

# Strengthening Private Sector Extension and Advisory Services Portfolio Review

Developing Local Extension Capacity (DLEC) Project  
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# Strengthening Private Sector Extension and Advisory Services – Portfolio Review

## Preface

This review carried out by the Feed the Future Developing Local Extension Capacity (DLEC) Project explores recent experience and potential for expanding private sector agricultural extension and advisory services (EAS) as a means of improving knowledge and information support for the agricultural sector. It is based on a global review of literature and rapid desk review of United States Agency for International Development (USAID) investments, especially as they relate to private sector roles and participation in EAS systems. Food security investments predominate, though the review recognizes the multi-functional nature of agriculture. The objective is to summarize lessons learned and options for expanding private sector agricultural extension and advisory services through future USAID projects and other investments.

USAID has funded the DLEC Project to assist Feed the Future countries to measurably improve extension programs, policies and services by creating locally-tailored, partnership-based solutions and by mobilizing active communities of practice to advocate for scaling proven approaches. The five-year (2016-2021) project is designed to diagnose, test and share best-fit solutions for agricultural extension systems and services across the Feed the Future countries. Led by Digital Green with key partner the International Food Policy Research Institute as well as Care International and the Global Forum for Rural Advisory Services, DLEC is an action-oriented, evidence-based learning project that generates evidence through diagnostic studies and engagement activities, which in turn are used as a catalyst for mobilizing global and country-level communities of practice to advocate for improved EAS. This report is one such diagnostic.

The Executive Summary synthesizes findings in a framework to guide planning and investments in agricultural extension and advisory services. Subsequent sections provide background on EAS system development; potential and issues with private sector EAS; findings from the portfolio review; and options for project investments in EAS. A final section summarizes recommendations for USAID in planning future EAS investments to promote private sector EAS. Attachment E contains the portfolio reviews for the 28 countries.

The study is based on a global review of experience and synthesis of lessons learned across countries. The individual country portfolio reviews were done as desk studies of available materials. DLEC acknowledges the invaluable assistance from more than 46 USAID staff, who contributed materials and/or comments for these reviews. Given time and resource constraints, country reviews are not necessarily comprehensive or completely up-to-date. Additional review and field assessment will be necessary to confirm findings and develop plans for any future country investments in extension and advisory services.

## Executive Summary

Effective agricultural extension and advisory services (EAS) are widely recognized as essential for any program to transform agricultural systems and address global social and economic development objectives. This study draws from a literature review relevant to private sector EAS and from a portfolio review of USAID EAS activities in 28 countries to provide guidance on good practice in expanding private sector provision of EAS to small farmers. The review focused on agricultural EAS and on Mission programs with food security objectives, though recognizing that the scope and impacts of EAS go beyond both.

The idea of EAS as solely the purview of a government extension agency is now history. Both public and private organizations are active in EAS, which constitute an integral part of the agricultural innovation system (or agricultural value chain). Major EAS providers are: public agencies, agribusinesses (input suppliers, product buyers, financial agencies), producer organizations, NGOs, civil society interest groups, mass media, and private farm advisors. Private EAS providers include both for-profit and non-profit entities. Providers are linked – closely or loosely – in what can be called the national EAS system. The capacity of these providers and how well they are linked, motivated, and coordinated largely determine how well needs of rural producers are served.

Private EAS has always existed as an important complement to public extension services. Its role has increased in recent years with decline of funding and support for public EAS in some countries, greater public policy emphasis on private market mechanisms, and growth of economies and commercial agriculture. Private EAS providers are seen as more flexible, motivated, cost-conscious, and client-oriented, thus potentially providing more effective services at lower cost and on a sustainable basis. Private sector entities participate in EAS in several ways – as financiers, service providers, and users. They generally finance EAS only when this is profitable and in their direct business interest or when services advance their corporate objectives. This may or may not be in the interest of society at large or of the farmer. They may deliver services with their own funding or that of other private sector entities or government. Nearly all current USAID EAS activities (other than a few activities implemented by USDA) are implemented by private contractors or grantees.

The nature of the service and of the innovation being introduced conditions its suitability for private EAS. Public goods-type innovations are not easily commercialized and therefore are not of much interest to private for-profit EAS providers. Private goods-type innovations, often those embedded in inputs (e.g., hybrid seed, chemicals, fertilizers, feed, etc.) can be commercialized and are well-suited to dissemination by private providers. Government EAS programs and policy can either facilitate or constrain expansion of private EAS. Ideally, public EAS encourages expansion of complementary private EAS, providing technical backstopping and helping to coordinate activities of multiple providers.

Assessments of past experience with private EAS confirm both potential and limitations. Private for-profit EAS is most suited and relevant to larger-scale farms, high-value crops, and cash crop systems, but tends to be limited in scale of coverage and not well-suited to home consumption needs, general livelihood innovations, collective action, and natural resource conservation activities. Program costs typically must be covered by a donor or recouped through increased margins on market transactions. Fee-for-service arrangements do not tend to work well, except in the case of livestock health services or high-value specialty crops. Targeting special interest groups (women, youth, minorities, or resource-poor households) with private for-profit EAS is unlikely, as such groups typically lack purchasing power for market participation.

Private non-profit EAS providers may target such disadvantaged client groups as part of their organizational objectives but this is often not financially sustainable.

The USAID portfolio review found a weak base of strategy and planning for EAS. There is little analysis documented of EAS institutional capacities, methodologies, or client needs. Most EAS activities are technology transfer programs, but the evidence base for innovations being promoted was largely absent, leaving somewhat of a “leap of faith” that services would increase productivity or profitability. Fortunately, most projects report strong positive impacts, which appear to be due largely to increased use of commercial inputs and collective marketing. The basis for impacts is seldom documented. Better documentation of EAS methodologies, innovations, and impacts would greatly improve the learning agenda for EAS investments.

Projects tend to be quite complex with EAS elements just one of multiple activities. Only five projects out of over 130 reviewed were exclusively for EAS. On average EAS accounts for perhaps 5-10 percent of project funding, and thus, must compete with other activities for project management time and attention. The complexity of projects forces project managers into the position of “jack-of-all-trades-master-of-none.” Ambitious impact targets for many projects force trade-offs between numbers of clients reached by EAS and the quality/intensity of service provision per EAS client.

Project implementation relies heavily on traditional approaches. Programs to a surprisingly high degree depend on public EAS agencies for technical support and collaborative delivery of EAS. This holds true even in some countries with very weak public EAS systems. Decentralization reforms shifting responsibility for public EAS to local governments have often been slow and disruptive. Few Mission programs provide significant support to public EAS systems. EAS programs rely almost exclusively on traditional methodologies for training, demonstration plots, and radio programming. Projects report considerable success with these, but lack of more innovation and experimentation is surprising. Projects have tested new ICT applications for EAS, but none have been widely adopted in on-going programs. Most ready for wider application seem to be use of videos in mobile training programs, cellphone and internet links to subject matter specialist support, and use of various ICTs to link EAS actors with other stakeholders.

Subsidies appear widespread in EAS programs, but are often hidden in sub-grants and contracts. These clearly increase initial adoption rates for purchased inputs and facilitate changes in marketing and other practices, but don't necessary lead to permanent adoption of innovations.

Producer organizations, lead farmers, and input suppliers are common to EAS programs across most countries. Assessments frequently note the need for capacity development for producer organizations to engage more effectively in marketing, EAS, and other activities, but few programs provide such support. Lead farmers - known by various terms – are often associated with producer organizations and are key to extending reach of EAS messages. Sustainability of their services is uncertain and their limited training and experience limit ability to advise peers on diverse farming system needs. Lead farmers are most sustainable when they can commercialize services through sale of inputs or fees for services. Input dealers too are very common in projects, providing EAS to complement marketing of their products. While this is hugely important to improve farmer access to inputs, many dealers have limited knowledge of agriculture, and even of their own products, and limit services to production systems and crops using their particular products.

Projects quite consistently disaggregate targets and activity reporting by gender and frequently incorporate provisions to expand participation and benefits by women. How effective these provisions are is unclear.

EAS programs face the continuous challenge of better-off farmers being better able than less-advantaged groups to access and make use of EAS. A few more recent projects target youth, with youth entrepreneurship training seemingly the most substantive approach to-date.

A first set of five recommendations apply across all countries for USAID and others to improve analysis and planning essential to increasing impact and effectiveness of all EAS programs, projects, and activities.

1. **Improve due diligence in project design:** This requires more detailed and explicit attention to EAS approaches, methodologies, and sustainability; better understanding of farming systems, market and livelihood opportunities, client needs and capabilities, and local institutions; and a sound evidence base for potential benefits of innovations being introduced.
2. **Improve targeting of EAS clients:** EAS activities have varied objectives, methodologies, messages, and providers. A best-fit approach requires these to align to serve needs of target populations.
3. **Make full use of relevant ICTs:** Continued development and testing of ICT applications for EAS may improve communications and support for EAS activities. Radio remains important.
4. **Minimize subsidies:** To avoid market distortions and unsustainable costs, EAS programs should be explicit in any subsidies involved, their rationale, and the planned exit strategy.
5. **Ensure an EAS learning agenda:** This should be inherent in all EAS activities to continuously assess results and adjust activities as needed. Assessments are needed to confirm reports of success from EAS projects and to tease out lessons for feedback to design of future projects.

The second set of four recommendations encourage a better fit of investments to country EAS system needs, adapted to the specific country and program context for any activity. Preliminary recommendations for each of the 28 countries reviewed are included in Annex E, with the caveat that these are highly tentative, as more detailed analysis of sector needs, existing capacities, and program objectives is needed for each country. Potential EAS activities or investments are discussed in this paper and relative priorities for each shown in Table 1 for differing country situations with strong or weak public and private EAS capacities. Annex F lists key references for additional information on each of the types of EAS investment and Annex G provides an illustrative flow chart for decisions on EAS investments.

1. **Address immediate needs - Weak public EAS; weak private EAS:** Post-crisis countries and those with limited economic development and commercial agriculture may require direct delivery of private EAS through contractors or grantees. This achieves immediate and quantifiable impacts, but entails high recurrent costs, is time-limited, and often poaches top individuals from the public sector, weakening their capacity. Capacity development is a high priority to the extent that conditions allow. Producer organizational capacity – important in most cases – may be especially important to promote resilience.
2. **Establish the necessary foundation - Weak public EAS; strong private EAS:** This situation is extremely rare if it exists at all. There may be pockets of strong private EAS in countries with weak public EAS systems, such as with plantation crops or large farms with privileged access to services. These are typically not stable situations. Capacity development for the public sector is a priority, to the extent that this is possible.
3. **Diversify pluralism in service provision - Strong public EAS; weak private EAS:** This situation holds the highest priority for targeting support to strengthen private sector EAS. First consideration should go to refocusing public sector EAS on supporting private EAS through support and coordination. Strengthening support services for pre- and in-service training, technical specialist support,

and communications support to improves both public and private EAS. Direct support to private EAS is best done through trade associations and strengthening overall business models, allowing businesses to establish and expand their EAS activities as part of sustainable business models.

4. **Build for self-reliance - Strong public EAS; strong private EAS:** This fortuitous situation provides the basis for a strong and effective national EAS system. Donor activities should seek to further strengthen capacities and encourage coordination within the system, as well as addressing gaps in coverage of under-served client populations.

**Table 1: Likely Priorities for EAS Investments Based on Local EAS Capacity**

Investment	Local EAS Capacity Status			
	Weak public; weak private	Weak public; strong private	Strong public; weak private	Strong public; strong private
1. Develop national EAS policy and strategy	If requested	High	High	If requested
2. Strengthen public EAS	High	High	Medium	Medium
3. Improve EAS support services	High	Uncertain	High	High
4. Emphasize relevant ICT applications	As appropriate	As appropriate	As appropriate	As appropriate
5. Strengthen producer organizations	High	High	High	Medium
6. Strengthen input suppliers	Medium	Low	High	Low
7. Strengthen other private EAS providers	Low - targets of opportunity	Targets of opportunity	Targets of opportunity	Targets of opportunity
8. Establish EAS quality certification systems	Low	Medium	High	High
9. Establish EAS stakeholder consultation platforms	Where possible	Where possible	Where possible	Where possible
10. Subsidize innovations prompted by EAS	As appropriate	Avoid where possible	Avoid where possible	Avoid where possible
11. Fund direct EAS delivery	High	Medium	Low	Low

Priorities in Table 1 are quite subjective. Much depends on the local situation and program objectives. A key trade-off is that between funding direct delivery of services to meet immediate needs versus developing local capacity for scaling up sustainable services. While any of the possible investments may be higher priority in certain circumstances, any may be appropriate to all four situations considered. For example, strengthening producer organizations as advocate and facilitator for EAS clients is important in nearly all cases.

The DLEC project is available to provide USAID Missions with assistance in carrying out EAS diagnostics, program design work, and activity assessments to advance efforts to implement activities as discussed throughout this paper. Assistance might include a deep dive analysis to take the portfolio review and country EAS system assessment a step further and assist the Mission assess options for EAS investments that fit with country conditions and program objectives. Such additional review and field assessment are necessary to confirm findings and develop plans for future investments. While DLEC may provide some services directly, while in other cases DLEC may assist Missions in locating further information or specialist services or in developing terms of reference or standards for EAS activities. For further information contact: John Peters ([jopeters@usaid.gov](mailto:jopeters@usaid.gov) or Kristin Davis [k.davis@cgjar.org](mailto:k.davis@cgjar.org)).

## Introduction

Global food security is largely dependent on productivity of 570 million farms that vary widely by size, production system, product, resource base, level of technology, productivity, and other factors (FAO, 2014). Ninety percent of these are family enterprises. In low- and middle-income countries 95 percent of farms are less than five hectares, though larger farms occupy most of the land area (FAO, 2014). Farms of less than 50 hectares produce an estimated 62-66 percent of global food supply (Ricciardi et al, 2018). Farmers have continuously adapted and innovated over time in response to changing conditions, opportunities, and global demand for food and other agricultural products. Continued farm-level innovation will be essential to meet an expected 70 percent increase in global demand for food between 2005 and 2050 (FAO, 2009). An agricultural transformation to meet global food needs will require integrated research-extension systems, generally based on a public system with private initiatives that develop around it (Mellor 2017).

Multiple actors working synergistically to promote or constrain changes in production and productivity influence agricultural innovation. Knowledge and information services enabling farm management change are a key influence, and it is difficult to envision significant changes in farm productivity without farmer access to reliable agricultural extension and advisory services. A variety of different services delivered by different service providers are needed to meet needs of the diverse types of producers. Examples are: fee-for-service advisory services for larger commercial farmers; public services for food safety and natural resource conservation issues; and livelihood-oriented NGO services for small farmers. Public and private roles must be well-defined and coordinated. The public sector should ensure that private EAS services are technically sound and socially/environmentally responsible. The private sector includes both for-profit firms, for which EAS must have a business case justification, and NGO/civil society organizations for which EAS must serve organizational objectives.

To assess current status of private EAS and their role in agriculture, this study began with desk review of global literature on private sector EAS. Following this, 28 USAID country Missions with programs aligned with the United States Global Food Security Strategy were asked to identify project and other relevant documents relating to agricultural EAS activities. Countries included:

- Bangladesh
- Burkina Faso
- Burma
- Cambodia
- DRC
- Ethiopia
- Ghana
- Guatemala
- Guinea
- Haiti
- Honduras
- Kenya
- Liberia
- Malawi
- Mali
- Mozambique
- Nepal
- Niger
- Nigeria
- Rwanda
- Senegal
- Somalia
- South Sudan
- Tajikistan
- Tanzania
- Uganda
- Zambia
- Zimbabwe

Concurrently, searches were made in the USAID online document repository, the Development Experience Clearinghouse (DEC), to identify documentation from 2010 to the present for those countries that related to “extension” or “advisory services”. Resulting lists of DEC documents were shared with Mission contacts for comment. In total, 21 countries provided recommendations on documents for review or confirmed

appropriateness of those retrieved from the DEC. Documents included final project reports, evaluation reports, annual reports for on-going programs, and research and other special reports. Document reviews focused on EAS activities – approaches and strategies, providers, role of private sector, methodologies, results, and lessons learned. Various limitations apply. Some projects and relevant reports were likely missed as they were not provided by Missions, submitted to the DEC, or including mention of “extension” or “advisory services”. Documentation varied in quality, comprehensiveness, and type. Evaluations and final reports tended to be most comprehensive and analytical. EAS was typically only one element, and often a relatively minor element, of a larger project, and description of EAS approaches and activities were often not very complete. A separate review of budget documents (Congressional Budget Justifications – CBJs) from Fiscal Year (FY) 2010-2019; country strategy documents; and USAID agricultural project design guidance assessed the overall role of EAS in country Mission programs.

This paper covers a broad sweep of past experience and different country developmental environments in two parts. This main report summarizes past support for EAS systems, characteristics of private EAS programs, and findings from recent USAID experience. This introduction is followed by Section II background, which summarizes current thinking on EAS and its role in agricultural development, history of USAID investment in EAS, USAID Feed the Future Program investments in EAS, and current USAID guidance relevant to EAS investments. Section III reviews actors, issues, and global experience with private sector EAS. This is followed by Section IV with findings and observations from the USAID portfolio review of EAS activities. Finally, Section V provides more specific recommendations for future USAID investments. Annex E provides summaries of country EAS systems and private EAS experience in recent USAID projects for each of the 28 countries reviewed.

This overview is based on an extensive literature review and, though aspiring to a concise summary, may be longer than many may want. Readers may be well-advised to skip directly to Section IV and V on findings and recommendations.

Underlying the study is the acute understanding that no “one-size-fits-all” for EAS program design and implementation. Country conditions, institutional development paths, social structures, resource availabilities, agricultural systems, and other factors vary, mandating program and institutional designs tailored to each unique situation in order to be efficient, effective, and sustainable; the so-called “best-fit” approach (Birner et al., 2009).

## **I. Background on Extension and Advisory Services**

Extension has evolved over time with changes in operating environments and accrued lessons learned. This paper uses the terms “extension”, “advisory services<sup>1</sup>” and “extension and advisory services (EAS)” interchangeably to refer to mainly rural agricultural knowledge and information services. Globally, EAS development has gone through four phases:

*Foundation:* In the 1950s and 1960s, newly-independent and other developing countries launched EAS programs, typically as public agencies. Famine prevention, poverty reduction, and economic independence

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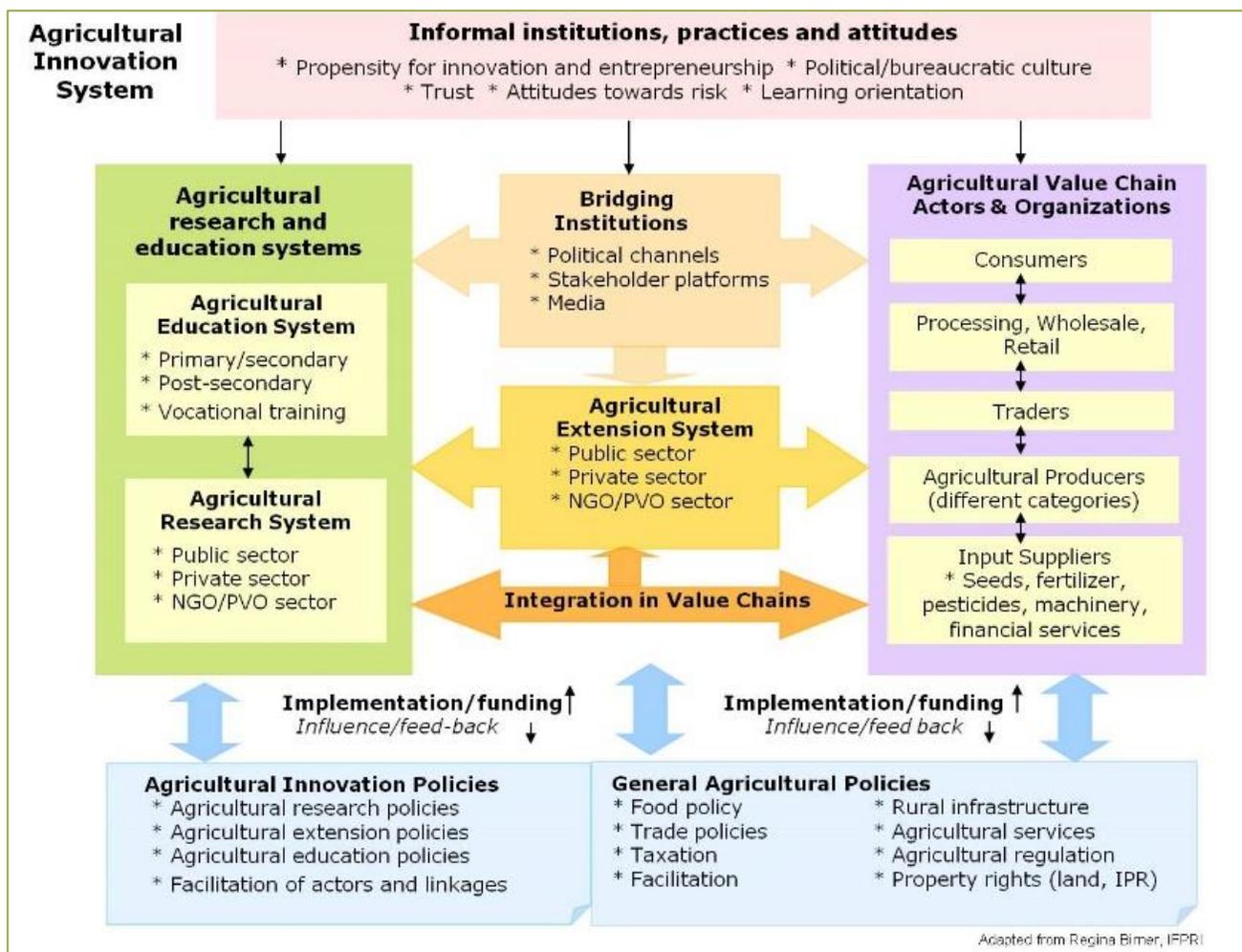
<sup>1</sup> “Advisory services” is now commonly used as synonymous with extension, but also denotes one approach to extension services characterized by services responsive to client demands across a broad range of topics, with the extension provider essentially a consultant to the client.

were primary motivations. Transfer of technology (often technologies from industrialized countries) was the primary objective and replication of institutional structures from those countries was common.

*Expansion:* The 1970s and 1980s saw strengthening of public EAS systems, with investments encouraged by successes of the Green Revolution. Importantly, locally-adapted technologies began to come available from research programs. Transfer of technology remained the main strategy, institutionally enabled in agricultural knowledge and information systems (AKIS) that linked agricultural research, extension, and education programs with farmers. Later in this period, farmer participation and farming systems research and extension systems became important.

*Privatization:* The 1990s and early 2000s saw a major shift away from public sector implementation mechanisms in agriculture, including away from EAS provision. Past accomplishments had reduced concern with famine, while globalization of markets opened opportunities for exports and high value products. Agribusiness investments and agribusiness support from donors increased, as government budgets for agriculture declined, especially for EAS. Donor funding for EAS that continued shifted to project funding for NGOs and agribusiness activities. New initiatives sought to redefine extension roles and strategies (Neuchatel, 1999; World Bank, 2002).

*Post-2008 Pluralistic:* The 2008 world food price crisis drew attention back to concerns with feeding future generations, and agricultural development again became a priority. What this means for EAS and how this current era will be characterized remains uncertain. Private sector mechanisms are still emphasized, but in the context of an agricultural innovation system (Figure 1). Information and communication technologies (ICTs) are an increasingly important tool, with a wide range of applications for cellphones, computers, and artificial intelligence (World Bank, 2017), though these are yet to find their place integrated within overall EAS systems and must overcome a past neglect of communications support to EAS programs. Perhaps, a reasonable hope is that this phase of extension may become known as “balanced system development.”



**Figure 1: Agricultural Innovation System**

Source: Spielman and Birner, 2008, adapted from Arnold and Bell, 2001

The private sector has always had a role in EAS, but through the 1980s, public sector predominated. A 1989 FAO survey of worldwide extension capacity found that globally only about three percent of extension agents are employed by private sector producer organizations, commodity groups, or other nongovernmental organizations (FAO, 1990). This was most likely a significantly under-counting of private EAS, but reflects the then common understanding of EAS as a public service.

### A. Extension and Advisory Services as a System

Extension or EAS is now widely recognized as a pluralistic system with both public and private elements. Christoplos (2010: 2) provides an apt definition of “extension” 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 agrifood systems and rural development.” Extension services are highly varied. Four major service strategies are followed: i) transfer of technology in which EAS providers promote pre-determined innovations expected to benefit producers or the public good; ii) advisory services in which EAS providers respond to farmer client requests for knowledge and innovations unique their farming system

needs; iii) facilitation in which EAS providers work with producers to identify problems and options and to seek linkages to other sources of support to address them; and iv) human capacity development in which EAS providers strengthen local human and institutional capacity to address problems and exploit opportunities. Overlapping the four service strategies are varied EAS approaches or methodologies (training and visit - T&V, farmer field schools, demonstrations, ICT-based, etc.) that have varied strengths and applications. Extension has been plagued by an excess of enthusiasm for specific approaches. These may have been quite effective in certain circumstances, and may not have been as distinctive as once thought, but were often touted at “the answer” to EAS needs very generally. This has hampered EAS system development efforts, which often attempted to impose a standard model where it was ill-suited.

Recognizing the pluralistic nature of EAS systems leads to two operationally important insights. First, with EAS properly seen as a system (i.e., a national extension and advisory services system), separate elements of the systems typically are necessary to provide different services to different client groups with different needs and capabilities, with the different service providers working separately or collaboratively. Secondly, there is no one “best” EAS model. Each EAS program must be designed as a “best-fit” for service provision, depending on the needs and capabilities of clients, provider capacities, and incentives for service provision (Birner, et al, 2009).

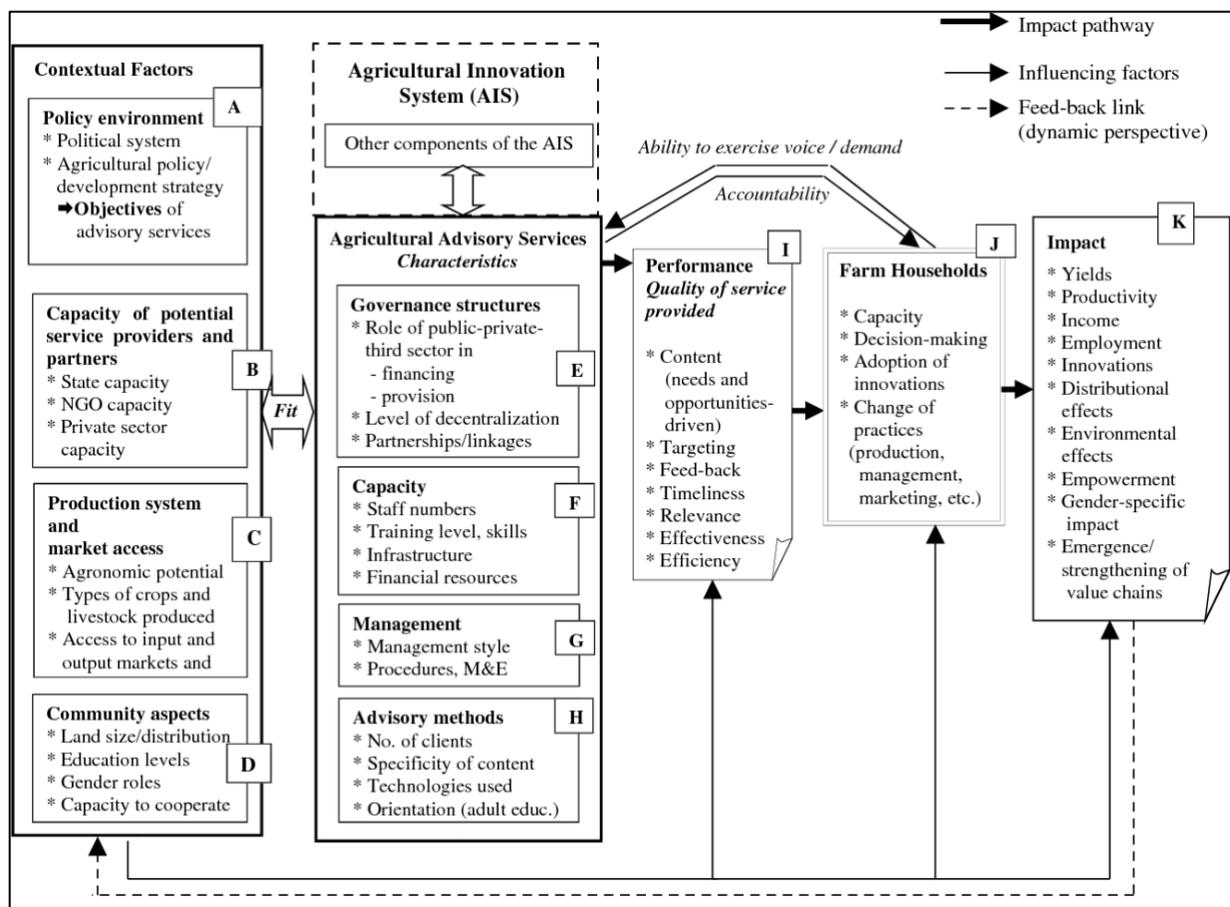


Figure 2: Best-fit Framework for Analysis of EAS Systems

Source: Birner et al., 2009

For analysis and design of EAS systems, the DLEC project uses an adapted version of the fairly complex framework shown in Figure 2. In practice, for USAID Missions and implementing partners planning EAS activities, the following factors are critical:

- 1) Nature of target clients – needs and opportunities, level of organization, resource availability, capacity for participation and financing
- 2) Overall policy environment – social and economic operating environment, openness to private service provision, market systems, frameworks for contracts and agreements
- 3) Capacity of public and private service providers – size, resource availability, links to sources of innovation and other key support, incentives
- 4) Nature of innovations expected – public or private good, long- or short-term benefit, collective or individual action
- 5) Incentive for service provision – willingness to pay, cost and profitability, public interest, social acceptability

An excellent summary of experience with public extension service development that dominated donor EAS investments through the 1980s is found in a World Bank evaluation of achievements and problems in national agricultural research and extension systems (Purcell and Anderson, 1997). From 1977 to 1992, the Bank committed more than \$3.0 billion to extension projects, largely T&V programs<sup>2</sup>. The evaluation found that 70 percent of extension projects had achieved “satisfactory” ratings (compared to 63 percent for all agricultural projects) and that these investments had “undoubtedly” increased productivity and welfare for smallholders. The Bank evaluation found common weaknesses in: inadequate provision for recurrent costs to ensure sustainability; weak linkages to research or other sources of technology; weak arrangements for farmer participation and input to programs; and weak qualifications of staff for public extension services. Projects targeted at specific crops, regions, technologies, or linked with credit programs were more likely to be effective, though by nature more limited in overall sector impact.

Evaluation recommendations emphasized: need for more in-depth analysis of production systems and constraints, resource and technology availability, market demand for agricultural products, and institutional capacities and resources as a base for extension program design; improving staff qualifications and experience for Bank program managers and the public extension service implementers; and greater attention to balance of public and private sector roles in extension services. The evaluation also concluded that program designs required more attention to priorities in targeting services and greater provision for client participation in service governance and delivery. It provided little discussion of private sector participation issues. There is little reason to suppose that recommendations from this evaluation would not continue to be relevant today for design and implementation of EAS programs – both public and private.

Increased competition for dwindling natural resources and pressures due to global climate change place new demands on EAS. Many responses to these challenges – for adaptation, mitigation, resilience – require collective action, production system management changes, and a longer-term benefit perspective. Resource-

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<sup>2</sup> The T&V extension system is basically a traditional public extension model with relatively rigid defined schedules and organizational structures to ensure sound management. It was widely used and reported commendable impacts, but later much derided for being overly ‘top-down’ and rigid and having excessive recurrent costs.

poor households and vulnerable populations are often most threatened by these challenges, but also less willing and able to access and pay for the required EAS to meet the challenges (OECD, 2006). These factors plus changing market demand, new production technologies, ICT potential, and increased capacity of producers and sector institutions enhance the challenges for future EAS system development.

## **B. USAID and Private Extension – A Long and Complicated History**

Although there had been previous US international development activities, an intensive and coordinated assistance program began with the International Cooperation Administration (ICA) in 1949 (ICA, 1959). Technical cooperation in agriculture was a major element of its strategy with a focus on food security and reducing malnutrition. Objectives focused on: improving government policy support and management of services to agricultural producers, establishing agricultural education institutions, and providing extension services to farm families. The Agency had substantial extension expertise on staff and in its leadership. By 1959, programs in 54 countries were staffed with 1,200 US agriculturalists, many of whom were extensionists. Extension agencies were established in 32 countries, with over 38,000 extension agents, including 1,274 women. As one aspect of the program, 19,774 4-H-like youth clubs were established. Though the ICA claimed substantial successes in extension, there were later criticisms of an over-emphasis on extension, attempted replication of US-style institutions in situations where they were inappropriate, and moving ahead without a base of proven technologies for recipient country agricultural systems (Rice, 1971).

While most ICA programs supported public extension services, there was also a major private extension model used in 12 countries of Latin America. “Servicios” were organized in those countries as bilateral quasi-independent operational agencies to implement agricultural development activities<sup>3</sup>. Extension services were a major emphasis of the Servicios, which had 64 full-time US extension specialists in the 12 countries in 1957. Servicios – similar in some ways to today’s USAID grants and contracts – allowed flexibility and freedom from many bureaucratic controls and regulations of the US and host governments. The model also allowed for coordination of extension with various credit, infrastructure, input supply, and other programs. Enthusiasm for extension and the Servicio model was short-lived. Extension was probably ahead of research and appropriate technologies were not available for local production systems; US technologies were often not appropriate. Expectations for rapid impacts were not realized. Bureaucratic competition may also have been a factor with some reaction against the strong extension commitment of early leadership within USAID. Host country governments too may have wanted to capture Servicio resources for government programs. Critics challenged the independent nature of the Servicios, citing the program as “the perfect way not to build capacity within the local government” (Rice, 1971). Withdrawal of support led to the number of US extension specialists in the Servicios dropping to 10 by 1965.

As US support declined, participating Servicio countries generally integrated the orphaned Servicios into public extension agencies under ministries of agriculture, adopting the public extension strategy common to other non-Servicio countries of the region. USAID supported this transition, though support was variable by country and somewhat ad hoc. Rice (1971) concluded that the program had generally failed to achieve productivity impacts or institutional development objectives. The now public extension services faced the

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<sup>3</sup> Servicios were initiated during World War II with the first being Paraguay in 1942. Later in the 1950s the Servicios were transferred to the ICA and the Point Four Program.

same constraint of a limited stock of available new technologies, along with increased problems of inadequate funding, bureaucracy, and difficult coordination with other agricultural activities.

The Rice evaluation report is credited with provoking a major shift away from strong support for extension within USAID. Rice concluded that extension was important but needed to be more closely integrated with other research, agricultural services, and regionally focused activities. Later evaluators questioned whether withdrawal of support to extension may have been premature, sidetracking institutional development of a strong base for technology development and transfer systems (Britin, 1986). Findings may also have been different had the report focused on Asia, where governments proved much more willing to support large extension services to meet food security needs.

USAID did not entirely walk away from extension services. Successes with the Green Revolution in Asia and greater availability of new technologies from research for developing countries encouraged continuing support. A focus on poverty reduction and the understanding that knowledge and information support was essential to facilitate rural innovation and natural resource conservation maintained substantial funding for extension. Thus, Mission extension funding continued in the 1970s, often as components of research and geographically focused activities. In fact, USAID funding for EAS peaked between 1977 and 1990.

Integrated rural development projects<sup>4</sup> came in vogue by the 1970s and by the mid-1980s, USAID had funded over 100 of them (Kumar, 1987). Although the original expectations of their planners and designers did not materialize, USAID-funded integrated rural development projects did have positive impacts. They contributed to increased agricultural production and productivity in a majority of the cases. Impacts were a result of multiple investments, including extension services that benefitted from availability of complementary services (inputs, credit, infrastructure, etc.). Component EAS activities continued to suffer from some of the management and sustainability problems of the past. Sustainability was problematic – primarily because host countries lacked political will and economic resources to maintain services and inputs at the levels provided during project life. In the end, they had few lasting impacts on agricultural development or on strengthening of local extension systems (Britin, 1986). Concurrent with the integrated rural development projects was a shift in agricultural research (and - to a lesser extent - extension) to a farming systems approach (Collinson, 2000). This approach engendered much stronger farmer involvement in the technology development and innovation process. The better understanding of farming systems made it more likely that research recommendations were actually appropriate to farmers' production systems. However, the extension aspect of this approach was never developed to a significant degree.

A renewed commitment to and a change in direction for EAS were embodied in a 1985 Worldwide Guidance Cable to USAID Missions from the Administrator on "USAID Support for Agricultural Extension." The guidance recognized the importance of extension services to achieving development objectives and the disappointing performance of traditional approaches. It directed Mission attention to extension and to three approaches to overcome problems of the past: a) encouraging private sector extension; b) expanded use of mass media communications; and c) selective support to increasing effectiveness of public sector extension (Cummings, 1989). Following these guidelines, the 1990s and early 2000s saw a major shift in USAID agricultural funding to agribusiness and value chain-based programs, with

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<sup>4</sup> Integrated rural development projects (IRDPs) focused multi-sectoral activities in limited geographic regions, typically including components funding infrastructure, health, education, and agricultural services.

a shift during this period from emphasis on agribusiness to value chains. Projects varied widely, but emphasized private agribusiness development, with management increasingly the responsibility of Private Sector Officers. A review of agribusiness and agricultural value chain projects (WAI, 2011) identified 240 projects worth over \$4.9 billion that were active between 1998 and 2011. Extension was not identified as a major element of funding in these projects, though 94 percent included “farmer training.” Other major activities financed were: enterprise training (92 percent), input supply (54 percent), grants (51 percent), policy support (41 percent), and finance (40 percent). The report was unable to assess overall impact across projects, largely because of inconsistent and incomplete reporting and use of indicators.

Over many decades, USAID has recognized the need for EAS to achieve developmental objectives and has struggled with decisions on allocation of investments between public and private services.

### **C. Feed the Future Support to Extension and Advisory Services**

The 2008 food security crisis spurred establishment of the US Feed the Future (FTF) Initiative, which has provided an estimated \$9.7 billion funding for global programs from FY2010 through FY2019. The Program is largely, though not entirely, agriculture-focused. Document reviews and country program observations suggest that FTF agricultural programs have continued to emphasize a transfer-of-technology approach to extension. Projects have often focused on specific value chains and lists of identified technologies to promote. While this may be fully appropriate, it requires a good understanding of local production systems, technologies, and markets. Project implementation in some cases seems to retreat from transfer of specific technologies, but to promote and monitor technology innovation on the basis of farmer use of a large number of practices lumped together as GAP (good agricultural practice). Again, this may be fully acceptable and would appear to have been effective, based on reported impacts on productivity and incomes. Still, there is a tension between the transfer of technology (scaling) strategy and implementation that involves a wide range of practices. At a minimum, the latter depends on a more sophisticated and farm-specific EAS, more responsive to and beneficial to clients. In practice, some projects are not able to identify the basis for expected and realized increases in productivity, though it may be that increased input use, especially fertilizers, is the major factor.

A synthesis of project evaluations from the initial phase of the Feed the Future Program found that projects had successfully facilitated technology adoption (KDAD, 2016). Details are vague as to the nature of technologies adopted and the mechanisms (extension, credit, marketing, etc.) that had been most responsible for adoption, though the evaluation synthesis states that “Agricultural productivity programs were frequently combined with training through agriculture extension activities to increase uptake, and successful projects also saw an increase in productivity. In Zimbabwe, Guatemala, Kenya, Nepal, Timor-Leste, Afghanistan, and Armenia, training focused on increasing uptake of new technology or farming methodology to improve agriculture productivity, thereby increasing income and improving household resilience. Training contributed to successful project outcomes in Guatemala, Kenya, Nepal, Zimbabwe, and Timor-Leste... In contrast, the projects in Armenia and Afghanistan did not see increases in adoption of new technologies, even after extensive training. There were several possible reasons for the lack of uptake, but evaluators cited the extension program’s insufficient training to farmers on the new technology.” How these programs EAS were organized and implemented was not discussed.

The 2016 Feed the Future Global Performance Evaluation (Briggs et al, 2016) assessed experience with the breath-takingly broad range of countries, issues, interests, strategies, and objectives under the FTF program. With this breadth of coverage, details on specific issues are necessarily limited and general, as is the case for evaluation of EAS activities. “Extension” is mentioned over 50 times and the evaluation credits FTF with having implemented a variety of human and institutional capacity development activities for EAS systems. With little further elaboration, the evaluation indicates that this capacity supports: policy analysis, formulation, and execution; consultation, convening, and organizational systems to support these functions; and local government structures to be more consultative and provide basic services. Most training seems to be delivered in the style of traditional extension in a top-down manner with content determined by the USAID implementing partner, though, a few programs are using other demand-driven extension modes.

FTF program strategies tend to focus on specific value chains and geographic areas (zones-of-influence), strategies which limit system-level impacts. Value chain projects emphasize strengthening market linkages and commercialization of agricultural production with 63 percent of programs involving at least one production-focused activity at the farmer or farmer organization level. Push-pull strategies combine product market linkages (pull) with productivity increasing (push) activities. Production-focused work was primarily through various forms of agricultural extension, including traditionally structured agricultural extension services provision; demand-driven; and farmer-led extension disseminated through peers, such as lead farmers. Most projects utilized traditional agricultural extension methods, although, due to national extension service capacity limitations, delivery was often accomplished through a mixture of program-specific, private sector, or government extension agents. Despite the general value chain approach, some programs were found to adopt a longer-term farming system approach to enhance overall farm productivity. FTF programs generally reach better-off producers and typically reached 10-15 percent of the target beneficiary population.

Public sector engagement in programs varied. Of the nine USAID Mission programs reviewed by the evaluation of the Modernizing Extension and Advisory Services (MEAS) Project, one (Ethiopia) supported EAS activities fully integrated with government programs; one (Ghana) was aligned with government policy; two had doubtful sustainability absent stronger public EAS; two noted need to strengthen public services for a more effective system; one was silent as to relations with public EAS; and two reported very good relationships with public agencies (though this was disrupted in one case (Kenya) by recent decentralization reforms) (Uphaus et al., 2015). Some country programs emphasized co-implementation with government and USAID project implementers collaborating, mostly by engaging government extension workers in agricultural and nutrition extension activities, and this was seen to build local ownership (Briggs et al, 2016). Other programs placed little emphasis on government engagement, and some host country officials viewed activities as another “project” of USAID, rather than as assistance to support the government in achieving its development priorities. USAID staff and programs noted the importance of engaging the private sector to provide services, although constraints noted were: little regulation, no quality control, dominance of a few firms, and a high-risk aversion in public agencies. The evaluation concluded that there is an over-emphasis on training and individual development within FTF programs relative to broader institutional and systems development needs.

The KDAD synthesis was extremely lean on lessons and conclusions relating to funded agricultural EAS activities. Extension components were included in 101 projects, but only seven country evaluation

summaries (out of 190) even mentioned extension and advisory services, with two only noting that public services were weak, one noting a non-extension functions being carried out by the extension services, and two noting positive contributions by extension. Afghanistan was the most substantive, finding that project-supported Farm Services Centers had proven viable, but that their EAS provision was not expected to be sustained. A 2014 Honduras evaluation found private extension services to have increased income from horticulture, but not to have affected total family income, nor led to more farmers producing horticultural crops. The synthesis also noted that farmer-to-farmer technology transfer had been effective in several cases as a means to reach marginalized farmers.

Nutrition-related extension services received relatively greater attention in the evaluation synthesis. In this, experience was quite mixed, and the evaluation questioned whether nutrition education extension could be effectively combined with agricultural EAS. All nutrition education activities appeared to have been implemented through private organization, donor-managed contracts and grants.

A review of Feed the Future human and institutional capacity development (HICD) work (Dichter et al, 2016) was critical of the overall program in this regard, noting a number of deficiencies. It found neglect in working with government, which was seen as a less than fruitful partner (too slow, too intransigent) and an underlying belief among those at mission level (who need to produce results), that one has to “work around” government to get results. Pressures for results limit the time for staff to deepen: understanding of HICD (including difference between the “H” and the “I”); understanding of how much of best practice today goes beyond training; and how HICD should fit more integrally into the larger FTF program. There is limited time at the mission level to undertake deep analysis of local institutional contexts and other external constraints and general mission underestimation of extant local capacity.

Global FTF support to EAS has been strong with: a) the Rural Advisory Services Program that included the support for the MEAS Project, the Global Forum for Rural Advisory Services (GFRAS), and the World-Wide Extension Study; b) a number of ICT-based extension initiatives; c) the Integrating Gender and Nutrition within Agricultural Extension Services Project (INGENEAS); and d) the Developing Local Extension Capacity (DLEC) Project. The MEAS project was the major initial initiative, but began too late to influence the first generation of FTF programs and Mission participation in early MEAS learning events was limited (Uphaus et al., 2015). DLEC continues this support with activities more closely linked to Mission programs. Country Mission experience provides a rich base of experience and lessons to guide future investments in EAS. The Feed the Future Program – since re-designated as the Global Food Security Strategy (GFSS) – has since adopted a stronger commitment to local capacity development, a move that will take time to mature. Central to this – and consistent with evaluation findings – is the need for much stronger institutional analyses of capacity and options for system development for program investments. This holds very true for EAS systems development activities.

#### **D. Current Strategies for Extension and Advisory Services**

USAID has issued a series of 18 guidance notes for implementation of the US Government Global Food Security Strategy (see Annex A). Ten of the guidance notes make no mention of EAS. Seven of the others simply note that EAS is an important tool to achieve program objectives, mostly with reference to nutrition, gender-equity, youth, and resilience objectives. The one note with substantive guidance for EAS

investments recommends ICT-enabled extension as a means of extending the reach of EAS to include more farmers.

The notes provide almost no guidance on how EAS programs may be designed and implemented to be more efficient, effective, and sustainable.

## II. Private Sector Extension and Advisory Services

This section summarizes the rationale for private sector involvement in EAS, the types of private sector actors in EAS, and their potential roles. It reviews the factors influencing private sector participation in EAS systems and summarizes global experience with private sector EAS.

### A. Why Private Sector EAS?

Growth of private sector EAS is in part intentional and in part spontaneous. A number of factors condition this growth, but their importance varies by country and the extent of influence of each is difficult to assess. The private sector has always been involved with EAS. Private producer organizations have facilitated EAS. Input suppliers have provided improved production inputs recommended by EAS programs. Buyers reach out to farmers to source needed agricultural products. Civil society groups have promoted their agendas of natural resource conservation, poverty reduction, or social equity. As economies and populations grew, so did these groups and their rural agendas.

Government EAS programs have shrunk, leaving more space for private activities. The Washington Consensus<sup>5</sup> of the 1980s led to pressures on many governments to reduce budgets, cutting or in some cases eliminating agricultural EAS programs. Often, government strategies were explicit in the expectation that private EAS would replace the public services eliminated, though they were generally silent as to how this would happen. An even greater factor may have been the elimination of parastatals involved in input supply, agricultural product markets, rural finance, and others. This too provided opportunity for the private sector to expand activities closely aligned with or reliant on EAS.

The private sector was expected to be more efficient and effective in EAS delivery. Public services were widely derided for being bureaucratic and inefficient. Private sector entities were expected to be more flexible, cost-conscious, motivated, and responsive to clients and opportunities. Competition and markets would drive private EAS actors toward better and cheaper EAS. While these expectations are probably valid, market imperfections have been a far greater constraint on private sector EAS development than had been anticipated.

Inherently, nearly all EAS has private sector elements. It is a rare farm that is not a private enterprise and a rare farmer who has no linkage to markets. But, as agriculture becomes more commercial, market linkages become more critical to production decisions, market demand evolves, and farmers need more specialized EAS help to move from informal markets to more formal market systems with rigorous quality and other standards (Ferris et al., 2014). Thus, EAS must help farmers develop as businesses – analyzing market opportunities, developing business and marketing plans, evaluating enterprise profitability, negotiating agreements with value chain actors, and ensuring production that meets quality and timing demands of

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<sup>5</sup> [https://en.wikipedia.org/wiki/Washington\\_Consensus](https://en.wikipedia.org/wiki/Washington_Consensus)

markets (Ferris et al., 2014). Most of these have been implicit in work of extensionists in the past, but with more commercial and competitive markets, EAS must also address these issues more explicitly in work with farmers. EAS can also assist farmers improve competitiveness through economies of scale – forming marketing groups, cooperatives, arranging fee-based service delivery, group input sourcing, and value chain agreements. In all of these, private sector EAS can provide services and may be better prepared to do so because of better understanding of markets.

