Seven Decades Building Agricultural Knowledge and Information Systems – USAID Contributions over Time

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Executive Summary

This review complements a data set of estimates of USAID funding for agricultural research, extension, and education over the period 1950 to 2017. For most of this period, agriculture was a priority investment area for USAID as a means of preventing famine, spurring economic growth, reducing rural poverty, promoting political stability, and conserving natural resources. Agricultural research, extension, and education together came to be considered the core of the agricultural knowledge and information systems (AKIS), key to innovation necessary to increase production and productivity. The three AKIS sub-sectors accounted for about 30 percent of USAID agricultural funding.

Total USAID funding for AKIS sub-sectors amounted to $8.3 billion current US dollars (equivalent to $15.6 billion constant 2012 dollars) – 61 percent for research, 29 percent for extension, and 10 percent for education. This involved 1472 projects in 119 countries. Funding estimates include both direct delivery of the services and investments in development of local capacity for their provision. In early years, emphasis was on extension and education with establishment of agricultural universities and government extension and research programs. After the demonstrated successes of the Green Revolution, investments increased with the 1980s representing the peak years for AKIS investments. Funding declined substantially in the 1990s until rebounding around 2010.

Broad trends are not surprising. Early projects often featured the transfer of US technologies and institutional structures. By the 1980s, projects became more tailored to local country conditions with more participatory approaches, better understanding of rural societies and farming systems, and greater integration with broader rural development efforts. By the late 1980s, focus had shifted from working exclusively with public technical agencies to more pluralistic systems with entities in both the public and private sector. A later shift saw projects with AKIS funding included as part of a wide range of activities across the broader agricultural innovation system (AIS) or a specific commodity value chain. In later years, funding for education declined; extension emphasized direct service provision through private sector providers; and research shifted to global programs.

The overall AKIS investment program contributed substantially to global agricultural production increases and country capacity development. Still, many projects fell short of expectations with sustainability a common problem. Local commitment to investments was often the critical determinant of success. Many lessons have been learned from AKIS investments over the years, but these have not always been incorporated into later projects.

The environment for AKIS programs and investments has changed dramatically, but additional investments in agricultural research, extension, and education are likely essential to provide the knowledge and information for agricultural systems over the next fifty years. Such investments

must be based on a clear-eyed understanding of past experience and grounded in local commitment to the AKIS programs and their objectives. New approaches and mechanisms for AKIS investments will demand innovation and ingenuity on the part of development practitioners. Options may include: a new focus on research, perhaps with more attention to the country level; support to improving efficiency and quality of extension services; targeted assistance to improve relevance of agricultural education; and new mechanisms for engaging university partner capacities.

Introduction

This paper documents and briefly reviews the major contribution that the U. S. Agency for International Development (USAID) has made to development of agricultural knowledge and information systems (AKISs) around the world.[1][2] The breadth and scale of global US investments in the three sub-sectors of AKIS – research, extension, and education – are impressive and likely have been major contributors to improvement in agricultural sector productivity and production over the past seven decades. Clearly, host countries and other development partners have contributed, participated in, and led much of this work, but USAID investments deserve recognition for variously initiating, catalyzing, and supporting many country efforts.

The paper responds to recurrent requests for information on USAID funding for international agricultural research, extension, and education. The database on this funding originated with a 1997 study of USAID agricultural research funding completed as part of USAID support to a multi-donor Agricultural Research and Extension Group (ESDAR) at the World Bank (Alex, 1997). In 2004, in support of a Neuchatel Extension Group meeting jointly hosted by USAID and the World Bank, the database was expanded to more comprehensively cover agricultural extension and education funding. Later requests for the data led to up-dates in 2011 and again in 2018. Finally, discovery of additional information on AKIS projects in the early part of the dataset allowed for minor additions and finalization of the dataset. Annexes A and B include summaries of funding over the time period.

A brief summary of USAID investment strategies for AKIS sub-elements over time and assessment of current status of AKIS sub-sectors supplements information on past funding. These draw on the author's experience with agricultural development and USAID program implementation. Agricultural development encompasses a broad range of investment areas, but the knowledge and information services from AKIS sub-sectors play a prominent role in innovation that drives sector development and resilience in agricultural systems. Mellor (2017)

[1] "USAID" is used throughout this paper but is intended to include also USAID predecessor agencies – the Point Four Program's Technical Cooperation Administration -TCA (1950-53), Mutual Security Agency (1951–1953), Foreign Operations Administration (1953-1955), and International Cooperation Administration- ICA (1955-1961). Funding from other US Agencies, such as the Millennium Challenge Account and U. S. Department of Agriculture (USDA), is not included.

[2] For USAID, the linkage of agricultural research, extension, and education came naturally as a result of their linkages in Land Grant universities in the US. The concept of "AKIS' as a system was further developed by Niels Rohling at Wageningen Agricultural University and others and summarized in FAO and World Bank (2000).

prioritizes these sub-sectors – research, extension, and education – as key foreign assistance investments needed for future transformation of agriculture. Understanding the past investments may be useful to planning for the future. The paper concludes with thoughts on possible future directions for USAID investments in AKISs.

Agriculture in the USAID Foreign Assistance Program

Agriculture has been an important element of the U.S. foreign assistance program for much of the past 70 years (USAID, 2013a). This has been due to: concerns over famine and food insecurity; a recognition of the important linkages that drive rural development impacts and overall economic growth; potential for reducing rural poverty and social unrest; and impacts on natural and environmental resource conservation. In practice, some USAID country programs have funded agricultural development using non-agricultural funding, even when agriculture is not a stated priority, simply because the size of the agricultural sector and population in many countries make it impossible to ignore.

Changing Role and Approaches to Agricultural Development

US foreign assistance goes back further than generally realized. Sanbraillo (2014) cites the first US foreign assistance activity to have been 1793 assistance to Haitian refugees. During World War II, foreign assistance activities expanded in part to help ensure wartime access to tropical agricultural products (e.g., rubber), and these drove a focus on agriculture, notably under the Interamerican Agricultural Services (SAIs) in Latin America (Rice, 1971). Following, the war, foreign assistance further expanded to assist in post-war reconstruction, combat the spread of communism, and reduce global poverty and hunger.

Evolution of the role and approach to agriculture in the USAID foreign assistance program can be very roughly and imprecisely described by decade as follows.

- ✓ The 1950s saw general expansion of foreign assistance with a heavy emphasis on agricultural extension to disseminate “modern agriculture methods” – often using US production technologies (e.g., fertilizers, livestock breeds, hybrid maize, etc.) – and replicating US agricultural institutions for research, extension, and education. Extension activities also placed substantial emphasis on youth programs and home economics, especially nutrition. Assistance in Europe and elsewhere supported AKIS activities with a view to facilitating recovery from the devastation of World War II.
- ✓ The 1960s was a period of rapid further expansion of foreign assistance with agriculture remaining a priority sector. Assistance was to counter Cold War communist rural insurgencies, assist in developing institutional capacity in newly-independent countries, and combat threats of famines in Asia. Agricultural programs increasingly recognized that US technologies and institutions were not always appropriate to developing country situations and local research and testing were required to develop locally-appropriate technologies. Research begun decades earlier with support from USDA, FAO, and the Ford and Rockefeller Foundations came to fruition, establishing the base for the Green Revolution in Asia and for

the establishment of International Agricultural Research Centers (IARCs). Technical assistance and capacity development remained the core of many programs (AID, Undated).

- ✓ The 1970s began the heyday of USAID agricultural development with considerable focus on AKIS programs. USAID embraced the success of the Green Revolution and expanded funding for spread of new varieties, fertilizer, and pest control innovations that underpinned major increases in agriculture production. The 1975 Title XII "Famine Prevention and Freedom from Hunger" Act committed USAID to expanded investment in agriculture and resulted in establishment of the Board for International Food and Agricultural Development (BIFAD). AKIS funding rose through the decade and peaked in 1979. US Land Grant universities with their linked education, research, and extension programs were the training grounds and inspiration for most USAID agricultural staff and may often have been the only agricultural development model they considered. This likely contributed to a heavy emphasis on funding for AKIS sub-sectors.
- ✓ Throughout the 1980s USAID continued a high level of funding for agriculture and for AKIS sub-sectors giving them their highest decade of total funding. Cold War competition ensured continued support for foreign assistance. But, major changes crept in during the decade. With the global increase in agricultural production and trade, food security and famine became less of a consideration in country strategies. "New Directions" of the 1973 Foreign Assistance Act directed assistance to "the poorest of the poor", shifting development activities to meet a broader range of basic human needs. Weaknesses of top-down planning and implementation led to more participatory development strategies and search for locally adapted solutions, including a new emphasis on farming systems research and extension projects. It became clear that technology innovations alone were often inadequate, but required related investments in policy and regulatory services, input supply, financial services, infrastructure, and marketing. Institution development projects for agricultural universities, research institutes, and extension programs ended – often short of expectations – while country fiscal constraints restricted continued operations of these institutions, in some case leading to post-project collapse. USAID Missions also tired of funding the same type of projects and a new generation of USAID agricultural staff entered the field (See below on USAID agricultural staffing.). Private sector implementation strategies came into favor generally, and by the end of the decade most new agricultural projects focused on agribusiness development.
- ✓ The 1990s began a new era and a decline in importance of agriculture in the foreign assistance program. Global agricultural production and trade increases had lessened concerns of food insecurity. The Cold War ended. Local government agencies became firmly established, and whether or not fully capable, became less open to reforms. Public sector implementation was somewhat discredited, and nearly all USAID project assistance flowed through grants and contracts to private-sector US implementing partners. USAID projects began to operate more independently of host government agencies. The number of agricultural development staff and their influence declined. Funding for AKIS sub-sectors dropped rapidly over the first half of the decade, as new agricultural projects focused on

agribusiness development, sometimes emphasizing "business" over "agriculture". A strong emphasis on monitoring and evaluation came in with the Government Performance and Results Act of 1993 that required reporting on development impacts for all projects – effectively seeking impacts within the lifetime of a five-year project. Since measurable short-term impacts are not hallmarks of investment in capacity development, research, or agriculture in general, these fell out of favor. Much of the remaining USAID investment in agriculture and AKIS was for global research, which retained a strong domestic lobby and which legitimately offered potential for broad impact.

- ✓ The 2000s passed with agriculture in the background. Global research continued with only slow decline. Agricultural projects emphasized agribusiness development, often focused on specific commodity value chains. Toward the end of the decade, the food price crisis of 2008 served as a shock that renewed interest and attention to agriculture. The US launched the Feed the Future (FTF) Program (or the Global Hunger and Food Security Initiative) with a major commitment of funding (USAID, 2010). Selected countries and programs projected substantial new investments in AKIS sub-sectors and USAID began rebuilding its depleted agricultural staffing.
- ✓ The 2010s featured implementation of the first phase of the FTF Program and transition to a second phase in about 2017. Feed the Future brought increased funding and attention to agriculture, but with some unexpected approaches. While starting with a very heavy focus on agriculture, the Initiative's true focus on food security (food availability, access, utilization, and stability) required a broader multi-sectoral development approach, including health, nutrition, governance, infrastructure, welfare, and employment. Thus, FTF Initiative investments gradually broadened over time. Nutrition quickly came to be a major focus, as did resilience with its multiple elements somewhat later. Within agriculture, the Initiative sought to concentrate resources to achieve rapid measurable impacts. The number of USAID country programs with agricultural funding was intentionally reduced, and projects in target countries focused on limited geographic regions and selected commodities, rather than targeting total farm or national production and productivity. The Initiative explicitly minimized long-term investments in local capacity development. Funding for AKIS sub-sectors increased, though by less than originally projected. Private-sector approaches and direct delivery of services by USAID grantees and contractors was the norm. Agricultural specialist staffing increased. Initially, the Office of Agriculture was merged into a Bureau for Food Security, a move that tended to eliminate central support to non-food-security agricultural programs and to countries not FTF targets. At the end of the decade, a new reorganization addressed this with establishment of a Center for Agricultural-Led Growth under a Bureau for Resilience and Food Security[3].

[3] https://www.usaid.gov/sites/default/files/documents/1868/Fact_Sheet_The_Bureau_for_Resilience_and_Food_Security_RFS.pdf

Formal Agricultural Strategies

Shifts in USAID agricultural development funding have shaped and been shaped by a number of factors. Formal USAID Agricultural Sector Strategies have been less influential than might be expected. There appear to have been only two Agricultural Strategies over the past 70 years, though there have been numerous less comprehensive policy and strategy documents relevant to the sector (e.g., environmental strategies, research, rural finance, biotechnology, irrigation, etc.). In addition, up through the 1980s, USAID Missions supported host governments to complete many country-level Agricultural Sector Assessments and country Agricultural Development Strategies that served as guides to USAID investments as well as those of the host government.

Thirty years into USAID investment in agriculture, a 1983 Food and Agricultural Sector Strategy (USAID, 1983) established comprehensive, yet flexible, guidelines for Agency investment in the sector. Its four strategies included: improving country policies; developing human and institutional capacity, with emphasis on science and technology; expanding the role of the private sector; and utilizing food aid to foster development.

By the early 2000s, a changing environment for development and foreign assistance along with international consultations and commitments paved the way for a new "USAID Agriculture Strategy "linking producers to markets" that sought to increase productivity and smallholder participation in markets (USAID, 2004). This Strategy's four themes were: expanding trade opportunities and trade capacity of producers and rural industries; improving the social, economic, and environmental sustainability of agriculture; mobilizing science and technology and fostering capacity for innovation; and strengthening agricultural training and education, outreach, and adaptive research. Coming during the period of low ebb of agricultural funding, the 2004 strategy did not stimulate significant change or increase in agricultural funding, but provided justification for activities remaining in the portfolio.

The 2008 Global Hunger and Food Security Response and 2009 Feed the Future (FTF) Initiative represented a new commitment for the Agency to double agricultural development funding. The Initiative was not focused exclusively on agriculture, but began with a heavy focus on agricultural production. FTF implementation launched with a strategy identifying 19 investment areas to promote agricultural growth (USAID, 2010). The strategy emphasized short-term increases in productivity—targeting a limited number of countries, priority zones of influence within the countries, and specific commodity value chains. Two of the 19 identified investments areas specifically involved extension and others implied need for extension or research. The mix of investments ultimately depended on decisions for each country. In the end, value chain project approaches, covering multiple investment areas, predominated in most FTF country programs. While AKIS sub-sectors were seen as important, they were not very prominent in the final country programs funded.

The FTF Initiative drove agricultural strategies and investments for most of the 2010s, though only for activities in selected countries, and focused exclusively on food security objectives. This

neglected country agricultural objectives more broadly relating to economic growth, the environment, social stability, and rural development[4].

Agricultural Portfolio Reviews

USAID agricultural investments have been much evaluated at the project, program, and country level. Sub-sector reviews have also been undertaken on occasion, some having been quite influential (agricultural credit, education, water management). Comprehensive reviews of agricultural sector investments have been rather limited.

One comprehensive review of USAID agricultural sector investments was undertaken by the Center for Development Information and Evaluation (CDIE) in 1996 (McClelland, 1996a). The review looked at the five main areas of agricultural investment up-to that date: a) policy reform and planning; b) AKIS sub-sectors of research, extension, and education; c) rural infrastructure; d) agricultural services (credit, storage); and e) asset distribution and access (land tenure, participatory institutions). The CDIE review recognized that natural resource management had become a sixth area of significance, but did not yet have a track record adequate to assess its performance. Private sector agribusiness development was also recognized as important, but had received relatively little investment to that point. It became a seventh major area of agricultural investment following the review.

The CDIE review came to two over-arching conclusions. First, country commitment to agricultural development and a sound policy environment were essential to productive investments. Second, USAID investments should address the most binding constraints to the sector, typically: the policy environment; AKIS support to technological and management innovation; and infrastructure. Investments in agricultural services and asset distribution and access are less likely to be productive. It found that "investments in agricultural technology development and diffusion have typically generated high rates of return. The social benefits from the investments justify the costs in a wide variety of countries, for a wide variety of commodities, and under a wide variety of conditions."

A separate review of agriculture and the environment (McClelland, 1996b) found that over half (or a total of $645 million) of USAID authorized funding for environmental activities had gone to agriculture – sustainable agricultural production, watershed management, agroforestry, integrated pest management, and range management. Projects were designed to achieve both economic and environmental objectives and most were judged to have yielded significant benefits. The extent of local people's and institution's participation appeared to be a main determinant of success. Principal activities were: new technology development and diffusion, education, institutional development, and policy reform, i.e., all of these relying heavily on AKIS sub-sectors. This importance of agriculture and AKIS to environmental activities is not surprising.

[4] Economic growth, poverty reduction, environment, and other objectives were recognized as important to food security in Feed the Future countries, especially as an appreciation grew for the importance of resilience in achieving sustainable food security.

A 2016 Performance Evaluation of the large and complex Feed the Future (FTF) portfolio covered much ground and found programs to be performing well in reducing global poverty and hunger (Briggs et al. 2016). The evaluation was not very informative as to what investments and approaches were most effective and sustainable. It did find the USAID-funded research portfolio to be highly relevant to the FTF Initiative objectives and supportive of FTF priority value chains. Research projects balanced strategic research with activities to provide short-term impacts. The evaluation noted that NARSs are critical to effective research, but NARS capacity is lacking and, aside from training, there was no concerted investment to strengthen NARS capacity. The evaluation had little to say about extension and agricultural education investments.

Dichter et al. (2015) reviewed Feed the Future program experience with human and institutional development. The review found serious weaknesses and identified 15 key deficiencies in the program's approach. Identified weaknesses were germane to AKIS sub-sector capacity development as well as more broadly across development activities.

Financing Agricultural Investments

Country commitment and funding for agriculture development have been major determinants of success for AKIS and broader sector investments. The multi-functional nature of agriculture potentially attracts funding for diverse objectives – economic growth, food security or self-sufficiency, national integration and rural development, poverty reduction, social stability, and environmental conservation. Some objectives, such as cheap food for urban areas or environmental services for adjacent regions, may benefit populations other than those employed in the sector. USAID and its host country institutions have often failed to analyze and plan investments that address the sector comprehensively, underfunding investments and failing to provide for necessary recurrent costs.

Country investment in agriculture is often sub-optimal. Policy makers don't always appreciate the importance or potential of the sector. Rural populations engaged in agriculture are dispersed, poorly organized, and lack influence on public policy and budgets. Political leaders may target funding to short-term, politically-attractive purposes (e.g., direct subsidies, high profile infrastructure), rather than more productive, long-term investments (e.g., research, education). The 2008 World Development Report (World Bank, 2007a) makes a strong case for agriculture's role in development, noting too the irony that, despite high potential returns it is so often "under-used" in national development strategies with government spending for agriculture as a percentage of agricultural GDP lower for agricultural-based countries (4 percent) than for transitional (11 percent) or urbanized (12 percent) countries.

Public, private, and civil society roles in agricultural development have shifted significantly over time. In the early decades of USAID investment in agriculture, funding and implementation were almost exclusively through public sector institutions[5]. In those early years, formal private agribusiness firms were nearly non-existent in many countries. By the 1980s, private

[5] Note, however, that small farmers, traders, and other traditional actors in the sector are in the private sector.

commercial firms and NGOs emerged as important actors – a development stimulated by increased local resources and capacities; a need for broader participation in program planning and implementation; and obvious weaknesses in public sector implementation. USAID encouraged this shift with its agribusiness and value chains projects from the 1990s onwards and by funding activities through NGOs and consulting firms. The critical constraint accompanying this shift is that many development needs in the sector, especially in AKIS sub-sectors, are public, rather than private, goods. Private sector entities have limited inherent incentives to invest in such public goods from which they cannot recoup profits.

Over much its history, USAID has played an important role in promoting investment in agriculture, influencing host countries and other donors to increase funding for the sector and shift investments to more productive areas within the sector. USAID analytical and strategy documents have consistently identified AKIS sub-sectors as priority areas for investment in agriculture. Across all years from 1955 to 1970, AKIS accounted for 19 percent of agricultural funding (considering AKIS-identified funding plus youth and home economic funding, but not agricultural education activities funded under Education) (AID, 1962; AID, 1970). From 1989 to 1994, AKIS accounted for 23 percent of total USAID agricultural resources (McClelland, 1996a). For recent years, a rough estimate of AKIS share of agricultural funding is 20 percent[6]. The reason this is not higher may be due to: lack of opportunities for AKIS investments; alternative investments with higher potential returns; an excessive focus on short-term results; poor performance of AKIS investments; concerns with sustainability; or some other issue.

Agricultural funding questions ultimately come back to country commitment. USAID and other donors fund time-limited projects that are well-suited to heavy initial program establishment costs. However, AKIS programs – like many others – require continuous funding of operational costs for sustainability. Research – even after successful breakthroughs – typically requires maintenance research to sustain productivity increases. Extension services must continue to address emerging problems and serve new clients. Agricultural education must train new cohorts of students. All AKIS programs require decades to develop as efficient and effective institutions. Thus, donor AKIS investments carry an inherent risk of failure, if the host country is unable or unwilling to adequately fund recurrent costs. Financial sustainability thus becomes an issue even for investments that may provide high social benefits.

In the changing world of 2020, there is a high degree of uncertainty as to how countries and agricultural innovation systems will react in financing and implementing agricultural research, extension, and education programs (Pray et al. 2020).

AKIS Funding Data Collection Methodology

Even though investment in agricultural research, extension, and education has been a prominent element of US foreign assistance from its beginning, developing time-series estimates of funding for these or other USAID development activities is not a trivial

[6] Based on $4.7 billion of total USAID FTF funding for food security and agricultural development from FY2010 to 2014 (Briggs et al. 2016) compared to the $925 million (current US $) estimated total AKIS funding for those years.

undertaking. The data presented in this paper must be recognized as only estimates of the funding for AKIS sub-sector activities. A number of factors make collection of data on actual expenditures impossible. There has been no consistent accounting or reporting on USAID funding for AKIS activities over time. Reporting systems and funding arrangements have both changed over time, as have procedures for planning and delivery of development assistance. The database underlying this report is based on best available information and does not represent official USAID estimates of funding for AKIS investments. It has been developed from publicly available information, generally in collaboration with USAID agricultural staff.

Annex D summarizes the methods used in estimating AKIS funding for the period 1950 to 2017. Estimates are based largely on summary project descriptions from the USAID Development Experience Clearinghouse (DEC), which provides a wealth of information on past USAID programs (Development Experience Clearinghouse, 2020). For the period from 1950 to about 2006, funding estimates were mostly at the project-level, based on project descriptions in the DEC (DEC, 2020)[7]. For most projects, funding was assumed to be spread equally across the years of the project, though, where more specific funding or other information indicated, allocations were varied by year. For more recent years from 2006 to 2017, estimates are generally based on higher level program funding documents. In all cases, estimates are based on the description and prominence of AKIS sub-sector activities within the funded activities. The author's experience working with USAID AKIS programs from 1968 to 2018 has facilitated understanding of project and program activities and estimation of AKIS funding within these.

Funding estimates for the three AKIS sub-sectors include both direct provision of services and development of local capacity for the service. Thus, research investment includes research and research capacity building; extension includes extension service delivery and development of capacity for technology transfer and other extension strategies to promote rural innovation; and agricultural education includes both operating costs and development costs for agricultural universities and other training institutions. Agricultural education funding does not include the diverse short-term training associated with most agricultural development projects nor general degree training programs for the sector (See section below on participant training.). Degree or short-term training for research, extension or agricultural education capacity development is included in each sub-sector. Each sub-sector includes funding for both public and private-sector-delivered services and capacity development, though the public sector predominates.

Challenges in data collection result from: the lack of standard accounting for funding by activity; likely gaps in reporting on some relevant activities, such as NGO projects, Food for Peace programs, and small projects; uncertainties in funding allocations across activities in individual projects/programs; and difficulties with definitions for agricultural research, extension, and education. During the 1950s and into the 1960s, AKIS investments may be under-estimated, as they may not include cost of USAID staff involved with direct implementation of AKIS activities during this period.

[7] AID (1970) provides accurate official data on AKIS funding commitments for years from 1955 to 1970.

Allocation of funding to AKIS sub-sectors relies on definitions, which can overlap. On-farm research trials and extension demonstrations overlap, as does extension training and vocational agriculture training. Research provides subject matter specialist technical support to extension and extension feedback informs research and technology development. Universities conduct research and have extension outreach activities, as well as training scientists and technicians for research and extension programs and for the sector generally. The overlap of these activities did not prove to be a significant problem in estimating funding for AKIS sub-sectors, but such overlap and the importance of linkages among these sub-sectors should be recognized. Potentially more challenging was the estimation of AKIS sub-sector funding in component projects for which AKIS sub-sectors received only a portion of total project funding. Project descriptions provided guidance in this as did personal knowledge of many projects and types of projects funded over various periods covered by the study. Despite these limitations, the data are considered reasonably accurate estimates of allocation and trends in AKIS funding over time.

The review identified 1472 projects and programs with AKIS funding, as listed in Annex C and with characteristics summarized in Table 1. The listing represents a mix of discrete projects and larger programs. Programs, more common in later years, often included multiple diverse projects. In a few cases, projects are double counted as they were listed separately for the different AKIS sub-sectors. Throughout this paper, all database entries will be called “projects”.

Total AKIS Funding

Total estimated AKIS funding for all projects was $8,301.02 million (current US $) over the 68 years, equivalent to $15,642.91 million (constant US 2012 Dollars)[8]. Research predominated being included in 59 percent of projects and accounting for 61 percent of AKIS funding. Extension was second with inclusion in 52 percent of projects, but accounting for only 29 percent of AKIS funding. Agricultural education came in third with only 16 percent of projects and 10 percent of funding.

Free-standing projects in which all funding was for AKIS activities accounted for 46 percent of projects and 59 percent of funding. Component projects that include funding for AKIS sub-sectors as well as non-AKIS activities accounted for 54 percent of projects and 41 percent of all AKIS funding. The AKIS share of funding in component projects averaged 37 percent for projects for which data is available.

Africa, taken as Sub-Saharan Africa, accounted for 36 percent of projects, followed by Latin America and the Caribbean (LAC) with 21 percent and Asia with 18 percent. Global projects accounted for 16 percent of projects, because of the large number of global research projects, including the international agricultural research centers (IARCs) and Innovation Lab (IL)

[8] Converted to constant 2012 dollars according to: Samuel H. Williamson, 'What Was the U.S. GDP Then?' Measuring Worth, 2020. URL: http://www.measuringworth.org/usgdp/

activities. of AKIS funding[9]. The Near East, including North Africa, had seven percent of projects and Europe two percent. Funding levels shown in Table 1 are in current US Dollars at the time of project funding. AKIS funding levels converted to a standard 2012 US Dollars, as shown in Annexes and used throughout this paper better reflects the level of support and priority given to USAID investments over time.

Table 1: Characteristics of USAID AKIS Projects (1950 – 2017) (Note: Funding is in current US $ at the time of the funding. Non-AKIS funding in component projects is not included.)

	Number of Projects	% of Projects	Funding Level (Current US$ Million)	% of Funding
AKIS Projects (Projects with multiple AKIS components are double or triple counted)				
Research	876	59%	5067.28	61%
Extension	770	52%	2366.48	29%
Agricultural Education	237	16%	867.26	10%
	1472			
Free-standing or Component				
Free-Standing	676	46%	4907.00	59%
Component	796	54%	3394.02	41%
	1472	100%	8301.02	100%
Geographic Area				
Africa (Sub-Saharan Africa)	534	36%	2186.07	26%
Asia	259	18%	1255.38	15%
Europe	28	2%	72.25	1%
Global	237	16%	2968.15	36%
LAC (Latin America & Caribbean)	311	21%	1122.69	14%
Near East (including North Africa)	103	7%	696.48	8%
	1472	100%	8301.02	100%
Type of AKIS Investment				
Research	537	36%	3759.58	45%
Extension	438	30%	1240.87	15%
Ag Education	150	10%	602.30	7%
Research-Extension	259	18%	2038.26	25%
Research-Ag Education	13	1%	107.05	1%
Extension-Ag Education	6	0%	22.35	0%
Research-Extension-Ag Education	69	5%	530.62	6%
Total	1472	100%	8301.02	100%

Table 2 shows AKIS investments by level of targeting - national, multi-country regional, or global and by AKIS sub-sector. As would be expected, most extension projects (88 percent) and funding (89 percent) and agricultural education projects and funding (both 86 percent) were at the country level. Research in contrast has more regional and global projects with 24 percent of projects and over half (56 percent) of funding at the global level. The regional and global

[9] For both IARCs and ILs, country Mission-funded activities are generally included as National activities, while centrally-funded programs are generally Global activities.

research does involve extensive work at the country level, focusing on specific countries, but targets production impacts across a broader spectrum of countries. In recent years, global and regional research shares of funding have increased greatly with the decline of country-funded research projects.

Table 2: Characteristics of USAID AKIS Investments by Level of Investment (1950 – 2017) (Note: Projects are listed for each of their AKIS sub-sectors)

		Number of Projects	% of Sub-Sector Projects	Funding Level (Current US$ Million)	% of Sub-Sector Funding
Research	National	548	63%	1659.44	33%
	Regional	121	14%	586.14	12%
	Global	207	24%	2821.70	56%
	Total	876	100%	5067.28	100%
Extension	National	682	88%	2105.28	89%
	Regional	59	8%	167.07	7%
	Global	29	4%	94.14	4%
	Total	770	100%	2366.48	100%
Ag Education	National	204	86%	746.64	86%
	Regional	25	11%	68.31	8%
	Global	8	3%	52.31	6%
	Total	237	100%	867.26	100%

USAID AKIS Funding Trends

Figure 1 shows the level and trend in estimated AKIS funding over time by geographic region.[10] Notable is the spike in funding from the late 1970s through the early 1980s with subsequent decline until funding picks up again in the 2010s following the food price crisis of 2008. All regions, except Europe, saw substantial funding until the early 1990s when levels then dropped, though less so for Africa and Global programs. Global programs claimed the largest share of funding from 1983 onwards, due to emphasis on global research investments. The decline in regional funding in late 2010s is surprising, but likely compensated for by Global programs that target specific countries and regions, especially Africa.

[10] In general, though not exclusively, geographic region investments are funded and managed by USAID country Missions, while global investments are funded and managed by Washington offices.

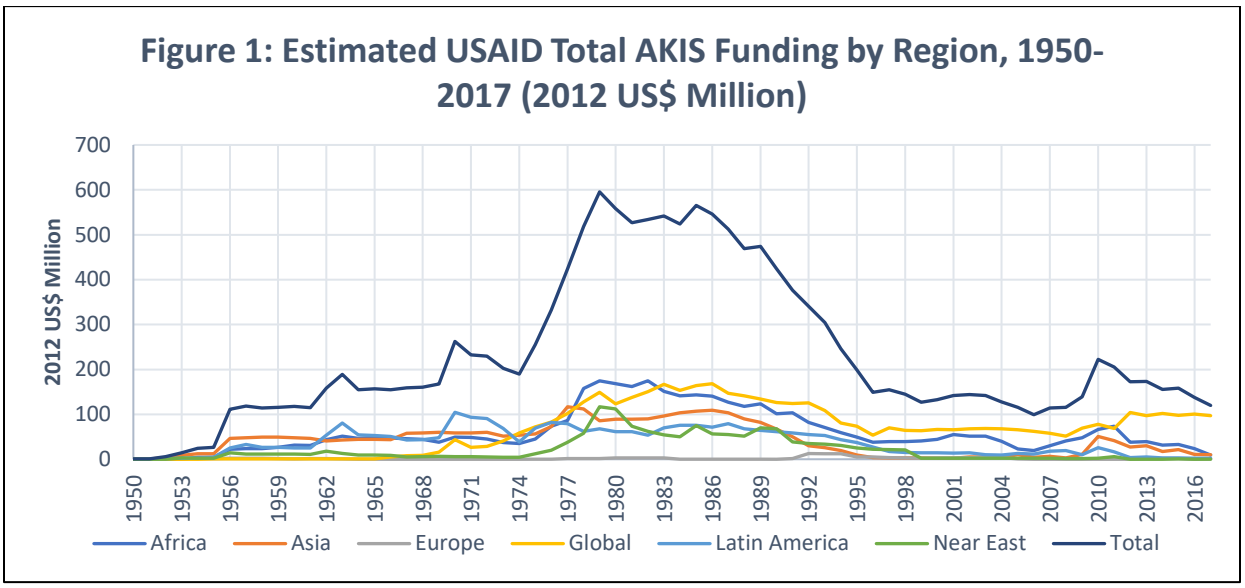
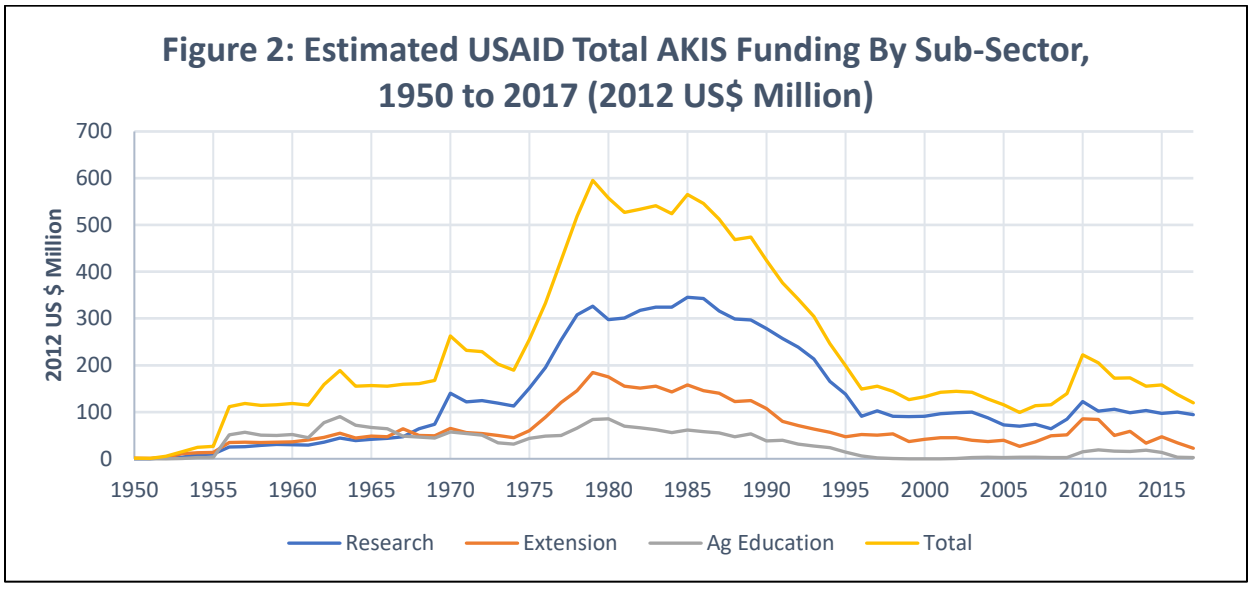


Figure 2 shows estimated AKIS funding over time with breakout by AKIS sub-sector. The phasing of investments is notable, whether by intent or accident. In early years funding for agricultural education helped establish a needed base for technical and managerial staffing for the sector. This agricultural education funding fell to third place by the mid-1970s and nearly ended by the end of the 1990s.



Research claimed the largest share of funding by the late 1970s, buoyed by the impressive example of research underpinning for the Green Revolution. Research has retained a surprising dominance over the last four decades. Figure 3 illustrates the change in composition of AKIS funding by decade.

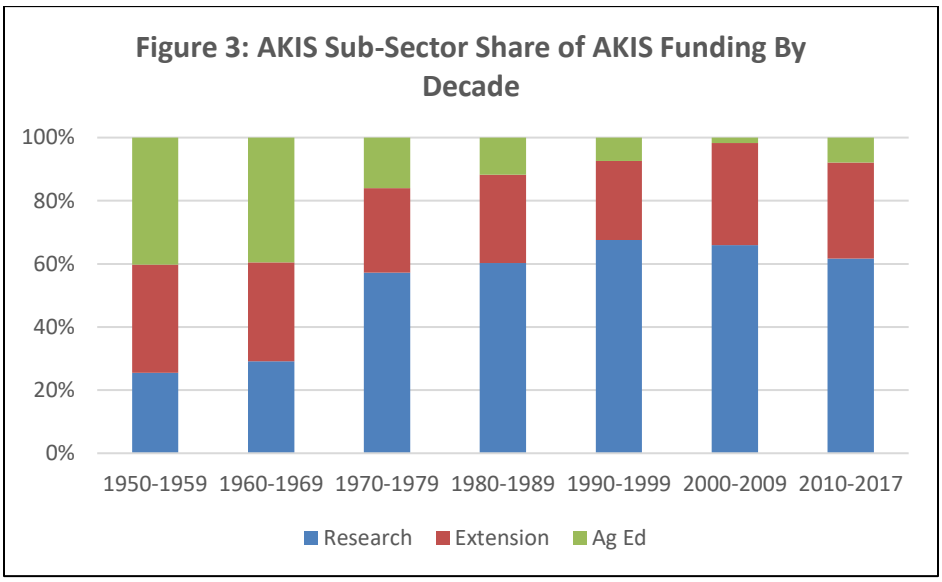
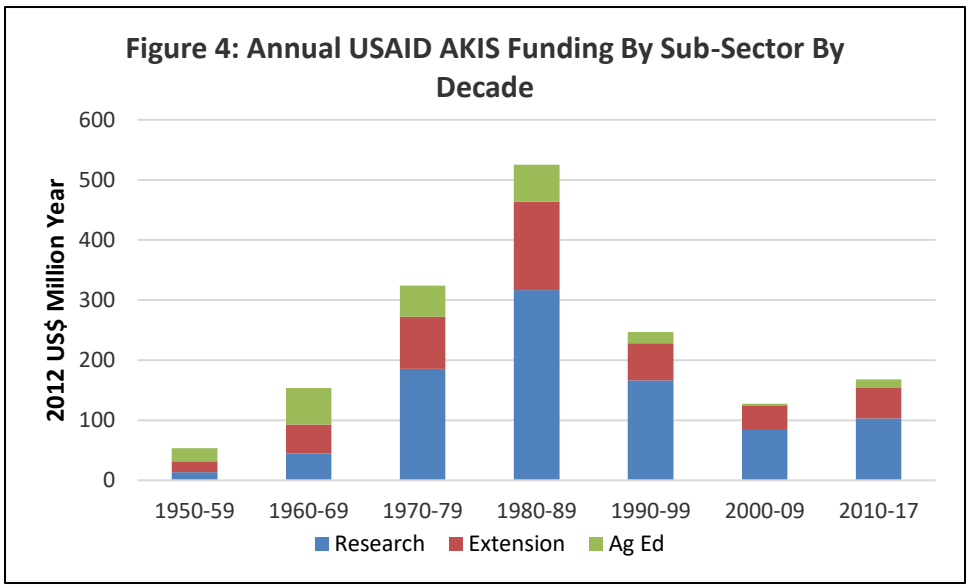


Figure 4 shows the level of AKIS funding by decade.



Over the seven decades, 119 countries received USAID funding for AKIS sub-sectors. Fifty-three countries received over $50 million; 29 received $10 to 50 million; 29 received $1.0 to 10 million; and eight received less than $1.0 million (all in constant 2012$). The ten countries receiving the largest amount of funding were: Egypt, India, Indonesia, Brazil, Pakistan, Afghanistan, Peru, Bolivia, and Nigeria. Most are not surprising given their size and foreign policy significance. Perhaps surprising is the absence of Viet Nam (ranked only 26th), despite the massive assistance program there during the Viet Nam War. Whether this is because the large program was confined to two decades, because most funding was for direct subsidies and not AKIS, or because the funding was missed in data collection is uncertain.

Framework for AKIS Investments

The conceptual framework for USAID AKIS investments has been more implicit than explicit but has evolved over time. While agricultural research, extension, and education were always seen as linked and key to agricultural development, early projects tended to focus on individual AKIS sub-sectors. Projects carried out agricultural research, extension, or education activities and developing local public sector agencies for the same purpose. Later projects funded more than one sub-sector or included AKIS funding with other sector development funding. Sixty-nine projects included funding for all three AKIS sub-sectors, and an additional 277 included funding for two of the three. Initially institutional development efforts often sought to link research, extension, and education programs in public sector institutions, following the US Land Grant model. Much frustration resulted as the institutional structures and pathways of development in host countries were rarely conducive to such linking of AKIS sub-sector responsibilities in a single institution.

Notably absent from the AKIS model intuited from USAID investments was the farmer. Most diagrams of AKISs include the farmer (and farmer organizations) linked with the AKIS sub-sectors as the client, participant, and driver of the system. Farming systems research and extension (FSR/E) projects of the 1970s and 1980s did bring the farmer into the system, but too often projects have failed to adequately incorporate farmers in planning, implementation, and governance of AKIS activities.

A major shift occurred in the 1980s with growing recognition of the AKIS sub-sectors as pluralistic systems rather than individual institutions. By the 2000s, these were recognized as: national agricultural research systems (NARSs); rural extension and advisory service systems (REASSs); and agricultural education and training systems (AETSs). These “systems” are existential in nature, rarely organized in any coherent way and sometimes quite rudimentary, but still functioning to some extent to serve sector needs. Each of these systems recognizes the role of multiple public sector agencies as well as commercial, NGO, and civil society actors in implementation, funding, and governance of AKIS programs. Coordination of different entities within a system is a major issue. Whether inspired by systems thinking or simply a natural program evolution, a major change for USAID projects was the shift from public sector partners to work with NGOs and agribusinesses for AKIS programs.

By the 2000s, USAID country agricultural programs embraced value chains as their conceptual framework, recognizing the full range of services and actors involved with innovation to increase agricultural productivity and sustainability. Financial services, input supply firms, buyers and processers, transporters, regulatory services, resource tenure systems, and farmer organizations were all recognized as critical to innovation. These often offered more immediate impacts on production than did education, research, or extension, were easier to work with when private-sector-based, and drew most project funding. The share of such value chain projects allocated to research and education was limited and the amount for extension, was difficult to identify. This accounts for the drop in AKIS funding over recent years.

The value chain approach mirrored the wider understanding of the Agricultural Innovation System (AIS) – rather than the more limited AKIS – as the foundation for agricultural development (World Bank, 2012). The AIS – consisting of all market, regulatory, service, and other entities impacting on farm production systems – provides the base for innovation and productivity increase. Agricultural investments should be based on analysis of the full AIS, perhaps with a view to determining the "most- limiting-factor" impeding innovation and profitability growth. Investments in the identified most-limiting-factor should presumably offer the best returns to investment. Although AISs are an important framework for analytical work, they are not necessarily an appropriate basis for project investments. The full AIS is so complex with such diverse sub-systems that it is likely to be unmanageable for an individual project, spreading resources too thinly and requiring expertise in highly diverse fields.

The more narrowly focused AKIS is a critical part of the AIS. Effective AKIS investments – as well as those in other areas of the agricultural sector – must be made based on understanding of linkages and relationships within the broader AIS. The AKIS sub-sectors perhaps deserve priority consideration as they provide knowledge and information needed by all actors in the AIS.

USAID Research Investments

USAID invested $8.93 million constant 2012 US dollars ($5.07 million current US dollars) in agricultural research from 1950 to 2017. Of this, 20 percent was for Africa, 13 Percent for Asia, 10 percent for Latin America, eight percent for the Near East, and 48 percent for Global programs. Figure 5 presents estimated agricultural research funding by USAID over time. Notable is the dominance of Global programs in recent years. In fact, much of the Global funding has in reality been focused on Africa, but with funding priorities and management from USAID/Washington with country-level consultations.

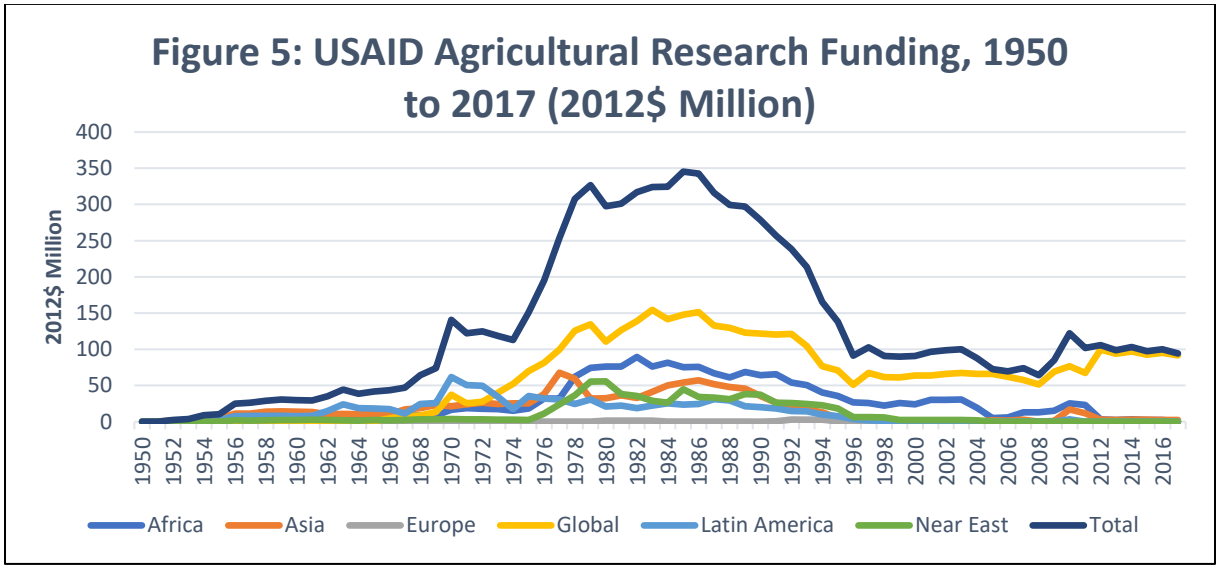
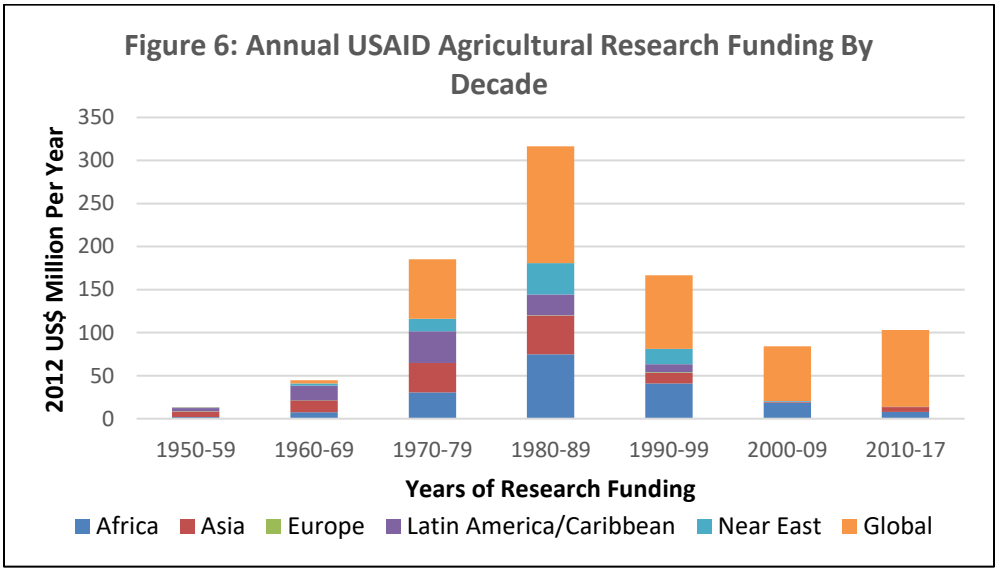


Figure 6 depicts estimated annual USAID funding for agricultural research by decade and by region. Research funding was limited in early years, perhaps due to lack of appreciation for its need, as extension-oriented staff pursued a policy of transferring existing technologies.

Additional constraints through the 1960s included a Congressional limitation on foreign assistance funding for research and restrictions on support for production of crops that would compete with US agricultural exports (Crawford, 1982).

The 1980s peak in funding - a highwater mark for research – is due to the number of country-level investments in NARSs. Over seven decades, USAID funded research activities in 95 countries, with 23 receiving more than $50 million (constant 2012 Dollars), 41 receiving between $10 and $50 million, 25 receiving between $1 and $10 million, and six receiving less than $1.0 million. Global and regional project funding also would have had benefits targeting specific countries and increasing research support to those country substantially, while also benefitting additional countries not identified. Importantly, international research – whether at the global, regional or country level – has also had substantial positive impacts on US agriculture (Pardey et al., 1996).



A 1997 review of USAID support for agricultural research (Alex, 1997) characterized this support as having gone through several stages: Extension Phase of the 1950s and 1960s; an Initial Research Phase of the 1960s and 1970s; a Maturing Research Phase of the 1980s; and a Sustainable Agriculture Phase (or Declining Phase) beginning in the 1990s.

The question now is whether that characterization of the post-1990 phase of support for research was correct. Was it sustainability focused, or a decline, or both? There may have been a rationale for declining research funding, as most countries had established agricultural research institutions, agricultural production and productivity trends were reassuring, and private sector actors were expected to expand their share of research investments. Yet, sustainability issues dictated a need for continued maintenance research to address emerging pests and diseases and second-generation constraints affecting improved production systems, while emerging environment and natural resources management problems required research attention. Much happened with agricultural research during the 2000s and 2010s, but "sustainability research and decline" seems not the proper characterization for either global

agriculture or USAID research funding of the period. Perhaps, "laisse-faire globalization" would be a more apt term. Global programs continued and NARSs were largely left on their own to develop needed linkages and capacities, through collaboration with CGIAR Centers and other global programs. Such support has been quite important, but has not generally allowed for a holistic approach to developing country NARSs.

USAID has been a fairly enthusiastic funder of agricultural research. This review of USAID AKIS funding found 875 projects with a total of $8,929.78 million (constant 2012 dollars) for research. Of these 537 were research only (though of these some may have had other components besides AKIS). There are various reasons for this strong support for research. The demonstrated impact of research on increasing US agricultural productivity and on enabling the Green Revolution inspired more funding for research with hopes of repeating these successes. And, simple logic suggested that identifying and developing new technologies and production systems would be essential to improving productivity and profitability of traditional agriculture.

