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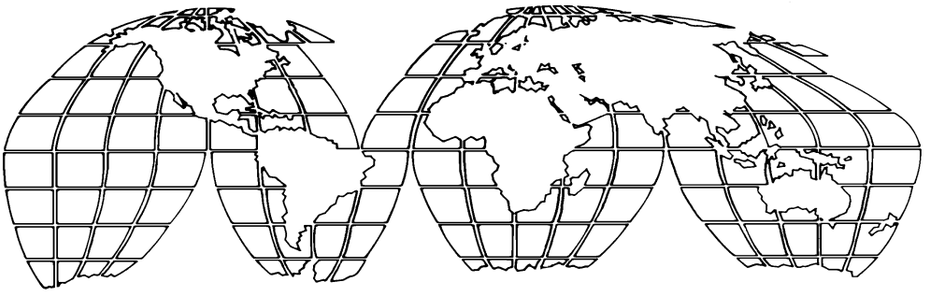
Investments in Agriculture: A Synthesis of the Evaluation Literature



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Summary

For more than 30 years USAID has been helping low-income countries develop their agriculture. Over that time the Agency has invested substantial resources in the five main agricultural subsectors: 1) economic policy reform and planning (such as budget support for policy reform), 2) technology development and diffusion (research, education, extension), 3) rural infrastructure (irrigation, rural roads), 4) agricultural services (credit, crop storage), and 5) asset distribution and access (land tenure and reform, local participatory institutions).

Under what conditions do these investments succeed—or fail? During 1993–94, USAID's Center for Development Information and Evaluation (CDIE) undertook a desk study to find out. The resultant report, a synthesis of syntheses, seeks to answer six questions about 1) *what* to do and 2) *who* should do it.

Two overarching conclusions emerge. First, a country's predisposition to agricultural development is important for success—whether or not this commitment is linked to donor investments. Second, the main bottlenecks binding agricultural growth are *most* likely to be inadequate policies, technologies, and rural infrastructure; they are *least* likely to be services and asset distribution.

The study offers five recommendations, one for each of the agricultural subsectors. The recommendations merit consideration once USAID has determined it makes sense to provide agricultural assistance to a country. They are as follows:

- USAID should provide nonproject assistance (such as cash transfers) to support economic policy reform only in countries where it will be used to facilitate policy reform processes already under way.
- Research and development for new agricultural technologies typically has had a high economic rate of return and is essential to sustained economic growth. USAID should invest in this area.
- Donors should consider investing in new rural infrastructure and—if justified by economic analysis—in maintaining existing infrastructure as well.
- Most investments in agricultural services are best left to the private sector.
- Most investments in programs designed to improve the distribution of land and other agricultural assets are best left to the indigenous public sector.

Background

"Agriculture" is interpreted broadly in the Foreign Assistance Act. It comprises five basic elements, and over the years USAID has provided resources to support and strengthen each of them. They are

- An economic *policy framework* conducive to agricultural growth
- Agricultural *technology* applicable to particular soil, water, and climatic conditions
- Roads and related *rural infrastructure* to transport agricultural inputs and market agricultural outputs
- Credit and other *agricultural services*
- Secure *tenure arrangements* to encourage investment in land and other agricultural assets

The CDIE study seeks to identify conditions under which investments (especially USAID investments) in the five areas have been successful—and unsuccessful. The study uses the "evaluation synthesis" methodology, an approach often used by the General Accounting Office to analyze large amounts of sometimes conflicting information about a particular program. It attempts to answer six questions important to USAID managers. The first three concern the relative importance of alternative investments in agriculture ("what to do"). The remaining three concern the most appropriate entities to undertake investments or implement projects in the five subsectors ("who should do it"). The evaluation literature was more helpful in answering the first set of questions than in answering the second set.

What to Do?

1. Is there a logical sequence for investing in the five agricultural subsectors?

2. Has agriculture developed successfully in the absence of investments in one or more of these areas?

3. Under what conditions have investments in each of the agricultural areas been relatively successful or resulted in a relatively high economic rate of return?

Who Should Do It?

4. Is the private sector better suited to invest in certain areas (such as agricultural services), and is the public sector better suited to invest in other areas (such as rural infrastructure)?

5. Among the various bodies (including nongovernmental organizations) that implement agriculture activities, are some better suited in certain areas than others?

