



Setting Priorities for Public Spending for Agricultural and Rural Development in Africa

Shenggen Fan, Tewodaj Mogues, and Sam Benin

IFPRI Policy Brief 12 • April 2009

Agriculture and rural development must play a central role in stimulating economic growth, reducing poverty, and improving food and nutrition security in Africa. The food price crisis of 2007–08 highlighted the dramatic implications of world neglect of agricultural development over the past two decades. The current global economic recession now underscores the need for urgent attention to measures that could promote agricultural growth in Sub-Saharan Africa.

Agriculture in Africa has not performed as well as expected during the past few decades. Agricultural growth rates in the region have increased modestly from about 2.4 percent a year in 1980–89 to 2.7 percent in 1990–99 and 3.3 percent a year since 2000.¹ Only a handful of countries in Sub-Saharan Africa—Ethiopia, Mali, Mozambique, Nigeria, Senegal, and The Gambia—have surpassed the Comprehensive Africa Agriculture Development Programme (CAADP) threshold of 6 percent agricultural growth in recent years. Looking at poverty outcomes, whereas many developing regions, especially Asia and the Pacific, are on track to meet the first Millennium Development Goal (MDG 1) of halving poverty by 2015, progress in Sub-Saharan Africa has been slow. As a result, Sub-Saharan Africa is the only region of the developing world expected to have more poor people in 2015 than it did in 1990.

Public spending is one of the most direct and effective instruments that governments can use to promote agricultural growth and poverty reduction, yet public agricultural spending in Africa has historically been very low compared with that in other developing regions. In recent years many Sub-Saharan African countries have pledged to increase government support to agriculture in order to achieve the goal of 6 percent annual agricultural growth, set by the New Partnership for Africa's Development (NEPAD) through CAADP. As part of the Maputo Declaration of 2003, African heads of state agreed to allocate 10 percent of their national budgets to agriculture. Yet many African governments are operating in an environment of scarce public resources, and so far only a few states have met these growth and spending targets.

As African governments work to increase agricultural spending and boost agricultural growth, they face a dearth of information about which types of public investments contribute the most to development goals. How should scarce resources be allocated across different sectors of the economy—such as agriculture, infrastructure, health, and education—for maximizing development outcomes? Within agriculture, how should resources be allocated among, for instance, agricultural research, extension, irrigation, and input subsidies? In some cases African countries have clear principles on

how to prioritize their scarce public resources, but they often lack the information needed to operationalize these principles.

Drawing mainly on case studies from Africa, but also from Asia, this brief provides insights on the contributions of different types of spending to poverty, growth, and welfare outcomes in a variety of circumstances. These circumstances include, for example, Ethiopia's relatively large share of public spending allocated to agriculture, Nigeria's rich natural resource endowments, Ghana's relatively sound governance environment, Uganda's past success in economic growth and poverty reduction, and Tanzania's rapid transition from a planned to a market-driven economy.

Past Trends in Public Spending in Africa

Underinvestment in agriculture and infrastructure. African governments spend much less on agriculture than their counterparts in other developing countries. In aggregate, African public spending on agriculture accounted for 5–7 percent of the total national budget from 1980 to 2005 (see Table 1), whereas for Asia the equivalent figure has been 6–15 percent. The share ranges considerably from country to country. Only a few African countries—Burkina Faso, Ethiopia, Malawi, and Mali—have surpassed the CAADP threshold of 10 percent of budgetary spending on agriculture in recent years. In fact, nearly half of African countries reduced their spending on the sector in this period. Asia has also reduced budget shares spent on agriculture, but this reduction is largely due to the rapid decline in the size of the agricultural sector. As a percentage of agricultural gross domestic product (GDP), African agricultural spending was only half that of Asia in 2005.²

African governments have also devoted a low share of spending to infrastructure, particularly transportation and communication, which gradually declined from 6.3 percent in 1980 to 3.7 percent in 2005. This pattern is discouraging because investments in transportation and telecommunication, especially road development, contribute immensely to growth and poverty reduction, yet road and infrastructure development remains poor in Africa.

