COMBINING INPUT SUBSIDIES WITH EXTENSION SERVICES TO BOOST AGRICULTURAL GROWTH IN UGANDA

MAFAP results validation workshop
Kampala . 6 March 2018 .

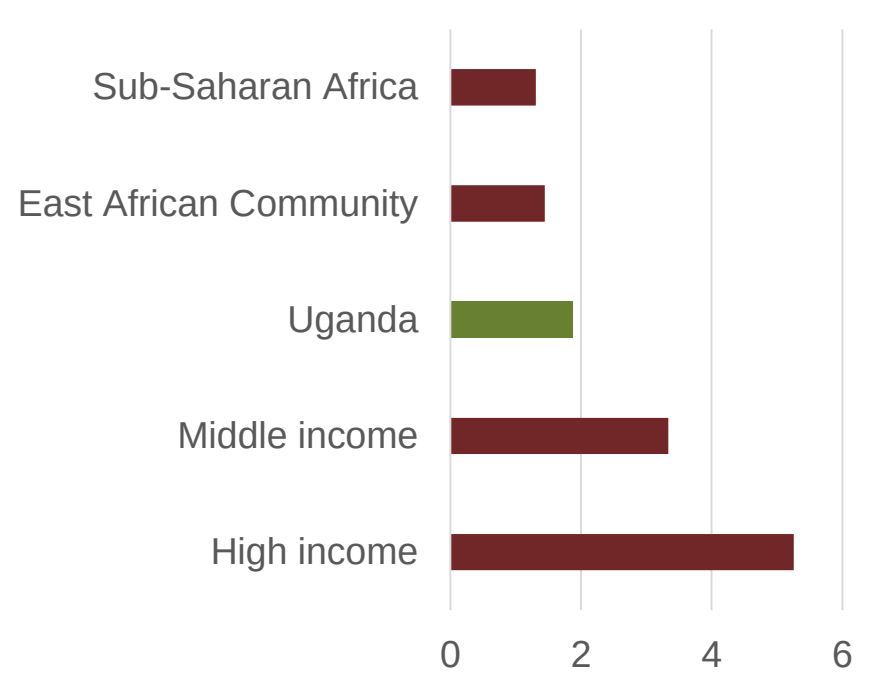
OUTLINE

1. CONTEXT
2. RESULTS
3. RECOMMENDATIONS

CONTEXT

- What is the issue?
- What should be done?
- Why is evidence needed?

AVERAGE CEREAL YIELD 05-14 (TONNE/HA)

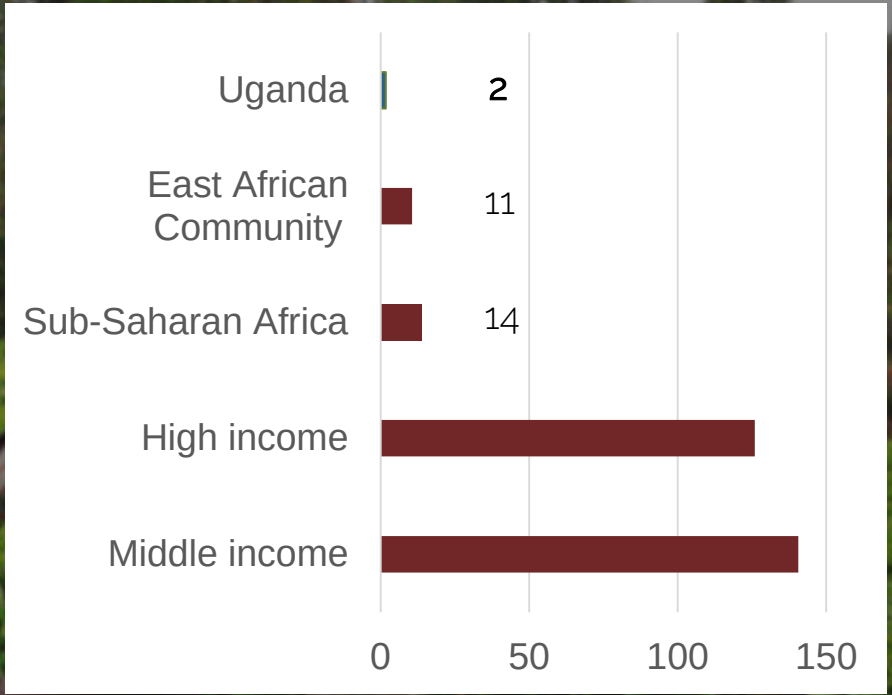


Source : FAOSTAT, 2018

- What is the issue?

Ugandan farmers face too low an agricultural productivity, partly because they do not use fertilizers, seeds, equipment and production techniques that may raise their output and therefore their income.

AVERAGE FERTILIZER USE 05-14 (KG/HA OF ARABLE LAND)



Source : FAOSTAT, 2018

- What is the issue?

Farmers' ability and willingness to adopt new agricultural techniques or inputs is limited by the high cost of acquiring them but also their low or uncertain returns on yields stemming from farmers' lack of knowledge, including on input quality.

References: Okoboi and Barungi, 2012; Bold et al., 2017

CONTEXT

- What is the issue?
- **What should be done?**
- Why is evidence needed?

What should be done?

Knowledge is a more ***sustainable*** and predictable driver of ***productivity*** and ***income growth*** than prices or rainfall.

Extension services are needed to provide agricultural knowledge.

Since 2014, the GoU has been restructuring its extension services and has transferred the mandate for public extension services coordination to a re-established Directorate of Agricultural Extension Services (DAES).