Studies of economic impacts of research investments suggest high rates of return – 48 percent was a median rate of return in one widely-cited meta-analysis of 1,144 estimates of rate of return (Alston et al., 2000)[11]. More recent analysis of 203 benefit/cost ratios for CGIAR research and development investments and 577 for those by non-CGIAR public, developing country investments show a median estimated benefit/cost ratio of approximately 10:1 for both (Alston et al. 2020). Studies indicate that these highly attractive returns remain high (Rao et al. 2019). Some pause may be indicated as studies may target more successful research investments and researchers have both incentives and ability to argue their case for funding. For USAID, an added incentive for funding research has been the potential benefits to US agriculture, which realized a US agriculture benefit-cost ratio of 190:1 from US support to CIMMYT wheat research and 17:1 from support to IRRI rice research (Pardey et al., 1996).

Several other factors also encouraged investments in agricultural research. Research carries a prestige that doesn't attached to other agricultural investments. The "science-base", "innovation-orientation", and "intellectual-nature" of research provide a cachet of respectability. Researchers are generally highly-trained and well able to argue their case for funding. And research labs and stations are relatively accessible, making monitoring and field visits easy (though on-farm research sites are more difficult to reach). Importantly, national research programs require relatively modest levels of funding as compared to other agricultural projects that must reach large numbers of farmers across a country. Yet research programs offer potential for finding technologies that can have broad nation-wide impact. And finally, US and global research organizations are well-organized and effective in lobbying for support to international research.

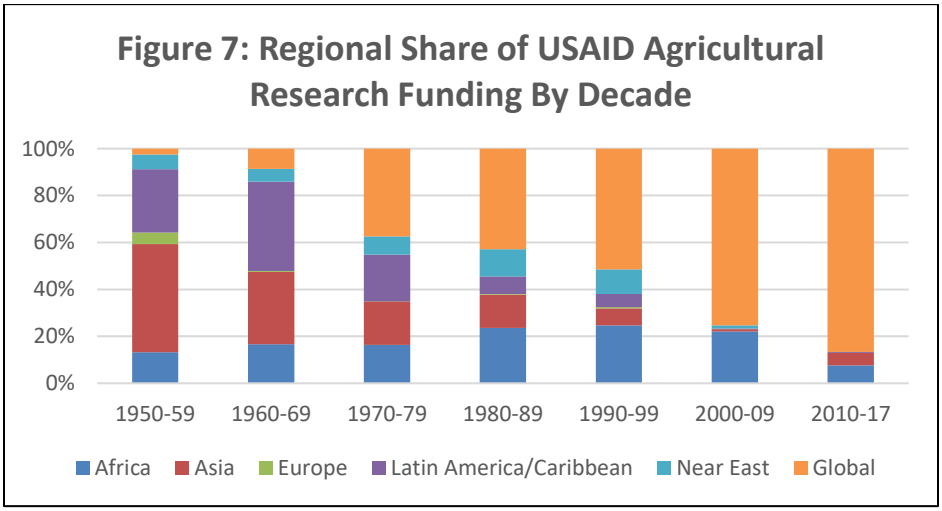
[11] Subsequent papers have questioned rate of return study methodologies and their high estimates of internal rates of return to research, but conclude that returns are still easily high enough to justify research funding, even if not at levels estimated (Hurley et al. 2017; Nin-Pratt and Magalhaes, 2018.).

The factors noted above have been key to maintaining funding for research, over-coming drawbacks inherent in research having high uncertainty as to results and long time-lags for impact, even when its outputs result in improved technologies. The long time lags to impact are a major challenge in foreign assistance agencies focused on short term impacts on critical social and economic problems.

USAID Research Funding Trends

Figure 7 shows the change of regional allocation of USAID funding for agricultural research over the past seven decades. As noted above, USAID research funding was limited in early years, picking up in the late 1960s. Much of the funding through the 1980s was from Mission projects to address country needs and expand Green Revolution impacts. These tapered off in the 1990s.

Early years saw Asia and Latin America receiving most of the funding, perhaps reflecting greater need and absorptive capacities. Country-level investments in those regions then declined or ended, while some country-level investment continued in Africa. Thus, Africa's share of funding increased gradually, while Global funding came to dominate, with much of the Global funding focusing on Africa in recent years.



Countries receiving the largest amount of funding for research were: Egypt, India, Indonesia, Bolivia, Pakistan, Bangladesh, Brazil, Peru, and Afghanistan. Most are unsurprising. Asia has half of the top ten. Bolivia stands out as an unexpected member of this group, making the list due to a period of intensive support to its NARS plus heavy funding for crop substitution efforts, which included some research.

Research projects took an interesting detour in the farming systems projects of the 1970s and 1980s (Collinson, 2000). Following early successes of wheat and rice research in the 1960s, USAID research targeted traditional disciplinary research development of component technologies. Problems with technology adoption by farmers forced researchers to look more closely at social, economic, and environmental factors affecting small farm production and the interaction of various crops and livestock within the production system. Many country Missions

funded farming systems research (FSR) projects that drew on greater involvement of farmers in the research process and sought greater relevance for research recommendations. This FSR approach echoed somewhat the late colonial era research efforts to develop more productive and sustainable production systems for the tropics. In essence, there was a shift from work on mono-cultures (as common to intensive production systems in the US) to diversified cropping/farming systems common to risk-adverse small farmers in low-income countries, a shift which was later reversed in the 2000s with value chain projects oriented to a single crop.

At the end of the 1980s, there was a growing concern over decreasing funding for agricultural research leading to a proposed strategy for the USAID Science and Technology Agriculture Office that emphasized a dual agenda of global research and technical support to Missions (York et al. 1989). The proposed research would continue focus on major food grains, but expand to cover other food and cash crops, and natural resource issues. The strategy failed to revive funding for research.

Up until the 1990s, research was largely considered the purview of the public sector national agricultural research institute (NARI). The focus then changed to the NARS, including other researchers in universities, NGOs, private firms, and farmer organizations. Though the NARIs typically remained central to research in each country, USAID reduced implementation through public agencies and emphasized private sector research to the extent possible.

The 1990s also saw an important shift in USAID research funding towards biotechnology and intellectual property rights important to incentives encouraging increased research funding by both public and private sectors. This was part of a marked global trend (Byerlee and Echeverria, 2002). These investments provided an important base for future research advances, though time lags from initial funding to eventual impacts were greater than expected.

In 1995, USAID with the World Bank and other donors established a multi-donor Agricultural Research and Extension Groups (ESDAR) at the World Bank to promote investment in and encourage synergies through linkages among varied actors in the global agricultural research system (Petit et al. 1996). Despite the name, the Group focused almost entirely on research. The Group lasted only a few years. It did little to spur increased USAID funding for NARSs, but it did promote wider awareness of research issues and facilitate the establishment of the Global Forum for Agricultural Research (GFAR) to promote NARSs' interests and effectiveness. Along with GFAR, there was support for an expanded role for Regional Agricultural Research Associations (RARAs), such as Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) (Byerlee and Alex, 1998).

Funding for RARAs in Africa became a significant part of USAID's research program and a mechanism for continuing support to newly-establish NARSs that still faced daunting problems. RARAs offered many advantages, especially for smaller countries, in promoting technology spill-ins, achieving economies of scale for research, fostering cooperation, and facilitating linkages to global research programs. The down-side, especially in Africa, was their high degree of donor dependency and tendency to go from donor project to financial crisis. They also added a layer

of additional bureaucracy to some activities. A serious, objective review of RARA performance, sustainability, and appropriate role would be useful.

Since the 1990s, a number of factors have – for better or for worse – pulled and pushed research into broader sector partnerships. USAID emphasis on short-term measurable impacts (hugely challenging for agricultural research) forced research activities to put greater emphasis on uptake pathways for their research results, often expanded partnerships with private firms, NGOs, and producer organizations. The DFID Research-into-Use program was an ambitious, though only partially successful, initiative to ensure relevance and use of research results (University of Edinburgh, 2006). Multi-stakeholder innovation platforms played a prominent role in some of its activities. USAID embraced agricultural value chains, often tying research to specific commodities and aligned with private sector firm interest. Generally, the agricultural innovation system (AIS) was accepted as a paradigm for development, linking research more closely with all other sub-sector institutions.

Reviews of Agricultural Research Project Performance

As USAID completed its first period of substantial agricultural research funding in 1982, a meta-review of 39 mostly Mission-funded project evaluations found an increasing focus on small farm needs, on-farm testing, and participatory research (Crawford, 1982). The review was not able to assess over-all performance or impact of the research, but did note common implementation problems of: lack of counterparts, procurement delays, inadequate technical assistance, participant training problems, research design, USAID supervision, research-extension linkages, and host country support. Many of these problems appear to stem from the attempt to carry out an expanded research agenda at the same time as developing local capacity – a kin to building a car as you drive along.

Byrnes (1990) reviewed a selection of 75 farming systems research and extension (FSR/E) projects funded by USAID between 1975 and 1990. He found significant strengths in FSR/E projects that oriented work towards the real needs and conditions of farmers, though impacts were not yet evident. While it might have been premature to expect production level impacts from FSR/E, some common problems were evident – lack of understanding of FSR/E and appropriate methodologies; weak local counterpart and financial support; lack of a local institutional base; and poor linkages with extension and disciplinary research. Dependency on project funding undermined potential for sustainability of FSR/E programs, while a shift of USAID priorities from staple food production to natural resource and environmental conservation required changes that FSR/E programs were not ready to make. Anderson (1985) noted the experimental nature of most FSR/E programs, but suggested virtue in their potential to provide research programs with feedback on farmer demands and interests, an enduring need in agricultural research systems.

While FSR/E programs declined and failed to be institutionalized due to their greater complexity as multi-disciplinary programs and the costs for on-farm participatory research, the FSR approaches still influence some research and may be rebranded to some extent in sustainable

intensification research. Clearly, FSR/E principles have relevance to future work adapting production systems to changing climatic conditions and to conserving natural resources.

In 1996, Purcell and Anderson (1997) reviewed $2.0 billion of World Bank investments in agricultural research between 1977 and 1996. They found generally satisfactory project performance and significant impact on NARS capacity, but remaining problems with research program management. Systems were weak in priority setting, coordination, and evaluation. Inadequate national funding was a common constraint, affecting both efficiency and sustainability of systems. USAID programs of the period faced the same problems, and, although typically differing in providing greater technical assistance and participant training, it is not clear that this materially affected project outcomes.

In recent years, most USAID research has been for global programs and most support to NARSs has been through the CGIAR and Innovation Labs discussed below. From 2000 to 2009, about 50 percent of Global program research was through the CGIAR and 42 percent through ILs. Other Global program research declined from about 22 percent in the 1980s to eight percent in the 2000s. Program evaluations for both ILs and CGIAR programs have been routine and generally positive.

An FTF Program Performance Evaluation covered a broad range of activities, including performance of research investments (Briggs et al., 2016). It found the USAID research strategy and portfolio to be highly relevant. Coordination of research across programs and with USAID Missions was an issue, but generally handled adequately. Evidence of new technology adoption by farmers and of production impacts was not available, but was not yet expected. A synthesis of evaluation findings relevant to FTF suggested that research aligned with and integrated with NARSs offered the best chance for dissemination and adoption of new technology (KDAD, 2016).

National Agricultural Research System Capacity

As with other AKIS sub-sectors, USAID research funding includes both funding for carrying out research and for development of local host country national agricultural research systems (NARSs). The share of each in the funding is difficult to impossible to disentangle and in practice the two should be mutually-reinforcing. Most USAID host countries had little if any agricultural research capacity in the 1950s. The need for such became readily apparent after failures of introduced technologies pointed up the need for locally-developed options. NARSs were needed both to enable donor efforts and to establish a base for country self-reliance (Moseman, 1970). After the Green Revolution demonstrated the potential benefits, USAID and other donors, particularly the World Bank, came to place a priority on agricultural research and developing NARSs.

Research capacity investments followed three phases (Byerlee and Alex, 1998). From the 1960s to 1980s, emphasis was on establishing and expanding national agricultural research institutes (NARIs) with staff training, infrastructure development, organizational development, and launch of research programs. From the 1980s to mid-1990s, emphasis shifted somewhat to

research management improvements and better responsiveness to farmer needs. In the mid-1990s, USAID and other donors further shifted focus to promoting pluralistic NARSs with greater private sector participation. During this latter period and after, USAID funding for NARS capacity development dwindled.

From 1979 to 2004, the International Service for National Agricultural Research (ISNAR), a CGIAR center, assisted countries strengthen organization, management, and structure of their NARSs. ISNAR provided a wealth of guidance and technical support for strengthening research systems (Anderson et al. 2004), but USAID and others were equally engaged[12]. The World Bank made major investments in agricultural research during this period and in the mid-1990s hosted the multi-donor Agricultural Research and Extension Group (ESDAR) to promote investments in research, strengthening NARSs, and linking actors in a global agricultural research system. But, enthusiasm waned. Many developing countries could not or were not willing to adequately fund agricultural research. In many cases, local research programs declined or collapsed when donor project funding ended.

The past two decades during which NARSs have had limited donor support have seen dramatic changes in their operating environments with: breakthroughs in biotechnology and genomics; the ICT revolution that put cell phones in farmers' hands and enabled global communication among researchers; globalized markets for agricultural products; agricultural mechanization; constraints on natural resources and global warming; and value chains that enable private firms to develop and market improved inputs across the globe. Some of these facilitate work of NARSs, but all complicate their agendas, roles, and operations.

NARSs have generally become more pluralistic with linkages between university and public research institute researchers, collaboration with NGOs, and funding from and joint research programs undertaken with private firms. These enhance stability and relevance of the NARSs, but it is hard to see how some of the common weaknesses of the 1990s could yet have been adequately addressed. Common problems identified then were: lack of operational funding; poor human resource management and development; poor resources and management of on-station trials; weak linkages to farmers and other clients; poor systems for planning and priority setting; and weaknesses in trial design and analyses (Byerlee and Alex, 1998).

The Global Forum for Agricultural Research (GFAR) and regional fora have emerged as a mechanism for research collaboration among countries, linkages to global research partners, and support to strengthening NARSs. GFAR and the regional agricultural research associations have potentially key roles in coordinating research and sharing findings across countries. This is critical – especially to smaller countries – to enhance technology spill-ins. Still, sustainable funding for these regional groups is a problem that countries and donors have not yet adequately addressed.

[12] See for example: MacKenzie, 1996; Bosch and Preuss, 1995; Gijsbers et al. 2001; Byerlee and Alex, 1998.

With the start-up of the FTF Program, USAID sponsored a Roundtable of experts to assess needs and provide recommendations for a strategy to strengthen NARSs (Anderson and Roseboom, 2013). The Roundtable found common agreement on the importance of the NARSs, but was not able to provide clear guidance on what additional support was needed, nor how it could most effectively be provided. USAID was recognized for its key role and effectiveness in past human and institutional capacity development of NARS. Future investments were seen as requiring country Mission analysis and investments to meet specific country needs (no surprise in this!). There was no apparent uptick in USAID support to NARSs following the Roundtable.

Anecdotally, international researchers currently credit some NARSs as being quite sound, adequately funded, and productive. For most countries, international researchers report that they are easily able to find local research collaborators. Whether this is because there is adequate local research system capacity or simply because international programs are able to attract qualified collaborators not fully employed in weak local systems is unclear.

Assessing and tracking trends in NARS capacity is a challenge. The Agricultural Science and Technology Indicators (ASTI) program in IFPRI collects a wealth of country data on financial, human, and institutional resources for agricultural research. While ASTI data on NARS inputs is extremely useful, assessing NARS productivity (outputs) and results (economic impacts) remains very challenging. Total factor productivity data bases are a good proxy for impact of research and productivity improvements and may become a good metric for the future. Still, it is hard to answer the questions, “how sound are NARSs and how well able are they to meet future sector challenges?”

One useful model for assessing NARS capacity may be the fairly comprehensive ASTI review of eight country agricultural research systems in Southeast Asia (Stads et al. 2020). The review found a relative stagnant level of public research funding over recent years, which coupled with growing agricultural production has resulted in a decline in research funding as a percentage of AgGDP from 0.50 percent in 2000 to 0.33 percent in 2017. National governments remain by far the most important source of funding, though the private sector is important for plantation and industrial crops, horticulture, and agricultural inputs. The review noted important differences between countries as to potential for research impacts on staple crops vs. high-value crops. Researcher numbers, qualifications, and support largely determined research productivity. The performance and capacity of NARSs was considered inadequate across all countries. Byerlee, et al. (2018) provide an example of an assessment for Pakistan that looks at the broader Agricultural Innovation System.

From 1961 to 2011, the number of full-time equivalent agricultural researchers in Sub-Saharan Africa increased from 2000 to 14,300, though the level of qualification of researchers declined (Beintema and Elliott, 2016). The share of women scientists in NARSs has increased over time, but remains low at an average of 32 percent for 86 low- and medium-income countries (Beintema, 2020a). Aging of senior researchers in the NARSs has been flagged as another problem, with 44 percent of PhD-qualified researchers in 84 countries over age 50 in 2010

(Beintema, 2020c). More details on these issues are available in regional syntheses of ASTI data (Stads, 2015; Stads, 2019, and Stads, et al. 2016). The implications of these staffing issues are worrying for future NARS research and leadership.

Annual funding for NARSs is substantial, reaching $28.2 billion (2011 PPP dollars) for low- and middle-income countries (not including private for-profit firm research) in 2016 (Beintema et al. 2020; Beintema, 2020d). However, this large figure masks a chronic under-investment in research. Globally, major changes have been underway since 2010, with high income country research funding declining, while China and other large middle-income countries have greatly expanded their investments. In 2016, agricultural research spending as a percentage of agricultural GDP averaged only 0.34 percent for low-income countries and only 0.24 percent for middle income countries, other than China, India, and Brazil, compared to 2.81 percent for high-income countries and a commonly-recommended target of 1.0 percent (Beintema et al. 2020). Even adjusting research funding targets for what may be an "attainable level" for resource-constrained countries, the investment gap is estimated at 66 to 76 percent of the actual investment. Volatility in annual funding levels is an additional problem, especially in Africa and other countries with high dependency on donor funding (Beintema, 2020b). These funding limitations are further aggravated by the need for most NARSs to carry out research on a wide variety of crops, livestock, and other agricultural issues (Beintema, 2020e).

Since the 1990s, private sector agricultural research has been seen as a "game-changer" for research funding, relevance, and impact, as it has been in the US and other wealthier countries. That hope may be somewhat mis-placed. Pardey and Alston (2006) note that, while the private sector funds about one-third of agricultural research worldwide, in less-developed countries it accounts for only 8.3 percent of all agricultural research. In 2011, low-incomes countries accounted for only 0.5 percent of global private food and agricultural research (Pardey et al. 2018). Of this, a substantial share is investment by multinational firms. Furthermore, the private research targets commercial priorities of the firms involved and not necessarily the farmers' or larger public good. As in the US, the public sector has a key role to play in facilitating private agricultural R&D (Fuglie et al. 1996).

Pardey et al. (2006) argue the case for NARSs, concluding, "developing countries will have to become more self-reliant in the development of applicable agricultural technologies". Changes in global agricultural investments, trade, and production systems are likely to make it less likely that lower-income countries will be able to continue to draw on technologies from wealthier countries. Serious challenges remain for strengthening NARSs, especially the problem of inadequate and variable funding. Improving staff incentives, linkages with private sector and international programs, exploitation of biotechnology and other scientific developments, and improved priority setting are additional problems. To become more research self-reliant, lower-income countries will have to strengthen and better support NARSs, improve the policy environment for agricultural innovation, and expand policy-oriented research.

In 2013, USAID sponsored a Roundtable of experts to assess issues of NARSs support to agricultural development and to achieving objectives of the Feed the Future Initiative (Anderson and Roseboom, 2013). Participants were unanimous on the importance of NARSs in support for agricultural development, but struggled with where, what, and how donors might best provide support. There was agreement that NARSs must develop in the context of the larger Agricultural Innovation System (AIS) and must develop effective linkages and division-of-labor among varied research actors – public and private. Many NARSs appear to be struggling to take advantage of new scientific opportunities and to align work to address emerging problems. Management and organization weaknesses constrain performance of many NARSs, as does the limited and uncertain funding, which is not conducive to the long-term nature of much agricultural research. Maintaining effective contacts and understanding across the broad agricultural sector and its many value chains is necessary for NARSs to be able to meet needs of various categories of clients.

The Roundtable recognized the importance of NARS development strategies being designed in accord with country-specific conditions and that NARS strategies will differ widely, as between small, low-income countries and larger, middle-income countries. The Roundtable concluded that a cogent NARS Assessment should be the basis for any investment strategy in NARS strengthening. USAID investments should be funded and managed by USAID country Missions to ensure alignment with country conditions and priorities. Country commitment to reform and funding is a necessary condition for success.

A serious global NARS assessment may be useful to analyze current capacity, structures, roles, strengths and weaknesses, and needs of NARSs and to determine whether investments are needed for them to meet future challenges. The capacity and funding issues for NARSs fall in a time of dramatic changes in global agricultural R&D financing and execution that will influence NARS development (Pardey et al. 2016). Recent funding trends suggest a need for new approaches to the “small country problem” that makes it difficult for small NARSs to establish and maintain adequate capacity to address research needs across the sector. For these, new institutional structures within country and new regional and global linkages may be necessary to more intentionally facilitate and support the knowledge and innovation spill-ins to meet country needs. The World Bank regional agricultural productivity program is one initiative to address this issue. Such structures and programs may differ from those of countries with more established capacity for their own research on local production systems.

As of 2020, some middle-income country NARSs have broken out as well-funded, global quality research providers. Many others have credible programs, but are inadequate to country needs. And, many small countries – especially in Africa – have serious deficiencies in light of their agricultural sector needs.

International Agricultural Research Centers (IARCs)

USAID provided $ 2.02 billion (2012 constant US Dollars) funding for global research programs of international agricultural research centers (IARCs) between 1969 and 2011[13]. In the early part of this period, some funding was for centers outside of the CGIAR (formerly the Collaborative Group for International Agricultural Research) system. With declining funding for agriculture, funding for non-CGIAR centers largely ended. Over all, most USAID funding for IARCs has gone to CGIAR centers. IARC global program funding as a proportion of all USAID agricultural research funding increased from 15 percent for the period 1980 to 1986 to 43 percent over the period 2005 to 2011.

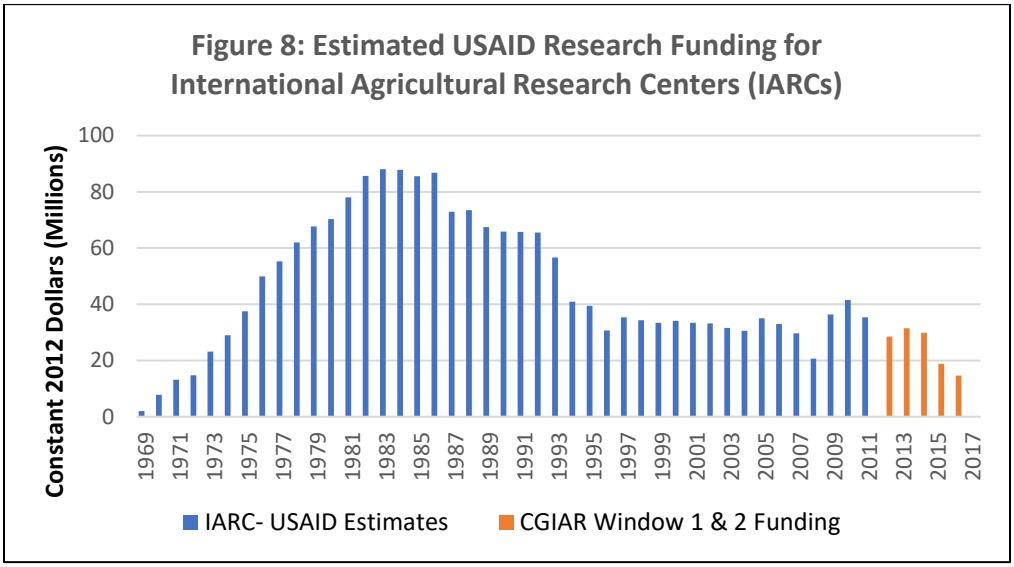
Figure 8 shows estimated USAID funding for IARC global research programs. Data up to 2010 is from USAID sources and includes funding for non-CGIAR IARCs. Data from 2011 on is from CGIAR sources. This funding for global programs does not represent total USAID funding for IARCs, as it does not include non-research activities, which have become significant in later years, nor does it include country-specific research activities funded by USAID Missions.

Through the 1990s, essentially all IARC global program funding was for or closely related to research. Since then, as discussed below, CGIAR Centers have taken on more activities related to research finding uptake and broader agricultural sector development activities. Up to 2011, USAID funding for CGIAR non-research activities was typically Mission-funded and distinguishable in USAID documentation. With post-2011 data from the CGIAR, distinguishing research from non-research activities is more difficult. Figure 8 assumes research funding is that funding allocated through CGIAR Trust Fund Window 1 and 2 for activities approved by the CGIAR System Council.[14] This may under-estimate USAID's CGIAR research funding[15].

[13] Available data on funding on funding for global research programs post-2011 aggregated and difficult to allocate by year and specific activity. This funding does not include non-research activities, nor country-specific research projects funded by USAID Missions.

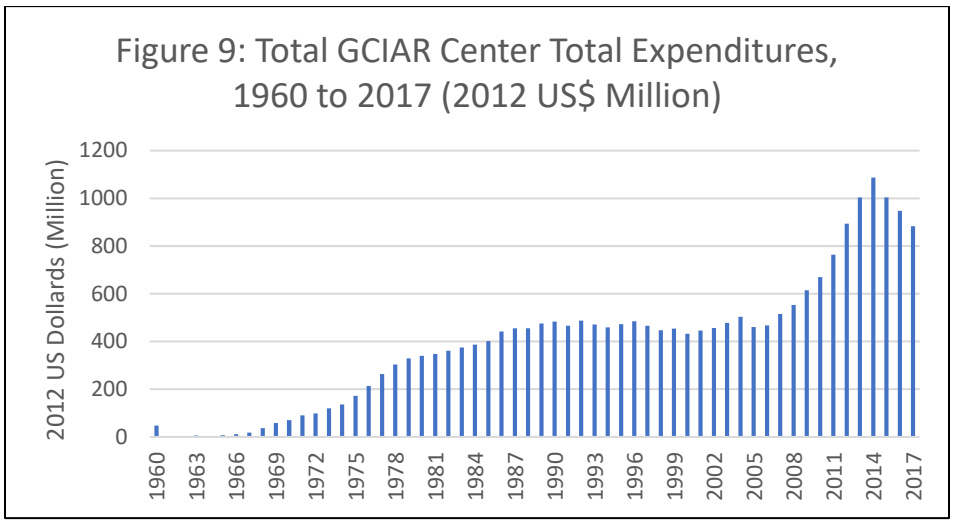
[14] Funding to the CGIAR Trust Fund is channeled through three Windows:
Window 1 (W1) – Portfolio investments: funding allocated to the entire CGIAR portfolio of approved system-wide investments prioritized and allocated by Funders collectively through the System Council – supporting CGIAR as a whole.
Window 2 (W2) – Program investments: funding allocated by Funders individually to any component (CRP, Platform or initiative) of the system-wide portfolio as prioritized, defined and approved by the Funders collectively through the System Council; and
Window 3 (W3) – Project investments: funding allocated by Funders individually to projects that are defined by the Funders themselves (with partners) and that are aligned with system-wide investments.

[15] The CGIAR data was not used for this paper's AKIS funding estimates, which should include all USAID research funding, even though the share attributable to CGIAR cannot be estimated.



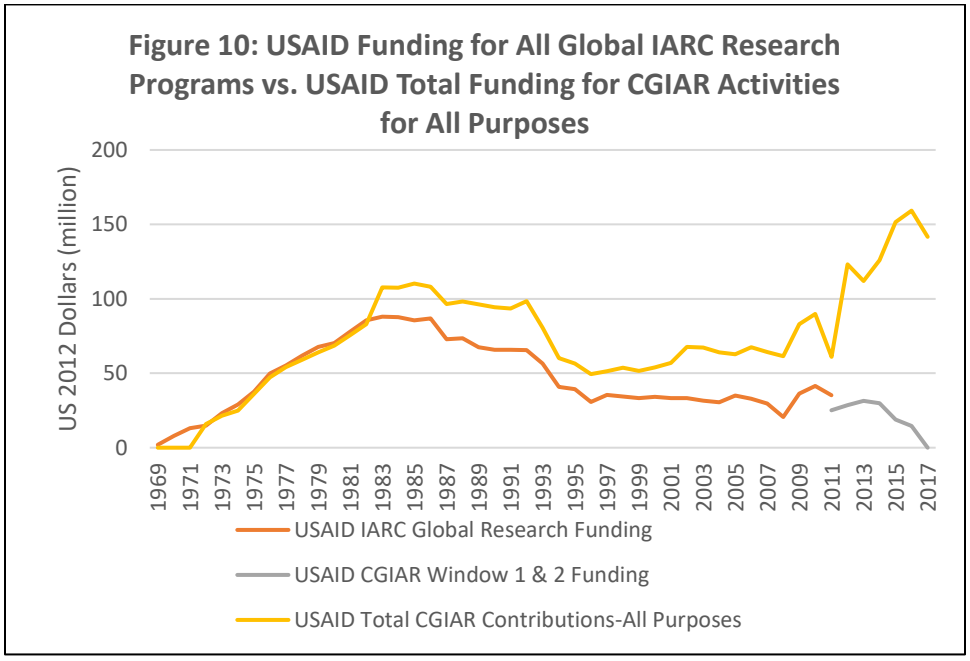
USAID was a key participant in formation of the CGIAR, which took over and broadened the funding base for international agricultural research centers. The initial centers grew out FAO and Rockefeller Foundation regional research programs inspired by US cooperative crop improvement programs of the 1920-30s and by colonial research networks in Africa (Byerlee and Lyman, 2020). Rockefeller and Ford Foundations funded initial centers that provided the model for IARCs. By most accounts this initiative has been a remarkable success (Anderson et al 1988). The CGIAR provides a basis for coordinating funding of international agricultural research, achieving economies of scale, enhancing sustainability and continuity in programs, ensuring high scientific standards, leveraging funding, and convening stakeholders. This has led to overall growth of CGIAR funding as presented in Figure 9.

There have been substantial changes in the CGIAR over recent years – not all favorable. System funding increased up to 2014 and has diversified with more donors and consequently greater challenges with governance and coordination. Increasingly, USAID and other donor funding is restricted to specific donor priority activities and not available to the centers' core research agendas. From 2011 to 2019, only 27 percent of funding was for systemwide and program initiatives and 23 percent for centers, with the remaining for bilateral activities (Beintema and Echevarria, 2020). The CGIAR research agenda has evolved and become more complex with attention to natural resource and environmental management, climate change, global pandemics and one health, food safety, and other emerging issues. Advances in biotechnology and genomics; the ICT revolution linking researchers across the globe and providing new means of collecting and processing information; and other new technologies place considerable demand on CGIAR centers to apply technologies in their programs and stay abreast of rapid scientific developments. System governance reforms have been nearly continuous and confusing, complicating Center research program management.



Source: 1960 to 2004 – Pardey, et al. (2006); 2007 to 2018 – CGIAR Dashboard

Figure 10 compares USAID total CGIAR program funding with USAID total funding for all IARC Global research programs. Beyond 2010, USAID funding for Window 1 and 2 funding is shown, though this may not be an accurate proxy for USAID global research program funding. Until 1983, modest funding for non-CGIAR about equaled any non-research funding for the CGIAR. From 1983 to 2000, non-CGIAR IARC funding was minimal and non-research CGIAR funding became significant but remained a relatively constant share of USAID CGIAR funding. Beyond 2000, non-research funding to the CGIAR grew as a share of all USAID CGIAR funding.



Source: USAID Total CGIAR Contributions – CGIAR Annual Reports; USAID CGIAR Global Research – AKIS database; USAID Window 1 & 2 Funding – CGIAR Dashboard

At the country level, with decline in USAID and other donor technology projects and staffing, the CGIAR has become more important in supporting country technical leadership in

agriculture. The Centers have longstanding partnerships with NARSs for collaborative research and work with and through regional agricultural research organizations. CGIAR scientists have credibility in the sector and established linkages with local agriculturalists and policy makers, giving them influence and an important role in the sector.

The CGIAR centers' local presence, relationships, and prestige make them attractive to donors as a means of implementing diverse sector development projects. For USAID, in the past the ease of making grants to the CGIAR was also an attraction to fund diverse activities through the IARCs. However, increases in restricted funding for bilateral projects may broaden a Center's range of activities and dilute its focus on the core strategic research agenda. Activities may relate to technology development, such as extension and information gathering, but include also input supply, value chain facilitation, policy reform, project design and analysis, and monitoring and evaluation. These are useful functions, but it is not always clear that the CGIAR Centers are best-suited to such implementation. It is of further concern if such additional activities compromise Center strategic research focus and turn them into more generalist NGOs.

USAID has been the largest funder for the CGIAR, which remains an important partner for agricultural research and agricultural sector development. But, problems are evident. Alignment of USAID CGIAR funding with USAID priorities has been an issue in recent years with only about 20 percent of USAID funding going to core CGIAR Window1/Window 2 activities (Briggs et al. 2016). The mis-match, which could, of course, be due to problems on either the side of the USAID or the CGIAR priorities is not a healthy situation. If CGIAR priorities don't mesh with USAID priorities, funding is likely to decline over time. But, if USAID funding diverts the IARCs from their long-term strategic research, there is a global loss. Alston et al. (2020) make a strong case that the long-term benefits from CGIAR strategic research should not be neglected.

The IARCs have a challenging agenda in adapting their research agenda and approaches to address the social, environmental, and natural resource issues confronting global agriculture. Continuing CGIAR reforms and USAID support appear important to enable IARCs to provide the technological and management innovations needed for greater efficiency and sustainability of agricultural systems in the future.

Agricultural Innovations Labs (aka "Collaborative Research Support Programs")

USAID provided $868.13 million (constant 2012 Dollars) of funding to CRSPs and Agricultural Innovations Labs (ILs) over the period 1977 to 2011. CRSPs were first launched in 1977 as a mechanism for tapping expertise of US universities for strategic research for international agricultural development. There were ten CRSPs from 1977 to 1996 and in 2009 there were still ten. In the 2010s, under the Feed the Future Initiative, the CRSPs were re-designated as Innovation Labs and the number expanded to 20 in 2020 (USAID, 2020)[16]. Some newer ILs are

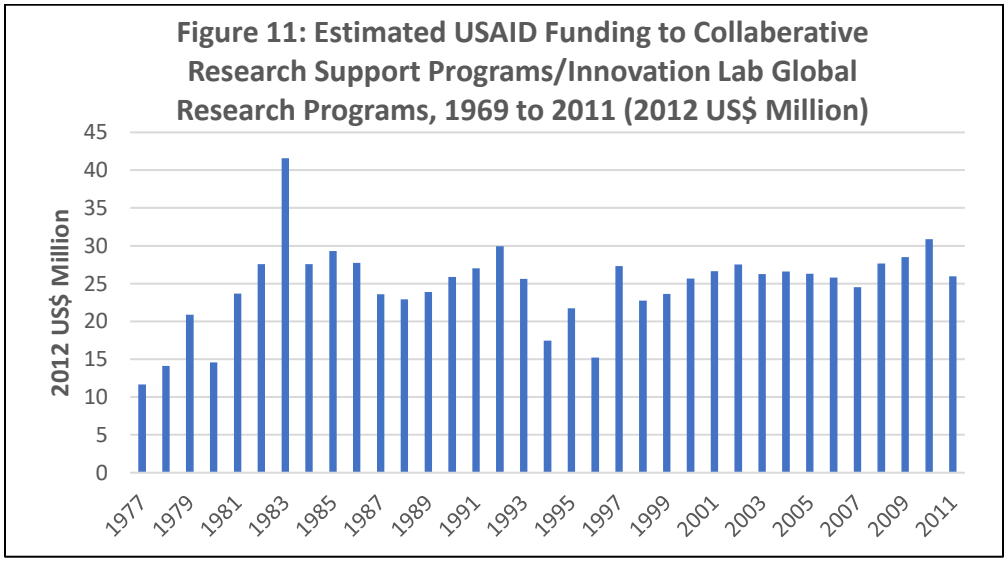
[16] The term Innovation Lab (IL) will be used through the rest of this paper.

more narrowly targeted and have lower funding levels than those of the CRSP-model, making the number of ILs more fluid. Jones et al. (2012) criticized the dispersion of effort and funding inherent in increasing the number of ILs.

Figure 11 shows estimated USAID funding for global research programs of the ILs. This is not necessarily the total funding for ILs, as country-specific projects funded by USAID Missions is not included, nor are non-research activities implemented by the ILs. Post-2011, IL funding by year for global research programs was not readily.

Initially the ILs were tightly targeted on strategic research for commodities not covered by other international agricultural research (Swindale et al. 1995). They were expressly not to engage in extension or other development activities. Over time, this restriction blurred as the programs sought to disseminate their research findings, USAID monitoring systems focused more heavily on short term impacts, and USAID began tapping the ILs for broader value chain development activities.

IL programs have a long track record with agricultural research in specific thematic areas, principally commodity focused. Presumably this stable long-term focus should be beneficial in allowing for continuity in research, which is often inherently a long-term process. Most impressive may be the 38 years of continuous funding for peanut research. Whether these programs have fully exploited their continuity to generate effective new technologies is unclear. The long-term continuity is somewhat compromised by the five-year agreements typical for the program. Renewing funding agreements, changes in USAID policies and strategies, and turnovers in IL staff inevitably involve program disruptions.



The geographic focus of individual ILs varies and is determined by the potential recommendation domain for the commodity or theme of the research program, USAID strategies, participating university and researcher interests and international linkages, and collaborating country interests and capacities. The Feed the Future Initiative required all ILs to work in the 20 or so countries targeted by that Initiative. Such restrictions do not always allow

strategic research to be carried out where conditions are most conducive to success. Dispersion of work across multiple countries and regions may be necessary for some work, but may complicate management and dilute intensity of efforts, as IL programs are not lavishly funded.

IL evaluations have been generally quite positive, but USAID Mission staff have often been critical of the programs. A 2012 CRSP Program evaluation carried out by BIFAD, a long-term proponent of the program, concluded that the program has had demonstrable impact on people's lives and judged the strength of the program to lay in integration of human and institutional capacity development with agricultural research (Jones et al. 2012). The Review Team also identified nine major weaknesses: need for more systematic priority setting, as some projects have endured for years, despite there being no explicit rationale for the existing portfolio; the equal amount for each award hampers the ability to address emerging development challenges in a strategic manner; small dollar amounts are dispersed very broadly over too many projects and institutions; lack of sufficient USAID technical and administrative oversight and coordination; poor coordination among CRSPs; poor alignment with national and regional development strategies; insufficient impact assessment; and insufficient attention to broader institution building. While experience confirms that capacity development must move beyond training the brightest of the bright in isolation from their institutional environment (Gilboy et al. 2010), this has not been factored into CRSP training[17]. The CRSP Evaluation suggested that an analysis of the trainee's home institutional environment is just as important as selecting individuals to be trained.

A potentially serious weakness of the ILs is their location in universities in the US. This may be appropriate for strategic global research, but it distances programs from their developing country partners and from the small-farm agriculture it seeks to change. Program management in the US weakens: program interaction with host country institutions and collaborators; knowledge of the country's agriculture and farmers; and ability to influence capacity and program development in country. The ILs have relatively few full-time scientific staff and these often work across multiple countries. Country collaborators are frequently well-qualified and highly motivated and very appreciative of the support and professional interaction ILs catalyze, but the limited IL resources restrict the level and breadth of activity in any one country. These various limitations and centralized US management of the programs are likely a reason for the history of USAID Mission criticisms of them.

The ILs appear not to have performed up to expectations. They draw on the tremendous resources available in US universities, which in early years of USAID's agricultural development program contributed many thought- and technical leaders in agricultural development. This has been less evident in later years, perhaps because limited funding has reduced opportunities for

[17] Some reporting on IL support for degree training programs needs to be treated with caution as definitions are not clear. Reporting includes participants from the US (26 percent in 1995 as per Swindale et al. 1995) and other developed countries. Furthermore, given funding available, it seems that most participants must receive partial and perhaps minimal support for their overall degree. This may be entirely appropriate to carrying out research, but may not be prove a significant factor in developing country human capacity.

posting university staff overseas in long-term, full-time positions or because the university incentive systems do not adequately recognize international agricultural development work. The IL research also suffers, as does that of the IARCs, when USAID funding directs attention and resources to short-term, non-research development activities for which the universities may not be the best suited.

There may be a good case for reforms to improve the IL program efficiencies, effectiveness, and relevance. The changing structures and environment for global agricultural trade, production, and innovation may require research more-tightly focused on environmental and natural resource management, food safety, and other issues, as opposed to the traditional commodity focus. Alternatively, ILs might shift focus from strategic research to local capacity development, drawing on the broad resources available in universities to strengthen local NARSs.

USAID Extension and Advisory Services Investments

Extension is the most difficult of the AKIS sub-sectors for estimating funding, as extension activities cover a wide range of methods, approaches, and strategies. Knowledge and information service delivery is often linked with input subsidies, marketing and market development, infrastructure development, broad-based production campaigns, value chain development, and other programs. Extension is recognized as essential to most agricultural development and innovation strategies, but is generally included as a component activity that often receives limited funding and attention (Digital Green, 2019).

Extension and advisory services (EAS) cover a broad range of activities and are currently broadly defined as: the "amorphous umbrella term for all the different activities that provide the information and advisory services that are needed and demanded by farmers and other actors in agri-food systems and rural development" (Christoplos, 2010). Extension may provide information on: crop production, livestock, aquaculture, marketing, resource conservation, mechanization, pest control, farming systems, farm budgeting and planning, social organization, nutrition, post-harvest handling and storage, food safety, and a host of other topics. Approaches may include: technology transfer, advisory response to farmer requests, facilitation of links to other assistance, or participatory problem solving. Rural clients are many, highly variable, and dispersed. Innovation impacts lag service delivery by varying degrees and adoption of innovation is generally partial and gradual, or even temporary.

USAID Extension Funding Trends

USAID funding for agricultural extension totaled $4,447.96 million (constant 2012 Dollars) ($2,366.48 million current US dollars) from 1950 to 2017. Of this, about 34 percent was for Africa, 27 percent for Latin America, 24 percent for Asia, 11 percent for the Near East, two percent for Europe, and three percent for Global programs[18]. Figure 12 presents estimated USAID funding for extension over time. The peak in funding in the 1980s is common across AKIS sub-sectors. Funding levels were relatively high in early decades, reflecting an emphasis on

[18] Does not add due to rounding.

transfer of technologies from the US. In contrast to research, global funding for extension has been quite limited as extension by its nature is a local activity and local public good.

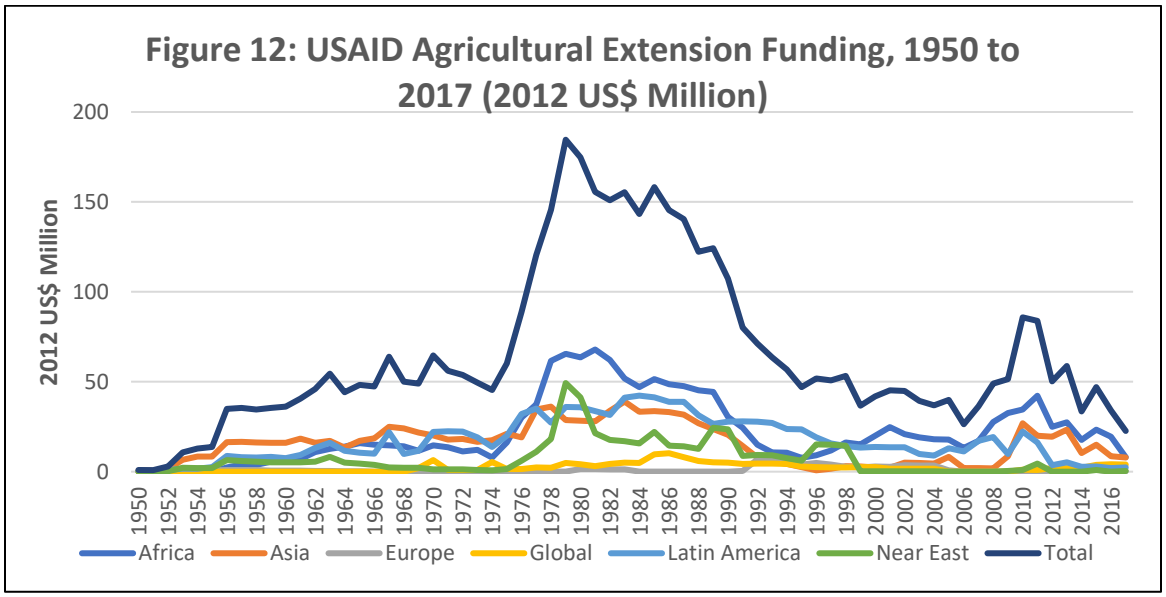


Figure 13 summarizes estimated annual funding for extension by decade, showing funding distributed across regions. Over seven decades, USAID funded extension activities in 110 countries, with 33 receiving more than $50 million (constant 2012 Dollars), 36 receiving between $10 and $50 million, 33 receiving between $1 and 10 million, and eight receiving less than $1.0 million. Eighty-eight percent of extension projects and 89 percent of extension funding was for country-level projects. Global and regional funding for extension was limited, mainly for support to improving extension methods.

The ten countries receiving the greatest amount of extension funding were: Egypt, Afghanistan, Haiti, India, Bolivia, Pakistan, Thailand, Honduras, and Peru. These were priorities due to: critical foreign policy considerations, high level of need, focus on Asian food security concerns, and crop substitution programs. Haiti is somewhat unexpected in this list, but, because of national system weaknesses, has had a series of projects involving extension to address rural poverty.

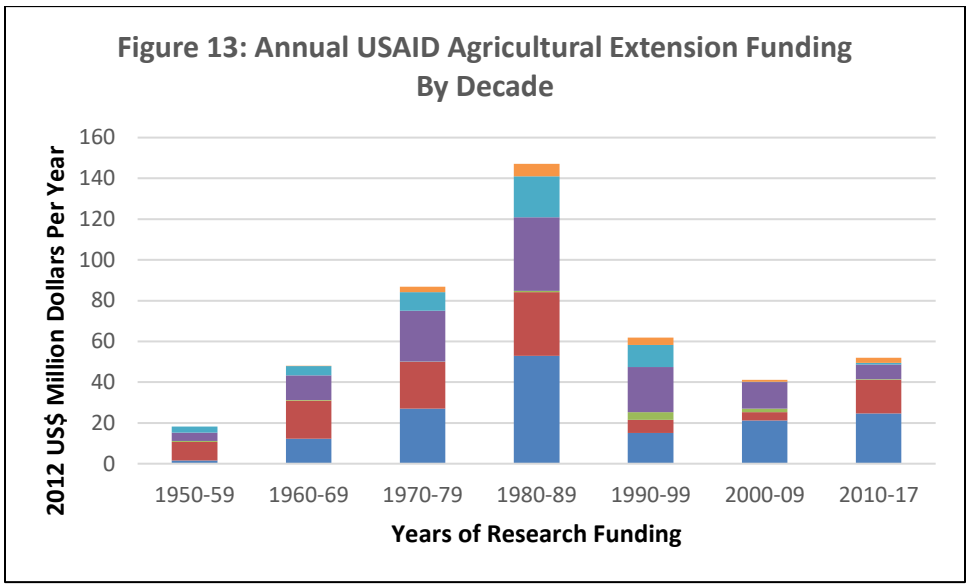
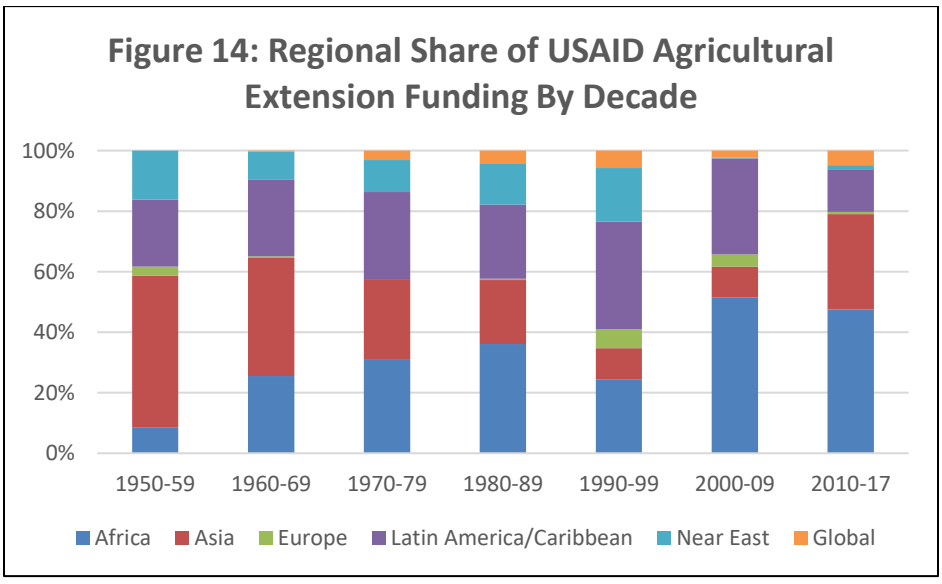


Figure 14 shows the allocation of USAID extension funding by region over the past seven decades. In the early 1950s, extension support was a priority across in Europe, where 50 US specialists were deployed for special projects (ECA, undated). Although funding levels have varied and extension has declined as a priority for USAID, some level of funding has been a constant in programs across all regions, as extension is seen as a necessary element of programs to influence farmer practices and achieve agricultural development objectives. Over time Africa has received an increasing share of extension funding and the Near East a declining share.



While the logic and potential for EAS to support agricultural development may be quite clear, evaluation of diverse activities and impacts of EAS is obviously problematic and has resulted in wide ranging estimates and controversial assessments of impact. Extension impact requires both effective EAS provision and the availability of technologies/innovation appropriate to and beneficial to the farmer clients. Even when extension promotes a specific innovation, the actual

impacts on farmer practices may range widely across different farms, farming systems, and categories of farmers.

Alston et al. (2000) found an average economic rate of return of 85 percent for 80 studies of extension projects. While project selection bias and methodology issues may overstate these rates of return, they are robust enough and supported by enough other experience to suggest high returns to extension investments[19]. Despite the difficulties in measuring EAS impacts, extension in one form or another seems essential, as it is difficult to imagine change in agricultural systems from new markets, technologies, credit and inputs, infrastructure, or natural resource availabilities without new information flows to and among farmers.