Sustainability of service provision remains an underlying problem and is expected to be greater with private EAS. Donor projects are by nature short term. Government programs too are subject to changing budgets, priorities, and demands. Developing a network of multiple actors providing EAS with their own funding sources and agendas provides diversity in EAS options available for farmers to meet their information and innovation needs. This provides stability along with potential to better align different services with different client needs.

Governments chronically underinvest in agricultural EAS, even though they can provide a high return on investment. Although many governments are unable or unwilling to provide adequate EAS to the agricultural sector, the global development agenda – food security, climate change, resilience, environmental conservation, stability, and poverty reduction – requires such services to meet social and economic objectives. The private sector is one option for filling this EAS gap.

## **B. Different Actors and Their Roles in EAS Systems**

Private participation in EAS systems can fit within a range of models, depending mainly on type of private entity involved and its participation in service delivery or financing. Recognizing that the entity financing services need not be the one delivering services is important. Table 2 reflects 20 options for EAS arrangements – one is purely public sector; seven are public-private; and twelve are purely private. Suitability varies by situation. Some are very common and others relatively rare. Programs can also involve quite positive collaboration among multiple types of institutions and funding arrangements.

**Table 2: Potential Public and Private Roles in Financing and Delivery of EAS**

Service Delivery	Financing for EAS				
	Public Sector Agencies	Farmers	NGOs/ Civil Society	Farmer-Based Organizations (FBO)	Private For-Profit Firms & Individuals
<b>Public Sector Agencies</b>	Traditional EAS provided free to farmers	Fee-for-service public EAS programs Check-off systems	NGOs contracts public agency for EAS to farmers	FBOs contract public agencies for EAS to farmers	Firms contract public agencies for EAS to target farmers
<b>NGOs/ Civil Society</b>	Government contracts NGOs for EAS to farmers	Fee-for-service NGO EAS programs	Traditional NGO EAS free to farmers	FBOs contract NGOs for EAS to farmers	Firms contract NGOs for EAS to farmers
<b>Farmer-Based Organizations (FBOs)</b>	Government contracts FBOs for EAS to farmers	Fee-for-service FBO EAS programs	NGOs contracts FBOs for EAS to members or others	FBOs hire extension agents to provide EAS to members	Firms contract FBOs for EAS to farmers
<b>Private For-Profit Firms &amp; Individuals</b>	Government contracts firms for EAS to farmers	Fee-for-service private firm EAS programs	NGOs contract firms for EAS to farmers	FBOs contracts firms for EAS to members	Firms provide EAS as part of business strategy

Source: Adapted from Rivera (1996) and Anderson and Feder (2004: 44).

A national EAS system would be expected to have a mix of these various financing and service delivery arrangements. A major research program initiative in Bangladesh attempted to determine the most efficient uptake pathways for pro-poor rice technology. It worked through extensive partnerships with local NGOs, producer organizations, and agribusinesses and tested multiple EAS methodologies (Van Mele et al, 2005). Transaction costs were high, partly because of the research nature of the program. But, one conclusion was that transaction costs are acceptable. EAS is about working with multiple actors, and ultimately, a network of EAS partners provide complementary services and reinforce the definition and delivery of services appropriate to farmer needs.

Past experience, the nature of EAS services, and the nature and interests of different EAS system participants condition how and where different institutions are likely to fit within the EAS system.

### ***Public Sector Agencies***

Governments have and will continue to play major roles in EAS systems for two reasons. They have the mandate and resources to operate at the national level and they have the responsibility to address public interest/public good issues for which market failures limit private investment. Relatively large public extension services exist in many countries. These may be unitary services for the rural sector or may be separate agencies with differing mandates, such as crop, livestock, fisheries, natural resource conservation, specific crop or product based, or targeting specific populations. Even systems with relatively high staffing frequently have a low ratio of extension agents to clients. Few are regarded as models of efficiency, but often their services are under-appreciated for their range of assistance to government program implementation, local NGOs and agribusinesses, and rural clients. These systems represent public financing and delivery of EAS.

An alternative arrangement is that of public financing and private delivery of services. This model – essentially how USAID implements development programs – requires continued public funding, but seeks to improve efficiency and flexibility in program implementation. EAS privatization is a special case in which EAS responsibilities are shifted entirely from the public to the private sector. This contrasts with private EAS programs that emerge independently alongside public services. Public policy influences private EAS provision in both cases, but privatization – which became common in the 1990s – involves a more complex transition in relationships and must be seen as a long-term process.

Private EAS providers can be an element of strategies to decentralize extension services (Swanson and Samy, 2004). Decentralizing extension services seeks to improve efficiency and effectiveness by: streamlining bureaucracies, increasing client participation, responding better to local needs, and reducing national budget outlays. Privatization can be a part of this, but many private EAS providers do not have capacity to work at a national level, though they can work effectively to address needs at a more local level. Decentralized EAS systems often still depend on some level of central direction, coordination, and policy support.

Private financing of public sector service delivery is less common, but quite possible. Product levies (or “check-offs”) can be assessed to support EAS and other development or marketing activities for the product or commodity sector (e.g., horticulture exports, coffee, wheat, dairy, etc.). This is essentially private financing. Financing or co-financing might also come directly from producer organizations or agribusinesses dominant in the product value chain or from fee-for-service arrangements.

While financing and implementation of EAS programs is the most obvious role of government, establishment of a national EAS policy or strategy is perhaps its most important role. National policies condition the incentives and constraints to private EAS provision. Policy should seek to encourage private sector participation, especially for provision of private good services, limiting public financing to public good services for which private actors lack incentives. Public EAS policy should seek to provide relevant services to all classes of clients; address public interest issues, such as food safety, resource conservation, food security, and social stability; and promote coordination and efficiency across the EAS system.

### *Non-Profit NGOs and Civil Society*

A diverse set of local and international NGO and civil society actors may play roles in EAS systems. See Box A. Producer organizations are a special case of this treated separately below. Others include:

- **Local NGOs:** Most local NGOs are small and serve mainly as service providers, dependent on funding from local or international donors for EAS programs. They typically target special interests, such as poverty alleviation, resource conservation, or other social agendas, but in practice their programs depend on whatever funding becomes available. In many cases, the line blurs between NGOs and local consulting firms. Many are ‘used’ by development programs to broaden outreach. Their EAS programs are as sustainable as their donor projects. Some large local NGOs have diverse funding sources and sustainable EAS programs.

- International NGOs (INGOs): INGOs include many USAID implementing partners. They typically have capacity to operate at a larger scale and may have specialized expertise. They often serve as ‘wholesalers’ contracting local NGOs and local consulting firms for EAS under donor projects. Again, their programs are as sustainable as their project funding. Some with independent funding are not entirely dependent on donors and may have longer-term EAS programs.
- Agribusiness associations: These include trade associations, such as input suppliers, seed trade groups, horticultural exporters, coffee exporters, food processors, and others, straddling the private sector/NGO categories. They are NGOs, but with for-profit commercial interest membership. They may either finance or deliver EAS. As associations, they may be able to operate at a larger scale than an individual firm and they may be able to provide farm EAS more generically with less likelihood of the service relationship placing clients under undue influence by an individual firm.
- Training institutions: Universities play an important role in EAS in the US through the Cooperative Extension System. In most other countries, EAS is not a mandate for the university, but these and other agricultural education and training (AET) institutions have critical capacity that figures into the national EAS system. AET institutions play a critical role in training extension staff. They often have outreach activities that engage students and staff in rural development and research. While these activities are rarely at scale, they may be important for piloting innovations in service delivery methodology and for content of EAS. AET institutions may provide EAS under contract. Many AET institutions are government financed and so blur the line between NGO and public sector.

#### Box A: Burma Expanding Farm Advisory Services for Smallholder Farmers Project

Strength: Extensive research provided an NGO with excellent understanding of client farming systems and EAS needs. In-service training center and staff mentoring prepared farm advisors able to problem solve, effectively engage with farmer-customers, and translate technical knowledge into actionable advice and support.

Caveat: Lack of strategy for impact beyond immediate service delivery.

#### *For-Profit Businesses*

A range of for-profit entities participate in EAS systems. They may provide services directly or fund other organizations to provide services beneficial to their businesses. Generally, the objective for EAS is to increase profit for the business entity. In more limited circumstances, the business may provide EAS unrelated to their business operations, but beneficial to their reputation and longer-term interests, e.g., corporate social responsibility programs. For-profit business EAS receives a lot of attention, as it is seen as financially sustainable, based on integration within a profitable business model. It is also seen as more efficient and effective, as it enjoys the flexibility of freedom from many governmental regulations and includes business profits as a strong incentive and impact measure. Major categories of for-profit EAS actors are:

- Consulting and advisory services: Such entities, including individuals, provide technical services, training, and other support to producers, either on a fee-for-service basis or under contract arrangements with funding from producers, the public sector, or others.
- Input supplies: Often the most obvious and widespread private EAS provider is the input supplier, agro-vet, multi-national seed or chemical company, equipment dealer, or other service provider (soil

tests, pesticide applicator, or other). For such businesses, EAS is a form of and adjunct to marketing of their products. EAS may go further than marketing. For an input dealer with a long-term perspective, assisting clients with overall enterprise profitability and sustainability and building strong loyalty is good for future business. Profits from sales must cover costs of EAS.

- Product buyers: Buyers are interested in ensuring a consistent supply of farm product of acceptable quality. This may make it in their interests to provide EAS to producers to build loyalty and ensure needed quality and quantity of product. This is most relevant to higher-value and specialty products, but can apply in many situations. Costs of EAS must be covered by margins on product purchases from farmers. Examples are: cotton companies in West Africa, horticultural exporters in Kenya and Central America, tobacco companies in southern Africa, and coffee exporters.

### *Producer Organizations*

Local producer groups – typically informal groups – are common as contact points for EAS programs, often operating with a ‘lead farmer’ or ‘contact farmer’ as group coordinator. The T&V system, farmer field schools (FFS), and farmer-to-farmer EAS services are example of this. Such groups broaden the reach and impact of EAS and increase program efficiencies. EAS also has a role to play in promoting collective action and producer group formation, as was the case in the US where the Extension Service played a major role in establishment of agricultural cooperatives and rural electrification cooperatives.

The broader range of producer organizations can play varied roles in EAS systems. See Box B. Strong producer organizations, based on commercial production systems with well-defined, narrow marketing channels, can be very effective in financing and delivering EAS. Prime examples are coffee in Colombia and East Timor and cotton in West Africa. At the other end of the spectrum, local farmer groups of varying levels of formality serve well as local contact points for EAS provision, often being ‘used’ by providers to reach clients, but ideally effectively representing client interests, mobilizing local resources to support EAS, and facilitating dissemination of information. Contract production (e.g., outgrower) programs with producer organizations are another way local producers can be linked to EAS, though this can put them under the control of the entity contracting with them. Another potentially important role for producer organizations is in governance of EAS provision, participating on EAS coordination platforms, program governing boards, or other arrangements to represent different types of farmers in planning, implementing, and evaluating EAS programs.

#### **Box B: Senegal Cereals Value Chain Project**

Strength: Producer organizations (referred to as Consolidation Networks for their role in coordinating input procurement and marketing) are linked in an elegant system of relationships that provides for EAS, facilitates input supply, tracks production and marketing, and monitors loan repayment. A farmer-owned data system provides farmers, government and other stakeholders with up-to-date information on cereal production.

Caveat: Sustainability is yet to be confirmed. Applicability to other areas is uncertain.

The 2016 Feed the Future Global Performance Evaluation concluded that market-oriented interventions focused on the poor should place more emphasis on building farmer and farmer groups’ business acumen. Producer organizations have been neglected in agricultural development programs, in part because of the negative reputation of ‘cooperatives’ based on past experience with pseudo-cooperatives in socialist

countries and developing countries where cooperatives operated under tight control of governments. Even in positive environments, producer groups suffer a high rate of failure. This may not exceed the failure rates for small businesses or for cooperatives in the US, however, and cooperatives may have significant impacts on terms of trade for producers, even when they are not long-lived.

Thus, in EAS systems, producer groups may finance EAS services, be providers of services for members, be linking mechanisms for broader impact of EAS at the local level, or may be a client for EAS services to facilitate producer organizations growth and efficiency. With changing, more competitive agricultural systems and with increased natural resource management requirements and climate change threats, farmer collective action will be more necessary and will require attention from EAS programs.

### *Farmers*

Farmer roles in EAS are also varied. They are the major client, but should not be viewed, as in the past, as a passive beneficiary (i.e., “the grateful waiting for help from the great”), but rather as active participants – financing EAS when possible, collaborating on service delivery, and expressing demand and evaluating services through governance or feedback mechanisms. EAS rural client and beneficiary households or enterprises may be grouped as: large-scale commercial, traditional surplus producers, subsistence, landless, or chronically poor (OECD, 2006). Each group’s needs and potential roles are likely to be different, depending also on the nature of innovation and EAS arrangements.

## **C. Factors Conditioning Potential for Private Sector Extension and Advisory Services**

Several key factors govern potential for development of private sector EAS. The major issues are: the country economic and security conditions, the nature of innovation being introduced, and the government policies, capacity, and practices.

### *Country Conditions*

Country conditions, especially the security situation and state of economic development, are a major factor governing development of private sector EAS program. These must be a primary consideration in design of USAID investments. Conflict, post-conflict, and post-crisis country situations are not uncommon. Eighteen of the 28 countries in this review fall into this category and may be termed “fragile states”. Their institutions are generally destroyed, rebuilding, or in flux, and public services are weak or nonexistent. Unfavorable conditions constraining self-financed private EAS do not preclude private provision of publicly-funded EAS, though it must however be recognized that there is little likelihood that such programs will continue beyond the period of project funding. They are not attractive to long-term investments that would encourage for-profit entities to invest in EAS. Donor funding for private EAS providers may be essential, but consideration of overall program objectives is important. Local government provision of or visible involvement with service delivery may be necessary to build local confidence in social and economic stability and government credibility with the people. Issues of EAS in such situations are discussed in McNamara and Moore (2017) and Robertson and Olson (2012).

Even with stability, the level of country social and economic development conditions the potential for private sector EAS. With limited economic activity and commercial agricultural production, incentives for private EAS activities are also limited. Such situations may attract non-profit NGO funding for EAS for

humanitarian objectives, but grounds for sustainability are not encouraging. Generally, the higher the level of economic activity in country, the greater the potential for private EAS.

**Nature of Agricultural Innovation**

Innovations and services differ in how they are accessed and implemented and how they benefit providers and clients. Benefits are largely economic, but may also be social. They have inherent differences in how easily they spread, how widely they may be shared, and how they may be commercialized. The general principle inherent in the distinction between public and private goods, as described below, is fairly simple, but the range of possible EAS services and innovations complicates distinctions.

The nature of an innovation is fundamental to its potential suitability for financing by the public or private sector. Excludability (ability to limit access to a good) and rivalry (use of a good by one diminishes its availability to others) largely determine the incentives for provision of knowledge and information services. Benefits for private good-type innovations (use of services reduces availability to others and access can be limited) can be captured by individual farmers, and thus can be readily commercialized; benefits from public good-type innovations (use of services does not reduce availability to others and access cannot be limited) cannot be fully captured and are difficult to commercialize. Financing and dissemination of public goods-type innovations generally depend on government of other stakeholders with relevant interests (Figure 3).

		Excludability	
		Low	High
Rivalry	Low	<b>Public goods</b> - General farm management information (recommended planting dates, conservation practices, storage & post-harvest handling, etc.) - Market information - Environmental awareness	<b>Toll goods</b> - Farm-specific management advice - Producer organization and collective action services - Cellphone-/internet-based subscription information
	High	<b>Common-pool goods</b> - New varieties of self-pollinated seeds or vegetatively-propagated crops - Water, forest, and other natural resource management practice advice	<b>Private goods</b> - New equipment, fertilizers, agricultural chemicals, - New varieties of hybrid seed or biotechnology products - Contract grower advice

**Figure 3: Characteristics of Knowledge and Information Services for Farmers**

Source: Adapted from Umali and Schwartz, 1994

Commercializing common-pool goods and toll goods is possible, but with limitations or special conditions. Categories often blur, but a few examples of implications are illustrative:

- ✓ Innovations embedded in purchased inputs (e.g., seed, fertilizer, equipment, etc.) provide an incentive for private input firm EAS. This goes with, but beyond, the simple marketing of inputs.

- ✓ Information enabling producers to meet market demand for specific products has considerable value to both producers and purchasers in those markets, thus offering opportunities for profitable private sector provision.
- ✓ Innovations in management systems (e.g., cropping patterns, integrated pest management, self-saved seed, etc.) are not easily commercialized and must often be supported by the public sector or other interested stakeholder.
- ✓ Some innovations (e.g., food safety, downstream resource conservation, biodiversity, etc.) may not provide direct benefits to or even be in the producer's immediate interest. The lack of direct benefits to for-profit entities means that these generally require public financing.

The bottom line is that analysis of incentives inherent to EAS service provision are critical to sustainability and efficient provision of services. The private sector is unlikely to provide services that do not offer a reasonable return benefit. Public sector EAS programs on the other hand should be based on clear understanding of the public interests and benefits to be derived. Options for private sector participation are quite varied, but need to reflect understanding of the incentives and constraints.

### *Government Policies, Capacity and Attitudes*

Government policies, regulations, programs, and attitudes also condition potential for private EAS providers. Policies are important and many countries now have policies that espouse pluralism and expansion of private EAS. Policies however can be enacted but never implemented so the policy is only the first step. Public EAS agencies and supporting services, such as training institutions and research programs, must first have established capacity before these can benefit private EAS provider programs. For some time, many public EAS officials viewed EAS as an exclusive prerogative of the government. They tolerated but did not encourage private providers. This situation is improving, but there will probably always remain a level of competition, suspicion or jealousy between the sectors. There is some reason for these views on both sides. Not all public EAS agencies are models of efficiency, capability, and probity, nor are all private providers working for the farmer-client's welfare. Some regulation of private EAS is appropriate.

In addition to specifics of policy on private EAS providers, the overall environment for private sector development and investment affects the likelihood of investments that include EAS. USAID support for free market development and investment is important. Competition is also important, as monopoly supply of EAS by a private firm risks problems of bias and quality. Activities should support government policies and programs that promote pluralistic EAS systems and private providers and should interact to influence attitudes and regulations that support these.

### **D. Past Experience with Private Sector Extension and Advisory Services**

An overview of ten case studies of private extension services by Babu and Zhou (2016) is quite optimistic in its findings as to the potential for private extension service provision. Private extension allowed flexibility to overcome varied resource constraints to EAS delivery, offered opportunity for provision of new knowledge to farmers, and built on shared value by increasing profits to both farmers and the service provider. The private EAS was found to facilitate marketing and improve product quality, respond to farmer demands, enable farmers to organize to address mutual problems, and achieve indirect cost recovery through related business transactions. But, they noted that private extension programs were limited in coverage, generally

focusing on specific products and excluded service to farmers not under some form of contract agreement with the service providers.

Rabatsky and Krause (2017) noted three types of agribusinesses that provide EAS services – input suppliers, service providers (financial and technical), and offtakers (produce/product buyers). For each, EAS provision may support overall profitability. Strengths of such activities include: potential to develop farmer client loyalty and long-term business relationships; improve marketing efficiency; and mobilize specialized in-house expertise on crops/products that can be shared with producers. Weaknesses are: perceptions or reality of conflict of interest; high costs of EAS service provision; lack of expertise in EAS delivery; and lack of economies of scale for small agribusiness firms. Costs must generally be recovered indirectly through increased margins on the private providers' sales or purchases from farmers. They conclude that fee-for-service is rarely a viable approach to cost recovery for farmer EAS services and that joint agreements with donor-funded programs to support EAS activities are a poor option, as these are by nature short-term and not sustainable.

Gomez and colleagues (2016) report on a global survey of private sector extension providers in developing countries. Findings are somewhat obscured by the mix of different organizations responding and by the nature of self-selection in submissions of responses from only about 25 percent of the 400 organizations contacted. Survey respondents were: private businesses (52 percent), NGOs (31 percent), farm-based organizations (7 percent), social organizations (5 percent), and public agencies (2 percent). Findings revealed a high degree of heterogeneity regarding: objectives, strategies, and tactics for extension activities. Programs operated on a substantial scale with an average coverage of 33,000 farmers reached per program. For-profit businesses were found to be more innovative in extension approaches and in use of ICTs than public programs. Program objectives emphasized increasing productivity, though a multiplicity of objectives was surprisingly prevalent with 70 percent of respondents reporting nine to eleven different objectives for their EAS programs. Unsurprisingly, private extension programs tended not to focus on social needs and community development issues. Oddly, none of the objectives reported were to increase profits for the private sector provider.

Survey respondents indicated that key elements for successful private extension programs were: a long-term, highly-participatory approach tailored to the local context; use of traditional extension service methodologies; strong professional development of extension staff; and consistent monitoring and evaluation of extension activities. Private for-profit firm extension was found most effective for improving farm product quality and ensuring reliable market supply, while NGO services were most effective for impacting on marginalized groups.

Private EAS providers have a comparative advantage in providing high-quality, market-oriented commercial services, but public EAS provision is stronger for primary production systems, effective rural outreach, and information and regulations and standards (Heemskerk et al, 2008). As stated by Christoplos (2010:17), "Today, services for relatively well-off commercial farmers are increasingly dominated by private advisory services, but these investments are rarely serving the rural poor. In many countries, privatization (often undertaken by the mere withdrawal of funding for public sector agencies) resulted in the majority of farmers losing access altogether to impartial and independent advice. This experience showed that creation of a level playing field for private extension providers is very important, but that this needs to be part of a wider reform process which promotes pluralism while recognizing the need for public financial support."

As EAS evolves in the context of the broader agricultural innovation system, roles and services change in ways as described in the “Agricultural Innovation Systems – An Investment Sourcebook” (World Bank, 2012). Along increasing institutional pluralism, EAS providers must approach clients on the basis of farming-as-a-business, promoting farm enterprise development, commercialization, and marketing skills. Services that emphasize market-responsiveness and linkages, along with greater participation in producer groups, has been referred to as “extension plus”. EAS agents must adopt facilitation approaches, as innovation brokers linking producers to sources of needed assistance.

Veldhuizen and others (2018) note that many agribusinesses opt not to create their own capacity for EAS or minimize this. They prefer to partner with government EAS agencies, where possible, contract for EAS delivery, use traditional EAS methodologies, and use lead farmer representatives at the community level. This reduces their costs and potentially improves cost-efficiency, but can significantly limit the range and technical depth of services offered.

A 2015 survey of 19 development organizations – all themselves private sector EAS providers – explored institutional views and experience with EAS programs (Sahlaney et al., 2015). Most of these were non-profit, but one a cooperative, one a social enterprise, and five consulting firms. Only two organizations surveyed found engaging with local private sector to be a challenge. Nine identified private sector EAS collaboration as a clear success – collaboration with input suppliers being the most common success – though five felt a need to better engage with the private sector. Nine were committed to collaboration with public extension and five cited stronger government relations and collaboration as an area for improvement. Six noted a limited capacity in the public sector; four in the private sector; and five in their own field staff.

An influential review of issues with private sector EAS found significant limitations to private sector EAS provision (Feder et al, 2011). Private sector EAS activities have: misused public funding; lacked accountability to farmers; provide inequitable service coverage; failed to address all farmer information needs; and been of poor quality. Not all of these shortcomings need apply to private EAS programs, but some are inherent in them. Private EAS is more suited to larger commercial farming operations, higher-value crops, and private good-type of technology dissemination.

## **E. Investing in Private Extension and Advisory Services**

A range of options exists for supporting an expanded role for private sector EAS. Some devilishly difficult issues beset development efforts in this area, as with other areas of development. New approaches and innovative programs strategies are needed and deserve attention, perhaps especially as to applications of ICTs and roles for youth and producer organizations.

### ***Dilemmas Inherent in Investment in Extension and Advisory Services***

Extension and advisory services are an obvious need to achieve most program objectives relating to rural productivity, welfare, environmental conservation, and resilience. Economic analyses indicate potential for high returns (Alston et al, 2000), though these analyses note the complications due to: survey measurement problems; definitions of all benefits and costs; lag times for adoption and impact due to innovations; attribution; year-to-year climate and market variability; and lack of valid control groups. EAS investments typically must influence behavior (adoption of innovations) by large numbers of widely dispersed rural producers. This leads to several dilemmas.

*High recurrent costs:* Traditionally, EAS was closely linked with agricultural research as part of a technology transfer approach to improving productivity. Research allowed relatively modest investments to have potential impact across large populations and areas, though there is typically a long lag period before research results lead to direct impact on production. EAS on the other hand can result in relatively quick impacts, but requires high recurrent costs for national level service coverage. Bilateral donors generally balk at funding the large EAS costs and have opted to focus on research or fund EAS activities on a pilot basis or for limited geographic areas. Neither of these approaches has been particularly effective in developing local EAS capacity and programs. Host governments too are hard pressed to fund high recurrent costs for EAS. They are more willing to do so in countries with serious food security concerns, but generally governments find more political support for investments in infrastructure and direct subsidies than for EAS.

*Intensity of services:* The cost issue bleeds into the issue of “intensity” of services, with intensity referring to the level-of-effort, or cost, or quality, or type of EAS. Different intensities may well be appropriate for different types EAS messages or objectives, but generally more intensive coverage should prove more effective. The range may be from a low-cost radio message that reaches the whole country once, to a comprehensive program of season-long training sessions, field demonstrations with free inputs, farm visits, and regular farm visits. The intensity of coverage can also be diluted by using lower-cost (i.e., less qualified) EAS agents, often without provision for transportation or any program operating costs. Unfortunately, this has been a common occurrence. Cost per client is one means of estimating intensity of coverage, but programs can play games with numbers to try to show wide coverage at low costs.

*Mission creep:* Public EAS programs have a history of mission creep that is both a benefit and a curse. Often, in the past, EAS agents were the only government presence in rural areas, and, consequently, were tapped to take on additional tasks, such as: administering subsidies and input distribution, collecting loans, gathering statistics, organizing for elections, nutrition messaging, administering surveys, disaster response, and others. Many of these may be in the public interest, but they do detract from the prime objective of agricultural productivity improvements. During the T&V era, the World Bank discouraged assigning EAS agents any task other than agricultural EAS. At one point, there was an enthusiasm for using EAS agents to promote family planning. This never seemed effective, as the knowledge, skills, and messaging required was so far from those typical of agricultural EAS agents. Nutrition education is currently stressed for some agricultural EAS programs, though efficacy of such an approach is also debated because of the different skills required. While nutrition has traditionally been a part of agricultural EAS programs, this was generally with specialized home economic agents. EAS must be flexible and able to address varied needs of different client groups and programs, but there are limits to tasks EAS programs can take on, especially when EAS staff that are poorly-trained and supported.

*Capacity development:* EAS investments may include both direct delivery of services or capacity development for EAS. Where there is little or no capacity (e.g., post-crisis countries), direct service delivery is typically indicated. Where countries are doing well and moving away from reliance on developmental assistance (i.e., “graduation”), local capacity development is the priority. Of course, capacity development is necessary throughout to bring countries to a position of not relying on foreign aid. Most USAID projects include a bit of both services and capacity development, though early FTF projects explicitly focused in direct service delivery.

### *Contracting (Outsourced) Extension and Advisory Services*

Contracted EAS (public financing for private service delivery) came into vogue in the 1990s and 2000s, as a reaction to frustration with public extension service performance, government budget constraints, and a global shift toward private sector mechanisms. Rivera and Zijp (2002) provide an overview of early experience and issues with the many initiatives to outsource EAS. Industrial countries led in this shift (e.g., The Netherlands, New Zealand, United Kingdom), but many Latin American countries embraced the approach and were followed by experiments in African (Uganda's NAADS, as a prime example). Benefits expected from this model included: increased efficiency and effectiveness, reduced public costs, greater accountability to clients, greater flexibility, more diversity in service providers, and greater client participation in governance and implementation. The models were based on: a) government contracts or grants with EAS providers (for-profit firms and individuals, NGOs, universities, or producer groups) to provide services in a specific area, or b) government grants to producer groups (or vouchers for individual producers) to procure services from such private providers.

Contracted EAS programs did not resolve all problems with public systems and faced significant problems with: transaction costs, delays, and conflicts of interest in procurement processes; lack of capacity in service providers; weak arrangements for support (training, technical specialist advice, communications packaging, and M&E) for diverse small providers; and managing expectations and relationships during the transition between systems. Continuity was an issue from contract to contract. Whenever public funds support private EAS activities operating in parallel with public extension services, there is potential for conflict, controversy, and inefficiencies, as was evident in Uganda's experiment with the NAADS extension model (Rwamigisa et al, 2017).

Industrial countries largely continued their contracted extension programs, adapting as necessary to improve performance and facilitate transitions from public service delivery, but the Latin American programs withered with the completion of donor support projects that helped with their introduction. The contracted EAS programs introduced considerable diversity and innovation into the EAS systems and expanded client participation in governance of EAS activities (World Bank, 2006; Klerkx et al, 2016). Chile has had the longest running program, which continues to evolve and adapt (Berdegue and Marchant, 2002). Bureaucratic processes and local capacity issues in most countries are such that contracted EAS are a poor option.

USAID-funded contracts and grants for development projects including EAS are also contracted EAS programs. These may or may not have participation of the host government. These have obvious issues with sustainability, but are essential in some country situations.

### *Introducing Voucher-based EAS Systems*

A variant of the contracted EAS strategy is that of providing farmers with vouchers to purchase EAS. This has a strong theoretical justification in that it promotes development of a market for EAS. This approach should empower the farmer-client in determining service needs, selecting appropriate providers with the specialized expertise required, and evaluating performance. It should also encourage providers to develop appropriate capacity, respond to client needs, and seek efficiencies and effectiveness in service delivery. Vouchers can fully fund or co-finance services and can be provided to individual producers or producer groups. Over time, the value of vouchers can be reduced to reduce the subsidy element of the program and

ideally the vouchers can be ended when the market is well-established. In practice, farmers are often unwilling or unable to fund full cost of EAS, making full phase out of vouchers problematic or inadvisable.

Despite the theoretical benefits of vouchers for market-based procurement of EAS, implementation frequently runs into problems. Feder et al (2011) conclude that experience with vouchers for developing markets for EAS services has been “dismal”. EAS voucher programs are best suited to highly commercial agricultural systems in which: producers have the sophistication and networks of contacts to identify and contact qualified EAS providers; multiple providers are available with appropriate expertise to establish a competitive EAS market; vouchers can be efficiently distributed to target clients; and there are sufficient voucher recipients and other clients to retain interest of providers. Monitoring and evaluation of such impact of such programs can be challenging, even though in theory the farmer-client is the ultimate evaluator of EAS provision.

In most developing country situations, the above conditions are not met. Frequently, there are not enough EAS providers to make for a competitive market; farmers are not well-informed, nor well-able, to identify and contract specialized services; probity issues arise with sale of vouchers with no delivery of services; targeting producers for receipt of vouchers is imperfect; EAS providers are not pre-screened and certified for participation; and budgets are inadequate or uncertain leading to lack of continuity. With regard to the latter issue, continuity is important to such programs as it is likely to take several years for EAS providers to develop and refine services on offer and for producers to understand how the market works and begin winnowing out the good service providers from the poor.

USAID Missions should be extremely cautious in funding EAS voucher programs. Most countries probably lack provider capacity necessary for successful voucher programs and the typical five-year USAID project is probably too short to establish and mature voucher programs that are likely to be sustainable.

### *Public-Private Partnerships (PPPs)*

PPPs are commonly defined as “collaborations between public- and private-sector entities in which partners jointly plan and execute activities with a view to accomplishing mutually agreed-upon objectives while sharing the costs, risks, and benefits incurred in the process” (Spielman et al., 2007). This would rightly exclude situations where private sector entities simply receive grants or contracts to carry out an activity or where they are recipients of assistance. The FTF Global Performance Evaluation found that 6,493 public-private partnerships were established between FY2012 and FY2015, assisting 300,000 food security private enterprises. This is certainly a dramatic statistic, though it is not clear as to the nature of the partnerships, nor the extent to which they involved EAS. It is probably safe to view this number with some skepticism, but it does confirm the enthusiasm for USAID projects to engage with the private sector.

#### **Box C: Zambia Production, Finance, and Improved Technology Plus (PROFIT+) Project**

Strength: The project trained community agents on conservation farming, business management, marketing, and entrepreneurship to serve as local input retailers. The project partnered with all the country’s major inputs suppliers, who worked through community agents. Some firms recruited and trained their own additional agents.

Caveat: Despite training, community agents are likely limited as to the range of services they can provide.

Public-private partnerships for EAS are principally to access resources to improve current EAS coverage and efficiency and/or to enhance long-term sustainability of innovation benefits and/or availability of EAS. See Box C. Partnerships can provide EAS support services or align EAS provision with other activities, for example, irrigation systems development, new market opportunities, etc. Private EAS providers themselves can also be legitimate clients for EAS, or conversely can be facilitators, supporting access to technologies and innovation, training, communications, or M&E for the services provider.

Public-private partnerships have a reputation for being very labor-intensive to establish. They should not be undertaken lightly, but they do have potential to leverage additional resources for and add sustainability to EAS programs. They should be seen as strategic initiatives that go beyond simply providing time-limited EAS in a defined area and that can have a broader and sustainable reach with EAS. The EAS portfolio review found few true public-private partnerships for EAS, though project funding of private EAS activities was common. The one partnership that stood out was in Zambia, where Cargill established a network of community agents for marketing inputs and providing related EAS.

### **III. EAS Portfolio Review Findings and Conclusions**

This review of USAID Mission agricultural activities relating to EAS covered diverse country situations and program objectives over roughly the past ten years. Few countries had standalone EAS projects. Bangladesh and Malawi had projects specifically focused on strengthening EAS systems; Burma had a rice production system-focused Expanding Farm Advisory Services for Smallholder Farmers Project; and, though little information on them is available, Haiti and Honduras had USDA activities to support public EAS systems. Six others had ICT EAS Challenge Fund projects and a few had activities of research institutions (Innovation Labs or CGIAR centers) focused largely on EAS. In the vast majority of cases, EAS was one of many activities or components of a project and supportive of one of many project objectives. The following findings and observations were apparent across this range of activities.

#### **A. Extension and Advisory Services in USAID Country Program Strategies**

Country strategy and budget documents should provide a clear indication of the country conditions; program priorities, theory of change, and implementation plans; and risks and uncertainties for programs. Thus, programs to influence production decisions by large numbers of farmers would be expected to consider the role of EAS and reflect this in planning documents. This study reviewed budget documents and program strategies to assess strategies for EAS and the role of private sector EAS<sup>6</sup>. Budget documents were Congressional Budget Justifications (CBJs) and strategies, mainly FTF Multi-Year Strategies and GFSS Plans, but with a few others, such as Country Development Cooperation Strategies, for countries without the food security specific programs.

Review of ten years of CBJs from FY2010 to FY2019 for 28 countries does not suggest a high priority for EAS activities. (See Annex B.) Over the ten-year period, 12 of the 28 countries' CBJs never once made mention of EAS issues or programs. Only five mentioned it in three or more years (with four years the

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<sup>6</sup> The review was largely based on word searches for “extension” and “advisory services”. Inherent limitations for this were: space and bureaucratic requirements for documents that limited coverage of individual topics; the reality that program implementation may (often justifiably) vary from plans; and the possibility that some coverage or implications for EAS was missed by not thoroughly reviewing the documents as a whole.

maximum for any country). A few documents contained substantive discussion of EAS investments, but these were rare.

Country strategy documents might be expected to provide more details on country-level conditions, constraints, and planned activities and approaches. Only 14 (38 percent) of the 37 strategy documents reviewed for 27 countries provided modest or substantial assessment of country EAS systems<sup>7</sup>. See Annex C. Of the strategies: 15 (41 percent) indicated a modest or substantial commitment to work with private EAS; 10 (27 percent) to work with public EAS; and eight (22 percent) to work with producer organizations in EAS. Surprising only seven strategies (14 percent) indicated any plans for work with ICTs as part of EAS programs. Absence of coverage in strategy documents does not necessarily mean absence in the country program, but does certainly suggest a low priority for the program.

Overall, based on the budget and strategy documents, country Mission commitment and interest in agricultural EAS appears weak. In addition, very few country reports or studies were found that focused on agricultural EAS (other than those of centrally-funded EAS support projects). The DEC has a few extension materials that were prepared for projects, but little on *agricultural* extension strategies or approaches. As an example, a DEC search for documents with “extension” in the title from FY10 to the present for Ethiopia returned nine results – eight for public health extension and one for nutrition extension.

## **B. Private Sector Extension and Advisory Services in Country Projects**

The review covered about 133 projects related to EAS across 28 countries. Information was not consistently available across the countries so the following summary is only an estimate and numbers are perhaps minimum estimations. Projects were complex with an average of 3.6 components or objectives per project. Some had ten or more major activities. EAS was the sole focus of only five projects, of which two were USDA activities for which little information was available. For most projects EAS was one of multiple activities and on average likely accounted for 5-10 percent of project funding.

Based on background documents reviewed, public EAS agency capacity was considered strong in 21 percent of the 28 countries, moderate in 21 percent, weak in 21 percent, and very weak in 46 percent. See Annex D. USAID projects included substantial input supplier participation in EAS in 75 percent of the programs, local NGOs in 46 percent, producer organizations in 93 percent, and public agencies in 68 percent. Of the countries, 54 percent had decentralized public EAS systems or were in the process of decentralizing them. Lead or contact farmers were a feature of 61 percent of country programs. Seven programs (25 percent) included ICT innovations in the EAS activities.

### ***Project EAS Design Considerations***

Activity design establishes the base for investment success or failure and the nature and extent of its impact. Issues may lie in USAID activity designs, implementing partners’ proposals, or activity work plans. There appear to be some significant design issues for EAS and effective private sector participation in EAS systems.

*Weak Analytical Base for Designs:* There is a poor analytical or strategic base for most project EAS activities. Mission strategy documents do not emphasize or outline EAS approaches or strategies. Planning for most

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<sup>7</sup> The extent of coverage of EAS issues is based on subjective assessment of the documents reviewed.

project EAS activities appears to be somewhat ad hoc, done by contractors and grantees, either in their applications or during implementation planning. Individual projects may use fairly disparate approaches. Different projects in a portfolio may or may not follow similar approaches. Sequential projects may build on work done previously or may appear to start from scratch in implementing EAS. Activities may be effective, and, if reporting is to be believed, are generally highly so. However, sustainability is a chronic issue in project evaluations. Contractors and grantees bring varied levels of expertise to their project EAS work, but Missions and host organizations need to ensure that activities are relevant and appropriate. EAS program effectiveness, efficiencies, and sustainability might be much enhanced if activities were designed within and supportive of an overall national EAS strategy. Box D provides an example of detailed EAS approach planning.

*Weak Evidence Base for Extension and Advisory Service Content Messages:*

Content is critical to impactful EAS, but USAID projects rarely demonstrated (or documented) an adequate understanding and objective for EAS messaging. True, EAS approaches do vary and may not have a standard set of recommendations (i.e., for EAS approaches that emphasize human or institutional capacity development, advisory service responsiveness to individual farmer issues, or collaborative problem-solving facilitation), but most USAID projects espouse a technology-transfer approach, which by definition must have clearly-defined innovation recommendations. This holds especially true in the common project strategy of focusing on a specific crop(s) or value chain(s).

**Box D: Tajikistan Farmer Advisory Services in Tajikistan (FAST) Project**

Strength: Developed a highly participatory “community inclusiveness” type EAS model grounded in community mobilization to organize groups for self-help activities and economies of scale in markets and accessing services.

Caveat: Model was not implemented beyond pilot testing and required some cost-reduction refinements.

Ideally, an EAS program should have a solid evidence base for recommended innovations – either research trials results or field survey data. Rarely, was this evident from projects reviewed. In some cases, farmers explicitly rejected EAS recommended innovations as being inappropriate, impractical, and/or unprofitable. Research organization EAS activities appeared to have the best clarity in understanding innovations being recommended and their potential benefits and disadvantages. They also had the best understanding of the farming systems and recommendation domains for which they were appropriate. Many projects promoted vague “good agricultural practices” with little sense of which practices carry the greatest potential for yield and income impacts or which entail the most risk or disadvantages<sup>8</sup>. Commendably, some projects monitor changes in gross margins, as a means of confirming benefits from innovation. This should typically be at the farm or household level to ensure benefits are not accruing to one crop or enterprise at the expense of another.

Happily, most projects seem to have had useful EAS recommendations, even when these were not made explicit. An overwhelming number of these involved two innovations – greater use of purchased production inputs (improved seed, fertilizer, chemicals, machinery) or collective marketing of produce. Unfortunately,

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<sup>8</sup> Promotion of vague sets of “good agricultural practices” runs into other issues. Often some practices are already being used by farmers, so that “adoption rate” surveys may be questionable. Some practices may be trivial or have minimal impacts; others may be highly significant. Better understanding of what innovations are being recommended, which are being adopted, and what the individual impacts are is highly useful in assessing effectiveness and efficiency of EAS.

there was little analysis of these in terms of increase in volume of inputs used or product sold or of prices and marketing margins involved pre- and post- project. Again, such detail would be helpful: to understand where benefits are coming from; to establish an evidence base for programs; and to contribute to the USAID learning agenda.

*Projects are Complex:* Most projects are quite complex, with some mega-projects the number of activities and objectives is mind-boggling. Why is this? In some cases, a lot of activities (EAS, financial services, input supply, producer organizations, irrigation, mechanization, market development, etc.) are needed to enable change at the farm level. Value chain projects may rightly or wrongly attempt to engage with all levels and participants in a value chain. And, Missions may combine disparate activities in one project for management convenience.

With the complexity of many projects, there is no way an implementing partner can provide adequate technical direction to planning and implementation of the full range of activities. Thus, EAS activities are seldom designed and managed by EAS specialists. Furthermore, EAS is generally not a high-profile, “sexy” element of the program and hence is even more prone to neglect.

*Chasing Numbers, Diluting Messaging:* Two separate observations of the portfolio review may be linked. Projects often have very ambitious beneficiary targets (and often achieve or exceed these) and projects can easily dilute the intensity of EAS for clients. Targets are important to ensure reasonable economic efficiency in investments and implementing partners are highly focused on achieving those targets. It is common for projects to reach their mid-term and then, recognizing shortfalls in targets, adopt significant changes in strategy or activities to reach those targets. This is sound management, as long as it does not compromise real developmental impact just to reach targets. One option for projects is to reduce the intensity of services and interaction with EAS clients. Few projects seemed to blatantly dilute messaging to meet targets by using only radio broadcasts or signboards to reach millions or with short one-off training programs (a process during the T&V EAS era known as “train-and-vanish”). Still, EAS programs must reach as many clients as is practical to be efficient, cost-effective, and equitable, but they must do this without compromising effectiveness.

Two approaches are widely used to expand the reach of EAS – producer organizations and contact farmers. (See below for more on both.) Both strategies can be very sound, and perhaps essential, to strong EAS programs. They can also inflate the numbers of farmers reached and dilute quality and intensity of messaging to clients. Quite often these are combined in training-of-trainers cascade training, wherein project specialists train EAS agents (often with limited qualifications) who then train lead farmers who are in turn expected to train other farmers. This greatly helps meet targets<sup>9</sup>. Again, such training-of-trainers can be a sound strategy, but the quality of subsequent levels of training may be questionable. Several projects did find leader farmer training of other farmers and especially any training beyond that to be unsound or non-existent.

Projects also focus on reaching targets for farmer adoption of innovations. This gets complicated and mired in the many issues for M&E for EAS. The definition for “adoption” should probably include partial adoption, but probably not trial-and-then-rejection. These issues take considerable effort to sort out. A

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<sup>9</sup> One project reported training 3,000 farmers after having provided two hours of training to 100 lead farmers and then assuming each lead farmer had trained 30 others.

more worrisome problem is that of projects adding subsidies for inputs, credit, sale of production, or other incentives to ensure adoption of innovation, which may not be sustained post-project. There is probably good reason to view with skepticism many impact numbers reported by projects.

### *Project EAS Implementation Considerations*

Project implementation arrangements were surprising in the degree of conformity with traditional practice.

*Strong Reliance on Public Sector Extension and Advisory Services:* Projects across almost all countries exhibited a surprising degree of reliance on public sector EAS programs. In some cases, most notably perhaps Ethiopia, projects focused on work with agribusinesses, marketing, and farmer organizations, leaving EAS to be provided by the government. Nearly all projects employed field EAS agents in one form or another, but quite commonly, project EAS agents cooperated with government EAS agents to present training courses, set up field demonstration sites, or implement other higher profile activities. Government EAS participation was sometimes necessary to gain access to communities and validate legitimacy of activities. In other cases, it seemed obvious that the public EAS was essential to provide technically sound content to activities. In almost all countries, some projects considered the public EAS to be weak or lacking in some manner. Surprisingly, even in countries with weak public EAS, some projects still relied heavily on those public systems for EAS delivery. Few projects invested significantly in strengthening the public services. Commonly, projects that had no or poor relationships with public EAS suffered. There were also several countries in which the public EAS system was essentially defunct, and, in these too, projects faced difficulties with providing EAS.

*Extension Methods are Quite Traditional:* Extension methodologies are highly “traditional”, though poorly defined. Most projects use training, field demonstrations, lead contact farmers, field days, and producer groups (often farmer field schools). Unfortunately, few projects go beyond this in documenting their methodologies. There is a wide range of options for providing training, for organizing demonstrations and field days, for involving groups in EAS, or for structuring work of a contact lead farmer. For all of these, the local context matters – the innovation being promoted, the social structure, the farming systems, the institutional base, and the degree of commercialization. Better planning and documentation of EAS methodologies and reporting on their effectiveness and efficiency would be highly useful to a learning agenda. Farmer field schools are used very widely, but again details on how these operate is lacking and the term likely covers a multitude of approaches.

Training and demonstrations are used universally. Demonstrations are widely acclaimed as effective. Training may be more open to question, as development practitioners often report of community “training fatigue” due to number and type of donor training programs. Such training fatigue was not noted in the EAS portfolio review, which conversely found many reports of farmers highly valuing training received. Farmers generally do not appreciate highly formal or academic training, so more information as to what training approaches are most effective should be helpful to project design and implementation.

Across the countries and projects reviewed, there was a sprinkling of other methodologies used. These included: agricultural fairs, printed materials, mass media campaigns, call centers, text messaging advice, interactive voice response systems, and community school interventions. Private sector EAS providers – both for-profit and non-profit – used essentially the same methodologies. EAS providers tended to be more innovative in their EAS programs than were public sector agencies, though this was not a pronounced

difference. Private sector EAS providers likely have greater flexibility than public agencies, with better ability to cover operating costs and implement a range of EAS methodologies. This may make them more effective. However, the greater flexibility may be due simply to availability of project funding for the EAS activities, meaning that the flexibility may not hold beyond the end of the projects. There was some indication that private

*Radio Reigns, but Use of Newer ICT Applications is Limited:* Effective communications is at the heart of EAS, but support for better communications has often been neglected. Radio, fortunately, is being used widely and appears to be very well-accepted and effective. Both the information and the communications aspects of new ICTs hold much promise for transforming agriculture, though this promise remains largely unrealized in most countries. Very few projects reviewed have used new ICT applications for EAS, though there may be more substantial uses being applied to achieve efficiencies in project management than are documented in reporting. The ICT EAS Challenge Fund demonstrated potential for linking different service providers with information and communications technologies; country projects, as in Bangladesh, have developed innovative ICT application; and a number of programs use extension videos and interactive voice response systems for EAS. Still, most new ICT applications – farmer videos, cellphone-based systems, and internet applications – appear to remain project-dependent. Adoption has not survived the end of a project or spread to other EAS providers. Continued experimentation and development are warranted and should probably be included in a far higher proportion of projects.