CONTEXT

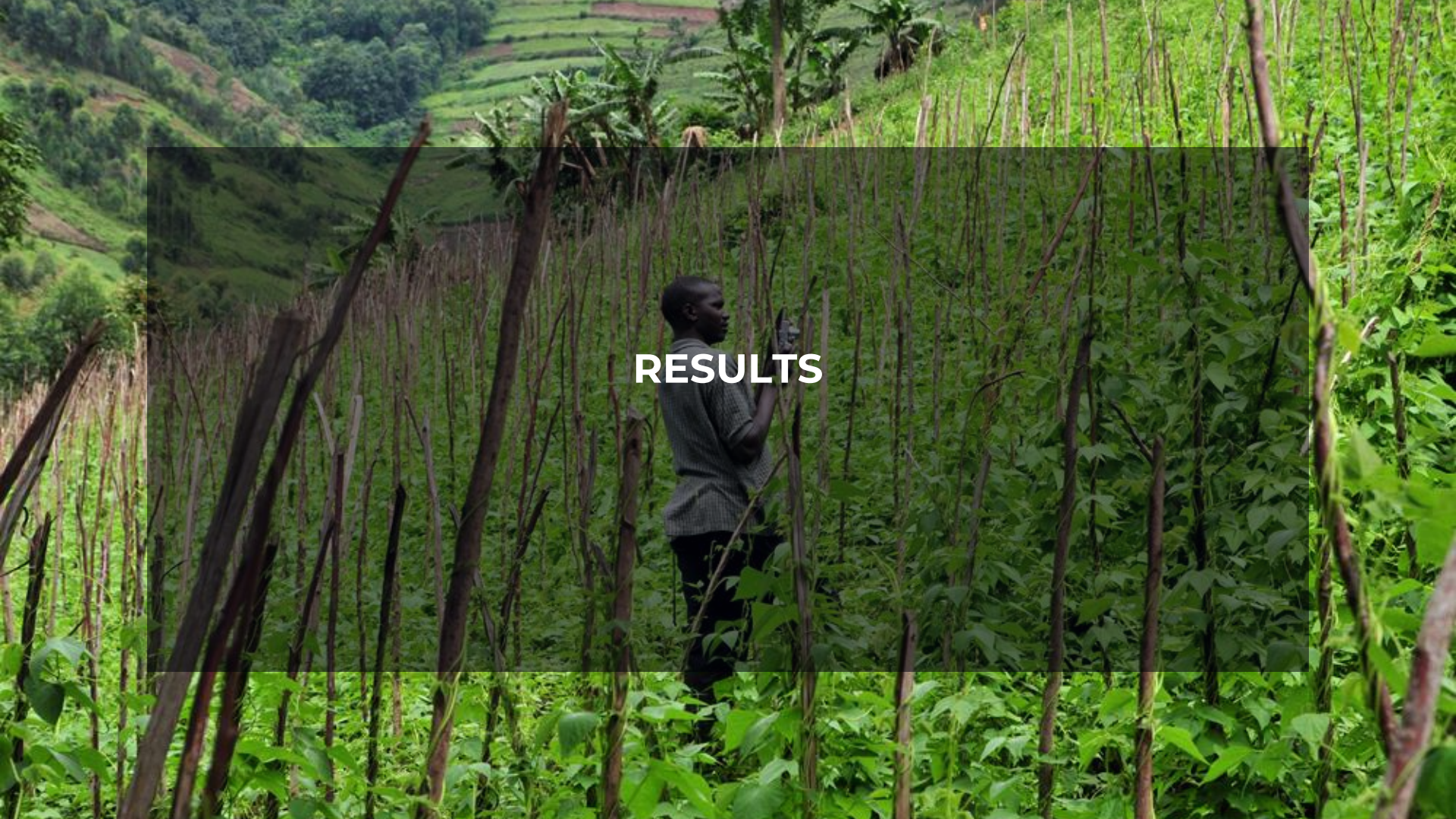
- What is the issue?
- What should be done?
- **Why is evidence needed?**

Why is evidence needed?

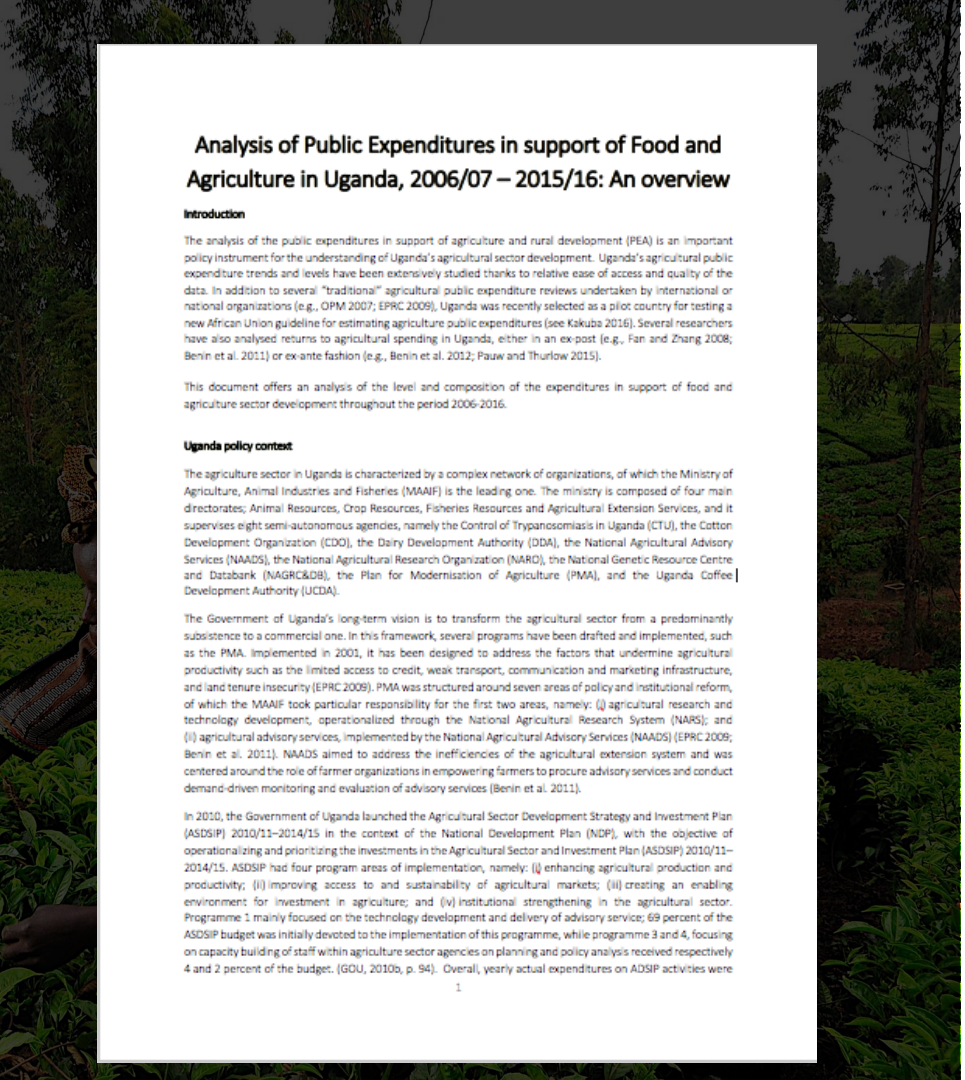
Evidence on the benefits of extension services on agricultural productivity can make the case for increased funding towards it.

Three studies:

- Public agricultural expenditure review
- Evaluate the economy-wide implications of recent strategic choices in the agricultural sector
- Evaluate the farm-level impacts of Uganda's revised inputs policy, particularly the on-farm returns to improved seed and fertilizer use,



RESULTS



Analysis of Public Expenditures in support of Food and Agriculture in Uganda, 2006/07 – 2015/16: An overview

Introduction

The analysis of the public expenditures in support of agriculture and rural development (PEA) is an important policy instrument for the understanding of Uganda's agricultural sector development. Uganda's agricultural public expenditure trends and levels have been extensively studied thanks to relative ease of access and quality of the data. In addition to several "traditional" agricultural public expenditure reviews undertaken by international or national organizations (e.g., OPM 2007; EPRC 2009), Uganda was recently selected as a pilot country for testing a new African Union guideline for estimating agriculture public expenditures (see Kakuba 2016). Several researchers have also analysed returns to agricultural spending in Uganda, either in an ex-post (e.g., Fan and Zhang 2008; Benin et al. 2011) or ex-ante fashion (e.g., Benin et al. 2012; Pauw and Thurlow 2015).

This document offers an analysis of the level and composition of the expenditures in support of food and agriculture sector development throughout the period 2006-2016.