USAID funding for extension has gone through several phases. Initially extension was a top priority. The newly expanded foreign assistance program under the International Cooperation Administration (ICA) focused on agriculture to promote food security and reduce malnutrition (ICA, 1959). Major ICA objectives were to: improve management of services to agricultural producers, establish agricultural education institutions, and provide extension services to farm families. Agency leadership and staff included many extensionists. In 1959, USAID had 1,200 US agriculturalists implementing projects in 54 countries. Extension activities relied heavily on a transfer-of-technology approach, supporting: extension agencies in 44 countries; fielding of 38,000 extension agents; and operation of 19,774 4-H-like youth clubs. The heavy emphasis on extension was later criticized for promoting US institutional models and agricultural technologies unsuited to local conditions.

The 1970s and 1980s saw a change in USAID support for extension, in part due to an influential evaluation (Rice, 1971). While extension continued to be seen as important, more emphasis was given to research, other agricultural services, and regionally-targeted activities that complemented extension activities. Still, the Asian Green Revolution and new technologies coming from expanded local research investments brought additional emphasis on extension to disseminate these new technologies. Increasing emphasis on participatory rural development, poverty reduction, and natural resource conservation also spurred funding for extension, which was seen as the obvious mechanism for involving farmers and local communities in their own development. Farming systems research and extension programs of the late 1970s and 1980s introduced greater farmer involvement and a better understanding of farmer needs in extension activities (Collinson, 2000). USAID extension funding reached a peak of $184.58 million (constant 2012 dollars) in 1979. Still, during this period, extension was often somewhat neglected compared to other agricultural activities.

Extension projects from 1975-84 relied on traditional extension approaches and activities and lacked clear long-term goals and visions (Britain, 1986; Thompson, 2002). Most projects had neglected work with producer organizations and farmer participation in extension. Innovative approaches (mass media, women-targeted extension, research linkages, farming systems, and private extension) were creeping in, but in relatively few projects. Britain (1986) suggested that

[19] Though regrettably extension has not attracted as robust a data base of economic evaluations as has research.

there was a clear need for USAID staff to become better informed of options and potential for improved EAS provision and support to project objectives.

A search for the ideal extension model has complicated EAS investments. Different extension models have come and gone somewhat as "fads", often enthusiastically promoted by different agencies. These have included: the Training and Visit System, Farmer-led Extension, Farmer Field Schools, Fee-For-Service, etc. Most have had their strong points and many may be more alike than different in their fundamentals. The problem seems to come when a well-supported model proves effective in initial projects, but then under-performs or fails when scaled up to a country level with less intensive support. This leads to a lack continuity and sometimes dueling models for extension. Perhaps part of the solution is for extension systems to be designed for extensive coverage with provision to scale up for temporary intensive campaigns as needs and resources may dictate. The quest for the ideal extension model has been to some extent put to rest with the concept now widely accepted of the "best-fit" extension system, designed to conform with local needs, clients, resources, and institutions (Birner et al. 2009).

In 1985, USAID recommitted to extension, but with a recognition of needs for a changed approach. While encouraging increased extension funding, a new strategy was to: a) encourage private extension; b) expand use of mass media communications; and c) be selective in providing support for public sector extension (Cummings, 1989). From the late 1970s through the 1980s, much of the extension was funded within integrated rural development projects (IRDPs) or linked with other credit, research, or input supply projects. This approach may have improved performance but rested uncomfortably with the need for national agricultural sector development, which required a broader and longer-term perspective for EAS provision.

Funding for extension stagnated in the 1990s, as agriculture and rural development funding overall went into decline and USAID programs shifted away from work through public agencies (e.g., public extension services) to work with private contractors and grantees. Projects emphasized agribusiness development and later targeted specific agricultural value chains. Although these activities were relevant to and relied on extension, extension received limited attention or funding.

In the early 2000s, with extension widely neglected by donors, efforts were made to re-engage with new approaches. USAID participated in the Neuchatel Group to promote increased funding for and introduce new pluralistic and participatory approaches to extension (Neuchâtel Group, 1999). A Neuchatel Group meeting jointly hosted by USAID and the World Bank in 2004 led to a general consensus on EAS issues and to the formation of the Global Forum for Rural Advisory Services (GFRAS) (Alex et al. 2004). USAID funding was instrumental in launch of GFRAS and its program of promoting investment in and good practice in EAS, along with the formation of regional EAS coordinating fora (See: https://www.g-fras.org/en/).

Then by 2010, the Feed the Future (FTF) Initiative had increased funding for agriculture and brought some renewed attention to extension and research. Still, FTF country programs focused largely on value chains facilitation and agribusiness development with extension

included along with multiple other areas of value chain support. The 2010 rise in USAID extension funding and subsequent fall may be due in part to an initial enthusiasm for extension reflected in budget documents, followed by decline and perhaps failure to follow through with extension investments. Several global projects sought to encourage increased investment and new approaches to extension (Modernizing Extension and Advisory Services, Developing Local Extension Capacity, ICT Extension Challenge Fund, Integrating Gender and Nutrition within Agricultural Extension Services). These contributed substantially to a dialog on EAS, but impacted on the USAID portfolio only marginally.

The past 20 years has seen dramatic developments in information and communications technologies (ICTs) with profound implications for enabling effective agricultural extension (Anderson, 2020). Much of this remains unrealized potential for extension and advisory service providers. Pilot programs demonstrate effectiveness, but costs and human capacity constrain scaling up. This was reflected in a six-country project using different ICT tools and channels to complement non-ICT-based agricultural extension approaches delivered by public and private sectors (Landell Mills. 2019). Despite positive impacts of ICTs, financial sustainability problems arose as the project ended.

The ICT revolution's major impact has been that of diversifying information sources through widespread use of farmer cell phones and internet linkages enabling extension providers access to sources of innovation and technical support. Anderson (2020) with many years of experience analyzing extension program performance and constraining design and administrative problems sees potential for digitized EAS to diminish those constraint and make EAS more readily and equitably available across the globe. One must hope that he is right in this.

Reviews of Agricultural Extension Project Performance

USAID has had relatively few portfolio reviews of extension and advisory services (EAS) performance, though there were many evaluations of individual projects in the 1970s and 1980s. In many project evaluations, as well as the farming systems project review (Byrnes, 1990) and the agricultural portfolio review of 1996 (McCleland, 1996), discussion of research overshadowed extension. This has been a chronic problem.

In an influential in-depth review of 30 years of extension investments in Latin America, Rice (1971) concluded that neither agricultural production nor institutional development objectives were fully achieved). But, to the question, "Should extension services be abandoned?", he answered with a strong "No!". He concluded that better targeting of EASs would generally be necessary and that extension agencies should be involved as an element of agricultural development projects. Rice blamed failures with extension investments on problems in USAID's approach to institutional development, which was compromised by an inappropriate institutional model and the short-term nature and discontinuity in projects.

Britain (1986) concurred with Rice's assessment of problems in establishing effective extension services, finding two contributing problems. The US model as adopted by other countries tended to be highly centralized, while the genius of the US model lay in its decentralization to

the state and county level. This decentralization spawned a strong base of support and participation by US farmer organizations and farmers themselves. This base was not there nor prepared in other countries. Two caveats to these finding may be necessary. While the Rice review was confined to Latin America, extension agencies took root better in Asia (India, Taiwan, Korea, Thailand, etc.) where country commitment was higher. And, as with NARSs and research, extension projects expected service providers to implement effective extension programs at the same time they themselves were being established and strengthened. This proved a complicated undertaking.

A 1989 Global Consultation reviewed status of extension services (FAO, 1990). The Consultation confirmed continuing need for support to extension services, which had over 600,000 extension agents worldwide, an average of one agent to 2000 farmers. At that time, 97.4 percent of agents were in public sector organizations. Critical problems identified were: the limited funding being provided for extension, the low level of training for most extension agents, and inability to reach low-income producers and to fully engage farmers in EAS governance and provision.

As part of the FAO Consultation, Cummings (1990) reviewed USAID's extension strategy noting its shift from strengthening national systems to funding extension for technology transfer linked to new technologies, generally from research. National extension systems tended to be: overly centralized; have limited contacts with farmers; have inadequate linkages with researchers, private industry, and universities; rely on poorly trained, in-experienced, and overworked extension agents; have numerous non-extension responsibilities; use ineffective and outmoded methods; and have little new technology of practical value to offer. Cummins noted that USAID was continuing substantial investment in extension, including support to strengthening national systems in addition to funding specific technology transfer projects. One new initiative was the Communication for Technology Transfer in Agriculture (CTTA) to establish more effective communications with farmers using both personal contact and mass media, and applying social marketing and development communications principles. CTTA was experimental at that time, but did show progress and evolved into GreenCom for environmental education and extension and SCALE (System Wide Collaborative Action for Livelihoods and the Environment) for agriculture, both premised on multi-stakeholder engagements to facilitate multiple channels of communication for extension programs (AED, 2007).

Sustainability of USAID's national extension system investments often floundered due to inability or unwillingness of national governments to continue funding recurrent costs of extension after project completion. This was also a key problem identified in a World Bank evaluation of $3.0 billion investment in extension (Purcell and Anderson, 1997). Other issues with the World Bank extension projects were: lack of relevant technology for dissemination and poor linkages to research; a top-down orientation and limited participation of farmers; inadequate qualified extension staff; and lack of commitment from national leaders. All issues reminiscent of USAID experience.

A 2010 European Union review of EAS experience and best practice noted the variety of recent reforms being implemented in NEASSs – decentralization, demand-driven approaches, outsource contracting for service provision, privatization, revitalization of public EAS agencies, and national EAS strategy and policy development – and described strengths and weaknesses of eight extension approaches (Ludemann and Stoetzer, 2010). Many of these reforms trace back to work and recommendations from the Neuchatel Initiative.

Private extension has been part of the USAID EAS agenda for a long time. Feder et al. (2011) reviewed various approaches and benefits from private sector funding or provision of EAS and found that private EAS options are diverse and applicable to differing situations. However, despite some advantages inherent in private EAS, the review concluded that private sector extension is not a panacea and that many developing countries will require a capable public extension service for some time into the future. Developing effective models and mechanisms for public-private collaboration in extension should be a priority.

A review of USAID support to private sector extension and advisory services during the 2010s found that most USAID projects utilize traditional extension methods – field demonstrations, lead farmers, radio, and farmer training – implemented by private NGOs and contractors but relying heavily on public extension for technical support and extension program implementation (Digital Green, 2019). Much of the extension emphasis was on nutrition education and reaching women with relevant services, and with an emerging focus on reaching rural youth. Interestingly, these represent a return to some priorities of the 1950s. The study recommended: better analysis and planning for EAS projects; expanded use of relevant ICTs; avoidance of subsidies; and capacity development of public and/or private EAS tailored to country conditions.

A synthesis of project evaluations relevant to the FTF Program found success with facilitating technology adoption, though details were unclear as to the technologies adopted and investments (extension, credit, marketing, etc.) most responsible for adoption (KDAD, 2016). Farmer training appeared to be the major mechanism for extension and technology transfer the main approach. Little information was provided on how EAS programs were organized and implemented. The report suggests need for greater innovation and attention to strategy development for EAS. It is not clear that the approach of relying on USAID contractors or grantees to provide EAS or to subsidize local providers is effective in strengthening sustainable local capacities.

From 2017, USAID has reoriented its overall strategies and programs in a “Journey to Self-Reliance”. The intent of this strategy is to build local capacity and make foreign assistance no longer necessary. To provide a base for maintaining and increasing agricultural productivity and rural well-being, investments will be needed to develop capacity in local extension services – public and private. Whether and how this will be done remains to be seen.

National Extension and Advisory Service System Capacity

National extension and advisory services systems (NEASSs) are substantial, complex, and diverse, as reflected in a review of global status and performance of national extension and advisory service systems (NEASSs) in selected countries (Davis et al. 2020). A 2012 Global Forum for Rural Advisory Services (GFRAS) survey of 347 EAS providers in 81 countries found there are over one million field EAS agents (Davis and Alex, 2020). This clearly represents a formidable global effort to improve agricultural sector performance. Despite requesting data from organizations across the pluralistic NEASSs, especially from private providers, 91 percent of field EAS staff reported were in government extension organizations. Under-reporting by the private sector is likely, but the limited numbers typically reported by private providers make clear the public sector predominance. Comparison of the 2012 survey with prior surveys of global extension capacity is strongly suggestive of growth in NEASSs, increased institutional pluralism, a diversity in EAS clientele, and use of more diverse extension methods. Other factors influencing NEASSs are: requirement for more effective coordination, decentralization, increased participation by women as agents and clients, challenges to target youth, better market-responsiveness, increasing urbanization, and needs for better linkages to public and private research programs.

NAESSs have a wealth of EAS approaches to draw from in developing their individual best-fit models for EAS delivery. There is also a wealth of ICT applications for EAS that have been piloted - farmer-made videos, text and voice messaging, call centers, internet programs, databases, etc. (See World Bank. 2017 – "ICT in Agriculture, Updated Edition: Connecting Smallholders to Knowledge, Networks, and Institutions".). Mainstreaming these innovations in inter-connected NEASSs that efficiently address needs of varied client groups remains the challenge.

Changes in NEASSs carry significant implications for country-level policy (Davis et al. 2020). Countries need clarity in extension policy and strategies to guide restructuring and modernization of the EAS system. Although the public sector is likely to remain important in EAS funding, policies should promote diverse funding arrangements to encourage stability and sustainability in services. EAS capacity improvements may entail changes in organizations, management, incentives, and training to meet new demands. Extension methods too must change to draw on ICTs and other approaches suited to defined client groups.

Review of the USAID EAS portfolio largely confirms the above findings (Digital Green, 2019). Public sector EAS – financing and provision – currently and likely into the future will provide the base for NEASSs, even as the private share of EAS increases. Substantial EAS capacity exists in nearly all countries, even though nearly all exhibit significant weaknesses. Strengthening intra- and extra-system linkages is a key area for improvement. Critical system improvements are needed. The door now seems open to NEASS improvement with knowledge (e.g., best-fit concept) and tools (i.e., ICTs) available, if adequate intentional efforts are applied to this task.

USAID Agricultural Education and Training Investments

Agricultural education and training (AET) was an important initial priority for USAID funding in early years of the 1950 and 1960s. As with other AKIS sub-sectors, estimated funding includes both direct support for local agricultural education programs and funding for development of local capacity. Since USAID rarely undertook to cover recurrent costs of training in local educational institutions, most funding was for program and institutional capacity development – principally for establishing or expanding agricultural colleges and universities. Agricultural vocational and technical level training programs are also included, but represent a much smaller share of the funding. Funding estimates do not include international training (other than for AET faculty and staff), nor farmer training or regular in-service training for extension and other sector institutions. Though not included in the USAID AET funding estimates, USAID's general participant training program for the agricultural development is discussed below.

USAID Agricultural Education and Training Funding Trends

USAID funding for agricultural education and training totaled $2,265.16 million (constant 2012 Dollars) ($867.26 million current US Dollars) from 1950 to 2017. Of this, about 34 percent was for Africa, 29 percent for Asia, 23 percent for Latin America, nine percent for the Near East, one percent for Europe, and four percent for Global programs.

Figure 15 presents estimated USAID funding for agricultural education over time. The funding profile differs from those of other AKIS sub-sectors, due to early investments in establishing agricultural education and training institutions. Funding remained relatively high from 1956 through 1991 with two peaks – under ICA in mid-1950s to mid-1960s and again under AID from the late 1970s to late 1980s. The first was perhaps inspired by the obvious need to fill a void in agricultural technical training in developing countries and the latter by Green Revolution successes and concern over global food security. Funding dropped to near zero by the mid-1990s. USAID funding generally supported establishment of AET programs, but rarely took on funding for recurrent operating costs.

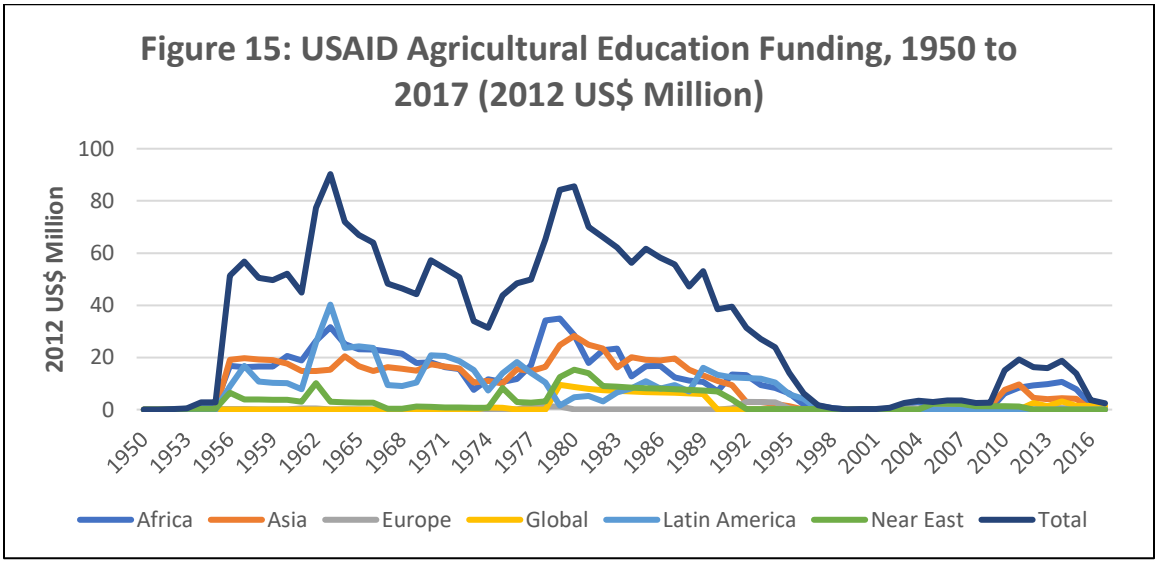


Figure 16 shows the annual level of USAID funding for agricultural education by decade. Substantial investments in the 1950s were followed by retreat from this sub-sector in the 1990s and then by a modest increase in the 2010s to help address second-generation problems and strengthen agribusiness and vocational/technical training.

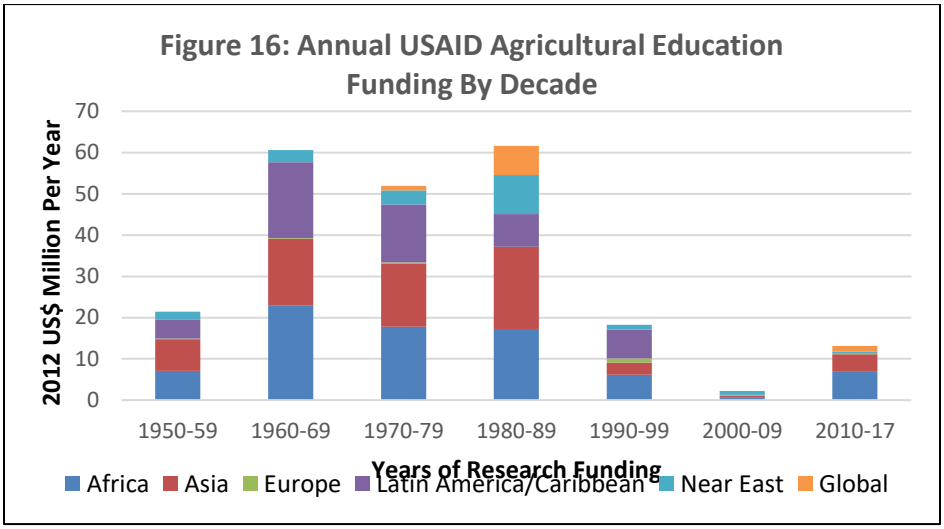
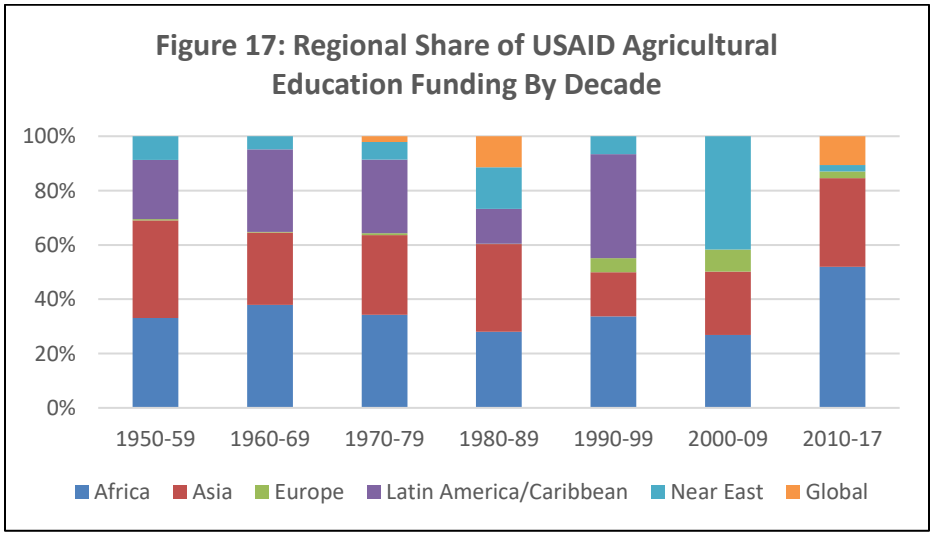


Figure 17 shows share of USAID agricultural education funding by region over seven decades. Global funding for agricultural education has been limited as education is by nature a local activity and local public good. Support for institutions in Europe has also been limited as countries there generally had existing universities and agricultural training institutions. Proportions in latter decades are skewed by the limited numbers of projects funded, which result in individual projects inflating the proportion for their regions.



The ten countries receiving the greatest amount of USAID funding for agricultural education are: Nigeria, Brazil, Indonesia, India, Peru, Kenya, Tanzania, Pakistan, and Morocco. These include larger countries with multiple universities and countries that had two or more phases of support to their universities. Given the strong US-India university partnership and intensive

early USAID support, it is perhaps surprising that India doesn't rank higher. Over seven decades, USAID funded AET activities in 76 countries, with 15 receiving more than $50 million (constant 2012 Dollars), 24 receiving between $10 and $50 million, 30 receiving between $1 and 10 million, and seven receiving less than $1.0 million. Eighty-six percent of AET projects and 86 percent of AET funding was for country-level projects. Global and regional funding for AET was limited, mainly for support to improving AET capacity and development strategies.

Overall, the USAID AET program was a major effort and had commendable impact. USAID assisted in strengthening over 84 agricultural colleges and universities in 48 countries, mostly prior to 1985 (See Annex H). Much support was provided through twinning or partnerships between US universities and local universities with funding through a contract or grant to the US institution (Hanson, 1989; Oehmke, 1995). Such arrangements provided for faculty and staff training, equipment and materials, curricula development, libraries, and technical assistance on university administration. University construction, if included, was generally covered under separate contracts. Partnering universities developed close ties. Occasional frustration occurred when US university consultants expected universities to develop along the US Land Grant model combining research, extension, and education, even though the developing university usually lacked the mandate, resources, constituency, and institutional framework for such a model. Many other universities benefitted from other targeted or limited USAID grants or contracts that may or may not be captured in the AKIS database.

By mid-1980, many USAID Missions had completed one or more phases of funding for agricultural universities and were ready to move on. Funding for agriculture was reduced and there was an understandable desire to invest in something new. There was left a clear "glass-half-full" situation, with agricultural universities a highly visible accomplishment, but still not up to all hoped for standards. That was due in part to unreasonable expectations and to the realities of local resource limitations. USAID funding for AET essentially disappeared.

In the 2000s and 2010s, some USAID interest returned to agricultural education, which saw a modest bump-up in funding. Agricultural technical training was recognized as important to a profitable agribusiness sector able to service farmer-clients. One notably and apparently-successful project was in Egypt. Such vocational-technical training institutions are not as prestigious, nor as well financed, as universities and lack strong constituencies for support. Models for effective technical training are still needed to provide graduates practical skills, an orientation to market mechanisms, and links to private sector employment opportunities.

In 2011, USAID supported a Roundtable of AET specialists to explore the state of National Agricultural Education and Training Systems (NAETSs) (Maguire, 2011). The Roundtable concluded that many AET institutions have common weaknesses in: limited funding, an excessive focus on production agriculture, and pending wholesale retirement of senior staff trained under previous donor programs. Many need reform to become more demand-driven, more responsive to varied stakeholders, and better linked to other sector institutions. Their training programs need to focus more on practical skills and an interdisciplinary understanding

of agricultural issues. The Roundtable's general recommendations for NAETS support were aligned with country conditions and level of development.

The AET Roundtable led to USAID funding for the InnovATE Project (2012-18) to catalyze investments to develop local capacity for a strong and growing agricultural sector (Larson et al. 2018). The project conducted country assessments of AET capacity; supported activities to build capacity in agricultural education institutions; and sought to distill good practices recommendations and create tools for AET system strengthening. A final evaluation concluded that there were some positive effects from InnovATE activities, studies, and contributions to the AET knowledge pool, but limited success in addressing in-country AET constraints and increasing country AET program investment, design, and operations (Larson et al. 2018). The evaluation stated that, "InnovATE's most prominent challenge was the lack of Mission demand and engagement".

The InnovATE Project did result in five Mission investments: Armenian agribusiness education, Senegal positive youth development and technical/vocational education, Afghanistan agricultural innovation, and Honduras livelihoods and violence study (Virginia Tech, 2016). The project found that women are underrepresented in all roles throughout AET systems and that employers from different countries consistently say that workers' skills do not match those needed and that soft skills are needed in addition to technical capacities. Vocational training for agribusiness managers and employees should include soft skills necessary for entrepreneurship, leadership and workforce readiness.

Reviews of Agricultural Education and Training Investments

Hanson (1990) summarized reviews of agricultural university development projects in ten countries in "Beyond the Neoclassical University: Agricultural Higher Education in the Developing World – An Interpretive Essay". He considered the university development projects completed or nearing completion to have been the "first generation" projects to establish basic capacity. He somewhat optimistically envisioned a "second generation" of projects that would revitalize agricultural universities by engaging them in extensive collaborative research and exchange programs with other institutions. But, this was not to be.

University project evaluations found that capacities were in place, but that too much emphasis had been on physical sciences and technology generation and dissemination, marginalizing the social science programs needed for universities to engage more broadly in rural development processes (Hanson, 1989). Additional problems were: limited budgets; traditional teaching methodologies; lack of linkages with Ministries of Agriculture; bureaucracy and political interference; and lack of institutional vitality. The weak endorsement of university performance by these evaluations failed to generate support for the envisioned second-generation projects. This may not have been all bad, as it forced universities to find their own place without dependency on continued USAID funding. Not all were able to do this.

Current National Agricultural Education and Training System Capacity

Nearly all USAID-assisted universities continue in operation with some having developing high-quality, well-respected programs. Inevitably, results varied, and institutional development proved a long-term process. As with other capacity development efforts, much depended on local commitment and funding. Most agricultural universities faced serious financial constraints in early years – deferring maintenance, paying faculty and staff less than a living wage, and failing to provide equipment and materials for labs and practical learning experience. On top of this, governments often increased enrolment to meet popular demand, further stressing systems and quality of training offered. Even with such constraints, the universities have played a positive role in preparing technical and managerial personnel for the sector. Indian agricultural universities, perhaps one of USAID's most successful partners, were found in a 1988 review to have this pattern of considerable achievements and impact on Indian agriculture, but continuing areas of concern (Busch, 1988). This likely continues to the present (Tamboli and Neme, 2011).

Ensuring a practical rather than theoretical orientation of AET programs has been a continuous struggle. Some universities established admirable practical production experience curricula, though these were difficult to maintain. A frequent problem was an expectation of students that their degree would lead to a permanent government job. After a few years of graduates, opportunities for government jobs dried up. Graduates often had little entrepreneurship training or preparation for private sector employment. Integrating agribusiness skills and a market orientation in curricula has come slowly.

A World Bank review (World Bank, 2007b) of African AET programs made a compelling case that modernizing AET institutions is vital to African development. It found existing institutions to be: isolated and fragmented; have inappropriate enrollment profiles; have obsolete curricula; lack adequate qualified staff and faculty; and use outdated teaching methodologies. Some change is likely to have occurred since the review, but the absence of a concerted effort in this area makes it unlikely that the problems have been resolved.

Analytical work on and developmental investment in AET systems has lagged that of research and extension. As a critical component of the agricultural innovation systems AET institutions train personnel for the whole of the system and its component value chains. These institutions also may participate directly in research, extension services, and technical support to all public and private participants in the system. AET is not widely understood as a national system, though this concept deserves increased attention. Universities tend to attract most attention and funding due to their prestige and ability to lobby for funding. Country situations differ widely, but vocational and technical training centers, public and private sector in-service training programs, and other job training initiatives can be important, even though often neglected. Linkages among training institutions and universities can be highly beneficial to share experience and expertise. Such indirectly links between universities and farmers and agribusinesses can keep university programs grounded in practical sector issues.

Maintaining dynamic linkages to stay abreast of developments in agriculture is a challenge. Some agricultural universities have not kept pace with developments in biotechnology, ICTs, natural resource management issues, agribusiness, and global market systems. University linkage programs have helped with this, but the linkages wear away over time. Some universities have developed strong partnerships with international programs and become centers of excellence, but many struggle, and it is not uncommon to find courses and curricula that have been unchanged over 20 years. Professional linkages are necessary to keep curricula and other institution programs current with emerging technologies and issues. Equally important are linkages with agricultural sector clients and stakeholders within the country to keep programs relevant and to build a constituency for continuing local support.

A 2011 review of Pakistan agricultural universities provides an example of continuing needs, finding that: "Despite impressive achievements and academic progress among agriculture universities, the need is there for a true paradigm shift in agriculture education and research that focuses directly on the needs of small and medium farmers, including pursuit of innovation in credit/market linkages, intermediate and appropriate technology, sustainable farming systems, and value-added interventions that link fully with water and energy concerns." (Odell et al. 2011). This review followed a period in which Pakistani agricultural universities – previously supported by USAID – had gone through a period of significant decline, followed by a turnaround, especially in research and publication output. The turnaround was a result of a Higher Education Commission initiatives to impose publication standards and providing appropriate staff incentives (Derek Byerlee, pers. Comm.).

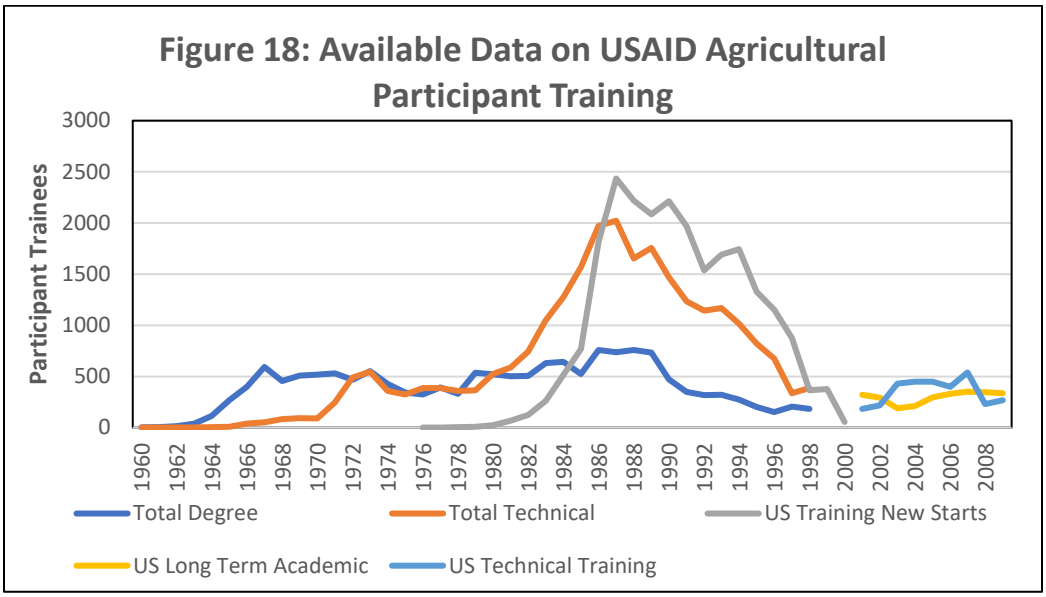
As with all educational programs and systems, NAETSs and AET institutions face a continuing challenge of staying relevant in a changing world. Still, the strength of current NAETSs is evident in the fact that many developing countries have become net exporters of well-trained agricultural professionals.

USAID Participant Training

One of USAID's most widely acclaimed contributions to agricultural development has been its participant training – degree and non-degree training of agricultural scientists and sector technical and management personnel. Participant training is essentially a short-term alternative to in-country training, providing the human resources needed for the sector until local AET institutions are in place to meet country needs. Much of the training, especially degree training, has been in the US, though a substantial amount has also been in international universities and centers.

Figure 18 shows total and US-based academic and technical (i.e., non-academic) programs funded by USAID from the 1960s to 2009. Data are drawn from various sources listed in Annex F. Data on training in the 1950s and early 1960s are not available and that from later periods are incomplete, inconsistent, and subject to varied definitions. Problems include: systems for central monitoring changed over time; some country Missions neglected to report on training;

and training was funded by multiple contractors and grantees, some of which reported training consistently and some did not.



Available data indicate that USAID funded at least 18,255 academic degree training programs and at least 28,373 technical training programs (mostly short-term) from 1960 to 2009. Many of these were in the US. This includes training of staff for AKIS institutions, funding for which is included in AKIS funding estimates. It also includes training for many other agricultural sub-sectors (e.g., policy and planning, agribusiness, regulatory systems, land tenure, rural finance, input supply, etc.), which are not included in AKIS funding estimates.

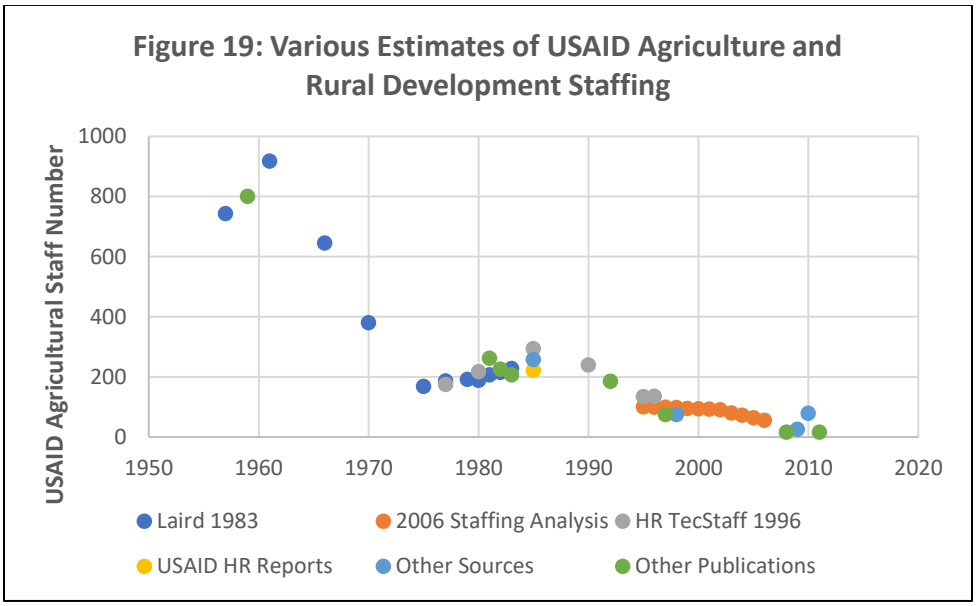
Presumably, with local AET institutions in place, the need for such international participant training should be greatly reduced, though a lower level of continued international training is important to: exchange of knowledge across countries, facilitate development of global partnerships, and increase global understanding. This is especially important to agricultural research and education programs.

USAID Agricultural Staffing

USAID funding for AKIS both drives and is driven by technical agricultural staff in the Agency. Technically-qualified staff are essential to design, management, and evaluation of agricultural projects, perhaps especially for AKIS sub-sectors where understanding of production technologies, farming systems, and rural social and economic systems is especially important to introducing innovation. Lack of qualified technical staff reduces Agency ability to assess and insist on qualified staffing of projects by implementing partners and reduces Agency credibility in working with technical staff of other organizations. Technical staff are important also to ensure advocacy and planning for investments in agriculture. The diverse and multi-functional nature of agriculture requires diversity in agricultural staffing to address issues of natural resource conservation, marketing and agribusiness, and rural social issues in addition to AKIS subsectors.

Tracking USAID agricultural staffing is as difficult as tracking AKIS funding levels. There is no standard reporting on staffing over time and staffing strategies have changed. There are multiple categories of employees (direct hire, personal service contractors, foreign service and third country nationals, USDA and other seconded staff, interns, and others), with different levels of responsibility and influence[20]. There are also civil service and foreign service employees and overseas and Washington-based staff. The number of foreign service agricultural staff may be the most representative of commitment to country agricultural programs, though Washington-based agricultural staff are most critical and influential for the important global research program funding.

Figure 19 shows various estimates of USAID agriculture and rural development staffing over time. These come from varied sources and almost certainly vary in categories of staff counted. (See Annex G.) Still, the figure is strongly suggestive of agricultural staffing trends. Agricultural technical staffing is a part of the larger issue of adequacy of staffing for management of the USAID programs (USAID, 2004; GAO, 2010).



Several factors help to explain the decline in agricultural staff numbers. The major drop from the 1960s to post-1975 reflects two changes. In early years of foreign assistance, USAID staff directly implemented field programs. This required large numbers of staff. From the 1970s, the Agency shifted to contracting out implementation to consulting firms, NGOs, and universities. Thus, need for USAID technical staff declined, while contracted implementing partners fielded large numbers of technical staff for project implementation. An additional factor was the large number of total staff in Viet Nam, which peaked at 1977 direct hires in 1968 and other

[20] US Direct-hire staff accounted for 27 percent of the workforce in 2004 and 35 percent 2009 (GAO, 2010).

countries of mainland Southeast Asia (USAID, 2007). These dropped sharply after the Viet Nam War ended in 1975.

Country mission foreign service national and third country national staff numbers are not generally included in Figure 19. Third country national numbers were significant in earlier years but have declined from the 1980s. Since the 1980s, the number of contracted local foreign service nationals (FSNs) has greatly increased. They are now the basis for much program management, perhaps especially for agriculture, as the numbers of US direct-hire agricultural offers has dropped substantially. Many of the local foreign service nationals are very well-qualified and have intimate knowledge of local agricultural institutions, market and farming systems, and rural societies. However, despite these strengths, local staff may lack: knowledge of technologies, institutions, and development options from other countries and regions; appreciation of weaknesses and potential benefits from changes to existing local institutions and policies; understanding of US domestic and foreign policy issues driving USAID programs; and influence over program strategy and planning. Local staff are often tasked with most field program monitoring, which they do well, but which may insolate US staff from direct understanding of field conditions and issues.

The nature and qualifications of USAID agricultural staff have changed and can be characterized in four eras[21]:

- In the 1950s and 1960s, large numbers of staff came from US universities and extension services, bringing strong practical experience and technical training in production agriculture, as well as an understanding of US agricultural institutions. They did an excellent job in laying a base for agricultural development, but were less adept at understanding local social and economic constraints to development and less accomplished in cross-cultural work situations. Their technical training and practical US work experience conditioned them as strong believers in AKIS institutions as the basis for agricultural sector development.
- The 1970s and 1980s brought a turn-over of agriculture and rural development staff with a high proportion of new staff having prior overseas experience (largely with Peace Corps), often having worked on agriculture and rural development projects. Some had US farm backgrounds, but many, who did not, returned to the US and got agricultural degrees before joining USAID. In general, their practical experience and technical training in agriculture was less than previous Agricultural Officers, but they were better equipped for cross-cultural work (including language capabilities), more committed to participatory approaches (such as farming systems research), and more appreciative of rural social and economic constraints on agricultural development. Their more generalist background made them more objective in assessing investments in AKIS.
- The 1990s became a turning point. With agricultural funding and staff levels declining, there was little hiring in agriculture and reduced coherence in sector staffing. An island of staff and activity remained in Washington for management of global research programs that

[21] Apologies for these gross generalizations!

continued despite constant downward pressures on budgets. In country Missions, agriculture largely became agribusiness projects, and these were often managed by Economic Growth rather than Agriculture Officers. They often focused more on business and less on agriculture and producers. Many agricultural staff elected or were forced to move to positions other than agriculture. The remaining agricultural staff emphasized research, especially global research investments.

- And, then the 2000s ushered in a new more complicated period. The gap in agricultural staffing for the Agency was painfully obvious and a part of a general staffing problem (USAID, 2004). The serious decline in staff numbers led to a break with the past. The Agricultural Sector Council ceased to function, eliminating an important forum for professional dialog and independent analysis. For a time, agriculture was subsumed under the Feed the Future's food security program. Recruitment of new agricultural staff was initially difficult, but eventually brought in a new cohort of agricultural staff, much more diverse in terms of gender, ethnicity, and technical background. A sample of 48 new agriculturalists suggests that: most (over 80 percent) had prior international experience (often Peace Corps); prior work experience in farming (~20 percent), private agribusiness (~ 20 percent), or government/NGOs (~70 percent); about a quarter had a basic degree in agriculture; and most had advanced degrees in agricultural technical fields (~40 percent), general agricultural or international development (~40 percent), environmental sciences(~15 percent), or a non-agricultural degree (~10 percent (author's estimates)[22]. It is unclear what priority staff recruited since 2000 will - or should - put on AKIS investments.

Recruiting and retaining qualified agricultural technical staff is not a new problem. The number of US agriculturalists has dropped along with the decline in number of farms from 5.6 million in 1950 to 2.6 million in 2019 (Wikipedia, 2020). Even in 1983, Laird (1983) noted that shortage of technical agricultural specialists in the US made recruitment for USAID's overseas programs difficult. The strong job market for such individuals in recent years accentuates this problem, which may be an even greater problem for USAID grantees and contractors. Sound AKIS investments are unlikely without adequate USAID and implementing partner technical staff for planning and oversight of such programs.

So, what about the future for AKIS investments?

Looking back to identify and understand trends in USAID AKIS investments may be of some interest, but also leads to the question "What's next?". Two mildly contradictory but relevant adages apply "those who do not learn history are doomed to repeat it.' and the common investment warning that "past performance is no guarantee of future results". It is a different world from the 1950s when USAID began, from the 1980s Green Revolution, and from the enthusiastic globalization of the 2000s. Even the role and need for foreign assistance may be questioned.

[22] Some had more than one advanced degree.

Some widely-discussed changes are shaping agricultural systems – globalization of trade and markets; commercialization of small-farm agriculture; natural resource constraints; climate change; ICT advances; a new wave of mechanization; and new biotechnologies. These and the ever-changing global political environment will continue to influence foreign assistance needs, opportunities, and strategies. Challenging questions also arise on the interplay of social, economic, and environmental issues in defining the way forward for agriculture. The environment for future USAID investments in AKISs is dramatically changed in the following ways.

- Substantial local capacity exists in AKISs. Agricultural research institutes, extension agencies, and universities are in place in most countries with mandates for their roles and with a track record of operation. Most exist as pluralistic systems with public, private, and civil society actors linked to varying degrees. Quality of programs varies considerably, with the appropriate size and structure of the systems dependent on country size and agricultural sector characteristics. Countries might be broadly characterized by AKIS capacity as: formational where systems are quite limited and still in an establishment phase (e.g., Southern Sudan, Somalia); strengthening where some capacity exists but with major weaknesses (e.g., Cambodia, Guinea); maturing where there is substantial capacity but not yet adequate to country needs (e.g., Kenya, Uganda); and mature where the AKIS is strong and able to engage effectively in partnerships to address new challenges and more sophisticated basic/strategic (e.g., India, Brazil). The level of capacity within a given country may vary among agricultural research, extension, and education systems.
- Technological developments in genomics, other biotechnologies, ICT applications and precision agriculture, nano-technologies, mechanization, and other areas provide opportunities for AKISs to facilitate major improvement in farm productivity and sustainability, but require the necessary expertise, resources, and programs to exploit these new technologies.
- Private sector actors are the preferred mechanism for agricultural development in most countries. Their market- and client-orientation, flexibility, and ability to draw on private funding are well-recognized. But, they have clear limitations for AKIS sub-sectors, which often tend to involve provision of public goods-type services that lack incentives for private provision. The private sector is important to agricultural research that leads to innovation embedded in inputs sold to farmers (e.g., hybrid and other seed, pesticides, machinery), but overall private sector funding accounts for a very limited share of agricultural research in less-developed countries – only 8.3 percent, as per Pardey and Alston (2006). Though private funding for local research may be limited, public policies should encourage this and recognize the private sector as a prime facilitator of technology spill-ins (Pray, et al. 2011). Extension and advisory services are frequently provided efficiently by private entities, but this is usually restricted to targeted technologies or products and relies heavily on public sector extension support (DLEC, 2019). And, few private universities offer strong, well-rounded agricultural programs.

- Globalization allows for freer flow of trade, finance, innovation, labor, and ideas, widely impacting markets and opportunities throughout the agricultural sector. How far this may continue or what reactions may constrain the processes is unclear as of 2020.
- Natural and environmental resources are under threat with loss of forests, wetlands, biodiversity, un-used arable land, and fishery stocks. Soil erosion, nutrient depletion, salinization, and reduction in soil organic matter increasingly constrain productivity. Climate change, food safety and human health linkages, and environmental pollution add complex new challenges for AKISs. Producing more with less impact on natural resources is essential.
- US agriculture has also changed and faces a dilemma. "Intensive, high-input" agriculture exploits economies of scale and technologies in highly-productive, monoculture production systems, but is widely criticized for supposed negative social and environmental impacts. "Sustainable" agriculture, a diverse set of approaches, challenges the dominant Intensive, high-input agriculture model with more complex farming systems that are claimed to be more environmentally-friendly, resilient, socially-sound, and equally productive. The debate between the two models undoubtedly has a long way to run, presenting challenges to AKISs. Research, extension, and education actors will be pulled between these two models, but need to retain an objectivity to inform the debate and to provide support for emerging paradigms. The decline in number of US farms brings with it a drop in numbers of individuals with practical experience for agricultural scientist and technical specialist positions that may significantly constrain ability of USAID and its implementing partners to access technical staff with necessary agricultural expertise.

Future investments should support USAID's renewed commitment to developing local capacity to the point that foreign assistance is no longer needed. For many countries, as in Africa, this requires a long-term vision and support for institutional models consistent with a country's traditions and institutional structures (Eicher, 2003). Future AKIS investments must be based on a clear-eyed understanding of past experience and grounded in local commitment to the AKIS programs and their objectives. USAID and other donors can not build local capacity, but can play a critical role in fostering its development.

Options for Future AKIS Investments

USAID is entering an eighth decade of US support to global agriculture and national AKIS programs. There may be relevant lessons from the $15.64 billion (constant 2012 dollars) investments made to-date in AKIS activities, despite the very different world environment for future programs. What are the implications for the future? This question must be asked broadly for the sector, but has special implications for the AKIS sub-sectors that facilitate innovation and resilience in agricultural systems.

The true challenge for USAID agricultural staff will be to come up with new approaches and mechanisms for investing in agriculture research, extension, and education, ensuring that knowledge and information systems meet global needs over the coming decades. This cannot be "new wine in old bottles," but will likely require considerable innovation and ingenuity. In all

of this, understanding family farms and farming systems and giving them a place in the systems is apt to be critical for resilience and sustainably. Following are some options for consideration.

Agricultural Sector Program Review

A comprehensive review of USAID's agricultural sector programs (and perhaps those of other donors) would be timely and perhaps essential. The 2011 World Bank agricultural portfolio evaluation for the period 1998 to 2008 (IEG, 2011) would be one useful reference for such a sector review, though more detailed analysis of specific approaches and strategies would be useful in defining good practice. For USAID, the 1996 CDIE review seems to be the most recent and comprehensive and something of a model (McClelland, 1996). Much has happened since then. A new review should look at agriculture holistically – as it impacts objectives of food security, economic growth and poverty reduction, environmental and resource conservation, and political stability. Assessing what has worked and how to address future challenges should provide broad guidance for strategies and planning. The review needs to be practical, with a good understanding of agricultural systems and rural economies, but visionary in looking to needs to 2040 or 2050. Complementary to this it would seem necessary to carry out an analysis of USAID agricultural staffing needs – with the last documented review competed in 1991, this seems overdue (Chemonics, 1991).

Concluding a review with a new "agricultural strategy" might be appropriate, but also risks devolving into a process of attempting to justify whatever projects are currently underway. AID (1990) recognized that formal sector strategies are often not worth the effort. Rather effective programs depend on strong technical leadership committed to asking hard questions, conducting rigorous analysis with broad participation, and establishing clear priorities based on evaluation and analyses. A thorough sector review could provide the base for such leadership.

Re-Commit to Agricultural Research

USAID's commitment to agricultural research is longstanding, continuing even through the dark days of minimal funding for agriculture in the 2000s. The rationale for funding agricultural research remains strong. Still, changes may be needed and there may be an important gap in current programs. Change will not be easy, as fifty-year old ways of doing business are well entrenched. Still, major changes in global agricultural research funding may have important implications for developing countries (Pardey et al. 2018). A renewed commitment should consider the following options.

Consider Focus on National Agricultural Research Systems

With the end of significant donor funding for NARS capacity development over the past three decades, it is uncertain whether they are well prepared to lead innovation needed in country agricultural development. Many have proven solid partners in work with IARC, ILs, and other global programs, but to some extent this has been living off the capacity development of earlier donor investments. Some are or can aspire to conduct basic research; many need capacities for applied research to meet local needs; and others in smaller countries simply need be able to facilitate adaptive research and testing of technologies introduced from regional programs and

by private firms. All countries require some capacity for agricultural R&D, but ASTI data suggests that many NARSs have significant weaknesses.

A global assessment of NARS capacities and ability to meet research needs to 2050 would be useful in planning for future research strategies. Ultimately, country-specific assessments are necessary to determine: current level of capacity, country commitment to agricultural research, research needs, and research capacity needs[23]. The private sector and civil society will generally have roles in NARSs, but inevitably public sector funding and often implementation will lead. Where USAID proceeds with support to NARS development, projects may not necessarily be high-cost, but ideally will have a long-term perspective, as required by the nature of both research and capacity-development undertakings. Recommendations of Anderson and Roseboom (2013) should be relevant to such NARS assessments.

