

Comprehensive Africa Agriculture Development Programme (CAADP)

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UGANDA

LONG-TERM FUNDING FOR AGRICULTURAL GROWTH, POVERTY REDUCTION, AND FOOD AND NUTRITION SECURITY

The Relationship between Agricultural Spending, Growth, and Poverty Reduction

The required level of funding to achieve the different growth and poverty outcomes projected in Brochure 3, *Agricultural Growth and Poverty Reduction: Past Performance and Prospective Outcomes*, is calculated based on the estimated relationships (i) between the rate of agricultural GDP growth, overall GDP growth and the consequent change in the poverty rate; and (ii) between the level of agricultural funding and the rate of agricultural GDP growth. Estimates of the first relationship indicate that agricultural growth at close to 6 percent per year would increase overall GDP growth from 5.5 to 6.3 percent. This higher growth rate would reduce the national poverty headcount to 17.9 percent by 2015, which is lower than the 24.0 percent poverty rate that would be achieved without the additional agricultural growth. This means that the higher agricultural growth of 6 percent per year projected under the National Development Plan (NDP) and the Development Strategy and Investment Plan (DSIP) of the Ministry of Agriculture,

Animal Industry and Fisheries (MAAIF), which are aligned with the CAADP targets, would lift an additional 2.3 million people above the US \$1.00 per day poverty line by 2015.

Using growth-poverty elasticities, estimates show that a one percent growth in agricultural GDP leads to a reduction in poverty of between 0.64 and 1.38 percent at national level, depending on the mix of agricultural sub-sectors contributing to this agricultural growth (see Figure 3, Brochure 4). However, the estimates of the relationship between public spending and agricultural growth suggest that a one percent increase in public agricultural spending in Uganda generates, in contrast, only 0.17 percent growth in agricultural GDP. This responsiveness (elasticity) is used for modeling the public expenditures required for 6 percent agricultural growth in Uganda under a scenario in which agricultural spending is used less efficiently. If government is able to more efficiently utilize its resources for the agricultural sector in a manner

more in line with the efficiencies in agricultural development spending observed among the best performing developing countries, on average a one percent increase in public spending in agriculture can generate a more attractive

0.30 percent increase in agricultural growth. This elasticity is used for modeling a second scenario for 6 percent agricultural growth in Uganda in which agricultural spending is used more efficiently.

Long-Term Funding Requirements to Meet NDP and DSIP Targets for Poverty in Uganda

Table 1 summarizes the results of the projections of long-term public funding needs in Uganda's agricultural sector. The analysis focused on estimating the aggregate Public Agricultural Expenditure (PAE) requirements to achieve long term economic growth targets and poverty reduction. In the baseline scenario, it is assumed that PAE and non-agricultural spending will continue to grow according to recent trends

at 14.8 and 9.0 percent per year, respectively, during the period 2005 to 2015. Using 2005 as the base year for simulations, the results in Table 1 show that the share of agricultural spending in total expenditure will rise from 5.3 percent to 6.7 percent in 2010 and 8.6 percent in 2015 under current trends, since PAE has been growing more rapidly than total spending.

Table 1: Estimated spending required for six percent agricultural growth in Uganda

	<i>Baseline, 2005 or projected under current trends</i>	Scenario 1		Scenario 2	
		Agricultural growth due to agricultural expenditure growth only		Agricultural growth due to both agricultural and non-agricultural expenditure growth	
		Low efficiency	High efficiency	Low efficiency	High efficiency
Public expenditure, ann. growth rate, %	<i>9.3</i>	12.2	10.5	11.0	9.9
Agricultural (PAE)	<i>14.8</i>	33.2	25.0	26.9	18.6
Non-agricultural	<i>9.0</i>	9.0	9.0	9.2	9.2
Agricultural spending as a percentage of total public expenditure	<i>5.3</i>				
2010, projected	<i>6.7</i>	13.2	10.0	10.6	7.8
2015, projected	<i>8.6</i>	29.3	18.0	20.0	11.3
Total public expenditure as a percentage of Uganda's GDP	<i>22.6</i>				
2010, projected	<i>27.0</i>	27.9	26.9	27.3	26.5
2015, projected	<i>32.3</i>	38.7	33.4	34.9	31.5
Total additional public expenditure required, US\$ billions					
2005–2010, projected cumulative	<i>1,716</i>	2,721	2,219	2,325	1,890
2005–2015, projected cumulative	<i>4,742</i>	13,290	8,388	9,315	5,864
Annual average, 2005–2015	<i>431</i>	1,208	763	847	533

Under the two CAADP-related scenarios for Uganda considered, agricultural growth is projected to accelerate from 2.7 to 6 percent per year during 2005–2015, while non-agricultural