Uganda policy context

The agriculture sector in Uganda is characterized by a complex network of organizations, of which the Ministry of Agriculture, Animal Industries and Fisheries (MAAIF) is the leading one. The ministry is composed of four main directorates; Animal Resources, Crop Resources, Fisheries Resources and Agricultural Extension Services, and it supervises eight semi-autonomous agencies, namely the Control of Trypanosomiasis in Uganda (CTU), the Cotton Development Organization (CDO), the Dairy Development Authority (DDA), the National Agricultural Advisory Services (NAADS), the National Agricultural Research Organization (NARO), the National Genetic Resource Centre and Databank (NAGRC&DB), the Plan for Modernisation of Agriculture (PMA), and the Uganda Coffee Development Authority (UCDA).

The Government of Uganda's long-term vision is to transform the agricultural sector from a predominantly subsistence to a commercial one. In this framework, several programs have been drafted and implemented, such as the PMA. Implemented in 2001, it has been designed to address the factors that undermine agricultural productivity such as the limited access to credit, weak transport, communication and marketing infrastructure, and land tenure insecurity (EPRC 2009). PMA was structured around seven areas of policy and institutional reform, of which the MAAIF took particular responsibility for the first two areas, namely: (i) agricultural research and technology development, operationalized through the National Agricultural Research System (NARS); and (ii) agricultural advisory services, implemented by the National Agricultural Advisory Services (NAADS) (EPRC 2009; Benin et al. 2011). NAADS aimed to address the inefficiencies of the agricultural extension system and was centered around the role of farmer organizations in empowering farmers to procure advisory services and conduct demand-driven monitoring and evaluation of advisory services (Benin et al. 2011).

In 2010, the Government of Uganda launched the Agricultural Sector Development Strategy and Investment Plan (ASDSIP) 2010/11–2014/15 in the context of the National Development Plan (NDP), with the objective of operationalizing and prioritizing the investments in the Agricultural Sector and Investment Plan (ASDSIP) 2010/11–2014/15. ASDSIP had four program areas of implementation, namely: (i) enhancing agricultural production and productivity; (ii) improving access to and sustainability of agricultural markets; (iii) creating an enabling environment for investment in agriculture; and (iv) institutional strengthening in the agricultural sector. Programme 1 mainly focused on the technology development and delivery of advisory service; 69 percent of the ASDSIP budget was initially devoted to the implementation of this programme, while programme 3 and 4, focusing on capacity building of staff within agriculture sector agencies on planning and policy analysis received respectively 4 and 2 percent of the budget. (GOU, 2010b, p. 94). Overall, yearly actual expenditures on ADSIP activities were

1

Analysis of the public expenditures on support of food and agriculture, 2006/07 – 2015/16: An overview

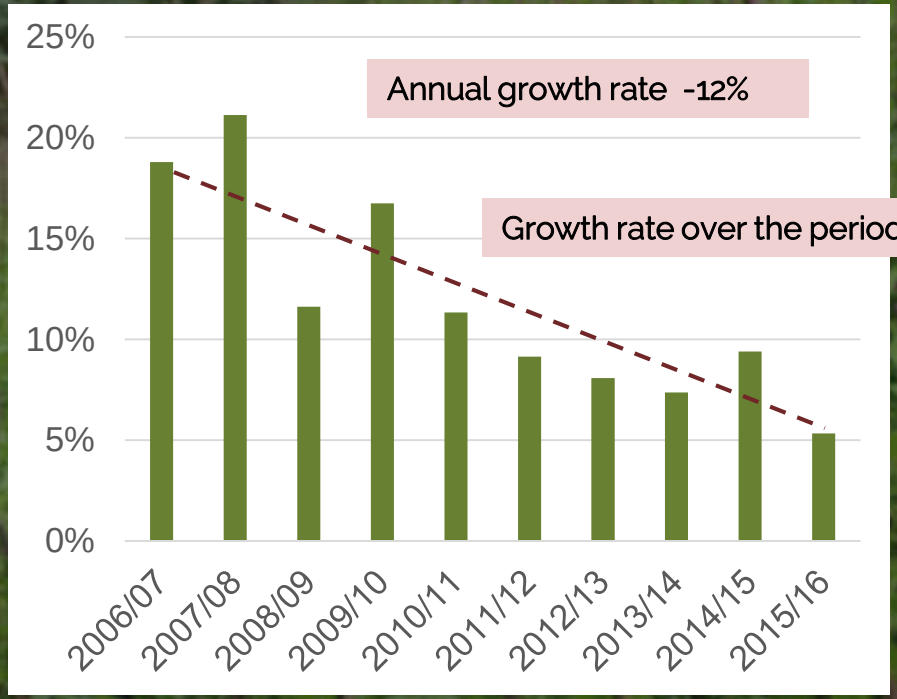
Type: MAFAP Public expenditure analysis

Data:

- Budget data for 16 Ministries, 2006-2015, from MOFPED.
- World Bank's BOOST database.

→ Objective: Analysing the level and composition of the expenditures in support of food and agriculture

SHARE OF THE TOTAL BUDGET IN SUPPORT OF AGRICULTURE, 06-15, ACTUAL

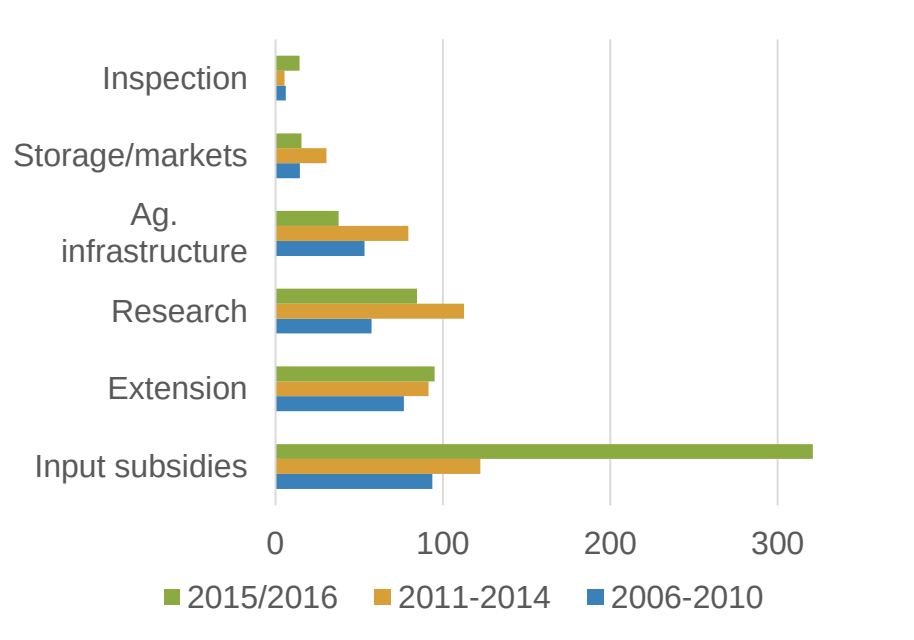


Source : MAFAP, using MOFPED, 2017

The share of budget going to agriculture is diminishing and increasingly focused on inputs subsidies

In spite of being a signatory of the African Union's Maputo and Malabo declarations, GoU has reduced its relative budget on agriculture. In parallel, since 2014, it has increasingly concentrated the agricultural budget on free input provision under Operation Wealth Creation.