Reform Innovation Lab Program Strategies

The current set of Innovation Labs includes: recent smaller projects that target specific research topics and the broader research programs under legacy CRSPs, some of which have been funded through serial grants over 35 years. There is justification for both approaches, but a good case for some reform. The more narrowly targeted research grants are an excellent means of funding more basic or strategic research on global public goods issues. This can be done under a competitive grants program. Such a program might well be managed by USDA with its deep pool of agricultural research expertise and contacts throughout the research community.

The broader collaborative research program ILs offer opportunity for more diverse and comprehensive research programs that engage a broader range of US and host country scientists. Programs have suffered in being pushed to engage more in non-research development activities for which they may not be best suited. They operate in dispersed and maybe not very logical sets of countries and have limited resources and interactions in each participating country. With management of multiple country activities located in a US university, it is hard to avoid being supply-driven with the lead implementer setting the research agenda. That may be fine for truly strategic research on global issues, but in practice activities have shifted towards more adaptive and applied research nearer readiness for adoption. Restructuring the program might better prepare it for relevance and effectiveness over coming decades.

One option warranting consideration would be that of switching collaborative research support projects from a thematic focus to a country focus. This would result in a more diverse research program responsive to specific country needs. It could: enhance country ownership and commitment; encourage more comprehensive knowledge of local farming systems and the agricultural sector; engage with a larger range of NARS actors in country; increase impacts on production and local capacity development; provide opportunity for stronger US scientist

[23] Capacity can be understood to include: human resources; physical infrastructure; and organizational structure, including institutional linkages.

experience in and linkages with the country; and raise the profile of and strengthen USAID Mission commitment to research. Such a program would best be managed by the USAID Mission or co-managed by the Mission and a Washington-based Agricultural Research Officer. If the existing thematic IL approach is continued, management by USDA might be desirable for the reasons noted above for a competitive research grants program[24].

Strengthen IARC Focus on Research

The drift of the CGIAR centers from a strict focus on core research programs to non-core development activities has been pronounced, distracting attention and resources from priority research to activities for which they may not be best suited. This has happened in part because they have been easy to fund and have well-established country-level relationships. Refocusing them more tightly on research could enable them to develop new models for research collaboration to meet needs for coming decades. This should include development of models for research funding and collaboration to improve natural resource management, mitigate and adapt to climate change, and enhance agricultural system sustainability, areas of weakness in the past (Byerlee and Lynam, 2020). Shifting management responsibility to USDA might allow for better coordination of IARC strategic research with US agricultural research. Emphasizing core strategic research and the core funding for this will be critical.

Develop Strategic Support Services to Improve Extension and Advisory Services

Since USAID and the World Bank co-hosted a Neuchatel Extension Group meeting in Washington in 2002 (Alex et al. 2004), a wealth of new research and information has become available on good practice for extension and advisory services[25]. "Extension" has crept back into development agencies' vocabulary and into projects. Still, USAID country projects have not generally adopted very explicit or comprehensive strategies for extension and provide most funding for direct delivery of EAS in targeted areas using traditional methods (DLEC, 2019). Except for a few select countries of high foreign policy priority, USAID will not be able to fund delivery of EAS on a broad basis. What should be possible and strategically important within the likely resource base available would be investment in strengthening country EAS support services – public EAS policy and coordination mechanisms; training, both pre-service and in-service; mass media and ICT applications; subject matter support systems; and monitoring and evaluation systems. Such quality support services would benefit both public and private EAS providers.

A New Approach to Agricultural Education and Training

Sound agricultural education and training (AET) will be as essential to agriculture of the future as it has to the gains of the past decades. Quality AET can have a broad impact on sector development, though unfortunately such impact is long-term, diverse, and difficult to attribute.

[24] A change also with some support from Dalrymple (2008) and Pardey and Beddow (2013).

[25] GFRAS Good Practice Notes https://www.g-fras.org/en/ggp-home.html; Modernizing Extension and Advisory Services Project Studies https://meas.illinois.edu/, Developing Local Extension Capacity Project Resources https://www.digitalgreen.org/resources-dlec/, and others.

This makes AET investments less attractive to donors concerned with measuring short-term impact. Still, two categories of AET investment deserve consideration.

Targeted agricultural university support

Agricultural universities train future technicians, scientists, managers, farmers, and leaders, all of whom will need technical and other knowledge to address the new challenges to agriculture as noted above. Most countries have the agricultural universities needed, though a few, such as South Sudan, will need investments to establish basic AET capacities. All universities face the challenge of evolving to keep up with a changing world, even though by nature universities tend to be quite traditional, bureaucratic, and resistant to change. The old model for university development through a linkage program funded through a US university is no longer appropriate. Local universities' increased capacity and understanding of their own mandates and aspirations make them better equipped to manage their own development.

Two program approaches may be relevant to strengthening agricultural university ability to train personnel for the agriculture of 2050. First, would be targeted grants to universities to strengthen specific functions (administration, outreach, research, graduate placement and tracking, etc.) or disciplines/departments (biotechnology, plant breeding, agribusiness, economics, ecology, etc.). Such projects would be managed by the university with appropriate arrangements for accessing services, training, and other support from US universities or other sources. The second approach would be limited to exchange programs at the individual level for host country university faculty or students to spend a year or more at a university in the US or other country or for US faculty or students to spend a year of more at the overseas university. Competitive grant applications for these exchanges would come from the overseas university with justification for the exchange to help meet a specific capacity development need. Interested US institutions could help in preparing proposals. The exchange program would help institutions address specific issues and foster linkages among institutions.

Agricultural Vocational and Technical Training

Agricultural vocational and technical training programs are weak or non-existent in many countries. Those that exist are often under-funded and have poor arrangements for linking graduates with employers. Institutional arrangements for such training vary. Where universities have such programs, they tend to be overly-academic and neglected in comparison to degree programs. As a result, lack of qualified technicians has been a constraint to agribusiness development in a number of countries. Strengthening vocational and technical level training potentially addresses two USAID priorities – youth employment opportunity and agribusiness development. USAID Missions should consider options for strengthening vocational and technical agricultural training programs, where needed, under institutional arrangements appropriate to the country.

Renew Partnership with US Universities to Support Agricultural Development

US universities provided the inspiration and much of the support for USAID investments in agricultural knowledge and information systems. University support to agricultural

development is an important resource for AKIS sub-sectors, but is relevant across the full spectrum of sector needs. Need for such technical support continues and may intensify over coming years, as countries demand more specialized assistance in addressing emerging problems. Yet, individual land-grant US universities have limitations in having: focus primarily on specialized production systems of their own state, a mandate to prioritize their domestic teaching agenda, and limited faculty and staff in any one discipline. The USAID-university relationship, while productive, has been fraught with problems, due to differing objectives, limited capacities within a specific field, lack of continuity, high costs, emphasis on US models, and others. A new model for effective cooperation is needed.

As one option for a new model, a single entity might be established as a mechanism to tap university resources to support international agricultural development. This could include AKIS activities, such as some suggested above, but could address the full range of agricultural development topics. Such an organization might be linked to a single university[26] or might better be outside of the university system, but with flexible arrangements to draw on resources from multiple universities. An autonomous organization, structured perhaps as the International Fertilizer Development Center, could have the flexibility to provide needed services. The institution would need to establish a strong knowledge base on agricultural systems, institutions, and problems internationally. It would have to provide services that are responsive to country needs, with reasonable cost-efficiencies, of high quality, and drawn from US universities to the extent possible. This would not be an easy undertaking, but would be one option for the new model needed for US university engagement.

Additional Reflections

This review may seem somewhat of a nostalgic look back to the "glory days" of intensive USAID support to AKIS programs and institutions. While that is not the intent, no apology is made, as the author is honored to have had the opportunity to work on such programs over the years with the many dedicated USAID, contractor, development partners, and host country agriculturalists engaged in the task. Most were well-qualified agricultural specialists, strongly committed to reducing hunger and rural poverty, and willing to accept significant hardships in the course of their work. Some were widely recognized for their scientific breakthroughs and leadership, while most worked hard with little recognition. There were many successes and lessons learned.

Still, the review is done with an acute awareness that the future is different. Much has changed, but the world again faces major challenges in sustainably feeding its growing population. Agricultural knowledge and information – research, extension, and education – will be essential in meeting future challenges and building resilience in food and agricultural systems, but how these activities will be managed and how appropriate capacity will be put in place are uncertain. At times, we thought we knew how to invest in these sub-sectors – in AET in the

[26] University of Minnesota would be an interesting candidate 70 years after staff there provided the impetus for internationally coordinated research networks that led to dramatic increases in grain productivity.

1960s, in research in the 1990s, and in extension in the 2010s. The investment strategies may have been appropriate to the time, but are not likely so for the future.

The challenge for agriculturalists over the next 20-30 years is great. It will require much analysis, strategy development, experimentation, learning, and innovation to facilitate development of effective AKISs. Almost certainly, these will have to be systems with significant private sector participation and strong public sector roles. USAID can't build the capacity, but can facilitate its development when local policy and commitment allows. Farmers – mostly on family farms – will have to be central in this effort, which will require a good understanding of farming systems and rural communities. For USAID and other donors, hopefully, experience from the past seven decades can help in moving forward.

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Annexes

Annex A: Estimated USAID Agricultural Research, Extension, and Education Funding Time Series Data – 1950 to 2017 (Current and constant 2012 US$)

Annex B: Estimated USAID AKIS Funding by Country, Sub-sector, and Decade – 1950 to 2017 (constant 2012 US$)

Annex C: List of USAID-Funded AKIS Projects

Annex D: Methodology for USAID AKIS Funding Data Collection

Annex E: USAID Funding for CGIAR and Innovation Lab (IL) Global Research Programs

Annex F: Sources and Data on USAID Participant Training

Annex G: Sources and Data on USAID Staffing

Annex H: USAID-Assisted Agricultural Colleges and Universities

Annex A: Estimated USAID Ag Research, Extension, & Education Funding – 1950 to 2017 (Current and constant US 2012 $)[27]

Agricultural Research Funding (current US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	0.34	0.34	0.45	0.49	0.49	0.70	0.77	0.77	1.11	1.17	1.25	1.65	1.67	1.68
Asia	0.00	0.00	0.29	0.29	0.59	0.59	1.71	1.81	2.25	2.31	2.31	2.22	1.75	1.84	1.83	1.93	1.91	3.16
Europe	0.00	0.00	0.02	0.11	0.11	0.11	0.16	0.16	0.19	0.19	0.07	0.07	0.07	0.02	0.02	0.02	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.87	1.44
Latin America	0.00	0.00	0.05	0.08	0.24	0.32	1.16	1.30	1.31	1.31	1.29	1.34	2.53	4.15	3.29	3.27	3.14	2.14
Near East	0.00	0.00	0.00	0.04	0.04	0.04	0.26	0.26	0.33	0.39	0.39	0.45	0.41	0.33	0.28	0.38	0.37	0.46
Total	0.00	0.00	0.35	0.52	1.33	1.50	3.84	4.12	4.69	5.01	4.94	4.96	5.99	7.63	6.78	7.39	7.96	8.89

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
1.71	1.75	3.56	4.27	4.28	4.31	4.19	5.41	10.05	10.74	22.14	28.76	32.18	35.22	43.93	38.87	42.98
3.69	4.74	4.66	5.46	6.20	6.11	6.90	7.52	12.07	22.62	21.29	12.41	13.75	16.92	16.14	20.98	26.46
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.66	0.66	0.66	0.66	0.03
1.69	2.80	8.10	5.82	6.57	9.97	14.25	20.84	25.68	33.28	44.99	52.20	46.69	58.57	68.28	78.89	74.92
4.82	5.31	13.37	11.47	11.83	8.66	4.75	10.60	10.07	10.22	8.75	11.83	8.93	10.32	9.24	11.28	13.42
0.65	0.65	0.77	0.77	0.77	0.72	0.72	0.70	3.49	8.05	12.95	21.40	23.53	17.70	17.53	14.74	13.89
12.57	15.25	30.46	27.79	29.64	29.77	30.81	45.11	61.39	84.94	110.15	126.64	125.74	139.39	155.79	165.42	171.69

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
41.15	42.08	38.16	36.15	42.09	40.79	43.24	36.49	34.91	28.34	25.46	19.64	19.12	16.69	19.69	18.85	23.94
29.52	31.73	29.70	28.34	28.05	22.52	17.16	13.16	11.70	9.18	3.74	2.19	1.02	0.00	0.00	0.00	0.00
0.03	0.03	0.03	0.03	0.03	0.00	0.32	1.99	1.99	1.99	0.32	0.00	0.00	0.00	0.00	0.00	0.00
80.63	84.28	75.69	76.43	75.50	77.34	79.13	81.60	71.85	53.86	50.99	37.37	50.22	46.46	46.67	49.81	51.06
12.77	13.56	17.75	17.32	13.22	12.85	12.12	10.06	9.88	6.99	5.53	2.83	1.32	0.65	0.65	0.41	0.41
24.36	19.06	19.06	18.44	23.44	23.77	17.13	17.26	16.93	15.99	13.27	4.72	4.72	4.57	1.76	1.76	1.76
188.47	190.75	180.39	176.71	182.33	177.28	169.10	160.55	147.26	116.34	99.32	66.76	76.39	68.37	68.78	70.82	77.16

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
24.42	25.12	16.18	4.38	5.49	12.00	12.08	14.34	24.50	22.50	3.38	2.44	3.54	2.24	2.31	0.68	**1009.67**
0.00	0.00	0.00	1.73	1.28	2.65	0.00	0.90	16.03	11.61	3.00	2.59	3.00	2.80	2.50	2.50	**513.30**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**10.94**
53.38	55.39	55.98	57.52	55.76	53.31	48.51	65.54	73.52	65.94	99.51	95.32	100.28	96.83	100.84	98.12	**2821.70**
0.41	0.41	0.41	0.00	0.00	0.41	0.00	0.00	3.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**334.87**
1.76	1.76	1.76	0.00	0.00	0.00	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**376.82**
79.96	82.68	74.32	63.62	62.54	68.37	60.61	80.78	117.24	100.05	105.90	100.35	106.82	101.87	105.65	101.30	**5067.29**

[27] Some totals may not add due to rounding; Conversion to constant 2012 dollars per: Samuel H. Williamson, URL: http://www.measuringworth.org/usgdp/

Agricultural Research Funding (2012 US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	2.36	2.32	2.94	3.11	3.04	4.25	4.62	4.57	6.54	6.82	7.14	9.28	9.11	8.94
Asia	0.00	0.00	2.00	1.98	4.02	3.96	11.13	11.41	13.92	14.07	13.87	13.19	10.26	10.68	10.46	10.83	10.44	16.77
Europe	0.00	0.00	0.15	0.78	0.78	0.76	1.04	1.00	1.14	1.13	0.44	0.44	0.43	0.12	0.12	0.12	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.67	0.65	0.63	0.71	0.70	0.69	0.68	0.67	0.67	0.66	0.73	4.78	7.66
Latin America	0.00	0.00	0.32	0.55	1.67	2.15	7.60	8.24	8.12	7.97	7.72	7.94	14.86	24.12	18.80	18.39	17.16	11.37
Near East	0.00	0.00	0.00	0.27	0.27	0.26	1.70	1.64	2.02	2.39	2.36	2.66	2.44	1.89	1.60	2.16	2.02	2.46
Total	0.00	0.00	2.48	3.58	9.10	10.13	25.06	26.04	28.95	30.50	29.71	29.49	35.20	44.30	38.78	41.51	43.50	47.20

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
8.73	8.52	16.42	18.76	17.99	17.19	15.33	18.13	31.93	32.11	61.85	74.19	76.12	76.13	89.42	76.12	81.25
18.82	23.01	21.48	23.96	26.09	24.40	25.27	25.19	38.32	67.63	59.47	32.01	32.54	36.58	32.86	41.09	50.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.10	0.09	0.09	1.56	1.42	1.34	1.29	0.06
8.62	13.58	37.37	25.55	27.64	39.76	52.15	69.82	81.55	99.48	125.66	134.64	110.45	126.57	138.98	154.49	141.62
24.56	25.78	61.68	50.37	49.77	34.57	17.40	35.50	31.97	30.54	24.44	30.51	21.13	22.30	18.82	22.10	25.37
3.31	3.16	3.55	3.38	3.24	2.88	2.64	2.36	11.08	24.06	36.17	55.21	55.67	38.25	35.69	28.87	26.25
64.04	74.05	140.50	122.01	124.74	118.80	112.79	151.11	194.95	253.93	307.69	326.63	297.46	301.25	317.10	323.97	324.56

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
75.42	75.59	66.89	61.20	68.58	64.07	65.70	54.20	50.66	40.26	35.43	26.84	25.68	22.17	25.79	24.14	30.00
54.10	57.00	52.05	47.98	45.71	35.37	26.07	19.54	16.98	13.04	5.20	3.00	1.37	0.00	0.00	0.00	0.00
0.06	0.06	0.06	0.06	0.05	0.00	0.49	2.95	2.88	2.82	0.45	0.00	0.00	0.00	0.00	0.00	0.00
147.75	151.40	132.67	129.42	123.02	121.48	120.22	121.21	104.25	76.52	70.95	51.07	67.45	61.72	61.12	63.79	63.99
23.40	24.36	31.12	29.33	21.53	20.18	18.42	14.94	14.33	9.93	7.70	3.87	1.77	0.86	0.85	0.52	0.51
44.65	34.23	33.41	31.22	38.20	37.34	26.03	25.64	24.56	22.72	18.47	6.45	6.34	6.08	2.30	2.25	2.21
345.38	342.64	316.19	299.21	297.09	278.43	256.92	238.49	213.66	165.28	138.20	91.23	102.61	90.83	90.06	90.70	96.70

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
30.13	30.42	19.08	5.01	6.10	12.97	12.82	15.10	25.49	22.93	3.38	2.39	3.41	2.14	2.19	0.63	1802.04
0.00	0.00	0.00	1.97	1.42	2.87	0.00	0.95	16.68	11.84	3.00	2.55	2.89	2.67	2.36	2.33	1166.68
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.52
65.86	67.10	66.03	65.79	61.91	57.64	51.45	68.99	76.49	67.20	99.51	93.67	96.76	92.47	95.31	91.50	4293.55
0.50	0.49	0.48	0.00	0.00	0.44	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	912.59
2.17	2.13	2.08	0.00	0.00	0.00	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	730.41
98.66	100.14	87.66	72.78	69.43	73.92	64.29	85.03	121.98	101.97	105.90	98.61	103.07	97.28	99.86	94.46	8929.78

Agricultural Extension Funding (current US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	0.00	0.00	0.37	0.63	0.63	0.90	1.11	1.19	1.84	2.18	2.44	2.83	2.75	2.75
Asia	0.08	0.08	0.21	0.96	1.23	1.23	2.51	2.64	2.64	2.64	2.69	3.09	2.72	2.96	2.34	3.04	3.41	4.71
Europe	0.00	0.00	0.04	0.04	0.08	0.11	0.14	0.14	0.16	0.11	0.11	0.11	0.07	0.07	0.04	0.04	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Latin America	0.05	0.05	0.13	0.24	0.24	0.38	1.33	1.28	1.29	1.34	1.25	1.57	2.25	2.76	2.03	1.88	1.83	4.12
Near East	0.00	0.00	0.04	0.30	0.30	0.30	0.99	0.94	0.89	0.85	0.87	0.87	0.94	1.41	0.88	0.81	0.70	0.46
Total	0.12	0.12	0.42	1.55	1.86	2.04	5.34	5.62	5.59	5.83	6.02	6.82	7.82	9.39	7.73	8.60	8.69	12.04

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
2.78	2.41	3.17	3.08	2.67	3.06	2.17	4.83	9.46	12.50	22.03	25.41	26.85	31.43	30.57	26.47	24.92
4.71	4.47	4.36	4.06	4.31	4.16	4.77	6.27	6.00	11.54	12.98	11.14	12.00	12.92	16.66	19.91	17.59
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.66	0.66	0.66	0.66	0.03
0.00	0.40	1.42	0.22	0.22	0.22	1.48	0.46	0.46	0.76	0.76	1.91	1.76	1.45	2.08	2.59	2.59
1.92	2.38	4.79	5.11	5.29	4.77	3.77	5.95	10.13	11.72	9.75	13.96	15.16	15.56	15.46	21.04	22.37
0.43	0.43	0.30	0.30	0.30	0.21	0.21	0.41	1.92	3.73	6.54	19.10	17.47	9.93	8.70	8.70	8.27
9.84	10.09	14.03	12.76	12.79	12.42	12.40	17.96	27.99	40.28	52.10	71.56	73.88	71.96	74.12	79.36	75.78

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
28.09	27.04	27.18	26.74	27.22	19.37	16.07	10.09	7.34	7.38	5.57	6.69	8.84	12.28	11.56	15.66	19.83
18.35	18.46	18.07	15.89	14.50	13.09	9.39	5.25	3.92	3.07	1.88	0.60	1.28	2.25	2.28	1.88	1.75
0.03	0.03	0.03	0.03	0.03	0.00	0.32	4.58	4.58	4.58	2.91	3.58	2.92	2.09	1.81	2.24	2.24
5.31	5.71	4.65	3.50	3.22	3.22	2.82	3.06	3.05	3.05	2.05	1.82	1.82	1.82	1.96	1.96	1.35
22.51	21.63	22.18	18.57	16.28	17.68	18.40	18.74	18.64	16.65	16.91	14.03	11.76	10.74	10.29	10.78	10.78
12.02	8.05	8.05	7.52	15.02	15.02	5.72	6.25	6.25	5.31	4.45	11.16	11.16	10.88	0.12	0.12	0.12
86.31	80.93	80.15	72.25	76.27	68.36	52.73	47.96	43.77	40.04	33.76	37.88	37.78	40.06	28.02	32.64	36.07

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
16.93	15.81	15.31	15.59	11.84	15.90	26.12	31.06	33.29	41.40	24.99	27.85	18.25	24.40	20.53	8.59	878.19
4.08	4.08	3.85	7.18	1.75	1.91	1.81	8.12	25.89	19.52	19.46	23.71	10.70	15.70	9.10	8.39	494.16
2.86	2.86	2.86	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.80	1.10	0.00	0.19	48.30
1.35	1.43	1.43	0.00	0.00	0.00	0.00	0.00	1.00	1.00	2.04	2.04	2.19	3.94	4.30	4.30	94.14
11.06	8.15	7.66	11.43	10.15	15.90	18.20	9.36	21.38	15.92	3.69	5.35	2.85	3.10	2.15	2.45	618.50
0.12	0.12	0.12	0.00	0.00	0.00	0.00	0.40	0.88	4.46	0.00	0.00	0.00	0.93	0.00	0.43	233.18
36.41	32.45	31.22	34.82	23.73	33.70	46.12	48.95	82.44	82.29	50.17	59.85	34.79	49.17	36.08	24.34	2366.48

Agricultural Extension Funding (2012 US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	0.00	0.00	2.41	3.96	3.87	5.51	6.65	7.05	10.82	12.69	13.98	15.91	15.00	14.58
Asia	0.58	0.55	1.44	6.61	8.47	8.33	16.39	16.65	16.28	16.06	16.14	18.39	15.98	17.20	13.41	17.09	18.62	25.03
Europe	0.00	0.00	0.30	0.30	0.55	0.77	0.90	0.88	0.96	0.64	0.63	0.63	0.40	0.39	0.25	0.24	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Latin America	0.35	0.33	0.90	1.69	1.67	2.59	8.70	8.09	7.96	8.17	7.52	9.33	13.23	16.04	11.60	10.55	9.99	21.87
Near East	0.00	0.00	0.30	2.11	2.09	2.05	6.44	5.93	5.48	5.15	5.25	5.18	5.52	8.18	5.01	4.53	3.85	2.45
Total	0.94	0.88	2.94	10.70	12.78	13.74	34.86	35.49	34.56	35.53	36.19	40.57	45.95	54.50	44.25	48.32	47.46	63.94

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
14.14	11.68	14.63	13.51	11.24	12.20	7.96	16.18	30.04	37.36	61.54	65.53	63.51	67.93	62.23	51.83	47.11
24.01	21.73	20.10	17.83	18.15	16.59	17.47	21.02	19.05	34.49	36.25	28.74	28.38	27.93	33.91	38.99	33.26
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	0.10	0.09	0.09	1.56	1.42	1.34	1.29	0.06
0.00	1.94	6.54	0.96	0.92	0.87	5.40	1.53	1.45	2.28	2.13	4.94	4.16	3.13	4.23	5.07	4.90
9.78	11.54	22.08	22.42	22.25	19.05	13.78	19.95	32.15	35.05	27.25	36.01	35.85	33.63	31.47	41.21	42.30
2.21	2.11	1.38	1.31	1.26	0.85	0.78	1.38	6.09	11.15	18.27	49.28	41.33	21.46	17.70	17.03	15.63
50.14	49.01	64.72	56.03	53.81	49.55	45.39	60.18	88.88	120.43	145.53	184.58	174.79	155.51	150.87	155.42	143.25

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
51.47	48.58	47.64	45.27	44.35	30.42	24.42	14.98	10.65	10.49	7.74	9.14	11.88	16.32	15.14	20.06	24.86
33.63	33.17	31.68	26.90	23.63	20.55	14.27	7.79	5.68	4.36	2.61	0.82	1.72	2.99	2.99	2.41	2.19
0.06	0.06	0.06	0.06	0.05	0.00	0.49	6.80	6.64	6.50	4.05	4.89	3.92	2.77	2.37	2.87	2.80
9.73	10.26	8.14	5.93	5.24	5.05	4.28	4.55	4.42	4.33	2.85	2.48	2.44	2.42	2.56	2.51	1.69
41.25	38.85	38.87	31.44	26.53	27.76	27.96	27.84	27.05	23.66	23.52	19.17	15.79	14.26	13.47	13.80	13.51
22.03	14.46	14.11	12.73	24.47	23.59	8.69	9.28	9.06	7.55	6.19	15.25	14.99	14.45	0.16	0.15	0.15
158.17	145.38	140.50	122.33	124.28	107.37	80.11	71.24	63.52	56.89	46.97	51.76	50.75	53.21	36.68	41.80	45.20

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
20.89	19.15	18.05	17.84	13.14	17.19	27.70	32.70	34.64	42.19	24.99	27.37	17.61	23.30	19.40	8.01	1498.61
5.03	4.94	4.54	8.21	1.94	2.06	1.92	8.55	26.93	19.90	19.46	23.30	10.32	14.99	8.60	7.82	1057.02
3.53	3.47	3.38	0.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.77	1.05	0.00	0.18	72.40
1.67	1.73	1.68	0.00	0.00	0.00	0.00	0.00	1.04	1.02	2.04	2.00	2.11	3.76	4.06	4.01	154.49
13.65	9.87	9.03	13.07	11.27	17.19	19.31	9.86	22.25	16.23	3.69	5.26	2.75	2.96	2.03	2.28	1181.78
0.15	0.15	0.14	0.00	0.00	0.00	0.00	0.42	0.91	4.54	0.00	0.00	0.00	0.89	0.00	0.40	483.67
44.92	39.31	36.83	39.84	26.35	36.44	48.92	51.53	85.77	83.87	50.17	58.81	33.57	46.95	34.10	22.70	4447.96

Agricultural Education Funding (current US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	0.34	0.34	2.58	2.58	2.68	2.71	3.42	3.16	4.47	5.44	4.39	4.13	4.20	4.20
Asia	0.00	0.00	0.00	0.00	0.00	0.00	2.92	3.12	3.12	3.12	2.92	2.48	2.52	2.64	3.57	2.97	2.72	3.05
Europe	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.08	0.08	0.02	0.02	0.02	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Latin America	0.00	0.00	0.00	0.00	0.00	0.00	1.36	2.65	1.74	1.68	1.68	1.30	4.37	6.93	4.13	4.31	4.31	1.78
Near East	0.00	0.00	0.00	0.04	0.04	0.04	0.98	0.62	0.62	0.62	0.62	0.51	1.73	0.52	0.48	0.48	0.48	0.06
Total	0.00	0.00	0.02	0.06	0.40	0.40	7.86	8.98	8.18	8.14	8.66	7.53	13.16	15.54	12.58	11.91	11.71	9.09

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
4.20	3.68	3.93	3.69	3.69	1.90	3.17	3.17	3.70	5.70	12.25	13.53	12.08	8.29	11.21	11.92	6.73
3.08	3.08	3.75	3.75	3.75	2.61	3.01	2.98	4.88	4.95	5.88	9.60	11.94	11.51	11.51	8.24	10.59
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.43	0.43	0.43	0.03	0.03	0.03	0.03	0.03
0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.00	3.67	3.67	3.67	3.67	3.67	3.67
1.78	2.13	4.51	4.69	4.43	3.81	1.99	4.17	5.72	4.68	3.73	0.61	2.00	2.40	1.56	3.38	4.29
0.06	0.23	0.23	0.19	0.19	0.18	0.18	2.48	0.90	0.90	1.11	4.81	6.46	6.46	4.46	4.46	4.46
9.12	9.12	12.42	12.32	12.06	8.50	8.56	13.04	15.24	16.67	23.40	32.66	36.19	32.36	32.44	31.71	29.78

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
9.05	9.31	7.06	6.57	6.52	4.53	8.82	8.92	6.43	5.86	4.42	1.42	1.09	0.42	0.08	0.17	0.17
10.44	10.48	11.17	9.05	8.02	7.02	6.17	1.95	1.95	1.54	0.97	0.00	0.00	0.00	0.00	0.00	0.00
0.03	0.03	0.03	0.03	0.03	0.00	0.32	1.99	1.99	1.99	0.32	0.00	0.00	0.00	0.00	0.00	0.00
3.67	3.67	3.67	3.67	3.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.96	4.50	5.34	4.09	9.84	8.52	8.14	8.14	8.14	7.28	4.24	3.00	0.00	0.00	0.00	0.00	0.00
4.46	4.46	4.46	4.46	4.46	4.46	2.52	0.14	0.14	0.14	0.14	0.14	0.14	0.00	0.00	0.00	0.00
33.63	32.44	31.73	27.87	32.55	24.53	25.97	21.14	18.66	16.80	10.09	4.57	1.23	0.42	0.08	0.17	0.17

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
0.17	1.67	2.47	0.17	0.00	0.00	0.00	0.17	6.00	8.21	9.23	9.99	11.04	8.19	1.91	0.68	298.21
0.00	0.00	0.00	0.00	1.20	1.20	1.20	1.20	6.97	9.77	4.50	4.09	4.50	4.30	0.00	0.00	247.93
0.38	0.38	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.60	0.50	0.50	0.50	13.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	1.35	3.25	1.45	1.46	1.40	52.31
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	169.32
0.00	0.00	0.00	2.00	2.00	2.00	1.20	1.20	1.20	1.20	0.00	0.00	0.00	0.00	0.00	0.00	86.49
0.54	2.04	2.84	2.54	3.20	3.20	2.40	2.57	14.17	19.18	16.30	16.13	19.39	14.44	3.87	2.58	867.26

Agricultural Education Funding (constant 2012 US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	2.36	2.32	16.81	16.28	16.53	16.49	20.53	18.81	26.28	31.60	25.10	23.19	22.98	22.33
Asia	0.00	0.00	0.00	0.00	0.00	0.00	19.08	19.68	19.24	18.98	17.57	14.76	14.78	15.31	20.42	16.68	14.85	16.21
Europe	0.00	0.00	0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.13	0.45	0.45	0.12	0.12	0.12	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Latin America	0.00	0.00	0.00	0.00	0.00	0.00	8.86	16.73	10.76	10.24	10.10	7.75	25.66	40.24	23.60	24.24	23.58	9.45
Near East	0.00	0.00	0.00	0.27	0.27	0.26	6.42	3.91	3.83	3.78	3.72	3.03	10.14	2.99	2.72	2.67	2.60	0.29
Total	0.00	0.00	0.15	0.42	2.77	2.73	51.30	56.74	50.50	49.62	52.06	44.81	77.31	90.27	71.96	66.90	64.00	48.28

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
21.42	17.86	18.12	16.21	15.54	7.57	11.59	10.61	11.76	17.03	34.22	34.90	28.58	17.91	22.82	23.35	12.72
15.69	14.96	17.32	16.48	15.80	10.40	11.01	9.98	15.49	14.80	16.42	24.77	28.24	24.87	23.42	16.13	20.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.11	1.30	1.21	1.12	0.08	0.07	0.07	0.07	0.06
0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.72	0.00	0.00	0.00	9.47	8.69	7.94	7.48	7.19	6.94
9.07	10.33	20.78	20.57	18.64	15.22	7.29	13.98	18.17	14.00	10.41	1.57	4.74	5.19	3.18	6.62	8.12
0.28	1.13	1.08	0.83	0.79	0.71	0.65	8.30	2.87	2.70	3.09	12.40	15.28	13.96	9.08	8.73	8.43
46.46	44.29	57.29	54.08	50.77	33.90	31.33	43.70	48.39	49.82	65.35	84.24	85.61	69.94	66.04	62.10	56.29

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
16.59	16.72	12.37	11.13	10.63	7.11	13.40	13.24	9.33	8.32	6.15	1.94	1.46	0.56	0.11	0.21	0.21
19.14	18.82	19.58	15.32	13.07	11.03	9.37	2.90	2.84	2.19	1.35	0.00	0.00	0.00	0.00	0.00	0.00
0.06	0.06	0.06	0.06	0.05	0.00	0.49	2.95	2.88	2.82	0.45	0.00	0.00	0.00	0.00	0.00	0.00
6.73	6.60	6.44	6.22	5.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10.93	8.08	9.35	6.93	16.03	13.38	12.37	12.10	11.82	10.34	5.89	4.10	0.00	0.00	0.00	0.00	0.00
8.17	8.01	7.82	7.55	7.27	7.00	3.83	0.21	0.21	0.20	0.20	0.20	0.19	0.00	0.00	0.00	0.00
61.62	58.28	55.61	47.20	53.04	38.52	39.46	31.41	27.08	23.87	14.04	6.24	1.66	0.56	0.11	0.21	0.21

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
0.21	2.02	2.91	0.19	0.00	0.00	0.00	0.18	6.24	8.37	9.23	9.81	10.65	7.82	1.81	0.63	773.40
0.00	0.00	0.00	0.00	1.33	1.30	1.27	1.26	7.25	9.95	4.50	4.02	4.34	4.11	0.00	0.00	658.30
0.46	0.45	0.44	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.58	0.48	0.47	0.47	21.06
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.56	1.33	3.14	1.39	1.38	1.31	92.29
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	520.39
0.00	0.00	0.00	2.29	2.22	2.16	1.27	1.26	1.25	1.22	0.00	0.00	0.00	0.00	0.00	0.00	199.73
0.67	2.47	3.35	2.91	3.55	3.46	2.55	2.71	14.74	19.54	16.30	15.85	18.71	13.79	3.66	2.40	2265.16

Total Agricultural Knowledge and Information Services Total Funding (current US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	0.69	0.69	3.40	3.70	3.80	4.31	5.29	5.12	7.43	8.80	8.08	8.61	8.62	8.63
Asia	0.08	0.08	0.49	1.24	1.82	1.82	7.14	7.56	8.01	8.06	7.92	7.79	6.98	7.44	7.74	7.94	8.03	10.92
Europe	0.00	0.00	0.09	0.18	0.22	0.25	0.32	0.32	0.36	0.31	0.20	0.26	0.22	0.11	0.09	0.09	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.13	0.87	1.44
Latin America	0.05	0.05	0.17	0.32	0.49	0.70	3.86	5.23	4.35	4.33	4.22	4.21	9.15	13.85	9.44	9.47	9.28	8.04
Near East	0.00	0.00	0.04	0.38	0.38	0.38	2.23	1.82	1.83	1.86	1.89	1.83	3.08	2.25	1.63	1.67	1.55	0.98
Total	0.12	0.12	0.79	2.12	3.59	3.94	17.05	18.72	18.46	18.98	19.63	19.31	26.97	32.56	27.09	27.90	28.35	30.01

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
8.69	7.84	10.66	11.04	10.64	9.26	9.53	13.41	23.22	28.93	56.43	67.70	71.10	74.94	85.72	77.26	74.64
11.49	12.29	12.77	13.27	14.27	12.88	14.69	16.77	22.94	39.11	40.15	33.16	37.69	41.36	44.31	49.13	54.63
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.50	0.50	0.50	1.35	1.35	1.35	1.35	0.10
1.69	3.20	9.52	6.04	6.79	10.18	15.94	21.51	26.14	34.04	45.75	57.79	52.12	63.69	74.03	85.15	81.18
8.52	9.81	22.66	21.27	21.54	17.25	10.51	20.72	25.92	26.62	22.23	26.40	26.09	28.28	26.27	35.70	40.09
1.14	1.32	1.30	1.26	1.26	1.11	1.11	3.60	6.31	12.68	20.59	45.32	47.46	34.09	30.69	27.90	26.61
31.53	34.46	56.91	52.88	54.49	50.68	51.77	76.11	104.62	141.89	185.65	230.86	235.81	243.71	262.36	276.49	277.25

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
78.29	78.43	72.39	69.45	75.82	64.68	68.14	55.49	48.69	41.58	35.45	27.76	29.05	29.39	31.34	34.68	43.94
58.32	60.67	58.94	53.28	50.58	42.63	32.72	20.36	17.57	13.78	6.58	2.79	2.30	2.25	2.28	1.88	1.75
0.10	0.10	0.10	0.10	0.10	0.00	0.96	8.55	8.55	8.55	3.55	3.58	2.92	2.09	1.81	2.24	2.24
89.61	93.67	84.01	83.61	82.39	80.56	81.94	84.66	74.90	56.91	53.04	39.19	52.04	48.28	48.63	51.77	52.41
41.25	39.69	45.27	39.98	39.34	39.04	38.67	36.95	36.66	30.92	26.68	19.86	13.07	11.39	10.94	11.18	11.18
40.85	31.57	31.57	30.42	42.92	43.25	25.37	23.65	23.31	21.45	17.86	16.02	16.02	15.45	1.88	1.88	1.88
308.41	304.13	292.27	276.84	291.15	270.17	247.80	229.66	209.69	173.19	143.17	109.21	115.41	108.85	96.87	103.63	113.40

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
41.52	42.60	33.95	20.14	17.33	27.90	38.20	45.58	63.79	72.11	37.60	40.27	32.83	34.83	24.75	9.94	2186.07
4.08	4.08	3.85	8.90	4.23	5.76	3.01	10.22	48.88	40.90	26.96	30.39	18.20	22.80	11.60	10.89	1255.38
3.24	3.24	3.24	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.60	1.40	1.60	0.50	0.69	72.25
54.73	56.82	57.40	57.52	55.76	53.31	48.51	65.54	74.52	66.94	104.11	98.71	105.72	102.23	106.60	103.82	2968.15
11.47	8.56	8.06	11.43	10.15	16.31	18.20	9.36	24.52	15.92	3.69	5.35	2.85	3.10	2.15	2.45	1122.69
1.88	1.88	1.88	2.00	2.00	2.00	1.22	1.60	2.12	5.66	0.00	0.00	0.00	0.93	0.00	0.43	696.48
116.91	117.17	108.38	100.99	89.47	105.27	109.14	132.30	213.83	201.52	172.36	176.33	161.00	165.48	145.60	128.22	8301.02

Agricultural Knowledge and Information Services Total Funding (constant 2012 US$ million)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
Africa	0.00	0.00	0.00	0.00	4.72	4.64	22.17	23.35	23.44	26.25	31.80	30.43	43.64	51.10	46.22	48.38	47.09	45.85
Asia	0.58	0.55	3.44	8.59	12.50	12.29	46.60	47.74	49.45	49.12	47.59	46.35	41.02	43.19	44.30	44.61	43.88	57.97
Europe	0.00	0.00	0.60	1.23	1.48	1.68	2.08	2.01	2.23	1.90	1.21	1.52	1.28	0.64	0.49	0.48	0.00	0.00
Global	0.00	0.00	0.00	0.00	0.00	0.67	0.65	0.63	0.71	0.70	0.69	0.68	0.67	0.67	0.66	0.73	4.78	7.66
Latin America	0.35	0.33	1.22	2.23	3.34	4.74	25.16	33.06	26.84	26.38	25.34	25.02	53.75	80.41	54.00	53.18	50.72	42.70
Near East	0.00	0.00	0.30	2.64	2.62	2.58	14.56	11.48	11.33	11.32	11.33	10.87	18.10	13.07	9.32	9.36	8.46	5.21
Total	0.94	0.88	5.56	14.70	24.66	26.59	111.22	118.28	114.00	115.66	117.96	114.88	158.47	189.08	154.99	156.74	154.93	159.39

1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
44.29	38.07	49.16	48.47	44.77	36.96	34.88	44.92	73.72	86.50	157.61	174.62	168.21	161.97	174.47	151.31	141.09
58.52	59.70	58.89	58.27	60.04	51.38	53.75	56.19	72.86	116.92	112.14	85.52	89.16	89.38	90.18	96.21	103.28
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	0.32	1.49	1.40	1.29	3.19	2.92	2.75	2.64	0.19
8.62	15.52	43.91	26.50	28.56	40.63	58.34	72.07	83.00	101.76	127.80	149.05	123.29	137.64	150.69	166.76	153.45
43.40	47.65	104.54	93.36	90.66	68.84	38.47	69.42	82.30	79.59	62.09	68.09	61.72	61.13	53.46	69.93	75.78
5.81	6.40	6.00	5.52	5.29	4.44	4.07	12.05	20.03	37.91	57.53	116.89	112.28	73.67	62.46	54.64	50.31
160.64	167.35	262.51	232.13	229.32	202.25	189.51	254.98	332.23	424.18	518.57	595.45	557.86	526.71	534.01	541.49	524.10

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
143.47	140.89	126.89	117.60	123.55	101.59	103.52	82.43	70.65	59.07	49.33	37.93	39.02	39.05	41.03	44.41	55.07
106.87	108.99	103.31	90.21	82.42	66.96	49.71	30.24	25.50	19.58	9.16	3.82	3.09	2.99	2.99	2.41	2.19
0.18	0.18	0.18	0.17	0.16	0.00	1.46	12.70	12.41	12.15	4.94	4.89	3.92	2.77	2.37	2.87	2.80
164.22	168.25	147.25	141.56	134.25	126.53	124.49	125.76	108.68	80.85	73.81	53.56	69.89	64.14	63.68	66.30	65.68
75.58	71.29	79.35	67.70	64.10	61.32	58.75	54.88	53.20	43.92	37.12	27.14	17.56	15.12	14.32	14.32	14.02
74.85	56.70	55.33	51.50	69.93	67.93	38.55	35.13	33.83	30.47	24.85	21.89	21.52	20.52	2.46	2.41	2.36
565.17	546.30	512.31	468.74	474.41	424.33	376.49	341.14	304.26	246.04	199.21	149.23	155.01	144.60	126.85	132.72	142.12

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
51.22	51.60	40.04	23.04	19.24	30.16	40.52	47.97	66.38	73.49	37.60	39.58	31.67	33.26	23.39	9.27	4074.05
5.03	4.94	4.54	10.19	4.69	6.23	3.19	10.76	50.86	41.68	26.96	29.86	17.56	21.77	10.96	10.15	2882.00
4.00	3.92	3.82	1.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	1.35	1.53	0.47	0.64	117.97
67.53	68.82	67.71	65.79	61.91	57.64	51.45	68.99	77.53	68.22	104.11	97.01	102.01	97.62	100.75	96.81	4540.33
14.15	10.36	9.51	13.07	11.27	17.63	19.31	9.86	25.51	16.23	3.69	5.26	2.75	2.96	2.03	2.28	2614.75
2.32	2.28	2.22	2.29	2.22	2.16	1.29	1.68	2.20	5.76	0.00	0.00	0.00	0.89	0.00	0.40	1413.80
144.25	141.92	127.84	115.53	99.33	113.82	115.76	139.26	222.49	205.38	172.36	173.28	155.34	158.02	137.61	119.56	15642.91

Annex B: Estimated USAID AKIS Funding By Country, Sub-sector, and Decade – 1950 to 2017 (constant 2012 US$)[28]

Total USAID AKIS Funding (Agricultural Research, Extension, and Education) By Country and Decade (constant 2012 US$ million)

COUNTRY	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2017	Total
Africa Region	0.00	4.20	57.00	180.57	163.82	157.55	9.89	573.03
Angola	0.00	0.00	0.00	0.00	2.00	2.84	0.00	4.84
Benin	0.00	2.84	1.66	0.97	0.00	0.00	0.00	5.47
Botswana	0.00	0.00	7.03	18.63	0.00	0.00	0.00	25.66
Burkina Faso	0.00	0.27	20.36	26.55	10.97	0.27	1.15	59.56
Burundi	0.00	0.00	0.00	22.27	5.77	1.12	2.34	31.51
Cameroon	0.00	1.60	13.05	79.24	38.96	0.00	0.00	132.85
Cape Verde	0.00	0.00	4.13	10.48	7.03	0.00	0.00	21.65
Cent. Afr. Repub.	0.00	0.00	0.00	0.00	0.00	4.30	2.14	6.45
Central Africa	0.59	6.08	1.68	10.15	1.39	0.00	0.00	19.90
Chad	0.10	0.12	4.52	0.00	0.00	0.00	0.00	4.75
Comoros	0.00	0.00	0.00	7.61	4.00	0.00	0.00	11.61
Congo DR	6.78	10.45	23.97	95.49	29.93	1.54	2.63	170.79
Djibouti	0.00	0.00	0.00	2.76	0.00	0.00	0.00	2.76
East Africa	0.00	15.62	20.60	0.80	0.00	6.93	9.62	53.56
Equatorial Guinea	0.00	0.00	0.00	4.41	0.51	0.00	0.00	4.92
Ethiopia	34.23	47.96	53.77	0.00	7.04	20.82	29.15	192.97
Gambia	0.00	0.00	3.78	39.78	9.60	0.00	0.00	53.17
Ghana	5.31	16.75	26.64	5.79	2.09	2.67	20.00	79.25
Guinea	0.00	0.90	23.73	19.98	10.21	9.26	0.15	64.24
Guinea-Bissau	0.00	0.00	2.09	7.40	1.46	0.00	0.00	10.95
Ivory Coast	0.00	5.56	1.86	0.00	0.00	0.00	0.00	7.42
Kenya	0.00	26.13	52.50	101.43	31.11	20.52	15.85	247.55
Lesotho	0.00	0.00	11.60	44.30	8.39	0.00	0.00	64.28
Liberia	10.09	13.78	16.93	58.54	0.00	7.85	15.96	123.16
Madagascar	0.00	3.50	0.72	0.17	14.13	10.91	1.27	30.69
Malawi	0.00	0.00	5.80	40.01	30.76	17.81	20.01	114.39
Mali	0.00	1.65	41.20	87.69	42.57	16.73	24.69	214.53
Mauritania	0.00	0.00	7.81	12.07	0.11	0.00	0.00	19.99
Mauritius	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.90
Mozambique	0.00	0.00	0.00	0.00	15.09	32.27	11.23	58.59
Namibia	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.69
Niger	0.00	7.98	23.03	58.31	10.94	4.07	3.33	107.65
Nigeria	44.36	142.45	54.63	0.00	0.00	7.65	2.36	251.44
Rwanda	0.00	0.00	4.19	41.25	27.09	7.94	24.90	105.37
Sahel	0.00	1.19	69.96	58.47	0.00	0.00	0.00	129.62
Sao Tome/Principe	0.00	0.00	0.67	2.34	0.00	0.00	0.00	3.01
Senegal	0.00	2.18	22.51	82.44	41.97	2.75	29.35	181.19
Seychelles	0.00	0.00	1.30	3.06	0.00	0.00	0.00	4.36
Sierra Leone	0.00	27.32	7.93	12.40	0.00	1.93	1.82	51.41
Somalia	0.52	22.03	25.64	43.69	1.57	0.00	0.00	93.46
South Sudan	0.00	0.00	0.00	0.00	0.00	0.00	5.76	5.76

[28] Columns and row totals may not add due to rounding.