6. Does the United States have a comparative advantage in providing agricultural assistance in some areas?

Although most of the six questions concern the role of the public sector, experience suggests that successful agricultural development must rely primarily on the market and that most investment decisions will have to be made by the private sector. However, as pointed out by the findings, the public sector must provide the enabling policy environment and essential "public goods" to allow the private sector to operate effectively.

USAID's Assistance Approach

The Agency has invested substantial resources to support agricultural development in developing countries during the past 30 years (and more). During six years in the 1980s, annual USAID investments in agriculture exceeded $1 billion. Even in the early 1990s, investments in agriculture exceeded $500 million a year, until fiscal year 1994, when they slid to $418 million. It is probably accurate to say that, historically, no component of U.S. foreign economic assistance has been larger than the agriculture program.

Findings

The evaluation literature provides answers to some, but not all, of the six questions raised in the study.

1. *There is a preferred sequencing of investments in agriculture.* The first priority is to develop an environment in which agriculture will function. Such an environment includes at least three components: appropriate *policies,*

improved *technology,* and adequate *infrastructure*. Of greatest importance are economic policies that affect agriculture, directly or indirectly. Farmers must have an opportunity to make a profit, and the economic policy environment must not distort this opportunity. If a threshold level of proper policies is not in place, it is seldom worthwhile for donors to support any other investments in agriculture. Nor is it worthwhile for farmers to take risks and use new technologies to increase production beyond subsistence levels.

The literature does not suggest an optimal sequence for investing in agricultural technology relative to rural infrastructure. Investments in both work synergistically if the proper policy environment is in place; investments in one reinforce investments in the other. High-yielding technology must be available to promote growth. At the same time, agriculture cannot perform well without some rudimentary infrastructure.

Provision of agricultural services often relies on the three foregoing subsectors for its success. Many projects in credit or marketing have failed, usually because countries were pursuing economic policies heavily biased against agriculture. Credit projects have also run into difficulty because the supply of good technology available for farmers to adopt was inadequate. This suggests there is little value in supplying credit (or modern inputs associated with new technologies) if farmers lack the roads needed to acquire seed and fertilizer and transport the harvest to market.

The literature suggests no particular stage of development for investing to improve farmers' access to land. It does, however, suggest that when investments to improve land distribution and secure tenure do take place, they are typically motivated by political, not economic, objectives (notwithstanding that a highly inequitable and insecure land tenure structure tends to be highly inefficient). Despite the political considerations that usually drive land tenure programs, such investments still have economic effects, positive or negative, intended or unintended. The effects are more likely to be positive if a package of ancillary services is already in place. In this sense, investments to improve access to land should *support* agricultural development, not initiate the process.

2. *It is inconclusive whether investments in all five subsectors are essential.* What does emerge from the literature is that a country's commitment to agricultural development is important for success—whether or not such commitment is linked to donor investments. Some threshold level of economic and social stability is essential for agricultural progress. So too is an economic policy environment that is not significantly biased against agriculture. This does not mean policies should be biased *in favor of* agriculture. In the long run, that can reduce overall efficiency. Such policies can also become costly and politically difficult to remove.

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Most countries that have achieved sustained economic growth have also transformed their agriculture. Once it is no longer possible to expand acreage, gains in output must be achieved by increasing yields. This requires improved biological and mechanical technology. Although new technologies, which result from investments in agricultural research, are critical, there is no *empirical* evidence that investments in agricultural extension or higher agricultural education are necessary for agricultural development.

Agricultural development generally does not occur without investments in rural infrastructure. To the extent growth does occur, it is likely to be far less rapid and efficient than would otherwise be the case. Development can occur

in the absence of investments in agricultural services, but a high level of development will, at some point, require an increasingly wide variety of services. Likewise, agricultural growth can occur in the context of insecure and inequitable access to land. *Broad-based* agricultural development, however, is less likely in the absence of agrarian reform.

3. Investments have been most successful when they have removed a bottleneck or when existing conditions have favored progressive change. For example, agricultural research is more likely to have a high payoff in countries with basic infrastructure and sound economic policies. Similarly, infrastructure investments are more likely to reap rewards in the presence of supportive economic policies and availability of improved agricultural technology. Economic analyses have not been very helpful in guiding decisions on resource allocation among sectors of an economy (or among the five subsectors of agriculture). They have, however, helped in making *intrasectoral* choices among various types of projects and technical alternatives.