AGRICULTURAL PUBLIC EXPENDITURE, PER CATEGORY, 06-16, ACTUAL



Source : MAFAP, using MOFPED, 2017

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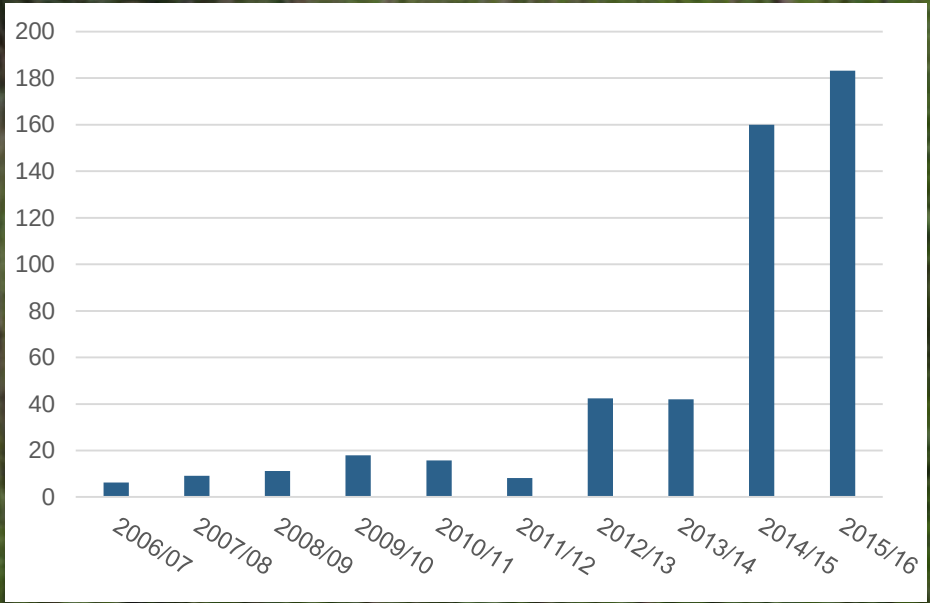
CHANGE IN THE AGRICULTURE ADVISORY SERVICES BUDGET, 2005 to 2016, ACTUAL (mln Ush)

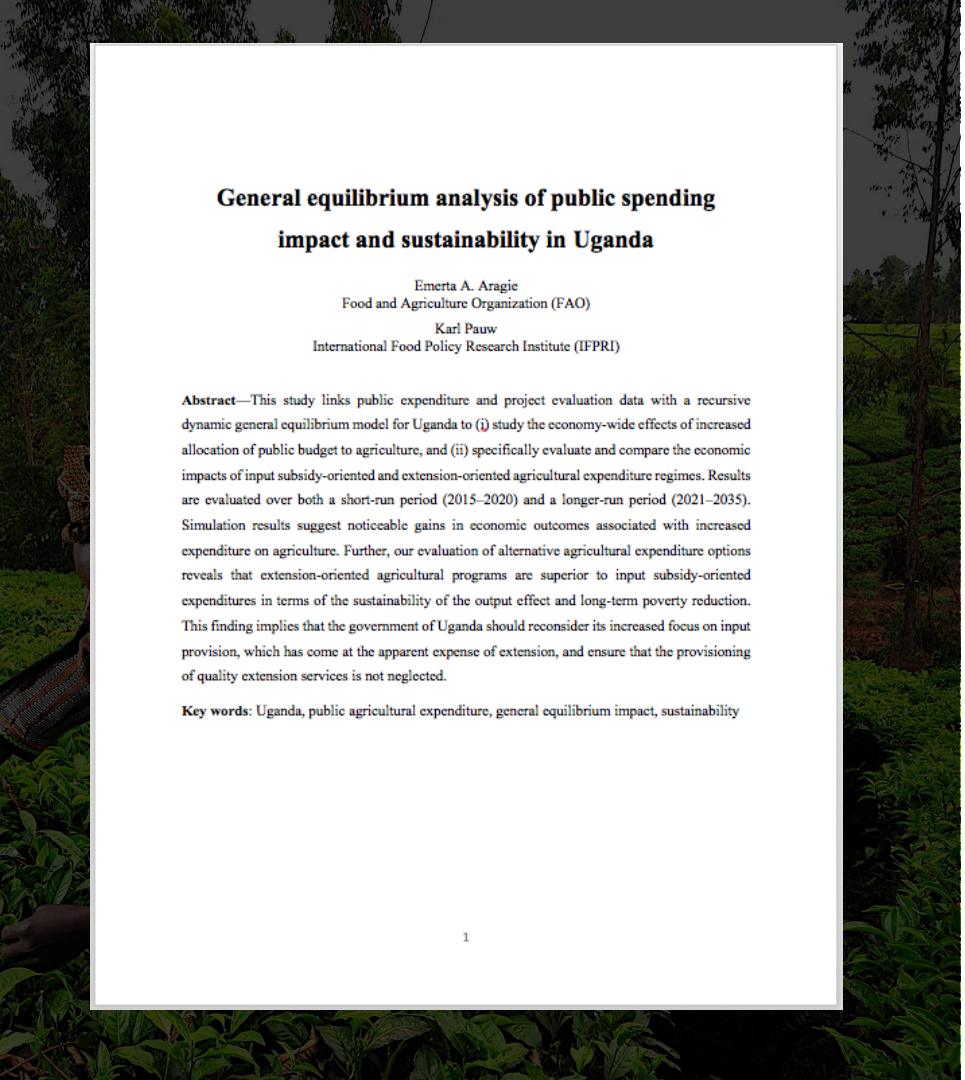


Source : MAFAP, using MOFPED, 2017

The actual expenditures allocated to National Agriculture Advisory Services increased over the period 2006-2016

Increase of 280% of the budget from FY 2013/14 to FY 2014/15.

This growth is mainly due to the Operation Wealth Creation allocations to NAADS, mainly devolved to input subsidies provision



General equilibrium analysis of public spending impact and sustainability in Uganda

Emerta A. Aragie
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Karl Pauw
International Food Policy Research Institute (IFPRI)

Abstract—This study links public expenditure and project evaluation data with a recursive dynamic general equilibrium model for Uganda to (i) study the economy-wide effects of increased allocation of public budget to agriculture, and (ii) specifically evaluate and compare the economic impacts of input subsidy-oriented and extension-oriented agricultural expenditure regimes. Results are evaluated over both a short-run period (2015–2020) and a longer-run period (2021–2035). Simulation results suggest noticeable gains in economic outcomes associated with increased expenditure on agriculture. Further, our evaluation of alternative agricultural expenditure options reveals that extension-oriented agricultural programs are superior to input subsidy-oriented expenditures in terms of the sustainability of the output effect and long-term poverty reduction. This finding implies that the government of Uganda should reconsider its increased focus on input provision, which has come at the apparent expense of extension, and ensure that the provisioning of quality extension services is not neglected.

