigation and energy for production. Further, there is significant government effort to develop market infrastructure through programmes like markets for the agricultural improvement programme (MATIP). This indicates the Government's commitment to developing infrastructure linked to facilitating agricultural development.

Through these strategies, the Government of Uganda has been successful in providing an enabling environment for the private sector to produce and trade competitively through the successive policy measures taken. Despite this success, the growth rates of the agricultural sector lagged behind other sectors of the economy in recent years and significantly below the population growth rate of 3.2 percent, implying that per capita agricultural GDP has been declining. It is also far short of the 6 percent growth target for the agricultural sector set by African Governments under CAADP.

The growth rate in the food crop sector was negative for four consecutive years (2003-2006). Similarly, the fish sector from 2006/2007 to 2008/2009. In addition, the incentive patterns of the various commodities appeared to deviate significantly from what would be expected under the

liberalized economic policy environment of Uganda. Besides, the level of incentives/disincentives for most commodities is variable over time, suggesting weak and delayed price transmission to domestic markets.

Several issues need to be addressed to further foster the growth of agricultural output, improve market efficiency, and reduce the disincentives frequently facing producers. The main challenge is to improve rural infrastructure and market access. Despite the Government's efforts to develop and rehabilitate rural feeder roads and improve market infrastructure through programmes like CAIIP and MATIP, these programmes are not implemented country-wide. Therefore, further investments in rural infrastructure would be instrumental in realizing the maximum benefits to both the farmers and the government as a whole. This is an important and consistent theme that emerged from the analysis of producers' incentives for all commodities.

Another challenge is the current bias of benefits from the export promotion in favour of exporters and wholesalers, although producers are benefiting as well. Benefits resulting from the measures aiming at promoting and diversifying exports should be shared equally along the value chain and in favour of commodity producers. This is important for realizing productivity increases as a combination of higher yields through improved technology and shifts in farm and crop enterprises to higher-valued activities.

Measures to simplify the value chains of thinly-traded commodities are important to increase the share of producers in the export price of the commodity. The marketing chains of many commodities in Uganda are long and complex with a plethora of intermediaries. For some commodities (maize, beef and beans), the commodity passes through several markets before reaching wholesale, export market or consumers. Naturally, the marketing margins and costs increase with each market transaction of the commodity. The high marketing costs negatively impact producers' prices.

Market information is important for integrating domestic markets of various commodities in various regions and for integrating these markets into regional and world markets. With the exception of the major export commodities, producers' price data, especially for thinly-traded and non-traded commodities, are extremely scarce in Uganda. Marketing costs are usually only available from donor-commissioned value chain studies which need to be updated regularly. Uganda has the institutional structures to collect and disseminate this data as a public good. It is vital to collect and disseminate such market information.

REFERENCES

African Development Bank Group. (2010). Lake Victoria Water Supply and Sanitatation Phase II-Program Appraisal Report.

African Agricultural Technology Foundation/ National Agricultural Research Organisation AATF/NARO. (2010). Policy Brief -Enhancing maize productivity in Uganda through the WEMA project

Aggrey, N. (2009). Patterns of agricultural growth and overall growth of the Uganda economy. Full Length Research Paper. Department of Economic Policy and Planning. Faculty of Economics and Management, Makerere University. Kampala, Uganda.

Baffes, John. (2006). Restructuring Uganda's Coffee Industry. Development Prospects Group. The World Bank. Washington

Baffes, John. (2009a). Comparative analysis of organization and performance of African cotton sectors: the cotton sector of Uganda.

Baffes, John. (2009b). "The Full Potential of Uganda's Cotton Industry" Development Policy Review, Vol 21, Issue 1, pp. 67-85.

Baffes, John. (2010). Markets for Cotton By-Products: Global Trends and Implications for African Cotton Producers. Policy Research Working Paper 5355. Development Prospects Group & Africa Region. World Bank.

Baffoe J. (2000). Structural adjustment and agriculture in Uganda. Working paper-WP.149, International Labour Office, Geneva.

Balagadde S. (2003). Fish Safety and Quality Assurance: Uganda's Experience.

Bibangambah, Jossy Rwakishana (1995) 'Marketing smallholder crops in Uganda. Kampala Uganda Fountain Publisher Ltd.

BoU Bank of Uganda. (2008). Report on the Domestic Resource Cost ratios for Selected Export Commodities- Survey June/July 2008. DRC/IAP Division. Bank of Uganda, Kampala, Uganda.

BoU Bank of Uganda. (2011). Report on the Domestic Resource Cost ratios for Selected Export Commodities 2009/10. Bank of Uganda, Kampala, Uganda.

BoU Bank of Uganda. (2011). "Report on the Domestic Resource Cost Ratios for Selected Export Commodities, 2009/10". Bank of Uganda, Kampala

Carr, Stephen. (1982). ''Impact of Government Intervention on smallholder development in North and East Uganda'' Agrarian Development Unit Occasional paper 5, Wyn College University of London

CDO Cotton Development Organisation. (2000). The Cotton Industry in Uganda. Production trends and earnings. Accessed June 2012.

CDO Cotton Development Organisation. (2007). Annual Report 2006/07. Kampala: Cotton Development Organisation (CDO). 2008. Annual Report 2007/08 . Kampala: CDO.

CDO Cotton Development Organisation. (2009). Annual Report 2008/09. Kampala: CDO.

CIAT. (1995). "Adding value to root and tuber crops: A manual on product development" / Christopher Wheatley, Gregory J. Scott, Rupert Best, and Siert Wiersema: Centro Internacional de Agricultura Tropical, CIAT Publication No. 247.

Collier , P. (1997). Trade Policy Review of Uganda. *The World Economy* 20 (5):649-64.

Collinson MA, Tollman SM, Kahn K, Clark SJ & Garenne M, 2005. Highly prevalent circular migration: households, mobility and economic status in rural South Africa. In Tienda M, Findlay SE, Tollman SM & Preston-Whyte E (eds), African migration in comparative perspective. Johannesburg, Wits University Press.

COMPETE/Chemonics International. (2010). "Market Assessment and Baseline Study of Staple Foods: Uganda Country Report". Competitiveness and Trade Program (COMPETE) of USAID.

De Laiglesia, J. (2006). Do Institutions Block Agricultural Development in Africa? OECD Policy Insights No. 17, Development Vol. 39. No. 1, pp. 77-86.

De Laiglesia, J. (2006). Institutional Bottlenecks for Agricultural Development: A Stock-taking Exercise Based on Evidence from Sub-Saharan Africa, OECD Development Centre Working Paper No 248. OECD, Paris.

EATTA East African Tea Trade Association (2012). Weekly Tea Auction. Mombasa. Kenya

Fan, S et al. (2004) 'Investment, Subsidies, and Pro-poor Growth in Rural India'. London: Imperial College London

FAO. (2007). ESS Food Balance Sheet 2007

FAO. (2012). The State Of Food Insecurity in World 2012.

FAOSTAT. (2012). FAOSTAT Trade data.