GDP growth increases marginally from 4.2 to 4.6 percent per year, and total GDP growth increases from 5.1 to 6.1 percent per year. To estimate the aggregate PAE required to support this

acceleration in agricultural growth, two general economic model simulations were performed. The first scenario assumes that agricultural growth will be supported by an increase in PAE only, without taking into account the effect of non-agriculture expenditure on agricultural growth. Under this scenario, non-agricultural spending continues to grow at the baseline rate of 9.0 percent per year. The second scenario, in contrast, incorporates an increase in non-agriculture expenditure growth in proportion to growth in GDP of the non-agricultural sectors. As discussed above, for both simulations, two elasticities representing different assumptions on the efficiency of public spending on agricultural growth are used.

Under the first simulation, the accelerated growth in agricultural GDP requires an associated growth in PAE from the baseline value of 14.8 to 25.0 percent per year under the high elasticity (efficient spending) scenario and 33.2 percent under the low elasticity (less efficient spending) scenario, as illustrated in Table 1. The total government budget is estimated to grow at 10.5 percent per year under the high elasticity scenario and at 12.2 percent under the low elasticity scenario. With agricultural spending growing more rapidly than total spending, the share of agricultural spending will rise from the baseline value of 5.3 percent to between 10.0 and 13.2 percent in 2010 and to between 18.0 and 29.3 percent in 2015. (The lower bound numbers correspond to the high elasticity scenario, while the upper bound numbers reflect the low elasticity scenario in Table 1.) These translate into additional spending on the sector of US\$ 8,388 billion to 13,290 billion over the period 2005–2015 or between US\$ 763 billion and 1,208 billion per year.

In the second scenario, in addition to increasing spending on agriculture, faster non-agriculture spending is assumed, growing at 9.2 percent per year. This scenario is considered more realistic than the first scenario because it is anticipated that the allocation of public spending in Uganda in the future will maintain a focus on industry (for both primary and secondary processing) and other services, all of which have multiplier effects on agriculture. Under this scenario, public

agricultural spending is expected to grow at 18.6 percent per year under the high elasticity scenario and 26.9 percent under the low elasticity scenario (see Table 1). The total government budget is now estimated to grow between 9.9 percent and 11.0 percent per year, and the share of agricultural spending in total expenditure will be between 7.8 and 10.6 percent in 2010 and 11.3 and 20.0 percent in 2015. These translate into additional spending on the sector of between US\$ 5,864 billion and 9,315 billion over the period 2005 to 2015 or between US\$ 533 billion and 847 billion annually.

The results provide compelling evidence for allocating more resources for agriculture even beyond the Maputo declaration of allocating at least 10 percent of the government's total budget to agriculture. In fact, the results suggest that, even under a more efficient spending scenario (i.e. a high elasticity), the government will need to allocate at least 11.3 percent of its total budget to agriculture by 2015 in order to achieve the CAADP growth target of 6 percent per year for the agricultural sector. The estimates indicate that the level of allocation of resources to the agricultural sector under current trends will be insufficient. This averaged 4.6 percent per year over the period 2000 to 2006.

Increasing agricultural growth to meet the 6 percent annual growth target, therefore, will require additional investment in the sector as well as improvements in the efficiency of public spending. The investment analysis indicates that government spending on agriculture would have to grow by 18.6 percent per year in order to achieve and sustain 6 percent agricultural growth. However, this spending scenario assumes that the government is able to invest its resources into the agricultural sector more efficiently in order to realize a 0.30 percent increase in agricultural GDP for every one percent increase in its total agricultural spending. If this is not the case and the government can only achieve a more modest return on its spending of 0.17 percent increase in agricultural GDP for every one percent increase in its total agricultural spending, then public spending on agriculture in Uganda would have to grow at 26.9 percent per year in order to reach the projected

6 percent growth target during 2005–2015. This means that the government would have to allocate about 20 percent of its total annual budget to the agricultural sector. Thus, it is important that government not only meets and exceeds the CAADP Maputo agricultural spending target, but also greatly improves the efficiency of its agri-

cultural spending. Doing so will assist the country in achieving the NDP and DSIP agriculture growth targets, which will substantially reduce the number of poor people living below the poverty line by 2015 and significantly improve the well-being of both rural and urban households, as described in Brochure 3.