Key words: Uganda, public agricultural expenditure, general equilibrium impact, sustainability

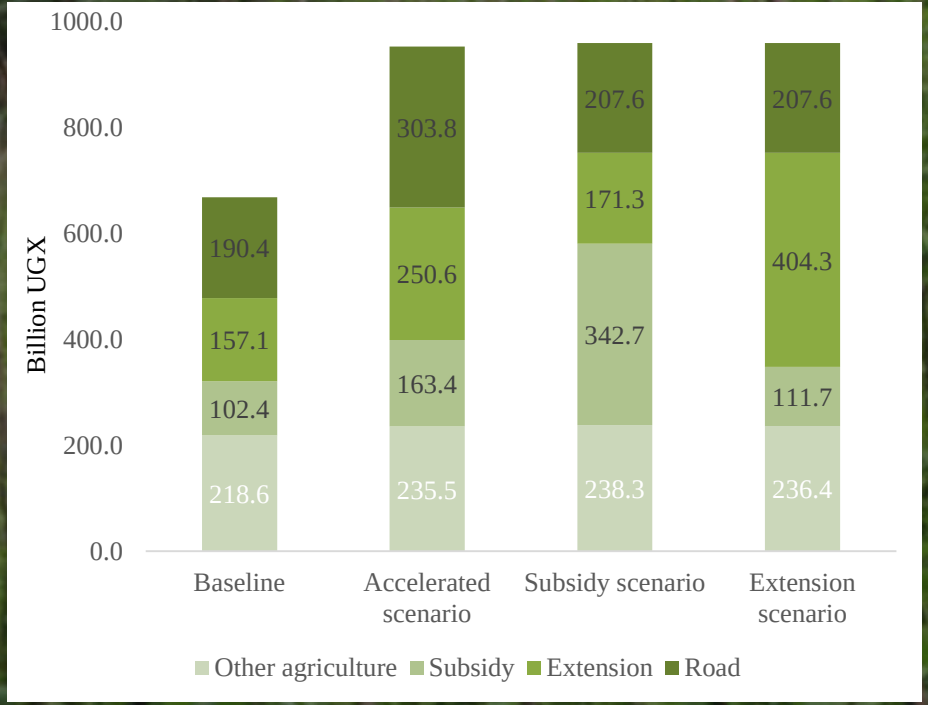
General equilibrium analysis of public spending impact and sustainability in Uganda

Type of analysis: Computable General Equilibrium Modelling.

Data:

- Social Accounting Matrix, 55 Ugandan economic sectors.

→ Objective: Compare short- and long-run effectiveness of different agricultural spending strategies emphasizing either input subsidy or extension provisioning.



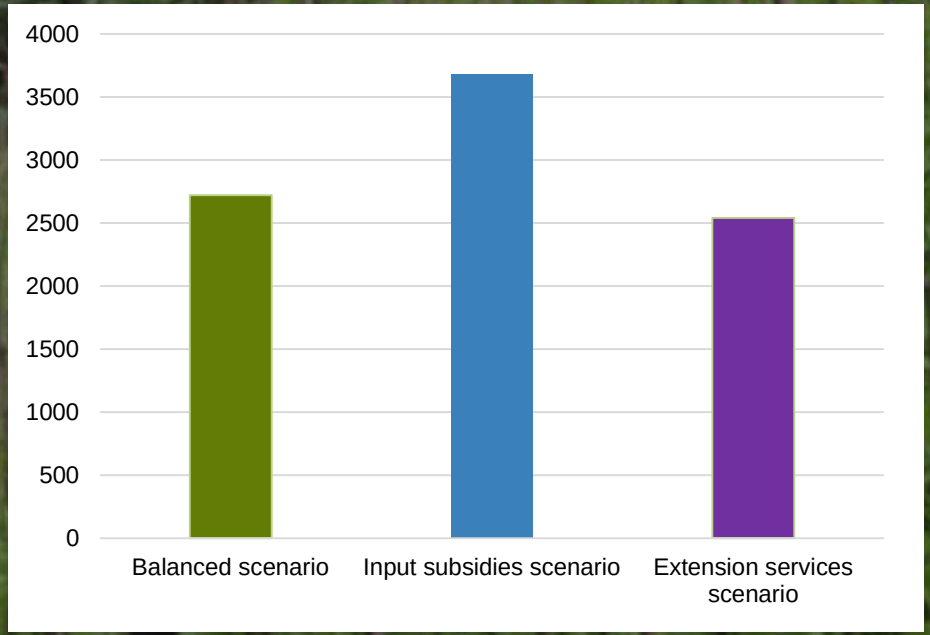
→Ag. expenditure should grow by 16% per year or more to reach close to CAADP spending target

Three scenarios:

1. Benchmark where agric. budget grows faster (16%), keeping the current budget share constant.
2. Input subsidy-oriented where agric. budget grows by 16%, but the additional budget going to subsidies.
3. Extension-oriented where agric. budget

Based on the 2011-2015 budget trends, benchmarks have been estimated in the ***short run*** (***2016-2020***) and in the ***long run*** (***2016-2035***)

RETURN IN AGRICULTURAL GDP PER 1000 USh INVESTED OVER 2016-2020



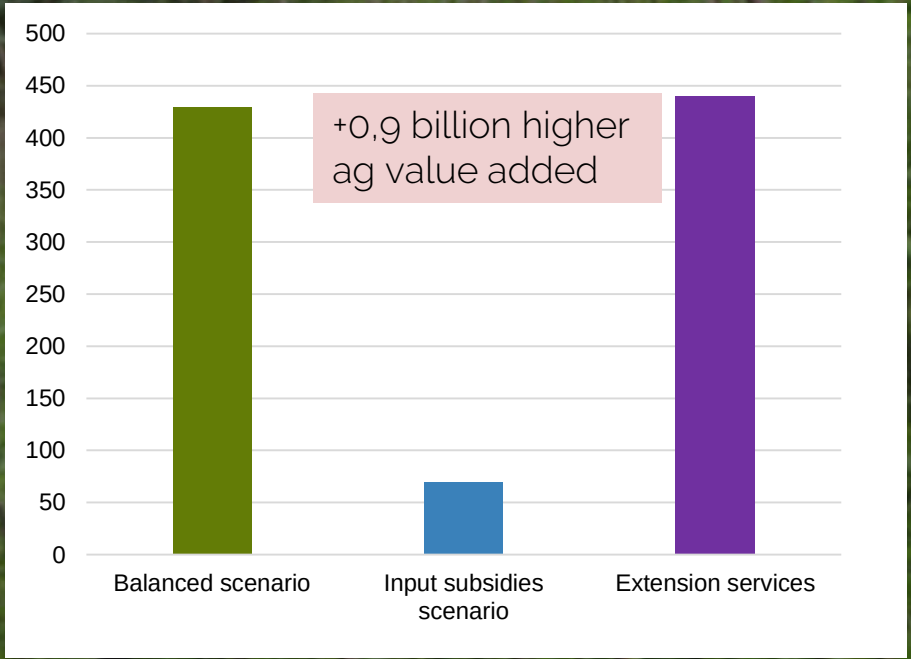
Source : MAFAP, 2017

In the short run, there is a higher return of public investment input subsidies than on other alternatives

In the short run scenario, investment in input subsidies appear to be more rewarding.