Southern Afr.	0.00	0.00	1.46	43.59	55.55	4.72	3.82	109.13
Sudan	2.59	21.64	38.94	55.68	0.63	14.03	2.93	136.45
Swaziland	0.00	0.00	0.00	27.59	1.21	0.00	0.00	28.80
Tanzania	0.00	18.92	80.84	40.75	4.81	4.30	43.85	193.48
Togo	0.00	0.00	0.00	16.95	0.00	0.00	0.00	16.95
Uganda	0.00	19.78	18.04	29.63	37.66	17.17	16.32	138.59
West Africa	0.00	0.00	0.00	0.00	0.00	15.08	6.41	21.49
Zambia	0.00	0.00	0.00	33.45	0.00	8.67	5.41	47.52
Zimbabwe	0.00	5.98	0.00	21.88	5.23	0.89	2.29	36.28
	104.57	426.88	751.61	1449.45	623.62	403.28	314.64	4074.05
Afghanistan	49.34	68.15	56.51	2.09	6.68	24.19	100.29	307.26
Asia Region	0.18	15.37	56.90	25.52	1.20	2.49	0.73	102.39
Bangladesh	0.00	0.08	30.19	92.47	1.35	3.22	34.43	161.74
Burma	0.00	0.00	0.00	37.50	8.59	0.00	2.21	48.30
Cambodia	6.09	8.49	0.00	0.00	2.19	0.89	2.89	20.54
East Timor	0.00	0.00	0.00	0.00	0.00	11.22	1.97	13.18
India	51.59	104.90	36.39	170.26	43.47	3.27	2.17	412.05
Indonesia	14.31	33.05	124.99	185.99	35.08	0.36	2.83	396.60
Japan	3.55	2.42	0.00	0.00	0.00	0.00	0.00	5.97
Korea	15.00	20.18	25.25	0.00	0.00	0.00	0.00	60.43
Kyrgyzstan	0.00	0.00	0.00	0.00	0.00	0.00	1.08	1.08
Laos	0.46	24.04	20.60	0.00	0.03	0.62	0.00	45.76
Nepal	3.67	10.99	33.99	74.14	27.45	5.02	4.06	159.31
Pakistan	5.60	22.42	58.90	159.84	30.48	0.00	41.55	318.79
Philippines	15.99	20.57	72.74	73.72	10.36	2.57	0.41	196.36
South Pacific	0.00	0.00	0.00	23.14	12.14	0.00	0.00	35.28
Sri Lanka	3.52	7.49	61.73	79.40	25.18	0.00	0.37	177.68
Taiwan	40.63	20.15	0.00	0.00	0.00	0.00	0.00	60.79
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	13.41	13.41
Thailand	11.89	69.79	71.41	35.95	9.84	0.00	0.00	198.86
Turkmenistan	0.00	0.00	0.00	0.00	0.00	0.31	0.56	0.87
Uzbekistan	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.87
Vietnam	9.05	59.05	76.38	0.00	0.00	0.00	0.00	144.48
	230.86	487.14	725.98	960.01	214.03	54.16	209.82	2882.00
Albania	0.00	0.00	0.00	0.00	21.79	4.78	0.00	26.56
Armenia	0.00	0.00	0.00	0.00	4.23	0.00	1.42	5.65
Austria	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.87
Europe Region	0.31	0.00	0.00	0.00	28.94	9.10	0.00	38.36
France	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Georgia	0.00	0.00	0.00	0.00	0.00	0.00	4.15	4.15
Greece	2.59	1.09	0.00	0.00	0.00	0.00	0.00	3.69
Italy	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.65
Lithuania	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.90
Moldova	0.00	0.00	0.00	0.00	1.76	0.00	0.00	1.76
Portugal	0.00	0.00	4.83	12.56	0.00	0.00	0.00	17.40
Spain	0.63	0.59	0.00	0.00	0.00	0.00	0.00	1.22
Ukraine	0.00	0.00	0.00	0.00	0.00	4.67	0.00	4.67
Yugoslavia	5.16	3.93	0.00	0.00	0.00	0.00	0.00	9.09
	13.21	5.62	4.83	12.56	57.62	18.56	5.57	117.97

Global	3.37	38.74	325.01	428.92	186.99	58.94	610.44	1652.41
Global-CG	0.00	1.94	359.96	795.96	467.78	317.36	76.77	2019.78
Global-CRSP	0.00	0.00	46.66	262.48	236.61	265.53	56.85	868.13
	3.37	40.69	731.63	1487.37	891.38	641.83	744.06	4540.33
Argentina	0.80	6.35	6.46	0.00	0.00	0.00	0.00	13.60
Bahamas	0.00	0.00	42.27	0.00	0.00	0.00	0.00	42.27
Belize	0.00	0.00	0.00	11.03	6.92	0.00	0.00	17.95
Bolivia	11.41	43.34	118.12	34.47	39.81	23.19	3.12	273.47
Brazil	32.91	150.59	164.89	0.00	2.97	2.72	0.00	354.08
Caribbean	0.00	0.00	36.88	53.73	10.60	0.00	0.00	101.22
Chile	9.19	10.75	0.39	0.00	0.00	0.00	0.00	20.33
Colombia	5.64	15.93	33.50	0.59	4.25	36.46	18.04	114.40
Costa Rica	1.51	6.17	39.46	8.05	4.65	0.00	0.00	59.85
Cuba	1.88	0.00	0.00	0.00	0.00	0.00	0.00	1.88
Dominican Rep.	0.35	6.97	42.04	32.49	45.97	0.00	0.00	127.81
Ecuador	7.70	28.75	25.34	41.04	18.28	0.00	0.00	121.10
El Salvador	5.68	1.36	37.34	34.32	15.99	1.04	0.00	95.72
Guatemala	9.54	17.18	11.96	32.56	29.11	9.19	6.80	116.34
Guyana	0.00	4.61	21.48	4.07	0.29	0.00	0.00	30.44
Haiti	1.63	7.93	18.56	78.65	60.67	18.90	16.17	202.52
Honduras	11.45	4.21	18.91	81.50	23.71	6.90	6.00	152.69
Jamaica	0.16	0.00	24.97	25.30	19.73	3.00	0.06	73.23
LAC Region	0.00	6.00	19.80	12.25	8.02	0.00	0.00	46.07
Mexico	0.16	0.00	0.00	0.00	0.00	2.95	0.00	3.11
Nicaragua	4.87	12.91	4.06	0.43	8.62	5.44	0.81	37.14
Panama	5.96	15.63	10.63	37.00	0.00	0.50	0.00	69.71
Paraguay	5.76	12.94	26.14	10.56	0.00	0.00	0.00	55.41
Peru	6.31	103.68	10.67	105.67	48.92	23.20	6.43	304.89
ROCAP	0.00	11.61	21.62	71.75	34.82	0.00	3.27	143.07
St Lucia	0.00	0.00	0.00	1.73	0.00	0.00	0.00	1.73
St Vincent	0.00	0.00	0.00	2.84	0.00	0.00	0.00	2.84
Suriname	0.74	0.78	0.00	0.00	0.00	0.00	0.00	1.52
Uruguay	0.00	8.49	21.89	0.00	0.00	0.00	0.00	30.38
	123.65	476.17	757.35	680.04	383.34	133.49	60.71	2614.75
Egypt	1.35	3.16	132.83	271.19	181.92	9.44	7.44	607.33
Iran	8.13	19.98	0.00	0.00	0.00	0.00	0.00	28.12
Iraq	5.21	3.02	0.00	0.00	0.00	0.00	0.00	8.23
Israel	6.50	4.12	0.42	0.00	0.00	0.00	0.00	11.04
Jordan	14.55	23.63	17.66	30.70	16.04	0.00	0.00	102.57
Lebanon	2.75	4.48	1.46	0.60	0.00	0.00	0.04	9.34
Libya	5.33	4.11	0.00	0.00	0.00	0.00	0.00	9.44
Morocco	0.00	4.34	36.62	108.98	38.84	0.75	0.00	189.53
Near East	0.00	0.00	0.00	46.73	29.39	10.84	0.00	86.95
Oman	0.00	0.00	0.00	0.00	1.53	0.00	0.00	1.53
Syria	0.00	0.00	5.16	9.05	0.00	0.00	0.00	14.21
Tunisia	9.61	17.21	30.28	50.92	0.00	0.00	0.00	108.02
Turkey	2.13	12.06	8.73	0.00	0.00	0.00	0.00	22.93
UAR	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.61

Yemen	1.26	1.19	36.57	143.51	29.45	0.21	1.77	213.96
	56.83	97.91	269.73	661.69	297.16	21.23	9.25	1413.80
Total	532.50	1534.41	3241.13	5251.12	2467.15	1272.55	1344.05	15642.91

Total USAID Agricultural Research Funding By Country and Decade (constant 2012 US$ million)

COUNTRY	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2017	Total to 2017
Africa Region	0.00	4.20	37.39	149.84	154.04	142.08	7.83	495.39
Angola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benin	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Botswana	0.00	0.00	2.69	10.29	0.00	0.00	0.00	12.98
Burkina Faso	0.00	0.27	0.98	4.53	6.04	0.00	0.00	11.81
Burundi	0.00	0.00	0.00	15.13	5.77	0.00	1.57	22.47
Cameroon	0.00	0.00	4.03	26.49	14.40	0.00	0.00	44.92
Cape Verde	0.00	0.00	2.09	6.81	4.24	0.00	0.00	13.14
Cent. Afr. Repub.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Africa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chad	0.00	0.00	4.01	0.00	0.00	0.00	0.00	4.01
Comoros	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Congo DR	0.00	0.00	11.61	32.03	18.54	0.00	0.00	62.18
Djibouti	0.00	0.00	0.00	0.92	0.00	0.00	0.00	0.92
East Africa	0.00	0.28	18.98	0.80	0.00	6.23	7.22	33.51
Equatorial Guinea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethiopia	14.08	20.81	20.25	0.00	0.00	1.18	0.00	56.32
Gambia	0.00	0.00	1.89	30.02	9.60	0.00	0.00	41.51
Ghana	0.00	0.00	10.50	0.00	0.00	0.00	1.56	12.06
Guinea	0.00	0.90	7.91	9.16	5.13	0.00	0.00	23.10
Guinea-Bissau	0.00	0.00	1.05	3.56	0.00	0.00	0.00	4.61
Ivory Coast	0.00	0.21	0.90	0.00	0.00	0.00	0.00	1.11
Kenya	0.00	3.99	13.91	50.35	18.03	3.66	0.55	90.49
Lesotho	0.00	0.00	8.74	26.39	3.53	0.00	0.00	38.67
Liberia	2.70	5.99	3.01	28.17	0.00	1.23	0.24	41.32
Madagascar	0.00	0.00	0.00	0.00	7.54	0.00	0.00	7.54
Malawi	0.00	0.00	4.84	25.36	9.77	1.35	5.57	46.89
Mali	0.00	1.36	13.05	39.15	22.03	9.38	12.54	97.50
Mauritania	0.00	0.00	3.75	7.89	0.00	0.00	0.00	11.64
Mauritius	0.00	0.00	0.00	0.90	0.00	0.00	0.00	0.90
Mozambique	0.00	0.00	0.00	0.00	11.57	0.00	0.39	11.96
Namibia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Niger	0.00	0.00	7.88	21.55	7.74	0.00	0.00	37.18
Nigeria	0.00	14.97	7.99	0.00	0.00	1.15	0.20	24.31
Rwanda	0.00	0.00	0.77	20.95	18.48	0.91	0.83	41.94
Sahel	0.00	0.24	37.92	24.05	0.00	0.00	0.00	62.21
Sao Tome/Principe	0.00	0.00	0.67	0.36	0.00	0.00	0.00	1.03
Senegal	0.00	0.00	5.70	31.38	24.79	0.85	2.76	65.49
Seychelles	0.00	0.00	0.69	1.99	0.00	0.00	0.00	2.68
Sierra Leone	0.00	0.23	4.28	7.02	0.00	0.00	0.00	11.53
Somalia	0.00	8.75	7.03	10.18	0.79	0.00	0.00	26.75
South Sudan	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61
Southern Afr.	0.00	0.00	0.00	42.14	45.28	2.87	3.62	93.91
Sudan	1.25	10.42	32.11	40.80	0.31	1.07	0.00	85.95
Swaziland	0.00	0.00	0.00	12.23	0.00	0.00	0.00	12.23
Tanzania	0.00	0.21	26.86	27.03	0.00	0.00	8.47	62.57
Togo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Uganda	0.00	1.46	0.40	12.05	22.60	0.53	1.33	38.37
West Africa	0.00	0.00	0.00	0.00	0.00	13.29	6.41	19.70
Zambia	0.00	0.00	0.00	19.91	0.00	0.00	0.87	20.78
Zimbabwe	0.00	0.00	0.00	7.29	0.58	0.00	0.00	7.87
	18.02	74.27	303.89	746.72	410.80	185.77	62.58	1802.04
Afghanistan	24.73	29.84	26.63	0.00	0.00	0.00	19.60	100.80
Asia Region	0.18	5.15	35.84	10.35	1.20	2.49	0.73	55.94
Bangladesh	0.00	0.00	20.77	86.80	0.00	1.66	8.96	118.18
Burma	0.00	0.00	0.00	22.13	6.02	0.00	0.00	28.15
Cambodia	0.14	0.25	0.00	0.00	0.00	0.00	0.09	0.47
East Timor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
India	13.40	23.59	12.05	85.29	37.73	3.06	0.31	175.43
Indonesia	1.74	3.86	47.25	72.83	30.46	0.00	2.15	158.27
Japan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Korea	7.50	11.18	25.25	0.00	0.00	0.00	0.00	43.94
Kyrgyzstan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laos	0.00	5.83	5.63	0.00	0.00	0.00	0.00	11.45
Nepal	1.86	5.57	15.38	32.35	8.38	0.00	0.00	63.54
Pakistan	5.60	10.38	36.09	58.88	9.93	0.00	12.39	133.28
Philippines	2.28	5.26	36.16	46.53	7.13	0.00	0.10	97.46
South Pacific	0.00	0.00	0.00	0.98	5.12	0.00	0.00	6.10
Sri Lanka	1.26	1.75	30.21	25.94	12.22	0.00	0.00	71.38
Taiwan	1.23	0.66	0.00	0.00	0.00	0.00	0.00	1.89
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	2.33	14.81	13.92	7.85	2.39	0.00	0.00	41.30
Turkmenistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uzbekistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vietnam	0.27	20.21	38.64	0.00	0.00	0.00	0.00	59.11
	62.49	138.33	343.83	449.93	120.57	7.21	44.33	1166.68
Albania	0.00	0.00	0.00	0.00	7.26	0.00	0.00	7.26
Armenia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Austria	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.87
Europe Region	0.00	0.00	0.00	0.00	2.33	0.00	0.00	2.33
France	3.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00
Georgia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greece	1.14	0.00	0.00	0.00	0.00	0.00	0.00	1.14
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lithuania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moldova	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	0.50	5.96	0.00	0.00	0.00	6.46
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ukhraine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yugoslavia	1.77	1.68	0.00	0.00	0.00	0.00	0.00	3.46
	6.79	1.68	0.50	5.96	9.59	0.00	0.00	24.52
Global	3.37	36.80	287.00	297.92	151.60	49.66	579.29	1405.64
Global-CG	0.00	1.94	359.96	795.96	467.78	317.36	76.77	2019.78
Global-CRSP	0.00	0.00	46.66	262.48	236.61	265.53	56.85	868.13
	3.37	38.74	693.63	1356.37	855.99	632.54	712.91	4293.55
Argentina	0.00	3.46	2.98	0.00	0.00	0.00	0.00	6.44
Bahamas	0.00	0.00	34.40	0.00	0.00	0.00	0.00	34.40
Belize	0.00	0.00	0.00	2.49	0.88	0.00	0.00	3.37
Bolivia	3.35	34.11	72.47	15.03	10.67	2.31	0.00	137.94
Brazil	6.86	50.32	60.42	0.00	0.21	0.19	0.00	117.99
Caribbean	0.00	0.00	27.09	12.18	3.72	0.00	0.00	43.00

Chile	3.48	4.07	0.00	0.00	0.00	0.00	0.00	7.56
Colombia	0.00	1.03	23.35	0.00	0.00	0.00	0.00	24.38
Costa Rica	0.29	2.15	8.13	1.27	1.47	0.00	0.00	13.32
Cuba	1.88	0.00	0.00	0.00	0.00	0.00	0.00	1.88
Dominican Rep.	0.00	1.35	14.75	6.24	0.00	0.00	0.00	22.34
Ecuador	2.41	6.66	3.57	13.46	7.63	0.00	0.00	33.74
El Salvador	1.70	0.41	12.73	8.65	6.22	0.00	0.00	29.71
Guatemala	2.94	7.03	6.87	7.11	4.23	0.00	0.00	28.19
Guyana	0.00	4.61	17.62	1.18	0.14	0.00	0.00	23.55
Haiti	1.63	0.00	5.86	29.50	15.58	0.00	0.00	52.58
Honduras	1.43	1.23	3.50	26.20	6.11	0.00	0.00	38.46
Jamaica	0.00	0.00	0.52	7.07	8.10	0.00	0.00	15.69
LAC Region	0.00	0.00	11.14	8.26	3.64	0.00	0.00	23.04
Mexico	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nicaragua	1.63	0.61	3.81	0.22	0.71	0.44	0.00	7.43
Panama	2.53	5.86	3.02	21.08	0.00	0.00	0.00	32.49
Paraguay	1.86	4.93	10.68	2.26	0.00	0.00	0.00	19.73
Peru	3.86	37.46	3.59	41.61	18.11	0.00	0.00	104.62
ROCAP	0.00	0.00	20.73	33.74	5.42	0.00	3.27	63.16
St Lucia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
St Vincent	0.00	0.00	0.00	1.89	0.00	0.00	0.00	1.89
Suriname	0.74	0.78	0.00	0.00	0.00	0.00	0.00	1.52
Uruguay	0.00	4.64	19.51	0.00	0.00	0.00	0.00	24.15
	36.62	170.71	366.75	239.46	92.85	2.94	3.27	912.59
Egypt	0.00	0.00	82.59	179.61	105.86	0.02	0.00	368.09
Iran	0.96	1.55	0.00	0.00	0.00	0.00	0.00	2.51
Iraq	1.17	1.10	0.00	0.00	0.00	0.00	0.00	2.26
Israel	2.44	1.57	0.14	0.00	0.00	0.00	0.00	4.14
Jordan	2.88	8.94	5.02	14.92	6.16	0.00	0.00	37.93
Lebanon	0.40	1.88	0.56	0.00	0.00	0.00	0.04	2.88
Libya	0.38	0.53	0.00	0.00	0.00	0.00	0.00	0.91
Morocco	0.00	1.60	15.88	53.05	21.86	0.00	0.00	92.38
Near East	0.00	0.00	0.00	46.73	29.39	10.84	0.00	86.95
Oman	0.00	0.00	0.00	0.00	1.53	0.00	0.00	1.53
Syria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tunisia	0.21	2.06	14.92	21.24	0.00	0.00	0.00	38.43
Turkey	0.11	4.81	6.30	0.00	0.00	0.00	0.00	11.23
UAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yemen	0.00	0.00	19.16	50.89	11.13	0.00	0.00	81.17
	8.55	24.04	144.57	366.44	175.91	10.86	0.04	730.41
Total	135.84	447.77	1853.15	3164.87	1665.71	839.33	823.12	8929.78

Total USAID Agricultural Extension Funding By Country and Decade (constant 2012 US$ million)

COUNTRY	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2017	Total to 2017
Africa Region	0.00	0.00	19.61	21.75	5.31	10.95	2.06	59.67
Angola	0.00	0.00	0.00	0.00	2.00	2.84	0.00	4.84
Benin	0.00	1.99	1.66	0.97	0.00	0.00	0.00	4.62
Botswana	0.00	0.00	4.34	8.34	0.00	0.00	0.00	12.68
Burkina Faso	0.00	0.00	12.53	14.26	3.61	0.27	1.15	31.81
Burundi	0.00	0.00	0.00	7.14	0.00	1.12	0.78	9.04
Cameroon	0.00	1.60	9.03	15.73	2.75	0.00	0.00	29.11
Cape Verde	0.00	0.00	2.04	3.67	2.80	0.00	0.00	8.51
Cent. Afr. Repub.	0.00	0.00	0.00	0.00	0.00	4.30	2.14	6.45
Central Africa	0.59	6.08	1.68	10.15	1.39	0.00	0.00	19.90
Chad	0.10	0.12	0.51	0.00	0.00	0.00	0.00	0.73
Comoros	0.00	0.00	0.00	7.61	4.00	0.00	0.00	11.61
Congo DR	0.00	0.00	12.03	62.69	11.39	1.54	2.63	90.27
Djibouti	0.00	0.00	0.00	1.84	0.00	0.00	0.00	1.84
East Africa	0.00	0.00	0.00	0.00	0.00	0.69	2.40	3.09
Equatorial Guinea	0.00	0.00	0.00	4.41	0.51	0.00	0.00	4.92
Ethiopia	6.84	7.99	13.18	0.00	7.04	19.65	28.99	83.67
Gambia	0.00	0.00	1.89	9.77	0.00	0.00	0.00	11.66
Ghana	4.09	12.26	14.06	5.79	2.09	2.67	16.87	57.82
Guinea	0.00	0.00	7.91	6.32	5.08	9.26	0.15	28.73
Guinea-Bissau	0.00	0.00	1.05	3.83	1.46	0.00	0.00	6.34
Ivory Coast	0.00	2.17	0.00	0.00	0.00	0.00	0.00	2.17
Kenya	0.00	9.39	6.06	7.48	6.44	16.86	14.76	60.99
Lesotho	0.00	0.00	2.44	13.30	3.53	0.00	0.00	19.27
Liberia	2.45	5.44	8.46	18.21	0.00	6.62	6.38	47.57
Madagascar	0.00	3.50	0.72	0.17	6.59	10.91	1.27	23.16
Malawi	0.00	0.00	0.97	14.65	13.66	16.46	13.32	59.06
Mali	0.00	0.30	18.92	34.75	20.48	7.36	11.74	93.55
Mauritania	0.00	0.00	4.06	4.18	0.11	0.00	0.00	8.35
Mauritius	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mozambique	0.00	0.00	0.00	0.00	3.52	32.27	10.44	46.23
Namibia	0.00	0.00	0.00	0.00	0.00	0.69	0.00	0.69
Niger	0.00	6.06	15.15	36.75	3.19	4.07	3.33	68.56
Nigeria	0.00	24.44	21.39	0.00	0.00	6.50	2.16	54.50
Rwanda	0.00	0.00	0.77	11.56	8.61	5.80	18.36	45.11
Sahel	0.00	0.24	19.37	33.84	0.00	0.00	0.00	53.45
Sao Tome/Principe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Senegal	0.00	2.18	16.81	51.06	17.18	1.89	9.89	99.00
Seychelles	0.00	0.00	0.61	1.07	0.00	0.00	0.00	1.68
Sierra Leone	0.00	2.07	3.65	5.38	0.00	1.93	1.82	14.86
Somalia	0.52	11.75	18.61	33.51	0.79	0.00	0.00	65.18
South Sudan	0.00	0.00	0.00	0.00	0.00	0.00	4.54	4.54
Southern Afr.	0.00	0.00	0.22	1.45	10.26	1.85	0.00	13.78
Sudan	1.17	9.76	6.27	14.89	0.31	12.79	2.93	48.12
Swaziland	0.00	0.00	0.00	15.36	1.21	0.00	0.00	16.57
Tanzania	0.00	6.39	19.72	6.62	1.18	4.30	18.90	57.12
Togo	0.00	0.00	0.00	16.95	0.00	0.00	0.00	16.95

Uganda	0.00	8.17	4.46	0.00	2.34	16.64	13.67	45.28
West Africa	0.00	0.00	0.00	0.00	0.00	1.79	0.00	1.79
Zambia	0.00	0.00	0.00	13.54	0.00	8.67	4.54	26.74
Zimbabwe	0.00	0.59	0.00	10.94	2.33	0.89	2.29	17.05
	15.76	122.51	270.17	529.91	151.18	211.58	197.50	1498.61
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Afghanistan	17.58	22.71	19.71	2.09	6.68	24.19	61.01	153.97
Asia Region	0.00	0.00	3.96	10.66	0.00	0.00	0.00	14.62
Bangladesh	0.00	0.08	9.42	5.67	1.35	1.56	24.21	42.30
Burma	0.00	0.00	0.00	15.37	2.57	0.00	2.21	20.16
Cambodia	1.06	1.48	0.00	0.00	2.19	0.89	2.71	8.32
East Timor	0.00	0.00	0.00	0.00	0.00	6.05	0.72	6.77
India	9.43	17.22	8.60	84.97	5.74	0.21	1.86	128.03
Indonesia	2.94	7.84	19.25	43.05	3.62	0.36	0.68	77.75
Japan	0.00	2.42	0.00	0.00	0.00	0.00	0.00	2.42
Korea	7.50	8.03	0.00	0.00	0.00	0.00	0.00	15.53
Kyrgyzstan	0.00	0.00	0.00	0.00	0.00	0.00	1.08	1.08
Laos	0.46	18.21	14.98	0.00	0.03	0.62	0.00	34.31
Nepal	1.81	5.42	7.28	19.70	10.52	5.02	4.06	53.80
Pakistan	0.00	5.31	19.20	60.94	10.09	0.00	17.28	112.82
Philippines	5.16	9.00	32.94	19.94	2.61	2.57	0.30	72.52
South Pacific	0.00	0.00	0.00	0.00	2.67	0.00	0.00	2.67
Sri Lanka	1.26	1.75	13.00	24.93	12.52	0.00	0.37	53.82
Taiwan	34.24	17.73	0.00	0.00	0.00	0.00	0.00	51.97
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	13.41	13.41
Thailand	4.86	35.90	43.60	24.16	3.19	0.00	0.00	111.71
Turkmenistan	0.00	0.00	0.00	0.00	0.00	0.31	0.56	0.87
Uzbekistan	0.00	0.00	0.00	0.00	0.00	0.00	0.87	0.87
Vietnam	5.06	34.49	37.75	0.00	0.00	0.00	0.00	77.30
	91.36	187.60	229.69	311.47	63.79	41.79	131.33	1057.02
Albania	0.00	0.00	0.00	0.00	7.26	2.99	0.00	10.25
Armenia	0.00	0.00	0.00	0.00	4.23	0.00	0.00	4.23
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Europe Region	0.31	0.00	0.00	0.00	24.29	9.10	0.00	33.70
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Georgia	0.00	0.00	0.00	0.00	0.00	0.00	2.88	2.88
Greece	1.45	0.45	0.00	0.00	0.00	0.00	0.00	1.90
Italy	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.65
Lithuania	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.90
Moldova	0.00	0.00	0.00	0.00	1.76	0.00	0.00	1.76
Portugal	0.00	0.00	0.50	5.96	0.00	0.00	0.00	6.46
Spain	0.63	0.59	0.00	0.00	0.00	0.00	0.00	1.22
Ukhraine	0.00	0.00	0.00	0.00	0.00	4.67	0.00	4.67
Yugoslavia	2.26	1.50	0.00	0.00	0.00	0.00	0.00	3.76
	5.30	2.54	0.50	5.96	38.45	16.77	2.88	72.40
Global	0.00	1.94	27.02	60.80	35.39	9.28	20.05	154.49
Global-CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Global-CRSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	1.94	27.02	60.80	35.39	9.28	20.05	154.49

Argentina	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bahamas	0.00	0.00	7.87	0.00	0.00	0.00	0.00	7.87
Belize	0.00	0.00	0.00	8.54	6.04	0.00	0.00	14.58
Bolivia	3.50	7.76	31.80	17.38	29.15	20.88	3.12	113.59
Brazil	2.02	28.24	31.38	0.00	2.77	2.53	0.00	66.94
Caribbean	0.00	0.00	3.26	37.93	6.88	0.00	0.00	48.07
Chile	5.44	6.36	0.39	0.00	0.00	0.00	0.00	12.19
Colombia	3.73	4.07	6.43	0.59	4.25	36.46	18.04	73.57
Costa Rica	0.92	2.11	21.42	6.78	3.18	0.00	0.00	34.41
Cuba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dominican Rep.	0.35	4.04	23.55	10.06	0.46	0.00	0.00	38.46
Ecuador	4.31	21.85	21.76	26.94	9.72	0.00	0.00	84.58
El Salvador	1.64	0.39	17.11	23.87	9.77	1.04	0.00	53.81
Guatemala	5.07	5.57	1.72	25.45	24.88	9.19	6.80	78.68
Guyana	0.00	0.00	3.86	2.89	0.14	0.00	0.00	6.89
Haiti	0.00	3.97	12.12	48.54	45.09	18.90	16.17	144.79
Honduras	3.75	2.66	15.41	53.98	17.61	6.90	6.00	106.31
Jamaica	0.00	0.00	14.00	8.00	4.82	3.00	0.06	29.89
LAC Region	0.00	3.79	4.24	3.99	4.37	0.00	0.00	16.39
Mexico	0.00	0.00	0.00	0.00	0.00	2.95	0.00	2.95
Nicaragua	1.63	12.29	0.25	0.21	7.90	4.99	0.81	28.10
Panama	2.67	9.23	7.61	14.89	0.00	0.50	0.00	34.89
Paraguay	2.95	6.09	15.46	8.30	0.00	0.00	0.00	32.81
Peru	2.45	1.27	7.08	37.85	25.59	23.20	6.43	103.88
ROCAP	0.00	0.00	0.88	22.54	17.89	0.00	0.00	41.31
St Lucia	0.00	0.00	0.00	1.73	0.00	0.00	0.00	1.73
St Vincent	0.00	0.00	0.00	0.95	0.00	0.00	0.00	0.95
Suriname	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uruguay	0.00	1.76	2.38	0.00	0.00	0.00	0.00	4.14
	40.44	121.45	249.98	361.41	220.49	130.55	57.44	1181.78
Egypt	1.35	1.21	50.03	91.58	76.06	0.21	4.97	225.42
Iran	3.95	6.36	0.00	0.00	0.00	0.00	0.00	10.30
Iraq	3.02	0.96	0.00	0.00	0.00	0.00	0.00	3.98
Israel	2.03	1.28	0.14	0.00	0.00	0.00	0.00	3.46
Jordan	8.90	14.00	4.92	15.78	9.88	0.00	0.00	53.47
Lebanon	2.35	2.59	0.90	0.60	0.00	0.00	0.00	6.45
Libya	2.57	3.58	0.00	0.00	0.00	0.00	0.00	6.16
Morocco	0.00	1.88	6.98	10.52	8.22	0.75	0.00	28.34
Near East	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oman	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tunisia	2.10	3.38	14.30	29.67	0.00	0.00	0.00	49.46
Turkey	2.02	7.26	2.43	0.00	0.00	0.00	0.00	11.71
UAR	0.00	0.61	0.00	0.00	0.00	0.00	0.00	0.61
Yemen	1.26	1.19	12.04	52.80	15.05	0.21	1.77	84.32
	29.56	44.29	91.75	200.96	109.21	1.17	6.74	483.67
Total	182.41	480.33	869.11	1470.52	618.51	411.13	415.94	4447.96

Total USAID Agricultural Education and Training Funding By Country and Decade (constant 2012 US$ million)

COUNTRY	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2009	2010-2017	Total to 2017
Africa Region	0.00	0.00	0.00	8.98	4.47	4.53	0.00	17.98
Angola	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benin	0.00	0.85	0.00	0.00	0.00	0.00	0.00	0.85
Botswana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Burkina Faso	0.00	0.00	6.85	7.77	1.32	0.00	0.00	15.94
Burundi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cameroon	0.00	0.00	0.00	37.02	21.80	0.00	0.00	58.82
Cape Verde	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cent. Afr. Repub.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Central Africa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chad	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Comoros	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Congo DR	6.78	10.45	0.34	0.77	0.00	0.00	0.00	18.34
Djibouti	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Africa	0.00	15.34	1.62	0.00	0.00	0.00	0.00	16.96
Equatorial Guinea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ethiopia	13.32	19.16	20.34	0.00	0.00	0.00	0.16	52.98
Gambia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ghana	1.22	4.50	2.09	0.00	0.00	0.00	1.56	9.37
Guinea	0.00	0.00	7.91	4.50	0.00	0.00	0.00	12.41
Guinea-Bissau	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ivory Coast	0.00	3.19	0.96	0.00	0.00	0.00	0.00	4.15
Kenya	0.00	12.75	32.53	43.60	6.65	0.00	0.55	96.07
Lesotho	0.00	0.00	0.42	4.60	1.32	0.00	0.00	6.35
Liberia	4.94	2.35	5.46	12.17	0.00	0.00	9.34	34.27
Madagascar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Malawi	0.00	0.00	0.00	0.00	7.33	0.00	1.11	8.44
Mali	0.00	0.00	9.23	13.78	0.06	0.00	0.41	23.49
Mauritania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mauritius	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mozambique	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.39
Namibia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Niger	0.00	1.92	0.00	0.00	0.00	0.00	0.00	1.92
Nigeria	44.36	103.03	25.25	0.00	0.00	0.00	0.00	172.64
Rwanda	0.00	0.00	2.65	8.74	0.00	1.22	5.72	18.32
Sahel	0.00	0.70	12.66	0.59	0.00	0.00	0.00	13.96
Sao Tome/Principe	0.00	0.00	0.00	1.98	0.00	0.00	0.00	1.98
Senegal	0.00	0.00	0.00	0.00	0.00	0.00	16.69	16.69
Seychelles	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sierra Leone	0.00	25.02	0.00	0.00	0.00	0.00	0.00	25.02
Somalia	0.00	1.53	0.00	0.00	0.00	0.00	0.00	1.53
South Sudan	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61
Southern Afr.	0.00	0.00	1.25	0.00	0.00	0.00	0.20	1.45
Sudan	0.18	1.46	0.56	0.00	0.00	0.18	0.00	2.38
Swaziland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tanzania	0.00	12.32	34.27	7.10	3.63	0.00	16.48	73.79
Togo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Uganda	0.00	10.14	13.18	17.57	12.72	0.00	1.33	54.95
West Africa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zambia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zimbabwe	0.00	5.38	0.00	3.65	2.33	0.00	0.00	11.36
	70.79	230.10	177.55	172.82	61.64	5.93	54.57	773.40
Afghanistan	7.03	15.60	10.17	0.00	0.00	0.00	19.69	52.48
Asia Region	0.00	10.22	17.09	4.51	0.00	0.00	0.00	31.83
Bangladesh	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.27
Burma	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cambodia	4.87	6.78	0.00	0.00	0.00	0.00	0.09	11.74
East Timor	0.00	0.00	0.00	0.00	0.00	5.17	1.25	6.41
India	28.76	64.10	15.73	0.00	0.00	0.00	0.00	108.59
Indonesia	9.62	21.35	58.49	70.11	1.00	0.00	0.00	160.58
Japan	3.55	0.00	0.00	0.00	0.00	0.00	0.00	3.55
Korea	0.00	0.97	0.00	0.00	0.00	0.00	0.00	0.97
Kyrgyzstan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Laos	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nepal	0.00	0.00	11.33	22.09	8.54	0.00	0.00	41.97
Pakistan	0.00	6.73	3.61	40.02	10.45	0.00	11.88	72.70
Philippines	8.56	6.31	3.64	7.24	0.63	0.00	0.00	26.37
South Pacific	0.00	0.00	0.00	22.16	4.34	0.00	0.00	26.50
Sri Lanka	1.00	3.99	18.51	28.53	0.45	0.00	0.00	52.48
Taiwan	5.17	1.76	0.00	0.00	0.00	0.00	0.00	6.93
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thailand	4.70	19.08	13.89	3.94	4.26	0.00	0.00	45.86
Turkmenistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uzbekistan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vietnam	3.72	4.35	0.00	0.00	0.00	0.00	0.00	8.07
	76.98	161.24	152.47	198.60	29.67	5.17	34.18	658.31
Albania	0.00	0.00	0.00	0.00	7.26	1.79	0.00	9.05
Armenia	0.00	0.00	0.00	0.00	0.00	0.00	1.42	1.42
Austria	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Europe Region	0.00	0.00	0.00	0.00	2.33	0.00	0.00	2.33
France	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Georgia	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.27
Greece	0.00	0.64	0.00	0.00	0.00	0.00	0.00	0.64
Italy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lithuania	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Moldova	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Portugal	0.00	0.00	3.84	0.64	0.00	0.00	0.00	4.48
Spain	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ukhraine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yugoslavia	1.13	0.75	0.00	0.00	0.00	0.00	0.00	1.88
	1.13	1.39	3.84	0.64	9.59	1.79	2.68	21.06
Global	0.00	0.00	10.98	70.21	0.00	0.00	11.10	92.29
Global-CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Global-CRSP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	10.98	70.21	0.00	0.00	11.10	92.29

Argentina	0.80	2.89	3.47	0.00	0.00	0.00	0.00	7.15
Bahamas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Belize	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bolivia	4.56	1.48	13.85	2.05	0.00	0.00	0.00	21.94
Brazil	24.02	72.04	73.09	0.00	0.00	0.00	0.00	169.15
Caribbean	0.00	0.00	6.53	3.62	0.00	0.00	0.00	10.15
Chile	0.27	0.31	0.00	0.00	0.00	0.00	0.00	0.58
Colombia	1.91	10.82	3.72	0.00	0.00	0.00	0.00	16.45
Costa Rica	0.30	1.91	9.91	0.00	0.00	0.00	0.00	12.12
Cuba	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dominican Rep.	0.00	1.58	3.73	16.20	45.51	0.00	0.00	67.02
Ecuador	0.97	0.23	0.00	0.63	0.93	0.00	0.00	2.77
El Salvador	2.34	0.56	7.51	1.79	0.00	0.00	0.00	12.20
Guatemala	1.53	4.58	3.37	0.00	0.00	0.00	0.00	9.47
Guyana	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haiti	0.00	3.97	0.58	0.61	0.00	0.00	0.00	5.15
Honduras	6.26	0.32	0.00	1.32	0.00	0.00	0.00	7.91
Jamaica	0.16	0.00	10.45	10.23	6.81	0.00	0.00	27.65
LAC Region	0.00	2.22	4.42	0.00	0.00	0.00	0.00	6.63
Mexico	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.16
Nicaragua	1.61	0.00	0.00	0.00	0.00	0.00	0.00	1.61
Panama	0.76	0.54	0.00	1.03	0.00	0.00	0.00	2.33
Paraguay	0.95	1.92	0.00	0.00	0.00	0.00	0.00	2.87
Peru	0.00	64.95	0.00	26.21	5.23	0.00	0.00	96.39
ROCAP	0.00	11.61	0.00	15.47	11.52	0.00	0.00	38.60
St Lucia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
St Vincent	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Suriname	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uruguay	0.00	2.09	0.00	0.00	0.00	0.00	0.00	2.09
	46.59	184.01	140.62	79.17	70.00	0.00	0.00	520.39
Egypt	0.00	1.94	0.21	0.00	0.00	9.21	2.47	13.83
Iran	3.23	12.08	0.00	0.00	0.00	0.00	0.00	15.31
Iraq	1.02	0.96	0.00	0.00	0.00	0.00	0.00	1.98
Israel	2.03	1.28	0.14	0.00	0.00	0.00	0.00	3.44
Jordan	2.77	0.69	7.71	0.00	0.00	0.00	0.00	11.17
Lebanon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Libya	2.37	0.00	0.00	0.00	0.00	0.00	0.00	2.37
Morocco	0.00	0.86	13.77	45.41	8.77	0.00	0.00	68.81
Near East	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oman	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Syria	0.00	0.00	5.16	9.05	0.00	0.00	0.00	14.21
Tunisia	7.30	11.77	1.06	0.00	0.00	0.00	0.00	20.13
Turkey	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
UAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yemen	0.00	0.00	5.37	39.82	3.27	0.00	0.00	48.47
	18.73	29.58	33.42	94.29	12.04	9.21	2.47	199.73
Total	214.22	606.33	518.87	615.72	182.94	22.09	105.00	2265.17

Annex C: List of USAID-Funded AKIS Projects

Note: Totals may not add due to rounding. Funding is in current US Dollars.

COUNTRY	PROJECT TITLE	Start Year	End Year	Project Total ($ million)	Est. Research Funding ($ million)	Est. Extension Funding ($ million)	Est. Ag Ed Funding ($ million)	National, Regional, or International	Free Standing or Component	Type
Costa Rica	Ag ext & res	1956	1958	0.15		0.15		N	F	E
India	Ag ed and Res	1958	1961	2.02	2.02			N	F	R
Egypt	Ag ext	1962	1964	0.21		0.21		N	F	E
Yemen	Farming Practices for Prod	1989	1990	40.00	10.00	15.00		N	C	R-E
Yemen	Tropical Fruit Improvement	1976	1980	1.90	0.30	1.60		N	F	R-E
Yemen	Poultry Development	1975	1979	1.92	0.50	1.00		N	C	R-E
Turkey	Cereals Production	1968	1977	1.60	0.80	0.80		N	F	R-E
Turkey	ICA/Aid Prog to 1963	1956	1962	0.60	0.03	0.56		N	F	R-E
Tunisia	CTRD Rural Ext & Outreach	1979	1985	21.40	6.30	10.00		N	C	R-E
Tunisia	Agr Techno Transfer	1978	1987	8.74	2.00	6.74		N	F	R-E
Tunisia	Rural Development	1976	1978	0.94	0.20	0.30		N	C	R-E
Morocco	Tadla Res Mgmt	1992	1995	10.60	0.50	2.10		N	C	R-E
Morocco	Range Mgmt Improvement	1980	1985	5.00	1.20	2.40		N	C	R-E
Morocco	Dryland Applied Ag Res	1978	1994	50.00	45.00	5.00		N	F	R-E
Libya	ICA/AID Programs	1956	1965	1.18	0.15	1.02		N	F	R-E
Lebanon	Restor of Min of Ag Serv	1978	1978	0.77	0.20	0.20		N	C	R-E
Jordan	Agr Marketing Dev	1988	1994	8.30	0.50	4.00		N	C	R-E
Jordan	National Agr Development	1985	1993	25.28	8.40	8.40		N	C	R-E
Jordan	Jordan Valley Agr Services	1981	1987	6.42	3.42	3.00		N	F	R-E
Jordan	Water Mgmt Technology	1977	1979	1.32	0.40	0.40		N	C	R-E
Jordan	Wheat Research & Prod	1967	1977	0.60	0.30	0.30		N	F	R-E
Egypt	Increased agr productivity	1996	1998	41.07	8.44	32.63	0.00	N	C	R-E
Egypt	National Agr Research	1985	1995	205.00	105.00	40.00		N	C	R-E
Egypt	Major Cereals	1979	1985	52.40	30.00	15.00		N	C	R-E
Egypt	Agr Mechanization	1979	1980	40.00	3.00	10.00		N	C	R-E
Egypt	Aquaculture Development	1978	1980	27.50	6.00	6.00		N	C	R-E
Egypt	Rice Research	1977	1981	21.77	16.00	3.00		N	C	R-E
Egypt	Agr Development Systems	1977	1983	14.90	6.00	3.00		N	C	R-E
Egypt	Water Use & Mgmt	1976	1981	13.00	3.00	3.00		N	C	R-E
Uruguay	Agr Prod & Marketing	1965	1979	2.73	1.73	1.00		N	F	R-E
St Vincent	St Vincent Agr Dev	1984	1984	2.00	1.00	0.50		N	C	R-E
ROCAP	Exp Ind Tech Supp	1991	1995	8.50	0.50	2.00		R	C	R-E
ROCAP	Reg Env & NRM	1989	1996	50.20	1.50	8.50		R	C	R-E
ROCAP	Reg Ag Technology Network	1987	1990	2.50	1.50	1.00		R	F	R-E
ROCAP	Tree Crop Prod	1985	1992	9.00	3.00	6.00		R	F	R-E
ROCAP	Integrated Pest Mgmt	1984	1989	6.75	2.50	2.50		R	C	R-E
ROCAP	Reg Coffee Pest Cont	1981	1990	6.00	3.00	2.00		R	C	R-E
ROCAP	Small Farm Prod Systems	1979	1985	8.16	7.16	1.00		R	F	R-E
ROCAP	Fuelwood/Alternative Energy	1979	1988	8.80	2.00	2.00		R	C	R-E
Peru	Alternative Dev	1992	1995	33.00	2.00	6.00		N	C	R-E
Peru	Central Selva Res Mgmt II	1988	1988	3.91	2.91	1.00		N	F	R-E
Peru	Centr Selva Res Mgmt	1982	1987	12.89	2.50	2.50		N	C	R-E
Peru	On Farm Water Mgmt	1978	1980	0.50	0.20	0.20		N	C	R-E
Peru	Soy/Corn Prod on Small Farms	1976	1980	2.30	1.20	1.10	0.00	N	F	R-E
Paraguay	Small Farm Technology	1979	1981	6.00	1.00	4.50		N	C	R-E
Paraguay	Minifundia Crop Intensif	1979	1981	2.00	0.50	1.00		N	C	R-E
Paraguay	Farm Mgmt Serv-Small Farms	1970	1970	0.42	0.21	0.21		N	F	R-E
Paraguay	Small Farmer Livestock	1970	1970	0.28	0.10	0.18		N	F	R-E
Paraguay	Inst Devel--Small Farm Lvstk	1969	1978	4.80	2.40	2.40		N	F	R-E
Panama	Managed Fish Prod	1980	1984	1.10	0.30	0.20		N	C	R-E
Panama	Agricultural Development	1963	1963	3.14	0.70	1.00		N	C	R-E
Nicaragua	Natural Res Mgmt	1991	1997	9.00	0.50	0.50		N	C	R-E
Nicaragua	Irrigation Dev	1970	1974	0.13	0.07	0.06		N	F	R-E
Nicaragua	Agr Res & Ext	1958	1963	0.10	0.05	0.05		N	C	R-E
Nicaragua	Agr Ext & Res	1953	1961	0.60	0.30	0.30		N	F	R-E

LAC Region	Envir & Global Change	1990	1996	27.00	2.50	3.00		R	C	R-E
LAC Region	Reduction of Vertebrate Pest	1979	1983	1.05	0.75	0.30		R	F	R-E
Jamaica	Hillside Agriculture	1987	1997	10.00	1.00	3.40		N	C	R-E
Jamaica	Fish Prod System Dev	1979	1982	3.20	0.80	1.10		N	C	R-E
Honduras	Ag Research Foundation	1984	1991	20.00	15.00	5.00		N	F	R-E
Honduras	Small Farmer Coffee Improv	1981	1990	20.75	2.00	12.00		N	C	R-E
Honduras	Agricultural Research	1978	1983	2.63	2.10	0.53		N	F	R-E
Honduras	Core Services	1973	1977	1.66	0.40	0.80		N	C	R-E
Haiti	Productive Land Use Syst	1990	1995	30.00	3.00	9.00		N	C	R-E
Haiti	Coffee Revitalization	1990	1995	12.44	5.00	5.00		N	C	R-E
Haiti	Targeted Watershed Mgmt	1986	1996	32.60	3.10	16.30		N	C	R-E
Haiti	Coffee Sector Asstance	1986	1988	2.00	0.50	1.50		N	F	R-E
Haiti	Local Resources Dev II	1986	1989	1.00	0.10	0.30		N	C	R-E
Haiti	Agro-Forestry Outreach	1981	1989	27.00	6.30	12.00		N	C	R-E
Haiti	Appropriate Technology	1978	1981	1.33	0.30	0.30		N	C	R-E
Guyana	Agr Sector Reform	1993	1994	0.60	0.10	0.10		N	C	R-E
Guyana	Small Farm Dev-Black Bush	1978	1982	8.90	0.90	2.20		N	C	R-E
Guatemala	Nat Res Mgmt	1990	1999	30.77	1.00	6.00		N	C	R-E
Guatemala	Cooperative Strengthening	1986	1994	19.00	0.75	2.00		N	C	R-E
Guatemala	Highlands Agr Dev	1983	1993	37.60	4.00	10.00		N	C	R-E
Guatemala	Small Farm Diversif System	1981	1985	8.05	1.00	5.00		N	C	R-E
Guatemala	Rubber Production	1959	1973	3.00	1.50	1.50		N	F	R-E
El Salvador	Coffee Tech Transfer	1991	1995	12.00	3.00	4.00		N	C	R-E
El Salvador	Agrarian Reform Sector Sup	1983	1987	46.00	4.00	8.00		N	C	R-E
Ecuador	Sustainable Use of Biodiversity	1989	1997	16.61	1.50	3.50		N	C	R-E
Ecuador	Agr Sector Reconstruction	1985	1994	23.80	1.00	2.00		N	C	R-E
Ecuador	Forestry Sector Dev	1982	1991	7.80	4.00	2.00		N	C	R-E
Ecuador	Rural Technology Transfer	1980	1987	9.80	2.00	7.80		N	F	R-E
Ecuador	Agr Prod	1961	1977	8.50	2.00	6.50		N	F	R-E
Dominican Rep.	Commercial Farm Systems	1987	1989	14.75	2.50	2.50		N	C	R-E
Dominican Rep.	Natural Resource Plan & Dev	1981	1984	8.58	1.00	2.00		N	C	R-E
Dominican Rep.	Agr Sector Loan II	1976	1977	15.00	2.00	5.00		N	C	R-E
Costa Rica	Forest Conserv & Mgmt	1990	1995	3.80	1.00	1.80		N	C	R-E
Costa Rica	Natural Resource Conservation	1979	1980	9.80	1.00	1.00		N	C	R-E
Costa Rica	Commodity Systems	1977	1979	5.50	1.40	1.40		N	C	R-E
Costa Rica	Agric & Nat Resources	1975	1981	0.40	0.13	0.10		N	C	R-E
Colombia	Small Farm Development	1976	1979	3.40	1.70	1.70		N	F	R-E
Caribbean	Agr Res & Ext	1989	1994	5.00	3.00	2.00		R	F	R-E
Caribbean	Farming Systems R&D	1983	1988	7.55	3.00	4.55		R	F	R-E
Bahamas	Bahama Livestk R & D	1970	1973	9.83	8.00	1.83		N	F	R-E
Brazil	Alternatives to deforestation	1995	2005	4.86	0.30	4.11	0.00	N	C	R-E
Brazil	Agricultural Research	1970	1973	10.24	7.24	3.00		N	F	R-E
Brazil	Fish Prod	1964	1976	3.20	1.20	2.00		N	F	R-E
Brazil	Agr Res & Ext Dev	1963	1975	8.95	4.45	4.50		N	F	R-E
Brazil	Agric Res & Ext NE	1963	1965	0.08	0.04	0.04		N	F	R-E
Bolivia	Increased licit employment	1998	2005	11.00	2.63	7.00	0.00	N	C	R-E
Bolivia	Cochabamba Reg Dev	1991	1997	63.00	5.00	15.00		N	C	R-E
Bolivia	Chapare Reg Dev	1983	1990	38.50	6.00	8.00		N	C	R-E
Bolivia	Coca Crop Substitution	1975	1980	3.79	0.90	0.90		N	C	R-E
Bolivia	ICA/AID Programs	1956	1972	4.64	2.27	2.37		N	F	R-E
Belize	Comm of Alternate Crops	1985	1991	8.10	2.00	0.70		N	C	R-E
Global-CG	CG-IARC-CIMMYT	1969	2004	145.06	145.06			I	F	R-E
Global	Agr Mktg Improv. Support	1987	1992	5.00	0.50	0.50		I	C	R-E
Global	Vertebrate Pest Mgmt R&D	1986	1990	3.91	1.00	2.00		I	C	R-E
Global	Forestry/Fuelw R&D	1985	1994	57.80	20.00	10.00		I	C	R-E
Global	Pre/Post Harv Rodnt/Bird Cont	1983	1992	12.80	10.00	2.80		I	F	R-E
Global	Coastal Resource Mgmt	1983	1995	37.99	2.00	3.00		I	C	R-E
Global	Integrated Support for Sm Farm	1982	1987	6.06	4.00	2.06		I	F	R-E
Global	Small Scale Fisheries-Rhode Is.	1969	1969	2.01	0.20	0.40		I	C	R-E
Portugal	Agricultural Production	1980	1983	10.61	2.50	2.50		N	C	R-E
Vietnam	Crop Production	1967	1977	31.70	13.00	13.00		N	C	R-E
Thailand	Highland Area Dev	1980	1987	9.20	1.50	2.00		N	C	R-E
Thailand	Land Settlements	1979	1980	4.20	0.40	1.20		N	C	R-E
Thailand	Agricultural Research	1964	1979	10.46	6.00	3.00		N	C	R-E
Sri Lanka	Mahaweli Ag & RD	1987	1995	23.00	6.50	4.80		N	C	R-E
Sri Lanka	Irr Systems Mgmt	1986	1991	18.60	1.50	3.00		N	C	R-E
Sri Lanka	Mahaweli Environment	1982	1984	5.00	0.40	2.00		N	C	R-E
Sri Lanka	Water Management	1979	1984	12.20	1.20	2.00		N	C	R-E
Sri Lanka	Rice Research	1977	1978	3.30	4.20	4.20		N	C	R-E
South Pacific	Pacific Islands Marine Res	1990	1994	12.80	3.00	1.30		R	C	R-E