Identifying Investment Priorities for Achieving DSIP and NDP Targets

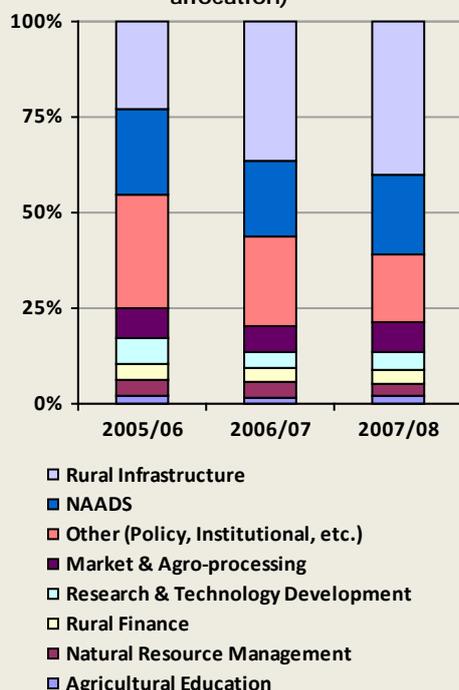
Estimating the total public resources needed to reach national agricultural growth targets is essential, but the choice of priority investments is more important. Lack of long historical data on public expenditure on specific investment programmes in Uganda, as well as related data on programme outputs and outcomes, makes it difficult to analyze specific investment priorities based on their potential returns to agricultural growth. The analysis here, therefore, was not able to establish priorities on where to invest (e.g. research, extension, irrigation, farm input support, marketing information, storage and processing infrastructure, etc.) to achieve the desired agricultural growth rates and how much to invest in each of those areas. However,

generalized guidance can be derived from the broad range of studies done in Africa and in other developing countries of the determinants of agricultural productivity growth, as well as more specific studies in Uganda.

In order to increase agricultural production, reduce costs of production, and protect the environment for sustainable agricultural production, farmers need access to improved technologies that are profitable under local farming and market conditions and increase yields, are able to effectively manage water and land resources, and to use other natural resources in a sustainable manner. A key investment area to support technology generation and dissemination is agricultural research and technology development (R&D) and extension. Previous research in Uganda confirms that investment in agricultural R&D and extension offers the greatest potential among agricultural investment areas for enhancing productivity and reducing poverty. Related studies for Africa as a whole show that for every one percent increase in yields brought about by investments in agricultural R&D, two million Africans can be lifted out of poverty. However, agricultural R&D spending in Uganda is low compared to expenditure on the provision of other public agricultural goods and services, as indicated in Figure 1.

A rural infrastructure and NAADS-dominated public agriculture investment strategy is shown in Figure 1. Recent studies show that the NAADS programme is having positive impacts on the availability and quality of advisory services provided to farmers, promoting adoption of new crop and livestock enterprises, and improving adoption of modern agricultural production

Figure 1: Allocation of government spending on agricultural development, 2005/06–2007/08 (% of total allocation)



technologies and practices. Furthermore, NAADS also appears to have promoted greater use of post-harvest technologies and commercial marketing of commodities, consistent with its mission to promote more commercially-oriented agriculture. However, the success in promoting adoption of improved varieties of crops and some other yield-enhancing technologies is not matched by promotion of improved soil fertility management. This raises concern about the sustainability of productivity increases that may occur, since such increases may lead to more rapid soil nutrient mining unless comparable success in promoting improved soil fertility management is achieved. Increased public investments are needed for applied agronomic research that identifies more effective ways to profitably combine inorganic and organic soil fertility measures in different crop systems, as well as to improve the market environment and promote adoption of more remunerative crop enterprises.

Public investment and spending priorities should also focus on other areas that contribute to increased productivity, including disease and pest control, irrigation, farm input support, basic storage and post harvest technologies, and the effective use and management of natural resources. Resources should also be allocated to activities that, although considered to be non-agricultural, will promote agricultural processing and marketing, such as investments in rural electrification and community roads. Studies have shown that investment in rural road infrastructure in Uganda, particularly feeder roads, provides a high economic return and can have

large effect on growth and poverty-reduction. The marginal returns on agriculture output and poverty reduction to public spending on feeder roads is 3–4 times larger than the returns to public spending on murrum and tarmac roads. In fact, investment in infrastructure, especially road development, is often ranked among the top two public spending sources of overall growth and poverty reduction. As such, the priority given rural infrastructure within the current public agriculture investment strategy of Uganda should be maintained. However, these expenditures should be matched with increased allocations to agricultural R&D and the dissemination of the resultant improved agricultural technologies.

In summary, the broad areas of public investments in the agricultural sector should be on the following areas:

- Investments aimed at raising factor (land, labor and capital) productivity in agriculture (crops, fisheries, and livestock);
- Investments that promote production and storage of staple foods at household level;
- Investments that promote agro-processing industries through public private partnerships;
- Investments that promote development of value chains for strategic agricultural commodities;
- Exploring and developing market opportunities for agricultural products of both small-scale and large-scale farmers.

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