Fashoyin, T. et al. (2004). Uganda. Multinational Enterprises in the plantation sector: Labour relations, employment, working conditions and welfare facilities ILO Working Paper No. 93. International Labour Office, Geneva

Foodnet. (2000). "Cassava Marketing in Uganda: Constraints and Opportunities for Growth and Development (Part 1 – Supply Chain Evaluation)". International Institute for Tropical Agriculture (IITA) & Natural Resources Institute (NRI).

Foodnet. (2002). "Transaction Cost Analysis - Final report", Prepared for the Plan for the Modernization of Agriculture by the Natural Resources Institute and the International Institute of Tropical Agriculture (IITA).

Gitau, R., Mburu, S., Mathenge, M. and M. Smale. (2011). Trade and agricultural competitiveness for growth, food security and poverty reduction: A case study of wheat and rice production in Kenya. WPS 45/2011. Tegemeo Institute of Agricultural Policy and Development. Nairobi, Kenya. Pp. 69.

Global Mechanism of the UNCCD. (2007). Budget processes and financing instruments in Uganda: Towards increased financing for the implementation of the United Nations Convention to Combat Desertification.

Greenbelt Consult Limited. 2006. An Analysis of the Implications of Uganda's Livestock Policies for the Competitiveness of its Livestock and Livestock products in the Local and International

markets. Final Report submitted to Uganda program for trade Opportunities and Policy, Ministry of Tourism, Trade and Industry, Kampala, Uganda.

Guluma,F.C. (2008). "Child Labour: A threat to the Future Manpower in Uganda" A Paper presentation at International Conference on Child Labour and Child Exploitation at Cairns Convention Center Queensland Australia from 3-5th August .

Government of Uganda. Undated. Plan for Modernisation of Agriculture : Eradicating Poverty in Uganda. Kampala.

Hammerle, M., Heimur, T., Maggard, K., Paik, J., Valdivia, S. (2010). The fishing cluster in Uganda, Boston, Massachusetts. *Accessed June 2012.*

Hill, Ruth. (2010). Liberalisation and Producer Price Risk: Examining Subjective Expectations in the Ugandan Coffee Market. *Journal of American Economies*, Vol 19, Issue 4, pp. 433-458.

Hunt D. (2004). "Unintended Consequences of Land Rights Reform: The Case of the 1998 Uganda Land Act", *Development Policy Review*, Vol 22 , Issue 2, pp. 173-191.

IFPRI. (2008). An assessment of the likely impact on the Ugandan Households of rising global food prices: A secondary data Analysis. A report to the Uganda Offices of the World Food Programme, UNICEF and the Food and Agriculture Organization. International Food Policy Research Institute, Kampala Office. Kampala, Uganda.

ICO International Coffee Organization. (2012). World Coffee Trade statistics

Ikwaput-Nyeko, J. (2004). Co-management and value chains: The role of the Nile perch exports in poverty eradication in Lake Victoria Fishing communities. Project report, United Nations University, Fisheries Training Program, Reykjavík, Iceland.

ILO-IPEC (2007) 'Rapid assessment report in trafficking of children into worst forms of labour including child soldiers in Uganda'. A study conducted in the districts of Busia, Pader, Kalangala, Masaka and Kampala as part of IPEC TBP preparatory activities.

IMF. (2011). World Economic Outlook 2011.

InfoTrade. (2010). "Market Analysis Report 2010"

Infotrade Uganda. (2011). Market Analysis Report 2011. Kampala, Uganda.

Infotrade Uganda. (2012). Wholesale and Retail Price of Selected Commodities in Uganda. Infotrade. FIT Uganda Ltd. Kampala, Uganda.

IISD/UNEP. (2005). Connecting Poverty and Ecosystem Services: Focus on Uganda.

James, Okumu B. (2009). Global value chains, standards and local enterprises upgrading for exports: case of fish industry in Uganda, Institute of Social Studies. The Hague, The Netherland. 69pp.

Jorge M. Diaz. Empowering Rural Producer Organizations within the World Bank Initiatives: A Capitalisation Study Uganda Country Case Study. World Bank.

Kaelin, A.J and Cowx, I.G. 2002. Outline of the path forward in Uganda's Fisheries sector. The Presidential conference on export competitiveness. The Compete project (USAID) and the European Commission.

Kiiza, Julius. (2007). Developmental Nationalism and Economic Performance in Africa: The case of three successful African economies, in Chang, Ha-Joon (ed), *Institutional Change and Economic Development*, Tokyo and New York: UN University Press and Anthem, pp. 281-300.

Kiiza, Julius. (2010). The Political Economy of Land Conflicts in Uganda, ACODE Working Paper No 55, Kampala.

Kijima Yoko,Otsuka, K. and Sserunkuuma D. (2008). Assessing the Impact of a NERICA on Income and Poverty in Central and Western Uganda, *Journal of Agricultural Economics* 38 (2008) pp. 327–337.

Kijima, Y., K.Otsuka, and D. Sserunkuuma. (2011). "An Inquiry into Constraints on a Green Revolution in Sub-Saharan Africa: The Case of NERICA Rice in Uganda" World World Development, Vol 39, pp. 77-86.

Landell Mills. (2011). Study on promoting a commercial beef industry in Uganda. Final Report. March 2011. A report prepared for Ministry of Agriculture, Animal industry and Fisheries (MAAIF), Entebbe, Uganda. Pg. 91.

MAAIF. (1998). Meat Production Master Plan, Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) Entebbe Uganda

MAAIF/MoH. (2003). Food and Nutrition Policy. MAAIF/MoH. Kampala. Uganda.

MAAID/MoH. (2004). Uganda Food and Nutrition Strategy and Investment Plan. Kampala. Uganda.

MAAIF. (2004). The National Fisheries Policy. Department of Fisheries Resources: Entebbe, Uganda

MAAIF. (2009). Policy Statement for the Ministry of Agriculture, Animal Industry and Fisheries for the Financial Year 2009/10. Kampala, Republic of Uganda.

MAAIF. (2009). Uganda National Rice Development Strategy. Second draft. Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda.

MAAIF. (2010). Agriculture Sector Development Strategy and Investment Plan: 2010/11 – 2014-15, Republic of Uganda.

MAAIF. (2010). Agriculture for Food and Income Security: Agriculture Sector Development Strategy and Investment Plan, 2010/11–2014/15, Kampala.

MAAIF. (2010). Statistical Abstract 2010. Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda.

MAAIF. (2011). Statistical Abstract 2011. Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, Uganda.

MAAIF. (2012). Department of Fisheries Resources Annual Report 2010/2011. Final Report. Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) Entebbe Uganda.

MAFAP. (2011). "Guidelines to Implement the MAFAP Methodology and Start-Up Country-level Work (Draft)". Monitoring African Food and Agricultural Policies (MAFAP) Project, FAO/OECD.

Makokha AK. (2001). Uganda Country Report: A synthesis of the Four SAPRI Studies on Structural Adjustment Policies (SAPs) in Uganda.