Aid to agricultural development has declined. Although total aid to developing countries grew by about 5 percent a year from US\$7 billion in 1980 to US\$27 billion in 2006, the amounts spent on agriculture plummeted from 20 percent in 1980 to 15 percent in 1990 and a paltry 4 percent in 2006, stabilizing somewhat at this level in the years leading up to 2006 (Table 2).

In 2006, for example, most African countries spent 3–6 percent of their aid budgets on agriculture. Botswana and Nigeria spent less than 1 percent of all aid received on agriculture.

TABLE 1 Composition of total expenditures (%)

Sector	Africa				Asia			
	1980	1990	2000	2005	1980	1990	2000	2005
Agriculture ^a	6.4	5.4	4.7	5.0	14.9	12.3	6.3	6.5
Education	12.2	15.1	17.0	17.9	13.8	17.4	16.9	17.9
Health	3.7	3.9	6.8	6.5	5.3	4.3	4.3	5.4
Transport and communication	6.3	4.1	3.9	3.7	11.7	5.2	3.8	4.5
Social security	5.7	7.1	6.1	5.6	1.9	2.4	6.4	8.7
Defense	14.6	13.7	9.4	8.1	17.6	12.9	8.3	7.9
Other ^b	51.0	50.7	52.0	53.1	34.8	45.5	54.0	49.1

Sources: Calculated using data from International Monetary Fund's *Government Finance Statistics* (various issues), based on the Classification of Functions of Government (COFOG) system in the International Monetary Fund, *Government Finance Statistics Manual* (Washington, DC, 2001).

^a Includes crops, livestock, forestry, fishing, and hunting associated with spending on general administration, research and development (R&D), extension, irrigation, subsidies of inputs and outputs, and information.

^b Other functions of government including fuel and energy; mining, manufacturing, and construction; and general administration.

productivity or income across several African countries studied (Table 3).³ These benefit-cost ratios are comparable to those obtained for India and Thailand and nearly twice as large as those obtained for China. These investments have substantially reduced rural poverty by stimulating agricultural growth and reducing food prices. As some case studies show, however, agricultural spending is not always the top contributor to increasing rural welfare, suggesting that cross-sectoral impacts (such as the contribution of rural road infrastructure to agricultural productivity) may be substantial and at times dwarf the sectoral impacts of spending. This finding also suggests that the "how" of agricultural spending can be as important as the "how much" and that the organization and governance of agricultural policymaking influence the productivity of expenditures undertaken in support of the sector.

Donor aid to the agricultural sector has declined in terms of both absolute amount and as a share of total aid. The shift in the focus of aid may have been due to pressure to broaden the aid agenda, with education and health now more favored. The shift does, however, raise questions about the sustainability of donor investments in the sector. When donor support to agriculture declines, countries may not have the capacity to maintain or replace past donor-funded capital investments. National governments' commitment to allocating 10 percent of their national budget to agriculture may not fill the funding gaps for these investments. Donors should thus reconsider the shift in their aid agenda away from agriculture.

How Different Types of Public Spending Affect Growth and Poverty Reduction

Assessing the impacts of any type of public spending is complicated. Many factors influence the relationship between public spending and development outcomes, and these factors act in complex and sometimes contradictory ways and with a lag. This examination of the impacts of public spending on agriculture, education, health, and road infrastructure on growth, welfare, and poverty reduction in Ethiopia, Ghana, Nigeria, Tanzania, and Uganda points to a number of broad conclusions.

Agricultural spending generally has the largest positive effects on growth and poverty reduction. In many cases government agricultural spending has contributed substantially to agricultural productivity, rural household income, rural household consumption, and rural poverty reduction. For each unit of local currency spent on the agricultural sector, on average 10 local currency units are returned in terms of increased agricultural

Spending on rural roads and rural education also has significant effects on growth and poverty reduction.