> ***'Countries uncommitted to reform have had little use for even the most cogent of analyses.'***

In policy reform, the most successful activities have been those that supported an ongoing program of policy change. Attempts by donors to *introduce* major new policy directions through program assistance have often produced disappointing results. The most successful capacity-building projects in policy analysis have occurred in countries where a) advisers had access to senior government decision-makers, b) advisers were assigned appropriate counterparts, c) highly trained staff had incentives to remain with the analysis units, and d) adequate funding and supplies were available. In contrast, countries uncommitted to reform have had little use for even the most cogent of analyses produced by such projects. The evaluation literature is largely silent on the rate of return to investments in policy reform.

The literature does, however, have much to say about the benefits of investments in agricultural technology and diffusion, which generate high economic returns. The social benefits from such investments justify the costs in a wide variety of countries, for a wide variety of commodities, and under a wide variety of conditions.

With regard to infrastructure development, resources tend to be allocated only when pressure for services is felt within the political system. And when this occurs, decisions on how much to allocate to infrastructure relative to other activities are typically a matter of judgment; no prescriptions emerge from the evaluation literature.

As with policy reform, few studies have measured the economic rate of return to investments in agricultural services. This is largely due to the difficulty of measuring the return to investments that, by their nature, do not directly increase agricultural output (for example, broadcasting commodity prices). Instead, they create an enabling environment to encourage use of directly productive inputs such as improved seeds, fertilizers, and machinery.

It's the same with land tenure. Cost–benefit analyses have not been undertaken for investments that encourage more equitable distribution of, and secure access to, land and other agricultural assets. However, the literature does identify two costs of *not* investing in this area. First are economic costs associated with maintaining an agrarian structure characterized by high efficiency losses, low profitability, and few incentives to invest in physical and human capital. Second are social costs manifested by peasant uprisings, civil war, and protracted and violent struggles.

Despite the costs, governments typically do not invest in more equitable land distribution. The reasons are twofold. First, governments lack the political support (or the will) to carry out change. And second, the cost of land reform is so high as to make it infeasible in many cases. Small farmers cannot pay for the land they receive, and elites resist paying for the reform either through taxes or through receipt of deval-

ued bonds as compensation for expropriated land. Other mechanisms to improve access to land and tenure security (such as titling, land registration, land markets, and land taxation) also have been difficult to implement successfully.

4. *Government should become involved in a particular investment only if it raises real national income more than would be the case if the public sector were* not *involved. Similarly, the public sector should become involved only when doing so improves the performance of the private sector rather than displaces it.*

Thus, it is logical for the public sector to invest in development of agricultural technology and rural infrastructure. These investments normally have the characteristics of public goods; it is difficult for private providers to recover their costs. However, the cost of *using* the services made possible by the rural infrastructure, including infrastructure operation and maintenance (as distinct from the infrastructure itself), should be paid by the users, not by the government or by donors. For example, the costs of transportation services made possible by roads, or of the water carried by major irrigation canals, should be borne by users.

In like manner, it is logical that the public sector has been the recipient of most donor assistance designed to support economic policy reform and planning as well as improved asset distribution and access, since it is the responsibility of governments to make decisions in these areas. Conversely, the private sector can be expected to invest in agricultural services when it is profitable to do so, obviating the need for public sector involvement.

5. *For the most part, the evaluation literature is silent on the question of which agencies are best suited to implement which agricultural activities.* Donors have been important in providing the analytical underpinning for policy reform, but governments have actually carried out such reforms. Similarly, donors can *provide advice* on how best to go about implementing programs to improve access to land, but governments are best suited to actually *implement* these politically sensitive initiatives. Some have asserted that U.S. land-grant universities are well positioned to carry out agricultural technology development and diffusion. They may be, but the literature provides no empirical evidence to either substantiate or refute this assertion. Conventional wisdom suggests private contractors are best suited to carry out infrastructure activities, but again there is no empirical evidence one way or the other. As for providing financial services, private commercial banks have a better record than specialized development banks. Likewise, private firms have a better track record than government agencies in providing efficient and timely inputs and marketing services.