MoFPED. (2000). Uganda's Economic Performance since 1986, when the NRM Government came to power, Ministry of Finance, Planning and Economic Development. Republic of Uganda.

MoFPED. (2001). Poverty Status Report. MoFPED Kampala. Uganda

MoFPED (2005). Budget Framework Paper 2005/06 2006/07. Ministry of Finance, Planning and Economic Development. Kampala, Republic of Uganda.

MoFPED (2010). Public Investment Plan (PIP) FY 2007/08 – 2009/ 10. Kampala. Republic of Uganda.

MoFPED (2011). Background to the Budget 2010/11 Fiscal Year: Strategic priorities to Accelerate Growth, Employment and Scio-economic Transport for Prosperity, Republic of Uganda.

MoFPED. (2012). Poverty Status Report. Economic Development Policy and Research Department. Ministry of Finance, Planning and Economic Development. Kampala. Uganda.

MoFPED. (Various Issues). Background to the Budget, Kampala.

MoH Ministry of Health. (2011). Annual Health Sector Performance Report 2010/11. Ministry of Health. Kampala. Uganda.

Mohapatra, S. (2009). Uganda Rice Revolution. Rice Today July-September. International Rice Research Institute.

MTTI. (2007). National Trade Policy. Ministry of Tourism, Trade and Industry, Kampala

Mulumba, Deborah and W. Olema. (2009). Policy Analysis Report: Mapping Migration in Uganda.

Muwanga NK. (2001). Structural Adjustment Participatory Review Initiative: the Differences in Perception of Poverty. Uganda National NGO Forum. *Accessed 2 January 2012.*

NEMA National Environment Management Authority. (2004). National State of the Environment Report, Kampala, Uganda

NRI/IITA National Resources Institute, Uk/ International Institute of Tropical Agriculture (2002), Transaction Cost Analysis Report. IITA.

Nyeko, J.I. 2004. Co-Management and value chains: The role of Nile Perch exports in poverty eradication in Lake Victoria fishing communities. United Nations University-Fisheries Training Programme, Final project report.

Nyombi, K. and Bolwig, S. (2004). A Qualitative Evaluation of Alternative Development Strategies for Ugandan Fisheries. The International Food Policy Research Institute. Washington. D.C. USA.

Odoch, Martin. (2008). Fair-Trade and Tea: a Comparative analysis of Value Chains in Kabarole District. Larenstein University of Applied Sciences. Wageningen. The Netherlands

OECD. (2006). OECD's Producer Support Estimate and related indicators of Agricultural Support Concepts, Calculations, Interpretation and Use (The PSE Manual).Trade and Agriculture Directorate. OECD. Paris, France.

Oxfam (2002). The Tea Market – a background study. Oxfam.

Plan for Modernization of Agriculture (PMA) Secretariat. (2009). Cotton Value Chain Study in Lango and Acholi Sub-regions. PMA Secretariat. MAAIF. Kampala, Uganda.

Plan for Modernization of Agriculture (PMA) Secretariat. (2009). Rice Value Chain Study in Achuli and Lango Sub-regions. PMA Secretariat. MAAIF. Kampala, Uganda.

Premium Consulting Limited. (2006). Production Response of Uganda's Key Agricultural Commodities to Trade Liberalization, Uganda Programme for Trade Opportunities and Policy

Republic of Uganda. (2005). Operationalization of the Rural Development Strategy For Increased Agricultural Productivity, Kampala Uganda

RoU Republic of Uganda. (2008). Prosperity for All Policy: Tackling Poverty at Household Level

RoU Republic of Uganda. (2010). National Development Plan 2010/11 – 2014/15. Republic of Uganda. Kampala.

SID (Society for International Development. (2012). The State of East Africa 2012: Deppening Integration, Intensifying Challenges. Society for International Development. Regional Office for Eastern Africa. Nairobi, Kenya.

Ssewanyana, S.,Matovu,M., Twimukye, E. (2011). "Building on Growth in Uganda." In Yes African Can: Success Stories from a Dynamic Continent. Eds. Punam Chuhan-Pole and Manka Angwafo. Washington, D.C.: The World Bank.

Stringer, L. C., Reed, M. S., Dougill, A. J., Seely, M. K., & Rokitzki, M. (2007). Implementing the UNCCD: participatory challenges. Natural Resources Forum, 31, pp. 198–211.

Tsakok, I. (1990). Agricultural Price Policy: A Practitioner's Guide to Partial-Equilibrium Analysis. Cornell University Press. Ithaca. New York.

UBoS Uganda Bureau of Statistics. (2006). "Statistical Abstracts 2006" Uganda Bureau of Statistics, Kampala, Uganda.

UBoS Uganda Bureau of Statistics. (2007). The 2005/06 Uganda National Household Survey (UNHS). Kampala: UBOS

UBoS Uganda Bureau of Statistics. (2009). "Statistical Abstracts 2009" Uganda Bureau of Statistics, Kampala, Uganda.

UBoS Uganda Bureau of Statistics. (2011). "Statistical Abstracts 2011" Uganda Bureau of Statistics, Kampala, Uganda.

UBoS The Uganda Bureau of Statistics. (2012). "Statistical Abstract 2012" Uganda Bureau of Statistics, Kampala, Uganda.

UBoS Uganda Bureau of Statistics. (2012). Trade data. *Accessed January 2012.*

UCDA Uganda Coffee Development Authority. (various issues). Annual Reports, Kampala, Uganda

UIA Uganda Investment Authority. (2009). Uganda: Livestock Sector Brief. Uganda Investment Authority, Kampala. Uganda.

UNCCD. (2007). Budget processes and financing instruments in Uganda. The Global Mechanism of the UNCCD

UNCTAD. (2012). Trade and Poverty: Virtual Institute Teaching Materials, UNCTAD GENEVA.

USAID. (2005). Value Chain Analysis: Mapping maize, sunflower and cotton chains. Final Report. USAID Uganda.

USAID (2010). Market Assessment and Baseline Study of Staple Foods, Country Report-Uganda. USAID.

USCTA Uganda Sugar Cane Technologist's Association. (2012). Sugar Production, Net Imports and Assumed Consumption Statistics. USCTA. Kampala, Uganda

UFPEA Uganda Fish Processors and Exporters Association. (2012). Services and Marketing. *Accessed June 2012.*

Uganda Gazette. (1994). New Coffee Regulations. Entebbe, Uganda

WARDA West Africa Rice Development Association. (2007). "Africa Rice Trends: Overview of Recent Developments in the Sub-Saharan Africa Rice Sector. Africa Rice Center Brief. Cotonou, Benin.

Wiegratz, Jorg, Paschal Nyabuntu, Charles Omagor. (2007). 'Case studies of lead firm governance system in the context of commercialization of smallholder agriculture in Uganda'. Uganda Programme for Trade Opportunities and Policy.

Wilfred, O. (2006). Final Survey Report on the Status of Rice Production, Processing and marketing in Uganda. A report submitted to the Embassy of Japan in Uganda through JICA and Sasakawa Africa Association – Uganda pp. 90.