Philippines	Rainfed Resources Dev	1982	1992	24.25	16.00	4.00		N	C	R-E
Philippines	Agr Research II	1979	1981	10.00	8.00	2.00		N	F	R-E
Philippines	Bicol IRD	1978	1978	2.24	0.30	0.80		N	C	R-E
Philippines	Libmanan/Cabusao Integr Dev	1975	1976	3.50	0.50	1.00		N	C	R-E
Philippines	Inland Fisheries	1971	1976	0.54	0.27	0.27		N	F	R-E
Philippines	Agricultural Services	1966	1979	4.99	1.00	3.99		N	F	R-E
Pakistan	Mgmt of Ag Res & Tech	1984	1990	38.00	24.00	14.00		N	F	R-E
Pakistan	Irr System Mgmt	1983	1991	90.00	2.00	6.00		N	C	R-E
Pakistan	Northwest Frontier Dev	1983	1991	30.00	2.50	2.50		N	C	R-E
Pakistan	Dryland Agr Development	1975	1979	0.69	0.10	0.59		N	F	R-E
Nepal	Agroenterpr & Tech Systems	1990	1995	12.00	4.00	2.00		N	C	R-E
Nepal	Forestry Initiative	1986	1990	4.82	1.20	3.62		N	F	R-E
Nepal	Agr Res & Prod	1985	1989	10.00	8.00	1.00		N	C	R-E
Nepal	Integrated Cereals	1975	1984	8.24	6.24	2.00		N	F	R-E
Nepal	Food Grain Technology	1957	1978	4.34	2.20	2.14		N	F	R-E
Laos	Narcotics Control	1972	1975	4.42	0.50	1.00		N	C	R-E
Laos	Agr Development	1963	1975	18.88	2.00	6.00		N	C	R-E
Korea	ICA/AID Prog to 1963	1956	1963	4.78	2.39	2.39		N	F	R-E
Indonesia	Upland Agr & Conserv	1984	1993	18.90	5.00	6.00		N	C	R-E
Indonesia	Secondary Food Crop Dev	1983	1986	7.40	1.00	3.70		N	C	R-E
Indonesia	Citanduy River Basin Dev II	1980	1983	27.00	4.40	7.00		N	C	R-E
Indonesia	Small-Scale Fisheries Dev	1980	1982	2.64	0.30	1.30		N	C	R-E
Indonesia	Agricultural Research	1971	1980	3.28	2.68	0.60		N	F	R-E
India	Nat'l Social Forestry Support	1985	1989	64.90	2.80	13.00		N	C	R-E
India	Hill Area Land/Water Dev	1984	1987	23.58	3.00	6.00		N	C	R-E
India	Maharashtra Minor Irr	1984	1987	38.60	1.90	1.00		N	C	R-E
India	Irr Mgmt & Trning	1983	1991	49.72	6.00	10.00		N	C	R-E
India	Maharashtra Soc Forestry	1982	1988	20.39	2.00	9.00		N	C	R-E
India	Madhya Pradesh Soc Forestry	1981	1983	16.98	1.00	7.00		N	C	R-E
India	Soil & Water Mgmt	1966	1975	0.50	0.30	0.20		N	F	R-E
Burma	Ag Production	1986	1991	30.00	2.00	5.00		N	C	R-E
Burma	Maize & Oilseeds Prod	1982	1985	30.00	3.00	5.00		N	C	R-E
Bangladesh	PVO Co-financing	1980	1985	5.00	0.50	0.50		N	C	R-E
Bangaladesh	Agr Research Phase II	1981	1989	46.50	44.00	2.50		N	F	R-E
Bamgladesh	Agricultural Assistance	1975	1979	25.00	0.50	0.50		N	C	R-E
Asia Region	Exten Small Scale Equip--IRRI	1976	1985	4.35	2.00	2.35		R	F	R-E
Afghanistan	Integrated Wheat Dev	1977	1979	4.38	2.00	2.38		N	F	R-E
Afghanistan	Helm-Argh Valley Dev	1954	1977	20.20	6.00	6.70		N	C	R-E
Afghanistan	Nat'l Agr Dev	1952	1979	11.60	8.00	3.60		N	F	R-E
Zambia	Agr Dev- Res & Ext	1980	1984	12.50	8.20	4.30		N	F	R-E
Swaziland	Cropping Sys Res & Ext Trng	1981	1989	11.57	6.57	5.00		N	F	R-E
Sudan	Enhanced food security	2003	2005	3.32	0.89	1.32	0.00	N	C	R-E
Sudan	Reforestation & Anti-Deserti	1987	1990	8.00	0.80	0.80		N	C	R-E
Sudan	Blue Nile Ag Dev	1978	1983	12.00	3.00	6.00		N	C	R-E
Sudan	Wadi Hafla Com Dev	1978	1982	0.52	0.10	0.42		N	F	R-E
Southern Afr.	Natural Res Mgmt	1989	1997	39.29	1.00	8.00		R	C	R-E
Somalia	Shebelli Water Mgmt I	1987	1990	22.60	2.00	2.00		N	C	R-E
Somalia	Bay Region Ag Dev	1980	1983	11.20	0.50	5.60		N	C	R-E
Somalia	Agr Delivery Systems	1979	1983	8.64	0.80	7.84		N	F	R-E
Somalia	Agr Ext Training & Res	1978	1979	4.02	0.40	3.62		N	F	R-E
Somalia	Agricultural Services	1962	1975	5.60	2.80	2.80		N	F	R-E
Sierra Leone	Adapt Crop Res & Ext	1978	1986	7.95	4.50	3.45		N	F	R-E
Sierra Leone	Adapt Crop Res & Ext	1969	1978	0.96	0.48	0.48		N	F	R-E
Seychelles	Food Crops Res	1979	1981	1.51	0.80	0.71		N	F	R-E
Senegal	Increasd agr production	1996	1999	6.00		6.00	0.00	N	C	R-E
Senegal	Cereals Prod II	1980	1983	7.70	2.00	5.70		N	F	R-E
Senegal	Casamance Reg Dev	1978	1984	21.42	3.00	5.00		N	C	R-E
Senegal	Bakel Crop Prod	1977	1984	7.84	0.40	0.90		N	C	R-E
Senegal	Cereal Production	1975	1979	4.74	1.00	3.74		N	F	R-E
Sahel	Regional Food Crop Prot	1978	1985	32.30	11.00	11.00		R	C	R-E
Sahel	Sahel Food Crop Prod.	1975	1979	4.26	0.50	1.00		R	C	R-E
Sahel	West Africa Reg Poultry	1970	1977	0.83	0.10	0.73		R	F	R-E
Rwanda	Adaptive Food & Ag Res	1992	1999	8.00	6.40	1.60		N	F	R-E
Rwanda	Natural Res Mgmt	1989	1994	12.20	4.00	4.00		N	C	R-E
Rwanda	Farming Systems Research	1984	1991	15.70	12.00	3.70		N	F	R-E
Rwanda	Food Storage & Marketing	1982	1984	2.90	0.50	0.50		N	C	R-E
Rwanda	Fish Culture	1981	1982	2.45	0.60	1.85		N	F	R-E
Rwanda	Local Crop Storage	1979	1980	2.57	0.60	0.60		N	C	R-E
Nigeria	Economic growth	2002	2005	4.23	0.50	2.67	0.00	N	C	R-E
Nigeria	Maize & Rice Prod	1971	1979	2.12	0.20	1.92		N	F	R-E

Nigeria	Agr Res & Ext-West	1965	1971	3.20	1.60	1.60		N	F	R-E
Nigeria	Rubber Dev	1965	1974	0.90	0.50	0.40		N	F	R-E
Niger	Integrated Livestock Dev	1983	1989	10.89	1.00	2.00		N	C	R-E
Niger	Agr Prod Support	1982	1987	19.90	6.00	8.00		N	C	R-E
Niger	Cereals Prod	1975	1981	16.10	3.20	3.20		N	C	R-E
Mauritania	Vegetable Production	1978	1982	1.80	0.90	0.90		N	F	R-E
Mauritania	RD	1977	1982	6.60	2.00	1.50		N	C	R-E
Mali	Accelerated economic growth	2002	2005	2.13	0.65	0.94	0.00	N	C	R-E
Mali	Increase invest in hi prod areas	1998	2002	5.60	1.60	4.00	0.00	N	C	R-E
Mali	Farming Syst R & E	1985	1994	20.79	10.40	10.39		N	F	R-E
Mali	Livestock Sector II	1982	1991	23.72	6.00	6.00		N	C	R-E
Mali	Mali-San Pilot Fish Prod	1979	1981	0.30	0.10	0.20	0.00	N	F	R-E
Mali	Operation Haute Vallee	1978	1987	20.00	1.00	4.00		N	C	R-E
Mali	Action Ble	1978	1981	2.07	0.30	0.60		N	C	R-E
Mali	Livestock Sector II	1977	1981	16.94	0.50	2.00		N	C	R-E
Mali	Operation Mils-Mopti II	1976	1981	14.39	1.50	3.00		N	C	R-E
Mali	Crop Prod-Action Riz-Sorgho	1976	1982	4.23	1.20	2.00		N	C	R-E
Mali	Mali Livestock Dev	1974	1979	4.50	0.80	0.80		N	C	R-E
Mali	Central Veterinary Lab	1968	1977	1.22	0.30	0.30		N	C	R-E
Malawi	Increase agr. Productivity	1997	2002	6.70	1.50	5.20	0.00	N	C	R-E
Malawi	Ag Res & Ext	1985	1989	15.00	7.50	7.00		N	C	R-E
Malawi	Agr Res	1979	1982	9.00	7.50	1.50		N	F	R-E
Madagascar	IRRI Rice Res	1990	1993	5.60	4.80	0.80		N	F	R-E
Madagascar	Ramomafiana National Park	1990	1992	3.24	0.20	0.60		N	C	R-E
Liberia	Improved economic livelihoods	2001	2004	2.99	1.01	1.98	0.00	N	C	R-E
Liberia	Ag Res & Ext II	1984	1989	19.95	12.00	7.95		N	F	R-E
Liberia	Agr Res & Ext	1980	1982	4.50	3.00	1.50		N	F	R-E
Liberia	Upper Bong County IRD	1977	1980	6.60	0.70	1.50		N	C	R-E
Liberia	Upper Lofa Rural Dev	1976	1979	5.00	0.20	0.50		N	C	R-E
Liberia	ICA/AID Programs	1956	1971	3.28	1.72	1.56		N	F	R-E
Lesotho	Farming Systems Res	1978	1985	11.20	9.00	2.19		N	C	R-E
Lesotho	Thaba Bosia Rural Dev	1973	1979	3.24	0.60	0.30		N	C	R-E
Kenya	Conserv of Biodiv Res Areas	1991	1997	4.80	0.30	1.50		N	C	R-E
Kenya	On-Farm Grain Storage	1981	1987	7.80	0.80	3.90		N	C	R-E
Guinea-Bissau	Food Crop Protection III	1985	1988	2.25	0.60	0.30		N	C	R-E
Guinea-Bissau	Rice Prod II	1980	1986	4.60	1.10	1.50		N	C	R-E
Guinea-Bissau	Agricultural Development	1977	1980	2.84	0.50	0.50		N	C	R-E
Guinea	Natural Resources Mgmt	1990	1995	11.80	3.00	1.50		N	C	R-E
Guinea	Smallholder Prod Prep	1983	1988	3.56	2.56	1.00		N	F	R-E
Ghana	Managed Input & Agri Serv	1976	1979	15.23	3.00	3.00		N	C	R-E
Gambia	Mixed Farming & Res Mgmt	1979	1984	8.80	4.40	4.40		N	F	R-E
Ethiopia	Rural productivity	2001	2005	4.62	0.96	2.73	0.00	N	C	R-E
Ethiopia	Upper Didesa Dev	1976	1976	2.00	1.00	0.50		N	C	R-E
Ethiopia	Pulse Diversif & Improve	1974	1979	1.40	1.00	0.40		N	F	R-E
Djibouti	Fisheries Development II	1984	1986	3.30	0.50	1.00		N	C	R-E
Congo DR	Applied Ag Res II	1989	1991	25.00	18.00	7.00		N	F	R-E
Congo DR	Applied Agr Res & Ext	1983	1988	15.00	7.00	8.00		N	F	R-E
Congo DR	Manioc Outreach	1978	1982	4.36	1.36	3.00		N	F	R-E
Congo DR	North Shaba Maize Prod	1976	1985	18.62	3.00	6.00		N	C	R-E
Chad	Ag Instit Dev	1978	1979	0.37	0.18	0.19		N	F	R-E
Cape Verde	Watershed & Appld Res Dev	1990	1992	3.80	1.50	1.50		N	C	R-E
Cameroon	Nat'l Cereals Res & Ext	1985	1994	7.70	4.00	3.70		N	F	R-E
Cameroon	No Cameroon Seed Mult II	1982	1988	15.89	1.00	2.00		N	C	R-E
Burundi	Basic Food Crops	1980	1985	6.70	2.20	3.30		N	C	R-E
Burkina Faso	Agr Res & Trng Support	1988	1994	7.43	5.43	2.00		N	F	R-E
Burkina Faso	Eastern Reg Food Prod	1981	1982	3.00	0.30	3.00		N	C	R-E
Burkina Faso	Foundation Seed Production	1981	1981	1.60	0.10	0.90		N	C	R-E
Botswana	Ag Technology Impr	1981	1986	9.20	4.00	4.00		N	C	R-E
Botswana	IVS Hort Dev	1978	1983	0.69	0.30	0.39		N	F	R-E
Botswana	Crop Production	1976	1979	1.74	0.84	0.90		N	F	R-E
Africa Region	Farm Technology	2000	2004	24.00	16.00	8.00	0.00	R	C	R-E
Africa Region	Adoption of Sust Tech	1997	1999	12.00	8.00	4.00	0.00	R	C	R-E
Africa Region	West Africa Rice Dev	1981	1986	12.00	9.00	3.00		R	F	R-E
Africa Region	Support to Regional Org	1979	1986	10.19	1.00	0.30		R	C	R-E
Africa Region	Rice Res & Prod -- WARDA	1975	1980	6.74	4.60	2.10		R	C	R-E
Africa Region	Soil & Crop Mgmt--IITA	1970	1975	3.80	2.60	1.20		R	F	R-E
Uruguay	ICA/AID Prog	1962	1966	0.65	0.28		0.37	N	F	R-AE
Peru	Agr Instit Dev & Opera	1962	1966	17.10	5.70		11.40	N	F	R-AE
Costa Rica	Agric Res & Educ	1959	1963	0.49	0.24		0.24	N	F	R-AE
Brazil	Regional Ctr for Admin & Tng	1967	1979	0.47	0.23		0.24	N	F	R-AE

Thailand	Khon Kaen Univ Res Dev	1983	1986	2.17	1.08		1.09	N	F	R-AE
Taiwan	ICA/AID Programs	1956	1965	0.37	0.19		0.18	N	F	R-AE
Afghanistan	Higher Ed-Kabul U	1973	1978	2.95	0.50		0.50	N	C	R-AE
Uganda	Manpower for Ag Dev	1983	1992	24.90	7.00		14.00	N	C	R-AE
Sahel	Human Res Dev III	1986	1987	19.00	2.00		0.20	R	C	R-AE
Kenya	Agr Systems Support	1978	1983	49.80	10.00		25.00	N	C	R-AE
Ivory Coast	ICA/AID Programs	1962	1972	0.85	0.05		0.80	N	F	R-AE
Ethiopia	Agric Educ & Research	1954	1973	13.76	6.88		6.88	N	F	R-AE
Africa Region	Graduate Fellowship Program	1985	1994	65.40	6.00		6.00	R	C	R-AE
Africa Region	CRSP- Food Security Initiative	2008	2008	1.00	1.00	0.00	0.00	R	F	R
Africa Region	CRSP- Food Security Initiative	2008	2008	6.50	6.50	0.00	0.00	R	F	R
Africa Region	CRSP- Tech. Diss. Aquaculture	2010	2010	1.10	0.99	0.00	0.00	R	F	R
Egypt	CRSP-PERSUAP Tomato	2008	2008	0.02	0.02	0.00	0.00	N	F	R
Global-CRSPp	CRSP-Payments for Envi. Services	2006	2006	0.18	0.18	0.00	0.00	I	F	R
Global-CRSPp	CRSP-BASIS	2002	2011	25.80	19.23	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Bean/Cowpea	2001	2011	35.43	23.54	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Global Livestock	2001	2011	29.22	17.12	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Horticulture	2009	2011	9.06	8.76	0.00	0.00	I	F	R
Global-CRSPp	CRSP-IPM	2002	2011	28.26	19.48	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Nutrition	2009	2011	6.00	5.70	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Peanut	2002	2011	27.39	17.84	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Pond Dynamics	2002	2011	28.31	19.86	0.00	0.00	I	F	R
Global-CRSPp	CRSP-SANRAM	2002	2011	27.66	18.48	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Soils Mgmt	2002	2006	16.32	5.48	0.00	0.00	I	F	R
Global-CRSPp	CRSP-Sorghum/Millet	2001	2011	33.42	21.59	0.00	0.00	I	F	R
Indonesia	CRSP-IPM	2010	2010	0.75	0.68	0.00	0.00	N	F	R
Lebanon	CRSP- PERSUAP Hydroponics	2010	2010	0.06	0.04	0.00	0.00	N	F	R
Mali	CRSP- freshwater aquaculture.	2007	2007	0.75	0.75	0.00	0.00	N	F	R
Mali	CRSP- Local Capacity in IPM	2010	2010	2.50	2.25	0.00	0.00	N	F	R
Mali	CRSP- Improved Ag Tech & Markets	2007	2007	5.25	5.25	0.00	0.00	N	F	R
Mali	CRSP-AA-Nutrition-Africa	2011	2011	0.08	0.08	0.00	0.00	N	F	R
Nicaragua	CRSP Evaluation: MCC	2007	2007	0.41	0.41	0.00	0.00	N	F	R
ROCAP	CRSP- Rapid Diss. Disease Res. Bean	2010	2010	3.39	2.37	0.00	0.00	R	F	R
ROCAP	Rapid Dis. Brown Midrib Sorghum	2010	2010	1.10	0.77	0.00	0.00	R	F	R
Senegal	CRSP- IPM of Mango Pests	2008	2008	0.40	0.40	0.00	0.00	N	F	R
Senegal	CRSP Pesticides Against Locust	2005	2005	0.37	0.37	0.00	0.00	N	F	R
Africa Region	improv Afr ag	2001	2006	96.03	2.30	0.00	0.00	R	C	R
Bangladesh	agriculture	2007	2011	100.34	5.45	0.00	0.00	N	C	R
Burundi	agriculture	2011	2011	27.77	1.54	0.00	0.00	N	C	R
East Africa	agriculture	2007	2011	72.16	10.22	0.00	0.00	R	C	R
East Africa	regional food sec	2001	2006	86.09	2.47	0.00	0.00	R	C	R
Kenya	rural income	2001	2006	54.31	1.49	0.00	0.00	N	C	R
Malawi	agriculture	2011	2011		4.38	0.00	0.00	N	C	R
Mali	agriculture	2007	2011	110.65	9.39	0.00	0.00	N	C	R
Mali	econ growth	2006	2006		0.80	0.00	0.00	N	C	R
Pakistan	agriculture	2010	2011	556.61	0.00	11.53	0.00	N	C	E
Pakistan	agriculture	2010	2011		11.53	0	0	N	C	R
Rwanda	food sec & econ growth	2005	2005		0.14	0.00	0.00	N	C	R
Southern Afr.	agriculture	2007	2011	26.69	5.19	0.00	0.00	R	C	R
Southern Afr.	agriculture	2011	2011		0.30	0.00	0.00	N	C	R
West Africa	agriculture	2007	2011	106.92	16.31	0.00	0.00	R	C	R
West Africa	improv food sec	2001	2006	46.08	2.31	0.00	0.00	R	C	R
Zambia	agriculture	2011	2011		0.85	0.00	0.00	N	C	R
Global-CG	Core Research	2002	2011	270.33	188.07	0.00	0.00	I	F	R
Africa Region	AATF	2007	2011	13.29	12.55	0.00	0.00	R	F	R
Africa Region	Biotech/AFR	2007	2008	1.57	1.57	0.00	0.00	R	C	R
Asia Region	Biotech/Asia	2002	2007	2.36	1.78	0.00	0.00	R	C	R
Asia Region	CG/Asia	2006	2010	1.15	1.15	0.00	0.00	R	C	R
Bangladesh	Biotech/Bangladesh	2002	2010	2.82	2.12	0.00	0.00	N	C	R
Bangladesh	CG/Bangladesh-Biotech	2007	2011	1.40	1.40	0.00	0.00	N	C	R
Global	ABSP-II/Central	2002	2011	22.48	10.12	0.00	0.00	I	F	R
Global	Biotech-ARS	2009	2009	0.12	0.12	0.00	0.00	I	C	R
Global	EGAT-Biotech-Misc	2003	2010	2.02	1.75	0.00	0.00	I	C	R
Global	Global Greenbank Trust	2003	2003	1.00	1.00	0.00	0.00	I	F	R
Global	Harvest Plus	2004	2004	1.50	1.50	0.00	0.00	I	C	R
Global	MSU	2003	2003	0.89	0.89	0.00	0.00	I	C	R
Global	PBS	2002	2011	19.74	13.20	0.00	0.00	I	F	R
Global-CG	CG/EGAT-Biotech	2002	2011	27.05	21.21	0.00	0.00	I	C	R
Global-CG	CG-Biotech-Cassava	2006	2009	2.42	2.42	0.00	0.00	I	C	R
Global-CG	CG-GDA-Abiotic Rice/Wheat	2007	2009	4.43	4.43	0.00	0.00	I	C	R

India	Biotech/India	2002	2009	3.40	1.60	0.00	0.00	N	C	R
India	CG/India	2002	2010	2.00	1.50	0.00	0.00	N	C	R
Indonesia	Biotech/Indonesia	2010	2011	1.39	1.39	0.00	0.00	N	C	R
Kenya	Associate Award-Kenya	2008	2009	0.32	0.32	0.00	0.00	N	C	R
Malawi	Biotech/Malawi	2007	2007	0.38	0.38	0.00	0.00	N	C	R
Nigeria	Biotech/Nigeria	2007	2007	0.70	0.70	0.00	0.00	N	C	R
Pakistan	CG/Pakistan	2011	2011	0.50	0.50	0.00	0.00	N	C	R
Philippines	Biotech/Phillipines	2009	2009	0.10	0.10	0.00	0.00	N	C	R
Southern Afr.	Biotech/Safr	2003	2004	0.65	0.65	0.00	0.00	R	C	R
Uganda	Associate Award-Uganda	2008	2009	0.50	0.50	0.00	0.00	N	C	R
Senegal	Cap. Bldg AgEd & Res	2010	2014	0.00	0.80	0.00	0.00	N	F	R
Tanzania	Ag education & Research	2010	2014	0.00	8.00	0.00	0.00	N	F	R
Yugoslavia	Ag & Home Ec Trng Res & Ext	1958	1962	0.26	0.26			N	F	R
Taiwan	Res, Ag ed, & ext	1956	1957	0.12	0.12			N	F	R
Philippines	Col of Ag & Central Expt Sta	1956	1960	0.45	0.45			N	F	R
Mali	Animal res & market	1962	1963	0.18	0.18			N	F	R
Lebanon	Ag Res	1959	1962	0.26	0.26			N	F	R
Greece	Ag ext, trg & res	1956	1959	0.18	0.18			N	F	R
Cuba	Ag investigaciones Com	1957	1958	0.30	0.30			N	F	R
Global	U.S. Borlaug Fellows	2012	2014		0.88			I	C	R
Global	Borlaug LEAP	2012	2015		1.10			I	C	R
Global	BHEARD	2012	2014		2.13			I	C	R
Global	AWARD	2012	2017		1.51			I	C	R
Global	Central/BFS	2011	2018	778.98	585.29			I	F	R
Afghanistan	Research	2012	2018		15.00			N	C	R
Cambodia	BHEARD - Cambodia	2013	2013		0.09			N	C	R
Bangladesh	BHEARD Bangladesh	2012	2015		1.30			N	C	R
Senegal	ERA	2012	2016		2.00			N	F	R
Uganda	Climate Change Adaptation	2013	2014		0.25			N	C	R
Uganda	BHEARD Uganda	2012	2017		1.13			N	C	R
Tanzania	AWARD Tanzania	2012	2017		0.48			N	C	R
South Sudan	BHEARD South Sudan	2014	2015		0.64			N	C	R
Rwanda	BHEARD	2015	2016		0.88			N	C	R
Mozambique	BHEARD - Mozambique	2012	2014		0.30			N	C	R
Mozambique	AWARD Mozambique	2012	2016		0.10			N	C	R
Mali	BHEARD Mali	2013	2016		0.43			N	C	R
Malawi	UILTCB - Malawi	2012	2013		0.32			N	C	R
Malawi	BHEARD Malawi	2014	2016		0.83			N	C	R
Liberia	BHEARD - Liberia	2015	2015		0.25			N	C	R
Kenya	BHEARD Kenya	2015	2016		0.37			N	C	R
Kenya	AWARD Kenya	2012	2016		0.20			N	C	R
Ghana	BHEARD Ghana	2012	2017		1.42			N	C	R
Ghana	Award -Ghana	2014	2016		0.20			N	C	R
Yemen	Sorghum & Millet Improve	1976	1980	3.30	3.30			N	F	R
Yemen	Agr Res & Development	1976	1981	3.21	1.61			N	C	R
Yemen	Sorghum Production	1973	1978	0.27	0.27			N	F	R
Turkey	Agr Dev & Control	1968	1974	2.70	1.30			N	C	R
Turkey	Agr Research	1963	1967	0.18	0.18			N	F	R
Turkey	Agr Plan & Econ Research	1961	1969	0.40	0.20			N	C	R
Tunisia	Agricultural Research	1982	1982	2.79	2.79			N	F	R
Tunisia	Small Holder Irrigation	1979	1985	0.50	0.50			N	F	R
Tunisia	Science & Technology	1978	1979	2.00	0.20			N	C	R
Tunisia	Agr Prod & Research	1970	1977	1.62	1.62			N	F	R
Tunisia	Agr Econ Res & Planning	1967	1981	3.40	1.70			N	C	R
Oman	Fisheries Dev & Managmt	1990	1992	20.00	1.00			N	C	R
Near East	Regional Cooperation	1986	1995	10.00	5.00			R	C	R
Near East	Arid Lands Research Prpg	1982	1985	5.00	5.00			R	F	R
Near East	Mid East Reg Coop Res.	1980	2004	110.00	44.00			R	C	R
Morocco	Dryland Farming	1976	1976	0.23	0.23			N	F	R
Morocco	Agr Research & Train	1975	1978	0.30	0.30			N	F	R
Morocco	Agronomy Research	1961	1969	0.29	0.29			N	F	R
Lebanon	Agr Research Serv	1965	1967	0.13	0.13			N	F	R
Jordan	Vegetable Res & Prod	1970	1974	0.03	0.03			N	F	R
Jordan	Feasibility Studies	1965	1977	3.45	0.80			N	C	R
Jordan	Agr Res & Develop	1958	1969	0.84	0.42			N	C	R
Jordan	Agr Res Facilities	1958	1961	0.13	0.13			N	F	R
Israel	Agric Nat Res Superv	1956	1962	0.23	0.11			N	C	R
Egypt	University Linkages II	1991	1995	7.00	1.50			N	C	R
Egypt	Sci & Tech for Developm	1986	1995	118.74	9.00			N	C	R
Egypt	Data Collection & Analysis	1980	1980	5.00	0.50			N	C	R

Egypt	Tech & Feasibility Studies	1978	1981	31.00	0.50			N	C	R
Egypt	Research & Research Mgmt	1977	1980	24.40	2.40			N	C	R
Egypt	Applied Science & Tech Res	1976	1980	24.40	5.00			N	C	R
Uruguay	Agr Research & TA	1975	1977	4.85	4.85			N	F	R
Suriname	Agric & Nat Resources	1954	1966	0.75	0.25			N	C	R
ROCAP	Ag Secretariat	1981	1983	0.80	0.10			R	C	R
ROCAP	Agric Res & Info Systems	1979	1983	3.33	1.11			R	C	R
ROCAP	Agri Info Systems	1975	1981	3.30	1.10			R	C	R
ROCAP	Small Farm Crop System	1970	1970	1.57	1.57			R	F	R
ROCAP	Agr Res Coord-ROCAP	1970	1970	0.91	0.91			R	F	R
ROCAP	Soil Fertility Research	1970	1970	0.70	0.70			R	F	R
Peru	Use of Treated Sewage	1977	1980	0.22	0.22			N	F	R
Peru	Agric Res & Dev	1960	1965	0.52	0.26			N	C	R
Peru	Agric Research	1954	1965	1.20	1.20			N	F	R
Panama	Agr Technology Dev	1979	1988	11.70	11.70			N	F	R
Nicaragua	Land Reform	1980	1982	1.40	0.10			N	C	R
Nicaragua	Agr Prod & Diversific	1970	1976	0.90	0.90			N	F	R
LAC Region	Soil Fertitlity	1986	1987	2.00	2.00			R	F	R
LAC Region	Tenure Sec & Land Mkt Res	1986	1989	1.07	1.07			R	F	R
LAC Region	Dev of Envir Mgmt Systems	1978	1989	18.83	1.00			R	C	R
LAC Region	Agr Dev in Latin America	1976	1976	0.20	0.10			R	C	R
LAC Region	Sector Analysis Support	1973	1977	4.50	0.10			R	C	R
LAC Region	Ag Sector Support	1973	1974	0.30	0.10			R	C	R
LAC Region	Int'l Trop Ag Center--IITA	1971	1974	2.28	2.28			R	F	R
Jamaica	Jamaica Ag Research	1986	1996	7.60	7.60			N	F	R
Jamaica	Hillside Assessment	1985	1985	0.60	0.30			N	C	R
Honduras	Feasibility Study	1966	1975	0.40	0.10			N	C	R
Haiti	Agric Station Feasibility St	1983	1983	0.40	0.40			N	F	R
Haiti	Agr Dev Support II	1978	1990	7.63	7.63			N	F	R
Haiti	Adm of Agric & Nat Res	1955	1956	0.02	0.02			N	F	R
Haiti	Tech Asst Agr & Nat Res	1954	1958	0.92	0.23			N	C	R
Guyana	Seed Farm Dev	1978	1978	0.50	0.20			N	C	R
Guyana	Rice Modernization	1969	1978	12.90	3.20			N	C	R
Guyana	Diversif & Dev of Agr	1967	1976	2.00	2.00			N	F	R
Guatemala	Food Prod & Nutr Improve	1975	1979	1.73	1.73			N	F	R
Guatemala	Agric Research	1959	1965	0.29	0.29			N	F	R
Guatemala	Agr Res & Dev	1955	1959	0.65	0.33			N	C	R
El Salvador	Agribusiness Dev	1987	1994	39.00	2.00			N	C	R
Ecuador	Agric Research	1952	1962	0.50	0.50			N	F	R
Dominican Rep.	Agr Sector Loan II	1979	1979	0.20	0.20			N	F	R
Dominican Rep.	Private Dev. Fund II	1972	1976	5.00	0.40			N	C	R
Colombia	Fisheries Research	1975	1975	2.20	2.20			N	F	R
Colombia	Agr Regional Sector Loan	1971	1975	26.50	2.60			N	C	R
Colombia	Nat'l Soil Fertility	1970	1970	0.10	0.10			N	F	R
Caribbean	Interagency Res Mission	1982	1988	0.81	0.10			R	C	R
Caribbean	Car Dev Facility III	1981	1984	16.00	1.60			R	C	R
Caribbean	Small Farm Multple Crop	1978	1981	2.21	2.21			R	F	R
Caribbean	Regional Agri-Business Dev	1977	1979	6.95	2.00			R	C	R
Caribbean	Food Crop Prod	1976	1979	10.70	5.30			R	C	R
Brazil	Dev Sci & Tech Research	1965	1974	0.24	0.10			N	C	R
Brazil	Dev Hi Qual Prot Corn	1963	1975	8.90	8.90			N	F	R
Bolivia	Sustainable Forestry Mgmt	1993	1999	15.00	1.00			N	C	R
Bolivia	Farm Policy Study	1978	1980	1.10	0.20			N	C	R
Bolivia	Exploratory Res on Plan Sys	1977	1979	0.46	0.46			N	F	R
Bolivia	ICA/AID Ag Research	1968	1972	13.40	13.40			N	F	R
Argentina	Animal Dis & Meat Lab	1966	1976	1.40	0.60			N	C	R
Argentina	F & C Elev Grain Storag	1963	1975	8.60	0.80			N	C	R
Global-CRSPp	CRSP-Plan-Horticulture	2004	2004	0.46	0.46			I	F	R
Global-CRSPp	CRSP-Plan-IPM	1992	1995	2.00	2.00			I	F	R
Global-CRSPp	CRSP--Plan-SANREM	1990	1991	2.30	2.30			I	F	R
Global-CRSPp	CRSP-Plan-Peanuts	1980	1980	0.40	0.40			I	F	R
Global-CRSPp	CRSP--Plan-Soils Mgmt	1979	1980	0.40	0.40			I	F	R
Global-CRSPp	CRSP-Plan-Bean/Cowpea	1978	1980	0.40	0.40			I	F	R
Global-CRSPp	CRSP--Plan-Small Ruminant	1977	1979	3.20	3.20			I	F	R
Global-CRSPp	CRSP--Plan-Pond Dynamics	1977	1980	0.70	0.70			I	F	R
Global-CRSP	CRSP-BASIS	1996	2004	11.55	11.55			I	F	R
Global-CRSP	CRSP-IPM	1993	2004	19.48	19.48			I	F	R
Global-CRSP	CRSP-SANRAM	1992	2004	27.62	27.62			I	F	R
Global-CRSP	CRSP-Fisheries Stock Asst	1985	1993	5.61	5.61			I	F	R
Global-CRSP	CRSP-Pond Dynamics	1982	2004	31.10	31.15			I	F	R

Global-CRSP	CRSP-Peanut	1982	2004	39.62	39.67			I	F	R
Global-CRSP	CRSP-Soils Mgmt	1981	2004	57.62	57.62			I	F	R
Global-CRSP	CRSP-Nutrition	1981	1989	11.95	11.95			I	F	R
Global-CRSP	CRSP-Bean/Cowpea	1980	2004	68.42	68.52			I	F	R
Global-CRSP	CRSP-Sorghum/Millet	1979	2004	72.40	72.40			I	F	R
Global-CRSP	CRSP-Global Livestock	1978	2004	75.72	75.72			I	F	R
Global-CGy	IARC-INIBAP	1989	1993	0.40	0.40			I	F	R
Global-CGy	IARC-ICIPE	1990	1991	0.60	0.60			I	F	R
Global-CGy	IARC-IBSRAM	1985	1993	0.60	0.60			I	F	R
Global-Cgy	IARC-AVRDC	1973	1995	18.40	18.40			I	F	R
Global-CGy	CG--CG Data Comm Eng	1977	1978	0.10	0.10			I	F	R
Global-CGx	CG-Nutr Plann for IARC's	1979	1982	0.49	0.49			I	F	R
Global-CGx	CG--Intn'l Water Mgmt Cntr	1982	1984	0.10	0.10			I	F	R
Global-CG	CG-IARC-WARDA	1968	2004	3.20	3.20			I	F	R
Global-CG	CG-IARC-IWMI	1984	2004	9.32	9.32			I	F	R
Global-CG	CG-IARC-ISNAR	1968	2003	18.52	18.52			I	F	R
Global-CG	CG-IARC-IRRI	1968	2004	130.30	130.30			I	F	R
Global-CG	CG-IARC-IPGRI/IBPGR	1975	2004	21.45	21.45			I	F	R
Global-CG	CG-IARC-ILRAD & ILRI	1974	2004	71.11	71.11			I	F	R
Global-CG	CG-IARC-ILCA	1968	2004	49.80	49.80			I	F	R
Global-CG	CG-IARC-IITA	1968	2004	133.71	133.71			I	F	R
Global-CG	CG-IARC-IFPRI	1980	2004	36.16	36.16			I	F	R
Global-CG	CG-IARC-ICRISAT	1968	2004	90.43	90.43			I	F	R
Global-CG	CG-IARC-ICRAF	1992	2004	6.68	6.68			I	F	R
Global-CG	CG-IARC-ICLARM	1979	2004	9.33	9.33			I	F	R
Global-CG	CG-IARC-ICARDA	1968	2004	84.69	84.69			I	F	R
Global-CG	CG-IARC-CIP	1968	2004	48.61	48.61			I	F	R
Global-CG	CG-IARC-CIFOR	1992	2004	6.73	6.73			I	F	R
Global-CG	CG-IARC-CIAT	1970	2004	108.61	108.61			I	F	R
Global	Biosafety Systems	2003	2008	14.86	4.95			I	F	R
Global	Ag Biotech Support	2002	2007	14.94	7.47			I	F	R
Global	Animal Vaccine from Biotech	2000	2005	0.88	0.73			I	F	R
Global	Agro Biotech for Sust Product	1997	2001	5.00	5.00			I	C	R
Global	Food Security II	1992	2001	5.00	5.00			I	F	R
Global	Agro Biotech for Sust Product	1991	1996	9.70	6.31			I	C	R
Global	PostHarvest Coll Agribus Supp	1991	1999	2.40	1.00			I	C	R
Global	Access to Land/Wtr/NatResII	1989	1998	9.00	4.00			I	C	R
Global	Single MOU's Agr	1989	1993	5.20	1.70			I	C	R
Global	Aquaculture Res & Support	1988	1992	1.30	0.80			I	C	R
Global	Improvd An Vaccine Thru Biotech	1986	1994	11.99	11.99			I	F	R
Global	Impr Bio-N Fix Thru Biotech	1986	1995	9.69	9.69			I	F	R
Global	R&D Improved Seed Prod/Util	1986	1993	6.84	1.00			I	C	R
Global	Dev Strategy for Fragile Land	1986	1995	10.34	1.00			I	C	R
Global	Soybean Util & Res	1985	1993	11.90	11.90			I	F	R
Global	IPM & Envir Prot	1985	1991	5.80	5.80			I	F	R
Global	Collaborative Res IARC's	1985	1993	4.20	4.20			I	F	R
Global	US-Israel Coop Dev Res Prog	1985	2004	45.80	30.27			I	C	R
Global	PostHarv Grain Syst R&D	1985	1993	3.24	1.62			I	C	R
Global	Heifer Project Intern'l	1985	1987	1.40	0.20			I	C	R
Global	ReproStudy Milkfish	1984	1994	15.10	15.10			I	F	R
Global	Biotech for Tissue Culture	1984	1995	5.00	5.00			I	F	R
Global	HBCU Res Grants	1984	1995	15.25	4.10			I	C	R
Global	Crop Nematode Res & Cont	1984	1984	1.00	1.00			I	F	R
Global	Host Resistance--Tick Control	1983	1989	1.67	1.67			I	F	R
Global	IBSNAT	1982	1992	9.93	9.93			I	F	R
Global	Agroforestry	1982	1995	13.14	4.00			I	C	R
Global	Innovative S&T for Dev	1982	1996	10.20	3.00			I	C	R
Global	Water Mgmt Synth II	1982	1987	14.50	1.00			I	C	R
Global	Fisheries Dev Support	1982	1995	4.00	0.40			I	C	R
Global	Innovative Sci Res	1981	1990	98.60	9.90			I	C	R
Global	Applying S&T to Development	1981	1990	36.00	9.00			I	C	R
Global	Ag Tech Res & Dev	1981	1995	13.00	6.50			I	C	R
Global	Dryland Agricultural Support	1981	1991	8.11	4.00			I	C	R
Global	Project Assistance	1981	1982	0.10	0.10			I	F	R
Global	Tissue Culture for Food Prod	1980	1983	0.90	0.90			I	F	R
Global	Access to Prod. Resources	1979	1989	6.52	2.00			I	C	R
Global	Integrated Protection Method	1979	1981	0.35	0.35			I	F	R
Global	Pest Management Capability	1979	1996	0.30	0.30			I	F	R
Global	Dev. Potential of New Land	1979	1979	0.15	0.15			I	F	R
Global	Research Econ-RSSA	1979	1979	0.10	0.10			I	F	R

Global	Water Mgmt Res	1978	1979	10.16	10.16			I	F	R
Global	Aquaculture Tech Dev	1978	1987	3.80	3.80			I	F	R
Global	Improve of Trop Prod Beans	1978	1980	2.64	2.64			I	F	R
Global	Control of Barley Disease	1978	1984	1.68	1.68			I	F	R
Global	Farming Syst R&D Methodology	1978	1981	1.20	1.20			I	F	R
Global	Pysiology & Ecology of Ticks	1978	1982	0.70	0.70			I	F	R
Global	Cons/Prod/Nutr Data-Farm Househ	1978	1980	0.50	0.30			I	C	R
Global	Deforestation & Development	1978	1978	0.25	0.25			I	F	R
Global	N Fix Non-Symbio Assoc Co	1977	1982	1.18	1.18			I	F	R
Global	Agri Mechanization	1977	1981	1.08	1.08			I	F	R
Global	Special Projects	1977	1980	2.47	1.00			I	C	R
Global	Small Farm Tech & Mark An	1977	1983	0.80	0.80			I	F	R
Global	Improve of Pearl Millet	1977	1980	0.77	0.77			I	F	R
Global	Aflatoxin Reduction in Maize	1977	1983	0.51	0.51			I	F	R
Global	Determinants of Irr Problems	1977	1981	0.44	0.44			I	F	R
Global	Knowledge Synth for Policy	1977	1981	1.60	0.10			I	C	R
Global	Compre Plan for Rural Dev	1977	1981	0.80	0.10			I	C	R
Global-CG	CGIAR Data Comm Eng	1977	1978	0.04	0.04			I	F	R
Global	Spring & Winter Wheat	1976	1995	10.20	10.20			I	F	R
Global	CONTX-Weed Control Util	1976	1984	3.70	1.90			I	C	R
Global	Soil Microbiology/Mineralogy	1976	1983	1.38	1.38			I	F	R
Global	World Rhizobium Coll Ctr	1976	1985	1.30	1.30			I	F	R
Global	Potential of Soil Resource in Trop	1976	1983	1.30	1.30			I	F	R
Global	Agro-Econ Res on Trop Soil	1976	1980	1.00	1.00			I	F	R
Global	Soybean Utiliz	1976	1979	1.40	0.70			I	C	R
Global	CONTX-N Fix Limit Factors	1976	1989	0.50	0.50			I	F	R
Global	Computerized Agri Info System	1976	1978	0.21	0.21			I	F	R
Global	CONTX-N-Fixation Res & Trg	1976	1976	0.09	0.09			I	F	R
Global	IFDC	1975	1994	81.86	20.46			I	C	R
Global	CONTX Fix Symb Trop Leg	1975	1988	11.30	11.30			I	F	R
Global	Pest Mgmt Root Knot Nem	1975	1983	2.90	2.90			I	F	R
Global	Benchmark Soils PR	1975	1979	2.30	2.30			I	F	R
Global	CONTX Grazing Ruminants	1975	1982	1.80	1.80			I	F	R
Global	Dryland Farming Oregon	1975	1975	1.00	1.00			I	F	R
Global	Extrusion Processed Foods	1975	1978	0.27	0.27			I	F	R
Global	Control Hemoprotazoal Dis.	1975	1975	0.22	0.22			I	F	R
Global	Moisture Util in Semi Arid	1975	1976	1.00	0.20			I	C	R
Global	Info on Foodstuff for Lvsk	1975	1982	0.90	0.20			I	C	R
Global	Soil Families-Hawaii	1974	1983	7.42	7.42			I	F	R
Global	Sorghum Pest Resistance	1974	1979	1.10	1.10			I	F	R
Global	Improve of Barley	1974	1974	0.90	0.90			I	F	R
Global	Technical Assistance	1974	1977	0.79	0.79			I	F	R
Global	Dev Hi Yield Sorghum	1974	1979	7.80	0.78			I	C	R
Global	Tropical Adapt of Sorghum	1974	1977	0.22	0.22			I	F	R
Global	Nat. Res. Semi-Arid Tropics	1974	1979	1.04	0.20			I	C	R
Global	New Tech for Rural Dev	1974	1977	0.80	0.10			I	C	R
Global	CONTX-Dev Impr Sybean	1973	1984	7.86	7.86			I	F	R
Global	Improve Mungbeans	1973	1980	2.46	2.46			I	F	R
Global	Disease & Insect Cont	1973	1980	0.84	0.84			I	F	R
Global	Improve of Soybeans for Tr	1973	1979	0.50	0.50			I	F	R
Global	Improved Fert for LDC's	1973	1975	0.40	0.40			I	F	R
Global	Eval of Mungbeans	1973	1976	0.10	0.10			I	F	R
Global	Livestock Prod in Tropics	1972	1977	0.50	0.50			I	F	R
Global	Analysis of Tropical Livestock	1972	1977	0.39	0.39			I	F	R
Global	Rural Development	1972	1972	0.80	0.10			I	C	R
Global	Pest Mgmt & Environ Prot	1971	1984	7.60	1.50			I	C	R
Global	Maize Protein Quality	1970	1979	1.80	1.80			I	F	R
Global	Artif Prop -Milkfish	1970	1970	1.29	1.29			I	F	R
Global	Ind Ext Small Scale Ag Equip	1970	1970	0.99	0.99			I	F	R
Global	Aquaculture	1970	1979	1.60	0.80			I	C	R
Global	Secondary Wood Util	1970	1970	0.61	0.61			I	F	R
Global	Coconut Protein Product	1970	1978	0.60	0.60			I	F	R
Global	Prog for Econ Analysis	1970	1983	7.20	0.50			I	C	R
Global	Agr & Econ Dev	1970	1970	0.90	0.40			I	C	R
Global	Soil Fert Utilization	1970	1972	0.30	0.30			I	F	R
Global	Agr & Econ Dev	1970	1977	0.30	0.20			I	C	R
Global	Agr & Econ Dev	1970	1976	0.70	0.20			I	C	R
Global	Un- & Under employment	1970	1970	0.70	0.10			I	C	R
Global	Tropical Soils	1970	1970	0.80	0.10			I	C	R
Global	Postharvest Food Loss	1970	1970	0.20	0.10			I	C	R

Global	Fisheries Training Ctr	1970	1970	0.30	0.10			I	C	R
Global	Agron-Econ Res-Trop So	1969	1981	4.00	4.00			I	F	R
Global	Soil Fert in Humid Tropic	1969	1979	2.00	2.00			I	F	R
Global	Analysis of Capital Prom	1969	1975	1.40	0.10			I	C	R
Global	Contx-Plant/Seed Materia	1968	1977	0.80	0.60			I	C	R
Global	Tailor Fert for Rice	1968	1973	0.50	0.50			I	F	R
Global	Soil Fert/Plant Water Rel	1968	1975	0.20	0.20			I	F	R
Global	Control Disease of Crop	1968	1974	0.20	0.20			I	F	R
Global	Comp Crop & Seed	1968	1975	0.20	0.20			I	F	R
Global	Breeding Agon Crops	1968	1974	0.20	0.20			I	F	R
Global	Control Vertebrate Pests	1967	1982	7.30	7.30			I	F	R
Global	Impr Postharvest Gr Sys	1967	1984	10.40	2.00			I	C	R
Global	Weed Control	1966	1982	4.40	4.40			I	F	R
Global	Wheat-Impr Nutr Quality	1966	1979	3.60	3.60			I	F	R
Global	Sorghum Protein	1966	1979	3.20	3.20			I	F	R
Global	Contx-Fert TA	1965	1990	4.40	0.40			I	C	R
Global	Seed Prod & Ind Dev	1958	1984	4.10	0.40			I	C	R
Global	Plant & Seed Materials	1955	1983	2.90	2.90			I	F	R
France	Devel Agr Res Lake Aloa	1953	1959	0.30	0.30			N	F	R
France	Develop Agr Res Medj Val	1953	1959	0.16	0.16			N	F	R
Austria	Agr & Nat Res Project	1953	1957	0.26	0.13			N	C	R
Vietnam	Animal Production	1967	1976	4.69	1.00			N	C	R
Viet Nam	Agric Resource Dev	1965	1969	0.26	0.06			N	C	R
Thailand	Emerging Problems of Dev	1985	1990	38.00	1.00			N	C	R
Thailand	Ag Res & Cons	1959	1964	0.30	0.15			N	C	R
Sri Lanka	Agroenterprise	1992	1997	14.00	2.00			N	C	R
Sri Lanka	Mahaweli Ganga Irr	1977	1978	5.07	5.07			N	F	R
Sri Lanka	On-Farm Water Mgmt	1977	1978	5.10	1.00			N	C	R
South Pacific	Fisheries Dev	1986	1992	8.66	1.00			R	C	R
Philippines	Farming System Dev	1981	1987	5.62	5.62			N	F	R
Philippines	Agricultural Research	1976	1977	5.00	5.00			N	F	R
Philippines	Small Farmer Inc & Prod	1975	1979	1.00	1.00			N	F	R
Philippines	Cabusao Integ Area Dev	1975	1976	3.50	0.30			N	C	R
Philippines	Farm Power & Equipment	1965	1975	1.35	1.35			N	F	R
Pakistan	Food for Peace	1973	1980	1.88	0.94			N	C	R
Pakistan	Agricultural Research	1969	1982	11.23	11.23			N	F	R
Pakistan	Agr Technology Support	1968	1974	1.50	1.50			N	F	R
Pakistan	Agri Research Demo	1956	1962	1.01	1.01			N	F	R
Pakistan	Agri Research Prod	1954	1965	0.61	0.61			N	F	R
Nepal	Sustain Income & Rrl Enterpise	1993	1996	12.00	1.50			N	C	R
Nepal	PVO Co-financing	1981	1987	3.78	1.00			N	C	R
Nepal	Agri Resource Inventory	1980	1985	2.39	0.24			N	C	R
Nepal	Ag Dev Council	1976	1985	2.40	2.40			N	F	R
Korea	Agr Research	1974	1979	5.00	5.00			N	F	R
Korea	Agric & Nat Resources	1972	1974	17.00	1.70			N	C	R
Korea	Agricultural Planning	1972	1979	1.30	0.40			N	C	R
Korea	Rural Policy Plan/Survey	1963	1974	6.00	1.00			N	C	R
Indonesia	Agribusiness Dev	1991	1997	20.00	2.00			N	C	R
Indonesia	Natural Res Mgmt	1990	1997	39.00	2.00			N	C	R
Indonesia	Agr & Rural Sector Support	1987	1996	100.00	8.00			N	C	R
Indonesia	Aquatic Resources Dev	1986	1986	2.81	2.81			N	F	R
Indonesia	Agr Planning	1984	1985	9.00	1.00			N	C	R
Indonesia	General Participant Training	1983	1995	29.90	2.00			N	C	R
Indonesia	Applied Agr Research	1980	1993	28.30	28.30			N	F	R
Indonesia	Environ. Center	1979	1980	0.50	0.20			N	C	R
Indonesia	Sederhana Irrigation II	1978	1981	36.30	1.80			N	C	R
Indonesia	Sci & Tech Res Asst Trg	1978	1980	6.39	1.50			N	C	R
Indonesia	Sumatra Agr Research	1977	1978	9.00	9.00			N	F	R
Indonesia	Agr Dev Plan & Admin	1977	1978	6.80	2.60			N	C	R
India	Plant Genetic Resources	1988	1994	31.90	31.90			N	F	R
India	Technical Assist & Support	1988	1997	15.00	1.50			N	C	R
India	Agricultural Research	1983	1987	18.40	18.40			N	F	R
India	Maharashtra Irr Tech&Mgmt	1982	1986	47.00	2.30			N	C	R
India	Gujarat Medium Irrig	1978	1981	30.00	3.00			N	C	R
India	Appl of SciTech to Rural Dev	1978	1978	1.95	0.60			N	C	R
India	Grain Utilization	1968	1974	0.20	0.20			N	F	R
India	Control Disease/Agron. Crops	1968	1974	0.20	0.20			N	F	R
India	Agr Economic Issues	1968	1974	0.20	0.20			N	F	R
India	Ag Prod Incentives Res	1968	1970	0.03	0.03			N	F	R
Burma	Agr Res & Dev	1985	1991	11.30	11.30			N	F	R