Political motivations for favoring subsidies over extension in the short run?

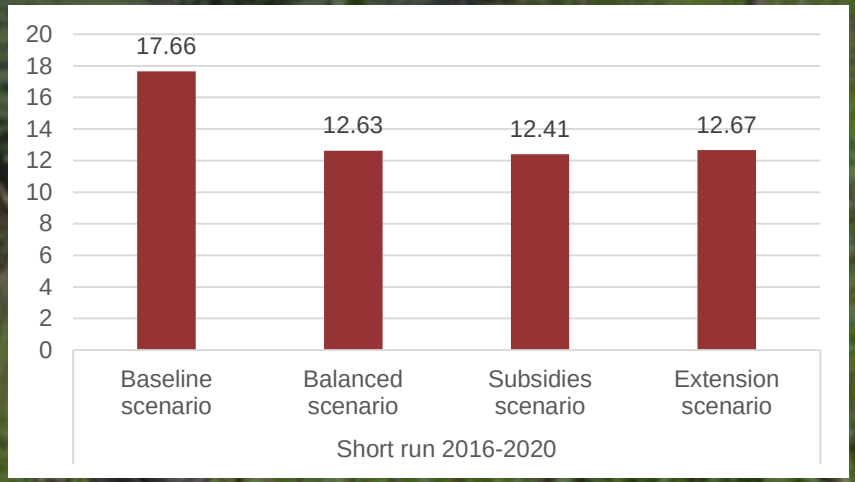
RETURN IN AGRICULTURAL GDP PER 1000 USh INVESTED OVER 2016-2035

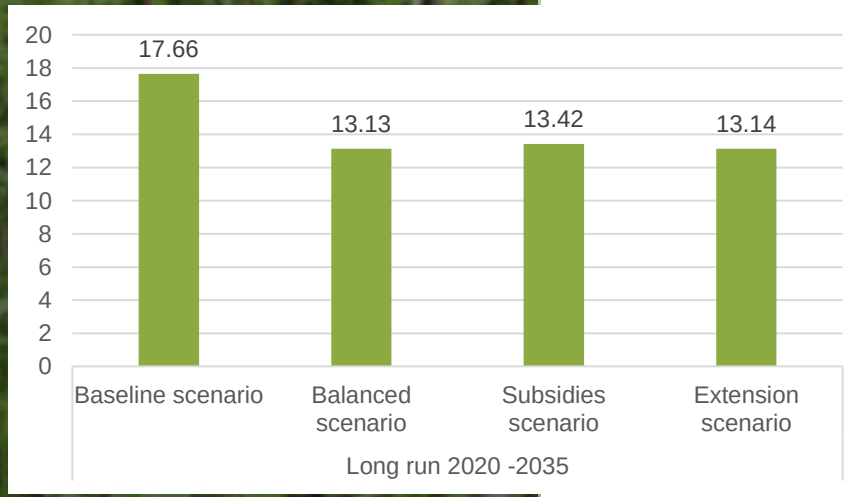


Source : MAFAP, 2017

However, in the long run there is a higher return of public investment on combined extension/input subsidies than on subsidies alone

It is more profitable for the government to invest in a combination of extension services and input subsidies because farmers retain productive knowledge over the years and pass it on, whereas inputs have to be subsidized each and every year.

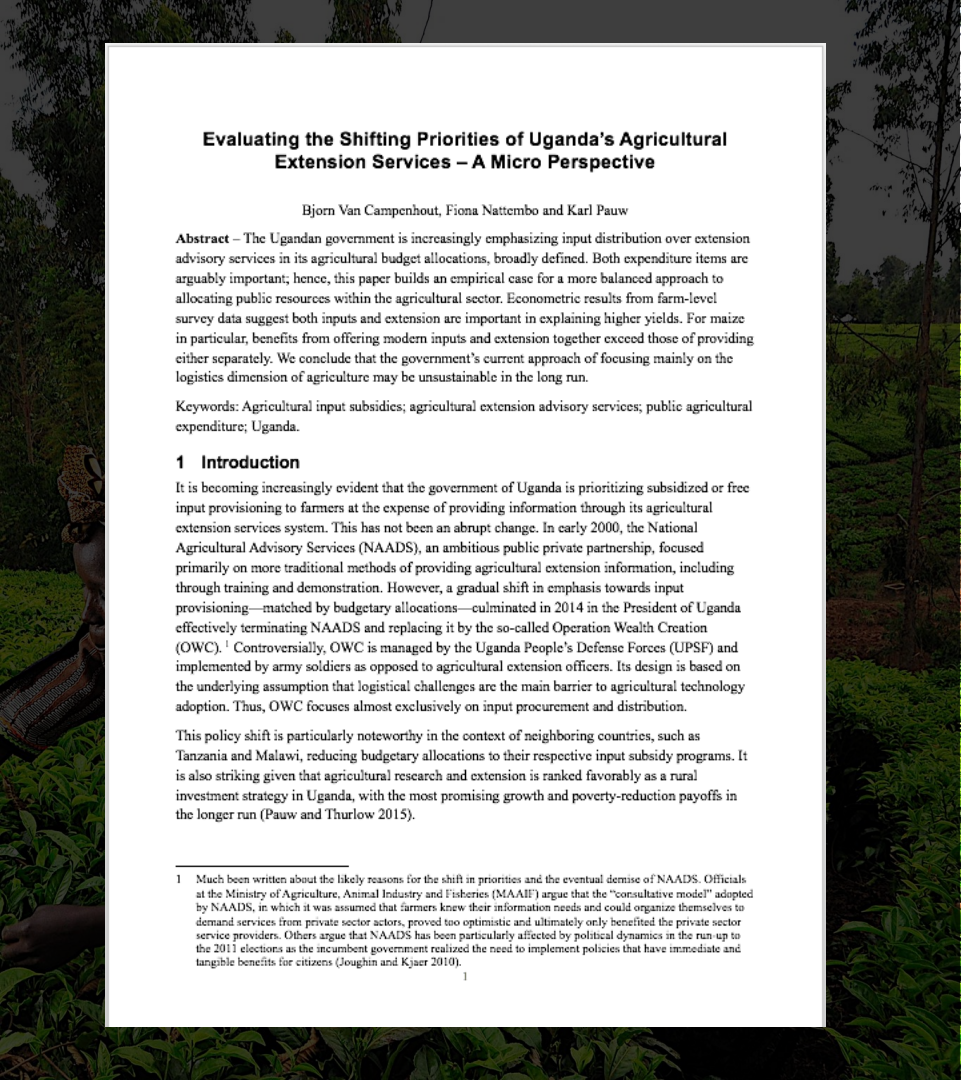




Source : MAFAP, 2017

Rural poverty headcount rate

An increased investment in agriculture lead to a decrease in the rural poverty headcount ratio



Evaluating the Shifting Priorities of Uganda's Agricultural Extension Services – A Micro Perspective

Bjorn Van Campenhout, Fiona Nattembo and Karl Pauw

Abstract – The Ugandan government is increasingly emphasizing input distribution over extension advisory services in its agricultural budget allocations, broadly defined. Both expenditure items are arguably important; hence, this paper builds an empirical case for a more balanced approach to allocating public resources within the agricultural sector. Econometric results from farm-level survey data suggest both inputs and extension are important in explaining higher yields. For maize in particular, benefits from offering modern inputs and extension together exceed those of providing either separately. We conclude that the government's current approach of focusing mainly on the logistics dimension of agriculture may be unsustainable in the long run.