*Subsidies are Problematic:* Subsidies were found in many programs reviewed. They are well known to distort market decisions, to be unsustainable, and to often be poorly-targeted. Still, nearly all EAS are essentially subsidies themselves, so the issue becomes that of what and how much to subsidize. EAS knowledge and information transfer itself can be defended as a public good, but EAS programs commonly, and USAID programs extensively, use free or subsidized inputs to encourage adoption of recommended innovations. Subsidies may be direct (free or subsidized seed, fertilizer, chemicals, or equipment; co-financing or grants for tractor, irrigation, or other equipment investments; or grants for demonstrations or adoption) or indirect (underwriting agribusiness costs of establishing or operating retail networks; covering costs for transportation for inputs or sale of products; subsidized credit or grants for credit provision).

The portfolio review found several cases in which projects subsidized innovations that led to farmers adopting innovations during the project, only to dis-adopt once project support was withdrawn. Such subsidies have broader disadvantages. They develop unreasonable expectations for future EAS programs, undercut the idea of farming-as-a-business, and disrupt development of competitive market channels for inputs and agricultural production. Broad government subsidy programs for inputs or agricultural commodity prices greatly facilitated adoption of innovations in Senegal, Zambia, and Ethiopia. Whether these are sustainable or economically efficient (as opposed to financial efficient) is another question.

*Decentralization Reforms – A Common Challenge and Promise:* Decentralization has become a fact of life. Of the 28 country portfolios reviewed, 15 countries have decentralized their public EAS systems. The transition to decentralized services is usually lengthy and somewhat chaotic, placing new responsibilities on local institutions that may lack capacity to provide services. Roles and responsibilities must be redefined; budgets and financial arrangements revised; programs and strategies redefined; and capacities developed. Some strong theoretical justifications support decentralization, as services should be more relevant and accountable when planned, funded, and managed at the local level where clients can have greater influence.

In practice, challenges arise due to limited capacity of many local governments, lack of institutional structures to allow clients to play a role in program governance, and the many conflicting demands on local governments. Decentralized EAS programs have some similar issues as do private EAS activities in accessing required support services. Problems become especially serious when program responsibilities are decentralized, but budgets do not follow.

Decentralization may facilitate private sector EAS, by making it easier for private sector providers to interact with public EAS at the operational level to coordinate activities, obtain technical support, and plan for public-private partnership collaboration. Institutional strategies that encourage such collaboration should be considered in project designs. Many countries have district or project level EAS coordinating committees (essentially EAS coordinating platforms) that include public EAS, for-profit firms, non-profit NGOs, and farmer organizations. These should be encouraged and strengthened, recognizing that effectiveness will vary across local administrations. Programs should also consider strengthening key EAS support services that address needs of both decentralized public EAS programs and private sector EAS providers.

### *Private EAS Providers*

USAID projects reviewed can all – except for two implemented by USDA – be classified as public sector-funded, private sector-implemented. At the level of field service delivery to clients, several categories of private providers were extremely common, complementing or extending the EAS delivery by public agencies.

*Producer Organizations are Ubiquitous:* Projects almost universally work with or through producer organizations for EAS delivery, achieving economy of scale in market transactions, and management of natural resources. Also, almost universal is a neglect of a comprehensive, well-thought-out strategy for strengthening these organizations. Such organizational strengthening is by nature a complicated undertaking, as effective organizations must grow at their own pace and be owned by and responsive to members' needs and not those of a donor agency. Donors are rightfully criticized for 'using' community organizations for their donor's own project purposes, rather than fostering their development as independent, sustainable organizations. Excess subsidies and project resource support can overwhelm such organizations and perhaps harm them more often than does neglect.

Producer organizations play many roles in a project. Commonly, they are used to deliver EAS, with a view to reaching large numbers of producers. This may involve formal cooperatives or associations, but most often appears to be based on informal, ad hoc groups formed for training sessions, farmer field schools, or other EAS activities. In few cases were formal producer organizations financing and delivering EAS to members. This was most common for specific commercial crops or livestock and for export and commercial farming systems. Projects often provided producer organizations with EAS to strengthen institutional structures, programs, and management systems; train members and officers; and facilitate collective marketing, resource management, or other objectives. These EAS services were facilitatory, helping organizations diagnose problems and opportunities, develop appropriate (market) linkages to address these, and then implement required actions. These services were appropriate, but seemed not to be comprehensive or well-structured.

*Contact Farmer-Leaders Too are Ubiquitous:* Most USAID projects use contact farmers for EAS. Terminology varies, including: lead farmer, community advisor, model farmer, community agent, farmer field school

leader, village health worker, volunteer, coordinator, etc. Most are selected by or in consultation with communities. They may be responsible to the project, to the community, to an agribusiness employer, or to a government EAS program. They may or may not receive salary or incentives in the form of operating cost payments or subsidized or free inputs for demonstrations. They may or may not be expected to continue providing services beyond the end of the project. In practice, the likelihood of continuing services without some external support and without some payment or incentives is likely limited.

Project documents do not provide much insight into the effectiveness and sustainability of the contact farmer positions, though such approaches have proven effective in other cases (World Agroforestry Centre undated). Based on project results reporting, they appear to be quite effective and are probably essential to coordinate community level activities, such as organizing meetings and training events, establishing demonstration plots, arranging field days, distributing EAS materials and inputs, and facilitating collective marketing and purchase by producer groups.

Such contact farmers thus appear essential to effective EAS activities, but in general they need to be recognized as community members, who are respected and (hopefully) early adopters of innovations. They cannot be expected to have the qualifications, contacts, or status to independently provide EAS to a significant extent. With adequate training, they can take on sustainable roles in delivery of specific commercial services – livestock health services, custom pesticide application, input and equipment retail sales, custom equipment services, soil testing, irrigation management, and others. These are all suited to fee-for-service arrangements that are sustainable and sound as long as there is required technical backup support to the community level provider/agent. Contact farmers cannot be expected to take on broad responsibilities for EAS provision, especially for public good-type services.

*Input Dealers are an Obvious, but Limited, EAS Provider:* Input suppliers are central to much agricultural innovation and productivity improvement, providing improved seed and breeding stock, fertilizers, agro-chemicals, feed, and mechanization. Many projects emphasized input suppliers as EAS providers, and most large projects provided substantial support to input supply systems. Extending input supply system networks to reach small farmers through village sales agents, hub-and-spoke input supply systems, retail networks, and group collective purchase arrangements may be the basis for project greatest impact on agricultural production.

Input marketing activities provide farmers with information on available input technologies. This is useful. But, rarely can this marketing information be considered objective, unbiased technical advice. It may also not be very sound. Several projects found input dealers to be highly deficient in understanding of agriculture or of their own products. Input supplier capability can be strengthened, but their advice will always focus on use of their product, though maybe in the best of cases may focus on the full production system in which their product is used. Input supplier EAS will seldom encourage use of less of their product and rarely extend to other inputs, other crops, farm management practices, or public good EAS. Input dealers can be an important actor in EAS systems, but can be expected to provide only a limited range of EAS. Certification systems to assure quality of both inputs themselves and EAS appear as needs in several countries.

### *Other Observations on EAS Activities*

A number of other factors noted in the portfolio review have implications for EAS system development and for project investments.

*Commodity-specific EAS:* Commodity-specific services have an important role in EAS systems, but have limitations. This was observed in several situations. They are important for: some crops that are widely grown (e.g., rice in Burma, grain in Senegal), have unique markets or production systems (e.g., oil palm in Liberia, coffee in Central America), and/or specific technical needs (e.g., livestock health services in Mali and Niger). These may benefit from or require specialized EAS. Agricultural product buyers may have interest in only a specific crop (e.g., cotton exporters in Burkina Faso, horticultural exporters in Kenya or Guatemala, feed mills in Ghana). Seed producers of course are interested in only the crop for which they sell seed. USAID value chain-based projects may work only with specific crops.

Problems arise when producer needs do not align with the EAS provided for specific commodities. This was noted in several cases in the portfolio review. In some instances, farmers may have been victims of project success. Increased production of the target commodity led to a fall in prices and lack of profitability for producers<sup>10</sup>. With EAS limited to the specific commodity, producers' options were limited. In other cases, farmers lacked resources or interest in the commodity for which EAS was available, but had no EAS support for other crops. In other cases, producers adopted recommended practices for the crops for which EAS was provided and then were interested in support for their other farm enterprises, but had no source of support for that. Commodity-specific EAS can be appropriate and the limited agenda may allow for specialization and greater technical expertise in that individual crop. These can be a part, but only a part of an overall EAS system, which should be able to address a larger range of farmer needs and interests and provide a range of opportunities for clients.

*EAS Activity Successes:* The EAS portfolio suggests an impressive record of success. Rough extrapolation of the available project data indicates that EAS reached 14.3 million farm households or 89 million people (at 6 per household) with production and farm management system improvements and with consistently high adoption rates. These estimates need be treated with caution, but the projects have clearly been a significant impetus for change.

Several relative successes stand out, as noted in Boxes scattered throughout the report. All these cases had: an excellent understanding of the technology or management innovation involved; an understanding of the farming system and local socio-economic environment; and detailed planning for EAS delivery methodologies and institutional arrangements. Most – or all – also had limitations, perhaps the greatest being the lack of fit within or influence on the larger national EAS system.

*EAS Inclusiveness:* Country programs and projects present a fairly mixed picture of EAS program inclusiveness. This varies by client category. Almost all projects demonstrate concern or commitment to reaching more women. Many have specific strategies to reach more women and nearly all disaggregate clients served by gender. The general impression is that of some progress in increasing women's participation, but still far to go to achieve parity. Constraints are well-documented in the literature, as are some of the corrective actions possible (see INGENEAS Project reports).

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<sup>10</sup> Government import or pricing policies can result in the same problems.

Reaching resource-poor households, minority groups, and displaced populations is an objective in some projects, mainly in post-conflict situations. Other projects intentionally or unintentionally target better-off, commercial farmers, who are more easily reached and more able to adopt innovations. Either strategy may be appropriate, depending on overall USAID country objectives, but these need to be made clear. Often, they are not. And, often projects are not entirely clear as to their client focus. Since clients group needs differ, they may be best reached through different approaches. There may need to be more attention to designing different EAS programs to reach different client groups (i.e., resource-poor vs. commercial farmers). This is not often done by USAID projects.

Youth are increasingly recognized as a distinct target group, but few programs have significant experience with targeting them with EAS. The DLEC Project is currently completing studies of opportunities for youth in EAS programs in three countries. Many countries have broader youth assessments, but guidance on EAS programming for youth has been limited. There are some inherent difficulties in this for general EAS programs that seek short term impacts on farm production, as youth rarely have decision-making responsibilities for farm and household management or their own assets such as land or livestock, though work with youth can also be complicated by the broad definition of youth used in many countries, some including persons up to the age of 35 or more. A more nuanced, human resource development approach to EAS with a longer-term perspective may be most appropriate to reaching youth. This applies across most, if not all, countries. Such programs should emphasize entrepreneurship along with technological innovation in agriculture. Some obvious examples are the US 4-H, FFA, or Junior Achievement programs. A key challenge in these is sustainability, as a country institutional framework is necessary and direct replication of US programs is unlikely to be appropriate.

In general, private sector EAS providers are unlikely to target women, youth, or resource-poor farmers, as that is not where the money is. It is the rare private sector program that does not have to recover costs or show a profit. Project investments can seek to reduce costs of EAS delivery through greater use of radio, other ICTs, or other mechanisms to make private sector EAS more cost-effective and perhaps more available to these groups. More commonly, public funding will be needed to reach these groups with public good-type EAS messages. These may be delivered by either public or private providers.

#### **IV. Investment Options for Private Sector EAS**

This section summarizes the major options for project investments to expand private sector EAS provision. These are oriented towards investments that can lead to lasting systemic change to achieve benefits at scale. The activities proposed vary greatly in terms of scale and cost, with some quite discreet activities and others broader programs that require substantial funding and detailed design to address specific conditions.

##### ***Improve the Policy Environment for Private EAS***

A coherent public sector policy on extension is key, as governments' actions are partly responsible in determining the willingness of other entities to provide agricultural EAS (Carney, 1998). Effective private EAS requires, or at least is greatly facilitated, by "friendly" public policies supportive of such services. Formal policy reform can be a lengthy process, but implementing new policies may be even more difficult. In many countries, there has been lingering public sector antagonism toward private EAS providers. This may be due to jealousy over resource availability, competition for funding or status, differences in

technology recommendations or service delivery approaches, or justifiable anger with activities that are not in client or public interest.

Where needed, support to government formulation of national EAS policies or strategies is an important first step to establishing a permissive environment for development of private EAS programs. This should be a priority for USAID investments, working in a supporting role that ensures local ownership of the process and resulting strategy. This generally requires limited technical assistance, training, and stakeholder consultations. More commonly, governments may have sound EAS strategies and need help in implementing them. This can be a long process. The process is further complicated in many countries where decentralization has moved responsibility for EAS to local governments and responsibilities and policies are yet to be established at the local level.

Government EAS policy speaks also to government commitment and funding for EAS. The best performing countries generally have strongest funding base of public EAS and take it seriously. Policy dialogue, support to EAS constituencies, and targeted studies on EAS potential and effectiveness may help ensure more adequate government funding.

### *Strengthen Public EAS Systems*

It may seem counter-intuitive, but one of the best investments to strengthen private sector EAS may be that of strengthening public sector EAS. The public sector often serves as somewhat of a backbone for the full EAS system. For-profit firms, producer organizations, and NGOs often go to the public EAS agencies for technical support and frequently collaborate in providing services. Rarely will private EAS provide comprehensive services for all different client types, areas, and products. The broader public services complement private EAS activities and serve as a base to respond to emerging issues (e.g., pest outbreaks such as fall armyworm). No public system will fill all needs, but they typically provide the framework for development of the broader EAS system and help to fill gaps in EAS coverage.

The level assistance required or appropriate is dependent on country-specific situations. Development of a national EAS policy or strategy can be a useful first step in legitimizing and encouraging private EAS. This may lead to another level of engagement to support improved public EAS operations. Technical assistance, extensive staff training, and program and management system development are typical needs and may emphasize coordination, support to, and collaboration with private EAS programs. Support may be in the context of implementing a national EAS strategy or establishing a decentralized EAS system. Project funding for operating costs of public EAS is a further option to facilitate the system development, but in such cases an exit strategy is quite important to ensure the systems is not donor-dependent.

### *Improve EAS Support Services*

Quality of EAS depends heavily on having adequate supporting services. Front-line EAS agents are key to most programs, but are often poorly trained and limited in effectiveness if they do not have needed technical support. This is often lacking. Large public EAS agencies may provide such services internally, but often lack funding and commitment. For smaller fragmented EAS providers, such as NGOs, decentralized government offices, producer organizations, and private firms, sourcing and arranging for such support is more difficult.

Key support services are technical and methodology related – training (pre-service and in-service), research and subject matter specialist backstopping, EAS methodology, communications (extension materials, mass media), and M&E. All are essential to sound EAS programs. Some can be provided “in-house” by some providers, but others have to be outsourced. Public EAS agencies, research programs, and universities are usual sources for such support. Provision of support services through specialized agencies and inter-institutional linkages helps to build EAS as a system with stronger over-all capacity and coordinated services providers. For any given country and organization, the following support may be strong or deficient:

1. Training is essential for extension staff to be effective. Many are poorly trained when recruited. Continuous in-services training is necessary to maintain motivation and to stay current in knowledge to address changing needs. Past training has generally emphasized production technologies, but increasingly field staff need skills and knowledge relevant to management innovations, value chains and marketing, and organizing for collective action. Training also needs to cover EAS methodologies. This may require substantial funding and support to multiple organizations.
2. Technical support arrangements are needed for EAS staff to access technical specialist support for specific issues. This often relies on research institutes and universities, if such support is not available from public extension. ICT applications for “ask a specialist” type of text messaging or internet services are a growing resource, and cellphones provide instant access to specialists, if the EAS agent knows whom to call. Research programs have been the traditional source of technical support, though EAS needs also to access innovations from private sector, local knowledge, market actors, and field experience. Substantial investment in research may be important to arm EAS programs with proven innovations.
3. Communications support for extension handouts, training materials, and mass media has been chronically neglected in EAS programs. Programs need to design effective EAS methodologies for field staff and provide them with materials and operating guidance appropriate to the clients. Facilitating linkages with other value chain actors may provide access to appropriate materials, especially as relate to marketing, group organization, and resource conservation. Such communications support, though important, does not generally require large scale funding.
4. Mass media EAS program support goes beyond communications support for field agents to reach the general population through radio, TV, magazines and newspapers, signage, traditional media, and ICT. This may be useful to raise awareness of problems and opportunities and as part of a multi-media campaign aligned with work of field agents. It may entail a modest commitment of funding.
5. M&E support can be important, but can be a complex issue and is closely related to program objectives. M&E systems generally need to be built into individual organization’s EAS programs. For many private EAS programs, the relevant metric is volume of business and profit.

Project investments that facilitate access to needed EAS support services by all EAS providers can have a broad impact and contribute substantively to developing EAS as a national system. These should be a priority. Individual project-by-project arrangements for support services are inefficient and usually inadequate. Depending on country conditions, investments can strengthen existing institutions that provide required services or, where such are lacking, directly provide the services for the benefit of all local EAS programs. One possible disadvantage for USAID projects is that such activities have indirect, rather than direct, impacts on beneficiaries and thus may affect reporting against targets. Advances in ICTs allow for

many applications in support of EAS and may warrant special attention to developing and testing their applications to EAS support functions.

### *Strengthen Producer Organizations*

More programs should invest substantively in producer organizations, as a key objective of projects, rather than solely as supporting actors. This requires more sophisticated strategies to develop capacity and a more detailed understanding of organizations' constraints and potentials. These private organizations may be informal, ad hoc interest groups or formal cooperatives, umbrella networks, or registered associations. Typically, strategies should seek to help groups move toward more formal organizational structures and programs that can be more active in market activities and commercial agriculture. Substantive work in this area depends on development of explicit strategies for producer organization activities and sound documentation and analysis of results. Work can build on the extensive, but poorly documented, experience to-date with work with producer and community groups. Beneficiary targeting is enhanced by the ability to work with organizations with similar membership – youth, women, resource-poor farmers, minority groups, and so forth. The Global Forum for Rural Advisory Services (GFRAS) has developed useful guidelines for training on work with producer organizations as part of the New Extensionist Learning Kit (Eliasa 2017).

Producer organization issues are often similar across countries, but no blanket recommendations are possible. Support must be tailored to the local situation and type of organization. Capacity development should consider major elements of group capacity: human resource capacity and leadership ability, operating policy and regulatory environment, organizational structure and program, and inter-institutional linkages. Assistance may be warranted in any or all of these.

Producer organizations are private sector entities and key players in effective EAS systems. More intentional effort is needed and more innovative approaches required to develop these organizations under USAID project investments. Experience indicates it is advisable to work with pre-existing organizations rather than form them specifically for project purposes, though this sometimes is unavoidable. In some countries, producer organizations have been or still are heavily controlled or influenced by government, a situation that mandates caution for any investments with such groups. Activities must be based in solid analysis and understanding of local institutions and social factors that affect these institutions.

Projects must also avoid overwhelming or co-opting groups with excessive project resources. It is especially tempting to add resources and activities to groups already operating successfully. Often less is better to allow groups to grow at their own speed and initiative. Many groups will fail – as do many private businesses. This does not mean complete failure as benefits in human capacity development and market development often accrue even when groups are not sustained long-term. Project support may help producer organizations engage in funding or delivery of EAS, but this need not be pushed as an immediate activity. Developing strong producer organizations provides farmers greater voice and ability to participate in collective marketing, service delivery, and representational activities that ultimately enable them to better access EAS.

### *Strengthen For-Profit EAS Providers*

Many potential private EAS providers in USAID countries are relatively weak. Engaging them to provide EAS risks “putting the cart before the horse”. It may be more efficient and preferable to strengthening their capacity and business models before expecting them to engage effectively in providing EAS. Capacity development for public EAS agencies and producer organizations is discussed above and NGOs are an amorphous group and not usually a priority target for capacity development by agricultural projects. Private agribusinesses are a separate case. Typically, they do not provide EAS, but do have critical business relations – direct or indirect – with farmers. They lack EAS capabilities, but often can strengthen their business model and profitability by helping their farmer buyers or suppliers to access sound EAS. Companies can provide EAS to improve company profitability; they cannot provide EAS for very long if they are not profitable.

Input suppliers are a prime provider of EAS in USAID-supported programs and have extensive need for support to extend their marketing network and improve technical capabilities. See Box E. Support to the input supply sector by improving the public policy and regulatory environment and helping with development of business plans and strategies, technical capabilities, and management and logistical systems is important to ensuring profitability as a base for provision of EAS.

Training may also address good business practice, quality of services, and considerations of professional ethics. Targeting training and support for input suppliers is an issue, as projects should avoid unfairly advantaging one company over another. Support to input suppliers to provide EAS can be organized as broad-based support across all input suppliers in the system (though recognizing that some may choose not to participate). The input suppliers EAS will almost certainly focus on use of their inputs, though ideally broader assistance to encourage profitability of the crop or livestock targeted for the input or for the overall farming systems in which these are embedded is more beneficial to the farmers and perhaps in the longer-term interest of the input supplier.

Similar issues apply to second category of for-profit EAS providers - agribusiness buyers of agricultural products. They may benefit by ensuring quality in the products they buy and in regularizing their supply chain. They may establish contract farming agreements, use outgrowers, have product aggregator intermediaries, or provide EAS. Again, these businesses will likely limit EAS to production of the specific product in which they are interested. With a more liberal approach they may provide services supportive of livelihoods or farming systems of their suppliers. They are not likely to be enthusiastic about EAS marketing innovations to increase product prices to farmers or to diversify to other crops.

Ideally, projects work with trade associations (e.g., seed associations, food processor associations, commodity exporter groups, fertilizer and agrochemical dealer associations, etc.) on capacity development and EAS programs, rather than with individual firms. This avoids perceptions of favoritism and development of effective monopolies and encourages competition. Support for EAS activities may be only a part of the larger program of institutional capacity development for potential providers.

**Box E:** South Sudan Food, Agribusiness, and Rural Markets II (FARM II) Project

Strength: Farmer-input supplier fora facilitated development of relationships between cooperative unions, cooperative societies, and input suppliers.

Caveat: Security threatened sustainability of the activity.

A third category of for-profit EAS providers is that of private EAS consultants. Such advisors can operate as individuals or members of EAS consulting firms. Such services are common in highly commercialized operations. Tajikistan has consulting firms that service larger cotton farms. Latin America and other programs that funded local institutions to contract for EAS encouraged such advisors. However, in general, demand for such consultants is limited, as family farmers are not able or willing to pay full costs for services. This holds true in many cases also in industrialized countries.

The one case where private EAS consultants are well accepted is for animal health services. Para-vets, community animal health workers or animal health auxiliaries are common in many countries and are self-supporting through fees for service. They are essentially input dealers, though able to provide farm-level services in conjunction with sale of veterinary pharmaceuticals.

### *Establish EAS Certification Systems*

Private EAS provision requires some attention to quality and objectivity of services, qualifications of providers and agents, and their accountability. Where private EAS providers are active, funding technical assistance, training, and development costs for a system to establish standards and register certified EAS consultants or providers may help ensure clients are well served and avoid unscrupulous or unqualified EAS providers.

The portfolio review found several examples of systems for registration or certification of private providers, a requirement that can help assure quality of services. See Box F. The US has a system of Certified Crop Advisers that assure clients that they can rely on the advice they receive. Certification may apply to all private EAS providers, with input dealers, NGOs, or produce buyers, as well as individual consultants. Such systems are often used in voucher systems for EAS, but may be more generally applicable. Although there may be a strong rationale for such certification, this can also become bureaucratic and introduce unhelpful governmental control. Private sector certification may be desirable.

#### Box F: Haiti Chanje Lavi Plantè Project

Strength: A program trained and certified master farmers, with theoretical and practical training and a mandatory exam. Certified master farmers were qualified for formal employment as EAS agents.

Caveat: Sustainability was an issue.

### *Use EAS Stakeholder Platforms*

Agricultural innovation platforms represent one approach to public-private partnerships linking researchers, EAS providers, agribusinesses, farmers, and others to address specific problems or opportunities. Such fora can be organized in many different ways, but have been most often research-led, building on agriculture-for-rural-development principles, or organized for a specific commodity value chain. They are intended to be highly participatory, but many still reflect a research-based top-down perspective. Review of crowd-sourced examples of agricultural innovation platforms indicated that, despite substantial accomplishments, none had achieved all elements necessary for success (Schut et al, 2016). Such platforms can be usefully focused EAS as EAS coordination platforms.

One stakeholder platform for a technology adoption program in four African countries used a value chain-based approach to engage multiple stakeholders, improve EAS, and link producers to markets (Arinloye et al., 2013). See Box G. Platforms improved value chain linkages and increased productivity and profitability, though platforms were not well understood by participants and appeared to be top-down in implementation driven by research programs.

EAS stakeholder platforms exist in many forms and under different names. Research-extension coordinating committees have been common and are an example of a simple, restricted platform. These can operate at the district level and were often a part of farming systems research programs. More diverse EAS coordinating committees are mandated for district and other levels of coordination in Bangladesh and Malawi and include public and private EAS programs, farmer groups, and other stakeholders. In the past in Nepal and Nigeria, semi-annual research workshops brought researchers and extension agents together quite effectively with NGOs and private firms to review improved technology recommendations and performance. Most of these have been government-initiated platforms, and, while useful, they have often not had a good record of continuity, due in part to lack of funding.

A more ambitious, nongovernmental EAS stakeholder platform is inherent in the SCALE (system-wide collaborative action for livelihoods and the environment) approach to program planning and implementation (AED, 2004). This participatory approach is a version of the common consultative planning approach, bringing “all-stakeholders-in-a-room” together to analyze a problem or opportunity, identify each stakeholder’s interests and relevant capabilities, plan, and coordinate activities. There is wide latitude for adapting this general approach, which is well-suited to encouraging private sector stakeholder participation in EAS delivery.

EAS stakeholder platforms are an attractive means of strengthening an inter-linked national EAS system, building partnerships, coordinating service delivery, and understanding farmer and other value chain actors’ interests and roles. They can have a strong private sector focus. These can benefit projects as project-specific initiatives, but where opportunities present, they may be useful as sustainable entities engaged in governance of EAS programs. More research may be needed on typologies of platforms and on potential roles for EAS systems.

### *Fund Direct Delivery of EAS Services*

In some cases, fully funding direct delivery of EAS to farmers may be appropriate. This typically applies to post-crisis countries, fragile states, under-served disadvantaged populations, and environmental and natural resource conservation programs. An advantage for donors is that such programs have a direct link between the funding and beneficiary impacts. The disadvantage is that such programs are generally time-limited, unsustainable, and scale-limited. They are generally costly, but are essential in some situations.

#### Box G: Ghana Taking Cowpea to Scale in West Africa Project

Strength: Multi-stakeholder innovation platforms included community-based organizations, farmer organizations, research, extension services, NGOs, financial institutions, processors, agro-dealers, and others, and facilitated cowpea EAS with demonstration plots, training, videos and brochures, and radio broadcasts. Extensive research underpins cowpea technology recommendations.

Caveat: Sustainability of the platform is uncertain.

Direct service delivery programs are typically implemented through grants or contracts with private EAS providers – non-profit organizations, for-profit firms, universities, or consulting firms. The EAS provider must organize all aspects of the program – staffing, EAS methodology, client targeting, innovations supported, and supporting services.

### *Subsidies to Promote Adoption of Innovations*

There is often a fine line between adaptive research or testing of innovations and demonstrations to promote dissemination of these innovations. Free or subsidized inputs or services certainly encourage farmers to try new technologies, and EAS programs typically require some inputs and cost sharing for demonstrations and trial plots. Distribution of mini-kits with small amounts of improved seed, fertilizer, or other inputs can be effective in rapid scaling up awareness and widespread testing of new technology. Beyond the initial testing and cost-sharing of risk inherent in innovation, subsidies become problematic for their costs, market distortions, and management problems.

The portfolio review found subsidies to be quite common in EAS projects. The review also found that some technologies to be adopted only as long as project subsidies continued. They need to be recognized as an EAS cost, but should be used with caution.

## **V. Recommendations**

General experience and recent USAID projects demonstrate that private sector EAS providers have strong potential to contribute to agricultural productivity, profitability, and sustainability and resilience. Private EAS also has real limitations that need to be fully understood. These two facts are widely accepted and taken together mandate an approach to developing EAS capacity in the context of an overall pluralistic EAS system. Current USAID agricultural projects are already extensively engaged with private sector EAS. The portfolio review found many commonalities in country approaches with variations due to differing country conditions and differing country strategies. Some good practices are widespread, but there is room for greater innovation and better documentation of lesson learned.

The following recommendations emphasize development of local EAS system capacity that encourages and exploits active participation by diverse pluralistic private sector providers. In, this, the project is seen as an investment. The project is not an “end”, but a “means” to mobilize markets and government to enable farmers to improve their productivity and livelihoods. This requires programs design that have clear scaling strategies, continuously assess and address constraints, and align with other investments and activities (Cooley and Howard, 2019).

Annex E contains summaries of USAID country EAS activities and tentative recommendations for future investments. Those recommendations are based solely on this limited desk study and will require further assessment as to their relevance, feasibility, and priority. Country-specific recommendations are not detailed, and, while there is a surprising degree of similarity across countries, actual program designs and implementation may differ greatly due differences in country conditions.

The following summarizes general recommendations across countries. The first five recommendations apply to USAID and other programs across all countries. The final four apply to EAS program development in four country EAS system situations. Recommendations are not made on specific EAS approaches and methodologies as these are so context dependent.

### *Ensure Due Diligence in EAS Program Design*

One key recommendation that applies across all countries is to ensure due diligence in planning country EAS strategies, project designs, and implementation. There is little evidence of this having been done. Projects EAS activities need to be strategic, based on an understanding of the agricultural sector and EAS system, and more clearly defined. Sustainability must be built into the strategy. Activities can rely largely on traditional EAS approaches and methodologies, but there is need for more innovation and better analysis and documentation of EAS experience and impacts.

EAS design must focus on two issues. First is the evidence base for innovation. Since USAID projects tend to focus on technology transfer EAS, this should require documentation of the innovation and expected benefits, usually from either research field trials or field surveys. This holds for both simple technologies (e.g., new varieties) or management changes (e.g., collective marketing). A thorough understanding of clients' farming systems, social and economic conditions, local institutions, and trusted sources for information is important to ensure a good fit of innovations and EAS methodologies. Where EAS pursues more general advisory assistance or capacity development approaches not focused on specific innovations, a list of potential technology and management innovations and their benefits, as based on research or survey evidence, would be appropriate to justify the program.

The second design consideration is specific to the EAS approach itself – the institutions involved, methodologies to be used, clients targeted, and support needs. Analysis of participating institutions should identify any capacity gaps and provide for addressing these. For private sector providers especially, an analysis of cost and benefits should demonstrate financial feasibility. Important in this is clearly identifying linkages among EAS providers, sources of innovation (e.g., research programs) and other value chain actor. Quite often the EAS strategy should include multiple channels for service and information delivery, not a single mechanism, and ideally not a mechanism fully reliant on the project itself.

This may not be easy. International EAS expertise is limited within USAID and in implementing partners. Project designs should include details on evidence for potential impact of innovations, target client characteristics and limitations, and expected EAS approaches and methodologies. Procurement documents should include the same and require this in applications/proposals and work plans. This may require EAS specialist assistance for analytical work, project design, and project implementation teams. If this is not possible, it may be necessary to default to acceptance of project investments as yielding short term benefits rather than longer term development impacts.

Another critical consideration is to ensure that EAS investment strategies align with the country context. Post-crisis countries and those with limited economic development and commercial agriculture may require direct delivery of private EAS through contractors or grantees; for more developed countries capacity development support may be more appropriate for future self-reliance. Larger, more commercial producers may rely more on private EAS and be able to share costs of service; resource-poor farmers, women, and youth may need more public goods-type capacity development and facilitation-type EAS provided with public funding. Subsequent recommendations provide some guidance on planning for different country EAS situations.

### *Improve Targeting of EAS Clients*

EAS investment design should be clear as to client population targeted. There is a tension between financing for EAS at the broad systems level versus providing services to targeted clients or products. There is virtue in the whole system strengthening because of its reach and hoped-for permanence. Public EAS agency programs and for-profit EAS providers are often forced to provide services for the majority client populations. Private EAS providers on the other hand generally have flexibility and smaller programs that enable them to target specific client groups and issues, when funding is available, e.g., from donors. Broad system level EAS – in government, but also private institutions – is often a blunt instrument and resistant to targeting specific groups, but in practice no EAS provider can meet needs of all clients.

Most countries' farmers are split in two categories. Commercial farmers require market facilitation services to better access technology, financing, inputs, and markets. Resource-poor farmers need more livelihood, home consumption, and human capacity development EAS. There are strong rationales for targeted EAS activities within an overall system to meet needs of: women, youth, and disadvantaged groups. Innovative designs may be able to bring private EAS to these groups. Project investments should be clear as to the clients targeted, and, where programs aspire to serving both sets of clients, different EAS providers, methodologies, and messaging will usually be necessary.

Youth are a special case. Even though there aren't many proven approaches to targeting EAS to young people, youth are the future of farming and a priority for USAID. Youth tend to be open to innovation and more adept at mechanization and digital ICT tools than are older farmers. They are intensely interested in job opportunities. Much EAS impact on youth is indirect through increase in job opportunities due to production increases. More profitable on-farm employment is an attraction, as are related jobs in marketing, services, and mechanization. The most direct youth targeting has been training at the degree or certificate level. This is essential, but involves small numbers of youth. More important is more generalized youth capacity development oriented to self-employment from income opportunities jobs in agricultural production and support services. The US has some extremely effective examples of programs in: FFA (Future Farmers of America Clubs in high schools), 4-H (agricultural clubs sponsored by the extension services and local volunteers), and Junior Achievement (youth entrepreneurship groups sponsored by businesses). Such programs may be extremely relevant in many countries as a means of introducing a farming-as-a-business mentality, technical innovations, and entrepreneurial skills to large numbers of young people. The major challenge is to find a local framework in country for such activities to enable them to be sustainable and cost-efficient. This is no trivial requirement for such programs.

### *Make Full Use of Relevant ICT Applications*

New ICT applications to EAS currently receive and deserve a lot of attention. Continued development and testing of ICT applications for integration into EAS programs is essential, with emphasis on uses to link with and support other EAS activities. Appropriate technologies will vary by country depending on level of sophistication and development of ICT infrastructure and capacity.

More traditional ICTs still have important roles. Radio is the primary mass media communications in most rural areas, and projects may benefit by giving a higher priority to radio message programming and by integrating this more fully with their overall EAS activities and strategies, including linkages with other ICT applications. Consideration should also be given to other traditional media – television, newspapers,

periodicals, signage, and local and traditional media. All can be effective for EAS and all bring in private sector participation in EAS – both in themselves as private sector media enterprises and in the potential for private sector advertising by private agribusinesses.

### *Minimize Subsidies*

Clearly, some inputs and equipment may be necessary for demonstrations and for training programs. But, beyond this what and how much to subsidize is a key issue. For initial introduction and testing of innovations, it is quite reasonable to buy-down risk by subsidizing costs of trials and demonstrations. Once an innovation is proven, that justification goes away. At a minimum, projects need to consider carefully their policies and approaches to subsidies and be explicit in strategies and with clients as to the purpose, nature, and duration of any subsidies related to EAS. Exit strategies are essential.

### *Emphasize an EAS Learning Agenda*

As a complement to improved analysis and planning for EAS programs, USAID Missions and other agencies need to improve the learning agenda in EAS programs. Programs have been quite poor in documenting EAS experience and lessons learned. There are some good lessons lurking in the portfolio that have not been adequately documented and assessed. Mission programs need to target M&E on specific EAS activities, documenting the methodologies and results to contribute to the global learning agenda. As part of this, Missions need more assessments to confirm reports of success from EAS projects and to tease out lessons to feedback for design of future projects. Several cross-country studies of specific issues relevant to private sector EAS would be useful. These would include studies of

- Agricultural cash crop product buyer EAS programs, pre-requisites, approaches, strengths, weaknesses, and options for promoting expansion of such programs.
- Effectiveness and prerequisites for various models using village advisors, lead farmers, or village agents to link small farmers to sources of credit, inputs and markets.
- Input supplier EAS programs, scope, quality, and arrangements quality control or enhancement.
- Sustainability and effectiveness of lead or contact farmer-type programs in private for-profit EAS programs, including good practice options for training and incentives.
- Post-project impact studies to confirm EAS program innovation adoption rates and farm household level impacts.
- Impact of EAS programs promoting collective marketing of agricultural products and purchases of inputs, developing tools for monitoring changes in marketing margins and prices for producers, intermediaries and consumers.

The above is an illustrative list that can best be refined to meet needs in different country situations.

The next four recommendations seek to align country investments with EAS system needs in differing country situations with strong or weak public and private EAS capacities. Relative priorities for each situation are presented in Table 3 following the recommendations.

### *Address Immediate needs - Weak public EAS; weak private EAS*

Countries with weak public and private EAS are often post-conflict or post-crisis countries or those with high poverty rates and weak governments. promotion of stability and resilience may be important objectives.

Climate change response and natural resource conservation and sustainable use may be important needs that may require collective action facilitated by EAS programs. The lack of trained EAS staff and appropriate technologies from research or other sources is constraining. Farmer EAS clients typically have limited financing available for purchased inputs.

Post-crisis countries and those with limited economic development and commercial agriculture may require direct delivery of private EAS through contractors or grantees. This achieves immediate and quantifiable impacts, but entails high recurrent costs, is time-limited, and often poaches top individuals from the public sector, weakening their capacity. Capacity development is a high priority to the extent that conditions allow. Producer organizational capacity – important in most cases – may be especially important to promote resilience.

### *Establish the Necessary Foundation - Weak public EAS; strong private EAS*

This situation is extremely rare if it exists at all. There may be pockets of strong private EAS in countries with weak public EAS systems, such as with plantation crops or large farms with privileged access to services. Services often target only specific crops and areas and leave most small farmers un-served. These are typically not stable situations. The existing private EAS providers have little local support and generally must draw support from their privileged access to international technologies or training. In other cases, NGOs may be active, providing limited coverage for small farmers. Such programs are often inefficient due to lack of local support.

Capacity development for the public sector is a priority, to the extent that this is possible. In some cases, previous public EAS systems may have been closed due to inefficiencies or neglect. The lack of an effective constituency for public EAS may be due to lack of voice and influence from small farmers and the fact that larger firms and farms are able to meet their needs through private EAS. Program strategies might seek to enlist private EAS providers in building a broader national EAS system with necessary support services, policies, and programs that benefit them, while establishing a base for meeting needs of the broader rural population. Developing capacity of producer organizations to negotiate more effectively with private firms and to meet needs of their members that are not being served by the public sector may be a critical need.

### *Diversify Pluralism in Service Provision - Strong public EAS; weak private EAS*

This situation holds the highest priority for targeting support to strengthen private sector EAS. This is common to many countries with lower levels of development and an important agricultural sector that has been a government priority over time. Private agribusinesses are usually a growing force as countries transition to more commercial agricultural systems. In early stages of this transition, public sector agricultural agencies tend to view private firms with suspicion and as competitors. This is changing, but may persist in some countries.

First consideration should go to refocusing public sector EAS on supporting private EAS through support and coordination. Strengthening support services for pre- and in-service training, technical specialist support, and communications support to improve both public and private EAS. Support to private input suppliers and others should strengthen their business operations and operating environment to provide a base for a role in EAS. Strengthening producer organizations should help them participate in marketing and

other activities in support of members interests, including accessing and funding EAS. Direct support to private EAS is best done through trade associations and strengthening overall business models, allowing businesses to establish and expand their EAS activities as part of sustainable business models.

***Build for Self-Reliance - Strong public EAS; strong private EAS***

This fortuitous situation provides the basis for a strong and effective national EAS system. These should be countries nearing “graduation” from need for continued foreign assistance. Still, “strong” is a relative term and undoubtedly there will be continuing weaknesses in aspects of the national EAS system in both the public and private sectors.

Donor activities should seek to further strengthen capacities and encourage coordination within the system. Donors may also seek to address gaps in coverage of under-served client populations.

Table 3 provides a starting point for assessing options for EAS investments in the different country situations noted above. These are quite subjective, as much depends on program objectives and local capacity and needs. Any of the investments may be more important in certain circumstances, but still appropriate to all four situations considered. For example, strengthening producer organizations as advocate and facilitator for EAS clients is important in nearly all cases. Program design analysis should typically include some form of an EAS institutional architecture analysis and an analysis of local farming system needs and opportunities. Annex F list key references for additional information on each of the types of EAS investment and Annex G provides an illustrative flow chart for decisions on EAS investments.

**Table 3: Likely Priorities for EAS Investments Based on Local EAS Capacity**

Investment	Local EAS Capacity Status			
	Weak public; weak private	Weak public; strong private	Strong public; weak private	Strong public; strong private
12. Develop national EAS policy and strategy	If requested	High	High	If requested
13. Strengthen public EAS	High	High	Medium	Medium
14. Improve EAS support services	High	Uncertain	High	High
15. Emphasize relevant ICT applications	As appropriate	As appropriate	As appropriate	As appropriate
16. Strengthen producer organizations	High	High	High	Medium
17. Strengthen input suppliers	Medium	Low	High	Low
18. Strengthen other private EAS providers	Low - targets of opportunity	Targets of opportunity	Targets of opportunity	Targets of opportunity
19. Establish EAS quality certification systems	Low	Medium	High	High
20. Establish EAS stakeholder consultation platforms	Where possible	Where possible	Where possible	Where possible
21. Subsidize innovations prompted by EAS	As appropriate	Avoid where possible	Avoid where possible	Avoid where possible
22. Fund direct EAS delivery	High	Medium	Low	Low

### *Access EAS Specialist Support*

In implementing the above recommendations and improving the performance of EAS investments, USAID Missions and others will require support from experienced EAS specialists. Many should be embedded in implementing partner teams. Support can come from varied sources.

The DLEC project is available to provide USAID Missions with assistance in carrying out EAS diagnostics, program design work, and activity assessments to advance efforts to implement activities as discussed throughout this paper. Assistance might include a deep dive analysis to take the portfolio review and country EAS system assessment a step further and assist the Mission assess options for EAS investments that fit with country conditions and program objectives. Such additional review and field assessment are necessary to confirm findings and develop plans for future investments. While DLEC may provide some services directly, while in other cases DLEC may assist Missions in locating further information or specialist services or in developing terms of reference or standards for EAS activities. For further information contact: John Peters ([jopeters@usaid.gov](mailto:jopeters@usaid.gov)) or Kristin Davis ([k.davis@cgiar.org](mailto:k.davis@cgiar.org)).

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## **VII. Annexes**

[Annex A: USAID Program Guidance Relating to Extension and Advisory Services](#)

[Annex B: Extension and Advisory Services in Congressional Budget Justifications \(FY2010 to FY2019\)](#)

[Annex C: Extension and Advisory Services in USAID Mission Strategy Documents](#)

[Annex D: Summary of Extension and Advisory Service Country Program Activities](#)

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[Annex G: Decision Tree for Investments in Extension and Advisory Services](#)

## Annex A: Global Food Security Strategy Program Guidance Relating to Extension and Advisory Services

The following is based on searches for “extension” and “advisory services” in the 18 technical guidance documents for implementing the U.S. Government’s Global Food Security Strategy (<https://www.feedthefuture.gov/guidance-and-tools-for-global-food-security-programs/>).

CORE GUIDANCE	
Strategy Objective 1: Inclusive and Sustainable Agricultural-Led Economic Growth	No substantive mention of extension
Strategy Objective 2: Strengthened Resilience among people and systems	No mention of extension
Strategy Objective 3: A well-nourished population, especially among women and children	Notes that extension services can promote improved nutrition
Policy Programming	No mention of extension
Gender Equality and Female Empowerment	Six mentions of extension, noting that: extension services often do not meet women’s needs; extension and training curricula need to be designed to address women’s interests and accommodate women’s participation; and extension can incorporate nutrition education messages.
SUPPLEMENTAL GUIDANCE	
Capacity Development	Eight mentions of extension (most in one table) noting only that extension is a part of the agricultural innovation systems.
Employment and Entrepreneurship	No mention of extension
Towards Digitally Enabled Global Agriculture and Food Systems	Two mentions of extension, noting that ICTs can extend reach of extension to more farmers and providing a reference to resources and tools on ICT-enabled extension.
Finance: Unlocking Capital Flows	No mention of extension
Increased Sustainable Agricultural Productivity	One mention of extension, noting only that local extension services may know best what innovations may have the most impact.
Diversifying Livelihoods, Resilience, and Pathways Out of Poverty	No mention of extension
Investing in Livestock Production and Animal Source Food Market Systems	Five mentions of extension, noting that extension and advisory services should be considered in program designs to increase livestock productivity and strengthen resilience.
Market Systems and Value Chain Programming	No substantive mention of extension (though extension is noted as an element of one project cited as an example)
Private Sector Engagement	No mention of extension
Scaling for Widespread Adoption of Improved Technologies and Practices	Two mentions of extension, noting that it was a key element of the successful Green Revolution scaling of technology and that it may be a part of government programs.
Land, Marine, and Resource Tenure	No mention of extension
Agricultural Trade	No mention of extension
Youth Programming	Four mentions of extension, noting that there may be employment opportunities for youth as extension workers and that extension services are an important channel to improve youth skills for employment in agriculture.

## Annex B: Treatment of Extension and Advisory Services in Congressional Budget Justifications (FY2010 to FY2019)

The following is based on a word search for “extension” and “advisory services” in regional CBJ documents available on the USAID website for the years FY10 to FY19. The search is intended to determine the extent of emphasis on EAS in budget documents. Reference to these terms were taken as extracts, not including references to health or other uses of “extension” not referring to agricultural EAS and not including references to non-farm “advisory services”. References to EAS using other terminology, such as “training” may have been missed and misinterpretation may have resulted from lack of full context in the overall document. These are not thought to be significant issues. CBJ documents are highly summarized representations of Mission programs; lack year-to-year consistency in coverage; and provide little detail. They are not expected to provide comprehensive description of the country program, but should reflect the what elements of the program that Missions deem important or that are seen as strong justification for funding requests.