6. *The literature provides limited insights as to the comparative advantage of the United States in providing agricultural assistance in the five subsectors.* It does suggest that the United States may have an advantage over other bilateral donors in providing assistance in agricultural policy reform and planning. There is, however, no *empirical* evidence that the United States enjoys an advantage in providing assistance in agricultural research—this even though U.S. agriculture is among the most productive in the world, owing largely to yield-increasing technology developed as a result of investments in research. As for development in rural infrastructure, this area often requires a major capital investment. Donors with relatively plentiful resources would seem to be in the best financial position to underwrite big-ticket capital projects. With regard to financial and other agricultural services, the United States has a large pool of analytical talent to study problems in this area, but the private sector in most developing countries is ordinarily best equipped to actually deliver such services. Finally, international donors, including the United States, have little influence over whether programs are introduced to alter the agrarian structure.

Management Recommendations

Even when the literature is not perfectly clear, it provides insights that can help USAID better understand some key issues concerning agricultural development in low-income countries:

- The literature strongly suggests a country's predisposition to agricultural development is important for success—whether or not this predisposition is linked to donor invest-

ments. In countries where agriculture cannot be profitable because of an adverse economic policy environment, USAID should invest reluctantly, if at all, in agricultural development.

- Bottlenecks are likely to be most binding in policy reform, technology development, and rural infrastructure. They are generally less of an impediment in agricultural services and asset distribution. Because there is a preferred sequencing of investments in agriculture, USAID should concentrate its investments on priority areas to alleviate the *binding* constraints (not all constraints) to agricultural growth.

Once USAID has determined it makes sense to invest in agricultural development, the following recommendations merit consideration:

1. Nonproject assistance can help governments create an economic policy environment designed to help agricultural markets work. Such investments are most successful when they are used to help ongoing reforms in economic policy. They are less successful when they are used to initiate new policy reforms or to "buy" reforms to which the government is not committed. Accordingly, *USAID should provide nonproject assistance to support economic policy reform only in countries where it will be used to facilitate policy reforms already initiated or having significant local support.*

2. If high economic rates of return were the only criterion USAID used in deciding how to invest in agriculture, development of new agricultural technology would probably top the list. An even more compelling reason for such investment is that most countries have not achieved sustained economic growth without transforming their agriculture. Transformation typically requires technical change—that is, improved biological and mechanical technology. Therefore, *USAID should invest in development of new agricultural technologies.* It should emphasize adaptive rather than basic research. It should promote technology transfer from neighboring countries and from international agricultural research centers. The Agency should also support agricultural research necessary simply to sustain existing yield levels.

3. Donors are understandably reluctant to invest in rural infrastructure. Such investments are costly, and existing infrastructure is often poorly maintained. It is, however, unlikely that agricultural growth will occur in the absence of these investments. Therefore, *donors should consider investing in new rural infrastructure, and if justified by economic analysis, in maintaining existing infrastructure as well.*

> ***'Government should become involved in a particular investment only if it raises real national income more than would be the case if the public sector were* not *involved.'***

4. The private sector is best equipped to provide agricultural inputs and services that can be sold for a profit. The public sector has an important role in helping markets work better (as distinct from displacing markets). Although donors may be in a position to *advise* developing countries on how best to establish input distribution systems, strengthen financial services, support marketing and storage activities, and develop price information systems, *actual investments in agricultural services are best left to the private sector.*

5. Programs designed to improve distribution of land and other agricultural assets are motivated by political objectives, not by agricultural development objectives. Donors may be in a position to *advise* governments on how best to implement titling schemes, cadastral surveys, land reforms, and other activities designed to improve access to agricultural assets. But *most investments in this area are best left to the indigenous public sector.*

The foregoing recommendations are reasonable, consistent with conventional wisdom, and in many cases, applicable across most countries. But one needs to recognize them for what

they are—generalizations. There is no substitute for careful analysis. USAID should analyze each country situation before investing in agricultural development.

This Evaluation Highlights *was prepared by Donald G. McClelland of CDIE. Readers can order copies of CDIE reports from USAID's Development Information Services Clearinghouse (DISC), 1611 North Kent Street, Suite 200, Rosslyn, VA 22209–2404, (703) 351–4006; fax (703) 351–4039; Internet docorder@disc.mhs.compuserve.com.*

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