Keywords: Agricultural input subsidies; agricultural extension advisory services; public agricultural expenditure; Uganda.

1 Introduction

It is becoming increasingly evident that the government of Uganda is prioritizing subsidized or free input provisioning to farmers at the expense of providing information through its agricultural extension services system. This has not been an abrupt change. In early 2000, the National Agricultural Advisory Services (NAADS), an ambitious public private partnership, focused primarily on more traditional methods of providing agricultural extension information, including through training and demonstration. However, a gradual shift in emphasis towards input provisioning—matched by budgetary allocations—culminated in 2014 in the President of Uganda effectively terminating NAADS and replacing it by the so-called Operation Wealth Creation (OWC).[1] Controversially, OWC is managed by the Uganda People's Defense Forces (UPSF) and implemented by army soldiers as opposed to agricultural extension officers. Its design is based on the underlying assumption that logistical challenges are the main barrier to agricultural technology adoption. Thus, OWC focuses almost exclusively on input procurement and distribution.

This policy shift is particularly noteworthy in the context of neighboring countries, such as Tanzania and Malawi, reducing budgetary allocations to their respective input subsidy programs. It is also striking given that agricultural research and extension is ranked favorably as a rural investment strategy in Uganda, with the most promising growth and poverty-reduction payoffs in the longer run (Pauw and Thurlow 2015).

1 Much been written about the likely reasons for the shift in priorities and the eventual demise of NAADS. Officials at the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) argue that the "consultative model" adopted by NAADS, in which it was assumed that farmers knew their information needs and could organize themselves to demand services from private sector actors, proved too optimistic and ultimately only benefited the private sector service providers. Others argue that NAADS has been particularly affected by political dynamics in the run-up to the 2011 elections as the incumbent government realized the need to implement policies that have immediate and tangible benefits for citizens (Joughin and Kjaer 2010).

Evaluating the Shifting Priorities of Uganda's Agricultural Extension Services – A Micro Perspective

Type: Regression analysis (parametric and non-parametric)

Data: 2009/2010 – 2013/2014 UNPS

2014 PASIC dataset

3000 households (UNPS), 400 rice producing households/500 potato producing households (PASIC)

- Commodities: Maize, Cassava, Beans, Groundnuts, Potatoes and Rice
- Inputs: Fertilizers and Improved seeds

→ Objective: Investigate the impact of fertilizers, seed and extension use on yields

PERCENTAGE OF PLOTS WHO USE FERTILIZERS, SEEDS, AND HAVE ACCESS TO EXTENSION

	Maize	Beans	Cassava	Groundnut
Fertilizer (%)	4.59	3.77	1.88	-
Seed (%)	35.34	5.25	-	10.19
Extension (%)	30.40	31.20	30.67	30.86

Source : Authors' calculations based on UNPS 2013/14 (UBOS 2014) and Pasic (2014) data

Descriptive statistics

Less than a third of the farmers across different crops have access to extension services

- Use of improved seed is widespread among maize farmers, while it is less common in beans; only on about 5 percent of plots are planted with improved bean varieties

- Inorganic fertilizer use on cassava plots is low

PERCENTAGE OF FARMERS WHO USE FERTILIZERS, SEEDS, AND HAVE ACCESS TO EXTENSION

	Potato	Rice
Fertilizer (%)	22	17
Improved seed (%)	90	59
Extension(%)	36	15

Source : Authors' calculations based on UNPS 2013/14 (UBOS 2014) and Pasic (2014) data

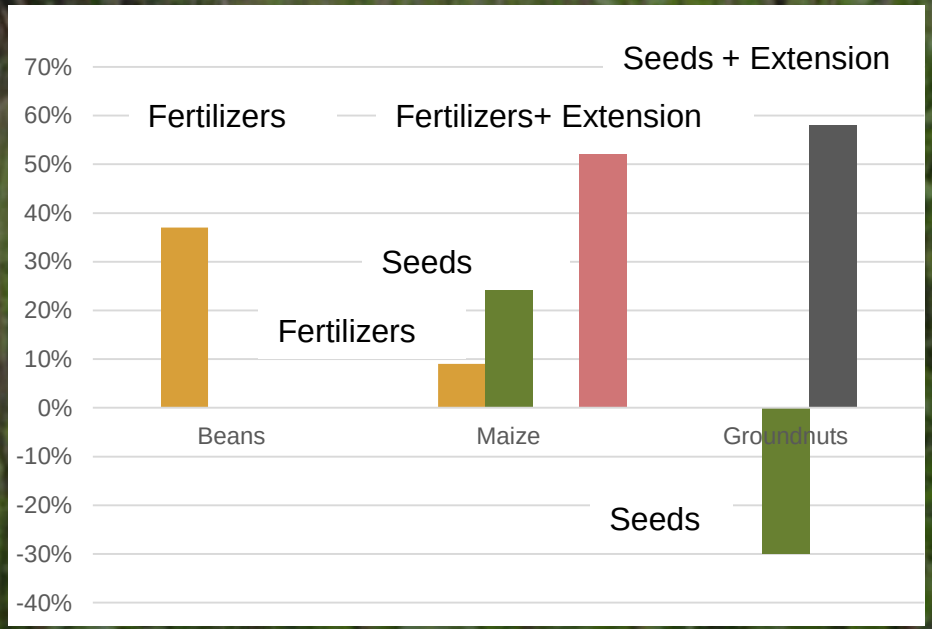
Descriptive statistics (pt. 2)

Less than a third of the farmers across different crops have access to extension services

The differences between rice and potato farmers is significant, especially with respect to access to extension, with potato growers about twice as likely to have received extension.

Fertilizer use among potato and rice farmers is, on average, around 20 percent.

YIELD DIFFERENCE BETWEEN FARMERS WHO USE FERTILIZERS, SEEDS, HAVE ACCESS TO EXTENSION AND THOSE WHO DO NOT

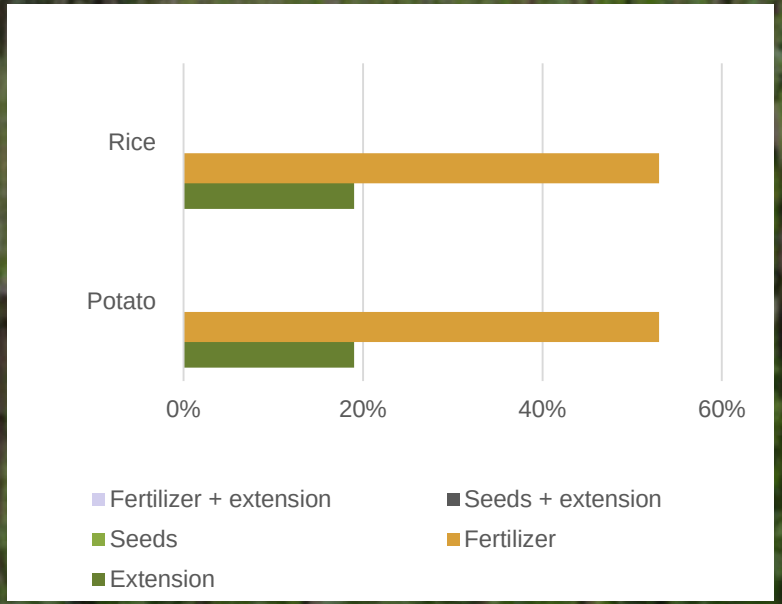


Source : MAFAP, using UNPS 09/10, 13/14 and PASIC 14

→ Modern input use and extension can increase agricultural productivity, but the effects differ for different crops and different inputs

- Maize farmers using fertilizer and having access extension have yields 52% higher than those who do not
- The same figure is 58% for groundnut farmers.