World Bank. (1994). Uganda – Cotton Subsector Development Project. Staff Appraisal Report No 4150 UG. Washington DC.

World Bank. (2001). World Development Report 2002: Building Institutions for Markets. Oxford University Press: World Bank.

World Bank. (2003). The Uganda Fisheries Authority: Draft Business Plan. Ministry of Agriculture Animal Industry and Fisheries, March 2003.

World Bank. (2006). Uganda: Agriculture Sector Performance, A Review for the Country Economic Memorandum. Kampala: World Bank – Uganda office

World Bank. (2007). Uganda Moving Beyond Recovery: Investment and Behavior Change, For Growth. Country Economic Memorandum. Volume II: Overview. Report No. 39221-UG. Poverty Reduction and Economic Management Unit Africa Region.

World Bank. (2007). World Development Report 2008: Agriculture for Development.

World Bank. (2008) Agriculture for Development. World Bank: Washington D.C.

World Bank. (2009). Eastern Africa: A Study of the Regional Maize Market and Marketing Costs. Report No. 49831 – AFR. Agriculture and Rural Development Unit. World Bank. Washington, DC.

World Bank. (2010). A Project Appraisal Document on "Agricultural Technology and Agribusiness Advisory Services Project". Washington D.C. - The World bank.

World Bank. (2010). Uganda: Agriculture Public Expenditure Review, World Bank.

ANNEX 1: List of projects and programs included in the analysis of public expenditure

Public expenditure measure	Implementing government body
Headquarters MAAIF	MAAIF
Crop resources directorate	MAAIF
Farm Development department	MAAIF
Crop protection department	MAAIF
Crop production department	MAAIF
Animal resources directorate	MAAIF
Animal Production department	MAAIF
Livestock Health and Entomology department	MAAIF
Fisheries Resources department	MAAIF
Policy and Planning department	MAAIF
Internal Audit department	MAAIF
Development of early warning systems	MAAIF
Vegetable Oil Development Project	MAAIF
Crop disease and Pest control project	MAAIF
Sustainable Land Management Project	MAAIF
Support for irrigation	MAAIF
Livestock disease Control	MAAIF
National Livestock Production Improvement	MAAIF
Support to Fisheries Development	MAAIF
Uganda Meat Exports Development Project	MAAIF
Support to Quality Assurance Fish Marketing	MAAIF
Export Goat Breeding and Production	MAAIF
Increasing Mukene for Human Consumption	MAAIF
Support to Fisheries Mechanisation & Weed Control	MAAIF
North West small holder Agricultural development	MAAIF
Agriculture Sector Programme Support	MAAIF and MoLG
Support for Institutional Development	MAAIF
Support for Tea Cocoa Seedlings	MAAIF
Sustainable Land Management Project	MAAIF
Agricultural extension	MAAIF

Agriculture Marketing Support -World Food Programme	MAAIF
Farming in Tsetse Controlled Areas (FITCA)	MAAIF
Farm Income Enhancements and Forestry Conservation	MAAIF and MoWE
Creation of Tsetse and Trypanosomiasis free areas	MAAIF
Rural Electrification (total)	MAAIF and MoEMR
Olweny Rice Irrigation Scheme	MAAIF
Pan African Control Of Epizootics	MAAIF
Supervision, Monitoring & Evaluation	MAAIF
Support To UTGC, Tea Seedlings.	MAAIF
Trans-boundary Agro-ecosystem Management	MAAIF
Plan for National Agricultural Statistics	MAAIF
Agricultural Production, Marketing &promotion of Regional integration project	MAAIF
Dissemination of NERICA & Improved Rice	MAAIF
FAO/TCP Intergrated Pest & Disease Management	MAAIF
Sustainable Irrigated Rice Production in eastern Uganda	MAAIF
Avian & Human Influenza Preparedness and response	MAAIF
MAAIF Coordination	MAAIF
Support to quality assurance for fish marketing	MAAIF
Markets & Agricultural Trade Improvement	MoLG and MAAIF
Regional NERICA Research and Training Centre	MAAIF
Agriculture and Rural Development	MAAIF
Establishment of a Tea Factory in Kabale	MAAIF
Uganda Coffee Development Authority	UCDA
Uganda Cotton Development Organisation	UCDO
National Agricultural Advisory Service	NAADS
National Agricultural Research Organisation (NARO)	NARO
Energy for Rural Transformation	MoEMD, MoLG, MoWE, MoH
World Food Programme-Karamoja	MoES
Child Friendly Basic Education	MoES
Emergency Construction of Primary School	MoES
Support to market research project	MoFPED
Presidential Initiative on Banana Development	MoFPED
Rural Roads Programme (RRP) -	

Value Addition- Tea Industry	MoFPED
Water and Sanitation Development Facility	MoFPED and MoWE
Marketing Agricultural Production - Northern Uganda	MoFPED
Value Addition to Fruit Drying project	MoFPED
Poverty Alleviation Programme	MoFPED
Adult Literacy Programme	MoG
District Infrastructure Support Programme	MoH
Nutrition and Child Development Project	MoH
Rights to Health & Nutrition	MoH
Primary Health Care	MoH
District Health Services Project.	MoH
Rehabilitation Of Health Services-Bundibugyo/Kabarole	MoH
Rehabilitation Health Facilities Eastern Region	MoH
Community health	MoH
Area-Based Agricultural Modernisation Programme	MoWT and MoLG
District Livelihoods Support Programme	MoLG
Community Agriculture Infrastructure Improvement Programme (CAIIP)	MoLG
Land Tenure Reform Project	MoLHUD
Digital Mapping Project	MoLHUD
Intervention In Strategic Agriculture Exports	MoTTI
Cleaner Production Centre	MoTTI
Lake Victoria Environment Management Programme	MoWE
Mid-Western Town Water & Sanitation.	MoWE
Mitigation Of L.Kyoga Floods	MoWE
National Wetland Project - Phase 3	MoWE
North Eastern Towns W&S-BADEA	MoWE
Water Resource Management-Nile Basin project	MoWE
Rural Towns Water, ADB	MoWE
Schools/Community Sanitation & Water	MoWE
South/West Towns Water & Sanitation	MoWE
Support To Rural Water Sector.	MoWE
Support To Small Towns Water	MoWE