Bangaladesh	Agricultural Research	1976	1980	8.22	8.22			N	F	R
Bangaladesh	Project Studies	1974	1979	0.90	0.10			N	C	R
Asia Region	ASEAN Human Resources	1987	1992	14.60	1.40			R	C	R
Asia Region	ASEAN Coastal Res Mgmt	1985	1990	2.70	0.50			R	C	R
Asia Region	Private & Voluntary Orgs	1976	1983	47.91	5.00			R	C	R
Asia Region	Regional Scholarships	1975	1985	2.20	0.60			R	C	R
Asia Region	AVRDC	1971	1976	3.00	3.00			R	F	R
Asia Region	Asia Foundation Support	1969	1979	41.30	2.00			R	C	R
Asia Region	SE-Asia-Fisheries	1969	1973	0.30	0.30			R	F	R
Asia Region	IRRI	1968	1975	1.85	1.85			R	F	R
Asia Region	Mekhong Basin Dev	1959	1978	6.20	0.60			R	C	R
Afghanistan	Agricultural Inputs	1975	1977	8.00	0.50			N	C	R
Zimbabwe	Grain Marketing Reform Res	1991	1996	0.40	0.40			N	F	R
Zambia	Commodity Import Program	1984	1984	15.00	1.50			N	C	R
Uganda	Marketing & Ag Res Strength	1994	1999	25.00	12.50			N	C	R
Uganda	Oil Seed Prod	1985	1992	5.80	3.00			N	C	R
Uganda	Agric Prod Research	1971	1973	0.05	0.05			N	F	R
Tanzania	Farming Systems Res	1982	1982	3.00	3.00			N	F	R
Tanzania	Agric Research	1980	1984	8.37	8.37			N	F	R
Tanzania	Agr Research	1971	1981	8.50	8.50			N	F	R
Tanzania	Agr Project Support	1971	1977	0.97	0.20			N	C	R
Sudan	Yambio Ag Res Station OPG	1979	1980	1.07	1.07			N	F	R
Sudan	Western Sudan Ag Res	1978	1982	26.00	26.00			N	F	R
Southern Afr.	S Afr Root Crop Res Net	1993	1995	7.00	7.00			R	F	R
Southern Afr.	SA Ag Res Mgt Trng II	1992	1992	1.50	1.50			R	F	R
Southern Afr.	Reg Agr Res Coordinat	1984	1992	5.10	5.10			R	F	R
Southern Afr.	Reg Sorghum/Millet Res	1983	1996	40.10	40.10			R	F	R
Somalia	Central Rangeland Dev	1979	1989	14.90	3.00			N	C	R
Seychelles	Commodity Import Progr	1983	1983	2.00	0.40			N	C	R
Senegal	Commun-Basd NRM	1993	1999	7.00	2.00			N	C	R
Senegal	Nat Res Based Ag Res	1989	1998	11.00	11.00			N	F	R
Senegal	So Zone Water Mgmt	1988	1995	18.50	6.10			N	C	R
Senegal	Agr Research	1984	1990	5.10	5.10			N	F	R
Senegal	Ag Res & Planning	1981	1985	5.35	5.00			N	C	R
Senegal	Management of Research	1981	1981	0.10	0.10			N	F	R
Sao Tome/Principe	Crop Prod & Diversification	1977	1981	1.88	0.40			N	C	R
Sahel	OMVS Ag Res	1984	1984	1.06	1.06			R	F	R
Sahel	Strength Afr Ag Res	1984	1984	0.50	0.50			R	F	R
Sahel	Project Dev & Design	1978	1988	0.30	0.30			R	F	R
Sahel	Central Vet Lab	1978	1979	1.74	0.30			R	C	R
Sahel	African Dev. Programs	1976	1977	6.66	1.50			R	C	R
Sahel	OMVS Agron Res II	1976	1979	0.87	0.87			R	F	R
Sahel	Major Cereals-Sahel	1970	1978	3.52	3.52			R	F	R
Sahel	OMVS Agron Res	1970	1975	1.26	1.26			R	F	R
Rwanda	Cropping Systems Start Up	1983	1983	0.52	0.52			N	F	R
Nigeria	Agric Res-Midwest N	1965	1974	0.92	0.92			N	F	R
Nigeria	Ag Dev Studies & Eval	1965	1973	1.70	0.20			N	C	R
Niger	Ag Sector Dev Grant II TA	1990	1995	20.00	1.00			N	C	R
Niger	Applied Ag Research	1987	1997	5.97	5.97			N	F	R
Niger	Herder Organization Dev	1983	1989	5.00	1.00			N	C	R
Niger	Extension Support Center	1982	1987	10.00	1.00			N	C	R
Niger	Rural Integrated Ag Dev	1978	1979	0.50	0.40			N	C	R
Mozambique	Agr Sector Dev Program	1992	1995	60.00	6.00			N	C	R
Mozambique	Private Sector Support TA	1990	1995	13.50	2.00			N	C	R
Mauritius	Commodity Import Program	1986	1986	1.91	0.50			N	C	R
Mauritania	Dirol Plain Operat Res	1985	1985	0.50	0.30			N	C	R
Mauritania	Mauritania Ag Res	1984	1989	0.39	0.39			N	F	R
Mauritania	Integr Dev of Oases	1980	1982	6.00	1.50			N	C	R
Mali	Streg Res Plan & Res on Comm	1990	1997	7.95	7.95			N	F	R
Mali	Progr & Dev Support Fund	1988	1996	1.00	0.10			N	C	R
Mali	Cereals Mrkt Restruct	1985	1988	1.00	0.10			N	C	R
Mali	SemiAr Trop Crop Res II	1981	1987	7.75	7.75			N	F	R
Mali	Village Reforest in Mali	1980	1982	1.00	0.30			N	C	R
Mali	Semi-Arid Tropics Res--ICRISAT	1979	1981	0.55	0.55			N	F	R
Mali	Tsetse Fly Mali	1976	1977	1.00	0.80			N	C	R
Lesotho	Agr Planning	1980	1987	6.20	0.60			N	C	R
Lesotho	Southern Afr Manpower Dev	1978	1984	9.97	1.00			N	C	R
Kenya	National Ag Research	1986	1997	16.50	16.50			N	F	R
Kenya	ICIPE	1979	1986	10.20	10.20			N	F	R
Kenya	Drylands Cropping Syst Res	1979	1986	4.14	4.14			N	F	R

Ivory Coast	Social Science Res	1978	1978	0.30	0.30			N	F	R
Guinea	Agr Marketing Investment	1991	1997	5.80	0.50			N	C	R
Guinea	Agric Resources Dev	1965	1969	0.50	0.17			N	C	R
Ghana	Rural Reconstruction Move.	1976	1976	0.58	0.58			N	F	R
Gambia	Ag & Nat Resources	1992	1997	4.70	1.18			N	C	R
Gambia	Ag Res & Diversif	1985	1991	18.00	18.00			N	F	R
Ethiopia	Agr Sector Loan	1970	1975	20.00	2.00			N	C	R
Ethiopia	Agric & Natur Resources	1957	1966	1.64	0.41			N	C	R
East Africa	East Afr Comm Food Crop Res	1972	1980	3.04	3.04			R	F	R
East Africa	EA Comm Freshwater Fish	1971	1976	2.20	1.10			R	C	R
East Africa	Major Cereal & Leg Impr	1970	1974	1.10	1.10			R	F	R
East Africa	Animal & Crop Prod-EA	1969	1974	0.34	0.34			R	F	R
Congo DR	Inera Support	1977	1981	3.85	3.85			N	F	R
Chad	Crop Prod, Res, Seed, Gr	1978	1979	0.20	0.15			N	C	R
Chad	Range & Lvstk Dev	1977	1979	3.20	0.80			N	C	R
Chad	Lake Chad Irr Ag	1977	1977	1.27	0.30			N	C	R
Cape Verde	Food Crop Res	1982	1992	4.69	4.69			N	F	R
Cape Verde	Tarrafal Water Resources	1977	1980	5.20	1.00			N	C	R
Cameroon	Root & Tuber Crop Res	1992	1994	5.20	2.60			N	C	R
Cameroon	Tropical Root/Tuber Res	1986	1994	9.24	9.24			N	F	R
Cameroon	Small Farm Livstock Dev	1980	1983	1.30	0.20			N	C	R
Cameroon	National Cereals Research	1979	1984	7.70	7.70			N	F	R
Cameroon	Social Science Res & Trg	1978	1980	0.80	0.40			N	C	R
Burundi	Human Res Dev	1987	1997	11.74	0.80			N	C	R
Burundi	Small Farming Systems Res	1983	1993	11.79	9.00			N	C	R
Burkina Faso	Upper Volta Seed Multipli	1975	1975	1.70	0.20			N	C	R
Burkina Faso	ICA/Aid Prog	1963	1964	0.05	0.05			N	F	R
Botswana	Rural Dev	1980	1984	9.80	1.00			N	C	R
Africa Region	So. Afr.: Imp. rural livelihoods	2004	2005	5.70	2.85	0.00	0.00	R	C	R
Africa Region	Afr Reg Tech Fund	2003	2007	2.50	1.00			R	F	R
Africa Region	Forum for Afr Ag Res	2002	2005	3.00	2.25			R	C	R
Africa Region	East Afr: Food Security	2001	2005	24.50	19.60	0.00	0.00	R	C	R
Africa Region	West Afr: Food Security	2001	2005	11.00	8.80	0.00	0.00	R	C	R
Africa Region	Africa: Economic Growth	2000	2003	20.00	20.00	0.00	0.00	R	C	R
Africa Region	Africa: Improved Agr Production	1999	2003	34.00	34.00	0.00	0.00	R	C	R
Africa Region	East Afr: EHAI Support	1995	2000	15.00	15.00	0.00	0.00	R	C	R
Africa Region	Appld Dev Res in Sahel	1992	1998	1.36	1.36			R	F	R
Africa Region	Policy Analysis, Res, & TA	1991	1998	25.77	20.00			R	C	R
Africa Region	Rural Soc Sci Res Capac	1990	1990	0.30	0.30			R	F	R
Africa Region	Emergence Locust Assistance	1987	1995	27.75	2.00			R	C	R
Africa Region	Food Grn R&D II-ICRISAT	1986	1993	12.30	12.30			R	F	R
Africa Region	Reg. Sorghum/Millet--ICRISAT	1983	1999	55.26	55.26			R	F	R
Africa Region	Strengthening Afr Ag Res--CG	1982	1993	50.24	50.24			R	F	R
Africa Region	FSR Res--CIMMYT	1982	1982	1.21	1.21			R	F	R
Africa Region	Streng Mgmt of Ag Res	1982	1982	0.50	0.50			R	F	R
Africa Region	Social Science Research	1978	1978	0.31	0.10			R	C	R
Africa Region	SAFGAD	1977	1986	0.50	0.50			R	F	R
Africa Region	Entente Food Prod	1976	1984	17.80	3.00			R	C	R
Africa Region	Entente Livestock II	1976	1984	7.80	2.00			R	C	R
Africa Region	Afr-Amer Scholars	1970	1970	1.50	0.20			R	C	R
Africa Region	Agr Research Survey	1970	1974	0.19	0.19			R	F	R
Africa Region	Rice Prod & Marketing	1969	1977	0.83	0.83			R	F	R
Africa Region	Reg Wheat Improvement	1967	1979	0.73	0.73			R	F	R
Africa Region	Conf Agric Res-Econ Dev	1966	1973	0.26	0.13			R	C	R
Africa Region	Major Cereal/Legume Imp	1964	1973	0.20	0.20			R	F	R
Africa Region	Contag. Bovine Pleuropneum.	1962	1974	0.57	0.57			R	F	R
Jamaica	Coop Dev & Training	1985	1987	1.12		0.30	0.30	N	C	E-AE
Haiti	ICA/AID Programs	1962	1962	1.35		0.68	0.68	N	F	E-AE
El Salvador	Water Mgmt	1985	1987	18.74		3.00	1.00	N	C	E-AE
South Pacific	Commercial Ag Dev	1992	1993	3.09		0.50	0.50	R	C	E-AE
Indonesia	Provincial Area Dev Progr II	1979	1984	41.50		4.00	8.00	N	C	E-AE
Zimbabwe	Natural Res Mgmt	1994	1998	17.00		1.70	1.70	N	C	E-AE
Afghanistan	ag	2002	2006	181.69	0.00	5.35	0.00	N	C	E
Afghanistan	agriculture	2007	2011	778.05	5.00	24.27	0.00	N	C	E
Africa Region	agriculture	2010	2011	69.00	0.00	3.04	0.00	R	C	E
Angola	agriculture	2007	2010	7.05	0.00	0.10	0.00	N	C	E
Angola	agriculture	2007	2010		0.00	0.11	0.00	N	C	E
Angola	improved food security	2001	2006	12.49	0.00	0.60	0.00	N	C	E
Bangladesh	agriculture	2007	2011		0.00	3.43	0.00	N	C	E
Bolivia	agriculture	2008	2010	26.80	0.00	1.34	0.00	N	C	E

Bolivia	altern dev	2005	2006	178.41	0.00	3.46	0.00	N	C	E
Bolivia	Counter Narcotics	2007	2011	204.32	0.00	8.78	0.00	N	C	E
Burkina faso	agriculture	2009	2011	17.94	0.00	1.38	0.00	N	C	E
Burundi	agriculture	2009	2011		0.00	1.07	0.00	N	C	E
Cambodia	agriculture	2010	2011	15.84	0.00	0.79	0.00	N	C	E
Central Africa	carpe	2005	2006	63.85	0.00	1.53	0.00	R	C	E
Central Africa	environment	2007	2011	90.15	0.00	4.51	0.00	R	C	E
Colombia	alt dev	2002	2006	296.53	0.00	6.79	0.00	N	C	E
Colombia	Counter Narcotics	2007	2011	1411.71	0.00	35.20	0.00	N	C	E
Congo DR	agriculture	2008	2011	75.40	0.00	3.69	0.00	N	C	E
Congo DR	livelihoods	2001	2005	38.73	0.00	0.30	0.00	N	C	E
East Africa	agriculture	2009	2011	2.00	0.00	2.00	0.00	R	C	E
East Africa	agriculture	2011	2011	1.00	0.00	1.00	0.00	R	C	E
East Timor	agriculture	2008	2011	16.20	0.00	1.84	0.00	N	C	E
East Timor	econ revital	2001	2005	66.90	0.00	1.98	0.00	N	C	E
Egypt	agriculture	2011	2011	23.00	0.00	4.60	0.00	N	C	E
Ethiopia	agriculture	2007	2011	254.51	0.00	23.82	0.00	N	C	E
Ethiopia	food security	2001	2004	16.70	0.00	4.17	0.00	N	C	E
Ghana	agriculture	2008	2011	129.27	0.00	6.43	0.00	N	C	E
Guatemala	agriculture	2008	2011	68.17	0.00	6.08	0.00	N	C	E
Guatemala	increas rural income	2001	2005	28.66	0.00	0.26	0.00	N	C	E
Guinea	agriculture	2007	2008	9.19	0.00	1.65	0.00	N	C	E
Guinea	NRM	2001	2006	29.11	0.00	0.85	0.00	N	C	E
Haiti	agriculture	2008	2011	181.68	0.00	10.56	0.00	N	C	E
Haiti	econ groewth	2001	2006	66.49	0.00	2.96	0.00	N	C	E
Honduras	agriculture	2007	2011	39.20	0.00	2.97	0.00	N	C	E
Honduras	economic restruct	2005	2005	39.04	0.00	0.49	0.00	N	C	E
India	agriculture	2009	2011	20.00	0.00	2.00	0.00	N	C	E
Indonesia	agriculture	2010	2010	20.10	0.00	1.00	0.00	N	C	E
Jamaica	agriculture	2010	2010	5.93	0.00	0.13	0.00	N	C	E
Kenya	agriculture	2007	2011	117.78	0.00	9.53	0.00	N	C	E
Kenya	NRM	2001	2006	24.71	0.00	1.16	0.00	N	C	E
Kenya	rural income	2006	2006	54.31	0.00	1.06	0.00	N	C	E
Kyrgyzstan	agriculture	2011	2011	24.12	0.00	1.06	0.00	N	C	E
Laos	econ dev.	2002	2003	2.00	0.00	0.40	0.00	N	C	E
Liberia	agriculture	2007	2011	112.39	0.00	7.40	0.00	N	C	E
Madagascar	agriculture	2007	2011	29.28	0.00	4.45	0.00	N	C	E
Madagascar	NRM	2004	2006	42.69	0.00	2.58	0.00	N	C	E
Malawi	agriculture	2007	2011	76.99	0.00	6.86	0.00	N	C	E
Malawi	rural income growth	2001	2005	37.15	0.00	0.35	0.00	N	C	E
Mali	agriculture	2008	2011		0.00	5.97	0.00	N	C	E
Mali	econ growth	2001	2005	61.71	0.00	0.58	0.00	N	C	E
Mexico	training	2004	2006	26.77	0.00	2.62	0.00	N	C	E
Mozambique	agriculture	2007	2011	124.02	0.00	15.78	0.00	N	C	E
Mozambique	increase rural inc	2001	2006	77.96	0.00	2.84	0.00	N	C	E
Namibia	NRM	2001	2006	14.38	0.00	0.60	0.00	N	C	E
Nepal	agriculture	2007	2011	26.92	0.00	1.72	0.00	N	C	E
Nicaragua	agriculture	2008	2011	27.80	0.00	1.41	0.00	N	C	E
Nicaragua	trade & ag diversiff	2004	2004	37.00	0.00	0.00	0.00	N	C	E
Niger	agriculture	2008	2011	46.33	0.00	7.10	0.00	N	C	E
Nigeria	agriculture	2007	2011	80.82	0.00	4.09	0.00	N	C	E
Nigeria	sustain ag & econ growth	2005	2006	18.71	0.00	1.02	0.00	N	C	E
Peru	alternative dev	2001	2006	311.81	0.00	4.99	0.00	N	C	E
Peru	Counter Narcotics	2007	2011	322.05	0.00	14.30	0.00	N	C	E
Philippines	agriculture	2007	2011	15.33	0.00	0.99	0.00	N	C	E
Philippines	econ growth	2005	2005	50.42	0.00	1.60	0.00	N	C	E
Rwanda	agriculture	2007	2011	67.18	0.00	6.13	0.00	N	C	E
Rwanda	food sec & econ growth	2001	2006	22.63	0.00	0.60	0.00	N	C	E
Senegal	agriculture	2009	2011	83.91	0.00	4.21	0.00	N	C	E
Sierra Leone	agriculture	2007	2011	31.83	0.00	3.58	0.00	N	C	E
Southern Afr.	improved rural livelihoods	2005	2006	18.44	0.00	1.63	0.00	R	C	E
Sri Lanka	agriculture	2011	2011	2.15	0.00	0.36	0.00	N	F	E
Sudan	agriculture	2007	2011	105.45	0.00	5.27	0.00	N	C	E
Sudan	food sec	2001	2006	200.16	0.00	7.64	0.00	N	C	E
Tajikistan	agriculture	2010	2011	33.38	0.00	6.56	0.00	N	C	E
Tanzania	agriculture	2007	2011	47.19	0.00	2.76	0.00	N	C	E
Tanzania	econ growth	2001	2004	13.80	0.00	1.38	0.00	N	C	E
Tanzania	NRM	2004	2004	10.07	0.00	0.14	0.00	N	C	E
Turkmenistan	agriculture	2008	2011	4.22	0.00	0.84	0.00	N	C	E
Uganda	agriculture	2007	2011	156.73	0.00	12.56	0.00	N	C	E

Uganda	econ dev	2001	2006	88.02	0.00	1.41	0.00	N	C	E
Uzbekistan	agriculture	2010	2011	4.59	0.00	0.84	0.00	N	C	E
West Africa	improv food sec	2005	2005		0.00	1.56	0.00	R	C	E
Yemen	agriculture	2009	2011	11.81	0.00	1.13	0.00	N	C	E
Zambia	agriculture	2007	2011	51.94	0.00	2.60	0.00	N	C	E
Zimbabwe	agriculture	2010	2011	34.98	0.00	1.75	0.00	N	C	E
Zimbabwe	increased access	2005	2005	2.88	0.00	0.05	0.00	N	C	E
Global	MEAS	2010	2014	9.00	0.00	2.00	0.00	I	F	E
Sierra Leone	Ag Ext	1961	1964	0.32		0.32		N	F	E
Lebanon	Ag Res	1963	1963	0.41		0.41		N	F	E
Japan	Ag Productivity	1961	1961	0.41		0.41		N	F	E
India	Ag & Home Ec Ext	1956	1962	1.54		1.54		N	F	E
Europe	Young farmer trg	1958	1958	0.05		0.05		R	F	E
Ethiopia	Ag ed & res	1956	1964	2.45		2.45		N	F	E
Yemen	Feed the Future	2015	2017			0.86		N	C	E
Egypt	Feed the Future	2015	2015			0.50		N	C	E
Nicaragua	Feed the Future	2012	2012			0.25		N	C	E
Honduras	Feed the Future	2012	2016			4.95		N	C	E
Haiti	Feed the Future	2012	2018			9.44		N	C	E
Guatemala	Feed the Future	2012	2018			4.95		N	C	E
Global	DLEC	2016	2018			4.00		I	F	E
Global	MEAS	2012	2016			6.16		I	F	E
Global	INGENEAS	2015	2018			7.00		I	F	E
Global	GFRAS	2012	2014			1.65		I	F	E
Georgia	MEAS	2013	2015			2.50		N	F	E
Georgia	Feed the Future	2015	2017			0.49		N	C	E
Tajikistan	MEAS	2013	2015			5.70		N	F	E
Tajikistan	Feed the Future	2012	2018			1.17		N	C	E
Pakistan	Agriculture Development	2013	2013			5.50		N	C	E
Nepal	Feed the Future	2012	2018			3.20		N	C	E
Cambodia	Feed the Future	2012	2016			2.00		N	C	E
Burma	Feed the Future	2014	2018			2.33		N	C	E
Bangladesh	Feed the Future	2012	2018			21.50		N	F	E
Afghanistan	Agriculture Development	2012	2018			45.66		N	C	E
Zimbabwe	Feed the Future	2012	2013			1.31		N	C	E
Zambia	Feed the Future	2012	2016			2.95		N	C	E
Uganda	Feed the Future	2012	2018			9.65		N	C	E
Tanzania	Feed the Future	2012	2018			17.35		N	C	E
South Sudan	Feed the Future	2012	2013			4.59		N	C	E
Senegal	Feed the Future	2012	2018			7.65		N	C	E
Rwanda	Feed the Future	2012	2016			14.55		N	C	E
Mozambique	Feed the Future	2012	2016			5.13		N	C	E
Mali	Feed the Future	2012	2016			8.29		N	C	E
Malawi	Feed the Future	2012	2018			9.00		N	F	E
Malawi	Feed the Future	2012	2014			2.60		N	C	E
Liberia	Feed the Future	2012	2016			2.90		N	C	E
Kenya	Feed the Future	2012	2018			12.00		N	C	E
Ghana	Feed the Future	2012	2018			13.25		N	C	E
Ethiopia	Feed the Future	2012	2018			13.39		N	C	E
Yemen	ICA/AID Programs	1956	1963	0.40		0.40		N	F	E
UAR	ICA/AID Prog to 1963	1961	1963	0.10		0.10		N	F	E
Turkey	Agr Extension	1963	1967	0.90		0.90		N	F	E
Tunisia	Livestock Feed Prod	1977	1980	2.60		2.60		N	F	E
Tunisia	Integrated Agr Dev	1973	1978	0.40		0.20		N	C	E
Morocco	Improved water mgmt.	1999	2004	0.73	0.00	0.73	0.00	N	C	E
Morocco	Doukkala Irr	1976	1978	13.00		1.00		N	C	E
Morocco	Cereals Prod	1968	1978	1.60		0.80		N	C	E
Morocco	Agr Extension	1960	1966	0.20		0.20		N	F	E
Lebanon	Agr Rehabilitation	1979	1981	1.71		0.40		N	C	E
Lebanon	TAMS Extension	1956	1957	0.10		0.10		N	F	E
Lebanon	Agr Extension	1953	1960	0.30		0.30		N	F	E
Jordan	Sprinkler Irr Equipment	1976	1977	4.49		0.50		N	C	E
Jordan	Agr Ext Department	1953	1969	2.30		2.30		N	F	E
Iraq	Agr Extension	1952	1958	0.30		0.30		N	F	E
Egypt	Small Farm Prod	1979	1984	49.00		4.90		N	C	E
Egypt	Small-Scale Agr Activities	1979	1979	1.70		1.70		N	F	E
Egypt	Agr Extension	1953	1956	0.20		0.20		N	F	E
St Lucia	Agr Struct Adj	1983	1984	9.50		0.90		N	C	E
Peru	Alternative development	1996	2005	10.50	0.00	9.45	0.00	N	C	E
Peru	Sustainable econ growth	1995	2003	4.46	0.00	4.46	0.00	N	C	E

Peru	Soil Conservation	1980	1986	1.60		0.60		N	C	E
Peru	Dalpra Community Food Prod	1979	1981	0.30		0.30		N	F	E
Peru	Dev Of Sub-Tropical Lands	1978	1981	19.00		2.70		N	C	E
Peru	Campesino Para-Training	1977	1977	0.10		0.10		N	F	E
Peru	Agr Extension	1944	1965	0.80		0.58		N	F	E
Paraguay	Population	1969	1979	2.90		0.30		N	C	E
Paraguay	Agr Ext & Info	1943	1962	0.20		0.13		N	F	E
Panama	Improved NRM	2000	2002	0.40	0.00	0.40	0.00	N	C	E
Panama	Agr Tech Transfer	1982	1985	7.50		7.50		N	F	E
Panama	Small Farm Improve	1969	1975	3.50		2.20		N	C	E
Nicaragua	Improved econ opportunity	1997	2002	6.50	0.00	6.50	0.00	N	C	E
Nicaragua	Private Agr Services	1991	1996	8.50		2.00		N	C	E
Nicaragua	Appropr Agr Tech	1981	1982	0.10		0.10		N	F	E
Nicaragua	ICA/AID Programs	1967	1967	2.20		2.20		N	F	E
LAC Region	Rural Comm. Services	1979	1983	2.04		2.04		R	F	E
LAC Region	Coop League of USA	1963	1977	3.00		1.50		R	C	E
Jamaica	Improved NRM	1998	2005	3.80	0.00	3.33	0.00	N	C	E
Jamaica	National Dev Foundation Exp	1984	1988	0.90		0.40		N	C	E
Jamaica	Integrated Regional Rural Dev	1977	1980	11.40		5.70		N	C	E
Jamaica	Inland Fish Dev	1976	1978	0.46		0.46		N	F	E
Honduras	Enhanced opportunities for poor	1997	2004	3.62	0.00	3.62	0.00	N	C	E
Honduras	Sustainable NRM	1996	2002	3.00	0.00	3.00	0.00	N	C	E
Honduras	Small Farm Export Dev	1994	1997	2.50		1.00		N	C	E
Honduras	Land Use Productivity Enhance	1988	1997	36.00		7.20		N	C	E
Honduras	Small Farmer Livestock Improv	1983	1986	12.90		3.30		N	C	E
Honduras	Natural Res Mgmt	1980	1987	16.20		5.40		N	C	E
Honduras	Agr Sector II Program	1979	1984	24.94		4.20		N	C	E
Honduras	Small Farmers Tech	1976	1979	7.10		3.60		N	C	E
Haiti	Improved conservation	2000	2002	1.85	0.00	1.85	0.00	N	C	E
Haiti	Increased employment	1996	2005	15.00	0.00	13.50	0.00	N	C	E
Haiti	Car & LA Scholarship Prog II	1990	1995	4.80		0.90		N	C	E
Haiti	NGO Support III	1985	1987	3.56		0.90		N	C	E
Haiti	Interim Swine Repopulation	1983	1987	7.94		1.00		N	C	E
Haiti	NGO Support	1983	1984	3.97		0.80		N	C	E
Haiti	Small Farm Swine Repopulation	1981	1983	0.42		0.10		N	C	E
Haiti	Small Farm Dev	1974	1978	7.40		1.50		N	C	E
Guyana	Public Sector Manpower Dev	1977	1977	1.00		0.50		N	C	E
Guatemala	Increased rural incomes	2000	2004	1.72	0.00	1.72	0.00	N	C	E
Guatemala	Improved NRM	1999	2002	2.61	0.00	2.61	0.00	N	C	E
Guatemala	Community Nat Res Mgmt	1993	1998	8.40		4.20		N	C	E
Guatemala	Small Farm Coffee	1989	1997	11.00		2.00		N	C	E
Guatemala	Dairy Dev	1986	1986	1.20		0.30		N	C	E
Guatemala	Family Fish Pond Dev Progr	1981	1981	0.34		0.34		N	F	E
Guatemala	Community Education	1980	1980	0.42		0.42		N	F	E
Guatemala	Agr Extension Service	1955	1959	0.70		0.70		N	F	E
El Salvador	Expanded economic opportunity	2002	2004	0.86	0.00	0.86	0.00	N	C	E
El Salvador	Improved NRM	1992	1998	2.83	0.00	2.83	0.00	N	C	E
El Salvador	Agrarian Reform Support-TA	1980	1980	1.70		0.40		N	C	E
El Salvador	League of Women Voters OPG	1979	1985	1.00		1.00		N	F	E
El Salvador	Small Farm Natural Res Mgmt	1979	1979	0.20		0.20		N	F	E
El Salvador	Small Enterprise Dev OPG	1978	1980	1.30		1.30		N	F	E
El Salvador	Intensive Small Farm Mgmt	1978	1979	1.20		1.20		N	F	E
El Salvador	Small Farm Irrigation Systems	1978	1978	2.30		0.50		N	C	E
Ecuador	Sustainable Land Use Mgmt	1990	1990	0.24		0.24		N	F	E
Ecuador	Land Titling	1985	1991	10.30		2.00		N	C	E
Ecuador	Integrated Rural Dev	1980	1984	11.80		1.20		N	C	E
Ecuador	Family Food & Nutrition	1972	1975	0.20		0.20		N	F	E
Ecuador	Agr Dev & Diversif	1971	1977	7.10		1.80		N	C	E
Ecuador	Institutional Dev--Coops	1967	1977	4.84		1.00		N	C	E
Ecuador	Agr Extension	1952	1962	0.90		0.90		N	F	E
Dominican Rep.	On-farm Water Mgmt	1983	1992	12.85		1.00		N	C	E
Dominican Rep.	Inland Fisheries	1982	1984	0.28		0.28		N	F	E
Dominican Rep.	Video-Based Non-Formal Ed	1975	1976	0.08		0.08		N	F	E
Dominican Rep.	ICA/AID Programs	1956	1956	0.05		0.05		N	F	E
Costa Rica	Forest Res for a Stable Env	1988	1990	7.50		1.00		N	C	E
Costa Rica	Agr Services & Union Dev	1985	1988	2.00		0.50		N	C	E
Costa Rica	Agr Coop Dev Intern'l	1985	1986	0.80		0.40		N	C	E
Costa Rica	Agrarian Settlement & Product	1980	1981	1.00		0.10		N	C	E
Costa Rica	Science & Technology	1979	1980	4.50		2.00		N	C	E
Costa Rica	Family Planning Services	1978	1981	1.20		0.20		N	C	E

Costa Rica	Nutrition Prog	1976	1978	6.00		0.30		N	C	E
Costa Rica	Ext Service Div	1960	1961	0.10		0.10		N	F	E
Columbia	Reduced illicit crop prod.	1998	2005	12.88	0.00	11.27	0.00	N	C	E
Colombia	Agr Train Program OPG	1979	1980	0.50		0.50		N	F	E
Colombia	Agr Extension	1953	1963	0.90		0.90		N	F	E
Caribbean	Structural Reform-Dominica	1991	1994	2.00		0.50		R	C	E
Caribbean	West Indies Tropical Produce	1988	1995	17.00		3.00		R	C	E
Caribbean	Ag Ext II	1982	1988	11.00		11.00		R	F	E
Caribbean	Regional Non-Formal Skills Trg	1982	1990	8.20		2.00		R	C	E
Caribbean	Agr Trading Company	1982	1988	4.45		0.40		R	C	E
Caribbean	Agricultural Extension	1980	1981	1.55		1.55		R	F	E
Brazil	Agr Production-Livestock	1964	1976	3.20		2.10		N	C	E
Brazil	Rural Rehab	1964	1975	1.30		0.20		N	C	E
Brazil	Agr Res & Ext NE/Ext Improv	1963	1968	0.30		0.20		N	C	E
Bolivia	Expanded econ opportunity	1995	2005	5.81	0.00	5.28	0.00	N	C	E
Bolivia	Small Farmer Orgs	1975	1981	11.60		1.20		N	C	E
Belize	Nat Res Mgmt & Protection	1991	1996	8.50		3.00		N	C	E
Belize	Toledo Agr Marketing	1987	1990	2.50		0.80		N	C	E
Belize	Macal Coop Dairy Dev	1986	1986	0.60		0.60		N	F	E
Belize	Accelerated Cocoa Prod	1984	1985	0.60		0.60		N	F	E
Belize	Livestock Dev	1983	1991	6.35		3.20		N	C	E
Global	Virtual Outreach	2003	2004	0.15		0.15		I	C	E
Global	GreenComm-II	2001	2007	4.60		2.63		I	C	E
Global	Farmer-to-farmer Volunteers	1999	2004	20.83		4.17		I	C	E
Global	Green Comm	1993	2000	10.10		10.10		I	F	E
Global	Farmer-to-farmer Volunteers	1992	1998	19.48		3.89		I	C	E
Global	Farmer-to-farmer Volunteers	1985	1991	10.88		2.17		I	C	E
Global	Comm For Tech Trans In Agr	1985	1992	7.30		7.30		I	F	E
Global	Intern'l Vol Services	1985	1987	2.40		2.40		I	F	E
Global	Fisheries Dev Support Services	1982	1988	4.00		2.00		I	C	E
Global	Seventh Day Advent World Serv	1981	1984	2.40		1.20		I	C	E
Global	Rural Satellite Progr Dev Comm	1979	1986	9.20		9.20		I	F	E
Global	Intern'l Inst For Rural Dev	1977	1980	0.60		0.60		I	F	E
Global	Heifer Project Intern'l	1977	1979	0.47		0.47		I	F	E
Global	Family Plan Thru Home Econ	1974	1980	3.20		3.20		I	F	E
Global	Small Industry Grants	1974	1974	0.80		0.80		I	F	E
Global	Low-Cost Communications	1970	1970	1.20		1.20		I	F	E
Global	Analyt. Services in Comm Tech	1970	1974	1.09		1.09		I	F	E
Ukhraine	Economic development	2000	2005	4.55	0.00	3.80	0.00	N	C	E
Spain	Agri Extension Demos	1956	1963	0.20		0.20		N	F	E
Moldova	Foster mrkt economy	1996	1999	1.32	0.00	1.32	0.00	N	C	E
Lithuania	Foster mrkt economy	1996	1996	0.66	0.00	0.66	0.00	N	C	E
Italy	Demo In Ag Ext Methods	1955	1957	0.10		0.10		N	F	E
Greece	Agr Extension	1954	1961	0.30		0.30		N	F	E
Europe Region	Farmer-to-farmer Vols	1999	2004	44.35		8.87		R	C	E
Europe Region	Farmer-to-farmer Vols	1992	1998	61.57		12.31		R	C	E
Europe Region	Food Systems Restructuring	1992	1997	12.86		2.00		R	C	E
Armenia	Food system reform	1992	1997	3.00	0.00	3.00	0.00	N	C	E
Vietnam	Agr Ext & Info	1965	1970	2.40		2.40		N	F	E
Thailand	Seed Dev II	1982	1985	11.70		1.10		N	C	E
Thailand	Northeast Rainfed Agr Dev	1981	1983	7.47		6.00		N	C	E
Thailand	Northeast Small Scale Irr	1980	1988	8.70		0.90		N	C	E
Thailand	Non-Formal Vocational Ed	1980	1980	0.50		0.50		N	F	E
Thailand	Village Fish Pond Dev	1979	1979	0.40		0.20		N	C	E
Thailand	Rural Off-Farm Employment	1979	1979	0.50		0.20		N	C	E
Thailand	Agr Ext Outreach	1977	1978	3.00		3.00		N	F	E
Thailand	Lam Nam Oon On-Farm Dev	1977	1978	4.60		1.00		N	C	E
Thailand	Seed Dev	1975	1976	3.70		1.20		N	C	E
Thailand	Agr Dev	1974	1978	5.00		1.00		N	C	E
Thailand	Exp Ext Ed Farm People	1965	1968	2.10		2.10		N	F	E
Thailand	Agr Development	1964	1979	10.50		7.00		N	C	E
Taiwan	ICA/AID Prog to 1963	1953	1963	8.25		8.25		N	F	E
Sri Lanka	Natural Res & Environ Policy	1990	1999	19.00		4.00		N	C	E
Philippines	Fresh Fish Dev	1979	1982	1.70		1.70		N	F	E
Philippines	Bicol Integr Area Dev III	1979	1980	3.50		1.20		N	C	E
Philippines	Cooperative Marketing	1978	1979	6.00		1.00		N	C	E
Philippines	Aquaculture Res & Extension	1974	1980	0.80		0.40		N	C	E
Philippines	Agrarian Reform	1974	1978	2.32		0.30		N	C	E
Philippines	Agr Extension	1950	1966	1.30		1.30		N	F	E
Pakistan	Baluchistran Area Dev	1984	1987	45.00		1.50		N	C	E

Pakistan	On-Farm Water Mgmt II	1977	1983	8.42		8.42		N	F	E
Pakistan	Village Level Food Processing	1976	1979	0.60		0.60		N	F	E
Pakistan	Academy for Rural Dev.	1967	1975	6.25		2.10		N	C	E
Pakistan	Agr Extension	1960	1965	0.30		0.30		N	F	E
Nepal	High value agr	1997	2005	6.14	0.00	5.46	0.00	N	C	E
Nepal	Rapti Rural Dev	1987	1994	18.80		2.80		N	C	E
Nepal	Irr Mgmt & Trning	1985	1994	9.00		1.50		N	C	E
Nepal	Seed Prod & Input Storage	1978	1981	4.03		0.80		N	C	E
Laos	Silk sector	1999	2003	0.13	0.00	0.13	0.00	N	C	E
Laos	Agr Extension	1957	1964	0.20		0.20		N	F	E
Indonesia	East Timor Agr Dev	1981	1984	5.00		1.30		N	C	E
Indonesia	Citanduy Basin Dev	1977	1980	12.50		2.50		N	C	E
Indonesia	Luwu Area & Transmigr Dev	1976	1982	18.70		0.90		N	C	E
Indonesia	Assist. to Modern Ag Practices	1969	1978	2.70		2.70		N	F	E
India	Center for Tech Dev	1988	1997	16.30		2.00		N	C	E
India	Madhya Pradesh Minor Irr	1983	1985	42.50		2.10		N	C	E
India	Agricultural Production	1966	1977	2.00		2.00		N	F	E
India	Agr Inputs-Plant Protection	1966	1976	0.40		0.40		N	F	E
East Timor	Revitalize the economy	2001	2005	2.64	0.00	2.11	0.00	N	C	E
Cambodia	Rural economic growth	1998	2000	1.98	0.00	1.98	0.00	N	C	E
Cambodia	Cambodia-Amer Volunteer	1992	1992	2.00		0.30		N	C	E
Bangladesh	Increased agr productivity	1998	2001	2.05	0.00	2.05	0.00	N	C	E
Bangladesh	Small Scale Irr I	1976	1979	14.00		0.70		N	C	E
Bangladesh	Agr Org-East Pakistan	1969	1974	0.10		0.10		N	F	E
Bangaladesh	Development Serv & Train	1974	1979	1.80		1.80		N	F	E
Asia Region	Ext Small Scale Agr Equip	1982	1986	3.80		3.80		R	F	E
Asia Region	AIDSAT Comm In Dev Progr	1978	1980	0.70		0.70		R	F	E
Afghanistan	Reestablish food security	2002	2005	10.56	0.00	7.92	0.00	N	C	E
Afghanistan	Narcotics Res & Awareness	1990	1992	12.00		2.00		N	C	E
Afghanistan	Agr Sector Support	1987	1995	74.00		3.70		N	C	E
Zimbabwe	Agr Ext & Edu	1960	1962	0.10		0.10		N	F	E
Zambia	Increased income	2000	2004	6.20	0.00	6.20	0.00	N	C	E
Zambia	Agribusiness & Mgmt Support	1988	1989	12.10		2.00		N	C	E
Zambia	Chama Rice Prod	1981	1982	1.20		0.60		N	C	E
Uganda	Increased rural income	2000	2005	6.00	0.00	5.00	0.00	N	C	E
Uganda	Invest In Dev Export Ag	1994	1999	5.20		0.70		N	C	E
Uganda	Demobilization & Reintegration	1994	1994	3.00		0.50		N	C	E
Uganda	Agr Extension	1963	1975	2.30		2.30		N	F	E
Togo	Sio River Econ Dev	1984	1987	3.50		1.80		N	C	E
Togo	Togo Animal Traction	1983	1988	5.23		5.23		N	F	E
Togo	Agr Trg & Ext Supp OPG	1982	1983	1.00		1.00		N	F	E
Togo	OICI-Davie Comm Farm I	1981	1981	1.00		1.00		N	F	E
Tanzania	Improved NRM	1998	2002	2.24	0.00	2.24	0.00	N	C	E
Tanzania	Village Environ Education OPG	1981	1981	0.40		0.40		N	F	E
Tanzania	Arusha Planning & Village Dev	1978	1982	14.59		3.60		N	C	E
Tanzania	Masai Livestock & Range Mgmt	1970	1979	4.80		2.40		N	C	E
Tanzania	Seed Multiplication	1970	1983	6.90		1.70		N	C	E
Swaziland	Enterpr Advis Serv	1990	1990	0.60		0.20		N	C	E
Swaziland	Manpower Dev	1984	1990	19.73		4.00		N	C	E
Sudan	East Refugee Reforest CARE	1983	1987	5.00		2.60		N	C	E
Sudan	Southern Region Ag Rehab	1976	1978	0.15		0.15		N	F	E
Southern Afr.	Reg Technician Training	1970	1973	0.05		0.05		R	F	E
Somalia	CDA Forestry I-Refugee Areas	1983	1985	6.00		2.00		N	C	E
Somalia	Refugee Self Reliance	1983	1985	6.00		1.00		N	C	E
Somalia	Agr Ext & Training	1959	1965	0.60		0.60		N	F	E
Senegal	Kaolack Agr Enterprise Dev	1992	1995	8.00		2.00		N	C	E
Senegal	Ag Dev Support	1987	1989	20.00		5.00		N	C	E
Senegal	Senegal Reforestation	1986	1992	14.00		7.00		N	C	E
Senegal	Irr & Water Dev I	1985	1989	9.50		1.00		N	C	E
Senegal	Comm & Enterprise Dev PVO	1984	1990	15.20		7.60		N	C	E
Senegal	SODESP Livestock Prod	1979	1984	8.00		1.00		N	C	E
Senegal	Lowland Fish Culture	1979	1979	0.18		0.18		N	F	E
Senegal	Rural Ext Centers	1964	1968	0.40		0.40		N	F	E
Sahel	Accelerated Impact Progr	1980	1982	3.20		1.60		R	C	E
Sahel	Lake Chad Comm Lvstk/Mixed	1980	1980	0.50		0.50		R	F	E
Sahel	Planning, Mgmt, & Res	1978	1988	37.80		7.60		R	C	E
Nigeria	Agr Ext-No Nigeria	1965	1974	4.70		4.70		N	F	E
Niger	Goure Nat Res Mgmt Interven	1992	1996	3.00		0.60		N	C	E
Niger	Agr Sector Dev Grant II	1988	1998	11.30		2.00		N	C	E
Niger	Niamey Dept Dev II	1981	1987	14.89		7.40		N	C	E

Niger	Niger Range & Lvstk Mgmt	1976	1980	5.40		2.70		N	C	E
Niger	Agr Edu & Ext	1963	1972	1.60		1.60		N	F	E
Mozambique	Improved rural income	2000	2004	11.81	0.00	11.81	0.00	N	C	E
Mozambique	Improved NRM	1998	2001	5.34	0.00	5.34	0.00	N	C	E
Mauritania	Renewable Res Mgmt	1978	1981	4.70		0.60		N	C	E
Mauritania	Human Res Dev	1978	1991	7.40		0.50		N	C	E
Mali	Dev Of Hautee Vallee	1988	1997	22.80		7.60		N	C	E
Mali	Trg Center for Women	1980	1980	0.50		0.50		N	F	E
Malawi	Increased rural income	2001	2005	4.62	0.00	3.70	0.00	N	C	E
Malawi	Improved NRM	2000	2003	2.64	0.00	2.64	0.00	N	C	E
Madagascar	Improved NRM	1997	2005	6.67	0.00	5.93	0.00	N	C	E
Madagascar	Commercial Agr Promotion	1994	1998	10.39		1.00		N	C	E
Madagascar	Amber Mt Cons & Dev	1988	1991	0.90		0.20		N	C	E
Madagascar	Impr Agr Ext Services	1962	1971	0.80		0.80		N	F	E
Liberia	Nimba Rural Tech	1978	1978	0.16		0.16		N	F	E
Liberia	Agr Coop Dev	1977	1977	1.40		0.70		N	C	E
Liberia	YMCA Agr Training & Dev	1970	1970	0.10		0.10		N	F	E
Kenya	Increased rural income	2001	2005	2.18	0.00	1.74	0.00	N	C	E
Kenya	Improved NRM	2001	2005	1.25	0.00	1.00	0.00	N	C	E
Kenya	Rural Enterprise Ext Service	1977	1979	0.40		0.40		N	F	E
Kenya	Agr Loan Sector I	1975	1979	13.50		1.40		N	C	E
Ivory Coast	ICA/AID Prog to 1963	1962	1963	0.37		0.37		N	F	E
Guinea-Bissau	Tombali Sustain Rural Initiatives	1990	1990	0.93		0.93		N	F	E
Guinea	Improved NRM	1998	2005	8.71	0.00	7.62	0.00	N	C	E
Ghana	Agr Productivity Promotion	1988	1990	20.00		4.00		N	C	E
Ghana	Dev & Appl of Intermed Tech	1979	1981	1.70		0.90		N	C	E
Ghana	Women in Ghanain Dev	1976	1978	0.48		0.23		N	C	E
Ghana	Women in Nat'l Dev	1975	1977	0.05		0.05		N	F	E
Ghana	Agr Ext & Production	1957	1973	3.74		3.74		N	F	E
Gambia	Coop Trg & Education OPG	1980	1983	1.00		1.00		N	F	E
Ethiopia	Increase staple food prod.	1995	2001	7.31	0.00	7.31	0.00	N	C	E
Ethiopia	So. Gemu Gofa Area Rehab	1976	1976	0.20		0.20		N	F	E
Ethiopia	Agr Sector Loan IV	1975	1976	15.00		2.00		N	C	E
Ethiopia	ADA Agr Dev	1973	1973	1.60		0.80		N	C	E
Equitorial Guinea	Coop Dev II	1986	1991	5.20		1.00		N	C	E
Equitorial Guinea	Coop Dev PVO	1983	1985	3.00		1.50		N	C	E
Equitorial Guinea	Agr Dev	1981	1982	2.00		0.20		N	C	E
Congo DR	Small Project Support	1988	1991	12.00		4.00		N	C	E
Congo DR	Central Shaba Agr Dev	1986	1989	33.90		11.30		N	C	E
Congo DR	Area Food & Mrkt Develop	1985	1990	8.30		4.15		N	C	E
Comoros	Anjouan Sustainable Agr	1989	1992	3.50		3.50		N	F	E
Comoros	Land & Soil Conservation	1984	1989	3.50		3.50		N	F	E
Chile	School-Family Garden Coop	1979	1979	0.15		0.15		N	F	E
Chad	ICA/AID Prog to 1963	1957	1963	0.04		0.04		N	F	E
Cent. Afr. Repub.	Opportunities Ind Centers Int	1990	1990	0.46		0.46		N	F	E
Cent. Afr. Repub.	Agr Enterprise Dev	1986	1991	4.00		1.30		N	C	E
Cent. Afr. Repub.	Post Harvest Food System PVO	1984	1988	4.30		4.30		N	F	E
Cent. Afr. Repub.	Rural Dev	1982	1986	1.00		0.50		N	C	E
Cent. Afr. Repub.	Fish Culture Extension	1978	1979	0.10		0.10		N	F	E
Cent. Afr. Repub.	Seed Prod Center	1975	1978	0.46		0.46		N	F	E
Cent. Afr. Repub.	ICA/AID Programs	1964	1968	0.98		0.98		N	F	E
Cent. Afr. Repub.	ICA/AID Prog to 1963	1957	1963	0.22		0.22		N	F	E
Cape Verde	Watershed Dev	1984	1992	7.61		1.00		N	C	E
Cape Verde	Watershed Mgmt	1978	1982	5.70		1.90		N	C	E
Cameroon	Small Farmer Fish Prod	1980	1983	0.60		0.60		N	F	E
Cameroon	Lvstk & Agr Dev	1978	1983	5.09		5.09		N	F	E
Cameroon	Young Farm Fam Trg Cntr OPG	1977	1977	0.95		0.95		N	F	E
Cameroon	No Cam Seed Mult	1976	1981	1.50		0.40		N	C	E
Cameroon	Agr Ext & Planning	1964	1973	0.50		0.50		N	F	E
Burundi	Food security	2003	2005	0.99	0.00	0.66	0.00	N	C	E
Burundi	Bururi Forest	1982	1982	1.00		0.20		N	C	E
Burkina Faso	Nat Res Mgmt Dev Support	1991	1991	0.80		0.80		N	F	E
Burkina Faso	Southwest Reg Reforestation	1985	1985	1.00		0.50		N	C	E
Burkina Faso	Seuenega Integr Rural Dev OPG	1978	1985	6.50		0.80		N	C	E
Burkina Faso	Oncho Areas Vil Dev Fund	1978	1981	0.90		0.20		N	C	E
Burkina Faso	Integrated Rural Dev	1977	1980	4.80		2.40		N	C	E
Burkina Faso	Women's Roles in Dev	1977	1980	0.70		0.30		N	C	E
Burkina Faso	Village Livestock	1976	1979	2.00		2.00		N	F	E
Botswana	Rural Enterprise Ext Service	1978	1978	0.50		0.50		N	F	E
Benin	Benin Soya Nutrition	1979	1980	0.82		0.82		N	F	E