YIELD DIFFERENCE BETWEEN FARMERS WHO USE FERTILIZERS, SEEDS, HAVE ACCESS TO EXTENSION AND THOSE WHO DO NOT



Source : MAFAP, using UNPS 09/10, 13/14 and PASIC 14

Higher productivity for several farmers who both receive inputs and extension services.

- Uneven results depending on crops.
- Improved seeds are associated with higher outputs for maize but not for other crops.
- Beans, potato and rice farmers report better yields when they use fertilizers alone (37, 53 and 53 percent, respectively) but not maize, groundnuts or cassava producers.

RESULTS

- The share of budget going to agriculture is diminishing and ***increasingly focused on inputs subsidies***
- In the ***long run***, there is a higher return of public investment on ***combined extension/input subsidies*** than on subsidies alone
- Higher productivity for several farmers who ***use inputs and receive extension services***.
- Differences in yields changes ***depending on the crops and on the inputs used***

→ it is important reconsider the ***combined role of extension services and input provision***

RECOMMENDATIONS

RECOMMENDATION 1: FOLLOW A BALANCED INPUT/EXTENSION SUBSIDY INVESTMENT STRATEGY

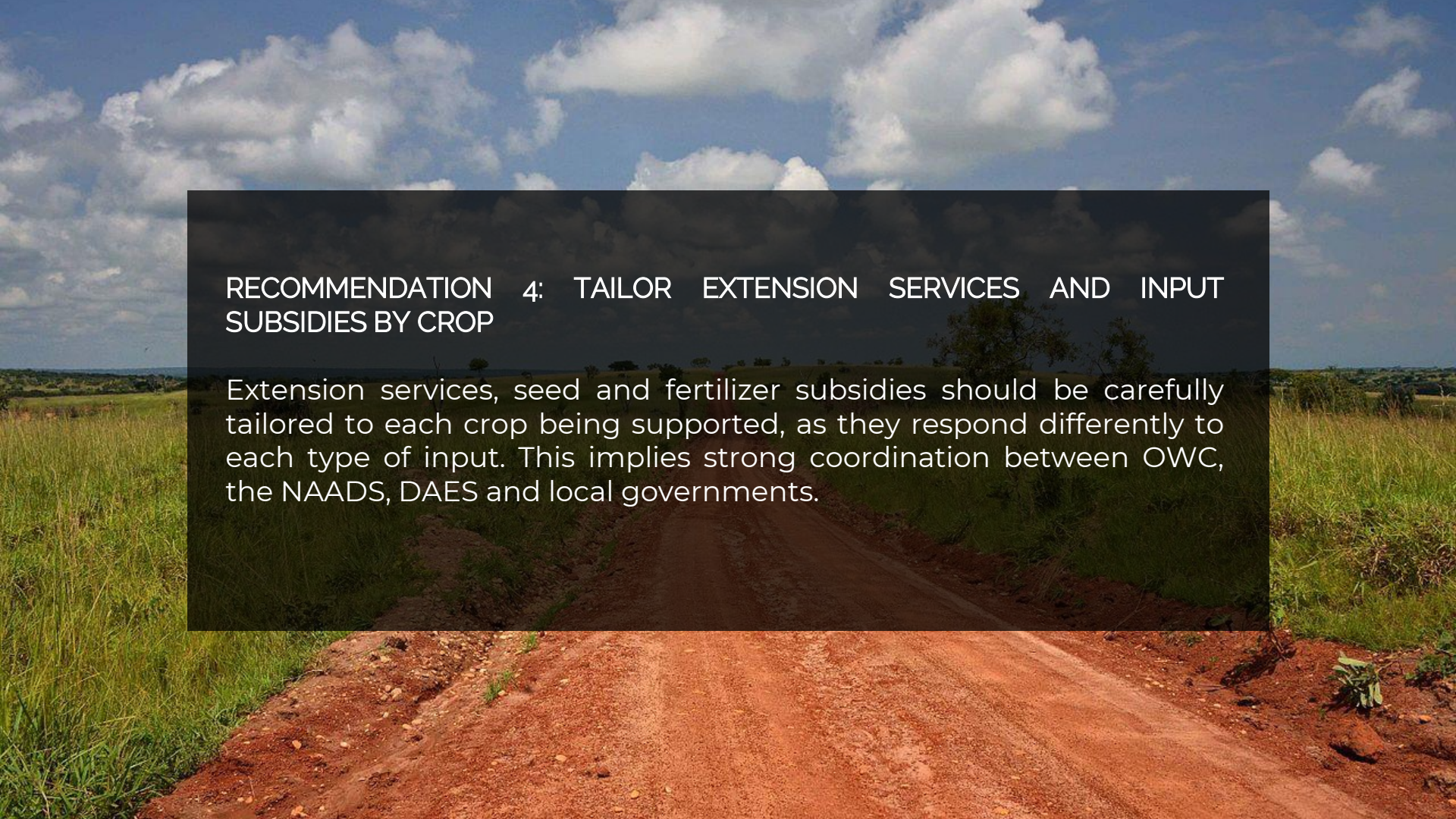
To stimulate agricultural productivity growth, the GoU is advised to follow a medium to long-term balanced public investment strategy that couples the input subsidies with extension services.

RECOMMENDATION 2: INCREASE FUNDS ALLOCATED TO EXTENSION SERVICES IN THE NEXT BUDGET

The increasing budget going to OWC should be complemented by sufficient allocations to the DAES of MAAIF and local governments, to allow effective advisory services to farmers, in particular those who benefit from subsidized fertilizers.

RECOMMENDATION 3 : CARRY OUT A COST-BENEFIT ANALYSIS OF EXTENSION SERVICES POLICY MEASURES

Further cost-benefit analysis should be carried out to map out policy solutions on how to deliver public extension effectively, using approaches that are known to be the most effective in Uganda and other neighbouring countries, to farmers and crops who need the services most, where the private sector is failing to deliver the services, and in synergy with other support to the sector, in particular input subsidies.



RECOMMENDATION 4: TAILOR EXTENSION SERVICES AND INPUT SUBSIDIES BY CROP

Extension services, seed and fertilizer subsidies should be carefully tailored to each crop being supported, as they respond differently to each type of input. This implies strong coordination between OWC, the NAADS, DAES and local governments.

Thank you

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Monitoring and Analysing Food and Agricultural Policies, click here

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