Gulu Water &Sewerage Rehabilitation & Ex	MoWE
Climate Change Project	MoWE
Meteorological Support For PMA	MoWE
Water for Production	MoWE
Support to earth quake disaster victims	MoWE and MoWT
Development of Inland Water Transport	MoWT
Construction & Improvement Ferry Services.	MoWT
Construction of Selected Bridges	MoWT
Rehabilitation of district roads	MoWT
8 Districts Road Network - Feeder Roads	MoWT
8 Districts Road Network - Gravel Roads	MoWT
8 Districts Road Network - Labour Based	MoWT
Atiak-Moyo Road	MoWT
Busega-Mityana	MoWT
Feeder Roads Rehabilitation Northern Uganda	MoWT
Gayaza Kalagi Road	MoWT
Gravel Roads Maintenance/W. Uganda	MoWT
Kabale-Kisoro	MoWT
Katunguru-Kasese-Fort Portal Road	MoWT
Kyotera-Mutukula Road	MoWT
Malaba Border Post	MoWT
Matuga-Semuto-Kapeka Road	MoWT
Mityana -F/Portal, Kyegegwa, Kyenjojo	MoWT
Ntungamo-Kagamba	MoWT
RDP - Arua-Pakwach Road	MoWT
RDP - Busunju-Kiboga-Hoima Road	MoWT
RDP - K'la-Gayaza-Zirobwe-Wobulenzi	MoWT
RDP - Pakwach-Karuma	MoWT
RDP - Transport Master Plan	MoWT
RDP Accident Black Spot Improvement	MoWT
RDP -Soroti-Lira	MoWT
RDP-Upgrading Of District Roads - IDA	MoWT
Reconstruct. Malaba/Busia-Bugiri Road	MoWT
Reconstruction Jinja-Bugiri Road	MoWT

Road Equipment For District Units	MoWT
Road Maintenance In Central Uganda	MoWT
Road Maintenance In Eastern Uganda -KFW	MoWT
Sironko-Kapchorwa Road.	MoWT
South West Road Maintenance	MoWT
Strengthening The Northern Corridor	MoWT
Transport Rehabilitation. Road Maintenance Project	MoWT
Transport Rehabilitation Project-Main Roads.	MoWT
Transport Rehabilitation Project-Feeder Roads.	MoWT
Upgrading. Kagamba-Rukungiri Road	MoWT
Upgrading Of F/Portal-Bundibudyo Rd	MoWT
Upgrading Of Kafu-Masindi Road	MoWT
Regravel District Roads (STABEX)	MoWT
PTA Roads	MoWT
Iganga Tirinyi Mbale - ADB	MoWT
Community Agricultural Infrastructure Im	MoWT
Interconnectivity Improvement Road Proje	MoWT
Kyapa -Kensoro Road	MoWT
Karamoja Roads Development Program	MoWT
Capacity Building for Disaster Management	OPM
Northern Uganda. Social Action Fund Project	OPM
Restocking Project	OPM
Support to Luwero Triangle	OPM
Conditional transfers to Road Maintenance	Local Government - district
Conditional transfers to PMA NSCG	Local Government - district
Conditional transfers to Agric. Development. Centres	Local Government - district
Conditional transfers to feeder roads maintenance workshops	Local Government - district
Conditional transfers to Rural water	Local Government - district
NAADS - district level	Local Government - district
Conditional transfers to Production and Marketing	Local Government - district
Conditional transfers to Functional Adult Literacy	Local Government - district

ANNEX 2: Summary of main methodological concepts

Main concepts

MAFAP methodology proposes to capture all public expenditures that are undertaken in support of food and agriculture sector development. That includes expenditures from the national budget, either central or regional government, regardless of the ministry that implements the policy, and external aid, provided either through local governments or specific projects conducted by international organisation or NGOs.

The primary focus is on the food and agricultural sector, however, for some countries forestry and fisheries may be an important part of rural activity and are also included in the scope of the project. We seek to capture all public expenditures in the rural areas, such as rural infrastructure, rural education and rural health, as they may also have an important role in agriculture's sector development, even if they are not specific to the sector.

Expenditure measures generate explicit or implicit monetary transfers to supported individuals or groups. We consider all those expenditure measures that generate explicit or implicit monetary transfers in support of food and agriculture sector development. These measures are divided into two main categories of expenditures: agricultural-specific expenditures and agricultural supportive expenditures. Agricultural-specific expenditures include those measures that generate monetary transfers to agricultural agents or sector as a whole. The agents, or the sector as a whole, must be the only, or the principal recipient of the transfers generated by the expenditure measure. Agriculture supportive measures should include measures that are not strictly specific to agriculture sector, but that have strong influence on agricultural sector development such as investments in rural development. All the measures that comply with these criteria are considered, regardless their nature, objectives or perceived economic impacts.

Further, general expenditure measures available throughout the entire economy are not considered, even if they generate monetary transfers to agricultural sector. Finally, the expenditure measures are considered and classified according to the way in which they are implemented and not on the basis of their objectives or economic impacts.

Classification of public expenditures in support of the food and agriculture sector

I. Agriculture-specific policies – monetary transfers that are specific to agriculture sector i.e. agriculture is the only, or major, beneficiary of a given expenditure measure

I.1. Payments to the agents in the agro-food sector – monetary transfers to the agents of agro-food sector **individually**

I.1.1. Payments to producers – monetary transfers to individual agricultural producers (farmers)

A. Production subsidies based on outputs – monetary transfers to agricultural producers that are based on current output of a specific agricultural commodity

B. Input subsidies – monetary transfers to agricultural producers that are based on on-farm use of inputs:

1. **variable inputs** (seeds, fertiliser, energy, credit, other) – monetary transfers reducing the on-farm cost of a specific variable input or a mix of variable inputs
2. **capital** (machinery and equipment, on-farm irrigation, other basic on-farm infrastructure) – monetary transfers reducing the on-farm investment cost of farm buildings, equipment, plantations, irrigation, drainage and soil improvements
3. **on-farm services** (pest and disease control/veterinary services, on-farm training, technical assistance, extension etc., other) – monetary transfers reducing the cost of technical assistance and training provided to individual farmers

C. Income support – monetary transfers to agricultural producers based on their level of income

D. Other – monetary transfers to agricultural producers individually for which there is insufficient information to allocate them into above listed categories

I.1.2. Payments to consumers – monetary transfers to final consumers of agricultural commodities individually in form of:

E. food aid – monetary transfers to final consumers reducing the cost of food

F. cash transfers – monetary transfers to final consumers to increase their food consumption expenditure

G. school feeding programmes – monetary transfers to final consumers providing free or reduced-cost food in schools

H. other – monetary transfers to final consumers individually for which there is insufficient information to allocate them into above listed categories

I.1.3. Payments to input suppliers – monetary transfers to agricultural inputs suppliers individually

I.1.4. Payments to processors – monetary transfers to agricultural commodities processors individually

I.1.5. Payments to traders – monetary transfers to agricultural traders individually

I.1.6. Payments to transporters – monetary transfers to agricultural commodities transporters individually

1.2. General sector support – public expenditures generating monetary transfers to the agro-food sector agents **collectively**

I. Agricultural research – public expenditures financing research activities improving agricultural production

J. Technical assistance – public expenditures financing technical assistance agricultural sector agents collectively

K. Training – public expenditures financing agricultural training

L. Extension/technology transfer – public expenditures financing provision of extension services

M. Inspection (veterinary/plant) – public expenditures payments financing control of quality and safety of food, agricultural inputs and the environment

N. Infrastructure (roads, non-farm irrigation infrastructure, other) – public expenditures financing off-farm collective infrastructure