Government spending on rural roads and education has had large positive impacts on growth and poverty reduction, although the effects are mixed and are context specific. The relative returns to spending on different sectors vary within each country (see Table 3). For example, although the second-ranking growth returns in Ghana and Tanzania were from spending on rural roads, the second-ranking growth and income returns in Uganda and Ethiopia were from rural education spending. The growth returns to spending on rural education in Ghana were negative; the formal education system has not benefited the agricultural sector there because better-educated and skilled farmers tend to move away from farms, leaving the less skilled in the agricultural sector. In Ethiopia, the growth returns to spending on roads were by far the highest. In terms of poverty reduction impacts, on the other hand, returns to spending on roads and education ranked second and third, respectively, in Uganda. The ranking was first for education and third for roads in Tanzania. Poverty reduction (and growth) returns to health spending were relatively low in all country case studies.

Different types of spending across different geographic areas deliver substantially different returns. The growth and poverty returns to different types of spending differed substantially across regions or agroecological zones within the same country. In general, and as expected, the growth returns to spending on agriculture and rural roads were largest in the areas that had higher agricultural potential or were more developed, such as the forest and southern savannah zones in Ghana, the Gambela region in Ethiopia, the western and central regions in Uganda, and the southern coast and highland areas in Tanzania. In Tanzania, however, the growth returns to spending on agriculture and

rural roads were high in the central zone—the driest zone in the country, with an annual rainfall of less than 500 millimeters and serious environmental degradation problems. The growth returns to spending on education and health were more evenly distributed across geographic areas within each country. All four types of spending (agriculture, education, health, and roads) had the largest poverty reduction impacts, however, in the poorer or less-developed areas, such as the northern and eastern regions in Uganda and the central and southern coast zones in Tanzania.

Sharpening the Targeting of Future Spending

Public spending on the agricultural sector and in rural areas has contributed substantially to growth and poverty reduction. Despite these achievements, reducing mass poverty in Africa remains a major challenge—Sub-Saharan Africa still has the highest poverty rate of any region in the world. The persistence of poverty raises key issues regarding the prioritization, governance, and coordination of spending across different sectors, among different activities within a particular sector, and across different geographic areas for better distributional outcomes of growth and for poverty reduction. Although the countries described here represent different political and economic systems, natural resource endowments, socioeconomic conditions, and sizes, the findings offer important lessons on how African countries should prioritize public spending in the future.

African governments must increase spending on agriculture and rural roads. African countries need to substantially increase their spending on agriculture (especially agricultural R&D) and rural roads (especially feeder roads)—the two sectors that contribute the most to boosting productivity, incomes, and consumption and to reducing poverty. Agricultural spending is effective for poverty reduction because the sector accounts for a large share of GDP, export earnings, and employment in most African countries. Furthermore, the vast majority of the poor reside in rural areas and depend on agriculture for their livelihoods. By raising productivity, investments in agriculture contribute to growth and poverty reduction both directly and indirectly, through higher farm wages and lower food prices. Reductions in food prices have powerful real income effects, and the welfare benefits are large when spread across all consumers, even if some producers end up being worse off. Spending on rural roads leads to successful outcomes by reducing transportation and transaction costs and promoting market development and integration, thereby making farm inputs cheaper and more readily available and lowering food prices. Together, these outcomes cause real incomes to rise. Spending on rural roads also contributes indirectly to growth and poverty reduction by improving access to education, health care, and other services.