Country	No. of Years with References to EAS	Nature of Reference to EAS
Bangladesh	1	In FY10, Bangladesh proposed new programs to help increase effectiveness and efficiency agricultural extension services
Burkina Faso	0	--
Burma	1	In FY19, Burma proposed programs to provide critical extension services to farmers, entrepreneurs, and other civil society actors in agriculture
Cambodia	0	--
DRC	1	In FY17, the DRC proposed boosting access to improved agricultural extension services
Ethiopia	0	--
Ghana	0	--
Guatemala	2	In FY10, Guatemala proposed support to GOG efforts to strengthen agriculture research and extension services; In FY17, activities emphasized nutrition training to extension agents.
Guinea	0	--
Haiti	4	In FY13, 15, and 16, Haiti supported local organizations and community groups in providing extension services; in FY19, support was proposed for research and extension centers
Honduras	0	--
Kenya	0	--
Liberia	3	In FY12, Liberia proposed to improve farmer-to-farmer extension services; in FY13, proposed to expand access to market information services, value-added technologies, and high-quality public and private sector agricultural inputs and extension services and to train farmers to improve farmer-to-farmer extension services; and in FY17, proposed to coordinate partnerships with the Ministry of Agriculture and private companies to deliver extension services
Malawi	4	In FY12, Malawi proposed small-scale capacity building through training and extension services; in FY13, proposed capacity building through training and extension services with activities implemented through farmer groups, community-based organizations and/or GOM extension; in FY15, proposed support to extension and nutrition advisory services, providing comprehensive support through training and extension services; in FY17, noted they had identified sites for watershed management, and expanded the reach of extension services on conservation best practices and 265 health and nutrition care groups

Country	No. of Years with References to EAS	Nature of Reference to EAS
		and that agricultural development was hindered by poor extension support from national institutions
Mali	1	In FY 13, Mali planned investments to expand technology dissemination through extension services
Mozambique	0	--
Nepal	2	In FY17, Nepal proposed training extension agents from multiple ethnic and caste groups on best production methods, nutrition, hygiene, and female-friendly farming methods; in FY19, USAID worked with GON extension agents and collaborated with research groups to disseminate improved practices and technologies through private sector-managed and activity-developed demonstration sites
Niger	0	--
Nigeria	1	In FY17, Nigeria proposed support to engage internally displaced persons in productive agricultural skills training and extension services in the Northeast
Rwanda	3	In FY12, Rwanda proposed to assist the Rwandan Agriculture Research Institute to develop systems to ensure its results are disseminated through an improved extension network. Partnerships between US and Rwandan universities would help produce a steady stream of qualified agricultural researchers and extension agents. In FY15, proposed support to national government agencies and implementation of activities at the district level with agricultural extension agents and local communities. In FY17, proposed facilitating farmers' access to extension services, and implementation of an action plan for enhancements in agricultural extension services delivery
Senegal	0	--
Somalia	0	--
South Sudan	2	In FY12 and FY13, South Sudan proposed support to linkages with US and regional agricultural institutions to foster agricultural extension; In FY14,
Tajikistan	2	In FY13, Tajikistan proposed to develop and deliver agricultural advisory services through public agencies as well as private input and marketing firms; FY17 proposed to foster better extension for small-holder farmers;
Tanzania	0	--
Uganda	1	In FY18, Uganda proposed provision of extension services for coffee, maize, and beans;
Zambia	1	In FY15, Zambia proposed to improve public and private sector agricultural extension services
Zimbabwe	3	In FY10, Zimbabwe proposed to rebuild deteriorated extension services, supporting outreach capacity by training and attracting former extension agents back to their former positions: In FY 12, proposed reviving the agricultural sector through provision of extension services; and in FY15, proposed training in Farming as a Family Business and improved animal health care through access to extension services

## Annex C: EAS Coverage in USAID Mission Strategy Documents

The following is based on a word search for “extension” and “advisory services” in reference strategy documents available on the USAID website or internet search. Most were Feed the Future Multi-Year Plans (2010-15) and 2018 Global Food Security Strategy Country Plans. For countries lacking such documents, Country Development Cooperation Strategies or other strategy documents were used. Multiple documents were available for some countries. The search is intended to determine the extent of emphasis on EAS in strategy documents. Reference to these terms were taken as extracts, not including references to health or other uses of “extension” not referring to agricultural EAS and not including references to non-farm “advisory services”. References to EAS using other terminology, such as “training” may have been missed and mis-interpretation may have resulted from lack of full context in the overall document. These are not thought to be significant issues. (Note: 1 = minimal; 2 = modest; and 3 = substantial)

Country		Assessment of EAS System	Strategy Commitment to:				Nutrition Emphasis	Input Supplier EAS	Other Issues
			Private Sector EAS	Public Sector EAS	POs and EAS	ICTs for EAS			
Bangladesh	FY 2011–2015 Multi-Year Strategy	3	3	3	3	0	1	1	Strong overall treatment of EAS issues
Bangladesh	GFSS Country Plan 2018	1	3	2	2	0	1	1	
Burkina Faso	N/A								
Burma	None available	-	-	-	-	-	-	-	--
Cambodia	FY 2011–2015 Multi-Year Strategy	2	3	1	1	2	0	1	Only one percent of farmers are visited by EAS
DRC	FTF Strengthening Value Chains Activity - Gender, Social Inclusion, and Conflict Mitigation Strategy 2017	2	1	1	3	2	0	1	Includes work with a Coffee Farm College
Ethiopia	FY 2011–2015 Multi-Year Strategy	3	1	3	0	0	2	1	Includes a strong coordination with public sector EAS
Ethiopia	GFSS Country Plan 2018	0	0	0	0	0	0	0	
Ghana	FY 2011–2015 Multi-Year Strategy	0	0	0	0	0	3	0	Minimal treatment of EAS, with most focus on nutrition services
Ghana	GFSS Country Plan 2018	0	0	0	0	0	2	0	
Guatemala	FY 2011–2015 Multi-Year Strategy	1	1	1	2	0	2	0	
Guatemala	GFSS Country Plan 2018	3	1	3	1	0	0	0	
Guinea	Country Development Cooperation Strategy 2015–2020	0	0	0	0	0	0	0	No mention of EAS, but commits to completing an Ag Sector Review

Country		Assessment of EAS System	Strategy Commitment to:				Nutrition Emphasis	Input Supplier EAS	Other Issues
			Private Sector EAS	Public Sector EAS	POs and EAS	ICTs for EAS			
Haiti	FY 2011–2015 Multi-Year Strategy	1	0	2	0	0	3	0	PASA support being provided to GOH for EAS system development
Honduras	FY 2011–2015 Multi-Year Strategy	1	2	1	0	0	2	0	Recognizes needs for NRM/climate change related EAS
Honduras	GFSS Country Plan 2018	3	0	3	0	0	0	0	USG is recognized as the largest EAS provider in the country
Kenya	FY 2011–2015 Multi-Year Strategy	3	3	2	0	1	0	3	USDA is providing support to public EAS system
Kenya	GFSS Country Plan 2018	0	1	0	1	1	0	1	Very limited treatment of EAS in strategy, but supportive of broad market system development
Liberia	FY 2011–2015 Multi-Year Strategy	3	3	3	3	0	2	2	Very strong EAS element included in strategy
Malawi	FY 2011–2015 Multi-Year Strategy	1	0	0	0	0	2	0	Commits to emphasis on EAS in early phase of program, but little detail or discussion
Mali	FY 2011–2015 Multi-Year Strategy	0	1	1	0	0	3	1	Proposes to combine agriculture, health and micro-finance services in integrated Care Group activity
Mali	GFSS Country Plan 2018	0	0	0	0	0	0	0	No mention of EAS, but recognition of importance of NRM and resilience issues
Mozambique	FY 2011–2015 Multi-Year Strategy	2	3	1	3	0	0	0	---
Nepal	FY 2011–2015 Multi-Year Strategy	3	3	3	0	0	0	3	Strong EAS discussion and element of strategy; plans a Mapping Study of EAS Service Providers
Nepal	GFSS Country Plan 2018	3	3	0	1	0	0	3	---
Niger	GFSS Country Plan 2018	2	0	0	0	0	0	0	Minimal treatment of EAS issues in strategy
Nigeria	GFSS Country Plan 2018	1	2	1	0	2	0	0	---
Rwanda	FY 2011–2015 Multi-Year Strategy	1	2	1	1	3	0	0	Recognizes needs for NRM/climate change related EAS
Senegal	FY 2011–2015 Multi-Year Strategy	1	1	1	0	0	3	0	---
Senegal	GFSS Country Plan 2018	0	3	0	2	0	1	2	---
Somalia	Strategic Framework for Somalia: 2016-2019	0	0	0	0	0	0	0	Prioritizes service delivery but no mention of agriculture or EAS
South Sudan	Operational Framework - 2016 –2018	0	0	0	0	0	0	0	Prioritizes service delivery but no mention of agriculture or EAS
Tajikistan	FY 2011–2015 Multi-Year Strategy	3	3	3	3	0	1	2	
Tanzania	Country Development Cooperation Strategy - 2014 –2019	0	0	0	0	0	0	0	

Country		Assessment of EAS System	Strategy Commitment to:				Nutrition Emphasis	Input Supplier EAS	Other Issues
			Private Sector EAS	Public Sector EAS	POs and EAS	ICTs for EAS			
Uganda	FY 2010 Implementation Plan	1	2	0	0	0	0	2	Plans an Analysis of Research-Extension Delivery Systems
Uganda	GFSS Country Plan 2018	2	2	1	0	2	0	2	12% of households receive EAS
Zambia	FY 2011–2015 Multi-Year Strategy	1	1	1	0	1	1	1	Recognizes needs for NRM/climate change related EAS
Zimbabwe	GFSS Country Plan 2018	0	0	0	0	0	0	0	Notes that EU supports EAS system development

## Annex D: Summary of EAS Country Program Activity Characteristics

**Table D-1: Summary of EAS Country Program Engagement Characteristics**

Country	Crisis/Post-Crisis	Country Public EAS Capacity	Decentralized Public Services	USAID Project Involvement				ICT Innovations	Assessment Available	Lead/Contact Farmers	EAS Stakeholder Platform*	Dedicated EAS Project
				Input Suppliers	Local NGOs	Producer Organizations	Public Agency					
Bangladesh		Strong	x	x	x	x	x	x	x	x	x	x
Burkina Faso	Yes	Weak		x	x	x				x		
Burma	Yes	Weak		x	x					x		x
Cambodia	Yes	Weak	x	x	x	x	x	x				
DRC	Yes	Very Weak		x	x	x			x			
Ethiopia	Yes	Strong		x		x	x		x	x	x	
Ghana		Moderate	x	x		x	x	x	x	x	x	
Guatemala	Yes	Weak	x		x	x	x		x	x		
Guinea	Yes	Very Weak		x		x			x			
Haiti	Yes	Very Weak				x		x		x		x
Honduras		Very Weak	x	x					x			x
Kenya		Strong	x	x		x	x		x			
Liberia	Yes	Very Weak	x	x		x	x		x			
Malawi		Strong	x		x	x	x		x			x
Mali	Yes	Weak		x	x	x	x		x	x	x	
Mozambique	Yes	Weak	x	x		x			x			
Nepal		Moderate	x	x	x	x	x	x	x			
Niger	Yes	Very Weak				x	x			x		
Nigeria	Yes	Moderate	x		x	x	x		x	x		
Rwanda	Yes	Strong	x			x	x		x	x		
Senegal		Moderate	x	x	x	x	x	x	x	x	x	
Somalia	Yes	Very Weak				x						
South Sudan	Yes	Very Weak		x						x		
Tajikistan	Yes	Very Weak		x	x	x			x			x
Tanzania		Strong	x	x	x	x	x			x		
Uganda		Moderate	x	x		x	x			x		
Zambia		Moderate		x		x	x			x		
Zimbabwe	Yes	Very Weak		x		x	x	x		x		
Total Number			15	21	13	26	19	7	16	17	5	5
Percent			54%	75%	46%	93%	68%	25%	57%	61%	18%	18%

\* EAS Stakeholder Platforms were noted where multi-stakeholder consultative groups were used to plan and coordinate EAS activities. These were typically project specific, so not all projects in a country may not have used them. There may have been other project coordinating committees for some programs that were not cited in documents reviewed.

**Table D-2: Innovations or Lessons Learned in Country Programs**

<b>Country</b>	<b>Innovation or Lesson Learned</b>
Bangladesh	Project strengthening of public services must be done collaboratively with a view to sustainability.
Burkina Faso	--
Burma	EAS requires good understanding of client needs and capacity; direct project provision is not good base for sustainability.
Cambodia	Formal collaboration agreement with government can facilitate EAS activities.
DRC	Local capacity development may be essential to EAS activities.
Ethiopia	Strong government commitment to EAS is critical.
Ghana	Effective EAS requires availability of improved innovations; local intermediates can be key to reaching small farmers.
Guatemala	Commodity-specific EAS can be limiting.
Guinea	Innovation: Emphasizes human capacity development of youth entrepreneurs (AVENIR).
Haiti	Innovation: Sustainable Rural Development Centers provided a good base for EAS activities. Certification program for Master Farmers developed qualified field agents and opportunity for employment.
Honduras	--
Kenya	Local capacity strengthening is critical.
Liberia	--
Malawi	--
Mali	Innovation: Community Agribusiness Agents embedded in producer organizations provided critical services. Extensive engagement with and support for producer organizations was beneficial.
Mozambique	--
Nepal	Agrovets and input supply wholesalers are a readily available mechanism for EAS.
Niger	--
Nigeria	--
Rwanda	Innovation: Twigire Muhinzi program provides broad coverage.
Senegal	Innovation: Production data collection, analysis and distribution based on EAS, producer organizations, and coordinated marketing and support services empowers an integrated production system.
Somalia	--
South Sudan	Innovation: Tests farmer-input supplier coordination fora.
Tajikistan	Innovation: "Community inclusiveness" EAS model emphasizes livelihood resilience strengthening.
Tanzania	--
Uganda	Innovation: Village Agents fielded by agribusinesses and aligned with public EAS.
Zambia	Innovation: Community agents (or community advisors).
Zimbabwe	Innovation: Lead farmers in a network of hub demonstration centers.

## Annex E: Country Mission Portfolio Review of Extension and Advisory Service Activities

### *Bangladesh*

#### Country Extension and Advisory Service (EAS) System Status

Bangladesh's rural population of 105.6 million depends on EAS to a large degree to ensure food security and escape from poverty. About one-third are under the poverty line and about 42 percent are illiterate. Of farms, 86 percent are classified as “small and marginal” and 53 percent are less than half an acre. Rice is the major crop, though there is a trend toward more diversified, higher-value crops. In many ways, Bangladesh is a development success, having moved from being considered a food-insecure “basket case” in early days to lower-middle income status. This is due in part to impressive agricultural sector performance, resulting in part from government and donor concern for food security and stability that led to a relatively high priority for agriculture and EAS.

The public EAS system is huge with a ballpark estimate of 20,000 EAS agents total – 14,092 field agents in the Department of Agricultural Extension alone. EAS is organized under 487 sub-districts (‘upazillas’) in 64 districts and seven divisions. Each sub-district has several ‘unions’ divided into three ‘blocks’ (14,032 total in country) of about 900 farmers. The blocks are the focus for EAS by Sub-Assistant Agriculture Officers (SAAOs). The public EAS agencies adopted the T&V system in the 1970s to good effect. That top-down, technology transfer approach followed a rigid structural methodology for introducing green revolution technologies. By the 1990s, conditions had changed and a new approach was needed, leading to a “New Agricultural Extension Policy” adopted in 1996 and revised in 2012. This committed the GOB to an EAS that is: efficient, decentralized, pluralistic, demand-driven, serving all categories of farmers, focused on farmer groups, comprehensive, and technically sound. Implementation of this ambitious agenda has been slow.

Frontline public EAS staff are relatively well-trained in technical topics, especially as compared to the past, and are reasonably well paid, but have no fixed office and little logistic support. In-service training remains a continuing challenge. ICT and other communications support is provided by an Agricultural Information Service. Fragmentation is another problem, as separate departments for crop, livestock, and fisheries each have their own EAS, as do several other GOB agencies. These coordinate poorly, despite having coordinating committees established at the sub-district and other levels. Since farmers need EAS for their full farming system, commodity-specific services may not match needs. Field EAS agents, in addition to their own work agenda, frequently provide advice or services for NGOs and agribusinesses. The public EAS is often criticized for its inefficiencies, but it remains a major force for sectoral change and deserves some credit for past positive agricultural sector growth.

Private EAS capacity is also extensive, though less well organized. Both NGOs and for-profit private firms – mainly input dealers and agricultural product buyers – have active EAS. Input dealers are spread throughout the country. (One USAID project trained 3,000 of them.). They have the obvious motivation to engage clients to sell their inputs and to show these products to be as

beneficial as possible. Product buyers seek timely access to agricultural products in the quantities and of quality required, sometimes providing EAS in contract-grower or outgrower agreements. One example is PRAN (Program for Rural Advancement Nationally), a food processor with 78,000 farmers under contract for product. There are an estimated 3,500 EAS staff in agribusinesses. For-profit firms, as well as NGOs, are eligible to participate in sub-district EAS coordinating committees, though how common this is not clear. Bangladesh is known for its NGOs, of which there are thousands. Some have large rural programs, such as BRAC (with a half million farmer clients) and Rangpur-Dinajpur Rural Services (with two million farmers), but many NGO EAS projects are small and most are time-limited. There are an estimated 2,500 NGO EAS agents. ICT services are widely available. About three-fourths of the population has access to cellphones and one-third to internet.

Farmer organizations are ubiquitous, but not necessarily strong. Many form at the behest of donor projects and exist as long as project resources keep them together. The current status and stability of these is uncertain. Even as transitory entities, they are critical to efficiently engaging with small farmers in provision of EAS. Producer organizations are likely necessary to achieve some economy of scale in market transactions by small farmers, though to be effective in this, greater sophistication and stability might be necessary.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Of the CBJs from 2010 to 2019, only FY10 makes reference to extension, proposing new programs to improve EAS efficiency and effectiveness. The FY2011-15 Multi-Year FTF Strategy includes a substantial assessment of EAS and a commitment to support both public and private service provision. The 2018 Global Food Security Country Plan continues the commitment to improving EAS. Recent project reports and evaluations reflect commitment to technical change and support to smallholder agricultural production. Of 23 separate project activities in the portfolio, about nine support research, development, and regulatory capacity necessary to improve content offering of EAS; three provide substantial resources for EAS delivery; and one completed activity focused on improving the EAS system.

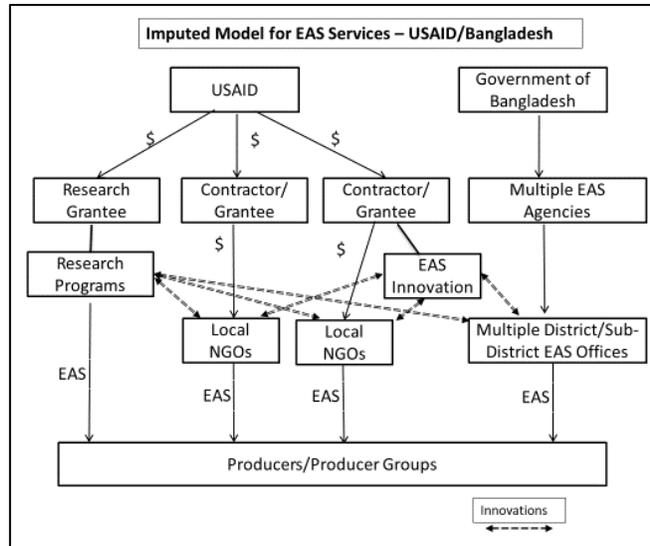
The 2015 evaluation of the Rural Advisory Services Program found that many of the 28 Bangladesh FTF activities were related to EAS, but only one focused on increasing local EAS capacity necessary for sustainability. The evaluation found that there had been substantive innovative in use of ICTs for EAS, but that engagement with GOB agencies for EAS had been limited. Current projects appear to have improved in linkages with the GOB.

The **USAID Agricultural Extension Support Activity (AESA) Project** (\$19.1 million) sought to strengthen the existing agricultural extension system in 26 sub-districts (upazilas), focusing on six commodities: aquaculture, beef, chili, dairy, jute, and mung bean. The project engaged 116,130 smallholders; formed 3,942 Farmer Producer Groups; developed an farmer producer group-channeled community extension approach; created agricultural extension service centers as one-stop agro-service delivery points; developed an 'A-Card' tool for facilitating farmer access to credit; developed ICT EAS tools (Farmer Query System, Crop Diagnostic Tool, extension agent's

electronic diary, and agro-knowledge bank), and integrated private sector EAS agents as vital partners in the overall EAS system.

The project ‘equipped’ 1,412 EAS agents, included GOB SAAOs, input retailers, and irrigation, tillage, spray, and artificial insemination service providers. It established agricultural extension services centers at the ‘block’ level, providing office facilities, motorcycles, communications, and smart phones for SAAOs to facilitate their interactions with farmers, research and technical support contacts, and private input suppliers and product buyers. SAAOs,

farmers, and DAE officials all appreciated this new model. In equipped areas, all SAAOs used ICT tools, compared to two-thirds in other areas. In the equipped areas, farmer ICT usage was about 75 percent compared to 15 percent elsewhere. Regrettably, at the end of the project there was no arrangement or capacity for the GOB to adopt the approach as piloted.



The project established farmer producer groups for collectively action and to facilitate access to SAAOs and ICT support. Groups received services through ‘Learning Sessions’ organized by project ‘Field Facilitators’ deployed in each union. The project trained 94,512 farmers through Learning Sessions, typically holding two sessions per month per farmer producer group. Each group selected three leaders – a Farmer Leader (Extension), Farmer Leader (Marketing), and Farmer Leader (ICT) –responsible for these activities in the group. Performance of groups was mixed – 21 percent performed excellently, 63 percent moderately, and 16 percent not up to the expectation.

The project developed an ambitious suite of ICT tools: a) Farmer Query System, a mobile application allowing farmers to call and send photos to a ‘call center’ and get a response through a phone call and/or SMS (maintained by a project-funded partner, mPower); b) Crop Diagnostic Application , a smartphone application that enables farmers to access information on pest and disease-related problems for 10 crops on their own; c) SAAO Digital Diary, a smartphone application to help SAAOs log daily services provided to the farmers digitally; d) Seed Variety Recommendation, a query-based tool for seed variety and fertilizer recommendations based on the farming system and land characteristics; e) Crop Statistics Application, a mobile application for EAS agents to record farmer data; f) Fish Diagnostic Application, a query-based tool to provide information on fish diseases and production; g) Livestock Management System, a mobile software product for monitoring and service delivery for livestock health and production by small farmers; and h) Agro Knowledge Bank portal, a knowledge data base of production technology for 35 crops compiled from agricultural research organizations (managed by mPower in collaboration with the GOB); i) Audio-Visual Materials, six videos on crop production practices j) and a ‘Call Center’ at AIS headquarter (managed by Practical Action Bangladesh, an NGO).

Experience varied, though none of the ICT tools seemed to be a run-away success. The A-Card for credit programs had some problems, but is being adopted for use by CARE-Bangladesh. The Crop

Diagnostic Application was useful, but limited in that it covered only ten crops. The Farmer Query System often experienced delays in response. The SAAO Digital Diary was useful, though it needed enhancements, and the GOB is not able to adopt this at present. The future is uncertain and probably 'iffy' for those services maintained by sub-contracted NGOs. Farmers also tended to use ICTs through project staff or project-supported staff, rather than with their own phones, and generally, farmers were not able to utilize tools on their own, as they did not have smartphones and could not deal with the complexity of the tools.

The project trained input sellers, recognizing inputs as essential to many innovations and dealers as an available and motivated actor for providing services to farmers. The input dealers exhibited little interest in using ICT applications. They also on occasion compromised quality of inputs to maximize profits. About 50 percent of farmers received advice from private extension agents, but only 19 percent of those agents provided reliable and correct advice. Greater training seems much needed.

The project found commodity (value chain) based EAS to be problematic. Farmers needed advice relevant to their specific farming systems and agro-ecological environments. A commodity-focused EAS did not always meet those needs. Some farmers participated in programs (i.e., for jute or for dairy) for commodities they did not even produce. Some shifted out of specific products because of drop in market price and demand or because of incompatibility with their land resources, but then could get no help from EAS for their new crops. In some cases, commodity-specific EAS introduced innovations for a commodity and then had nothing more to offer the farmer. The implementing partner also found there to be greater risk in forming farmer groups based on one specific crop (value chain).

In retrospect, the AESA Project had two options for strengthening the EAS system. It could have supported innovations in ongoing programs of EAS providers, but instead chose to provide services directly and pilot innovations in its own program. This enabled it to show its own impact on farms, but ultimately made it more difficult to have innovations suited to and adopted by other providers.

The **National Agricultural Technology Project - Phase II Project (NATP – 2)** (\$8.0 million) is to increase agricultural productivity of one million smallholder farms and improve their access to markets. The project includes an agricultural research component and three sub-sector components for crops, livestock, and fisheries. This is expected to better integrate agricultural research, extension, and production. It will improve EAS through stronger linkages with research, on-farm demonstrations of new technologies, capacity enhancement through training, and co-funding productive assets.

The **Agricultural Value Chains (AVC) Project** (\$34.2 million) is to strengthen agricultural value chains reaching 158,000 farmers. The project works with input dealers to improve marketing strategies, retail alliances, branding, client relations (training and loyalty programs), information management, and distributor-retailer-farmer linkages. Work with product buying-firms emphasizes greater interaction and development of relationships with producers. The project assisted in developing capacity of five NGOs, but found limitations in inculcating strategic long-term planning and change. The NGO roles were unclear. The project shifted from direct farmer training to embedded training, which was found more effective. Little detail was available on the embedded

training and what this implies. It appears that this is training provided farmers by agribusinesses rather than by the project. Whether the project continues to fund such training was unclear.

The **Feed the Future Bangladesh Livestock Production for Improved Nutrition Project** (\$9.0 million) is to: increase livestock productivity; improve household access to healthy foods; and improve nutritional behaviors. During 2018, 38 Livestock Service Providers (out of 425 planned for the project) received three-day training from the Department of Livestock Services and then trained 16,000 farmers. Most service providers increased their income.

The **Feed the Future Bangladesh Rice and Diversified Crops Activity** (\$24.5 million) catalyzes market system change to promote a diversified farm management approach for rice production and higher-value crops. It seeks to expand agribusiness operations and provide 500,000 farmers access to new products, services, and/or markets. It has a \$1.5 million Market Accelerator Fund to support public-private partnerships. The project currently works with 35 private companies and expects to impact on 23,600 farmers. Project activities facilitate company changes to: improve market signals to increase farmer investment; facilitate alliances between buyers and input suppliers; shift to customer-oriented marketing strategies; increase access to mechanization; facilitate innovative financing mechanisms; and increase adoption of information technologies.

### EAS System Issues

The client base for EAS is large and accustomed to EAS. Nearly all farms are small and group approaches necessary to EAS efficiency. Most farmers are resource-poor and not accustomed to cost-share or fee-based services.

The operating environment is generally favorable. The public EAS provider policy is sound, though implementation of all of its principles is a work in progress. Structures for coordination exist on paper and operate to varying degrees.

EAS provider capacity is generally quite strong. Providers have large numbers of staff and there is extensive experience in country with varied EAS methodologies and approaches. Agricultural training institutions produce graduates with generally sound technical skills, though group formation and market facilitation skills may be weaker. Some of these other skills exist in country in the large NGO community. In-service training and skill up-grading are continuing challenges for GOB EAS providers. Input dealer EAS quality is also weak or inconsistent.

EAS program content must address rice production technology, but must also go beyond this to encourage more diversification of production systems. Support for whole farm management will need to respond to natural resource constraints and climate change. Market facilitation and group strengthening represent a new agenda for the technology-oriented EAS agents. New technologies are expected from the substantial research work underway in country.

Incentives for EAS delivery are adequate. Public EAS agent salaries are reasonable though logistical support and amenities are lacking. Opportunities exist for EAS staff to move between EAS providers or to move up in larger organizations. Introducing some fee-for-service arrangement would be difficult, but may result in better service quality.

## Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Bangladesh EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Fund an activity to assist the government adopt and implement those AESA Project EAS innovations that are appropriate and that will improve services to farmers and encourage and support complementary private EAS programs.
- ❖ Fund a program to strengthen input suppliers nationally with a view to improving professionalism, management, and quality consciousness, including but not limiting this project to encouraging EAS provision.
- ❖ Fund a pilot program of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Burkina Faso*

### Country Extension and Advisory Service (EAS) System Status

The Burkina Faso pluralistic agricultural EAS system provides services to the country's 13.7 million rural people. These services are limited and perhaps intermittent. The system continues to deal with the challenge of aligning conflicting interests of agribusiness and producer organizations in an integrated EAS system that has weak public sector support.

The decentralized public EAS system is based on programs within four Government Ministries for: Agriculture, Water and Fishery Resources; Higher Education and Scientific Research; Animal Resources; and Environment. World Bank assistance in the 1990s helped establish a national EAS system with 1,007 village extension workers, 521 district extension agents, 213 animal health agents, and 127 literacy and cooperative education agents providing services through a Training and Visit (T&V) system. Plans envisioned greater devolution of responsibility to farmer organizations for high value crops and livestock and increased participation by village communities. Problems surfaced in later Bank assistance with low extension coverage (reaching only 35 percent of family farms) that did not appear to improve farm productivity. Other problems arose due to split of the Ministry of Agriculture into two departments; difficulties in transition to a demand-driven approach; and a reduced number of extension agents. Restricted public funding appears to be the major constraint.

Private sector EAS has been dominated by cotton companies that have long been important for the country, which ranks first or second in cotton production in Africa. Cotton companies in the past exerted extensive control over producers, who lack alternative channels for markets for sale of cotton. Cotton producer organizations at the community level were a link for cotton buyers. Larger scale producer organizations emerged to represent producer interests and partner with the for-profit cotton firms for EAS and other production facilitation. EAS was generally effective, but the partnership was an uneasy alliance, due to priority, strategy, and political differences. Other private firms have begun engaging as EAS suppliers, though these are on a low level of operation and often linked to donor projects. The country has a relatively strong and growing ICT capacity and strong government support for digital systems development. There are three cellphone network operators and a 44 percent penetration rate for unique users. 4G coverage is available but limited. An interactive voice response (IVR) system is being developed by the government to provide extension information on demand, at no cost to the user. Interactive radio programming was been used to good effect. ICT potential for use in EAS is promising.

Producer groups, as noted above, are relatively well-established in country and are a recognized force. Collective action at the community level is common, though, as is often the case, sustainability of initiatives and impacts at scale can be challenges. A general commitment to community service likely underpins some successes with farmer-to-farmer extension (perhaps NGO-supported), as in spread of improved *zai* (planting pit) technology for land rehabilitation through innovative approaches of: "Market Days," "Teacher-Student" approach, and "Zai Field Schools".

The national EAS system appears poorly organized and poorly integrated. A full assessment of the public and private system may be useful.

## Recent EAS Project Experience

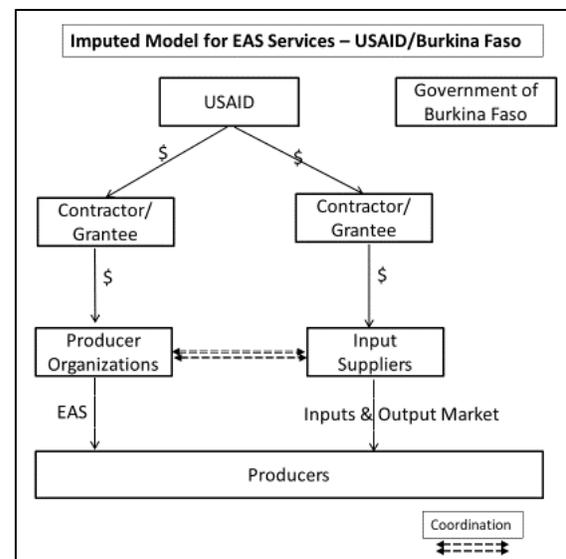
USAID budget and planning documents provide little evidence of commitment to EAS development. None of the CBJs from 2010 to 2019 make reference to EAS. Recent project reports and evaluations suggest a modest role for EAS. Project activities appear to be quite diverse and to lack a clear strategy or approach to EAS.

**The Burkina Families Achieving Sustainable Outcomes (FASO) Project** (\$53.3 million) helped 56,126 households improve access to food of sufficient quantity and quality throughout the year. Agricultural activities were implemented by field staff of two local partners, using a wide variety of activities to diversify agricultural production, increase incomes, and improve natural resource management. The project targeted specific value chains: rice, sesame, cowpea, orange-fleshed sweet potato, sorghum, maize and millet. Activities included: provision of agricultural inputs; subsidized seed coupons and tools; reclaiming degraded lands; promoting improved agricultural practices; supporting producer groups; promoting linkages with agro-dealers and government research and extension; and establishing Savings and Internal Lending Communities groups.

The FASO Evaluation provided little detail on EAS approaches, which appear to have been traditional and were certainly confounded by subsidies for inputs and activities. About the only evaluation mention of extension was that female-headed households received inputs and training and were linked to the Village Poultry Extension Agents (VPAGE). Participating farmers consistently reported improved production, and field work confirmed that beneficiaries had knowledge of and claimed to be applying improved agricultural practices. However,

project survey data showed more mixed results for technology adoption. Some savings and internal lending community groups were created by “private sector providers” apparently funded by the project. Problems emerged because high monthly compensation for some private sector providers’ staff served as a disincentive for others. The project appears to have benefitted local communities, but sustainability is uncertain and lessons on and role of EAS are obscure.

The **Resilience and Economic Growth in the Sahel – Accelerated Growth (REGIS-AG)** (\$34.4 million) used “pull” strategies to link more market-oriented producer organizations with the companion REGIS-ER Project, which focused on production-level “push” strategies. The project operated in both Niger and Burkina Faso with implementation by employee teams from eight organizations. The project targeted three value chains: cowpeas, small ruminants and poultry. REGIS-AG works with 748 POs, with over 30,000 households in. Activities included: training value chain actors, training producers, monitoring and coaching producer organization members, and fairs. A planned next step will be educating farmers on pesticide risks using trained input suppliers and public sector EAS.



Commercial linkages should increase likelihood that value chain activities will be maintained, but sustainability still may be questionable for many activities. The chief constraint to-date has been low production levels that do not allow producer organizations to satisfy rapidly developing national and regional-level demand for products. But, production issues are not included in the REGIS-AG mandate. This was to be the responsibility of parallel projects, but those have focused principally on food security and reducing malnutrition, reducing attention on production for markets.

Evaluators concluded that the project was successful in: training producers in organizations to get better prices on group sales; helping vulnerable producers build social networks to access markets; testing models for community-based veterinary services; and building capacity of producer organizations and commune governments to support value chain activities. Participating producer organizations faced a steep learning curve requiring at least two agricultural years to improve and become more organized and able to play required roles in year three.

The **Resilience and Economic Growth in the Sahel – Enhanced Resilience (REGIS-ER)** project aimed to increase the resilience of vulnerable populations in the Sahel region by upgrading competitiveness and inclusiveness of pro-poor value chains (cowpea, small ruminant and poultry). The project works through Community-Based Solution Providers and Local Resource Persons, supporting them in commune-level platforms to cluster, network, and diversify available goods and services. Community-based solution providers receive support from agro-dealers to market agro-dealers' products. In the two countries there are 93 “promising community-based solution providers”, 159 Auxiliary Veterinarians in networks of local private veterinarian services, and at least 99 other CBSPs. Entities, which do business with 63 input suppliers. The project provided kits for 80 livestock auxiliaries and 60 poultry vaccinators. The project encouraged community-based solution providers to expand marketing efforts to grow their businesses. Local radio ads have been effective in promoting awareness of availability of inputs. Nearly 57,000 clients benefitted from the products and services provided by these CBSPs, whose sales revenues exceeded \$522,000. The project also trained government extension leadership in the districts.

An evaluation of the **Victory Against Malnutrition (ViM) Project** found that beneficiaries receiving EAS training produced a greater number of crop or livestock products compared to those not participating in trainings. Training participation was associated with a higher yield for cowpeas and had a positive effect on household asset values. Project beneficiaries used government or private sector veterinary services more than non-beneficiaries (50.3 percent vs. 32.8) and extension had a positive effect on use of improved livestock practices. Beneficiaries credited project EAS with substantially improved crop yields, citing as particularly useful: literacy courses, production techniques, conservation of crops, hygiene awareness, access to health care, livestock techniques, and porridge making. This list highlights the wide range of project assistance topics. The evaluation concluded that project EAS had positive outcomes, though it could also be the case that better-resourced households participated in the EAS trainings and that was a partial reason for differences.

### EAS System Issues

The client base is largely small farmers and herders, with relatively few large commercial farmers. Cotton is a major cash crop, but many farmers are partially subsistence based with limited resources and natural resource management and climate change threats. Producer groups are common and

appear effective in facilitating EAS, including with farmer-to-farmer and leader farmer activities. Producer groups have sustainability issues and may be prone to a donor-dependency welfare dependency. Many small farmers are illiterate. Stronger business planning and financial independence through sound market-based relationships may help strengthen collective action.

The operating environment for EAS is difficult. Projects report strong market demand for agricultural products, but systems are not highly commercialized (except for cotton) and marketable surpluses are limited. Security is a problem in some areas, and EAS has a potential role in promoting stability. Studies indicate that mobile phones are widespread and a potential tool for EAS. These create a horizontal platform of information exchange and may lower extension costs and facilitate knowledge sharing by all EAS providers. Cellphone videos may be particularly advantageous to illiterate farmers.

EAS provider capacity is thin. EAS programs are fragmented with public services decentralized and many private services project-based. It is unclear whether there is an accepted framework for coordination and emergence of an effective pluralistic EAS system.

EAS program content is an issue, with the cotton sector a good example. Cotton buying firms are highly motivated to provide effective EAS to improve quality and availability of cotton. This is appreciated by clients, but they also want a broader range of services to address whole farm needs and to diversify to strengthen resilience. The management advice for family farms (MAFF) extension approach has been introduced and is reportedly preferred by farmers, though this collaborative, whole-farm advisory approach is beyond the interests of cotton firms. The diverse needs – livestock, crop, market facilitation, group strengthening, natural resource management, etc. – complicate service provision, requiring differing expertise. Funding is inadequate.

Incentives for EAS delivery are limited. Much of the client base has little of the purchasing power necessary to attract and finance EAS. Many needed services are public-good type in nature and not well-suited to private financing. Public sector salaries and operational funding are low. Local participation may be motivated by a strong spirit of community solidarity. The sheer survival challenges for many small farmers force innovation and collective action on some issues, such as the effective land reclamation movement that has gone on.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Burkina EAS program and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, comprehensive EAS system, recognizing this as a long-term objective in the case of Burkina Faso.
- ❖ Request DLEC or another organization to carry-out a full assessment of the national EAS system and of options for strengthening the system to better meet needs of the sector.
- ❖ Differentiate EAS for two categories of farmers, focusing input supply-linked EAS for producers with resources and capacity to produce surplus for markets and a separate EAS program for less-market ready producers, requiring more human capacity development

services and broader livelihood strategies to combat poverty and perhaps important to future stability. Services should include links on-going research on production systems suited to the environmental and climate change threats to small farmers.

- ❖ Explore options for developing agricultural services coordination platforms with strong EAS participation at the regional level to coordinate activities, liaise with research and input suppliers, and represent producer interests.
- ❖ Integrate an expanded role for radio into all programs and encourage commercial advertising by input dealers, buyers, and market information services. Make this a significant effort with sustained funding and link this to other ICT initiatives.

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## *Burma*

### Country Extension and Advisory Service (EAS) System Status

Extension and advisory services (EAS) have a critical role to play in helping Burma's 37.2 million rural people adapt to a competitive, market-linked global economy. The transition underway has far to go and many potential pitfalls. The rural sector is fast changing, as it recovers from decades of mis-management, social repression, and market distortions. An incredibly rich resource base and industrious population should enable the rural population to emerge from poverty and contribute substantially to national economic growth. For this to happen, empowerment through information and knowledge must play a role and can be fostered by effective EAS.

The public EAS system is somewhat of a puzzle. Analysts are unanimous as to need for reform and a new commitment to EAS to spur agricultural sector growth. Country funding for extension is estimated at a low 0.2 percent of AgGDP, compared to 0.56 percent for the Asia region. Constraints include: low educational levels of extension staff; limited staff numbers; lack of extension materials; little use of innovative approaches and technology; low involvement of private providers; and poorly developed farmer organizations. Current EAS approaches reflect continued influence of top-down approaches and a technology transfer focus, emphasizing demonstration plots, managed in collaboration with extension agents and contact farmers. Worse is the legacy of past extension agents' roles in enforcing government controls over rural people, mandating production targets and technologies, allocating inputs and resources, and reporting on production targets and political issues. Technology was highly valued, but decisions were not market nor farmer-welfare driven. The current public EAS staff is variously estimated at between 3,500 and 11,000, but likely around 7,400. Many are well-trained in production technology, but lacking in marketing, enterprise budgeting, collective action and diversified cropping. The major EAS system reforms needed are under discussion and likely to be part of a major reform agenda.

Private sector EAS is somewhat of a new game since the opening of the economy. The for-profit private sector is strong, resourceful and adaptable. It has had to be, as it thrived during colonial times, survived and kept the economy afloat with the black market during the Burmese road to socialism era, emerged and grew during the period of international sanctions, and is now flourishing with the new openness in the economy. There remain issues of cronyism and questions as to origin of investment funds. In agriculture, private firms still struggle with uncertainties and constraining public policies. Firms tend toward a short-term perspective and lack familiarity in dealing with independent small farm producers. This is changing, but private firm EAS is relatively rare. One example that carries a cautionary tale is that of contract maize production in Shan State, where some argue that production contracts have led to loss of land – a sore point due to colonial era experiences in country. NGOs are also expanding, though they too still operate with substantial government oversight and control. Many work in agriculture and provide EAS, but questions are raised as to their level of technical competence. ICT services and capability are growing; cellphones are common in rural areas; and information channels are developing. ICT should play a major role in future EAS.

Producer organizations are weak. Independent community organizations were long repressed and government-supported rural organizations had reputational problems. Problems of trust remain and continuing regulation and lingering suspicions inhibit producer organization development. Still, the new freedom to organize, a positive attitude toward the future, and obvious needs provide a push toward producer organization growth. Producer groups can at least serve as an effective mechanism in disseminating EAS messages at the community level. More active participation in providing and funding EAS will take time.

The evolving national EAS will likely be a complex system to deal with challenges of differing production systems and environments, different client groups, equity across the various states, and environmental and natural resource challenges. The Burmese people emerged from the closed economy with a hunger for contacts with the outside world and access to new technologies and institutions. That may wane with exposure but for now it still serves as an opening for competent and demand-driven EAS to make an impact.

### Recent EAS Project Experience

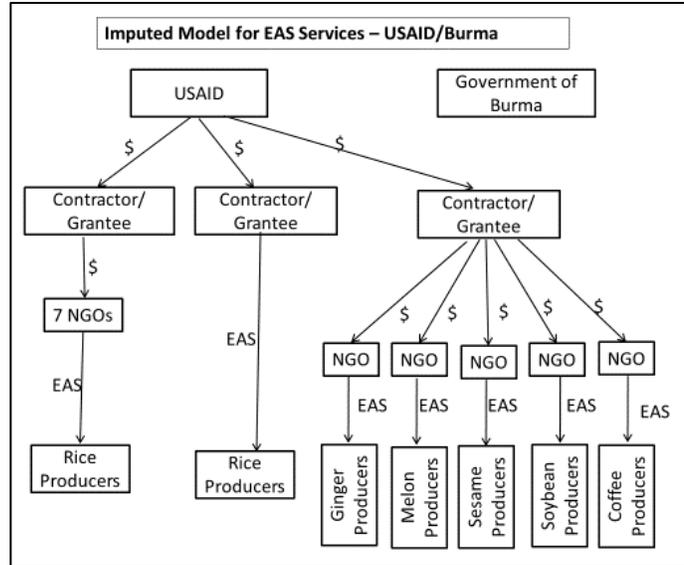
USAID budget and planning documents suggest a modest role for EAS support in achieving development objectives. Only one CBJ from 2010 to 2019 mentioned EAS. That of FY2017 proposed to improve access to EAS for farmers, entrepreneurs, and civil society. Due to the unique situation with USAID re-establishing a new program in Burma, no country strategy documents are available. With the new country program, limitations on direct support to government, and the evolving opening of the country economy, USAID's initial agricultural projects were somewhat ad hoc. Initial analyses proposed a strategic approach combining a "short game" of immediate direct service delivery to ameliorate poverty and encourage social and economic stability with a "long game" phased in to support a structural transition in agriculture. The long game would emphasize policy reforms, research, extension, and education. This appears a sound strategy. Current projects may have missed an opportunity for transformational impact on EAS systems. Still, they include a substantial element of EAS, and the opportunity for influence on the country system may still be possible. The initial projects in the sector offer some very useful lessons, as to opportunities, approaches, and challenges for effective EAS.

The **Value Chains for Rural Development (VC-RD) Project** (\$27 million) has a goal to improve smallholder productivity, strengthen value chain competitiveness, and increase private investment in value chains. It focuses on specific value chains: coffee, soybean, ginger, sesame, and melon, using "lead firms" for large-scale processing and marketing activities and an "Innovative Grant" program to foster community group-private sector linkages. The project reports benefitting 37,190 value chain participants, more than 74 percent of whom adopted at least one new technology.

A project evaluation found problems of: delayed payments (coffee), limited increase in gross margins (soybean, ginger), reliance on few market players, limited market options for improved products (melon, sesame, ginger), and limited adaptation of training recommendations (soybean, ginger). It recommended changes to training programs, strengthening producer organizations, and engaging with a wider range of market players in all value chains. The evaluation concluded "The main takeaway is that agricultural productivity—measured mostly by gross margin, but also by yield—increased for coffee, sesame, and melon. .... All value chains saw improvements in the availability of

productivity-enhancing technologies. Community-based producer organizations were strengthened for coffee, sesame, and melon value chains...”

One factor driving success was the training provided to producers that contributed to improved awareness and adoption of better production technologies, such as fertilizer management (melon and sesame), improved pesticide and disease control (melon and sesame), and chemical management and worker safety (melon, sesame, and ginger). Training included: training of trainers, lead farmer training, technology awareness, and facilitating



linkages to government EAS. Access to quality extension or advisory services, according to interviews with producers, has been provided for coffee, but only partially so for sesame and melon, and has been limited for soybean and ginger.” As a result, project initiatives risk becoming unsustainable. In coffee, [the implementing partner’s] heavy-handed role is a potential threat to the sustainability of market linkages, extension services, and the quality-assurance process.

The evaluation concluded that access to quality EAS was: achieved for coffee for the present with the project’s local field agents, but not for the long term; very limited for the present for soybeans and ginger, but not for the long term; and only partially achieved for sesame and melon. The evaluation recommended accelerating government engagement to improve production technology for all five value chains. Private EAS was lacking and the evaluation noted that farmers claimed salespeople from input suppliers would come and train them on using inputs in an indiscriminate way, saying “the more, the better.” Some farmers have mindsets still conditioned by these salespeople.

Project implementation suggested a lack of understanding and support for local agricultural systems. The large technical assistance team was based in the capital, far from the project areas. One processor stated that the project implementer: “searches for staff who are graduates, speak the ethnic language, and work in the field. Often the Local Field Assistants do not have an agriculture background.” One project team had nine engaged Local Field Agents, but only one that was an agronomist. Scheduling training activities could have better suited timing for crop cycles. Ginger training and demonstration plots were not adapted to the local environment, cropping system, or farmer capabilities in terms of available labor and funds. Coffee was a high-profile activity, because of potential for export, but producer participation was limited. In one area, out of 9,000 coffee producers only about three 3 percent participated directly in the program.

The evaluation questioned project sustainability, noting stakeholders’ comments on soybean work, which would, as one put it, “after [the implementing partner] finishes, the program will stop. Farmers follow the direction [the implementing partner] gives, they don’t lead by themselves. The lead farmers don’t lead...” effective EAS would require better understanding of innovation feasibility

and better incorporation of producers in the search for system improvements. Producer groups need more capacity. And, the range of private actors facilitating the value chain approach is narrow and needs to expand. Future value chain interventions should not only ensure the involvement of lead firms (good for a first pilot phase) but also be inclusive and engage a strategic number of actors in the private sector, ensuring that lead firms really lead and are followed by sufficient numbers of other private actors. Stronger producer organizations are needed to interact with private enterprise – perhaps in sector, regional, or value chain fora – for managing value chain relationships, technology transfer, and extension efforts and, therefore, ensuring systemic and sustainable changes. The project should develop a comprehensive sustainability or exit strategy. This would seem a must for any project, but especially for this one.

A final note is that the project was a first major field project for USAID in country, carried high expectations, and faced many constraints. It generated much interest in the sector and some new ways of thinking about value chains. It seems to have failed in several ways. First, it did not understand that producer organizations and production systems were the weakest part of the value chain and deserved priority attention in reorienting from past neglect and repression. It was easier to interact with more accessible private firms with more resources. Secondly, the numbers and evidence base for new technologies were weak, except perhaps for coffee. And, the level of effort for EAS was inadequate.

The **Livelihoods and Food Security Trust Fund (LIFT)** with funding from multiple donors supports a range of development projects, mainly implemented by NGOs. Activities are small and scattered, but effectively provide much needed rural services and pilot useful development approaches and strategies. This pertains to EAS provision, for which 40 LIFT projects report having reached a total of 238,000 households. LIFT found this to balance past extension focus on crop yields and neglected other issues important to overall farm income and welfare. LIFT sees significant potential for private sector involvement in both research and extension with some interesting examples of projects underway. In one case, a partnership with one firm enabled the firm's agents in providing basic production training to farmer producer enterprises. Local input dealers visited villages to negotiate contracts with farmer enterprises for input supply and provided associated information and advice on proper use of inputs.