O. Storage/public stockholding – public expenditures financing public storage of agro-food products

P. Marketing – public expenditures financing assistance in marketing of agro-food products

R. Other – other transfers to the agro-food agents collectively for which there is insufficient information to allocate them into above listed categories

II. Agriculture supportive policies – public expenditures that are not specific to agriculture, but which have a strong influence on agricultural sector development

S. Rural education – public expenditures on education in rural areas

T. Rural health – public expenditures on health services in rural areas

U. Rural infrastructure (rural roads, rural water, rural energy and other) – public expenditures on rural infrastructure

V. Other – other public expenditures on rural areas benefiting agricultural sector development for which there is insufficient information to allocate them into above listed categories

For more details on MAFAP methodology on measurement of public expenditures in support of food and agriculture sector development, see **www.fao.org/mafap.**

ANNEX 3: Data and data sources for public expenditure analysis

The data required to conduct an in-depth public expenditure analysis under MAFAP project include the following:

- At a detailed level (i.e. at the individual expenditure measure) policies that generate transfers in support of food and agriculture sector including:
  - detailed description of policy implementation criteria (for whom, how, for which commodity, under which conditions);
  - actual expenditure;
  - source of funding (national and/or aid);
  - government level that implements the policy (national/subnational).
- At an aggregate level (i.e. for the whole sector/agencies involved as defined above):
  - proportion of administrative costs in total expenditures;
  - recurrent versus development budget;
  - ratio of actual spending and budget allocations;
  - share of aid in budget allocations and share of aid in actual spending;
  - aid type – loans versus grants;
  - off-budget expenditures.

The analysis covers expenditures of the following government bodies (see Section 2 for more details): Ministry of Agriculture, Animal Industry and Fishery, National Agricultural research Organisation, the National Agricultural Advisory Service Secretariat, the Uganda Cotton Development Organisation, the Uganda Coffee Development Agency, Ministry of Finance, Planning and Economic Development, Ministry of Energy and Mineral Resources, Ministry of Works and Transport, Ministry of Local Government, Ministry of Water and Environment, Ministry of Health, Ministry of Education and Sports, Ministry of Tourism, Trade and Industry, Ministry of Gender, Labour and Social Development, Ministry of Lands, Housing and Urban Development and even the Office of the Prime Minister. All relevant expenditure measures from these ministries have been identified and included in the analysis. The main source of data on public expenditures was the Ministry of Finance, Planning and Economic Development (MoFPED) and the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

The data on budget allocations and actual spending for the identified projects and programmes are coming from the Uganda BOOST database. This database is the most up-to-date and most comprehensive source of information on the government budget. It includes budgeted amounts and actual spending, both for national and donor spending. Where data on actual spending and/or donor spending were not available, alternative sources of information from MoFPED were used. In the absence of latter, estimation methods were applied to fill in missing values. Descriptions of projects and programmes were obtained from MoFPED, MAAIF (particularly, various editions of the Policy Statements), and consultations with various experts from different ministries.

This draft was prepared based on data from 2011/12 edition of the BOOST database. As a consequence, data for the most recent years, particularly 2010/11 are only provisional and, to a large extent, based on estimates.

Finally, some of the information was not available in the databases identified at the country-level. In particular, we failed to identify the source of data that would allow us to estimate the proportion of loans and grants in the total aid. Neither could we collect the information on off-budget expenditures. The external data sources, such as the OECD Creditor Reporting System database may help to fill that gap. These sources of data are currently being explored.

All data have been collected and processed by the Economic and Policy Research Centre (EPRC), one of the project's main technical partners in Uganda, under close guidance from the MAFAP Secretariat.

ANNEX 4: Data sources for the analysis of incentives and disincentives

Variable	Commodity	Observed	Adjusted
Benchmark price	**Rice**	Unit import prices of rice computed from value and quantity of rice imports based on data reported in MAAIF (2011) and UBoS (2012)	N/A
	Beef	CIF price calculated as unit value from export data reported by UBoS (2012)	N/A
	Cotton	FOB or FOT price at Tororo published by CDO various monthly reports.	N/A
	Coffee	Unit export prices for Uganda coffee obtained from various reports published by CDO	N/A
	Fish	FOB price calculated as unit value from export data reported by DFR	N/A
	Maize	FOB price, computed by dividing value of maize exports by its quantity, is obtained from MAAIF (2011) and UBOs (2012).	N/A
	Tea	Mombasa auction prices for Uganda tea obtained from Africa Tea brokers Limited (2012)	N/A
	Sugar	CIF unit value calculated from the CIF value of sugar imports of consumption sugar obtained from UBoS (2012)	N/A
	Wheat	CIF unit value calculated from CIF value and quantity of wheat imports of Uganda obtained from UBoS (2012)	N/A
	Cassava	FOB price of maize adjusted by the ratio of retail price cassava to retail price of maiz.e	N/A
Domestic price at point of competition	**Rice**	Wholesale price of rice at Kampala market, reported by Regional Agricultural Trade Integration Network (RATIN) for 2005-2011 was used.	N/A
	Beef	Export unit price of processed beef adjusted for the transportation and handling costs at Entebbe airport.	N/A
	Cotton	Annual average wholesale price at the ginnery gate supplied by Bon Holding Ltd ginning company	N/A
	Coffee	Annual average unit export price reported by CDO adjusted by the 1 percent export tax charged by CDO	N/A
	Fish	Weighted prices received for processed fish and by-products parts by by processors obtained from DFR (2012)	N/A
	Maize	Domestic wholesale price in Busia at point of competition obtained	N/A

		from RATIN (2012).	
	Tea	Annual average of auction price adjusted by transportation and marketing cost of tea at Mombasa auction	N/A
	Sugar	Ex-factory sugar prices for 2005-2010 obtained from Uganda Sugar Cane Technologist Association	
	Wheat	Wholesale price are unavailable.	
	Cassava	Annual average wholesale price in Kampala as reported by Infotrade (2012).	
Domestic price at farm gate	**Rice**	Annual average wholesale price in Kampala reported by RATIN (2012) adjusted by the observed access costs from the farmgate to the wholesale market in Kampala.	N/A
	Beef	Annual average wholesale price in main producing area as reported by Infotrade (2012) adjusted by marketing costs to the farmgate.	N/A
	Cotton	Annual average price received by growers published by CDO.	N.A.
	Coffee	Annual average price received by coffee producers obtained from CDO reports for various years.	N.A.
	Fish	Annual average price received by boat transporters and fishers at Kasenyi fish landing sites obtained from DFR (2012)	N.A.
	Maize	Infotrade (2102) and value chain analysis	N.A.
	Tea	Annual weighted average price received by Estate and smallholder tea producers obtained from Mabale Tea Factory (2012) through personal communication	N.A.
	Sugar	Farmgate prices of sugar cane for 2005-2010 obtained from Uganda Sugar Cane Technologist Association	
	Wheat	Farmgate prices as reported by wheat millers (Elgon Ltd) through personal communications.	
	Cassava	Annual average wholesale price in main producing area as reported by Infotrade (2012)	
Exchange rate	**All commodities**	Annual average of exchange rate as reported by UBoS (2012)	N.A.
Access costs from the point of competition to the border	**Rice**	All observed marketing costs involved in transportation and marketing of rice from Mombasa port in Kenya to Kampala based on estimates from RATIN (2012)	Adjusted access costs are assumed to be the same as observed access costs
	Beef	Transportation and handling costs at Entebbe airport as reported by Bank of Uganda (2011)	Transportation and handling costs at Entebbe airport as reported by Bank of Uganda (2011)