To achieve the MDG 1 of halving poverty by 2015, African countries together will need to boost their agricultural spending to 33–39 billion 2000 international dollars (data collected in local currency is converted to a common currency using purchasing power parity so that comparisons can be made across countries) annually from 2005 to 2015. This amount represents about a

TABLE 2 Agricultural aid as a percentage of total aid, 2002–06

Country	2002	2003	2004	2005	2006
Botswana	1.64	1.00	0.87	0.97	0.74
Burkina Faso	5.50	8.35	7.23	7.63	7.87
Cameroon	2.87	1.00	1.36	2.94	1.45
Côte d'Ivoire	0.85	1.29	1.29	0.94	4.24
Egypt	1.34	2.26	1.38	3.92	5.55
Ethiopia	4.82	3.30	1.97	2.08	2.83
Ghana	3.56	4.32	1.79	4.10	5.80
Kenya	5.17	4.42	3.59	2.86	4.33
Malawi	3.88	6.37	3.93	8.72	5.28
Mali	6.46	4.62	6.71	6.78	5.29
Morocco	2.02	3.50	3.08	2.02	2.57
Nigeria	1.24	1.91	0.83	0.12	0.05
Togo	3.30	4.63	3.53	2.49	1.40
Tunisia	6.69	6.27	4.91	3.98	3.00
Uganda	2.99	3.16	5.08	4.96	5.18
Zambia	3.96	2.29	1.33	1.80	2.51

Source: Statistical portal of the Organization for Economic Cooperation and Development (OECD).

20–24 percent annual increase in agricultural spending over current levels. Because of underlying differences across countries, the resource requirements vary by country. Although various studies differ in their estimates of the resources required for Africa to achieve the MDG 1 target, they generally agree that the current level of resources must be significantly increased.

Spending on rural human capital is also crucial. Spending on other sectors, particularly rural education, also contributes substantially to growth in productivity, incomes, and consumption and to reduction in poverty. Investment in education leads to an increase in the stock of human capital and contributes directly to growth and poverty reduction by raising labor productivity both on and off the farm, boosting wages and incomes. Investment in education also contributes indirectly to growth and poverty reduction by complementing spending on agricultural R&D and extension. For example, educated farmers are better positioned to adopt (and to persuade other farmers to adopt) improved technologies for agricultural production and natural resource management, leading to increased agricultural productivity and sustainable use of natural resources and the environment. Although improvements in rural education may encourage skilled laborers to migrate away from farms, these better-educated migrants can get higher-paying jobs and thus increase remittances and incomes. Returns to investments in health have not been as high. One explanation for this finding could be that some health indicators in the region had already improved, thus reducing the productivity or income effects of further health improvements. For example, HIV/AIDS prevalence in Sub-Saharan Africa stabilized around 2.7–3.0 percent in 2001–07, after rising rapidly from 1 percent in 1990 to 3 percent in 2001. Uganda, for example, has achieved great success in containing HIV/AIDS through an aggressive public campaign that pushed the prevalence of HIV/AIDS from 30 percent

TABLE 3 Returns to public spending in Africa and Asia

Sector	Ghana	Uganda	Tanzania	Ethiopia ^a	China	India	Thailand
Returns to agriculture or rural income (local currency/local currency spending) ^b							
Agriculture ^c	16.8	12.4	12.5	0.14	6.8	13.5	12.6
Education	-0.2	7.2	9.0	0.56	2.2	1.4	2.1
Health	1.3	0.9	n.e.	-0.03	n.e.	0.8	n.e.
Roads	8.8	2.7	9.1	4.22	1.7	5.3	0.9
Ranking in returns to poverty reduction							
Agriculture ^c	n.e.	1	2	n.e.	2	2	1
Education	n.e.	3	1	n.e.	1	3	3
Health	n.e.	4	n.e.	n.e.	n.e.	4	n.e.
Roads ^d	n.e.	2	3	n.e.	3	1	2

Sources: Ethiopia, Ghana, Tanzania, and Uganda: T. Mogue, S. Benin, and S. Fan, eds., *Public expenditures for agricultural and rural development in Africa* (International Food Policy Research Institute, Washington, DC, 2008), book manuscript; China: S. Fan and X. Zhang, *Investment, reforms, and poverty in rural China, Economic Development and Cultural Change* 52, no. 2 (2004): 395–422; India: S. Fan, P. Hazell, and S. Thorat, *Government spending, agricultural growth, and poverty in rural India, American Journal of Agricultural Economics* 82, no. 4 (2000): 1038–51; Thailand: S. Fan, B. Yu, and S. Jitsuchon, *Does allocation of public spending matter in poverty reduction? Evidence from Thailand, Asian Economic Journal* 22, no. 4 (2008): 411–30.