The **Fertilizer Sector Improvement Project (FSI+) (\$7.1 million)** seeks to increase production and profitability of rice-based farming systems and increase capacity of service providers to supply and advise farmers. Activities focus on research and extension, initially emphasizing urea deep placement technology. Based on early experience, the project expanded to provide EAS on broader production technologies, including use of good seed, seeding rates, and balanced use of fertilizers. The project expects to reach 15,000 farmers and help 180 retailers improve their business practices. Project reports state that direct beneficiaries get a 14 percent higher gross margin (\$530/ha) than indirect beneficiaries. Targeted service providers are primarily agro-input retailers and contract service providers. The project uses seven local NGOs to reach farmers. Training these NGOs develops new capacity for the sector. The project found government extension services to be under-resourced and inadequate as a source of information. Its own EAS program is fairly traditional, based on farmer training (11,850), demonstrations (257), field visits and field days (73), and field

trials. Retailer training is a six-day residential training that includes other public and private service providers. Many retailers are also service providers.

The overall goal of the **Food Security Policy (FSP) project** is to address critical evidence gaps for policy formulation and foster credible, inclusive, transparent, and sustainable policy processes. The project undertook an in-depth diagnostic review of crop research system and extension linkages, finding the system to have critical shortages of research staff and funding and limited engagement with farmers, extension, or the private sector. Correcting weaknesses could increase sector growth and generate an additional \$2 billion of GDP, much of which would benefit farmers and the rural economy.

The **Expanding Farm Advisory Services for Smallholder Farmers Project** carried out an intensive EAS program to reach 84,231 smallholder rice farmers with new best-fit technologies. An impact study showed annual income increases of \$494 per farm. The project conducted considerable research to understand farmer clients and their associated value chains. This rich research on users was key to informing EAS processes and approaches and enabled the project to establish a platform of affordable, best-fit farm advisory services to enable farmers to optimize their farm yields and income.

Recruitment of qualified extension staff was and will likely continue to be a challenge. Myanmar's education system has long suffered from lack of investment and does not emphasize critical or creative thinking; it is difficult to find qualified and motivated staff. The advisory service model relied on staff who could quickly problem solve, effectively engage with farmer-customers, and translate technical knowledge into actionable advice and support. The model is staff intensive. An in-house training center was key to needed staff training and development. The center offered diverse year-round training, including Problem Solving, Customer Engagement, Manager Trainings, and a Training of Trainers program to enable EAS managers to train their own team members and future leaders.

ICT applications were to be an important element of the EAS program, but project experience with farmers in rural areas did not mirror external reports of rapid digitization in country. ICT infrastructure and networks are still at early stages of development. Telecoms face numerous structural challenges outside of urban areas and lack of digital literacy in rural communities is a hurdle. These ICT problems were a setback to project initiatives. Still, 71 percent of farmers have access to a smartphone and digital channels should become increasingly viable as a future option for lowering cost of EAS services to farmers.

### EAS System Issues

The client base for EAS is large and poorly organized. Most are small farmers, though past chaotic land tenure administration enabled some large landholdings to emerge. Poverty rates are high and land tenure remains an issue. The open economy has led to a large exodus from farming communities to work in cities and other countries. Equity in services and development across regions and states will be important to growth and stability.

The operating environment for EAS is fluid, but seems to be improving. Agricultural sector reforms are underway, reducing government controls and regulation of the sector. A revitalized public EAS

is needed and under consideration. The resource base for agriculture is extensive and market demand good for most products. Transport, financial, and input supply services must continue to develop.

EAS provider capacity is generally weak. Public services pending reforms need a new direction and greater resources. NGO and for-profit firm EAS is limited and weak in technical qualifications. A national agricultural education and training system is in place and can provide sound technical training, but needs strengthening in marketing, producer organization, and extension methodology.

EAS program content needs are highly diverse. Rice has understandably been the priority. Diversification is needed to encourage higher value and higher quality products that offer potential for higher producer incomes. Again, greater attention to producer organizations, marketing, enterprise budgets, and farming systems thinking is needed.

Incentives for EAS delivery are substantial for producers seeking to increase profitability. Current projects have shown this possible. China is a major market that can absorb much of the country's production, though better quality products may command higher prices from other world and internal markets. Input suppliers have the obvious incentive of encouraging sales, but this needs to be supported by regulation of input quality.

#### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Burmese EAS programs and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, comprehensive EAS system.
- ❖ Support government policy formulation and planning for EAS system development to meet producers' needs and encourage an agricultural sector transformation. Ensure the policy and public EAS programs encourage private EAS provision and consider incorporating this support within a comprehensive program of planning for agricultural extension, research, and education.
- ❖ Provide comprehensive support for implementation of a program of reform for the public EAS system to establish necessary capacity to foster diversification and commercial agricultural development and growth of independent member-controlled producer organizations and to encourage extensive partnerships and collaboration with private EAS providers.
- ❖ Finance a capacity development program for producer organizations across the country to establish internal management systems, marketing and linkage capabilities, and EAS facilitation mechanisms to meet members' needs, supply markets and participate fully in profitable value chains.
- ❖ Fund a program to make necessary EAS support services available to EAS providers within country, focusing especially on technical and extension communications training, but including also technical specialist support (perhaps using internet or cellphone text messaging), communications support services, and management advice. This would ideally

establish local institutions that will continue to provide such services, but, if such is not possible, may entail direct provision of EAS support services to meet current needs and provide a model for future more permanent program development.

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## *Cambodia*

### Country Extension and Advisory Service (EAS) System Status

Cambodia's rural population of 12.3 million has potential to benefit greatly from effective EAS. Most are small farmers engaged in traditional rice-based farming systems. They have made significant progress in recovery from the social and economic disaster of the civil war and are rebuilding local economy and society. Food imports have dropped dramatically and the country has potential for increasing and diversifying its agricultural exports. There is a good resource base for rice production and half of the country is still under forests.

The public EAS system was established in 1957 and destroyed in 1975 by civil war and the tragedy of the Khmer Rouge regime. The Royal Government of Cambodia (RGC) reestablished an extension service in 1986 in an office of the Ministry of Agriculture. This was raised in status to a separate Department of Agricultural Extension in 1995. The Department has 1,244 staff, of which 1,120 are field level extension workers. Most are assigned at 25 provincial level offices, with some assigned in the 165 districts closer to the farmer client base. The Department is also training farmers, recent graduates, and animal health workers as commune EAS workers and village EAS workers. Limited budgets restrict transportation, logistics, and ICT support for the government EAS agents. The RGC adopted an Agricultural Extension Policy in Cambodia in 2015, with a theme of "Extension Service for Better Well-being." The policy promotes a well-coordinated, decentralized, market-driven, and participatory approach. The public EAS system is not noted for great efficiency and effectiveness, but farmer surveys indicate a positive appreciation for public and NGO EAS compared to for-profit firm services.

Private sector EAS has probably predominated in recent years. For-profit firms are in an early stage of engagement in EAS provision, principally represented by input suppliers marketing their products. Agricultural product buyers engage in EAS provision in a limited way. The greatest potential for this probably lies with buyers for export crops and livestock products. Non-profit NGOs have been the most active EAS providers. During an emergency period after the civil war, they were the main source of EAS for farmers. NGO EAS is appreciated by farmers and recognized as important, but their activities are criticized for lack of coordination, a short-term perspective, and limited scale of coverage. Staff turnover with NGO EAS appears a problem, perhaps indicating shortage of technically qualified candidates for the many positions available with different organizations. Farmers have relatively good access to radio, TV, cell phone (text and call), smart devices, computers, and Internet. ICT applications provide opportunities to increase efficiency and effectiveness of EAS, but few are being applied at scale.

Producer organizations are common at the village level, often formed as a common interest groups at the instigation of donor projects, or occasionally as self-organized groups. Their level of formality and scale of operation is generally not great and capacity development support over time is required to enable them to participate effectively in markets, EAS provision, and representation of member interests. At the national level, a Cambodian Farmers Association Federation of Agricultural Producers has a mandate to represent smallholder interests.

The national EAS system is very much in a development phase. The system is still quite weak, but should benefit from its established structure, continued training of personnel with greater technical and management expertise, and further experience and evolution of effective methodologies and approaches to serve farmer needs. Strengthening public EAS engagement with clients at the district level and coordination/collaboration with private providers would be helpful. Such system development will both benefit from and contribute to positive trends in national economic growth and commercialization and diversification of agriculture.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension. The FY2011-15 Multi-Year FTF Strategy included an assessment of the EAS system and committed to development of private sector EAS and use of ICTs for EAS. Recent project reports and evaluations reflect the importance of EAS in achieving program objectives.

The **Helping Address Rural Vulnerabilities and Ecosystem Stability (Harvest) Program** sought to improve food availability; increase food access through rural income diversification; improve natural resource management and resilience to climate change; and strengthen capacity of the public and private sectors and civil society to address food security and climate change. The project helped 192,755 smallholder farmers apply new technologies or management practices and improved food security for 124,058 rural households.

The project committed to a comprehensive extension methodology to deliver hands-on technical assistance to smallholders in rice, horticulture, and aquaculture value chains, training not just in production practices, but also in postharvest value addition, business skills and marketing, natural resource management, and improved health and nutrition practices. The project sub-contracted with 21 NGOs to provide 431 technicians for EAS provision. Turnover of the subcontracted EAS agents was high and may have reduced quality of services and increased costs.

The project made extensive use of demonstration sites to introduce new practices and technologies. For rice, 3,624 demonstration sites led to 44,450 farmers reportedly adopting improved technologies. Work on vegetables focused on commercial horticulture technologies with demonstration sites linked to continuous on-site agronomic training for 18 months. The project organized 870 horticulture farmers into 77 marketing groups to supply larger volume buyer demand. Aquaculture demonstrations convinced 1,500 client households to adopt 16 improved technology and practices and dig 3,031 new ponds. Reportedly, rice farmers increased yields by 45 percent, horticulture farmers by 216 percent; household gardeners by 171 percent; and fish farmers by 150 percent.

The project piloted a Farm Business Advisor approach supporting local entrepreneurs to support themselves on commissions for selling agricultural inputs and providing EAS to farmers. However, there proved to be little capacity or incentive for advisers to provide EAS other than straight sale of inputs and the project dropped this as a major mechanism for providing EAS. The project provided an extensive, year-long training course for 47 district RGC EAS agents in commercial horticulture and assisted the RGC with drafting and stakeholder consultations for its new national agriculture extension policy and guidelines. The lack of a direct formal agreement between the project and the

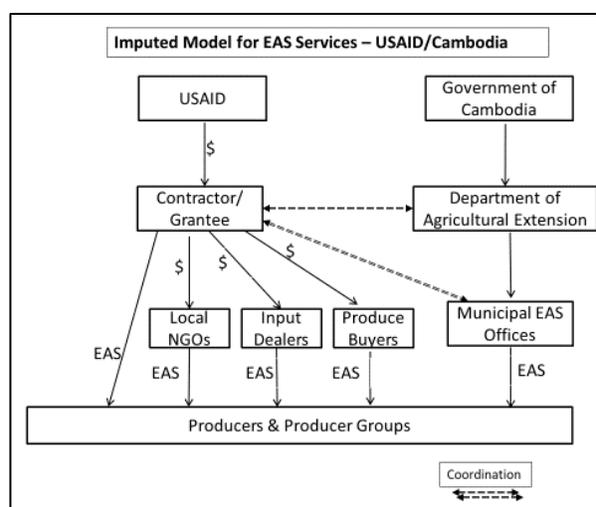
RGC made it difficult for RGC staff to collaborate with the project. Working relationships at the field level suffered as a result.

The project supported 340 input agribusinesses, 12 provincial distributors, 323 village input suppliers, and five irrigation companies to expand operations, introduce new products, and provide EAS. It co-financed equipment investments with seven rice mills, covering 38 percent (\$290,145) of costs. It worked with 31 branches of micro-finance institutions to link them with farmer borrowers and trained 699 lending officers on costs associated with new technologies, crop business plans, and benefits and risks of farming. Environmental conservation objectives were addressed by improving management capacity of 30 community forestry and 15 community fishery areas; conservation messaging to the general public; and improving management of 1.3 million hectares of protected areas of biological significance.

A household nutrition training program with fifteen modules and cooking demonstrations as a participatory learning tool reached 10,064 households. The program established 218 village Food Security and Nutrition Groups, the first of their kind in Cambodia. Groups train members on nutrition, hygiene, and basic financial literacy. Of these groups, 146 formed savings groups. In total, 345,804 people received training in agriculture and food security through interactive field days, demonstration sites, mobile kitchens, and production technology recommendations.

A mid-term evaluation found project activities were leading to increased economic benefits and increased incomes in rice and fish production, but found sustainability to be a concern. Clients were highly dependent on project EAS to solve production and marketing problems and technology transfer and training for the sub-contracted NGOs was no guarantee of sustainability, as local NGOs work only on whatever activities donors fund. Thus, trained NGO technicians are unlikely to be able to use project-acquired skills in future programs. Cost-neutral farm practices may continue, but the project had not built capacity for effective extension beyond the life of the program.

An impact evaluation found that project clients had good knowledge of and a high rate of adoption of improved practices. A significantly higher percentage of farmers in project villages than others adopted some recommended technologies. For other technologies, a higher percentage of project clients than others tried these, but only 50 percent of farmers who became aware of a new technology tried it and then only 50 percent of those continued to use the innovation. The impact analysis failed to detect statistically significant project impact. Project households saw significant improvement in productivity, crop income, expenditures, poverty, hunger, dietary diversity, and malnutrition. But, non-project households also saw similar levels of improvements, perhaps due to: service from other programs; spillover effects from the project; inadequate EAS follow up with clients to reinforce innovations; or too little time elapse for impacts to be realized.



The **Helping Address Rural Vulnerabilities and Ecosystem Stability II (Harvest II) Project** aims to accelerate growth of commercial horticulture by: improving capacities of market actors; creating linkages between value chain actors; and improving the sector enabling environment. A buyer-led approach helps buyers and sellers form commercial partnerships to expand sales, create employment, and increase investment. Identified constraints to increasing sales included: lack of organized producer groups, lack of consistent product supply, and lack of producer technical knowledge. Work with producer groups helps to share new technology and organize production planning. The project enlisted input suppliers to provide EAS, explored options for accessing finance, and coordinated market linkages. Twenty commercial partnerships are underway. The project assumption that there were many existing producer groups to link to buyers proved not to be true. Not many groups from previous projects are still functioning.

The project works with buyers and some producer groups to identify areas for improvement on current production practices; agree on quality standards; and prepare for introduction of certification standards. Information and training materials on climate-smart agriculture have included short dramas and talk shows on local radio and training handouts and materials on climate resilience practices.

The project's initial work plan made no mention of extension and it appears that EAS may not be receiving sufficient consideration. It also seems clear that EAS will be important to project success.

A **regional workshop on “Convening Private Sector Investment in Climate-Smart Commodity Production in Southeast Asia”** discussed regional needs, opportunities, challenges, and actions to accelerate investment in climate-smart, low-emission agriculture and forestry production. Participants agreed that insufficient understanding and a low level of interest in climate-smart practices was the most significant challenge and that regular public-private dialogues would improve this. In-person meetings or workshops may be the most effective means for public-private sector communications, including meetings at both national and sub-national levels. Donors, as neutral parties, can help overcome distrust between public and private stakeholders and improve transparency on controversial issues. Donor support can promote dialogue and increase local capacity, but should not be considered an option for long-term support.

An **Analysis of Three Commodity Value Chains: Rice, Horticulture, and Aquaculture** found that some input companies provide EAS through farmer field schools and demonstration farms, but no embedded EAS agreements were in effect between input companies, product buyers, and farmers. Farmer knowledge of yield-raising practices is very limited, as is knowledge of safe chemical use practices. There is little to no enforcement of out-of-date, banned, and low-quality inputs that move across borders informally. Cooperatives, producer groups, and commercial horticulture farms are not widespread.

The **Feed the Future Asia Innovative Farmers Activity (AIFA)** is a regional project to build a diverse regional agricultural innovation community. Component One supports a sustainable regional agricultural innovation ecosystem to foster new technologies and partnerships and is strengthening Kasetsart University capacity as a regional innovation hub. Component Two supports a regional agricultural technology challenge open-call competition for identifying promising technologies.

Component Three works to improve the enabling environment for technology innovation in the region.

The **Rice Field Fisheries Enhance Project** (\$2.0 million) aimed to improve rice field fisheries productivity. Fish productivity per hectare of rice field increased on average by 27 percent (from 78 kg/hectare in 2013 to 99 kg/hectare in 2015). The project benefited 18,377 households and provided capacity building for 19 local NGO staff and 434 community fish refuge committee members at 40 sites. Training covered technical innovations and management of water quality, flooded areas, and community fish refuges. Capacity of local communities, NGOs, and local authorities was initially very limited. A total of 356 awareness raising events - village campaigns, village meetings, and student classrooms - reached 16,491 people. High staff turnover at local NGOs required repeat training of the new staff.

### EAS System Issues

The client base for EAS is somewhat hard to characterize. Most are small farmers, focused on traditional rice production, poorly organized, and poorly informed on new production technologies and innovations. They are responsive to new opportunities and markets, but seem not to be especially proactive in seeking sources of innovation and technology to change their production systems.

The EAS operating environment is generally open to EAS providers, but government controls remain and can constrain activities. Regulatory oversight, needed for such things as agro-chemical safety and sales, is minimal. Market opportunities are good and the growing economy encourages innovation.

EAS provider capacity is limited in public, for-profit, and NGO providers. All have limited staff that require additional training and lack proven methodologies for efficient EAS delivery.

EAS program content needs are large and focus on integrating farmers and farmer organizations into more commercial and productive agricultural systems. Crop diversification, aquaculture, commercialization, natural resource conservation, and climate change adaptation are the main challenges for EAS.

Incentives for EAS delivery exist in the potential for increased productivity and profitability of innovations to farmers, though how this can link to improved incentive to EAS services by providers is yet to be worked out. A substantial amount of needed EAS is for public good-type services for natural resource conservation and producer organization development for collective action in marketing, resource management, and other activities. These typically rely on publicly funded EAS.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Cambodia EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Finance a program of support to government EAS capacity development, including training, program development, and management improvements that will enable the public EAS system to improve effectiveness in working with private EAS programs.
- ❖ Fund a pilot program for farm youth entrepreneurship at the commune level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Democratic Republic of the Congo*

### Country Extension and Advisory Service (EAS) System Status

The Democratic Republic of the Congo (DRC) has a turbulent history, a large resource base, and a rural population of 45.6 million that is in much need of EAS to facilitate rural social and economic development. Institutions are fragmented by past political and economic disruptions, distances, and lack of sustained funding. Building an effective, integrated EAS system is clearly a long-term proposition.

The public EAS system based in the Ministry of Agriculture, Livestock and Fisheries National Extension Service (Service National de Vulgarisation—SNV) was established in the late 1980s. Although the Ministry has had an estimated 11,245 extension agents across the country, these agents are aging; poorly – if at all – paid; and have negligible institutional support. The EAS agency’s operating approach has roots in colonial agricultural sector control functions, but embraced the T&V system early in its life, and has since worked through farmer field schools. The SNV is largely defunct and in the field SNV agents work for NGOs when they can. A reform program in 2009 established regional Agriculture and Rural Management Councils (CARGs), which offered promise in coordinating rural service delivery, but it is uncertain if and how they are functioning. There is no strong national extension policy and public EAS seems to have at best a passive role in the overall EAS system.

Private EAS providers pick up the slack to the extent that any services are provided to rural communities. Input dealers market their products, though with little, if any, oversight and quality control or guidance to product users. NGOs – largely donor-funded – are the major providers of EAS. Their programs are generally small, time-limited, poorly distributed, and somewhat ad hoc. Radio is an important media for EAS messages. Other ICT applications for EAS have important potential, but capacity and up-take to-date have been limited. Producer organizations and other community groups coalesce easily to interact with EAS programs but rarely have their own programs.

### Recent EAS Project Experience

USAID budget and planning documents suggest a moderate commitment to EAS support as a means of achieving development objectives. Of the CBJs from 2010 to 2019, only that of FY17 commits to improving access to EAS. A 2017 Activity Strategy provides substantial analysis of the EAS system and proposes support to producer and community organizations to improve EAS. Recent project reports and evaluations suggest a modest role for EAS in projects.

The **Food Production, Processing and Marketing (FPPM) Project** (\$22.8 million) was to increase agricultural productivity, improve market efficiency and develop local capacity to respond to market opportunities. The strategy was based on urban centers as development poles linked to highly productive agricultural areas. Public-private and private-private partnerships were to further project objectives. The project design was deemed sound, but severe management problems led to the project being terminated early. Despite the problems, there were positive outcomes and a richness in lessons learned. The project reportedly: assisted 67,231 rural households, impacted 454,482 individuals, and benefitted 487 producer organizations and 223 firms. For EAS impacts, 94

new qualified agricultural extension agents and 124 business development agents became active in the project zone, and 19,980 farmers were regular listeners of market information radio broadcasts, 80 percent of whom reportedly modified commercial behavior because of broadcasts

Two design flaws were evident. Pre-selected/targeted “subsistence” crops contradicted the overarching objectives of commercialization and market-responsiveness. Flexibility was needed so that market factors could influence crop selection. The design also underestimated the country’s culture of donor dependency, with some of the activities carried out conflicting with sustainable development objectives.

Capacity development was a clear need. Available new technologies are cost effective, efficient and adaptable to the Congolese environment, but the project needed field agents capable of working in villages in local languages. What they got initially were experienced bureaucrats that enjoyed the office. Later, recruiting 15 field agents made a huge difference in project visibility and quality of activities. Early focus on building capacity of extension staff and farmers and on understanding the holistic farming and market systems would have established a much better base for improving productivity and marketing. Capacity development was also needed by producer organizations, though they generally proved able to establish and manage new marketing and processing enterprises.

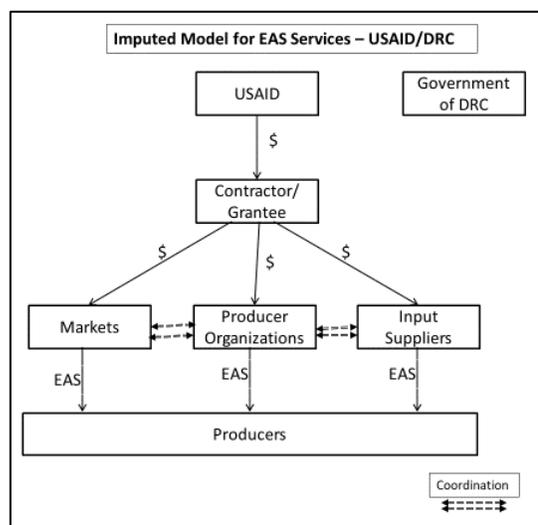
Collaboration with local implementing partners for the delivery of services was difficult, time consuming and expensive. Local partners included: informal farmer associations, local associations, formal cooperatives and religious groups. Potential partners come in all shapes and sizes and choosing the right partners required proper due diligence in assessing capacity. Unfortunately, partners were not rigorously screened and, in some cases, the local partner was merely an individual professing to represent a group. True partnerships are as much about quality as they are about quantity. At one point, the project screened 145 existing local partners and found only 31 that were active. Partners need to be trained and monitored. In retrospect, implementers concluded that it may have been better to contract established technical agencies (e.g., the local research agency) rather than attempt to work with community groups.

The project had a clear EAS strategy to increase farm productivity by 50 percent through improved inputs and a program of farmer field schools complemented by farmer field days, demonstration plots, and an input voucher program. Farmer field schools (FFSs) were expected to lead to certified seed production for field school members’ use and for sale. Cassava and short-cycle crops were to be co-located with farmer field school demonstration plots for short-cycle crops adjoining those for cassava. The project had 204 implementing partner contracts for 289 farmer field schools for cassava, rural enterprises and maize/peanut – a daunting number to manage.

A functional market information system was a positive and appreciated innovation, though sustainability may be questionable. Simple blackboards were set up near markets with price, market and volume data for reference by market sellers, producers, buyers and transporters. More generally, market information was diffused through a network of 25 community radio stations. Market prices and cost of transport were a major part of radio content, but this extended to programs on agricultural production and marketing practices. Within six months, local populations responded very positively to radio programming.

An IFPRI mid-term review concluded that there had been weak impact during the early phase of the project. As to EAS, the review stated, “Traders, extension agents, and farmers interviewed expressed the need for more certified seeds to be distributed. The promotion of productivity-enhancing inputs other than improved seeds, such as fertilizer and mechanization, is also critical. Interviews with traders, extension agents, and farmers also suggest the need for more training for extension workers, more training on cassava processing, and training among farmers on good management and production practices such as buying new seeds or planting materials (and not mixing different varieties and colors).”

The **IITA Action to Control Cassava Brown Streak Disease** seeks productivity improvements through cassava varieties resistant to cassava brown streak disease and approaches for integrated management of cassava diseases and pests. INERA (the National Agricultural Study and Research Institute) is the key local partner, but staff of two other unnamed partners were trained. Varieties are still under testing and planting materials for available varieties is limited. Outreach activities appear limited. The **Farmers to Markets Project** was a limited scale micro-enterprises-based program that reported that available technologies made substantial impacts on increasing farm productivity. Staffing qualified field workers was an issue and they found advisable the need to have qualified agricultural technical staff in the field offices. The **Africa LEAD Project** provides occasional training courses for local youth, entrepreneurs and NGOs, developing local capacity in the agricultural sector.



The **Feed the Future DRC Strengthening Value Chains Project** seeks to increase incomes and access to nutrient-rich crops by linking farmers to market services and other value chain actors. Ambitious objectives include: capacity building for value chain actors, credit facilitation, market linkages, public-private partnerships, behavior change and advocacy for dried bean, soybean and specialty coffee value chains. The project is in an early stage of implementation and, while the project annual report has little discussion of EAS, it describes several activities. One implementing NGO provides training at a Coffee Farm College; a research team has established 13 on-farm trials for coffee, including options for intercropping beans and bananas; and 20 listening clubs discuss topics on the Lima Faidika radio show and identify actions they can take in their communities.

The **Feed the Future DRC Pool Malebo Intensification Project (PIRK II)** (\$999,694) supported the local rice supply chain in three peri-urban sites near Kinshasa. The project had eight staff to implement activities and worked with 1,802 households. Two lead farmers provided local technical assistance and supervised extension campaigns. Despite the modest budget, the project had nine objectives, including in addition to the presumed focus on rice, vegetable production, nutrition, women's empowerment, composting, hygiene, health and environmental sanitation. Problems involved: an unanticipated add-on activity, political unrest and staff issues. The add-on activity for vegetable production required a strong – though small – EAS effort with 12 vegetable farmer field

schools and follow on technical assistance. the project also provided quality agricultural inputs to households. There was need for diverse technical skills for the varied activities in construction, productivity, marketing, local organizational development, finance, and household nutrition. Thus, there was an overly-ambitious design, a small budget, a small implementation team, and a short timeframe – not an ideal model.

### EAS System Issues

The client base for EAS is huge, dispersed, frequently illiterate and largely unserved. Clients are hard-working, interested in obtaining services and willing to collaborate on programs, but a strong donor-dependency attitude and short-term perspective are common. Conflict affects many, especially in the east.

The operating environment for EAS in some ways could not be worse. Infrastructure is lacking; public policy is ill-defined and unenforced/unimplemented; corruption is common; and security is poor. On the other hand, potential market demand from urban areas is huge and the resource base extensive.

EAS provider capacity is very weak in public, for-profit businesses, NGOs and producer organizations. There have not been enough periods of stability for organizations to develop and training for extension workers has been minimal. Poorly developed linkages among EAS providers and stakeholders is a serious additional constraint.

EAS program content needs are huge and rather basic. There is widespread need for: conflict prevention/mitigation, collective action (group capacity development), market linkage facilitation, natural resource management and individual capacity development. Production technology innovations come on top of these, but may be necessary to underpin the other services. Improved production technologies are available, but research relevant to local farming systems needs to be expanded. Much of the needed EAS content is a public good in nature.

Incentives for EAS delivery are weak. Clients have market opportunities, but weak linkages to markets and little purchasing power for EAS. Donor-funded EAS activities pay extension staff well, but government agents are often not paid. Attractive NGO salaries attract qualified staff from both private and public systems. Agribusinesses tend not to invest in EAS as this requires stability and a longer-term perspective than is currently common in the DRC.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in DRC EAS programs and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, comprehensive EAS system.
- ❖ Provide a broad spectrum of EAS services to address fundamental needs for PO development, market and other linkages, conflict prevention and human capacity development. Implement activities through contracted EAS (grants or contracts)

demonstrating good practice by working through local coordination platforms and making support services available to other EAS providers.

- ❖ Engage with government on long-term policy and planning for EAS system development based on extensive participation of private EAS providers and looking to expedite provision of support elements of technology R&D, training, communications services and linkage facilitation.
- ❖ Fund a program to provide key support services to private EAS providers, including technical and EAS methodology training, communications support, technical specialist support (perhaps through internet and/or cellphone-based applications), and EAS program management advice, making these services broadly available to address smallholders needs and improve EAS provider capacity and use of good practice in EAS delivery.
- ❖ Support innovation and expanded use of radio and other ICTs in EAS programs, ensuring that client information needs and technical content are the main drivers of activities. Avoid direct financial subsidies of programs.

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## *Ethiopia*

### Country Extension and Advisory Service (EAS) System Status

Ethiopia's large rural population of 83.6 million has extensive needs for EAS as the country recovers from past food insecurity and political disruptions and seeks to enter an era of equitable growth and poverty reduction. Much donor and national investment focused on agriculture provides a base for innovation and resources for rural transformation.

The public EAS system is large – perhaps the third largest in the world. The GOE commitment to EAS is a fundamental element of its agricultural growth strategy, a commitment similar to Asian countries with large populations and food security concerns. The Ministry of Agriculture and Natural Resources (MoANR) has more than 60,000 extension agents (“Development Agents”) posted largely in some 15,000 Farmer Training Centers, each expected to have 3-4 Development Agents. The EAS staff include Home Economic Agents to focus on services to women clients, although responsibility for nutrition education has been shifted to health extension agents. A network of 25 Agricultural Technical and Vocational Education and Training Centers train Development Agents. Service delivery uses a Participatory Demonstration and Training Extension System (PADES) that has retained a traditional top-down, technology-transfer orientation. This is gradually evolving toward a more participatory, demand-driven approach providing more diverse services. An Agricultural Transformation Agency (ATA) is charged with facilitating and coordinating activities in the agricultural sector. Reforming an organization as large as the Ethiopian EAS systems takes time and considerable effort. Nonetheless, this public system is and will likely remain the backbone of the national EAS system for some time.

Private sector EAS is growing, though this growth has been constrained in the past by government control and regulation of private initiatives (as well as NGOs). Still, the developing economy has spurred expansion of input supply firms and buyers, processors, and exporters of agricultural goods, along with expansion in numbers and activities of NGOs funded by foreign donors. NGO roles are increasingly accepted as legitimate and their EAS programs complement, interact with, and to a large extent rely on public EAS. Radio has a wide rural listener base and high potential for EAS applications. Mobile phone coverage, while expanding, is limited and in 2011, Ethiopia ranked 150<sup>th</sup> out of 155 countries in the ICT Development Index.

Producer organizations are important to foster collective action by farmers, most of whom have limited land holding and marketable surpluses. Producer organizations generally do not provide EAS, but facilitate member access and participation in such programs, and play important roles in input supply and produce marketing. In this, they have to overcome a negative view of cooperatives that derives from tight past government control of such organizations. Government influence continues to inhibit producer organization operations, though government support is important to some of their services to members.

The overall EAS system enjoys strong support from government and may be a major influence on future development. Capacity issues remain, including the important issue of finding appropriate roles and relationships for private EAS actors vis-à-vis the public agencies. ATA coordination is an

attempt to improve overall efficiencies and synergies in program operations. This may be critical to long-term sustainability and performance of the EAS system.

### Recent EAS Project Experience

USAID budget and planning documents present a mixed picture as to program attention to EAS in achieving objectives. None of the CBJs from 2010 to 2019 make reference to EAS, nor does the 2018 GFSS Strategy. However, the FTF Multi-Year Strategy 2011-15 provided a strong assessment of EAS systems and committed to collaboration with the public sector EAS program. Recent project reports and evaluations suggest a modest role for EAS in projects. In pursuit of the country's overall agricultural development strategy, USAID has agreed to support agribusiness and market development parallel to GOE EAS programs. The 2015 Rural Advisory Services Program evaluation concluded that this Mission approach was generally effective in supporting EAS system development. It does however lead to some tensions in implementation and evaluation of individual USAID projects.

**A Review of Feed the Future Collaboration with the Government of Ethiopia's Agriculture Growth Program** looked at USAID's mandate for the Agribusiness and Market Development as a parallel program within the Agricultural Growth Program. There was little attention to EAS issues, as these lie outside of the USAID program. The review did note the apparent good practice in use of Memorandums of Understanding as an instrument of collaboration to define roles and responsibilities and clarify accountability. It also commended were the Agricultural Development Partners Linkage Advisory Councils to link research and extension.

The **Feed the Future Agricultural Growth Program-Agribusiness and Market Development (AGP-AMDe) Project** used a value chain approach in work with coffee, sesame, chickpea, honey, wheat, and maize with a goal to reduce poverty and hunger and enhance economic growth. Activities included: encouraging investment and technology transfer; increasing export sales; and collaborating with farmer organizations and companies through innovation matching grants (396 grants totaling \$13.8 million) for new technologies. The project reportedly reached 1.2 million people, influenced farmgate sales worth \$181 million, and increased capacity of 54 farmer cooperative unions representing 2,500 primary cooperatives and 1.9 million members.

The Final Report does not provide much detail on EAS work, but indicates "AGP-AMDe worked with lead farmer networks to deliver training on good agriculture practices, PHH [post-harvest handling], and better business management skills to farmers". There was considerable reliance on public EAS. For maize producers, innovations emphasized new hybrid varieties, better agronomic practices, and reduced post-harvest loss. Technology transfer was through lead farmer demonstration plots supervised by the GOE extension system. The project also relied on GOE extension to address farmer ability to produce quality coffee and to improve agronomic practices of wheat farmers. The project collaborated with GOE EAS to carry out an inputs campaign that distributed over 29,700 fertilizer application pocket guides, 5,700 maize fliers and posters, 6,900 wheat promotional fliers, 2,200 chickpea fliers, and 1,000 sesame fliers. Feedback suggested positive impact from the campaign.

The project appeared to give more attention to nutrition than agricultural extension. Cascade training emphasizing diet diversity, household nutritional needs, and improved hygiene used a

training-of-trainers approach, under which the project trained GOE Home Economic Agents and Development Agents who then each trained 20 lead farmers. These lead farmers were expected to go on to train 40 farmers each. One must question dilution of messaging in this process. Complementing this was an effective nutritional messaging activity that used participatory video and radio programs.

An AGP Knowledge Portal provided market information, agriculture news reports, and trade promotion material for stakeholders.

**The Graduation with Resilience to Achieve Sustainable Development (GRAD) Activity**

(\$25.6 million) was to enhance livelihood options for 50,000 chronically food insecure households. Activities included: increase farm and non-farm income generation; improve access to financial services; improve market access for inputs and outputs; nutrition improvement; and adaptation to climate change. The project reportedly increased client household incomes by 86 percent. A final evaluation suggests that the project had a strong extension strategy with activities in three areas. Project staff were responsible for most service delivery, sometimes in conjunction with GOE extension programs. In one activity, project staff organized communities into Village Economic and Social Associations, providing them training and support and facilitating loans and input purchases. It is not clear as to the staffing ratio of project facilitators to village associations, but the associations are expected to be self-sustaining. Follow up assessment of this would be interesting.

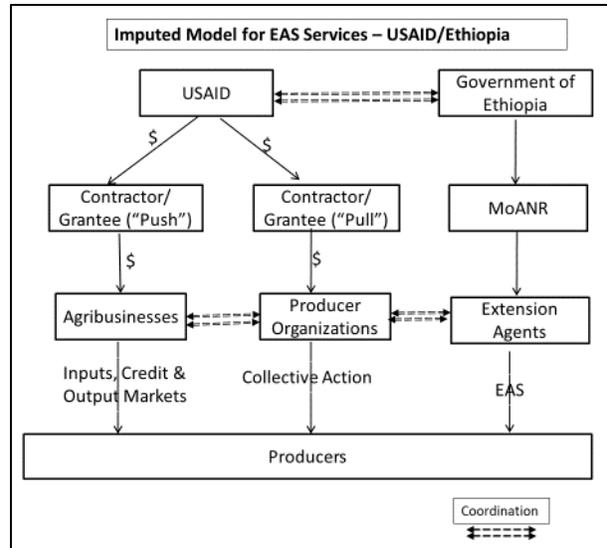
A second activity for agricultural technical services used a pluralistic services model with a wide range of service providers. The model had Community Promoters and Community Facilitators employed by the project along with volunteer model farmers and agro-dealers, who demonstrate their products. Extension staff provided training and follow up. Project extension staff worked with GOE agents, but reported their skills to be weak. There were initial problems with cooperation, but later a good collaborative working relationship developed between the GOE and the private sector. Quite often government agents taught or co-taught training courses and project staff did much of the follow up.

The third activity was nutrition education provided to about 15,000 households by project Community Facilitators and GOE Health Extension Workers. Training on dietary diversity and food preparation was provided to about 15,000 household.

The project seemed to benefit from well-organized EASs across the several areas of activity. Service delivery was mainly a project effort but with substantial collaboration with GOE.

**The Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING)**

project conducted a review to document experience and learning from three different Feed the Future activities utilizing a common strategy for promoting good nutrition. This strategy utilizes agriculture extension agents to promote maternal and child nutrition by conducting social and



behavior change interventions, including nutrition messaging. The activities were: Empowering New Generations to Improve Nutrition and Economic Opportunities; Agricultural Growth Program – Agribusiness and Market Development Project; and Pastoralist Resiliency Improvement and Market Expansion.

When asked specifically whether private sector actors can contribute to improved nutrition, respondents from one project were skeptical, explaining that the profit motive of private sector actors may be incompatible with EAS for public goods such as nutrition—particularly for vulnerable households. Even though that project staff were cautious about engaging with the private sector, they did work with growers to source inputs from private dealers. Staff of another project were mostly positive about for-profit actors’ potential to improved nutrition, recognizing the potential to leverage private sector resources to generate demand for diverse diets and to facilitate access to improved post-harvest processing and storage technologies.

The **Agriculture Knowledge, Learning, Documentation and Policy Project** assessed options for public-private partnerships in the livestock sector, concluding that there is good potential for private-sector veterinary services as part of long-term disease control programs. They found potential for improved delivery of neglected public-good services, such as animal disease surveillance, regulation, extension, and veterinary public health. Private provision of animal health clinical services in higher-potential areas could then allow redeployment of public-sector workers to improve other public-good services.

The **Feed the Future Ethiopia Value Chain Activity** is in its early phase of implementation to promote marketing and value chain development and expects to reach 1.5 million farmers producing maize, coffee, chickpea, dairy, livestock, and poultry. The project seems to have very little support for EAS, though it recognizes its importance and necessary collaboration with public EAS for diffusion of technologies. In one activity, project training of trainers is building capacity to control fall armyworm.

An **Evaluation of Ethiopia’s Feed the Future Program** made no mention of EAS. The evaluation observed that program constraints included: inadequate production, weak institutional counterparts, and limited availability of finance. Evaluators opined that funding independent activities paralleling government programs may be a more robust approach than funding complementary interventions within a common program. They found that with USAID projects focused on markets and agribusiness and not responsible for farm productivity activities, it is hard to see how they can be held to productivity level impacts. The evaluation stated, “it is not clear exactly how technology transfer for productivity fits into the agribusiness and marketing projects in the AGP [Agricultural Growth Program] geographic areas. Neither AMDe [Agribusiness and Market Development Project] nor LMD [Livestock Marketing Development Project] are well-designed to deliver on the agricultural productivity indicators of FTF. Their ‘middle of the value chain’ interventions are not particularly well-suited to address the household-level productivity indicators included in the global FTF results framework.”

An external mid-term evaluation of the **Ethiopia Agricultural Growth Program—Agribusiness and Market Development (AMDe) Project** expressed concerns that the project focus on exports could benefit larger commercial farmers more than the smaller farmers intended as primary

beneficiaries. The evaluation found agricultural growth to have been impressive, with productivity increases the result of public investment in inputs, roads, agricultural extension, and public policy reform. They concluded that more needs to be done to strengthen capacity of EAS systems with better links between research and farmers. They questioned the focus of activities and relevance to smallholders who prize crop diversity and find inappropriate the standardized extension recommendations designed for higher productive environments and larger farms.

An external mid-term evaluation of the **Pastoralist Areas Resilience Improvement through Market Expansion (PRIME) Project** (\$53.0 million) essentially made no mention of EAS. The project strategy aimed to: build capacity of pastoralists to increase production and participate in markets and develop markets for livestock products. The broad approach included objectives for increasing resilience to climate change, providing alternative livelihood options, and improving nutrition for the most vulnerable. The lack of EAS assistance is striking.

The **Digital Integration to Amplify Agricultural Extension Project** under the New Alliance ICT Extension Challenge Fund was to expand use of ICT-enabled extension approaches to accelerate adoption of improved agricultural technologies and practices. The project reached 948,312 farmers through video, radio and interactive voice response (IVR). Of these, 188,428 farmers adopted one or more improved practices. Of the 65 woredas in the project, video-enabled extension activities were operational in 35, radio in 36, and IVR in 39. These results were lower than projected. Non-donor funding covered 42 percent of implementation costs.

Participatory radio campaigns addressed agricultural production problems, describing solutions and how other farmers used innovations successfully, and providing instructions on application. Content was informed by baseline knowledge, attitude and practice surveys of farmers. Woreda-level video production teams produced localized videos that promote improved technologies. EAS agents then facilitated video screenings to 7,882 farmer groups. Overall, 43% of viewers used at least one new practice or technology. The project produced 562 short audio segments for an IVR platform that registered more than 9,500 users. Experience was largely positive, though measurement of technology adoption was complicated by lack of inputs in some areas and project-provided inputs in others.

### EAS System Issues

The client base for EAS is large, mostly resource poor farmers. Purchasing power and willingness to pay for EAS is low. Poverty levels are high and illiteracy common. Client groups are not especially strong but can respond easily to facilitate EAS services. Many are remote and have no ICT access beyond radio.

The operating environment for EAS is generally positive with strong government support and commitment for funding. The funding however does not meet the large EAS needs. Government controls and subsidies continue to distort markets and thwart sustainable private sector investment. Availability of inputs as well as financing is limited in many areas. The policy environment is improving, allowing private EAS providers more opportunity to establish and expand programs.

EAS provider capacity is mixed. The number of public extension agents is high. Many are not well trained, though there is an established training center network. Operating cost funding is inadequate

and there are reports of low staff morale. NGOs have long term experience in the country and experienced staff, though past programs have emphasized relief programs, rather than a market-based development approach.

EAS program content requirements are varied. There is need for producer group development and market facilitation services, as well as technical production and marketing needs that cut across diverse production environments. There is continuing need for relevant technology and production and marketing innovation options for both crops and livestock.

Incentives for EAS delivery are limited. Public policy uncertainties and interventions constrain private investment in input supply and EAS delivery. Government EAS agent salaries are low.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Ethiopian EAS programs and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, comprehensive EAS system.
- ❖ Fund a project providing EAS for farmer organization and community group development building group capacity for market activities and group facilitation and provision of EAS.
- ❖ Fund a youth targeted activity to foster agro-entrepreneurship, production/marketing experiential learning opportunities, and testing of innovations in communities. This may be linked to GOE EAS programs or another framework for organization that draws on community participation.
- ❖ Continue with projects focusing on agribusiness and market linkage development with EAS provided by GOE and others, focusing on structural changes that incentivize EAS provision by all parties.
- ❖ Target the poorest farmers and landless with EAS for human capacity development to facilitate engagement in agriculture-related enterprises or move out of agriculture.

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## *Ghana*

### Country Extension and Advisory Service (EAS) System Status

Ghana's rural population of 12.9 million requires effective EAS to sustain the country's achievements in economic growth, poverty reduction, and food security. Despite long term stability and development progress, 21 percent of the population remained below the poverty line in 2012. Crop yields are below potential.

The public EAS system dates back to colonial era programs to promote production of export crops. In 1957 with independence, this shifted to EAS for smallholder production of basic food crops. By the late 1970s, the public EAS was being criticized for poor performance and a bias toward wealthier farmers. This led to the creation of a Unified Extension System with all public agricultural EAS integrated under a Ministry of Food and Agriculture (MOFA) Department of Agricultural Extension Services. A modified T&V methodology was adopted to underpin this system and introduce a more disciplined, structured approach to EAS delivery. Still, performance failed to meet expectations. In the early 2000s, in line with government's decentralization policy, responsibility for agricultural EAS was shifted to the district level. District Agricultural Officers in the 216 districts are now responsible for EAS as well as other agricultural programs in their districts. Ten MOFA regional offices coordinate programs across districts in their region. The public systems has about 3,500 extension agents at the field level and about 60 national level extension staff. Most agents have B.Sc., certificate, or diploma-level credentials in agriculture. However, many positions are reportedly vacant and in-service training has been weak, thus limiting effectiveness. Following decentralization, staff were transferred to districts, but funding for transportation, operational costs, and offices was often delayed and/or inadequate. Quite commonly, district EAS agents are formally or informally seconded to donor projects that cover operating and support costs. This is a pragmatic approach and relatively effective in enabling agents to serve clients, but fragments services, does not provide equitable services across areas, and undermines potential for stable, long-term programs. Most EAS programs employ a variation of a basic model of a community volunteer EAS promoter facilitating activities with a local producer group. Demonstration plots, training, farm field days, community videos, and other ICT applications are all commonly used. The public system should provide wide coverage, though, because of the limited number of agents and reasons noted above, coverage is not always effective. Several USAID-supported initiatives have worked with the GOG on reforms to strengthen the system.

Private sector EAS is extensively available. For-profit firms – both output buyers and input sellers – provide EAS. One cotton company has 100 EAS agents serving 175 villages. This may be the largest such example and is facilitated by the fact of there being only one market for cotton, thus eliminating the problem of side-selling. Contract grower arrangements are becoming more common in other commodities and are promoted by USAID programs. Input dealers are an important EAS provider, with most input shops providing at least point-of-sale advice on use of their product. They are increasingly active in arranging production plot demonstrations and field days and training to promote effective use of their products. A fertilizer wholesaler has been especially active in EAS relating to fertilizer use. A large number of NGOs – both international and local – are active in country and in providing agricultural EAS. Most are donor-funded and use the lead farmer-

community contact group approach with demonstrations and community training. They may also provide subsidized inputs, facilitate market linkages, and provide other services. ICT capacity in country is substantial with 225 radio stations, relatively high levels of cellphone and internet connectivity, and multiple experiments under 28 different projects testing ICT applications for EAS. These are largely yet to prove their sustainability and effectiveness.

Producer organizations are extensively involved in EAS. In a few cases, they provide funding and direct service provision to members, as with a cocoa production union that has 36 extension agents to serve members. Community-based producer organizations typically serve to access EAS at the village level. These tend to be informal. Those formed by public extension staff are reported to be more permanent than those formed by short-term donor projects.

The national EAS system has strengths in its diversity of service providers, substantial number of available agricultural specialists, established model for efficient linkage with clients, and extensive experimentation with different EAS methodologies and ICT applications. Operations are unfortunately highly dependent on donor funding. Collaboration among providers is extensive, but still inadequate to minimize coverage gaps and fragmentation of services. Improving management of the decentralized services remains a work in progress for the government.

#### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension services for the Ghana program. The FY2011-15 Multi-Year FTF Strategy made no mention of agricultural EAS or the existing EAS system, but made a strong commitment to nutritional education extension with agricultural EAS agent coordinating with local health workers. The 2018 Global Food Security Strategy Country Plan also makes no mention of agricultural EAS, but has a moderately strong commitment to nutritional education extension. Recent project reports and evaluations reveal an important role for EAS in achieving program objectives, but a fairly varied or uncertain overall strategy for EAS system development.

The **Agricultural Development and Value Chain Enhancement (ADVANCE) Project** to sustainably reduce global poverty and hunger adopted a value chain approach, working through commercial actors to reach large numbers of smallholders and focus on maize, rice, and soybeans. The project reached 34,121 producers; trained 27,979 on production technologies, management practices, ‘farming as a business,’ and numeracy skills; and set up 326 demonstration sites in collaboration with private firms. Reportedly, 84 percent of project clients adopted at least one new technology or management practice. The project reported impressive gains in yield and gross margins, but these were based on only two years of data and may reflect changes in market prices and weather conditions. The project developed capacity of 822 enterprises – 122 aggregator/buyers, 12 processors, 77 input firms, 255 mechanization service providers, 27 financial institutions, 17 radio stations, and 312 farmer organizations.