	Cotton	The relevant access cost is only the CDO export tax of 2 percent of the FOB export price	Adjusted access cost at this market segment is zero
	Coffee	CDO charge of 1 percent of export price on coffee exports	Adjusted access cost is zero.
	Fish	All observed marketing costs involved in transportation, processing and exporting fish, and local taxes as reported by BoU (2008; 2011) and estimated processors margins.	All observed marketing costs involved in transportation, processing and exporting fish as reported by BoU (2008; 2011) and estimated normal processors margins (9 percent).
	Maize	CESS, hired labour, non-tariff barriers, clearing agent fees and profit margins reported by World Bank (2009).	Hired labour, clearing agent fees and profit margins reported by World Bank (2009).
	Tea	All observed marketing costs involved in transportation and marketing of tea at Mombasa auction obtained from Mabale Tea Factory (2012) through personal communication plus an estimated export margin of 15.7 percent	All observed marketing costs involved in transportation and marketing of tea at Mombasa auction obtained from Mabale Tea Factory (2012) through personal communication plus an export margin of 10 percent%
	Sugar	Estimated from data obtained from reported by Regional Agricultural Trade Integration Network (RATIN) on port costs and transportation charges to Kampala plus estimated profit margin of 23% for traders and importers..	Estimated from data obtained from reported by Regional Agricultural Trade Integration Network (RATIN) on port costs and transportation charges to Kampala plus an adjusted normal profit of 10% for importers.
	Wheat	Estimated from data obtained from reported by Regional Agricultural Trade Integration Network (RATIN) on port costs, transportation charges to Kampala and border costs plus estimated profit margin of 20% for traders and importers..	Estimated from data obtained from reported by Regional Agricultural Trade Integration Network (RATIN) on port costs, transportation charges to Kampala and border costs plus an adjusted normal profit of 10% for importers.
	Cassava	CESS, hired labour, non-tariff barriers, clearing agent fees and profit margins for maize exports reported by World Bank (2009).	Hired labour, clearing agent fees and profit margins for maize exports reported by World Bank (2009).
Access costs from the farmgate to the point of competition	**Rice**	All costs involved in moving rice from the farmgate to the wholesale market including transportation, milling, packaging, taxes and traders' margins as reported by PMA (2009)	All costs involved in moving rice from the farmgate to the wholesale market including transportation, milling, packaging, taxes and traders' margins as reported by PMA (2009)
	Beef	All observed marketing costs involved in marketing and processing of cattle from the farm gate to point of competition including transportation, fees, taxes and levies, slaughtering and processing, non-tariff measures and profit margis as reported by Landell Mills LTD (2011)	All observed marketing costs involved in marketing and processing of cattle from the farm gate to point of competition including transportation, slaughtering as reported by Landell Mills LTD (2011) and processing and normal profit margin (10%)
	Cotton	All observed marketing costs involved in collection, transportation, processing and classification of cotton as reported by PMA (2009), BoU (2008) and BoU (2011) plus estimated margin of profit (18 percent).	All observed marketing costs involved in collection, transportation, processing and classification of cotton as reported by PMA (2009), BoU (2008) and BoU (2011) plus normal margin of profit (10 percent)
	Coffee	All observed marketing costs involved in transportation, processing	All observed marketing costs involved in transportation,

		and marketing of coffee as reported by Bank of Uganda (2008) and Bank of Uganda (2010) plus an estimated profit margin of 12.6 percent	processing and marketing of coffee as reported by Bank of Uganda (2008) and Bank of Uganda (2010) plus an assumed profit margin of 10.0 percent
	Fish	Not applicable (all costs are included in the primary segment)	Not applicable (all costs are included in the primary segment)
	Maize	Storage cost, transport costs from farm gate to wholesale, CESS, hired labor, non-tariff barriers and profit margins reported by World Bank (2009).	Storage cost, transport costs from farm gate to wholesale, hired labor, profit margins reported by World Bank (2009).
	Tea	Processing costs extrapolated from Bank of Uganda (2008) and (2011) plus an estimated average profit margin of 4.5%	Processing costs extrapolated from Bank of Uganda (2008) and (2011) plus an estimated average profit margin of 4.5%
	Sugar	Estimated annual transportation from farm to factory, processing cost, transportation from factory to wholesale market, excise tax, VAT, and local taxes as obtained from Uganda Sugar Cane Technologist Association	Estimated annual transportation from farm to factory, processing cost, and transportation from factory to wholesale market as obtained from Uganda Sugar Cane Technologist Association
	Wheat	Estimated packaging and transportation cost from farm to wholesale market extrapolated from value chain study of maize plus a profit margin for traders of 20 percent.	Estimated packaging and transportation cost from farm to wholesale market extrapolated from value chain study of maize plus a profit margin for traders of 10 percent.
	Cassava	Costs extrapolated from Foodnet (2002) estimating transport, packaging, marketing dues, commissions and profit margins.	Costs of transport, packaging, and commissions extrapolated from Foodnet (2002) plus an assumed normal profit margin of 10 percent

a. In this note and unlike other conventional commodities, fishers' prices (equivalent to farmgate prices) are unavailable. The primary market is assumed to be the fish landing site where boat transporters and fishermen sell their fish.

b. N/A denotes not applicable or no adjustment is needed in the analysis.