Benin	Agr Edu & Ext	1962	1972	0.50		0.50		N	F	E
Angola	Enhanced Food Security	2002	2005	1.10	0.00	0.83	0.00	N	C	E
Africa Region	Support to Reg Org II	1985	1987	1.50		1.50		R	F	E
Africa Region	Energy Initiative for Africa	1982	1987	7.20		1.40		R	C	E
Africa Region	INADES-Formation PVO	1980	1981	0.70		0.70		R	F	E
Africa Region	Improved Rural Tech	1978	1982	2.80		0.50		R	C	E
Africa Region	Accelerated Impact Progr	1977	1982	12.90		6.40		R	C	E
Yemen	Agr Dev Support	1979	1990	106.70	25.00	25.00	25.00	N	C	AKIS
Tunisia	ICA/AID Programs	1956	1966	4.21	0.09	0.92	3.20	N	F	AKIS
Morocco	Agribusiness Promotion	1991	1997	20.50	1.00	2.00	1.00	N	C	AKIS
Jordan	ICA/AID Programs	1956	1972	3.25	1.40	1.84	0.01	N	F	AKIS
Israel	ICA/AID Programs	1956	1972	0.54	0.18	0.18	0.18	N	F	AKIS
Israel	ICA/AID Prog to 1963	1953	1962	1.16	0.39	0.39	0.39	N	F	AKIS
Iraq	ICA/AID Programs	1956	1963	1.02	0.37	0.33	0.33	N	F	AKIS
Iran	ICA/AID Programs	1956	1966	3.56	0.42	1.73	1.41	N	F	AKIS
Peru	Agr Technology Transformation	1987	1993	25.00	15.00	5.00	5.00	N	F	AKIS
Peru	Upper Huallaga Ag Dev	1981	1993	31.20	5.00	8.00	2.00	N	C	AKIS
Peru	Agr Res, Exten, & Education	1980	1987	19.65	7.00	6.15	6.50	N	F	AKIS
Paraguay	ICA/AID Programs	1956	1968	2.63	0.96	1.18	0.49	N	F	AKIS
Panama	ICA/AID Programs	1956	1962	1.66	0.70	0.74	0.21	N	F	AKIS
Honduras	ICA/AID Programs	1956	1962	1.57	0.40	1.05	0.13	N	F	AKIS
Haiti	Integrated Agr Dev	1976	1985	14.44	2.00	6.00	0.50	N	C	AKIS
El Salvador	Agr Develop Res, Ed, & Ext	1972	1978	3.70	1.90	0.90	0.90	N	F	AKIS
El Salvador	Agr Development	1970	1972	5.46	1.40	1.40	1.00	N	C	AKIS
El Salvador	ICA/AID Programs	1956	1960	1.13	0.34	0.33	0.47	N	F	AKIS
Ecuador	Ag Res Ext & Ed	1987	1994	7.00	4.00	2.00	1.00	N	F	AKIS
Dominican Rep.	Agriculture	1975	1979	12.00	2.00	2.00	1.00	N	C	AKIS
Dominican Rep.	Agr Sector Loan II	1962	1974	2.07	0.40	1.20	0.47	N	F	AKIS
Costa Rica	Agr Development Program	1970	1978	15.93	0.50	3.00	2.00	N	C	AKIS
Costa Rica	Agricultural Development	1963	1977	3.23	0.40	0.60	0.30	N	C	AKIS
Colombia	ICA/AID Programs	1964	1972	3.42	0.29	0.60	2.53	N	F	AKIS
Caribbean	Carib Region IRD	1975	1976	8.50	1.00	1.00	2.00	R	C	AKIS
Brazil	Seed Industry Dev	1964	1976	3.19	0.50	0.50	0.50	N	C	AKIS
Brazil	ICA/AID Prog to 1963	1956	1963	10.49	2.19	0.65	7.65	N	F	AKIS
Bolivia	Basic Food Prod & Mark	1975	1982	6.90	2.90	2.00	2.00	N	F	AKIS
Bolivia	Agr Dev Sector I	1975	1977	9.20	2.30	2.30	2.30	N	C	AKIS
Bolivia	Agr Refinancing Fund	1971	1981	27.26	6.62	5.00	1.00	N	C	AKIS
Yugoslavia	Agr Edu Res & Ext	1952	1965	1.20	0.30	0.60	0.30	N	F	AKIS
Portugal	Tech Consultants & Training	1975	1989	12.88	0.50	0.50	0.50	N	C	AKIS
Europe Region	Restruct Agr/AgrBusiness	1991	1995	32.10	1.60	1.60	1.60	R	C	AKIS
Albania	Foster mrkt economy	2002	2005	4.01	0.00	2.51	1.50	N	C	AKIS
Albania	Restruct Albanian Ag	1992	1994	75.00	5.00	5.00	5.00	N	C	AKIS
Vietnam	ICA/AID Prog to 1963	1956	1964	3.24	0.10	1.81	1.33	N	F	AKIS
Thailand	Mgmt of Nat Res & Environmt	1988	1994	44.00	2.00	3.00	4.00	N	C	AKIS
Thailand	ICA/AID Prog to 1963	1956	1963	3.74	0.69	1.55	1.50	N	F	AKIS
Sri Lanka	Diversi Ag Research	1984	1990	14.60	10.00	2.60	2.00	N	F	AKIS
Sri Lanka	Reforest & Watershed Mgmt	1980	1983	10.45	1.20	3.50	3.50	N	C	AKIS
Sri Lanka	Agr Ext Res & Education	1956	1965	1.40	0.50	0.50	0.40	N	F	AKIS
Philippines	Accelerated Ag Production	1986	1990	30.00	1.50	3.00	2.00	N	C	AKIS
Philippines	Pest Control	1978	1980	5.00	0.50	4.00	0.50	N	F	AKIS
Pakistan	Transform/Integ Prov Ag	1984	1991	35.50	6.00	6.00	23.50	N	F	AKIS
Pakistan	Forestry Planning & Dev	1983	1991	25.00	2.00	5.00	4.00	N	C	AKIS
Nepal	Res Cons & Utilization	1980	1987	27.50	2.50	3.50	3.00	N	C	AKIS
Korea	Agr Ext Res & Tech	1962	1966	0.52	0.17	0.17	0.17	N	C	AKIS
Indonesia	ICA/AID Programs	1956	1969	7.98	0.97	1.64	5.37	N	F	AKIS
India	ICA/AID Programs	1956	1972	26.99	4.87	2.65	19.47	N	F	AKIS
Cambodia	ICA/AID Programs	1956	1965	2.43	0.07	0.42	1.94	N	F	AKIS
Zimbabwe	Ag Sector Assistance	1982	1989	62.00	4.00	6.00	2.00	N	C	AKIS
Uganda	Initiatives on Dev of Export Agr	1994	1999	5.25	0.50	0.50	0.50	N	C	AKIS
Uganda	ICA/AID Programs	1963	1970	2.76	0.31	0.31	2.14	N	F	AKIS
Tanzania	Livestock Market Dev	1973	1978	2.60	0.60	0.30	0.60	N	C	AKIS
Tanzania	ICA/AID Programs	1962	1972	4.76	0.05	1.61	3.10	N	F	AKIS
Sudan	ICA/AID Programs	1959	1968	4.26	2.05	1.92	0.29	N	F	AKIS
Sahel	Water Data Network & Mgmt	1976	1980	6.26	0.50	0.50	0.50	R	C	AKIS
Sahel	Reg Cntr Agr Sci	1969	1976	1.96	0.40	0.40	1.16	R	F	AKIS
Rwanda	Increased food security	2000	2005	4.58	0.61	2.37	1.00	N	C	AKIS
Nigeria	Agr Edu Res & Ext-East	1964	1972	4.00	1.30	1.40	1.30	N	F	AKIS
Malawi	Agr Sector Assistance-TA	1991	1996	11.67	3.00	4.00	2.00	N	C	AKIS
Malawi	Agr Sector Assistance-NPA	1991	1993	20.00	3.00	3.00	3.00	N	C	AKIS
Lesotho	Agr Prod & Instit Support	1985	1991	27.50	8.00	8.00	3.00	N	C	AKIS

Kenya	Increase agr. Prod.	1998	2001	9.13	2.61	6.52	0.00	N	C	AKIS
Kenya	ICA/AID Programs	1960	1970	5.16	0.79	1.85	2.52	N	F	AKIS
Guinea	Guinea Ag Prod & Trng	1976	1982	14.40	4.80	4.80	4.80	N	F	AKIS
Congo DR	Fish Culture Expansion	1978	1985	3.67	0.37	2.80	0.50	N	F	AKIS
Chile	ICA/AID Programs	1956	1964	3.30	1.25	1.95	0.10	N	F	AKIS
Burkina Faso	Agr Human Res Dev	1978	1992	8.65	0.87	0.87	4.33	N	C	AKIS
Angola	Rehab/Stabilization/Growth of Econ	1996	2001	2.24	0.00	2.24	0.00	N	C	E
Ethiopia	Training of Trainers for Road Works	2011	2011	0.16	0.00	0.00	0.16	N	F	AE
Pakistan	agriculture	2010	2011		0.00	0.00	11.53	N	C	AE
Southern Afr.	agriculture	2011	2011	3.00	0.00	0.00	0.20	N	C	AE
Sudan	Ag Higher Ed Assessment	2009	2009	0.17	0.00	0.00	0.17	N	F	AE
East Timor	Agr Business Ed (BACET)	2006	2010	6.00	0.00	0.00	6.00	N	F	AE
Egypt	AERI-Value Chain	2008	2012	4.80	0.00	0.00	4.80	N	C	AE
Egypt	Ag Education (AERI)	2003	2007	6.00	0.00	0.00	6.00	N	C	AE
Liberia	Excellence in Higher Ed	2011	2015	18.50	0.00	0.00	9.25	N	C	AE
Senegal	Cap. Bldg AgEd & Res	2010	2014	5.60	0.00	0.00	5.60	N	F	AE
Tanzania	Ag education & Research	2010	2014	24.00	0.00	0.00	16.00	N	F	AE
Taiwan	Voc ag schools	1956	1960	0.94			0.94	N	F	AE
Sri Lanka	Ag univ dev	1964	1964	0.45			0.45	N	F	AE
Somalia	Ag ed & trng	1960	1960	0.26			0.26	N	F	AE
Philippines	Voc ag ed	1956	1960	1.28			1.28	N	F	AE
Niger	Ag ed & ext	1962	1964	0.33			0.33	N	F	AE
Nicaragua	Ag voc ed	1956	1958	0.25			0.25	N	F	AE
Libya	Vo ag ed	1956	1956	0.36			0.36	N	F	AE
Liberia	Voc & ag ed	1956	1961	1.18			1.18	N	F	AE
Jordan	Ag ed	1956	1960	0.55			0.55	N	F	AE
Japan	Hokkaido Univ	1957	1959	0.57			0.57	N	F	AE
Jamaica	Voc ag ed	1958	1958	0.03			0.03	N	F	AE
Iran	Karaj Ag Col	1961	1961	1.17			1.17	N	F	AE
Honduras	Voc ag ed	1957	1957	0.92			0.92	N	F	AE
Greece	Amer Farm School	1961	1962	0.11			0.11	N	F	AE
Ghana	Ag Ed Trng	1958	1964	0.70			0.70	N	F	AE
Ecuador	Vocation ag	1956	1960	0.19			0.19	N	F	AE
Colombia	Voc ag ed	1956	1963	0.61			0.61	N	F	AE
Bolivia	Voc ag ed	1957	1960	0.98			0.98	N	F	AE
Benin	Ag ext & ed	1962	1964	0.15			0.15	N	F	AE
Mozambique	AWARD Mozambique	2012	2016	0.41			0.10	N	F	AE
Mali	BHEARD Mali	2013	2014	1.70			0.43	N	F	AE
Global	InnovATE	2013	2017	5.50			5.50	I	F	AE
Afghanistan	AgEd	2011	2015				20.00	N	F	AE
Global	CIFOR Biodiversity Research	2016	2016	1.45			0.36	I	C	AE
Malawi	UILTCB – Malawi	2012	2013	1.29			0.32	N	F	AE
Global	Borlaug Fellows	2012	2014	3.50			0.88	I	C	AE
Global	Borlaug LEAP	2012	2015	4.41			1.10	I	C	AE
Global	BHEARD	2012	2017	8.50			2.13	I	C	AE
Global	AWARD	2012	2017	6.05			1.51	I	C	AE
Armenia	AgEd	2015	2018	2.50			1.50	N	F	AE
Georgia	AgEd	2013	2014	1.30			1.30	N	F	AE
Malawi	BHEARD Malawi	2014	2016	3.30			0.83	N	F	AE
Cambodia	BHEARD - Cambodia	2013	2013	0.36			0.09	N	F	AE
Liberia	BHEARD - Liberia	2015	2015	1.00			0.25	N	F	AE
Bangladesh	BHEARD Bangladesh	2012	2015	5.20			1.30	N	F	AE
Kenya	BHEARD Kenya	2015	2016	1.49			0.37	N	F	AE
Kenya	AWARD Kenya	2012	2016	0.80			0.20	N	F	AE
Ghana	BHEARD Ghana	2014	2016	5.70			1.42	N	F	AE
Rwanda	AgED	2013	2015	0.00			5.05	N	F	AE
Senegal	ERA	2012	2015	28.00			11.20	N	F	AE
Uganda	Climate Change Adaptation	2013	2014	1.00			0.25	N	F	AE
Uganda	BHEARD Uganda	2012	2017	4.51			1.13	N	F	AE
Tanzania	AWARD Tanzania	2012	2017	1.90			0.48	N	F	AE
South Sudan	BHEARD South Sudan	2014	2015	2.55			0.64	N	F	AE
Rwanda	BHEARD	2015	2016	3.50			0.88	N	F	AE
Mozambique	BHEARD - Mozambique	2012	2014	1.20			0.30	N	F	AE
Ghana	Award -Ghana	2014	2016	0.80			0.20	N	F	AE
Tunisia	Inat Faculty Development	1978	1978	0.38			0.38	N	F	AE
Syria	Ag Education-Livestock Prod	1979	1981	6.00			6.00	N	F	AE
Morocco	Agronomic Institute	1980	1991	28.51			28.51	N	F	AE
Morocco	Assist Higher Ag Ed II	1976	1979	2.90			2.90	N	F	AE
Morocco	Higher Agr Education	1969	1977	1.60			1.60	N	F	AE
Jordan	Faculty of Agr	1975	1975	2.30			2.30	N	F	AE

Egypt	Agr Extension Education	1962	1970	0.70			0.40	N	C	AE
ROCAP	Reg Agr Higher Ed	1985	1995	13.60			13.60	R	F	AE
ROCAP	Regional Tropical Watershed	1983	1990	6.00			3.00	R	C	AE
ROCAP	Dev of Inst of Higher Education	1963	1963	4.16			2.00	R	C	AE
Peru	Agr Planning & Instit. Dev	1983	1989	17.65			4.00	N	C	AE
Panama	Education for Rural Dev	1981	1982	0.49			0.49	N	F	AE
Mexico	ICA/AID Programs	1956	1957	0.03			0.03	N	F	AE
LAC Region	Castelar Agri Grad School	1971	1977	1.20			1.20	R	F	AE
LAC Region	Agr Extension-Turrialba	1965	1966	0.40			0.40	R	F	AE
Jamaica	Agr Education	1984	1994	10.06			10.06	N	F	AE
Jamaica	Rural Ed Sector Loan	1976	1978	10.50			3.50	N	C	AE
Honduras	Pan American Ag School	1989	1989	0.75			0.75	N	F	AE
Honduras	Agr Education	1982	1982	0.05			0.05	N	F	AE
Guatemala	Edu & HRD	1976	1978	7.00			1.00	N	C	AE
Guatemala	ICA/AID Programs	1957	1970	1.15			1.15	N	F	AE
Dominican Rep.	Commercial Agribus Partn	1989	1996	24.00			24.00	N	F	AE
Dominican Rep.	University Agribus Partnership	1989	1994	12.00			12.00	N	F	AE
Dominican Rep.	Agr Sector Training	1983	1985	8.45			4.25	N	C	AE
Costa Rica	Agr Education	1970	1973	0.45			0.45	N	F	AE
Caribbean	Agr Education	1980	1981	1.60			1.60	R	F	AE
Brazil	Higher Agr Education	1970	1973	6.84			6.84	N	F	AE
Brazil	Agricultural Ed	1963	1978	20.24			20.24	N	F	AE
Argentina	ICA/AID Prog to 1963	1969	1971	1.16			1.16	N	F	AE
Argentina	ICA/AID Programs	1957	1963	0.30			0.30	N	F	AE
Global	Title XII Strengthen Grants	1979	1989	40.40			40.40	I	F	AE
Global	New Approaches--Mass Media	1974	1975	0.43			0.43	I	F	AE
Portugal	Rural Vocational Ed	1977	1979	6.00			1.20	N	C	AE
Thailand	Tech Trg for Acceler Dev	1964	1977	63.60			6.40	N	C	AE
Sri Lanka	Agr Education Dev	1978	1982	7.50			7.50	N	F	AE
Sri Lanka	Agr Education Dev	1977	1982	7.50			7.50	N	F	AE
South Pacific	Dev Support Training	1985	1990	3.00			1.00	R	C	AE
South Pacific	S P Region Ag Dev	1980	1991	13.00			13.00	R	F	AE
Philippines	Agr Education Outreach	1979	1982	2.50			2.50	N	F	AE
Philippines	ICA/AID Programs	1956	1972	1.46			1.46	N	F	AE
Pakistan	Institutional Excellence	1988	1989	30.50			2.00	N	C	AE
Pakistan	W Pakistan Agr Univ	1964	1973	2.10			2.10	N	F	AE
Nepal	Institute of Forestry	1987	1995	8.70			8.70	N	F	AE
Nepal	Institute of Ag & An Sci II	1985	1988	4.10			4.10	N	F	AE
Nepal	Inst of Agr & Anim Sci	1974	1982	5.50			5.50	N	F	AE
Indonesia	Higher Education Dev	1988	1993	20.00			1.00	N	C	AE
Indonesia	Western Univ Agr Ed	1981	1987	24.40			24.40	N	F	AE
Indonesia	Graduate School of Agr	1979	1980	7.50			7.50	N	F	AE
Indonesia	Agr Education For Dev	1976	1978	5.50			5.50	N	F	AE
Indonesia	Higher Agr Education	1970	1976	7.40			7.40	N	F	AE
India	Competency in Crop/Seed Prod.	1968	1974	0.20			0.20	N	F	AE
Asia Region	Asian Teaching Fellows Prog	1976	1978	0.20			0.20	R	F	AE
Asia Region	Regional Ed--SEARCA	1967	1985	20.92			7.00	R	C	AE
Asia Region	Regional Technical Services	1963	1976	7.30			1.70	R	C	AE
Afghanistan	Agricultural Education	1956	1977	6.16			6.16	N	F	AE
Zimbabwe	ICA/Aid Prog to 1963	1960	1963	0.91			0.91	N	F	AE
Uganda	Agr Non-Traditional Exports	1992	1997	63.80			4.00	N	C	AE
Uganda	Agr Education	1974	1977	2.30			2.30	N	F	AE
Uganda	Graduate Agr Faculty	1971	1976	1.15			1.15	N	F	AE
Tanzania	University Linkage	1990	1992	2.38			2.38	N	F	AE
Tanzania	Training for Rural Dev I	1979	1980	6.00			6.00	N	F	AE
Tanzania	Agr Ed & Extension	1978	1978	2.36			2.36	N	F	AE
Tanzania	Agr Manpower Dev	1974	1979	4.60			4.60	N	F	AE
Sudan	Ext Ed Trg for Human Res	1978	1978	0.20			0.20	N	F	AE
Southern Afr.	Buda Agr College	1971	1979	0.36			0.36	R	F	AE
Sierra Leone	ICA/AID Programs	1962	1968	4.50			4.50	N	F	AE
Sao Tome/Principe	Trilateral Proj for Agr	1986	1986	1.10			1.10	N	F	AE
Sahel	Federal Adv School of Ag	1974	1979	1.63			1.63	R	F	AE
Sahel	Pan-African Inst For Dev	1971	1978	0.70			0.70	R	F	AE
Rwanda	Agricultural Education	1979	1983	5.13			5.13	N	F	AE
Nigeria	ICA/AID Programs	1956	1972	30.03			30.03	N	F	AE
Mali	Sahel Human Res Dev III	1986	1990	19.00			0.20	N	C	AE
Mali	Improvement of Ag Officer Trg	1977	1985	9.93			9.93	N	F	AE
Liberia	Rural Dev Trg II	1985	1986	2.30			2.30	N	F	AE
Liberia	Rural Dev Trg Cuttington College	1977	1985	5.88			5.88	N	F	AE
Lesotho	Nat'l University of Lesotho	1977	1988	5.87			0.60	N	C	AE

Kenya	Instit Dev for Ag Trg	1986	1994	7.50			7.50	N	F	AE
Kenya	Agr Management Dev	1985	1991	4.03			1.00	N	C	AE
Kenya	Technology Training	1981	1981	0.45			0.20	N	C	AE
Kenya	University of Nairobi Vet Fac.	1971	1980	2.92			2.92	N	F	AE
Ghana	Faculty of Agr	1966	1976	0.84			0.84	N	F	AE
Ethiopia	University General Support	1973	1979	9.60			2.60	N	C	AE
Ethiopia	Haile Selassie Univ Expansion	1970	1975	5.80			1.50	N	C	AE
East Africa	ICA/AID Programs	1962	1970	3.16			3.16	R	F	AE
Congo DR	ICA/AID Programs	1963	1963	0.70			0.70	N	F	AE
Congo DR	ICA/AID Prog to 1963	1956	1963	2.16			2.16	N	F	AE
Cameroon	Ag Education II	1991	1995	15.00			15.00	N	F	AE
Cameroon	Agr Education	1982	1989	43.00			20.30	N	C	AE
Burkina Faso	Agr Human Res Dev	1978	1987	0.53			0.53	N	F	AE
Burkina Faso	Eastern ORD Non-Formal Ed	1977	1980	4.80			2.40	N	C	AE
Africa Region	Harmonizing Ag Curricula-So. Afr	2004	2004	0.80			0.80	R	F	AE
Africa Region	Ag Education Initiative	2003	2004	3.00			3.00	R	F	AE
Africa Region	African Manpower Dev II	1982	1987	43.00			2.00	R	C	AE
Total				**21603.72**	**5067.28**	**2366.48**	**867.26**			

Annex D: Methodology for USAID AKIS Funding Data Collection

These AKIS database estimates of historical time series USAID funding for agricultural research, extension, and education are based on the best available information and estimation of funding support for these agricultural sub-sectors. This is not an official data set of USAID budgets, expenditures, or allocations, but represents estimates based on data compiled drawing on various data sets and information sources. Estimating USAID funding levels for any agricultural sub-sector is complicated, as no consistent or coherent coding system for type of investment has been maintained over time. Funding is provided through various mechanisms—country vs. regional or global programs; development assistance vs. PL-480 and other funding; and project vs. program authorizations.

The data compiled was assembled at four different times — 1995-96; 2004; 2011-12; and 2018. Notes on each of these data collection efforts are summarized below. The general approach involved review of USAID agricultural development portfolios to identify investments in agricultural research, extension and education and then to estimate funding for the three agricultural sub-sectors, based on available project descriptions, funding information, and personal experience and knowledge of project designs and budgeting. In some cases, especially for USAID/Washington-funded activities, discussions with program managers informed estimates.

Data sources and level of detail differed over time and for the different periods in which estimates were developed. For each of the up-dates (2004, 2011-12, and 2018), funding estimates were developed for one to two years of overlap with the prior dataset to determine whether there was any major inconsistency in the data series. In each case, the overlapping data was found consistent with the earlier estimates, suggesting consistency in estimations.

Funding estimates for different time periods rely on information on different levels of the government financial management system – authorization, obligation, commitment, and expenditure. Most estimates for early years are for commitments; later year estimates are largely authorizations; and, for the period from the 1960s to 1995 are largely obligations. Although not all authorized funding is necessarily obligated, nor all obligated funding (allocated to a project) committed, nor all committed funding (in a grant or contract) spent, in practice, most authorized funding is eventually obligated, committed, and expended for the designated purpose. Overall, the estimates appear consistent with other sources and data on USAID funding for agriculture.

AKIS database estimates include both funding for direct implementation (i.e., carrying out research, delivering extension services, or conducting training) and for development of country capacity to carry out these activities (i.e., providing equipment, construction, training, technical assistance, etc.). This does not include estimates of funding for the extensive general participant training investments for the agricultural sector, although training investments linked to strengthening of specific research, extension, or education institutions or programs is included.

A. Methodology for Review of USAID Funding for Agricultural Research (1995-96)

The 1995-96 dataset was developed as part of an assignment to the Agricultural Research and Extension Group at the World Bank (ESDAR) and was documented in a paper “USAID and Agricultural Research: Review of USAID Support for Agricultural Research”. This paper was to quantify past USAID research investments and trends and note changed circumstances affecting current programs. Total USAID funding for 587 identified research activities from 1952 through 1996 was estimated at $3.62 billion.

Information on the past USAID projects was obtained through a search of the USAID's Center for Development Information and Evaluation (CDIE) database for projects related to agricultural research. The initial search turned up 459 project activities supporting research over the period 1952 through 1995. Comparison of this listing with that from an earlier review by Dennis Panther, USAID/Washington, resulted in identification of 48 additional projects. The data on this combined set of projects was then supplemented with more detailed information on funding for the

Consultative Group for International Agricultural Research (CGIAR) and the Collaborative Research Support Programs (CRSPs).

The review focused on investments in the technology generation activity part of the "agricultural knowledge systems," taken to include research and research capacity building, including development of agricultural universities. Extension program funding was excluded, though, technology dissemination activities were often associated with agricultural research investments. Also excluded were projects directed mainly at agricultural policy development or at agricultural data collection. Conservative estimates were made for the technology development components of agribusiness activities.

Funding for research was estimated based on information from the CDIE database. This provided levels of funds authorized and fiscal years of obligation. In the case of the IARCs and CRSPs, funding data was based on actual obligations, as per information available in the Agriculture and Food Security Office. For multi-year projects, obligations were assumed to be spread equally over the years of obligations for the projects. For projects with partial funding for research, an estimate of the level of funding for research was made based on the prominence of the research agenda in the project and on experience with past project budgets and designs. The resulting data was considered to provide a good estimate of levels of past research investments and trends in USAID agricultural research funding over time.

The review was challenging, as USAID had no standard and centralized accounting for past expenditures by category of activity and no standard USAID definition of research. Errors were possible due to: a) incomplete CDIE data, especially in earlier years (e.g., a few known projects prior to 1970 did not show up in the project list and the 43 university development projects identified are probably not a complete listing, though other university projects may not have involved research activities.); b) errors in the CDIE data; and c) difficulty in estimating the portion of project funding for research for those projects in which research is only one component of the project. The database may have missed smaller projects involving technology generation (i.e., NGO projects) and PL-480 food aid local currency allocations to research.

In some years, USAID had attempted to better quantify allocations of development funding and had collected Activity Code and Special Interest Code (AC/SI) statistics on funding obligations for research and other development activities for the years 1989 to 1996. Though this systematic data collection effort was useful, the SI Coded data differed significantly from levels of USAID support to agricultural research estimated by the review of project data. Differences were explainable in that: some agricultural research would be coded to other research categories (e.g., environment), coding missed research components of larger projects, and many capacity development activities would not have been included.

B. Methodology for Review of USAID Funding for Agricultural Research, Extension and Education (2004)

The 2004 up-date of the dataset was developed in preparation for a joint USAID-World Bank hosted workshop on agricultural extension, held in conjunction with a Washington meeting of the Neuchatel Group. Although the purpose was to focus on funding for extension services and service development, the review adopted a more comprehensive approach and developed estimates of funding separately for agricultural research, extension and education.

The approach used was the same as in 1995-96, except for separating estimates for the three AKIS sub-sectors. For this and the subsequent reviews, research investment included research and research capacity building. Extension investment included extension service delivery and development of extension capacity for technology transfer and other extension strategies to promote rural innovation. Agricultural education investment included funding for operating and development of agricultural universities and other training institutions and programs, but did not include the diverse short-term training associated with most agricultural development projects. International (or local) degree training is included in the various subsectors categories where the training was specific to development of capacity for research, extension or ag education, but general degree training programs in the sector are not

included. Each category includes funding for both public and private sector delivered services and capacity development. This review more clearly differentiated funding for the three AKIS sub-sectors.

The review was based generally on two sources of data: a) the CDIE database on projects, through which an expanded search turned up some additional projects from earlier years and through the early 1990s and b) Congressional Budget Justifications (CBJ), which summarize USAID programs and budgets for each fiscal year. The CBJ provided significantly less detail on program activities, but still enough to develop funding estimates for AKIS sub-sectors based on understanding of typical USAID project and program strategies in the agricultural sector. The data from this detailed review was then supplemented by detailed budget information on CGIAR and CRSP funding for research.

Several challenges were encountered in this dataset up-date. Definitions of extension were quite varied and limited in project and program documentation. Extension investments were often linked with grants for fertilizer, seed and tools, financial services, or other services not considered extension for the purposes of the database. Farmer knowledge and information services were taken as the relevant extension sub-set of USAID-funded activities. The portfolio shifted in the 1990s to largely private sector value chain or multi-disciplinary NGO community or area development projects, both having multiple complex activities. This coincided with a shift from project-focused programming and budgeting to programing by Strategic Objective, often aggregating multiple activities aligned to achieve a single Strategic Objective. This too limited the level of detail available on the activities funded. Despite this change, projects continued to be the basis for program design and implementation and remained fairly predictable as to design and funding.

This period coincided with significant decline in funding for agriculture and the number of qualified agricultural staff within USAID Missions, changes which also lessened the clarity of focus on and description of the agricultural funding by specific sub-sector. This up-date brought the number of projects and programs identified with AKIS sub-sector funding to 1182.

C. Methodology for Up-date of Estimates of USAID Funding for Agricultural Research, Extension and Education (2012)

The 2011-12 dataset up-date was completed in response to requests for information as to changes resulting from the renewed USAID commitment to agriculture, as part of food security and global climate change initiatives. Again, the procedure used was the same with review of CBJ program descriptions from 2001 to 2012 and estimation of funding for the three AKIS sub-sectors. This was supplemented by detailed funding information for CGIAR core funding, biotechnology programs, and CRSP programs. Details on CGIAR non-core (basically country level) funding was not available, but was captured in the country program review estimates.

The impact of increased attention to agriculture was clearly evident over the period reviewed, especially in Feed the Future (Global Hunger and Food Security Initiative) activities, but also in Afghanistan, Iraq and Pakistan projects and in other country programs.

Complications were as in the previous up-date, but with the added complication of changes in budgeting systems from Strategic Objective level budgeting to Foreign Assistance Framework budget categories, which included coding by type of activity that was not in any way useful to the identification of AKIS sub-sector activities. This was then again revised from about FY2010, but again was not useful in identifying types of agricultural activities. This 2012 up-date brought the number of activities with AKIS sub-sector funding to 1357, though some of the programs represented multiple projects and a few programs are listed multiple times against the three AKIS sub-sectors.

D. Methodology for Up-date of Estimates of USAID Funding for Agricultural Research, Extension and Education (2018)

The 2018 AKIS funding data up-date was again in response to requests for up-dated information. This covered the period 2012 to 2018 and revised 2011 estimates. The funding estimates for 2018 were considered preliminary as less information was available to confirm these and they are not used in summaries or analyses of trends.

This period covered the initial Feed the Future (FTF) Initiative funding for food security with its significant changes in programs, organizational arrangements, and budgeting. Despite the substantial FTF focus on agriculture, detailed, comprehensive and consistent data on agricultural sub-sector funding was not available by type of activity. AKIS funding estimates are based on the publicly-available CBJ budgets with AKIS sub-sector funding estimates informed by: CBJ program descriptions, analysis of FTF country program activities, analysis of research program activities, and knowledge of specific country AKIS-focused activities.

CBJ funding for "agriculture" captures nearly all AKIS funding, though there may be minor funding in other agriculture-related funding categories, such as environment, humanitarian assistance, and private sector. Little of such funding is thought to be AKIS-related. FTF programs generally embraced "value chain" approaches that impact multiple agricultural sub-sectors, but generally focus on facilitating specific market linkage transactions and relatively modest support to AKIS systems. One confounding issue was that CBJ narratives may describe activities in a country, even though the funding may be from USAID/Washington budgets rather than the country budget. This applied mainly to research activities and was easily addressed in estimating AKIS element funding.

Based on discussions with USAID program managers, global research program funding was estimated based on 60 percent of the budget for BFS Research and Policy Office. The balance of funding for the office was for management, non-research activities of CGIAR and Innovation Labs (ILs) (estimated at 25% of such programs), policy work, and training. Additional country funding for specific research activities was included in the few cases identifiable. Extension funding was estimated at 5% of total agricultural funding for FTF countries with an increase to 10% for countries that noted specific support for extension. Identifiable country extension investments or central extension support mechanisms were also considered.

Agricultural education continued to be limited. Estimates include funding for any centrally-funded agricultural education support activities and identifiable country agricultural education activities. Centrally-funded training investments – mainly the AWARD and BHEARD projects – included both central and country funding and to support a broad array of sub-sector capacities. These were estimated as 25% for research and 25% for agricultural education capacity.

E. Finalization of AKIS Funding Estimates

In 2020, a final review of the AKIS funding data was done to document and share the 70-year dataset data. A few minor corrections were made and additional information on early years of AKIS funding were taken into account. The additional information was found in the publication "A. I. D. Projects – Commitments By Field of Activity FY 1955-1970" and in annual fiscal year reports from ICA/AID on "Projects – By Country and Field of Activity" for most years between 1956 and 1964. These provide detailed documentation of funding by country and field of activity and specifically identified funding for research, extension, and education, but did not include all such activities, with some extension activities categorized separately under "Home Economics and Rural Youth" and agricultural education activities under "Education". Ironically, these early years were the only ones with clear documentation of USAID agricultural funding by activity sub-sector. After review, detailed funding levels reported in these references was not used directly in the AKIS database. Their funding levels were generally consistent with estimates developed earlier from the CDIE database, but reports did not cover all years and integrating these with the prior funding estimates would have led to inconsistencies. For most of these early activities, funding was allocated equally across the years of the activity.

The ICA/AID reports did serve to identify additional activities that were added to the overall database, bringing the total number of identified AKIS project activities to 1472, though several are double counted due to funding for multiple AKIS sub-sectors and others are programs that include multiple separate projects.

In comparing funding across years, current US dollars were converted to constant 2012 dollars, as per Louis Johnston and Samuel H. Williamson, "What Was the U.S. GDP Then?" Measuring Worth, 2018. URL: http://www.measuringworth.org/usgdp/.

Annex E: USAID Funding for CGIAR and Innovation Lab Global Research Programs

	1960	1961	1962	1963	1964	1965
USAID Global Research Funding-Other (Current US$ million)	0.11	0.11	0.11	0.11	0.11	0.13
USAID Global Research Funding-IARCs (Current US$ million)	0.00	0.00	0.00	0.00	0.00	0.00
USAID Global Research Funding-Ils (Current US$ million)	0.00	0.00	0.00	0.00	0.00	0.00
USAID CGIAR Window 1 & 2 Funding (Current US$ million)						
USAID Total CGIAR Contributions-All Purposes (Current US$ million)						
CG Expenditures-From Alston Pardey (1999 US$ million)	36.13	0.91	2.05	4.06	2.59	5.62
CG Expenditures-1997-2017 from ASTI CGIAR Spending (2011 US$ million)						
2012 US $						
USAID Est. IARC Global Research Funding	0.00	0.00	0.00	0.00	0.00	0.00
USAID CGIAR Window 1 & 2 Funding (2012 US $ million)	0.00	0.00	0.00	0.00	0.00	0.00
USAID Total CGIAR Contributions-All Purposes (2012 US $ million)	0.00	0.00	0.00	0.00	0.00	0.00
Total CGIAR Expenditures (2012 US $ million)	47.31	1.19	2.68	5.32	3.39	7.36
Total USAID CGIAR Funding as Percent of Total CGIAR Expenditures	0%	0%	0%	0%	0%	0%
Total Innovation Lab Global Research Program Funding	0.00	0.00	0.00	0.00	0.00	0.00

1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
0.87	1.44	1.69	2.40	6.40	2.82	3.07	4.17	6.35	9.64	9.98	10.91	17.77	17.88	10.79
0.00	0.00	0.00	0.40	1.70	3.00	3.50	5.80	7.90	11.20	15.70	18.47	22.17	26.22	29.72
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.90	5.05	8.10	6.17
						3.77	5.39	6.80	10.76	14.87	18.14	21.14	24.80	29.00
8.54	14.13	27.95	44.1	53.27	69.31	75.38	91.05	103.95	131.64	162.92	201.35	232.1	251.16	259.02
0.00	0.00	0.00	1.94	7.84	13.17	14.73	23.14	28.92	37.52	49.86	55.22	61.93	67.64	70.32
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	15.87	21.51	24.89	36.05	47.22	54.23	59.05	63.97	68.61
11.18	18.50	36.60	57.75	69.75	90.76	98.70	119.22	136.11	172.37	213.33	263.65	303.92	328.87	339.16
0%	0%	0%	0%	0%	0%	16%	18%	18%	21%	22%	21%	19%	19%	20%
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.66	14.11	20.89	14.60

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
11.49	12.68	12.72	13.90	17.94	20.53	20.62	19.50	19.43	18.97	18.03	17.34	15.19
36.12	42.06	44.93	46.43	46.70	48.30	41.60	43.40	41.40	41.90	43.30	44.10	39.00
10.95	13.55	21.24	14.58	15.99	15.45	13.47	13.54	14.67	16.47	17.79	20.16	17.66
35.00	40.78	55.02	56.85	60.19	60.22	55.10	58.04	59.08	60.08	61.59	66.25	55.54
265.87	276.08	286.31	295.75	306.99	336.92	347.72	348.01	363.2	368.79	355.87	371.83	360.18
78.07	85.60	88.00	87.78	85.58	86.76	72.92	73.48	67.46	65.81	65.79	65.51	56.59
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.64	83.00	107.76	107.47	110.30	108.17	96.58	98.27	96.27	94.36	93.57	98.41	80.59
348.13	361.50	374.90	387.26	401.98	441.17	455.31	455.69	475.58	482.90	465.98	486.88	471.62
22%	23%	29%	28%	27%	25%	21%	22%	20%	20%	20%	20%	17%
23.67	27.58	41.59	27.57	29.30	27.75	23.61	22.92	23.90	25.87	27.03	29.95	25.62

1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
12.76	7.03	3.79	3.52	3.52	3.12	3.16	3.16	4.15	7.63	7.52	3.94	2.85
28.80	28.33	22.45	26.35	25.82	25.50	26.60	26.65	26.90	26.10	25.90	30.57	29.66
12.30	15.63	11.13	20.34	17.12	18.05	20.05	21.25	22.33	21.67	22.56	23.00	23.25
42.29	40.54	36.10	38.30	40.50	39.40	42.10	45.40	54.90	55.50	54.20	54.80	60.70
351.15	360.86	370.21	355.93	341.67	346.8	330.54	340.37	348.74	364.79	384.94		
											452.2	458.1
40.91	39.42	30.68	35.39	34.30	33.39	34.07	33.40	33.19	31.61	30.55	34.97	32.93
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60.08	56.41	49.33	51.44	53.80	51.59	53.92	56.90	67.74	67.22	63.93	62.69	67.39
459.80	472.52	484.76	466.06	447.39	454.11	432.81	445.69	456.65	477.66	504.05	460.86	466.88
13%	12%	10%	11%	12%	11%	12%	13%	15%	14%	13%	14%	14%
17.47	21.75	15.21	27.32	22.74	23.63	25.68	26.63	27.55	26.24	26.61	26.31	25.81

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
3.25	2.96	3.89	3.99	5.81	99.51	95.32	100.28	96.83	100.84	98.12	1002.18
27.38	19.49	34.55	39.84	34.65							1210.57
22.68	26.06	27.10	29.68	25.48							608.42
				24.60	28.50	32.00	31.00	19.70	15.50	0.00	151.30
59.50	58.00	78.90	86.30	59.90	123.10	114.01	130.60	158.76	168.46	151.95	2652.62
											9956.75
505.60	542.10	603.00	657.20	749.80	876.80	984.60	1066.80	984.50	929.60	866.30	9676.60
29.60	20.67	36.37	41.46	35.31							2019.78
0.00	0.00	0.00	0.00	25.07	28.50	31.45	29.91	18.81	14.65	0.00	148.39
64.33	61.52	83.05	89.79	61.05	123.10	112.04	126.01	151.60	159.22	141.69	3577.64
515.29	552.49	614.55	669.79	764.17	893.60	1003.47	1087.24	1003.36	947.41	882.90	22899.52
12%	11%	14%	13%	8%	14%	11%	12%	15%	17%	16%	7.76
24.52	27.65	28.52	30.88	25.97							868.13

Annex F: Sources and Data on USAID Participant Training

Year	Agricultural Academic Degree Programs*	Agricultural Technical Non-Degree*	Agricultural Training New Starts: US Only** (Aver. Duration = 11.5 mon.)	Agricultural US Long Term Academic ***	Agricultural US Technical Training***
1960	2	0			
1961	3	0			
1962	15	1			
1963	40	1			
1964	114	3			
1965	268	7			
1966	397	38			
1967	593	51			
1968	455	81			
1969	509	93			
1970	517	88			
1971	531	246			
1972	467	488			
1973	553	547			
1974	427	358			
1975	341	324			
1976	322	386	0		
1977	391	387	0		
1978	331	357	3		
1979	535	365	7		
1980	519	524	22		
1981	503	586	67		
1982	505	743	124		
1983	630	1048	260		
1984	641	1274	514		
1985	525	1569	767		
1986	758	1973	1817		
1987	735	2022	2435		
1988	758	1652	2219		
1989	732	1756	2086		
1990	471	1468	2213		
1991	349	1233	1968		
1992	318	1143	1537		
1993	320	1168	1690		
1994	273	1014	1743		
1995	201	822	1328		
1996	152	675	1151		
1997	205	335	876		
1998	182	385	365		
1999			376		
2000			54		
2001				321	182
2002				292	217
2003				188	430
2004				211	450
2005				294	448
2006				329	398
2007				351	539
2008				345	231
2009				336	267
Total	15588	25211	23622	2667	3162

* Source: USAID Agricultural Training Report, Development InfoStructure, USAID, 1998.

** Source: USAID Agricultural Training Report, Development InfoStructure, TrainNet/HAC Report, USAID, 1999.

*** Source: USAID TrainNet Data Base, 2010.

Annex G: Sources and Data on USAID Staffing

Year	Estimated Number of USAID Agricultural Staff and Source
1957	743 (ICA, 1957)
1959	800 (ICA, 1959)
1961	917 (Laird, 1983)
1966	645 (Laird, 1983)
1970	380 (Laird, 1983)
1975	168 (Laird, 1983)
1977	186 (Laird, 1983); 175 (USAID HR Report, 1997)
1979	192 (Laird, 1983)
1980	188 (Laird, 1983); 217 (USAID HR Report, 1997)
1981	206 (Laird, 1983); 262 (Chemonics, 1991)
1982	215 (Laird, 1983); 226 (Chemonics, 1991)
1983	228 (Laird, 1983); 206 (Chemonics, 1991)
1985	294 (Lewis Email, 2010): 221 (USAID HR Report, 1997); 258 (JB Atwood Letter, 1998)
1990	239 (USAID HR Report, 1997)
1992	185 (JB Atwood Letter, 1998)
1995	100 (Staffing Analysis, 2006); 134 (USAID HR Technical Staff Report, 1996)
1996	99 (Staffing Analysis, 2006); 135 (USAID HR Technical Staff Report, 1996)
1997	99 (Staffing Analysis, 2006); 75 (JB Atwood Letter, 1998)
1998	98 (Staffing Analysis, 2006); 75 (Agricultural Staffing Draft Paper, 1998)
1999	95 (Staffing Analysis, 2006)
2000	94 (Staffing Analysis, 2006)
2001	93 (Staffing Analysis, 2006)
2002	90 (Staffing Analysis, 2006)
2003	80 (Staffing Analysis, 2006)
2004	72 (Staffing Analysis, 2006)
2005	64 (Staffing Analysis, 2006)
2006	55 (Staffing Analysis, 2006)
2008	16 (Atwood, et al. 2008)
2009	26 (Steffan Email, 2010
2010	79 (GAO, 2010)
2011	16 Ho and Hanratty (2011)

Note 1: USAID HR Report, Staffing Analysis, Email, USAID HR Technical Staff Report, Agricultural Staffing Draft Paper are unpublished materials.

Note: 2: Various sources likely include different categories of employees so are not strictly comparable, but constitute the best available data.

Annex H: USAID-Assisted Agricultural Colleges and Universities

Following is a listing of 84 agricultural colleges and universities in 48 countries supported by USAID. Information is not available on agricultural education and training for some countries, so some universities may be omitted. Other countries with significant Agricultural Education funding may not be included, if their support was for programs at the secondary or vocational level. Most university names are shown as listed in source materials. Some names have changed. Information is from Richardson (1969) and Oehmke (1995) supplemented with known recent project information.

Country	**University**
Afghanistan	Kabul University
Armenia	International Center for Agribusiness Research and Education
Bangladesh	University of Dacca Bangladesh Agricultural University
Brazil	University of Ceara University of Sao Paulo University of Rio Grande do Sul University of Vicosa Brazilian Agricultural Faculties Rural University of the State of Minas Gerais
Burkina Faso	University of Ouagadougou
Cambodia	National College of Agriculture
Cameroon	University of Dschang
Chile	University of Conception
Colombia	National University
Costa Rica	University of Costa Rica School of Agriculture for Tropics Humid Regions
Dominican Rep.	Superior Institute of Agriculture
Ecuador	University of Quito University of Guayaquil
Ethiopia	Alemaya University of Agriculture
Guatemala	University of San Carlos
Guinea	L'Institut Superieur Agronomique et Vétérinaire de Faranah
India	Haryana Agricultural University University of Udaipur G. P. Pant Agricultural University Andhra Pradesh Agricultural University Mysore Agricultural University Orissa University of Agriculture Punjab Agricultural University Madhya Pradesh Agricultural University Maharashtra Agricultural University Allahabad Agricultural Institute
Indonesia	University of Indonesia at Bogor Bandung Institute of Agriculture Eastern Regional Universities Western Regional Universities
Iran	Karaj College
Iraq	Agricultural College at Abu Ghraib
Israel	Hebrew University
Jamaica	Jamaican College of Agriculture

Japan	Hokkaido University
Jordan	University of Jordan
Kenya	Edgerton Agricultural College
Korea	Seoul National University
Liberia	Cuttington University
Malawi	Agricultural Training Center of Lilongwe Bunda College of Agriculture
Mexico	Superior Institute of Agriculture
Morocco	Institute of Agriculture and Veterinary Sciences
Nepal	Institute of Agriculture and Animal Science Institute of Forestry
Nigeria	University of Nigeria Ahmadu Bello University University of Ife
Pakistan	Peshawar University Punjab University Northwest Frontier Agricultural University
Panama	National Institute of Agriculture and Home Economics
Paraguay	National University of Asuncion
Peru	National Agrarian University
Philippines	University of the Philippines/Los Banos University of the Philippines College of Forestry Visayas College of Agriculture
Senegal	University of Cheikh Anta Diop University of Gaston Berger University of Thiès
Sierra Leone	Njala Agricultural University
Sri Lanka	Peredenia University
Taiwan	National Taiwan University Chung Hsiang University
Tanzania	Sokoine University of Agriculture Agricultural College of Tanganyika
Thailand	Kasetsart University
Turkey	Ataturk University
Uganda	Agricultural College at Bukalasa and Arapai Training Institute in Veterinary Medicine at Entebbe Makerere University
Uruguay	Universidad de la Republica Oriental del Uruguay
Vietnam	National College of Agriculture, Animal Husbandry and Forestry
Yemen	University of Sanaa
Zimbabwe	University of Zimbabwe Monza Agricultural Training Center