The initial project strategy was to rely on lead firms, especially large input wholesalers and produce buyers to work in value chains, but it soon became apparent that these firms were not interested in such roles. As a result, the project adopted nucleus farmers (and aggregators – local traders buying small farmer produce) as the key to linking farmers to markets, credit, and inputs. Nucleus farmers

were selected for willingness to invest and provide services (tractor services, improved seed, fertilizer, postharvest services, and credit). Many already had tractors and were providing services. The nucleus farmers and aggregators were trained to provide services and provide a market channel for produce and were supported with matching grants and technical advice. Projects grants (totaling \$2,925,648) cofinanced additional equipment for mechanized farm operations.

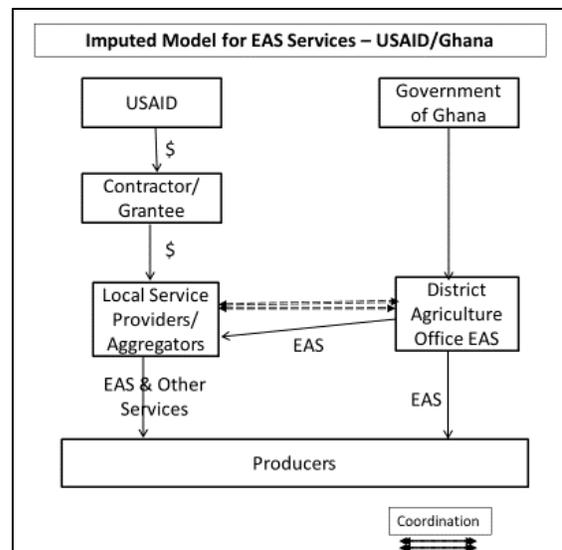
The project provided grants for 17 radio stations with an estimated listenership of 200,000 to disseminate agricultural information and attract sponsors for agricultural programs. Eight stations formed 120 listenership clubs, as a medium for technology transfer and feedback. Private firms sponsored agricultural program broadcasts with \$40,000 (though it was not clear whether this was with project grants or their own funds). Two firms were contracted to pilot voice messaging to smallholders – a communication media much appreciated by those who are illiterate.

Conclusions of an evaluation of the project were quite positive. Use of nucleus farmers/aggregators to link smallholders to services, training, credit, and markets was deemed quite sound, as existing producer organizations were quite weak. Grants for equipment purchase were crucial to rapid mechanization. There are some dangers of dependency and monopoly/monopsony powers, if outgrowers are the sole suppliers of services and buyers of produce. Selected commodities were appropriate, but the limited value chains supported makes business-oriented, profit-maximizing farming operations more difficult. Coordination with government and other donor programs needed improvement.

Project funding or co-financing of major machinery purchases for custom equipment operators seems an unsustainable subsidy and may warrant a special study to assess cost-effectiveness and conditions required for such activities.

The **ADVANCE II Project** builds on experience of its predecessor to improve value chain competitiveness. The project focuses on end-market opportunities that provide incentives for businesses to invest and benefit smallholders. A facilitative approach targets lead firms (processors, commercial farmers, aggregators, input dealers) to impact large numbers of smallholders. Lead firms must demonstrate commitment to the program, be willing to invest, and be able to provide farmers with in-kind or cash-up-front services. The project has reached 118,879 smallholders and supported 690 producer organizations. It has 142 full time staff with 20 agricultural production specialists and nine business development specialists.

Outgrower businesses are the key strategy for outreach to smallholders. These entities appear to be equivalent to the nucleus farmer/aggregator of the predecessor project, though they may be developing further as private enterprises and taking on new roles. Many seem to be custom equipment operators. The project assists these outgrower businesses and others to identify



equipment needs and business opportunities, apply for grants, and purchase large and small equipment to provide farm services. A grants team monitors all equipment use and trains outgrower/aggregator business operators in record keeping and equipment management.

Project capacity development targets local institutions, including NGOs, and producer organizations. The producer organization development helps noncommercial groups grow to become farmer based-enterprises. These groups include those affiliated with outgrower businesses and others that are independent and want to deliver commercial services for members. A project grant program promotes innovation, investment and capacity development. Local partnership grants engage NGOs, business development service providers, trade groups, and others to build local capacity and provide services, advocate to improve the business enabling environment, and/or implement specific activities.

EAS relies on demonstrations as a key means of training farmers in outgrower business models, good production practices, and postharvest handling. The project supports 542 demonstrations a year with about 100 for climate-smart agriculture and others for conventional demonstration plots. Input suppliers cover costs of materials for demonstrations. Model farms being developed are essentially large demonstrations of 10-20 hectares using improved mechanization, minimum tillage, and improved production technology to reach larger commercial farmers. Crop Production Protocols document recommended technologies and innovations for target crops and production systems.

The ADVANCE I project piloted many of the ICT tools that the ADVANCE II project now uses for EAS activities. It funds four partners providing farmers daily messages on agricultural practices, market prices, nutritional messages, pest outbreak/control, and weather. Initially, this was through SMS texts but is now transitioned to voice messages. The project pays mobile phone subscriptions for farmers for one year and then expects them to continue payments. Data are not yet available of farmer willingness to pay for these subscriptions. Smartex Application, a tablet-based application for outgrower businesses, provides tailored EAS to growers. Interactive agricultural radio programming has 1,000 listenership groups using solar powered radios. Project grants and private sector sponsorships support these radio programs. The project provides field agents with equipment, such as tablets, portable pico projectors, Bluetooth speakers, and SD cards, to facilitate extension services. The project collaborates with two partners to develop voice messages on tractor maintenance to be sent to outgrower businesses and operators to improve tractor operations.

EAS providers are varied, as may be appropriate, but the overall strategy is somewhat vague and the project itself seems to depend on effective EAS for sustainability and scaling up of impact.

The **USAID Resiliency in Northern Ghana Project (RING)** is a poverty reduction program to improve nutrition and livelihood status of vulnerable households. It is to: increase access to and consumption of high-quality food; improve nutrition and hygiene; and strengthen local support for vulnerable households. The multi-sectorial approach includes agriculture, income generation, savings and loans, nutrition, WASH, and good governance activities, and works through GOG systems to deliver services. Project agricultural activities include: drip systems for growing vegetables in 171 communities; distribution of soybean and groundnut seeds; plowing for land preparation; small ruminant and poultry production; and orange fleshed sweet potato planting material production and

distribution. EAS is provided by the implementer and the GOG county extension staff. The implementer steps in to provide technical support as needed. There appears to be substantial subsidy or free distribution of inputs. Problems have arisen with lack of poultry feed and mortality of baby chicks; installation/re-installation of drip irrigation systems; and timely procurement of planting materials. Sustainability could be a problem, but with welfare targeting of vulnerable households this may not be a major issue.

The **Taking Cowpea to Scale in West Africa Project** aimed to increase productivity, decrease postharvest losses, and increase home consumption of cowpea by strengthening local seed systems and increasing adoption of improved production practices. The approach used multi-stakeholder innovation platforms that include community-based organizations and farmer-based organizations along with research, extension services, NGOs, financial institutions, processors, agro-dealers, and others. Demonstration plots were used to reach beneficiaries and build capacity. Training of 228 EAS agents and 38 EAS supervisors enhanced capacity of government and NGO agents to train 30,769 producers using videos and brochures prepared by the project and to establish 456 demonstrations seen by 17,000 people on field days. Radio broadcasts reached 37,000 people. The project worked in partnership with GOG EAS services, but found there to be inadequate numbers of EAS staff to effectively manage on-farm demonstrations. This lack of EAS staff limited project outreach and remains a problem.

The **Strengthening Partnerships, Results, and Innovations in Nutrition Globally (SPRING) Project** developed a farmer field school curriculum to improve farming practices and increase aflatoxin-safe groundnut crops for better household nutrition. It was developed for MOFA's agricultural extension agents. The project trained agents in use of the curriculum, which was designed for farm level training.

The **Disseminating Innovative Resources and Technology to Smallholders (DIRTS) Project** explored barriers constraining productivity and profitability for small farmers, testing effects of improved input supply and intensified extension services. Project community-based EAS agents were trained to supplement work of GOG extension agents. Each agent visited selected farmers once a week for 30 weeks to provide predesigned messages on good farming practices. Agents were equipped with android smart phones with recorded messages in video or audio format, as well as a diagnostic tool to recommend appropriate messages for farmers depending on their responses to questions on planned farm activities. EAS materials, including Community Extension Agent handbooks, messages, videos, and posters, developed for soya bean, cowpea and groundnut, were important elements of the program. The program shifted from use of phones to tablets for viewing of extension videos, and later shifted from meetings with individuals to group meetings that required videos to be shown on a 21-inch LED TV set.

The intensive EAS resulted in small, but statistically significant, improvements in farmer knowledge and use of recommended practices. It did not result in change in value of output. The research conclusion was that the Community Extension Agent model is an attractive option for improving EAS, but the current menu of improved technologies is inadequate to improve farmer welfare. Increased investment in new technologies is needed to improve farm productivity and rural welfare. Since the EAS model performance appeared so effective, the District Department of Agriculture may test it further with a view to scaling up use by the government extension services.

The **Information Communication Technology Challenge (ICT Challenge) Project** aimed to increase farmers adoption of improved technologies for maize and rice by supporting 200,000 farmers through radio and 5,000 farmers through extension agents. The project tested three strategies: direct-to-farmer messages through radio; intermediated extension through in-person agent EAS combined with field videos; and in-person agent EAS combined with facilitated production credit. A final evaluation found positive, but somewhat inconclusive results. In coverage, the agent-based EAS activity fell 20 percent short of target coverage, while radio-based EAS exceeded its target by 143 percent. Not surprisingly, facilitated production credit substantially increased technology adoption rates. Otherwise, agent-based and radio-based EAS resulted in good adoption rates in roughly the same range for both. Problems arose in not having videos to address all needed innovations.

### EAS System Issues

The client base for EAS is divided into over 70 ethnic groups with farming systems differing in the three main agro-climatic zones - the forest vegetation zone, the northern savannah zone, and the coastal savannah zone. Most farmers are smallholders with limited resources, and, while many are organized in producer groups, these groups are often not especially strong.

The EAS operating environment is generally quite good. Government policy promotes pluralism in EAS delivery and is generally supportive of NGO and private firm EAS, though government EAS capacity to provide adequate support to these private providers may not be adequate.

EAS provider capacity is good overall, though coordination and linkage improvements would benefit the system. There is also need for culturally-adapted agents with locally-relevant solutions to strengthen and empower producer groups and engage them in markets and EAS facilitation.

EAS program content needs and availability vary. Improved technology is available for export crops. Greater emphasis is needed on commercializing stallholder systems, with marketing, enterprise planning, and business management support. Production technology options are needed for smallholder systems, suggesting need for more emphasis on farming systems research.

Incentives for EAS delivery exist in commercial systems for input suppliers and product buyer EAS. Community service is a significant motivation for lead farmers and farmer-to-farmer EAS, but additional incentives in terms of training and support would be helpful.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Ghana EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Fund a program to strengthen public EAS services through training, program development, and management improvements to improve effectiveness of district offices in working with private EAS programs.

- ❖ Support expansion of a farm youth entrepreneurship program at the district level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Fund agricultural research to develop technologies and management innovations to improve the productivity and sustainability of smallholder farming systems.
- ❖ Monitor project EAS activities to ensure that project supported private EAS providers are not excessively dependent on project subsidies for provision of EAS.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Guatemala*

### Country Extension and Advisory Service (EAS) System Status

Guatemala's rural population of 8.3 million represents a client base with important and diverse needs for EAS. The country has a wealth of natural resources and agricultural potential. Much of this remains underutilized, due to societal fractures. These present broadly as the linked divides between wealthier urban areas and impoverished rural communities and between the Ladino population of European descent and the indigenous Mayan population. A 30-year civil war ended in the 1990s, but inequalities, mistrust, and underlying reasons for conflict remain. Poverty and malnutrition rates are high.

A public extension services was established in the 1950s with focus on agriculture, the home, and youth. Over initial years, service focus vacillated between small and large farmers. This public sector EAS was essentially disbanded during the lengthy civil war, but was reconstituted in 2010 with establishment of the National Agricultural Extension System under the Ministry of Agriculture, Livestock, and Food (MAGA). This was expanded in 2013 with a government policy framework for a National Rural Extension System recognizing a pluralistic system including private providers. The public services are under a MAGA Directorate of Regional Coordination of Rural Extension (DICORER), which coordinates activities in the country's 22 departments and 334 municipalities. Each municipality is to have three extension agents: a Rural Development Extensionist, a Farming Systems Extensionist, and a Healthy Household Extensionist. Thus, there are about 1,000 field extension agents and 88 central trainers in the public system. Municipalities can hire additional extension agents, though this does not appear to be common. The EAS are demand-driven and emphasize a farmer-to-farmer approach, based on extensionists organizing community farmer groups called CADERs (Center of Learning for Rural Development) and training locally-selected volunteer promoters to facilitate EAS delivery. Coordination at the district level links CADERs with private EAS providers (NGOs or firms). The public system is centrally organized, but works at the decentralized municipal level. This system, which has expanded rapidly since formation appears to have chronic problems with: politicization; unstable staffing with at least some agents on annual contracts; limited resources; tensions between NGOs and public services and between communities and government; and limited staff training, despite the seemingly adequate number of central trainers.

An extensive private EAS exists in the large number of donor-funded NGO activities working with small farmers and the for-profit firms for horticulture export and for input supply. These seem to work well and have enabled the country to expand horticultural exports, but often these leave gaps in coverage for public goods-type EAS, as for natural resource management, home food consumption needs, and food safety. ICT capacity in the country is substantial, though does not seem to have been exploited much in EAS applications. The ICT capacities along with other infrastructure and services vary between highland areas and better served, more fertile lowlands.

Producer organizations are common, as with the CADERs accepted as the basis for the national EAS system. Groups operate at different levels of formality, with many remaining as informal community groups. Some – especially more commercial producers – move on to register as

associations or establish as cooperatives, as in the coffee sector. Greater group formality and professionalism in management will likely be necessary for more active producer organization roles in financing and governance of EAS.

An appropriate structure appears to exist for the evolution of a pluralistic national EAS system. Capacity issues, especially as related to organizational structures, programs, and linkages, and to staff training, remain for nearly all participants in the system. A new motivating force is likely needed to overcome issues of trust and to improve coordination, cooperation, and growth of the system.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Two CBJs from 2010 to 2019 made reference to extension: in FY10, proposing to strengthen public research and extension services, and in FY17, emphasizing nutrition training for extension agents. The FY2011-15 Multi-Year FTF Strategy had a limited assessment of the EAS system, but committed to development of producer organizations to access EAS and a commitment to nutritional education extension. The 2018 Global Food Security Strategy Country Plan includes a strong assessment of the EAS system and commitment to strengthening public EAS. Recent project reports and evaluations also reflect the importance of EAS in achieving program objectives.

The **USDA Food for Progress Project** (\$5.0 million) assisted MAGA launch its new rural extension service. The project supported expansion of extension to 93 municipalities. It supported training for 160 participants in two cohorts from an Extension Service Certification Program taught by local universities and U.S. professors. Little detailed information is available on the project.

The **Horticulture Innovation Lab's MásRiego Project** (\$1.8 million) promotes private sector development and small-scale commercial horticulture by increasing the use of low-pressure drip irrigation, conservation agriculture, and improved water management. The international project team will train 6,000 farmers. The project employs two field EAS agents in each of ten municipalities and works through three training methodologies: farmer-led field school training; specialist-led field school training; and school students training. Trainings initially were planned for 16 hours per producer group, but experience led this to be cut to 4 to 8 hours training per group. Initial plans to include topics of human rights and violence prevention were dropped at farmer request. Implementation follows a seven-step process: promotion to describe main irrigation activities; producer training on irrigation and project requirements; installation of systems with farmer participation; warehouse management at each municipality; technical assistance on maintenance and operation; organization and marketing; and M&E of system performance.

The project provides the drip irrigation systems with agreements for farmers to repay costs to a local cooperative, which supports irrigation groups. The private sector, especially fertilizer dealers, participates in establishing demonstration plots and training on fertilizer use. Drip irrigation system suppliers provide materials to warehouses in the municipalities. The project provides training on conservation agriculture and integrated pest management.

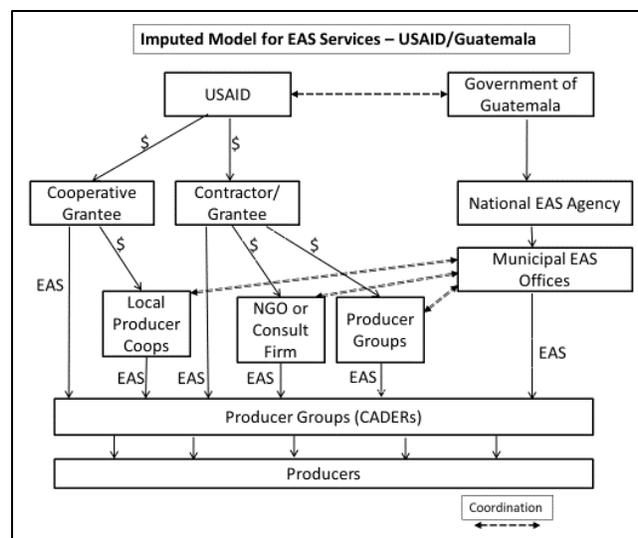
The **Feed the Future Innovative Solutions for Agricultural Value Chains Project** is in an early phase of implementation. The project has diverse objectives, including: farmer training for increased

agricultural production, credit provision, market linkages, reforestation, nutritional improvement, grants for local private sector development, and municipal water systems development. To-date the project has trained 2,838 farmers in new technologies through 99 field days. Of these, 413 have adopted new technologies, 114 are establishing fruit orchards, and 374 are using conservation practices. Incomes are reported to have increased by \$1.0 million total. The project hired and trained 22 EAS agents who have supervised 390 demonstration plots and facilitated links with government agricultural services for support. A new Center for Development of Rural Technology is considered key to implementation.

The **Rural Value Chains Project—AGEXPORT** (\$20.4 million) is one of two Rural Value Chain Projects. Its seven activity components are to: improve competitiveness and capacity of 60 enterprises; organize 3,910 producers' participation in value chains through 82 producer groups; introduce improved technologies; train 100 expert producers to serve as change agents; increase private sector investments; improve nutritional food security for 14,968 households; and improve competitiveness of craft chains for 31 artisan enterprises with 2,977 small producers. The project has served 22,361 families, increasing sales by US\$ 41 million, and facilitating 173 business chains. The private sector market investment component failed due to problems with establishing a co-financing fund and poor infrastructure and investment climate in the project area.

The project EAS utilized a process of technology and knowledge transfer through 100 expert producers—farmers with land to implement new technologies and a disposition to be trained as leaders to transfer knowledge to others and monitor results. The program included 450 demonstration plots for good production practices and adaptation to climate change. Arrangements for support, incentivizing, and training expert producers were not described. Strategic alliances were a key project strategy, involving 93 separate alliances: 15 with other USAID projects, 15 with private sector firms, 28 with craft buyers, 20 with agricultural product buyers, and 15 with public, academic, and international organizations.

The **Rural Value Chain Project—ANACAFE** (\$21.2 million) is the second of two Rural Value Chain Projects. It was to improve household access to food through increased and diversified rural income of small-scale coffee producers. The project implementation team included coffee cooperatives and was designed with a view to strengthen economically-viable associative trade organizations for coffee, horticulture, and handicraft value chains. Activities were quite diverse. The Project worked with 129 coffee producer groups, 25 horticulture groups, 16 handicraft organizations, and local schools and teachers. It reached 8,874 coffee growers, 3,590 horticulture producers, 807 artisans, and 5,763 families with nutrition activities. Participating families reported an average 22 percent increase in annual income.



The Project technical team had: 15 agricultural specialists, four post-harvest specialists, five organizational advisers, and 56 field agents. Much of the EAS was through “technical visits.” These appear to have been fielded through sub-awards to local organizations, such as the 129 organizations that trained 3,876 coffee producers. Entrepreneurial training utilized a suite of how-to videos, visual aids, and posters to support learning and producer organization strengthening. Rural Centers for Coffee Training (CERCAFES as the Spanish acronym) were seen as an innovative model for a comprehensive, holistic approach to coffee EAS. CERCAFES were established with producers known for use of good production practices, good will and ability to teach others, and willingness to showcase good family hygiene and nutrition practices. CERCAFE demonstration plots highlighted coffee production and environmental protection.

An **evaluation of the two Rural Value Chain Projects** concluded that in general the projects achieved goals of improving productivity, market access, and economic growth. The evaluation noted that projects used different methods for providing EAS – direct hiring of agents, contracting through producer organizations, and contracting through consulting firms, but did not note differences in efficiency or effectiveness between these. The evaluation team provided a sound assessment of the projects’ overall strategy and implementation and noted the following concerns, which merit consideration more broadly across Mission portfolios.

- 1) The Rural Value Chain Projects may not have added value to what already existed, as the coffee, vegetable, and cardamom sectors already had dynamism and established markets. Project support for production in specific areas may only have shifted production away from other communities.
- 2) Projects seem to have strengthened mainly the vertical structure of the chains and company control over all aspects of production. Strengthening learning skills throughout the value chain may be more beneficial by enabling producers to develop capacity for resilience and adaptation to changes in markets and the production environment. Risk increases greatly for producers dependent on a single product.
- 3) Rural income increases appear limited, due in part to the fact that exporters placed limits on acreage for production by any one producer.
- 4) Projects appear to have failed to have broad territorial impact on significantly reducing rural poverty. Activities were scattered in the target area, but do not provide a basis for national-level impact.
- 5) Limiting work to specific value chains limited participation of other communities and producers that could expand production of other products for their families and local markets.
- 6) Participation and leadership of Government is necessary to achieve results, but public institutions are weak or absent. The limited participation (and capacity) of public institutions resulted in little provision of public goods-type services (e.g., resource conservation, food safety, pesticide safety, etc.) and difficulty in facilitating infrastructure development and other support.
- 7) Future projects should emphasize developing capacities of producers and producer organizations and should engage more fully with government to ensure necessary support.

The **Feed the Future Centrally Funded Scaling Project (Buena Milpa)** seeks to broker agricultural innovation systems to promote innovation and adaptation of new practices and processes in the agri-food system, focusing on: (i) participatory native maize improvement, (ii) soil and water conservation, and (iii) farming system diversification. Change is expected as a result of: (i)

empowerment through social inclusion, (ii) enhancement of policies that enable innovation, (iii) access to resources by implementing partners, (iv) capacity to innovate, and (v) access to diverse information through innovation networks. Capacity building for local partner institutions provides a base for sustainability. The project trained 1,567 farmers on soil and water conservation techniques. An ambitious communications program included: press conferences, social media, publications, flyers, posters, and technical booklets to raise awareness for farmers, extensionists, and others of project activities. The project trained extension agents on use of social networks and communication strategies. Project implementation faced disruption due to reduced funding, drought, and pest problems.

The **MASFRIJOL Project** emphasizes four goals to: disseminate high-quality seed of improved varieties; promote community seed depots; promote nutrition messaging; and reach bean producers with technical assistance to increase yields. To date, the project has: reached 48,000 families with improved bean seed (5 pounds free of charge); established 72 seed depots; trained 38,687 producers in improved practices; and trained 47,883 beneficiaries in nutrition education sessions. No information was provided on arrangements for EAS farmer training.

The **Cooperative Development and Food Security in Guatemala Project** focused on cooperative development and poultry production enterprises. It included multiple activities: forming 72 community banks; providing equipment and resources to establish three Communal Centers of Poultry Technology; making 1,356 grants (totaling US \$ 277,484); and in conjunction with staff of the National Institute of Cooperatives (INACOP) provided training on cooperative principles. The project developed an integrated training model and materials for chicken production, nutrition, and financial literacy. These were adopted by INACOP for use at a national scale. The project trained 72 promoters to provide technical assistance for poultry on a fee-for-service basis to sustain projects benefits.

The **Guatemala Coffee Value Chain Project** (\$19.0 million) supports the Federación de Cooperativas Agrícolas de Productores de Café de Guatemala work to develop capacity of smallholder coffee farmers to: improve productivity and diversify production; expand access to markets; develop resilience through environmentally sustainable production; and improve nutrition education. The project expects to benefit 15,000 persons. To-date, the project has worked with 40 cooperatives with 4,322 members. Project services are provided by: 15 field technicians, 37 para-technicians, and 36 food security and nutrition promoters. EAS is based on training modules for recommended production and marketing practices and technical assistance visits. Initial innovations focus on soil management, conservation, adaptation to climate change, and new market access. A \$2.0 million fund is available to improve market access by subsidizing infrastructure investments. The project implementing partner has a good knowledge of coffee production systems and producers and a mandate to continue work in the sector.

### EAS System Issues

The client base for EAS presents some challenges. A basic divide is between commercial farmers, generally with more resources and more productive lands, and the small subsistence farmer. The small farmers are likely to be indigenous Mayan peoples speaking 28 separate languages. Nationally

literacy is about 82 percent, but illiteracy is much higher in indigenous rural communities and, even with literacy, basic education does not prepare farmers well for innovative management of the farm.

The EAS operating environment is relatively open and encouraging of multiple providers. The lingering distrust between groups and politicization of activities are significant constraints.

EAS provider capacity is substantial, though more training is needed for government EAS agents and programs and organizational improvements are needed in the system to facilitate better inter-institutional coordination and collaboration.

EAS program content needs are fairly well provided for with the larger commercial farms and horticultural export sector, especially as relate to production technologies and market requirements. The major gap remains in EAS for small farmers, who require assistance for farming systems productivity improvement, livelihood diversification, capacity development, natural resource management, and adaptation to climate change.

Incentives for EAS delivery generally reflect the dichotomy in clients and their differential ability and willingness to pay for services.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Guatemalan EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government to support training, program development, and management improvement for the National Rural Extension System to improve its effectiveness in working with private EAS programs.
- ❖ Fund a pilot program for farm youth entrepreneurship at the CADER level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Fund an EAS program targeting resource-poor smallholders with livelihood and resilience oriented services, emphasizing capacity development, livelihood diversification, market linkage facilitation, and linkages to farming systems research.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Guinea*

### Country Extension and Advisory Service (EAS) System Status

Guinea's rural population of 8.1 million has great need of, but little access to, effective EAS. The country suffered from over two decades of stagnant growth under a socialist government following independence. Subsequently, repeated army mutinies and military interventions over the period 1985 to 2010 caused disruptions and held back development. The country ranks 183<sup>rd</sup> out of 188 in the Human Development Index and has a poverty rate of 35 percent. Agriculture is primarily based on smallholders with a typical farm size of 1.5 hectares. Crops and farming systems are diverse across the country's four agro-ecological zones – coastal, middle (Fouta Djallon), upper, and forest. Livestock are important in many areas.

Public EAS was initiated in 1985 as the country began opening its economy. The National Agency for Rural Promotion and Agricultural Extension (APROCA by its French acronym) under the Ministry of Agriculture was formed in 1994 to provide EAS through the country's seven administrative regions, 33 prefectures, and 341 communes (sub-prefectures). The number of APROCA EAS staff has been shrinking due to retirements and no new hiring. Current staff number about 800, down from 1,446 in 2016. Many EAS staff have only a high school degree. The system is clearly in decline, a fact recognized by the GOG, which has considered options for a needed renewal of the system.

Private sector extension EAS is nascent in Guinea. Few private input suppliers or agricultural product buyers provide EAS as part of their business model in dealing with farmers. An exception is the private veterinary service and pharmaceutical suppliers, who have networks across the country to offer animal health services. One large private input dealer has discussed a proposal for providing EAS with the government, but no agreement was reached. Guinea has a broad network of 66 private, community, rural, and public FM radio stations and a wide coverage of mobile telecommunications with three private operators. Most people have access to relatively low-cost mobile telephones, with a reported penetration rate of 87 phones per 100 people. Internet use is reported to be 4.7 percent. ICT applications remain underused in EAS, though a World Bank project may be aiding in establishment of an e-Extension platform.

Farmers are organized in groups, unions, and a national federation (the Fouta Djallon Farmers Federation). The Federation provides some EAS. A National Confederation of Farmers' Organizations of Guinea (CNOP-G) was created in 2000 to bring together the varied producer organizations. With its 15 federations, 191 federal unions and six non-federal unions, and 520,000 total farmer-members, the CNOP-G can be an important partner for EAS and other agricultural activities. Producer organizations evolved from the socialist period and have had heavy government involvement in their operations. They are not particularly strong, nor well-experienced in marketing and commercial operations to serve their members. They are an important institution within the agricultural sector and well-accepted in communities and are likely to have an important role in future EAS development. Producer organizations generally are in need of EAS support to strengthen program operations and management.

The national EAS system appears quite stagnant at present. A national policy and strategy for EAS would be helpful, as would an initiative to revitalize public sector EAS. A European donor is understood to be planning an initiative with the government to address these issues. Private providers have incentives for EAS delivery, but need a push to become more active in this area.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension, nor does the USAID Country Development Cooperation Strategy 2015-2020. Still, recent project reports and evaluations suggest a significant role for EAS in the country program.

A value chain analysis found that transformation of agricultural value chains will require wide availability of agricultural services; policy constraints appear to limit competition in seed and inputs markets; private supply of locally made equipment is limited; private EAS are almost non-existent; and public extension services are inadequate with aging staff and little new recruitment.

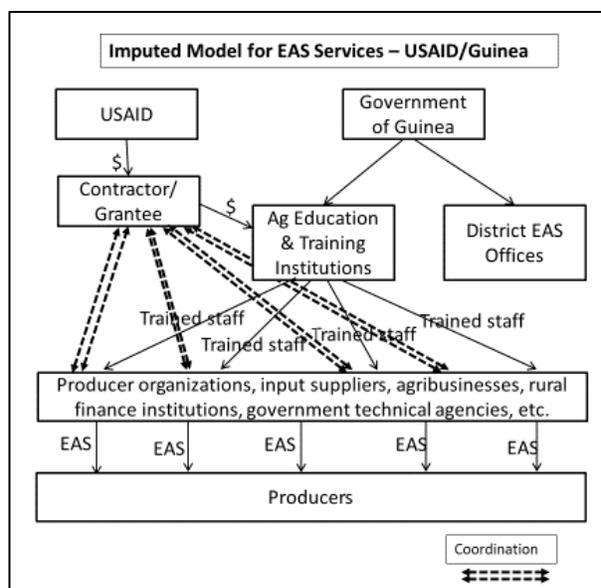
The **Agriculture, Commercial, Legal, and Institutional Reform (AgCLIR) Assessment** examined relevant laws, institutions, and social dynamics for the agriculture sector to identify constraints to investment and production. It found that EAS for agriculture appear to be in decline and of insufficient quality. Market information systems are very weak; EAS providers do not provide farmers useful market information; there is little information flow throughout agricultural value chains; and agricultural statistical capacity is very limited.

The **“Faisons Ensemble (FE)” (Working Together) Project** was to improve democratic governance in Guinea while achieving positive impacts in health, education, agriculture, and natural resource management. The project approach combined grants to NGOs that integrate good governance practices into technical sectors with partnerships among GOG administrative and technical agencies, local authorities, civil society, and the private sector. Concentrating resources on more capable and more reform-minded entities facilitated spread of reforms. An evaluation team found that the project had a significant effect on local governments and civil society entities and there had been change in functioning of local government, even though the regime remained fairly repressive. The project approach centered on training and implementation of existing regulations. Project impact on agricultural and natural resource was very limited, largely because few project resources were devoted to these sectors.

The **Agriculture Education and Market Improvement Program (AEMIP)** (\$6.7 million) was to raise capacity of Guinean agricultural education and training institutions to respond to the growing needs of farmers and agricultural enterprises in the face of shifting markets and climate change. The project focused on: curriculum strengthening, faculty strengthening, incorporating practical work into curricula, and improving institutional management. The rate of employment of graduates from supported institutions increased from 34 percent to 48 percent. Training on extension methods addressed a weakness in the curricula through training-of-trainers on experiential learning, practical hands-on problem-solving; and extension participatory skills for working with farmers and community leaders

The **Strengthening Market-led Agricultural Research, Technology, and Education (SMARTE) Project** focuses on increasing production, and improving on-farm livelihoods through improvements in: agriculture education and training; extension and advisory services; and research and development. A key element of the project strategy for modernizing agriculture is the Apprentissage en Vulgarisation, Entrepreneuriat, et Innovation Rurale (AVENIR) program to empower youth by giving them access to new technologies and business skills and placing them with host organizations to gain experience and disseminate innovations. AVENIR agents complete an intensive, one-month capstone training program that includes: marketing, managing credit, market analysis, farm budgeting, SWOT analysis, business planning, and other tools. Following the capstone training, AVENIR agents are then placed in seven-month apprenticeships with host organizations, emphasizing hosts that provide research, EAS, and training services. In practice, hosts include a wide range of organizations, such as GOG agencies, agro-businesses, veterinary offices, producer organizations, local NGOs, or input suppliers. Following the apprenticeship, AVENIR agents receive follow up monitoring and support to establish new businesses, improve productivity, taking employment with hosts or other organizations, or provide fee-based services. The project, which has finished its second year of implementation, faces budget cuts due to reduced USAID funding.

A project outreach campaign promoted the AVENIR program and host EAS programs, encouraging a view of agriculture as a dynamic business sector. Radio programs with 718,000 listeners supported: mobile micro-pump irrigation – “mobipompe,” commercial dissemination of improved pineapple suckers, ARICA 6 improved rice, and other innovations. The project produced nine agricultural extension films in national languages at local video hubs on topics such as: forced air dryers, raised nurseries, solar dryers, and pineapple sucker multiplication. Two magazines ran articles on plastic mulch technology and soil health management.



The project is implemented in parallel to the Strengthening Agricultural Value Chains for Youth (SAVY) Project (see below) with complementary activities, identical M&E indicators, and joint planning. The two projects support a single AVENIR program and overlap considerably in clients assisted, though one tends to emphasize capacity development support for agricultural knowledge and information service providers and the other for private sector users of such services.

The **Strengthening Agricultural Value Chains for Youth (SAVY) Project** seeks to improve input supply services, financial inclusion, and market functions, while building capacity of the next generation of Guinean agro-entrepreneurs. Program objectives focus on: increasing availability of agricultural inputs and credit; promoting animal health and mitigating disease outbreak; and increasing market information flows within value chains. Work focuses on rice, horticulture, and

livestock value chains. The AVENIR program is the core activity, preparing entrepreneurial young people to become entrepreneurs and change agents in strong, market-driven value chains. AVENIR agents are embedded for seven months of mentoring and on-the-job training with hosts, emphasizing private sector users of research, EAS, and training services. These included input suppliers, other agribusinesses, farmers' unions and confederations, financial institutions, and mobile network operators. A separate agro-dealer certification model promotes better business management and facilitates agro-dealer training.

Key principles for the project are: human and institutional capacity development; entrepreneurship; women's empowerment; and collaboration. AVENIR hosts aid in building capacity of young entrepreneurs, while project staff, consultants, and trainees provide services that strengthen business plans, credit applications, and management systems for the participating host organization. Activities seek to reduce the attitude of reliance on government subsidies that distort markets. It seeks to improve women's access to credit, EAS, and business opportunities. Implementation is founded on collaboration with other projects and development programs.

An evaluation of private veterinary input/service companies found that only 52 out of 79 private veterinary companies are functional. Major weaknesses are in poor coordination with public agencies; lack of capacity for diagnostic work; lack of equipment and materials; and poor reporting. A training of trainers workshop qualified 45 public and private technicians and EAS agents on detection, diagnosis, and prevention of zoonotic disease transmission, as well as on improved animal husbandry practices.

The project maintains a strong outreach communications program to advance program objectives. It has collaborated with the rural radio stations to produce and broadcast 144 educational programs on varied agricultural topics and produced five promotional videos for AVENIR agent use EAS in business planning and farmer organizations development.

### EAS System Issues

The client base for EAS is largely smallholder farmers with limited land and other resources. The adult literacy rate is 25 percent. The country has over 24 different ethnic groups, though three – the Fulani, Malinké, and Soussou – make up 90 percent of the population. Farming systems are diverse across regions and market system development limited. Producer and community groups are common and important, though not heavily engaged in EAS provision. EAS must account for this diversity across the client population.

The EAS operating environment is reasonably open, but challenged by the limited state of development of the overall economy and market systems in Guinea, which ranks 175<sup>th</sup> out of 189 countries in ease of starting a business.

EAS provider capacity is weak as the GOG EAS system continues its decline. USAID support to agricultural education and training systems is helpful in providing for better trained future EAS agents, but they will need incentives and support once on the job.

EAS program content needs are quite varied, due to the varied crops, agroecologies, and production systems. Producer organization strengthening, marketing and market linkage facilitation, natural

resource management, and enterprise planning are needed as well as production and handling innovations.

Incentives for EAS delivery are currently poorly developed. Increased commercialization of small farm agriculture and an improved business environment would expand demand for EAS and options for private sector provision.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Guinea EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government to support training, program development, and management reforms to enable the public EAS system to improve effectiveness in working with private EAS programs.
- ❖ Support agricultural input suppliers through training, technical assistance, and research to expand options and availability of inputs to small farmers and encourage EAS provision linked to input supply.
- ❖ Continue funding for the AVENIR program enhancing its emphasis on development of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Haiti*

### Country Extension and Advisory Service (EAS) System Status

Haiti's rural population of 5.0 million has extensive need for EAS to increase productivity and incomes. Farms are small, the country mountainous, and the population poor. The rural poverty rate is 75 percent. The country ranks 168<sup>th</sup> out of 187 on the Human Development Index. Agriculture is diverse, producing rice, maize, sorghum, mango, coffee, sugar cane, tubers, vegetables, fruit, and other crops for home consumption and export. The country continues to struggle to get back on the track to development after decades of political and economic stagnation, hurricanes, and a devastating earthquake.

In the 1980s, the Haitian Ministry of Agriculture essentially stopped providing extension services for farmers. The Ministry of Agriculture, Natural Resources, and Rural Development (MARNDR) has current responsible for providing decentralized agricultural services to farmers through a network of ten department directorates, four sub-directorates, and several bureaus located in 30 of the country's 135 municipalities. However, the range of ministry services is very limited and the public EAS system remains basically defunct.

Private EAS has fairly wide coverage. For-profit firm provision of EAS is limited, though some is provided by buyers for some export crops. Input suppliers provide limited EAS in conjunction with marketing and sale of their products. Non-profit NGO EAS is relatively widespread, provided by the numerous foreign and local NGOs active in the country. A 2013 survey found that a surprisingly high 13.9 percent of farmers reported having received recent EAS, most of which is thought to have come from NGOs. The NGO programs are therefore quite important. However, many are small in scale; all are poorly coordinated; and some are based on quite weak technical and methodological capacities. ICT service coverage in the country is adequate, but constrained by the limited resources and capacity of much of the potential rural clientele. Donor programs are able to support ICT applications for EAS, but sustainability will be a challenge.

Community and producer groups are common, organizing around commodities, common interests, and donor projects. These can be effective in facilitating EAS delivery, but many are relatively informal, poorly-managed and run, and somewhat transitory. The National Cooperative Council regulates cooperatives. Producer groups will likely have to play an increased role in EAS provision and governance, but will require considerable support over time for them to gain the capacity needed to fill this role.

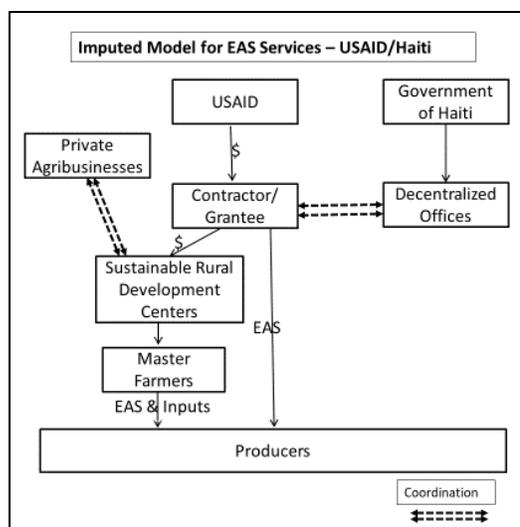
The national EAS system has not coalesced as a system. There are scattered efforts and major needs, but no overall coordination, facilitation, or guidance to encourage development of individual public and private EAS programs and inter-linkages to improve efficiency and effectiveness.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest significant commitment to EAS as a means of achieving program objectives. Four of the CBJs from 2010 to 2019 made reference to extension: in FY13, FY14, and FY16, committing to support for local organizations and community groups in providing EAS; and in FY19, proposing support for research and extension centers. The FY2011-15

Multi-Year FTF Strategy included a limited assessment of EAS capabilities, committed to development of public sector EAS, and put strong emphasis on nutrition education extension. Recent project reports and evaluations reflect the weaknesses in local EAS capacity along with the need for EAS in most projects. A 2012 BIFAD Task Force review concluded that research and extension were not well integrated into projects, and extension did not draw on information currently available from research efforts. The Task Force also noted that projects may be implemented without Haitian government input and recommended that all plans be long-term, integrate local capacity development, and have some level of inclusion of the Haitian government.

The **Feed the Future North Project (French acronym - AVANSE)** (\$87.8 million) was to reduce poverty and malnutrition. The initial design proposed use of sub-contracts and sub-grants to implement project activities and develop capacity of local firms, but a performance audit found that capacity development was not taking place. This and other problems with project management and baseline data prevented scaling up activities as planned and led to reduction in scope of project. The revised project was still quite ambitious with three components to: increase agricultural productivity through research, extension, access to inputs, irrigation rehabilitation, and producer organization strengthening; improve watershed stability by stabilizing critical slopes; and strengthen markets through improved storage and processing, market information systems, and value chain relationship strengthening. The revised project aimed to double income of 20,000 farm households in cacao, banana, and rice production.



Project implementation relied on: farmer field schools to introduce improved technologies and practices; vouchers to subsidize farmer investments; commercial supply of the quality inputs; and improved water management. The project reported that 27 technologies or management practices were made available to farmers and that 33,857 farmers received training.

A mid-term review found that new technologies and management practices had been introduced as planned through farmer field schools that reached out to farmers and provided equipment and services to increase productivity. The voucher program strengthened institutions, such as agricultural input stores that developed better infrastructure to provide farmer services. Community organizations had sufficiently developed to have underlying structures in place and management committees established.

The **Watershed Initiative for National Natural Environmental Resources (WINNER) Project** (\$127 million) sought to reduce environmental, infrastructural, and economic vulnerability in selected watersheds. The project worked to: improve livelihoods through increased agricultural productivity; improve critical infrastructure; strengthen watershed governance; and establish public-private partnerships. The project introduced 30 new technologies or management practices and reported that agricultural productivity increased by 413 percent for corn, 100 percent for beans, 141

percent for rice and 56 percent for plantain. The project reportedly resulted in a 119 percent increase in household income for 60,000 farmers.

The lack of any public EAS was a constraint, as farmers had no access to information on recommended agricultural practices. The project hired young agronomists as extension agents to provide farmers production advice and to monitor project agricultural campaigns. The project trained 3,127 master farmers in six-month training programs on agriculture, environment, management, family planning and nutrition, soil conservation, and specialized crop production, after which they received a GOH certificate and were qualified for employment. They provided EAS to growers and managed model farms as examples of modern agriculture.

The project established seven Sustainable Rural Development Centers managed by local organizations that included representatives of farmer associations, universities, the MARNDR, and the private sector. These were centers for training, research, and demonstrations and rapidly became strategic centers of agricultural innovation and dialogue among stakeholders. When possible, they offered additional services, such as soil and water test laboratories or pest diagnosis and treatment support.. Market and other information was provided through a program of bi-weekly SMS messages in Creole on topics, such as proper planting techniques, availability and price of inputs, and soil preparation services. This service reached 15,000 farmers.

The project established 300 farmer associations and five cooperatives with 100,000 farmers. Seventeen agricultural input supply stores owned by farmer associations were given in-kind grants and managerial and environmental compliance training to enable them to supply pesticides and technical advice. The project provided nine tractors to associations and trained 25 tractor operators, but tractors were not well utilized and are not likely to be maintained.

An Oxfam evaluation concluded that the project had provided many benefits to the farming communities, but questioned its sustainability. The Sustainable Rural Development Center services were heavily subsidized, and, while clearly an important asset to the country, sustainability was uncertain. The master farmer approach for EAS too was innovative, but master farmers were paid by the project, and, once the project ended, it was unclear how the master farmer training could continue.

The **Haiti Chanje Lavi Plantè Project** was to increase agricultural incomes, transform the agriculture sector, and improve the nutritional status of 87,748 households by increasing agricultural productivity, improving post-harvest operations, stabilizing watersheds, and supporting development of farmer organizations and agribusinesses. In part this was planned to strengthen sustainability of activities begun under the predecessor WINNER project and to reduce a culture of dependency. Activities included: providing EAS in close collaboration with the GOH; improving irrigation; improving access to credit and quality inputs; and stimulating private investment.

The project strategy centered on developing capacity of farmers' organizations and the Sustainable Rural Development Centers that became the project's main partners and beneficiaries. Sustainable Rural Development Centers led agricultural campaigns with technical support and training provided by the project. Each campaign included project technical assistance for introducing a "package" of practices including irrigation water management, quality seeds, fertilization, and cultivation practices

to increase yields. Agricultural productivity training for 174 beneficiary groups with 8,000 members introduced new production technologies and management practices.

The project trained and facilitated certification of 950 master farmers, expanding the pool of 3,127 master farmers trained and certified under the previous WINNER project. Master farmer training by an agronomist covered theoretical and practical subjects and was followed by a mandatory exam, passing which was required for certification. Certified master farmers were qualified for formal employment. The project funded 298 of them contracted to work with the GOH MARNDR, Sustainable Rural Development Centers, or the private sector.

The project worked closely with rural development centers, agro-supply stores, and farmer organizations to strengthen financial management and technical knowledge. Since no public agencies or large agribusinesses were providing extension services, the rural development centers became invaluable for providing EAS for sound agriculture, environment, and business practices beyond the life of the project. Many operated as small enterprises managing income-generating activities. The project approach to input supply relied on training EAS agents and 546 farmers on input use and benefits. This resulted in reduced chemical fertilizer use, higher dosages of organic matter, and increased yields at lower cost.

The project created eight legally-recognized sub-watershed management bodies in partnership with the private sector, farmer organizations, and local authorities and helped them develop watershed management plans. These integrated sound environmental measures, such as ravine treatments, agro-forestry campaigns, greenhouse development, and terrace farming. A new generation of small farmer greenhouses significantly improved on previous designs. Emphasis was on the importance of strong governance within water-user associations. This included community awareness programs to highlight benefits and importance water-user fees. Although significant progress was made, all water-user associations still required additional capacity for accounting and project management to be able to improve water-user fee collection and sustainably manage irrigation systems. Lack of collaboration with MARNDR constrained ability to ensure payment of water fees, manage irrigation systems, and completed needed cleaning and rehabilitation.

Project documents describe work with a variety of local organizations, focusing especially on the Sustainable Rural Development Centers, but are not always clear on the number of these organizations and their status. The impression given is that these are fairly fluid with limited or very varied capabilities and programs and not a great base for sustainability post-project.

### EAS System Issues

The client base for EAS is a challenge due to poverty and an ingrained donor dependency that has developed through the years with a succession of donor programs. Farms are small, averaging 1.5 hectares, with much of the land mountainous and low in fertility. Land tenure is often insecure. With high national unemployment, agriculture is often the fallback employment option. Providing a more remunerative commercial farming option for young people through effective EAS would fill an especially critical national need.

The EAS operating environment is difficult due to lack of infrastructure and other services and the lack of a public sector support base. The mountainous terrain, hurricane-prone location, and small farm sizes add cost and risk to EAS programs and to agribusiness operations.

EAS provider capacity is quite limited. Government staff are limited and have few operating funds or support, other than what may be obtained from donor projects. Donor programs are time limited with a resulting discontinuity in activities that limits development of capacity in local partners.