ANNEX 5: Prices used for the analysis of incentives and disincentives

Products	Price	2005	2006	2007	2008	2009	2010
Rice							
	Benchmark	286	332	293	439	431	460
	Price at the	911,872	1,157,497	1,054,476	1,480,490	1,646,637	1,588,307
	Producers'	270,278	420,882	373,471	650,923	704,605	638,086
Cotton							
	Benchmark	347.82	427.69	446.05	598.37	456.01	573.35
	Price at the	**513,995.45**	**764,084.94**	**765,518.07**	**1,109,480.23**	**891,906.16**	**1,145,612.64**
	Producer price	350,000.00	450,000.00	450,000.00	750,000.00	650,000.00	900,000.00
Beef							
	Benchmark	2,471.0	2,862.5	2,693.7	2,897.0	3,173.6	3,324.2
	Price at the	4,309,203.3	5,146,089.3	4,602,198.8	4,929,840.0	6,372,873.6	6,976,759.8
	Producer price				3,018,174.6	3,442,003.3	3,465,337.5
Tea							
	Benchmark	1,160.00	1,650.00	1,220.00	1,790.00	1,840.00	1,770.00
	Price at the	1,921,585	2,840,961	1,958,727	2,870,054	3,478,673	3,580,196
	Producer price	**199,200.00**	**209,200.00**	**219,600.00**	**240,000.00**	**257,360.00**	**269,200.00**
Coffee							
	Benchmark	1,430.00	1,460.00	1,600.00	1,970.00	1,490.00	1,450.00
	Price at the	2,521,366	2,647,145	2,730,009	3,355,382	2,995,173	3,125,885
	Producer price	1,635,452.48	1,937,586.13	2,166,946.21	2,751,893.00	2,239,983.68	2,591,347.87
Fish							
	Benchmark	2,153	2,317	2,189	2,469	2,703	3,427
	Price at the	3,834,296	4,242,639	3,771,684	4,247,245	5,487,375	7,463,005
	Producer price	2,369,842	2,871,763	2,723,981	3,599,792	4,898,954	5,684,317
Maize							
	Benchmark	**197.60**	209.22	235.26	273.73	307.77	229.81
	Price at the	297,371.2	302,189.8	334,357.4	593,553.1	836,561.1	572,697.6
	Producer price	185,189.2	223,844.3	222,954.5	338,000.0	619,674.9	424,220.5
Sugar							
	Benchmark	**355.00**	**424.00**	**448.00**	**431.00**	**489.00**	**600.00**
	Price at the	**1,020,511**	**1,182,576**	**1,289,075**	**1,337,678**	**1,706,175**	**2,046,123**
	Producer price	**29,753**	**34,478**	**37,583**	**39,000**	**41,981**	**56,728**
Wheat							
	Benchmark	**339.31**	**285.95**	**343.44**	**450.04**	**370.98**	**329.67**
	Price at the						
	Producer price	900,000.00	900,000.00	850,000.00	775,000.00	900,000.00	1,000,000.00
Cassava							
	Benchmark	**158.08**	**167.38**	**188.21**	**218.98**	**246.22**	**183.85**
	Price at the			**207,555.56**	**64,061.94**	**530,910.16**	**497,936.67**
	Producer price			120,250.00	361,231.88	360,298.91	346,232.44

Note: Price at the point of competition and producers' price are expressed in terms of USh per tonne of carcass while the benchmark price is in US $ per tonne of processed carcass.

ANNEX 6: Observed Access costs from the farmgate to point of competition market used for analysis of incentives and disincentives

Products	2005	2006	2007	2008	2009	2010
Rice	322,439	331,491	311,939	311,396	365,709	394,314
Maize	107,206.6	114,874.1	121,191.3	135,186.1	153,118.9	159,371.3
Beef	2,378,820.2	2,472,307.9	2,622,411.4	2,938,318.7	3,320,833.0	3,453,333.3
Fish	736,706	800,014	725,565	940,376	1,037,651	1,424,926
Coffee	593,549	576,846	659,006	721,045	783,927	800,268
Cotton	246,616.0	271,981.9	268,410.0	322,894.4	361,123.0	467,690.2
Tea[a]	1,348,647	1,586,237	1,329,550	1,598,206	2,130,778	2,429,794
Sugar[b]	50,903	55,258	56,229	57,477	68,479	77,711
Wheat	212,000.00	212,000.00	202,000.00	187,000.00	212,000.00	232,000.00
Cassava	66,023.94	67,907.06	63,904.03	63,791.02	75,286.91	80,739.99

a. On the basis of processed tea which is 22.5 percent of the weight of green tea.

b. On the basis of tonne of sugarcane.

ANNEX 7: Adjusted access costs from the farmgate to point of competition market used for analysis of incentives and disincentives

Products	2005	2006	2007	2008	2009	2010
Rice	258,677	265,939	250,253	249,817	293,390	316,338
Maize	103,146.7	110,698.4	117,261.8	131,263.4	148,489.4	154,406.4
Beef	1,115,855.2	1,159,708.3	1,230,118.8	1,378,304.3	1,603,129.6	2,212,800.3
Fish	548,917	590,141	522,194	698,470	738,581	1,091,300
Coffee	542,080	518,787	593,753	640,853	714,103	721,954
Cotton	207,343.3	224,696.9	219,941.6	252,498.9	294,348.9	377,823.3
Tea[a]	1,004,458	1,082,913	979,347	1,085,278	1,508,494	1,787,541
Sugar[b]	31,517	33,296	32,434	32,892	38,234	42,107
Wheat	122,000.00	122,000.00	117,000.00	109,500.00	122,000.00	132,000.00
Cassava	55,707.70	57,296.58	53,919.03	53,823.68	63,523.33	68,124.37

a. On the basis of processed tea which is 22.5 percent of the weight of green tea

b. On the basis of tonne of sugarcane.

ANNEX 8: Observed Access costs from the point of competition to border used in analysis of incentives and disincentives

Products	2005	2006	2007	2008	2009	2010
Rice	260,026	267,326	251,558	251,120	294,920	317,988
Maize	24,292.0	24,984.8	23,512.0	23,470.4	27,700.1	29,706.4
Beef	91,562.8	95,161.2	38,985.1	53,000.0	69,565.2	263,303.4
Fish	0	0	0	0	0	0
Coffee	25,468	26,739	27,576	33,893	30,254	31,575
Cotton	74,861.26	58,032.58	47,783.07	128,261.17	115,108.24	353,446.94
Tea[a]	145,875	181,689	144,833	210,246	258,027	276,364
Sugar[b]	569,915	616,637	594,145	611,947	813,315	929,705
Wheat	341,062	350,637	329,955	329,380	386,830	417,087
Cassava	31,147.35	32,035.73	30,147.27	30,093.95	35,517.24	38,089.77

a. On the basis of processed tea which is 22.5 percent of the weight of green tea

b. On the basis of tonne of sugarcane.

ANNEX 9: Adjusted access costs from the point of competition to border used in analysis of incentives and disincentives

Products	2005	2006	2007	2008	2009	2010
Rice	260,026	267,326	251,558	251,120	294,920	317,988
Maize	12,251.2	12,600.6	11,857.8	11,836.9	13,970.0	14,981.9
Beef	91,562.8	95,161.2	38,985.1	53,000.0	69,565.2	263,303.4
Fish	0	0	0	0	0	0
Coffee	0	0	0	0	0	0
Cotton	0	0	0	0	0	0
Tea[a]	145,875	181,689	144,833	210,246	258,027	276,364
Sugar[b]	431,663	456,044	419,746	427,070	584,039	658,226
Wheat	341,062	350,637	329,955	329,380	386,830	417,087
Cassava	9,346.50	9,613.55	9,049.92	9,037.02	10,664.38	11,428.79

a. On the basis of processed tea which is 22.5 percent of the weight of green tea

b. On the basis of tonne of sugarcane.

CONTACTS

www.fao.org/mafap
mafap@fao.org

FAO Headquarters
Viale delle Terme di Caracalla
00153 Rome, Italy

FOOD AND AGRICULTURE
ORGANIZATION OF
THE UNITED NATIONS

MAFAP
SPAAA

supported by the *Bill and Melinda Gates Foundation*