Notes: "n.e." indicates not estimated. All results are based on econometric analysis of system equations. While the specification of variables differs somewhat across countries, they are largely comparable.

^a Average across estimates for Ethiopia's eight predominantly rural regions.

^b This refers to total agricultural output per capita in Ghana and Uganda, rural income in Ethiopia, income in Tanzania, and agricultural GDP in China, India, and Thailand.

^c Agriculture refers to agricultural R&D spending except in Ethiopia and Ghana, where it is agricultural spending aggregated across subsectors.

^d This refers to rural or feeder roads.

in 1998 down to 6 percent in 2005.⁴ Nonetheless, the fact that Sub-Saharan Africa has made little progress in raising overall life expectancy—which has increased since the early 1980s by a mere half year⁵—suggests that the efficiency and effectiveness of overall health spending have been severely constrained. Furthermore, the results suggest that the substantial financial commitments to health interventions, especially for combating HIV/AIDS, have not yet translated into economywide productivity and income increases.

Public spending must be carefully targeted geographically.

The growth and poverty returns to different types of spending vary

substantially across different geographic areas, even within the same country. Each location has certain agroecological, population density, and market conditions. These conditions largely determine that location's comparative advantage by influencing the costs and risks of producing different commodities, the costs of and constraints to marketing, local commodity and factor prices, and the opportunities and returns to alternative income-generating activities, both on and off the farm. Growth effects are greatest when governments target spending on agriculture and rural roads toward higher-potential or more-developed areas. The growth effects of education and health spending tend to be more evenly distributed across different regions of each country. Poverty reduction effects are greatest when spending targets lower-potential or less-developed areas. Such areas, however, tend to have large shares of people that are unable to participate equally in the growth process (including children, disabled persons, and internally displaced persons). Programs that help them raise their productivity through investments in their human capital will be critical. Such programs include transfers through farm support, food-for-education, food-for-work, and cash-for-work programs.

Concluding Remarks

African governments have limited public resources, and the prospects for future development assistance

to these governments are uncertain in the current global economic slowdown. Using public spending to effectively stimulate economic growth and reduce poverty thus requires African governments to use funds as efficiently as possible. Yet until now little information has been available to guide policymakers on how best to allocate scarce public resources. This brief shows that to achieve greater and better-distributed growth and poverty reduction outcomes, African governments need to increase their spending on agriculture and rural roads, direct complementary spending to certain sectors, such as education, carefully target public spending, and coordinate spending among different levels of government.

¹ Authors' calculations based on World Bank, *World development indicators 2008* (Washington, DC, 2008), electronic database.

² S. Fan and A. Saurkar, Public spending in developing countries: Trends, determination, and impact, in *Public expenditures, growth, and poverty: Lessons from developing countries*, ed. S. Fan (Baltimore, MD, USA: Johns Hopkins University Press for the International Food Policy Research Institute, 2008).

³ Returns are not compared across countries because outcome variables are often measured somewhat differently, although these indicators are usually poverty, rural income, agricultural income, or productivity. Ranking within a particular country presents powerful information on best options for future investment priorities.

⁴ UNAIDS (Joint United Nations Programme on HIV/AIDS), *Report on the global HIV/AIDS epidemic 2008* (Geneva, 2008).

⁵ World Bank, *World development indicators 2008*.

Shenggen Fan is director of and **Tewodaj Mogues** and **Sam Benin** are research fellows in the Development Strategy and Governance Division of the International Food Policy Research Institute (IFPRI).