EAS program content needs include the basics of productivity improvement, agribusiness, and organizational skills. In addition, conservation practices and natural resource management are critical.

Incentives for EAS delivery are very weak. There few government services and fiscal constraints make it unlikely that this situation will change any time soon. Farm incomes are low and attitudes such that increased client involvement in delivery of EAS or any fee-for-service arrangements may be difficult.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Haiti EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government to develop a strategy and implement an action plan that provides incentives, coordination, and direction for private EAS provision. Strategy development should include an assessment of potential for expanding Sustainable Rural Development Centers and making them truly sustainable and for expanding the Master Farmer certification program.
- ❖ Fund a pilot program for farm youth entrepreneurship local level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by private sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Honduras*

### Country Extension and Advisory Service (EAS) System Status

Honduras's rural population of 4.0 million requires diverse EAS. Farms are split between larger commercial livestock and export crop producers, often on better lands, and small farmers, typically resource-poor and producing staple food commodities.

The public EAS agency was essentially disbanded in the 1990s, due to a reputation for inefficiency and a desire to move to more responsive, market demand-driven private service delivery. There is no established national extension policy or strategy. The Agricultural Science and Technology Board (DICTA) was charged with promoting a private system of technology development and transfer, including a system of certification of private EAS agents, but this has not progressed. The national government does allocate modest funding for a "National Extension Program." A national policy of decentralization has shifted responsibility for service delivery to the municipality level. Lack of funding and organizational challenges at the municipal level have limited progress in establishing EAS programs. As with other decentralized systems, arrangements for key support services (training, M&E, communications, and subject matter specialist advice) will need to be worked out.

A patchwork of private providers has emerged to fill some gaps in EAS. This "patchwork" is not necessarily bad, but does not represent full coverage. Commercial farms access their own EAS, employing or contracting advisory services. NGOs – mainly foreign donor-funded – provide services to small farmers. And, agricultural education and research organizations have increased their engagement in EAS and technology transfer. Quality of many of these services appears quite good. Some interesting experiments with contracting for EAS provision have envisioned a market for individual and firm advisory services, though administrative problems with such programs has dampened enthusiasm for them.

Producer organizations are important players in the EAS field. Organizations and federations with large commercial farmer members are able to provide or contract for EAS for members and have input to public policy discussions. For small farmers, organizing for EAS provision is more difficult, though still possible, especially for coffee and other cash crops. Smallholder farmer organizations are – as elsewhere – important as a channel for EAS delivery, but in this role serve more as "service-takers" than active financiers and managers of the EAS systems.

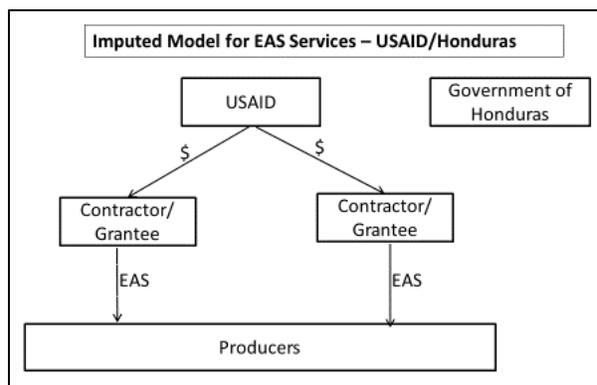
The national EAS system exists in a rather ill-defined concept. There are pluralistic providers, but no overall structure, policy, or path for future development. EAS provision is estimated to be split: 11 percent by the public sector, 43 percent by national and international NGOs, 18 percent by education and research institutes, 14 percent by unions and associations, and 14 percent by the private sector. EAS funding comes from varied source: 48 percent from foreign donors, 19 percent from the national government; 14 percent from private and research institutes, nine percent from farmers; four percent from donations, and two percent from local government. DLEC is currently engaged with DICTA to develop mechanisms for better oversight and coordination of EAS. Such coordination and a national strategy for agricultural EAS are much needed to provide a framework for future development.

## Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension. The FY2011-15 Multi-Year FTF Strategy had a limited assessment of EAS, but committed to support private service provision, noting the importance of natural resources management and climate change issues relative to EAS. The FY18 Global Food Security Strategy Country Plan provided a good assessment of the EAS system and indicated commitment to support for public sector EAS. Recent project reports and evaluations also reflect an important role for EAS in meeting program objectives.

The **ACCESS to Markets Project** seeks to improve nutrition and reduce poverty through economic development for 26,000 households. The project focuses on horticulture and coffee value chains, while also supporting household staple foods, such as corn and beans. Thus, the project embraces the whole-farm system and the need for services for varied crops and products to meet small farmer needs. The project: provides technical assistance and training to enhance capacity of poor households; links smallholders with input suppliers and buyers; facilitates rural financial services; improves utilization of healthy food; and provides health and nutrition services.

The project has 96 agronomy field technicians, 12 processing/value added technicians, and nine nutrition technicians on staff. Each agronomy field technician provides assistance and training to 270 client households. The project monitors farm enterprise gross margins to ensure viability of innovations and their benefit to farmer clients. To-date, 21,776 household clients are using one or more improved technologies or practices. The project reported that client household incomes had doubled and gross sales had increased by \$30.5 million.



The **Dry Corridor Alliance Activity (ACS)** is to move rural Honduran households out of extreme poverty and under-nutrition by improving incomes. Three components relate to: improved production, improved health and nutrition, and improved micro watershed management and conservation. The Alliance has provided technical assistance and training to 21,639 client households with 17,992 client households having adopted at least one new technology. It monitors enterprise gross margins to ensure benefit to producer clients. The Activity has trained 542 input supplier and buyers to date, encouraging them to incorporate EAS into their client services. It also works through agreements with 43 municipalities to encourage them to provide EAS. Eight of the municipalities have hired a total of 12 technicians under agreements with the project.

The **USAID-ACCESSO Project** was to move rural Honduran households out of extreme poverty and under-nutrition by improving incomes. Six components were: technical assistance and training in production, management, and marketing skills; market access; rural financial services; policy; malnutrition prevention; and environmental and natural resource management. The implementing partner consortium had a strong set of technical partners and had 147 field technical staff for

income-generating activities. Each project agronomist provided assistance to 300 households through informal groups organized around buyers and market opportunities. Project support included training in business management practices and facilitating access to finance. There were 71,417 training events; 48,873 individuals trained; 823,635 technical assistance visits made; and 30,364 client households assisted. A total of 29,899 farmers applied new technologies or management practices.

The **Transforming Market Systems Activity** (\$17.4 million) is to foster competitive, resilient, and inclusive market systems that provide increased economic opportunities (jobs and income) that incorporate poor, marginalized Hondurans and reduce incentives to migrate. EAS appears to have a minimal role in the project.

The **DLEC Engagement – Building capacity for public EAS coordination** (June 2018 – May 2019) aims to improve coordination of the EAS system. It seeks to identify producer EAS needs, the existing services available, and how the Directorate of Agricultural Science and Technology (DICTA) can fulfill its mandate to oversee and coordinate those services. This work builds capacity in DICTA to develop best-fit EAS via a consultative process. The activity working through DICTA will develop recommendations and a plan of action with DICTA to be presented at national and regional EAS workshops. The engagement is facilitated by CARE and coordinated with USAID.

### EAS System Issues

The client base for EAS is generally open to services, with larger commercial farms willing to fund or co-fund EAS. Small farmers are less able to access services and have unmet demand for EAS.

The EAS operating environment is fairly positive. Many for-profit and non-profit private organizations are active in providing EAS, and there is a rudimentary market developing for such services. Lack of an established government policy and significant financing for EAS constrain more active development.

EAS provider capacity is generally strong, except for the absence of significant public providers. Local training institutions produce well-qualified EAS staff with good understanding of market systems. The multiple organizations engaged in EAS have experience in varied effective methodologies and approaches. DLEC is working with DICTA to build capacity to develop best-fit approaches via a consultative process.

EAS program content needs are determined by market forces and self-determined demands from larger commercial farmers. Small farmers require more public good EAS for home consumption needs, natural resource management, community collective action, and commercial linkages. These are not readily available, except from short-term donor programs.

Incentives for EAS delivery are clear for cash and export crops and for large producers. They are less clear for small farmers, but decentralized provision at the municipality level may enable farmers to effectively express demands and influence EAS funding and provision through political channels.

## Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Honduras EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government with limited support to develop and launch a decentralized national extension program that provides a framework for public EAS delivery and incentives for private EAS investments.
- ❖ Fund a pilot program of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Kenya*

### Country Extension and Advisory Service (EAS) System Status

Kenya's rural population of 36.5 million has an appreciation for and a need for varied EAS to exploit opportunities from available natural resources and market linkages. The country's dynamism and economic leadership in the region provide a strong base for innovation and development.

The public EAS dates back to colonial times and has been split between commodity or value chain-based crop EAS for sugar, coffee, tea, and other crops and more general agricultural EAS for small farmers. The general EAS model is predominant and expanded in the mid-1960s. This grew as a top-down, technology-transfer extension approach, which met with some success in introduction of hybrid maize. By the 1990s, the extension service was faced with budget cuts and considerable debate over whether or not it produced any measurable impacts. Services were seen as inflexible, bureaucratic, and paternalistic. A New Agricultural Extension Policy in 2001 sought to introduce participatory, demand-driven approaches and was followed in 2012 by a National Agricultural Sector Extension Policy that promoted pluralistic public and private EAS. Devolution of EAS responsibilities from the national to county level after 2010 has potential for some positive benefits, but has resulted in confusion over arrangements for funding, planning, support, and service delivery. These are yet to be fully resolved. The public EAS has substantial resources in its 5,470 staff, many of whom have advanced degrees (data from 2010). The public EAS system has undertaken multiple initiatives to respond to client demands and identified weaknesses, but is probably still trying to find its path to efficient and effective services delivery, especially in light of the added challenge of decentralized service delivery.

The private sector is very active in EAS and is recognized as a third key element of the national system (along with the public commodity-specific and general EAS services). For-profit firms are very active. Horticultural exporters frequently find they must provide EAS to ensure small producers meet quality standards and production targets. Seed companies lead in EAS, especially in promoting hybrid maize. Other fertilizer and chemical dealers have followed. Export horticulture has flourished with exporters arranging required EAS for small producers to meet export quantity and quality requirements. Veterinary and para-vet services are widely available for livestock producers. All of these focus on EAS profitable to their own business model. Non-profit NGOs are also extremely active in country, many with social or environmental objectives. These are dynamic in introducing new EAS methodologies and participatory approaches. Much can be learned from their experiences, but, as is common with NGO programs, most are limited in scope of operations and impact and their programs may suffer from high levels of subsidies and poor sustainability. The country has strong capability and a wealth of ICT initiatives, including applications in EAS. Radio remains a preferred channel for farmers to access EAS information. Other cellphone and internet applications are likely to be adapted to specific situations.

Producer organizations are very important and take multiple forms. Communities have long traditions of organizing for collective action and for labor-sharing in agricultural activities.

Outgrower groups are often linked to horticultural exporters. A farmer field school program and a Kenya Agricultural Research Initiative outreach program (ATIRI) both had positive experience with

involving producer groups in EAS. Cooperatives are common and supported by a national cooperative training college. Cooperatives, commodity associations (e.g., Fresh Produce Exporters Association of Kenya), and other groups participate in varied ways in governance, financing, and delivery of EAS. An emerging model is the Produce Production and Marketing Organizations—small farmer groups that collaborate to access EAS and other inputs and market surplus production for members. Community solidarity and collaboration is often strong and facilitates farmer leader or farmer-to-farmer EAS dissemination strategies.

Kenya has an innovative and diverse agricultural sector with resources and market potential that may allow producers to expand production and reduce poverty. The national EAS systems has many strengths, but must adjust to decentralized public service delivery and coordination in order to achieve potential and adequately serve diverse client needs.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. None of the Kenya CBJs from 2010 to 2019 made reference to extension. The FY2011-15 Multi-Year FTF Strategy had a strong assessment of the EAS system and a strong commitment to support public and private EAS, especially from input suppliers. The 2018 Global Food Security Strategy Country Plan, however, includes little assessment of EAS capabilities and a very modest commitment to strengthening EAS systems. Recent project reports and evaluations provide little clarity as to the strategy for, commitment to, and role of EAS in achieving program objectives.

The **African Institutions Innovation Mechanism (AIIM)-Assist Project** was to support institutional capacity development for organizations with agricultural programs in at least two east African countries. The project assisted ten organizations with institutional capacity assessments and implementation of management and other improvements. No support seemed targeted to EAS program strengthening.

The **Feed the Future Innovation Lab for Assets and Market Access Project** is a collaborative research program on policy and programming for inclusive market access, risk management, resilience, and rural finance. Work in Kenya found that soil productivity potential variability within an area can greatly affect productivity of new technologies (varieties, fertilizer) and consequently the efficiency of farmer-to-farmer EAS. Areas with greater heterogeneity in soil productivity and other factors may benefit from larger numbers of on-farm demonstrations to test and disseminate innovations.

The **Kenya Agricultural Value Chain Enterprises Activity (KAVES)** was a major investment in the agricultural sector with a goal to increase productivity and incomes of 550,000 smallholders. Activities were to increase: competitiveness in selected value chains; farm productivity and market access; nutritional behavior and access to nutrient-dense foods; and capacity of local organizations. The project provided a wide range of services to 587,280 farmers producing maize, sorghum, dairy, animal fodder, banana, mango, passion fruit, potato, and export vegetables. The project reported that adopting good agricultural practices and technologies and responding to market opportunities enabled 500,000 farmers to achieve outstanding increases in productivity, sales, and incomes for target crops and dairy products.

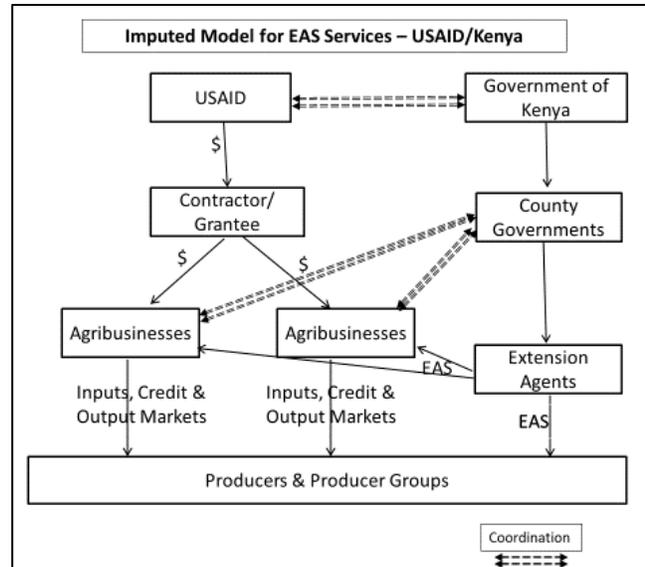
Reports provide limited details or analysis of EAS approaches or providers, but EAS was found critical to achieving objectives. The project collaborated with county governments and private sector stakeholders, who showcased improved technologies in farm field days and local trade fairs. Project teams at the county level provided extensive coverage and intensive capacity building support to fill the extension gap and enable farmers with the information needed to adopt new technologies and practices. The project reported that more than 50 percent of farmer beneficiaries adopted new technologies.

The project facilitated partnerships between hundreds of enterprises (traders, processors, exporters, regulators, business associations, input and equipment suppliers, banks, impact investors, microfinance institutions, farmers, farmer groups, and cooperatives) doing business with thousands of smallholder farmers. KAVES worked closely with more than 150 private and public sector organizations, all benefitting in some way from capacity building. A subcontract fund (\$22 million) co-financed activities with these organizations to carry out activities and develop local capacity.

Project Value Chain Analyses noted the importance of EAS and potential issues for the project. Maize activities all relied heavily on EAS support for broad adoption of new technologies, with county EAS agencies along with private firms expected to be the main EAS providers. EAS was seen as needed for mechanization, seed supply, and fertilizer use, but input dealer EAS was typically limited to information provided at time of sale of inputs. Farmer group leaders could be effective extension agents at the community level, but required continued capacity building to ensure sustainability and greater outreach. For French beans grown for export, government extension workers are poorly trained, but still need to be involved. Exporters have high up-front EAS costs in starting French bean export operations. For dairy too EAS services are woefully inadequate with only about 33 percent of surveyed farmers ever having received assistance from EAS providers for dairy.

The project also used a multi-sectoral approach to reach 350,298 beneficiaries with nutritional education messages. These included: mothers' groups of 10-20 members; sensitization meetings; and training and demonstrations.

The project final report recommended that future investments develop an agricultural technology industry to provide small-scale farmers a range of modern equipment, tools, inputs, and diagnostic systems appropriate to their crops and size of their holdings. This seems a sound, but pretty sweeping, recommendation. The project also recommended that future investments provide technical assistance and capacity building to county level governments to improve planning, investment, and EAS systems.



A **KAVES Project Evaluation** noted that the project's primary efforts to increase yields took place through targeted training, technical assistance, and demonstration sites to introduce improved production practices and cost-reducing, efficiency-enhancing technologies. The evaluation questioned the project EAS strategy. The project scope of work indicated that it would "train extension agents in its hands-on, field-based extension model where actual farmers are utilized as lead demonstrators for groups of 10 to 20 farmers, with minimum weekly visits that include direct technical assistance and group trainings (in agronomy, business skills, household nutrition and other related technical areas)." The evaluation found little evidence of the above mandate having been fulfilled.

EAS support to farmers was not especially intensive. Only four percent of the reported 587,280 beneficiaries had three or more direct interactions with the project, while most (76 percent) had only one. Local subcontractors from the private sector seemed to have had greater success reaching farmers, especially those firms that relied on farmers to supply them agricultural products. Initially the project had difficulties in identifying sub-contractors with expertise and interest in working with and building capacity of producer groups. Later, project capacity development work with subcontractors helped to overcome this constraint.

The project worked with different county government departments for crop production, livestock production, health, and nutrition. In counties where local government was heavily involved in implementation, the project had better results. This was especially apparent when activities required technical support from extension personnel.

The evaluation suggested that project funding was inadequate to cover the many functions and institutions throughout the target value chains. This has implications for sustainability and access to appropriate support resources. Additional funding would have allowed greater strengthening of local organizations and more adequate operating resources.

### EAS System Issues

The client base for EAS is very diverse, likely necessitating varied providers and programs to address needs of small farmers, commercial farmers with multiple crops and products, specialized producers linked into specific value chains, and pastoral livestock producers. The rural population is split into 42 ethnic groups, often requiring services in their own language.

The EAS operating environment is generally quite positive, fostering innovations in methodologies and use of ICTs. Improved coordination at the county level may improve efficiencies.

EAS provider capacity is quite good, though most providers have unmet training needs to ensure EAS staff are current in production technologies and innovations and market and organizational facilitation approaches.

EAS program content needs are also very diverse across regions and commodities. International linkages are quite good for accessing technologies and innovative management approaches. Research on local production systems and adaptations to environmental and natural resources conditions remain important.

Incentives for EAS delivery are generally present in market potential for highly commercial production systems. Incentives for EAS for resource-poor areas and producers are more of a problem and require attention from government and donors.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Kenyan EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system that takes devolution into account.
- ❖ Engage with government at national and county levels to support training, program development, and management improvement for the decentralized extension service to improve its effectiveness in working with private EAS programs.
- ❖ Explore options to support expansion of the Kenya 4-K (similar to the US 4-H Club program) program or other farm youth that can develop entrepreneurship and sound business skills for a commercial agricultural sector.
- ❖ Support continued piloting of ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Liberia*

### Country Extension and Advisory Service (EAS) System Status

Liberia's rural population of 2.3 million has major need for EAS for diverse aspects of livelihood improvement and a move from largely subsistence-based agriculture to a more productive agriculture integrated into a growing national economy. The country has abundant natural resources, but poor infrastructure. Decades of mismanagement, civil war, and the Ebola crisis have impeded economic growth, and recovery from the long civil war has been very slow. Poverty rates are high and the country ranks 177<sup>th</sup> out of 188 in the Human Development Index.

The public EAS system was established in 1960, as a top-down, transfer-of-technology system. This did not work well in Liberia. The system then completely collapsed during the civil war from 1990 to 2004 and is now being rebuilt in the Ministry of Agriculture Department of Regional Development, Research, and Extension (DRDRE). A 2012 National Policy for Agricultural Extension and Advisory Services commits to a pluralistic, decentralized, demand-driven, market-oriented system. This is easier to say than to establish. The DRDRE has only about 164 EAS agents, about half of whom are on temporary, project-funded contracts. Services are provided through offices in 15 counties and 91 districts. Staffing has been problematic. Some of the earliest recruited agents are aging and have outdated technical skills. More recent hires lack experience and have limited technical skills. DRDRE recruitment for new technical staff must compete with foreign NGOs paying significantly higher salaries. Transportation and other logistical and program support for DRDRE agents is limited at best. The public EAS systems has only begun its rebuilding efforts and has far to go, but has had commitment from some senior leaders with necessary vision for the future.

Private sector EAS is somewhat more available, but still quite limited. Some for-profit firms are beginning to provide EAS. The greatest potential may lie in the 14 or more import suppliers, though their capacity is limited, as is that of local input retail shops. Agricultural product buyers, especially oil palm, rubber, and cacao, also have potential to become major EAS providers for their target crops and supply areas. Non-profit NGOs are quite active with about 60 identified in country in 2011. Still, these struggle to achieve any level of scale of operation in view of the many rural needs and the infrastructure and support system challenges. ICT capacity is also limited. About 40 percent of the population is not within range of a mobile cellular phone signal and internet usage is about nine percent.

Farmer organizations are not well developed. Current groups form as needed and encouraged, usually by donor projects. They have low levels of formality and sustainability, often going defunct at the end of project subsidies. The period of civil war did little to reinforce trust within and across communities. Still, there is potential for groups to form and function when presented with opportunities to benefit members and the community. Farmer organization capacity development is necessary for these to become more formal entities capable of managing sophisticated commercial activities and directly delivering services to member. This will take time.

## Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Three CBJs from 2010 to 2019 made reference to extension: in FY12, proposing to improve farmer-to-farmer extension; in FY13, proposing to expand availability of a range of market-oriented public and private extension services, and in FY17, proposing coordinated partnerships with public and private EAS providers to deliver services to farmers. The FY2011-15 Multi-Year FTF Strategy provided a strong assessment of the EAS system and committed to strengthening both public and private EAS. Recent project reports and evaluations reflect the importance of EAS in achieving program objectives and the challenges in provision of effective services in Liberia. A Meta-Analysis of USAID assistance from FY2013 to FY2018 concluded that there had been relatively little progress in enhancing food security but more progress in managing natural resources sustainably.

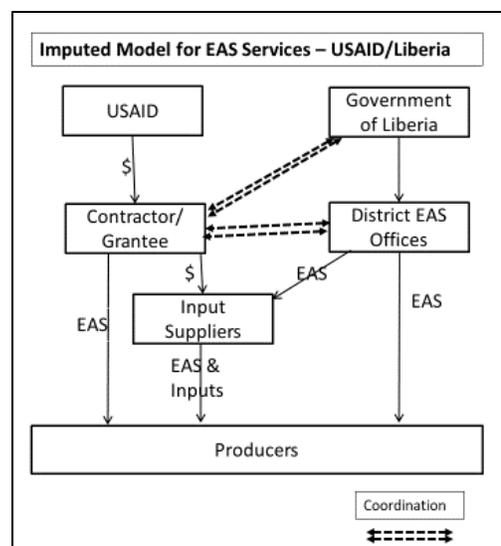
The **Food and Enterprise Development (FED) Project** (\$75.0 million) was to: increase agricultural productivity and profitability and improve human nutrition; stimulate private enterprise growth and investment; and build local technical and managerial human resources. The project worked in four value chains (rice, cassava, vegetables, and goats) in partnership with farmers, agribusinesses, NGOs, and the Government of Liberia (GOL). It benefitted over 102,679 rural households.

Project assistance delivery was based on: selecting farmers that already produced targeted commodities, had land, were members of a farmer group, and demonstrated motivation to adopt new practices. Following training, assistance to group members was provided at local demonstration farms managed by trained lead farmers. The project provided tools, equipment, improved seeds and fertilizers, and technical assistance and training to farmer groups on an in-kind grant basis. The project cost-shared purchase of major pieces of equipment, notably power tillers and tuk-tuk motorbikes. After the first year, groups were provided only technical assistance and training. Work through farmer groups and village demonstration farms was key, as it enabled the project to reach a wide audience. Group activities were somewhat problematic where farmers had not previously worked collaboratively and worked best with existing associations had already been formed prior to the project.

The project supported service providers, including: rice business hubs that provide drying, threshing, and milling services; three-wheel vehicles for transport; tillage services by cost sharing purchase of power tillers; tuk-tuk motorbikes to transport goods to markets; Village Savings and Loan Associations; and four regional community colleges to establish a 'National Diploma in Agriculture.'

The project contracted local NGOs to provide much of the project technical assistance and training, but also hired its own EAS agents. Some local NGOs complained of: lack of involvement in selecting beneficiary groups; the short-term nature of agreements; and lack of coordination between input provision by the implementing partner and their own EAS responsibility. Forty extension publications were prepared for the MOA, lead farmers, extension officers, NGOs, the private sector, and other development partners. A project radio specialist helped develop jingles promoting project recommended technologies.

An impact survey found significantly higher use of improved practices and technologies by project beneficiaries, but significantly higher enterprise gross margins only for the goat value chain. There were no significant differences in household incomes for any enterprises, but beneficiary groups had higher scores on five of nine quality-of-life measures. Of 25 improved production practices, 15 were used by less than half of the project clients. Adoption seemed to depend mainly on farmer willingness to increase labor use and on the ability of lead farmers to share knowledge. A cost-benefit analysis found a negative incremental economic net present value for the project's rice interventions. While high yields are often beneficial, limited rice markets prevented farmers from selling their rice and led to the low incremental economic net present value. A donor dependency expectation of free project inputs was noted as a problem, as was the deeply ingrained traditional production systems in many communities.



The project recommended that future programs: increase the role of local NGOs, which have greater flexibility and sometimes more expertise than government EAS; encourage the expansion of the private input supplier network and input supplier EAS; work with existing associations already formed by farmers; and improve coordination with the GOL.

The **Excellence in Higher Education for Liberian Development (EHELD) Project** was to transform the Cuttington University College of Agriculture and Sustainable Development into a premier institution to train Liberian professionals who can grow Liberia's economy. An updated curriculum is to produce graduates with skills required to meet agriculture sector needs. The revised curriculum includes: crop protection, postharvest handling and storage, production intensification, and water and natural resources management. A school farm supports experiential and practical training in the new curriculum. Agribusiness, entrepreneurship, and gender concepts cut across the entire curriculum. A major emphasis is on agricultural extension, with community outreach for practical application of teaching and research.

The **Smallholder Oil Palm Support (SHOPS) Project** was to increase productivity and profitability of the smallholder oil palm sector, improve marketing, and improve the sector enabling environment. Oil palm plantations were neglected during the civil war and are aging and declining in productivity. The project promoted local propagation and commercialization of higher-yielding seedlings from imported hybrid tenera seed. An evaluation concluded that project technical and business development activities aided 9,000 farmers and generated \$8.3 million dollars in increased income. The 327 participating small businesses invested \$625,555 and hired 3,805 employees and seasonal workers.

Project EAS agents worked with nursery owners to develop a supply chain for tenera oil palm seedlings, providing technical support to 43 nursery operators for production of 120,000 improved seedlings. During the initial phase of implementation, some organizations selected to participate

proved problematic, but project EAS staff later improved selection process targeting groups and individuals with resources and entrepreneurial attitude needed to adopt commercial approaches. A requirement that nursery operators make significant investments in pre-germinated seeds and polybags eliminated potential poor performers. Nursery operators needed assistance of project EAS staff to set up demonstration plots and conduct training for outplanters (seedling buyers).

The project had to contend with poor farmer understanding of quality differences between F1 and F2 seedlings. F2 seedlings are cheaper and can be misrepresented as F1. When they mature in 3-5 years they develop as non-uniform palms that may be sterile or low yielding. This threatened demand for high quality seedlings and necessitated significant EAS efforts, including: community-level discussions groups on advantages of F1 seedlings; 54 village demonstrations; ceremonial plantings; and radio talk shows over a one month period. This resulted in sale of 30,000 seedlings. The limited number of technical staff and large number of nurseries meant little time for follow up with outplanters. The project recommended separate EAS staff to work with outplanters on recommended production practices, but how these would be provided was not clear.

Related work on oil palm processing involved EAS support for 70 processing equipment demonstrations reaching 17,000 persons. Radio campaigns, jingles, t-shirts, stickers, and brochures with economic analyses promoted improved processing technologies.

The **Smallholder Oil Palm Support (SHOPS) II Project** (\$3.3 million) was to increase incomes in the smallholder oil palm sector while reducing deforestation. Project objectives were to: increase smallholder oil palm productivity and profitability; improve oil palm marketing; and enhance the sector business enabling environment. The project provided technical training and facilitated commercial linkages for farmers to sustain activities beyond life of the program. The project aimed for annual production of 100,000 seedlings that would produce a profit of \$200,000. Project funding was cut and the seedling target was only 24 percent achieved. The project ultimately benefited 2,818 farmers who increased annual income by an average of \$541.

The project focused on developing nurseries for improved tenera oil palm and introducing improved mills (called “Freedom Mills”) for oil extraction. Cost benefit analysis indicates that tenera palm oil production is among the most profitable options for smallholders. Project EAS agents provided 41 nurseries with assistance on seedling production and nursery management with training demonstrations that had 265 participants. Initially, a grants program provided a 50 percent match for seed purchases and stimulated seedling sales from approved nurseries, but this incentive structure was found unsustainable and dropped. At project end in the 2017 planting season, 150,000 seedlings were still in nursery inventories and only 13,132 seedlings had been sold. Renewed EAS efforts promoting purchase of the improved seedlings. The project hosted six radio programs to create awareness of improved oil palm, providing information on where and how farmers could purchase seedlings. A County Agricultural Trade Fair exposed 600 participants to new oil palm varieties and technology.

The project employed four production EAS staff and three technical trainers, who offered EAS compliant with Sustainable Palm Oil Roundtable standards. These EAS staff assisted with field layout at over 20 farm sites for outgrowers, demonstrating planting techniques. Work with village

savings and loan associations helped mobilize funding for seedling purchase. Project-assisted private firms increased services, fabricating improved oil mills and distributing oil palm price information.

A final evaluation concluded that most nurseries and mill manufacturers should be able to flourish without continued assistance. The evaluators noted that MOA EAS staff appreciated project EAS staff capabilities.

The **Technical Assistance Services in Support of the Ministry of Agriculture (TASMOA) Project** was to support the Ministry of Agriculture as a foundation for private sector-led agricultural and economic growth. A strategic assessment of the Ministry showed that over 75 percent of the Ministry staff reside in Monrovia. Key human resource issues were: weak capacity across the Ministry; poor practices and ineffective human resource systems; lack of planning, performance management, and staff training; and weak leadership across departments. Particular attention was paid to the Extension Division as the most important Ministry link to farmers. The Extension Division has had huge problems in communications with county offices around the country, but improvements are underway.

The **People, Rules, and Organizations Supporting the Protection of Ecosystem Resources (PROSPER) Project** (\$19.3 million) is to introduce appropriate models for community management of forest resources. Project objectives are to: expand capacity to improve environmental awareness and natural resource management; improve forest management; and enhance community-based livelihoods from sustainable forest- and agriculture-based enterprises. The project improved management on 24,323 hectares of biological significance.

The project developed an Environmental Education Club program in 15 primary schools. Field staff trained teachers and helped organize clubs, and community mobilizers worked with teachers on new curricula activities including outdoor activities for educating club members about the environment. Varied media and communications approaches were used in outreach awareness campaigns. These included: radio talk-shows, town criers, theme songs, jingles, video, dramas, cultural performances, town hall meetings, market-day displays, street parades posters, flyers, t-shirts, and booklets for distribution to target audiences. A 42-episode radio drama serial incorporated messages on community forestry, land tenure and property rights, and biodiversity conservation.

Community forest committees were formed in participating communities to implement outreach and awareness campaigns on community forestry. A training workshop for community biomonitoring of forests was 30 percent classroom-based and 70 percent field training. The project developed nine sets of agricultural training materials (composting, cassava processing, crop diversification, etc.) to support community forestry outreach and agriculture practices that reduce threats to biodiversity.

Project livelihood activities started with farmer field schools for food crops. These provided participants with lunches and tools to establish griffonia (an herbal supplement) nurseries, distributed mosaic virus resistant cassava planting material, and shared recommended technology for cowpeas, groundnuts, and plantains. In Year Two the farmer field school program was halted due mainly to concern with impact on land use and wetlands, but also because of high cost and a low adoption rate for recommended practices. Low adoption seemed to be due to need for extra labor that did not translate into large yield increases. EAS strategies refocused more directly on threats to

biodiversity and innovations with greater potential for long-term impact on more farmers. This emphasized tree crops (cocoa, oil palm), beekeeping, and wood-based enterprises. Community mobilizers moved into communities and interacted daily with farmers, resulting in a reported 90 percent of clients adopting all new technologies. Demonstrations on communal fields resulted in low levels of technology adoption, while demonstrations on farmers' own land had much greater impact. EAS staff worked with nursery owners to select appropriate sites for oil palm farms and provided regular extension visits to work with all group members, achieving good results in out-planting and seedling survival. Agents facilitated development and validation of 25 oil palm processing group constitutions and formalized them as enterprises.

The **Liberia Agribusiness Development Activity (LADA) Project** (\$19.3 million) is to increase incomes of smallholders through increased private agribusiness investment. Activities focus on strengthening agro-input provision, agro-processing capacity, and agro-policy development, including: industrial rice milling; processing for rice, cassava and vegetables; policy formulation; loan guarantees; capacity development of Agro-Input Dealers Association of Liberia (AIDAL); post-harvest handling training; food safety standards; upgrading processing equipment; organic fertilization and composting; and digital financial services.

The project works with the MOA to develop capacity of local agro-dealers on safer input use, business management skills and extension outreach. Working with the MOA and AIDAL, a network of 40 agro-dealers, the project is mobilizing agro-dealers and creating awareness of the importance of establishing strong business relations with farmers through extension outreach. The project team, along with MOA EAS personnel, conducted training on input use and post-harvest handling. An "On the Farm" radio show reaches farmers with market information.

A mid-term-evaluation found that farmer-training events are not being used effectively to link agro-input dealers to producers. Project, government, or partner staff provide farmer training, but this does not help the dealer-farmer relationship. Project staff however question the capacity of agro input dealers to deliver effective training that follows environmental safety best practices. Of farmers surveyed, 24 percent reported increasing production due to the project, largely by extending area cultivated rather than change in technology.

Project field activities are coordinated with GOL County Agricultural Coordinators and MOA staff serve as trainers. This serves to develop a sense of Ministry ownership of the project. This has benefits, but also some disadvantages. GOL selection led to participation by some ineffective organizations and GOL trainers did not always have current knowledge of technologies and good practice or a strong commitment to supporting profit-making private businesses.

Cooperatives were found to require long-term support to strengthen management systems and ensure compliance with provisions for member benefit and asset sharing. Cooperatives need management capacity to meet contractual arrangements and overcome a legacy of poor performance. They also must diversify rice sales to avoid dependency on purchases from NGO buyers and to develop more professional approaches to sales and business transactions.

A mid-term evaluation basically recommended pivoting away from work with farmers to work with more formal businesses. It found modest impact on agribusiness investment and progress in achieving income increases, with only 555 households having increased incomes out of a project

target of 15,000. The evaluation recommended: shifting away from work with the underperforming cooperatives; increasing the role of private enterprises in training; and becoming more of a business advisor by hiring staff with business and private enterprise backgrounds. It should emphasize agro-input dealer linkages to farmers by strengthening capacity to establish demonstration plots and provide EAS and supporting agro-dealer expansion into farm machinery rentals and leases. The role of government would be reduced, as it has not performed effectively.

The evaluation recommendations are understandable and pragmatic, but perhaps not advisable. They would enable the project to take full control of activities through funding of private sector entities, but would sidestep the important challenges of strengthening public-private collaboration and farmer/farmer organization capacities.

### EAS System Issues

The client base for EAS presents a serious challenge. Farmers are dispersed, isolated, poorly-resourced, and poorly organized. The population is split into three major ethnic groups and 30 languages. Rural literacy is only 50 percent.

The EAS operating environment is also quite problematic due to poor transportation and communications infrastructure and a less than vibrant overall economy. The policy and institutional environment is not a major issue, but the general challenge and cost of operating is a constraint.

EAS provider capacity is limited, due to EAS agents relatively poorly trained in new technologies, innovations, and business skills; limited coordination among providers; and unproven methodologies for efficient and effective EAS delivery.

EAS program content needs emphasize public goods-type services, building local group capacities, facilitating marketing, environmental and natural resource conservation; and introducing farming-as-a-business attitudes.

Incentives for EAS delivery are poor. Public EAS agents are poorly paid, and, since farms are small and not highly commercialized, agribusiness profits are limited, such that providing EAS as an embedded cost may not be an attractive business proposition.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Liberia EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government to support training, program development, and management improvement to improve its effectiveness in working with private EAS programs.
- ❖ Fund a pilot program for farm youth entrepreneurship at the local level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.

- ❖ Fund a national level smallholder EAS program, emphasizing producer organization capacity development, livelihood diversification, market linkage facilitation, and linkages to farming systems research.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Malawi*

### Country Extension and Advisory Service (EAS) System Status

Malawi has a rural population of 15.5 million potential users of EAS. Much of the population is food insecure and agricultural productivity is relatively low for the region. Maize is the key subsistence crop. Farmers are diversifying production, but at a very slow rate. Tobacco is the main export.

The public sector EAS is substantial and well-organized. A 2000 National Agricultural Extension Policy (NAEP) established key principles for the system to be: demand-driven; accountable to clients; cost shared; sustainable; equitable; pluralistic; and decentralized. Implementation of this ambitious reform agenda has been slow. The public system has about 2,415 extension staff. The Department of Agricultural Extension Services has overall responsibility for services, which are provided through District Agricultural Extension Services System (DAESS) Offices. Each district is divided into Extension Planning Areas, where frontline EAS are provided, mostly through farmer-based organizations and Lead Farmers. Stakeholder “platforms” at village, area, and district levels are expected to help coordinate EAS activities and improve quality of services. The public EAS is not well-funded. Expenditure on extension is estimated at only just under two percent of total expenditure for food and agriculture, and salaries account for 73-83 percent of the extension budget. In practice, extension agents spend much time on non-EAS activities, such as registering farmers for fertilizer subsidies. Still, surveys have found that 75 percent of farmers received EAS within the past two years and 75 percent were satisfied with those services. Two-thirds indicated that they had adopted recommendations, though this is not supported by other surveys. The public EAS system represents a substantial resource.

Private for-profit EAS providers include input suppliers and product buyers. Tobacco and cotton companies are the predominant actors in buyer EAS provision, but various other companies are involved at a smaller scale. These often work through contract grower or outgrower schemes. Input suppliers are widespread and are linked in a network (RUMARK – Rural Market Development Trust). They may use demonstration plots for new seed varieties and fertilizers, but most of their efforts are essentially marketing, rather than EAS on use of their products. NGOs are pervasive in Malawi, providing much of EAS targeting resource-poor small farmers. The country has about 11 major radio stations and a growing number of community radio stations, with about 60 percent of the population having access to radio. Internet use is low, but growing. The country mobile phone system costs are relatively quite high.

Farmer organizations play an important role in the sector. At the community level, producer groups of various types are heavily involved in collective marketing and EAS provision, often with support from donor NGO programs. Two large established entities are the Farmers Union of Malawi and NASFAM (National Smallholder Farmers’ Association of Malawi). They are much involved with marketing and representation of smallholder interests and implement associated EAS activities. Producer organizations can be expected to play an important role in EAS.

The Malawi national EAS system has considerable strengths in established organizations and coordination mechanisms, staff availability, and commitment to EAS. There are bound to be

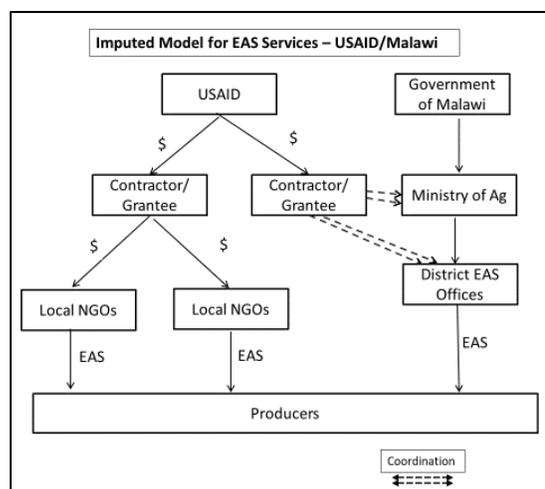
problems of EAS system coordination, especially in situations like Malawi with large numbers of NGOs. Some have suggested there is a ‘system failure’ in that, despite existence of formal coordination structures, public, private and NGO sectors do not operate well as a system. This may be exaggerated, but there remains need for better coordination.

### Recent EAS USAID Project Experience

USAID budget and planning documents have variable treatment of EAS as a means of achieving program objectives. Four CBJs from 2010 to 2019 propose substantial support to agricultural and nutrition education EAS. The FY2011-15 Multi-Year FTF Strategy has limited emphasis on agricultural EAS, but strong commitment to nutrition education extension. Malawi has funded a dedicated EAS-strengthening project, though other projects suggest a less strategic approach to EAS.

### The Feed the Future Integrating Nutrition in Value Chains (INVC) Project (\$0.4 million)

seeks to sustainably reduce rural poverty and improve nutrition, reaching 275,000 rural households with improved food production. Targeted populations are smallholder farmers with 0.5 to 1.2 hectares of land. the project’s primary components are: value chain competitiveness, agricultural productivity, nutrition, and local capacity development. The agricultural EAS program is implemented through three sub-award NGOs. The EAS program based on traditional farmer training and demonstration plots promotes a range of land preparation and management, harvesting and drying, post-harvest handling, and marketing practices. The project reports a very positive innovation adoption rate of 50 percent in year one, 60-70 percent in year two, and an expected 80 percent in year three.



An evaluation found the project to have a good understanding of collective marketing at the central level, but narrower understanding at the district, community, and farmer levels. The evaluation also found that farmers report not being able to afford pesticides, even when they know the recommended products. It suggested more emphasis on integrated pest management and consideration to organic production. Two sub-awardee NGOs implemented a seed program providing farmers free improved seed with an agreement to return two kilos per kilo received. The program did not work well, as recovery was only about 30 percent, and seed returned was mixed and poor quality.

The project nutrition education extension services are implemented through Farmers Clubs and a Community Care Group Model. The model prioritizes 15 nutrition behaviors and practices disseminated through a variety of methods – lead mothers, drama groups, peer counselling, growth monitoring, materials, and demonstrations. The evaluation found the model to have potential for scale-up though needing some improvement in coordination and capacity development. The project nutrition education approach appears more developed than that for agricultural technology, as

reflected in the evaluation, which dedicates about five times the space to the nutrition extension as compared to agricultural technical services.

The **Feed the Future Malawi Strengthening Agriculture and Nutrition Extension (SANE) Project** seeks to strengthen EAS systems through policy work; capacity development and provider coordination; and improved research-extension linkages. The project contributed to development of District Agricultural Extension Services System (DAESS) and an Agricultural Sector Food and Nutrition Strategy. One output was a DAESS Platform Standard Operating Procedures. An evaluation did not find evidence of project impact beyond its initial implementing area, but concluded that project training, communications materials, and stakeholder mapping improved platform capacity. District comparisons indicate the project had contributed to changes leading to agricultural and nutrition-related impacts.

There is as yet inadequate NGO and agribusiness participation in DAESS platforms, and an initiative is needed to encourage private sector involvement. The evaluation found that the project suffered from extreme levels of staff turnover and USAID budget cuts that could hurt sustainability, increasing importance of a viable exit strategy. The evaluation felt there to be some danger of the project focus drifting from more impactful work on system strengthening to more limited work on direct EAS delivery and farmer training. It concluded that “progress made by the project so far show that investments in strengthening systems, especially systems that are locally developed and owned, indeed have multiplier effects in other areas of development. However, improving extension systems is not a quick fix. Changes require effort at all levels, which takes time and investments of real resources, but it can work.”

The **New Alliance ICT Challenge Fund Country Grant Malawi Project** (\$1.70 million) was to improve capacity of farmers to use quality seeds and improved technologies and to provide a financially sustainable mix of ICT media approaches to complement other extension services. The project was largely successful, with a radio program and cellphone-enabled platforms launched and accessible nationwide. The cellphone service had up to 134,854 individual callers per month and 22,716,675 short messages were “pushed” to farmers. Non-donor funding for the overall ICT services was 51 percent, ranging from 85 percent for mobile phone services to 29 percent for radio. Stakeholders believed that radio and mobile phone-based services may continue.

EAS was provided through a suite of five ICT-enabled extension services. A toll-free, on-demand cellphone information service was available country-wide for farmers to access a menu of relevant information. This included a channel for Interactive Voice Recording (IVR) and a second channel that “pushes” messages to subscribers based on the crops they grow. An audio job-aid for extension workers used the same cellphone service to provided pre-recorded prompts and reminders on giving advice to the farmers. Another free service provided current market price information for key crops. A separate fee-for-service was to be a call center for GOM EAS agents to provide advisory services beyond that available on the toll-free system. This call center was not established because of concerns with cost and sustainability. Radio programming integrated agricultural messages into regular radio broadcasts.

The ICT-enabled EAS appeared quite cost-effective, as service could be made available country-wide. Infrastructure problems arose with power outages, and poor cellphone coverage for some

areas. Text messaging was constrained by limited literacy levels. There were delays in up-loading information and challenges in preparing new content on emerging issues, such as fall armyworm control programs. Farmers noted the need for information on a broader range of crops than were included in the program.

### EAS System Issues

The EAS client base for Malawi's EAS system is mainly smallholders producing maize for subsistence and challenged by decline in soil quality and uncertain weather conditions. Their crop yields are significantly below potential.

The operating environment for EAS is mixed with strong government and donor support, but thin markets and low level of rural economic activity. Private EAS providers are free to initiate programs and have potential for coordinating with the public sector and between for-profit firms and NGOs. Government subsidies add a significant uncertainty to farm decision-making and EAS program operations.

EAS provider capacity is generally quite good. Improvement is needed in program coordination, but many actors are present in country. Many sound EAS methodologies and approaches have been tested and are known. Agricultural education and training institutions are sound and able to provide the trained EAS personnel needed. Logistical, operating, and communications support improvements would be beneficial.

EAS program content needs are somewhat a puzzle. Clearly, improvements in maize productivity are important and market facilitation and producer group strengthening for collective action are needed. Natural resource management (agroforestry, soil conservation) have been emphasized in the past, though adoption rates have not been good. These issues may become more important with climate change impacts that may make water scarcity a greater problem for the traditional maize production system.

Incentives for EAS delivery are weak, due in large part to the limited development of market infrastructure and systems. Small farm size and inability of farmers to contribute to EAS costs limit incentives for providers.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Malawi EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Continue a low level-of-effort support to the GOM for implementation of its EAS reforms to improve coordination and facilitate private EAS delivery programs.
- ❖ Fund a participatory farming systems research and extension program in conjunction with the research institute, university, and private sector entities to develop innovations suited to

smallholder production systems in an environment of climate changing and recurrent water deficiencies.

- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Mali*

### Country Extension and Advisory Service (EAS) System Status

Mali's rural population of 10.8 million has substantial need for EAS. Poverty rates are high with nearly fifty percent of the population living below the poverty line. Illiteracy is over 60 percent. A military coup in 2012 and rebellion in the north disrupted development efforts and left the country in a troubled, fragile state. The peace agreement in 2015 helped restore order, but has not ended serious unrest in the north. The country has four agroecological zones – Saharan, Sahelian, Sudanese, and Sudano-Guinean, each with distinct crops and farming systems. Livestock is important, as the country has the largest livestock population in West Africa. Only 12 percent of available arable land is cultivated.

The public EAS system is fairly complex and spread across ministries and departments. Following a socialist period of collective farming and enforced cooperatives in the 1960s, the government established the public EAS system, which went through a period of top-down, transfer-of-technology EAS approach that began in the 1990s – somewhat later than in most other countries. The public EAS has been influenced by its reliance on donor funding and was largely defined by major projects - the participatory Support Program for Agricultural Services and Farmer Organizations (PASAOP) in the 2000s and the Fostering Agricultural Productivity Project (PAPAM) of the 2010s with its focus on irrigation and sustainable water and land management. The PASOP piloted a program of outsource contracting for EAS at the municipal level, though this was not continued. Currently, the National Directorate of Agriculture (DNA) is the primary entity for coordination and is responsible for crop EAS. Other National Directorates providing EAS include: Production and Animal Industries for livestock; Veterinary Services for animal health; Rural Engineering for irrigation; Fisheries for aquaculture; and eight specialized offices and parastatals for regionally- or crop-focused activities. Administratively the country is divided into ten regions, 49 cercles (districts) and 703 communes (sub-districts) with EAS provided largely at the district level. The public EAS system has 839 staff of which 646 are field-level extensionists. Each cercle is to have 2-3 EAS agents, but many posts are vacant. Public EAS performance has been hampered by its limited size and resources and by the fragmentation of activities across departments.

Private EAS providers are important actors. Private veterinary and animal health workers have become quite common. Input dealers are also quite important. Input supply firms collaborate through the Network of Agricultural Input Operators in Mali (ORIAM). The fertilizer market is the fifth largest in West Africa, but fertilizer rates per hectare are low and the fertilizer sector much influenced by government subsidies that promote use, but distort markets. Private agricultural product buyers may also provide EAS to their suppliers and collaborate through organizations, such as the Malian Association of Vegetable and Fruit Exporters, the Federation of Exporters of Livestock and Meat of Mali, the Group for Professional Agro-Food Product Transformation, and the Malian Association of Exporters of Picked Products. Cotton production is significant with growers receiving services from and marketing through a parastatal that has some private participation. These for-profit firms provide EAS to varying, but generally limited, degrees. Non-profit NGOs are also prevalent, many providing EAS as part of livelihood or humanitarian response projects. The country's ICT capacity is not exceptionally advanced, but mobile phones are prevalent

and radio is an important communications media. ICT applications for EAS programs are common and use is growing.

Producer organizations are very common throughout the country and comprise the bulk of the 15,000 organizations devoted to agriculture. Literature reflects two opposing views of these organizations. Some documents report generally very weak organizations, while other sources give producer groups much more credit for their established capabilities. Undoubtedly part of this discrepancy is due to a wide variation in group capacity. In general, producer groups are a well-accepted institution for community action and many are well-organized, if not well-resourced. Capacity development remains a priority to enable these groups to play a more substantial role in marketing, representing members interests, and providing and facilitating EAS. The Association of Farmers' Professional Organizations (AOPP) is an umbrella organization that brings together 130 regional farmer organizations. Producer organizations are likely to remain a key part of EAS delivery.

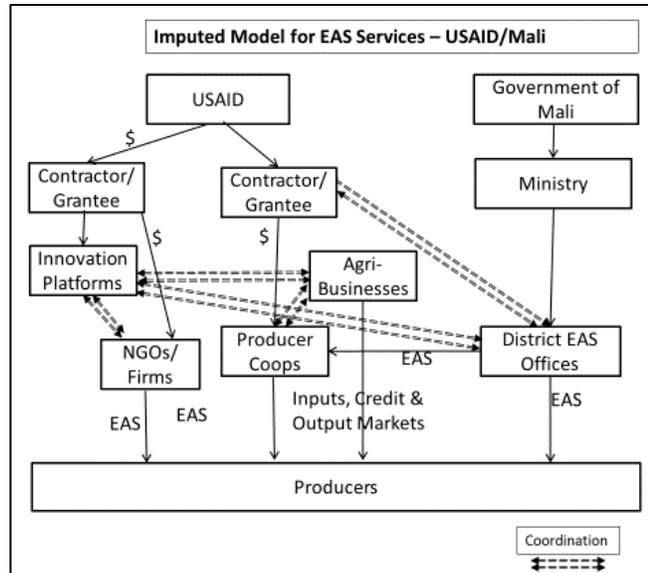
The national EAS system faces challenges due to limited public funding and fragmented organization of the public services. The system's strength lies in the accepted role of producer organizations in defining the agenda for and delivering EAS and their acknowledged role in representing EAS clients. The diverse and active private sector firms are a second potential strength, though building on these strengths may be difficult without national leadership. The Forum des Services de Conseil Agricole et Rural du Mali (FOSCAR-Mali), an association of all groups involved in EAS, has over 200 members and serves as a mechanism for knowledge sharing, collaboration and promotion of EAS.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Only one of the CBJs from 2010 to 2019 made reference to extension, in FY13 referencing planned investments to expand technology dissemination through EAS. The FY2011-15 Multi-Year FTF Strategy included relatively little assessment EAS system capacity or commitment to agricultural EAS, but included a strong commitment to nutrition education EAS. The 2018 GFSS Country Plan made no mention of EAS. Recent project reports and evaluations reflect an importance of EAS in achieving program objectives and a reliance on Mali's public sector EAS system.

The **Cereals Value Chain Project (\$24.9 million)** is to increase agriculture production, productivity and incomes for rice, millet and sorghum value chains. The project trained and supported 1,120 producer organizations with 83,000 members. The project reported adoption of new technology and production practices by 69,717 smallholders, resulting in increased yields of up to 127 percent for sorghum, 63 percent for millet, 21 percent for lowland rice, and 164 percent for irrigated rice. The project has enabled farmers to invest in production, improve grain quality, and sell larger volumes through cooperative bulk sales. An economic analysis of USAID's investments in cereal production found incremental internal rates of return of 32 percent and 37 percent and incremental financial net present values of \$710 and \$722 per hectare for millet and sorghum respectively.

Activities to address low cereal productivity included: mobilizing private input suppliers to sponsor new technology production demonstrations with producer organizations; establishing local seed cooperatives and enterprises to supply improved seeds; creating “revolving funds” for producer organizations to finance inputs for members; training 754 community agribusiness agents to serve 83,459 clients; strengthening GOM extension capacity; and building environmental management capacity of water user committees and local government. The project model for change was that of embedding teams of two local community



agribusiness agents in cooperatives as a resource for sustainable support to the groups. These project-trained advisors were producer organization members, who improved organizational management; facilitated technology diffusion to members; and coordinated with input suppliers, buyers and financial institutions for collective marketing and commercial activities. Community agribusiness agents’ role extended beyond that of the traditional lead farmer and included organizing group input purchase and collective sale of produce.

The project focused on partnering with government EAS to build capacity and expand the coverage and sustainability of project activities. GOM EAS agents worked closely with the project and serve as ongoing support to the community agribusiness teams. The project confirmed that lead farmers – the community agribusiness agents – could play an expanded role in EAS provision, but linkages to GOM EAS agents were critical in supporting the community agent role as local lead farmers and an ongoing source of agricultural information.

Cooperatives required formal training to strengthen organizational capacity. Many of the country’s producer organizations are not well managed, nor do they provide relevant services to members. The project enabled organizations to provide member services and to take a more market-oriented approach to activities. Capacity building included a financial intermediation approach, new technologies and production practices, EAS methodologies, and cooperative management and operations. Development of apex cooperative organizations was found necessary to establish adequate quality controls and scale of operations to negotiate contracts and maintain strong relationships with buyers. Local producer organizations lack scale and capacity to do this effectively.

A mid-term evaluation found steady progress in: household food security, productivity; technology adoption; and sustainable business relationships between traders and farmer groups. The community agribusiness agent model succeeded in using local community members to provide training to producer organization members. The model however is not sustainable, since there are no concrete incentives for agents to continue in their roles. Alternatives may include linking community agents to input suppliers or buyers, who can provide incentive packages for community agents to continue marketing activities and managing demonstration plots on a commission basis.

The **Integrated Initiatives for Economic Growth in Mali Project** was to reduce poverty by increasing agricultural productivity, employment and incomes. The project focused on farmer groups producing rice millet and sorghum, facilitating farmer group links with banks, processors and traders. Other investments were in irrigation infrastructure and post-harvest handling. The project sustained several modifications at the request of USAID and was affected by security problems in country.

The project area had been a focus of past development efforts for many years and farmers had received previous assistance that gave them good familiarity with improved technologies. They lacked however the necessary links to input suppliers and the wider value chain to respond to market opportunities. An evaluation found the project to have had substantial impact on strengthening the basic food grains value chain, linking suppliers and creditors directly to producer groups for financing, input supply and markets. Farmers and producer organizations showed evidence of substantial familiarity with commercial business operations. However, the performance evaluation questioned sustainability. Producer organizations that had phased out from project support reverted to marketing on an individual basis. Thus, sustainability of the marketing system may be questionable, if there is no third-party facilitator.

EAS was supplied to farmers through EAS agents hired under sub-awards to local organizations. Services reportedly addressed linkages throughout the value chains, but little description of EAS methodology was provided in the project performance evaluation.

The **Mali Agricultural Value Enhancement Network (MAVEN) Program** was to improve productivity and increase access to finance in targeted value chains. Program activities included technical assistance to improve: production, processing and marketing; business management skills of producers, producer groups and agribusinesses; and access to quality inputs and finance. The project: introduced 120 improved agricultural technologies or management practices; facilitated loans and business development services for 1,500 individuals and enterprises; strengthened producer groups and processors; and built capacity of agricultural education institutions. Illiteracy is a major constraint, requiring EAS activities to use pictorial and/or hands-on training materials and exercises. Most cooperatives are at a nascent stage of development and need training in group formation and operations. Involvement of public agencies and local leaders was key to success in identifying local partners, implementation. and follow-up.

The **Linking Financial and Social Capital to Enhance Resilience of Agro-Pastoral Communities Project** was designed to improve access to financial services for smallholders in Mali and Niger. In Mali, the project reached 15,769 people with face-to-face messages and 227,992 by radio. At start-up, the project grossly underestimated the reach of radio within the target area. The project found that there needs to be incentives to motivate village agents. This might be possible through income generating activities, travel or communication support, and/or cash or in-kind compensation by the groups serviced themselves.

The **Cowpea Out-scaling Project** sought to increase cowpea productivity, decrease postharvest losses and increase home consumption of cowpea in Ghana, Mali, Nigeria and Senegal. The project worked through multi-stakeholder innovation platforms that included farmer organizations, research agencies, EAS providers, government, NGOs, financial institutions, processors, agro-dealers, and

buyers. The private sector was important as providers of inputs and buyers of agricultural products. Activities for scaling out technologies were market-driven. The platform served as an interface to incorporate more actors into discussions on bottlenecks and opportunities for improving value chains and for activity planning. Farmer income from both grain and fodder sales increased, and cowpea consumption increased significantly (365 percent). The project found that nutritional status could be improved relatively easily with introduction of cowpea foods in diets.

The project worked through sub-grants to local partners for implementation. A training-of-trainers approach enhanced capability of public and NGO EAS providers, who trained farmers and organized field days. The project trained 34,276 farmers in Mali on the use of quality seeds, soil fertility management, planting density, pest and weed management, harvesting and storage, and seed treatment. Demonstration plots helped reach more beneficiaries. Due to security problems, some training activities had to be decentralized, using lead farmers to train others at demonstration plots, with two plots per village, as security restrictions prevented movement between villages. The project also strengthened seed production systems finding that a revolving seed system is a good means of facilitating access to improved seeds.

The **DUWUTE Project** was an emergency food security activity to improve: household access to food, household nutrition and agriculture practices, and community organizational capacity. A final evaluation found that targeted beneficiaries considered it to have been successful. The project reached 4,541 households in 50 villages. However, a follow-up survey found that 39 percent of beneficiaries had not participated in agricultural production training. Non-participation was 62 percent in one area. Adoption rates for improved production techniques greatly varied. In one area, it was reported at 88 percent, but another significantly lower at 44 percent. On average 86 percent of beneficiary households reported being satisfied with agriculture/natural resource management training. Some practices recommended were already in widespread use in the area. The technology base, EAS approach, and results reporting appear somewhat questionable, though the emergency-response nature of the project was probably the explanation for this.

### EAS System Issues

The client base for EAS has great need, but many constraints, including low literacy rates, climate stress and limited resources. On the plus side, producer organizations are well accepted and common, though these are often weak and in need of capacity development support.

The EAS operating environment is challenging. In the agricultural sector, the country ranks 146 out of 189 countries in terms of ease of doing business. Poor transportation, landlocked status and regulatory policies hinder trade and agribusiness development. The climate limits and adds risk to production systems.

EAS provider capacity is modest. Public sector EAS resources are limited, but the public sector appears to be relatively adept at collaboration with NGOs and for-profit EAS providers. Additional training is needed for EAS agents throughout much of the system.

EAS program content emphasizes rice, a government priority due to its importance as a staple food. Livestock are a vital agricultural value chain and relatively well-suited to the country's climate. Producer organization strengthening, market facilitation and basic entrepreneurship are other major

needs. Additional research is necessary to provide options for adaptation to climate change and resource limitations.

Incentives for EAS delivery are modest at best. Increasing logistical and operational support may improve status and incentives for public sector EAS agents. Market-linked incentives are important to private EAS and may be a means of providing appropriate incentives for community-based agents. Improved business operations and management may enable cooperatives and producer groups to incorporate incentives for EAS provision.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Mali EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated and comprehensive EAS system.
- ❖ Engage with government to develop a national EAS capacity development plan and support implementation of such plan with training, program development and management improvements to enable the public EAS system to improve effectiveness in working with private EAS programs.
- ❖ Fund a capacity development program for cooperatives and producer organizations, strengthening management systems and commercial operations and building in incentives for EAS provision.
- ❖ Fund a pilot program for farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support development and implement an action plan to increase use of ICT in EAS, including piloting ICT innovations in EAS by private (or public) sector ‘owners’ of ICT innovations with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Mozambique*

### Country Extension and Advisory Service (EAS) System Status

Mozambique's 19.1 million rural people have many challenges in their quest for sustainable livelihoods and would benefit greatly from effective EAS. The poverty rate is estimated as high as 80 percent. Literacy is 59 percent (up from only 27 percent in 1980). Farms are small with 99 percent under 10 hectares. Each of the country's ten agro-ecological regions has several farming systems and a variety of crops. Independence came late in 1975 and was followed by a disastrous 15 years of civil war and socialist economic policies. Civil strife threatens to re-emerge. As a result, the country has not been able to benefit from its generous endowment of agricultural land and natural resources.

The public EAS system is a case of "arrested development". The public extension service was launched in 1992 – about 20-30 years later than other countries in the region. Thus, the public EAS development lagged others in the region. Launch of the public EAS service was slow. A first phase in the early 2000s focused on expanding geographic coverage and tested an approach of contracting out provision of EAS. A second phase continued geographic expansion, but shifted with government policy to decentralized service delivery by government agents. This decentralization is likely beneficial in the longer term, but also complicated system growth, as there was loss of staff and a need to rethink organizational structures. A National Directorate of Agricultural Extension (NDAE) is responsible for the National Agricultural Extension Program (PRONEA). Services are provided at the provincial and district level with 141 of the 150 districts now covered by about 1,361 extension staff. Educational qualifications of EAS staff were very low initially and, though this has improved, it remains a problem. Many staff reportedly lack basic agricultural technical training. In-service training is weak, and NGOs and private firms reportedly hire extension agents from the PRONEA, making it somewhat of a training entity for the sector. The PRONEA has a unified EAS approach, providing services for crops, livestock, and natural resource management, and commits to a pluralistic delivery system. The Cashew Institute and National Institute of Cotton have provided EAS with funding that comes at least in part from levies on sales of these crops. A new national extension strategy is under development. Public EAS remains weak and in a growth and development stage.

Private EAS is substantial, but highly fragmented. For-profit cotton and tobacco firms provide effective, comprehensive EAS to producers in the north. Other private buyers and input dealers provide scattered services throughout the country, though with some major constraints due to lack of market development. Per one estimate, only one in five small farmers has marketable surplus in a given year – a serious constraint for EAS provision by product buyers. Input prices are high; input availability low; credit availability limited; and profitability of input use low. Thus, input dealers too are not well-placed to provide EAS. NGOs are very active with about 400 in country. They were the de facto base for the EAS system in the past. NGO activities are often small, scattered and time-limited. Many NGO programs pursue multi-disciplinary livelihood strategies that include limited attention to agricultural innovations and EAS approaches. They also may include unsustainable subsidies and incentives for beneficiaries. In total, there are an estimated 1,479 private EAS agents in country – 750 with NGOs and 727 with private firms.

ICT offers promise, but again with limitations. Radio is the main media channel used to distribute agricultural information and messages. The country's 100 or more radio stations reach 60-70 percent of the population. Over half of rural households have functional radio sets. Estimates of mobile phone use vary from an 84 percent penetration rate to a 25 percent usage rate in the USAID target area. While internet penetration is estimated at 60 percent, this appears high, given the low 22 percent electrification rate and low ICT skills for most farmers.

Producer organizations are common, but generally weak. One estimate is that only 6.5 percent of farmers are members of a group. Groups are mostly small and informal, but still serve as important channels for EAS delivery. The GOM has worked with 5,500 farmer groups. Their roles must grow to provide for collective action by small farmers to engage in markets. A National Smallholder Farmers' Union, an umbrella producer organization, has implemented some EAS activities. Substantial organizational and program development support will be necessary for these to develop over time.

The overall national EAS system is weak. With the public services still in a development phase, there is no "backbone" to the system. Coordination is poor and sharing of technical and other information among EAS providers is reported to be especially limited. Producers are unorganized and resource-poor, resulting in little effective demand for services.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 mentioned extension. The FY2011-15 Multi-Year FTF Strategy provided some assessment of EAS and a commitment to support private services and producer organizations in EAS. The 2015 Rural Agricultural Services Project evaluation noted the inherent unsustainability of using contractor and grantee employed EAS agents. Response to this issue remains a work in progress. Recent project reports and evaluations indicate commitment and varied approaches to EAS provision to meet program objectives.

The **Feed the Future Viable Sweetpotato Technologies in Africa (VISTA) Project** (\$12.2 million) seeks to improve production, utilization, and marketing of orange-fleshed sweet potato and benefit 102,500 households. The project distributes sweet potato planting material and provides training to farmers and government extension agents. The project supports vine multipliers, implements a nutrition education campaign, carries out marketing studies, and monitors sweet potato yields.

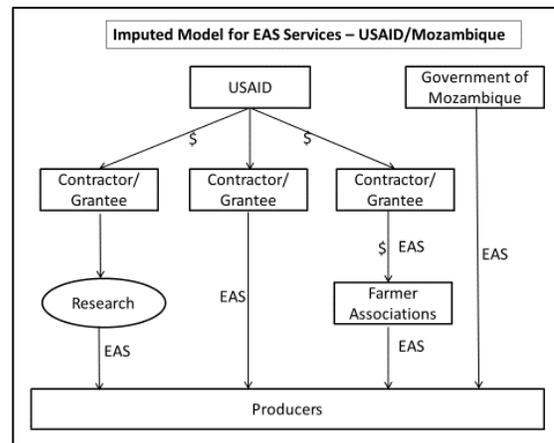
The **Feed the Future Mozambique Improved Seeds for Better Agriculture (SEMEAR) Project** (\$14.2 million) is a five-year activity that builds on previous USAID support to applied agricultural research, technology transfer and related capacity building. Objectives include: increasing legume seed production and supply, strengthening the national seed system, scaling-up adoption of improved varieties, and enhancing policy dialogue on seed and fertilizer supply. It has reached 67,916 beneficiary households. The project trains extension agents and partners with farmers' associations, seed companies, agro-dealers, NGOs, public extension services, and donor programs to scale up adoption of varieties and management practices. It used 1,598 demo plots in one crop season to introduce new technologies. Communication activities create awareness of

improved technologies and 75 field days have allowed farmers to see technologies discussed on radio broadcasts. The project monitors return on investment to ensure innovations introduced are actually of benefit to clients.

The **OCLUVELA Multi-Year Assistance Program (MYAP)** (\$15.0 million) was to reduce food insecurity. A grassroots-based extension delivery model included 333 farmer associations and reached 27,777 farm households. Work through Farmer Associations created a network for reaching farmers with specific technologies. Some technologies disseminated were judged inappropriate for low-resource farmers and input supply was a constraint. Conservation farming innovations had a reported adoption rate of 65 percent with adopters doubling yields. Farmer Association work ran from formation to strengthening, legalization, federation, and more active commercial operations. A process of two years' work in a community followed by a phase out period was found advisable to foster local ownership and sustainability.

**The Mozambique Feed the Future Resilient Agricultural Markets Activity – Beira Corridor**

seeks to raise agricultural productivity, profitability, and resilience by facilitating private sector engagement to deliver information, advisory services, inputs, market linkages, and finance for soy, pigeon pea, sesame, common bean, and cowpea value chains. It has four components: behavior change communication; model family farms; sustainable extension services; and strengthened market systems. The behavior change component has emphasized radio messaging on climate change and conservation, supplemented by awareness-raising events, awareness field days, community discussions, mobile, and video presentations that have reached 378,903 people. The Model Family Farm (MFF) component has established 138 model family farms, of which 109 were acceptable to technical standards. These trained 6,197 “followers”. The project combines resilient agriculture activities with improved input supply from private input dealers. Field days are held at all Model Family Farms. The sustainable extension component works to strengthen private and public extension networks. The project has developed and disseminated a resilient agriculture technical manual that includes extension methodology for MFFs and for supporting training by extension staff. The market systems component provides training on entrepreneurship, business planning, and marketing.



The **Feed the Future Mozambique Resilient Agricultural Markets Activity - Nacala Corridor Project** (\$6.0 million) is creating partnerships with the private sector, community based organizations, entrepreneurs, and others to increase availability and adoption of technologies and practices to improve household resilience. It promotes a new model of extension, focused on development of critical thinking to equip smallholder farmers to make smart decisions. A strategic grant fund has made 14 grants to small businesses to promote specific technologies. Mechanization and irrigation investments were prominent among these grants with another for fertilizer promotion. Two technology companies began cell phone-based information platforms for farmers to access agronomic, climate and weather, market, and railway safety information.

The **Public-private partnership for innovation in soybean and cowpea value chains in Mozambique Project** (\$0.5 million) was to transfer soybean and cowpea technologies to increase productivity. Much of the activity supported seed production. The project partnered the GOM to improve EAS effectiveness and used traditional EAS methods. Organizing meetings through community leaders was helpful for technology transfer. Demonstration plots served many farmers and need to be complemented by adequate training. Decentralized information centers in farmers' associations or communities were effective in distributing simple information packages (brochures and bulletins) in local languages. More EAS agents with resources to provide continuous support during the growing period were needed to be more effective. Radio and text messaging were effective to disseminate meteorological and other information in local dialects. Free handouts are not advisable. And, facilitating farmer access to inputs, markets, and credit was found to be important.

The **Partnering for Innovation (P4I) Project** partners with private sector entities to commercialize agricultural technologies and inputs for sale to smallholder farmers. The project also works with microfinance institutions to provide access to finance and banking services for smallholder farmers. Partnerships have facilitated 152,733 farmers' use of new technologies. Private partners emphasized business expansion, but EAS seemed not a major element in this. One firm however did train 250 agriculture development agents, who develop relationships with customers and train them in good agricultural practices, while promoting company products.

The **USAID Mozambique Agribusiness and Trade Competitiveness Program (AgriFUTURO) Project** to boost the competitiveness of private agribusiness reported reaching 55,000 rural families. Initially, the project did not focus on transfer of production technology, because policy, marketing, and organizational capacity constraints were seen as the more limiting factors. USAID requested a shift that placed greater emphasis on technology transfer. This showed results and increased productivity, which certainly motivates other farmers for adoption of innovations. Such programs require time, careful planning, and realistic targets. Activities focused on: strengthening 14 farmer-owned service centers to expand EAS; creating of 16 agribusiness service clusters linking commercial farmers, banks, buyers, and emerging market farmers with capacity to expand their operations; disseminating new production and post-harvest technologies; and providing \$1.3 million through 22 grants for organizations to purchase equipment and construct storage facilities. Grants increased firm capital base and leveraged access to bank finance.

The project strategy emphasized linking "emerging" farmers having at least five hectares with commercial farms to form agribusiness service clusters. Grants jump-started these relationships, but results were mixed. There were fewer emerging farmers than originally thought, and there were problems with side-selling, loan defaults, or renegeing on agreements. Some farmer-owned service centers and agribusiness service clusters dissolved operations; others discontinued work with small farmers. Financing was a continued problem and some operations proved unprofitable. On reflection, the project concluded that agribusiness service clusters are a promising means of transferring technology to small farmers, but future initiatives should use a block concept with contiguous farmer groups near commercial farms and should commit adequate resources to capacity development of the small farmer groups.

## EAS System Issues

The client base for EAS is weak. Small farmers are resource-poor, poorly organized, and not well connected to markets. Educational levels are low.

The operating environment for EAS is poor. Markets are poorly developed for agricultural products. Inputs are costly and often unavailable. Threat of renewed conflict constrain EAS system growth.

EAS provider capacity is weak. Coordination for a network of pluralistic providers is lacking, as is leadership in the EAS area. Pre-service and in-service training and technical support for EAS programs need improvement.

EAS program content needs are broad and basic – market information, market facilitation, group organization and operation, and basic productivity innovation. EAS need to be oriented towards encouraging an attitude of farming as a business. Increased R&D support for innovation is needed to exploit opportunities in the country’s large resource base and to aid in climate change adaptation and mitigation.

Incentives for EAS delivery are lacking. More analysis and experimentation is needed on how to address this issue.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Mozambique EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government with limited support for development and implementation of a new EAS policy providing a framework for public EAS delivery and incentives for private EAS investments.
- ❖ Fund a program to strengthen agricultural education and training institutions that provide pre-service and in-service training for EAS technical staff, that programs provide a sound understanding of private sector and market-led development and producer organization development issues, as well as a sound grounding in technical agricultural production issues.
- ❖ Fund a pilot program of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified.
- ❖ Fund a “community action-type” producer group program to test and disseminate new technologies and innovations; facilitate access to inputs and credit; and collectively market agricultural products.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Nepal*

### Country Extension and Advisory Service (EAS) System Status

Nepal's rural population of 23.6 million has extensive need for EAS. Many – probably most – households are highly oriented toward food production for home consumption. Land is scarce and 40 percent of farms have less than a half hectare. Double and triple cropping is common. Livestock is important to most farm households, as is use of forest areas and common grazing lands. A wide range of crops is grown across the three main agroecological areas of Terai, Mid-Hills, and Mountains.

The public EAS system has been dominant through the 1990s, providing largely public goods type services. A department of agriculture was first established in the 1920s, but a national extension service formed only in 1950, after the end of the Rana Regime. This expanded with donor support, following typical top-down, technology-transfer approaches, including T&V, block production, and integrated rural development. More participatory EAS programs with pluralistic providers emerged in the 1990s. EAS is provided through the Ministry of Agriculture's Departments of Agriculture and Livestock, which have 2,848 and 2,267 total technical staff respectively. A Decentralization Act in 1999 transferred responsibility for EAS to the district level, but implementation has been slow. Services are provided through 75 district offices of the two departments and 378 Agriculture and 999 Livestock Service Centers. There are 2,606 extension agents with 511 technical specialists providing support. Most agents are JTs (junior technicians) or JTAs (junior technical assistants) nearly all with a 2-3 year diploma or less. At the village level, a past program engaged "tukis" ("lamps"), as lead demonstration farmers. Such lead farmers or agricultural resource persons have been used in other projects, but are not common to the system. There appears to be a top-heavy concentration of technical staff in Kathmandu. About 60-70 percent of the public EAS budget goes to salaries. An Agricultural Information and Communications Center supports media services, especially radio, which has been quite influential in EAS in the past. The public EAS system has been quite stable over the years, despite civil war and changes in approach and government. This reflects a government recognition of the importance of agriculture to food security and the country's growth and stability. Performance of public EAS has been criticized and is not helped by the low levels of training and limited operational cost support available to government EAS staff. New decentralization reforms may have significant impacts.

Private EAS has grown greatly over recent years. Among for-profit firms, input suppliers are most important, marketing seed, fertilizer, chemicals, and equipment. Large numbers of agrovets – local shops retailing production inputs – are found throughout most of the country, except in the very remote areas. More than 5,000 non-profit NGOs are active in country, many working in agriculture. They tend to be quite effective in group formation and strengthening and in reaching vulnerable populations. The larger NGOs tend to pay staff well and are able to recruit well-qualified technical staff. Smaller NGO's staffing may not be as technically-qualified. NGO programs are generally area- and time-limited. ICT capacity in country is growing, though aside from radio, still somewhat limited.

Farmer organizations are common, mostly operating at the village level. The public EAS providers have worked with about 22,000 farmer groups. There are also 1,564 dairy cooperatives. Most of these groups are small and quite informal, serving mainly to facilitate EAS and other service provision at the local level. Producer organization strengthening is needed for groups to play a more substantial role in product marketing and in financing, governance, and delivery of services. Studies have found an 18 percent increase in income in communities with farmer groups and increases of 11-20 percent for group members compared to non-members.

The national EAS system is large and relatively organized. This does not mean it is well-coordinated or that collaboration among providers, especially public and private, is adequate. The system is thin on technical expertise with field staff training limited across all providers. Federal decentralization reforms and continued sector development can be expected to bring major changes to the growing EAS system.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Two CBJs from 2010 to 2019 made reference to extension: in FY19, indicating that work with GON extension agents would assist in disseminating improved practices and technologies through private sector-managed demonstration sites, and in FY17, proposing to use EAS agents from multiple castes and ethnic groups for agricultural and nutrition extension services. The FY2011-15 Multi-Year FTF Strategy had a strong assessment of the EAS system and commitment to strengthening public and private sector EAS provision. The 2018 Global Food Security Strategy Country Plan also includes a strong assessment of the EAS system and a commitment to strengthening private EAS, especially through input suppliers. Recent project reports and evaluations also reflect the importance of EAS in achieving program objectives.

The **Knowledge-based Integrated Sustainable Agriculture and Nutrition (KISAN) Project** goal was inclusive growth, increasing income of farm families and improving participation of the private sector in agriculture. The project had five objectives: increased access to quality inputs; improved capacity of agriculture extension workers, service providers, and farmers; improved production technologies and practices; improved market efficiency; and increased capacity of local agribusinesses and government. The project worked with 118,183 households and 5,382 farmer groups and reported improved practice adoption on 83,000 hectares by an incredible 99 percent of farmers. Reported yield increases over baseline were 36 percent for rice, 62 percent for maize, 82 percent for lentils, and 109 percent for vegetables. Capacity building support aided 280 agrovets, 150 microfinance institutions, 100 market collection centers, and 110 traders. Many farmer clients used traditional agricultural practices and had little commercial orientation, though most were selling some surplus to market. The project focused on poor, remote, landless, and disadvantaged groups and was apparently successful in this. A Business Literacy Program that trained 54,000 people in basic literacy and numeracy, nutrition and health, life skills, entrepreneurship, and access to finance was especially well received by participants.

In its first year, the project formed 1,600 farmer groups with 33,900 members. Activities included: training through demonstration plots, increasing awareness of market opportunities, aggregating production through collection centers, improving access to irrigation and mechanization,

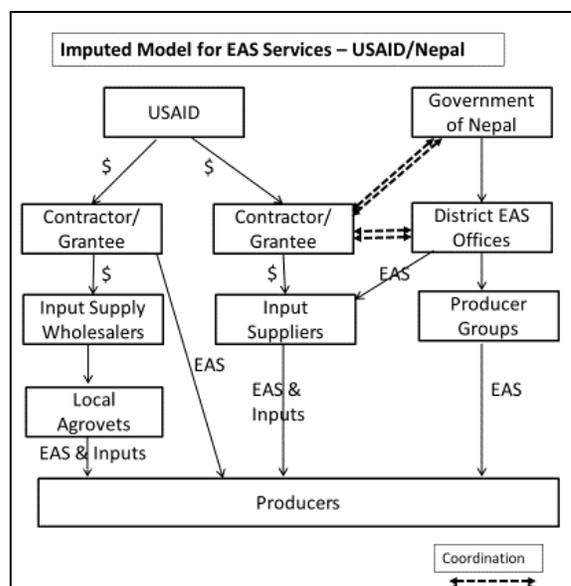
establishing linkages to agrovets, and forming savings and credit groups. The project evaluated farmer groups, classifying them by level of commercialization to facilitate tailoring training to farmer needs rather than providing a standard training to all. The training sought to move groups along a continuum of development toward self-reliance.

Project staff provided EAS the first two years, following which the project shifted to private sector-led EAS, as a central aspect of its sustainability strategy. In Year One, service delivery was 100 percent by the project, but by Year Five it was 19 percent by the project, 27 percent by local service providers, and 54 percent by private sector. Technical assistance and 39 sub-grants (totaling \$1.15 million) enabled agribusinesses (rice millers, feed processors, vegetable traders, seed companies, agrovets, and others) to pilot new business models and provide services to 39,378 farmers. Six Field Business Development Facilitators were added to the project team to provide technical training and mentoring the businesses.

A Mid-Term Evaluation found the project to have had substantial success in work with vegetable production due to effective technology transfer methodologies. Work with rice, maize, and lentils had less impact. Yield increases in rice were moderate; farmers were not satisfied with maize technologies promoted by the project; and farmers reported having received no assistance for lentil production. The project was quite successful in linking farmers with agrovets and increasing agroveta sales, but most agrovets had little knowledge of agriculture or of their own products.

The final project evaluation found that EAS agent numbers and capacity had increased, because of the grants for agrovets and others to hire EAS agents, but that these agents generally had low skill levels. The model of support to agrovets for embedded EAS did not appear sustainable, as most EAS staff would be laid off when grants ended. Project training improved agrovets' technical capacity and ability to relate to farmers, but some reported they had not received adequate training. Some reported that they had had only three to four days of training, including orientation. Project relations with public EAS staff at the field level were informal, but good. Farmers received training from GON agents, but viewed them as under-resourced, understaffed, and outdated in technical knowledge. GON agents did not report having received training from the project.

The **Knowledge-based Integrated Sustainable Agriculture in Nepal (KISAN) II Project** goal is to increase resilience, inclusiveness, and sustainability of income growth through agriculture development. The Project has components to: improve productivity; strengthen competitiveness, resilience, and inclusiveness of selected agricultural market systems; strengthen the market systems enabling environment; increase business opportunities for vulnerable community; and document lessons on market systems development.



In its first year, the project mapped 3,505 private sector organizations (1,009 agrovets, 641 agriculture cooperatives, 440 multipurpose cooperatives, 303 mills, 296 vegetable wholesalers, 251 saving and credit cooperatives, and others) and selected 40 private entities for partnerships grants to reach 62,600 farmers. Demonstrations plots are included in all agreements.

Instead of partnering with individual agrovets, the project will work with wholesale agrovets, who sell products/technologies and services through their downstream retail agrovets. The wholesale firms are more able to invest in new business activities that generate a return on investment. Since many agrovets are not trained agronomists, strengthening agricultural skills is important. The project will use Digital Green training videos for wholesale agrovet partners to train local agrovets, thus standardizing consistency and quality of the messaging to farmers.

The project plans to support provinces and municipalities establishing new GON Agriculture, Livestock and Cooperatives units for agriculture development. A private service provider will be subcontracted to develop training materials and provide assistance to municipalities.

Strangely, a project report states that there are no approved good agricultural practice guidelines in country and the vast majority of farmers are not using any good practice standards. This suggests a lack of understanding of the smallholder farming systems and locally available technology. While there certainly are gaps, a recent World Bank report noted that over five years, Nepal research programs had released 30 improved technology packages for producers, including 22 crop and eight livestock recommendation packages.

The **Feed the Future Nepal Seed and Fertilizer (NSAF) Project** aims to strengthen input supply systems by building capacity; improving private sector access to inbred lines and research knowledge; and enhancing public-private partnerships through a national research forum. It works on rice, maize, lentils, onions, cauliflower, and tomatoes. The project works closely with the Nepal Fertilizer Entrepreneurs Association and is assisting 62 private input suppliers to improve business performance. The project strategy, as illustrated for hybrid maize, includes: supporting private seed company varietal testing; supporting public and private partner demonstration sites; mentoring seed companies on marketing through various media; and linking seed companies with GON agencies for dissemination of new hybrids. A survey indicated that seed companies wanted training on marketing (53 percent), seed production (70 percent), seed quality (61 percent), and seed extension (23 percent) activities. Agrovets are their most important channel for sales.

A menu of locally-appropriate extension materials has been prepared for GON EAS agents, agrovets, and cooperatives. These include extension materials on crop management, flip files, game cards, plant nutrient deficiency posters, training manuals, banners, a board game, and activity cards. ICT-based agriculture development approaches are seen as a cost-effective way to reach farmers. In project areas, 85 percent of farmers already use mobiles/smart phones. VotoMobile, a non-profit that runs SMS and interactive voice response systems, delivers agricultural recommendations to smallholders. Plantix, an image recognition smartphone app, allows farmers, agrovets, and EAS agents to submit a photo of an infected plant and receive a pest, disease, or nutrient deficiency diagnosis and recommendation. The project also supports seed company marketing efforts through radio broadcasts and brand building.

The rate of adoption and diffusion of new crop varieties is very low in Nepal, with most farmers growing varieties released more than 25 years ago. The project believes this indicates a need to enhance adoption pathways. An equally valid conclusion might be that research needs to improve varietal development. The project does carry out extensive varietal demonstrations, completing 152 in a recent season. The implementer demonstrates a good understanding of available technologies and monitors gross margins. Reported increases in gross margins for rice, maize, and vegetables respectively are 14 percent, 47 percent, and 13 percent respectively. These figures may need be treated with caution, as gross margins for an annual cropping pattern are much more important to the farmer than for a single crop.

The project engages with new local governments by inviting GON staff to training events and field days. This is happening through seed company partners and project staff located in the various districts. The change to a federal system is expected to lead to changes in structure of the ministry and its entities at all levels. This will likely affect the project work.

**The Conservation and Adaptation in Asia's High Mountain Landscapes and Communities Project** goal was greater understanding and action to conserve the snow leopard across its range and to connect snow leopard conservation to broader economic and social issues for future sustainability. The project focused on an integrated set of conservation, climate adaptation, water and natural resource management, and livelihood activities at ten field demonstration sites in multiple countries. Demonstration site activities are models to be scaled across larger landscapes. The project trained 26,966 people in conservation awareness and natural resource management. Each year, 7,500 people received economic benefits from the project. Threats to snow leopards include: poaching, habitat loss, pasture degradation, and climate change, which already appears to increase drought, flooding, and livestock and crop diseases. In Nepal, the project introduced: sprinkler irrigation for cardamom; irrigation canal improvements; water storage ponds; greenhouse vegetable gardening; planting of apple, walnut, peach, orange, and plum trees; and improved yak pasture management. Reports provide little detail on EAS methodologies, strategies, or providers.

### EAS System Issues

The client base for EAS is large with most farmers seeking every possible option to increase productivity from their limited land resources. They are however resource-poor and increasingly female and graying, as younger people and males leave to seek work in cities or other countries. Rural illiteracy is 67 percent.

The EAS operating environment is fluid with the change to federalism. Capacity, policy, resource, and coordination problems can be expected at the local level. Transportation is problematic in most regions, especially the hills and mountains.

EAS provider capacity is substantial, but thin, with most field EAS agents relatively poorly trained.

EAS program content needs are demanding, as farming systems and cropping patterns are quite intensive and changes to component technologies have implications throughout the system. Many different crops and livestock are produced in the range of environments from the Terai to the high mountains.

Incentives for EAS delivery are poor for public agents with low salaries, support, and status. Input dealers are motivated to sell products, but may not look to longer-term benefits that may accrue from providing EAS as an additional cost.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Nepal EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment.

Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Provide support to government with training, program development, and management improvements for the decentralized public EAS systems to improve effectiveness in working with private EAS programs and in providing relevant services to farmers.
- ❖ Continue funding for input suppliers to expand their technical competence, reach into rural communities, business skills, and use of lead farmers for EAS.
- ❖ Fund a pilot program for farm youth entrepreneurship village level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Niger*

### Country Extension and Advisory Service (EAS) System Status

Niger's rural population of 20.0 million faces severe constraints in improving their economic and social conditions. EAS can be a critical support element for them. The country has contended with frequent droughts, encroaching desertification, and political instability. Its Human Development Index rank was 189<sup>th</sup> out of 189 in 2017. Farming is largely subsistence-oriented.

Information on the public EAS system is limited. There is no record of EAS programs during the colonial period. After 1960, the major EAS activity was under a World Bank-funded T&V program in the 1980s. This ended in 1998, after which the public EAS went into decline, though individual donor-funded regional projects provided EAS in specific areas. In the 2000s, a consultative process began planning for a revitalized, demand-driven EAS program. This initiative apparently ended with a change in government. In 2017, the government creation of the National System of Agricultural Advisory Services (SNCA). The Ministry of Agriculture and Livestock's Directorate-General of Environment, Water, and Forests is responsible for EAS and, in 2009, had 847 EAS staff for the country's 36 departments. This would be a significant EAS capacity, if this level of staffing continues and if deployed appropriately. More information on the public EAS system would be useful.

Private EAS provision is limited. For-profit firms provide little EAS beyond the product marketing efforts of input and equipment suppliers. Many non-profit NGOs are active in country and provide EAS under their programs, though these tend to be relief-oriented and have not had strong EAS components. Some NGOs reportedly hire government EAS agents to provide services. Cellphone penetration reaches only 32 percent of unique users. Four mobile operators provide coverage of only 55 percent nationally, with lower coverage in rural areas. 4G coverage is not available. ICT capacity is growing and may provide an important channel for EAS delivery and coordination. The GON is reportedly planning for an e-extension system to support public and private extension agents.

Producer organizations are important actors in the agricultural sector and have lobbied for government EAS programs. These organizations are of different types: village cooperatives; village savings and loans associations; pastoral associations; herder associations; and irrigator organizations. They may be organized by farmers themselves, by donors, or by government. Most are weak organizationally. Some are fully dependent on government or donor projects. Village-level organizations have proven their ability to be effective in some cases, as in the successful natural landscape regeneration and rehabilitated of more than five million hectares. producer organizations appear not to be currently active in EAS, but have potential to facilitate and provide direction for EAS activities, though perhaps not in financing EAS provision. Producer organizational interests vary and there have been examples of groups competing with each other. Major producer organizations at the national level are: COP-Niger (a collaboration of various farmer organizations) and The Peasants Platform of Niger.

The national EAS system is a work in progress, though progress appears slow at best.

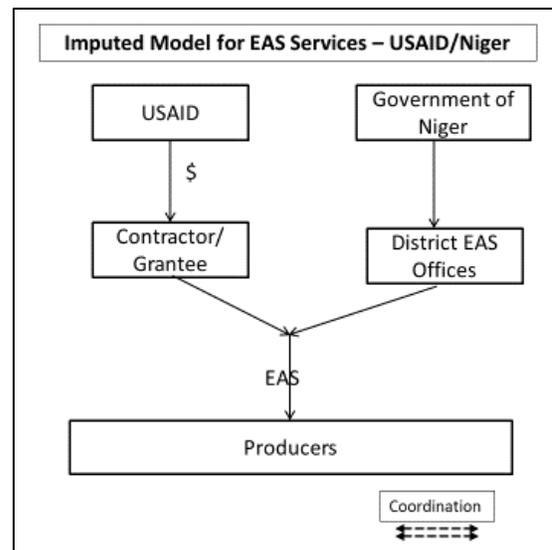
## Recent EAS USAID Project Experience

USAID budget and planning documents suggest minimal commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension. The FY2018 Global Food Security Strategy Country Plan provided a limited assessment of the EAS system, but no specific plans or commitment to work with EAS. Still, recent project reports and evaluations suggest a relevance for EAS in achieving program objectives. Projects are largely relief-oriented and include multiple, diverse activities. Free distribution of production inputs is a common feature. EAS and technical support relies heavily on GON services. Evaluations provide a mixed assessment of the effectiveness of EAS activities.

The **Programme d'Appui à la Sécurité Alimentaire des Ménages — Tanadin Abincin Iyali (PASAM-TAI)** was to reduce food insecurity and malnutrition. Components included: reducing chronic malnutrition; increasing food production; improving disaster risk management; and enhancing sustainable gender roles. The program worked in 909 villages using an approach of offering training, methods, tools and resources and allowing communities to use these to pursue their own development objectives. The project undertook a wide range of activities from horticulture to staple crop enhancement, ruminant livestock production, household savings, and environmental sustainability. Staple crop activities included training, demonstrations, provision of improved seeds for rainfed and low-input cultivation, and provision of free Purdue Improved Crop Storage (PICS) bags. A food for work activity restored degraded soils by constructing zai holes, half-moons, and trench micro-catchments to collect rainwater. A technical brochure covered agriculture, silviculture, and soil management issues and served as a good reference for field agents.

Livestock activities included provision of sheep and goats, farmer training, para-veterinarian training, savings and internal lending group loans for fattening livestock, and a traditional system of lending female goats that are passed on after providing offspring.

Main intermediaries with communities were project field agents, ICRISAT scientists, GON EAS agents, and savings and internal lending committee local field agents. A homestead keyhole garden program used volunteers supported by EAS field agents to form interest groups and establish demonstration sites. The relationship with GON agriculture services was central to implementation. GON agents helped with participatory variety selection, ICRISAT experimental plots, and monitoring irrigation development. GON livestock agents worked with the project in organizing markets for sheep and goats and ensuring animal health. Major factors in successful implementation were: the volunteerism approach, the partnership with GON agencies, and coordination with other NGOs.



Despite other positive reports of impact, an evaluation found that farmers did not generally retain simple project messages, nor cite changes in their agriculture, livelihoods, and disaster management practices.

The **Ensuring Food Security and Restoring Livelihoods for Displaced Populations and Vulnerable Hosts in the Diffa Region (SAME-Diffa) Project** (\$1.0 million) was to ensure food security and livelihood recovery for 1,100 households of displaced populations and vulnerable hosts. Three components were: market gardening support with vegetable seeds and agricultural tools, training, and monitoring; social livestock restocking by distributing goats, supplying feed, vaccinating, training, and monitoring; and cash transfer through cash for work and unconditional money transfers. The project targeted 2,800 households with 19,600 very poor, displaced, refugee, vulnerable local, or repatriated people. A team of 14 project EAS staff and nine livestock technical officers provided training on small ruminant husbandry. Training on crop production reinforced capacities of 26 EAS agents – 18 from the project and eight from the GON.

The **Improving food security and livelihoods opportunities for the most vulnerable households affected by the protracted crisis in Niger (GOAL) Project** was to support vulnerable communities through: village savings and loans association groups to diversify income sources; cash for work programs; and distribution of small ruminants. Activities were varied. Training on associative life skills for 400 women focused on their rights, knowledge of opportunities within villages, and raising gender awareness. Training on basic animal health and distribution of 800 “kits” of four small goats (three female and one male) rebuilt flocks of vulnerable households. Training 88 community animal health volunteers expanded a GON network of community-based volunteers linked to commune veterinary offices and private service providers. GON agencies were fully involved in training and technical services, such as vaccination, deworming, and ear-tagging. Village agents and project EAS staff assisted with establishment and continuous monitoring of 78 village savings and loan association groups.

The **12/12: Alliance for Year-Round Resilience Project** was to improve resilience for 12,760 households and 102,080 people by mobilizing new private investments. The project diversifies income through linkages with private sector entities. Direct client access to information and on-site training through producer enterprise agents equipped with smartphones connected to an ICT platform strengthened human capital. Strengthening private businesses facilitated access to goods and services needed to increase agricultural production, profitability, and household savings. Farmer association strengthening built capacity to provide member services.

The **Wadata Makiyaya “Thriving Pastoralists” Project** was to improve food security and reduce vulnerability to shocks for agro-pastoral and pastoral households. The project supported 5,000 households by strengthening women’s village savings and loans associations, training on animal husbandry, well rehabilitation, and building cattle vaccination crushes. The project constructed nine vaccination crushes and rehabilitated seven pastoral wells. Vaccination chutes expedited vaccination campaigns, resulting in 35,487 animals vaccinated in one year. EAS focused on community collection of fees for maintenance of rehabilitated infrastructures and training on improved fodder storage. Most of the 50 village savings and loan associations were expected to continue beyond the end of the project. An end-line survey concluded that project activities had helped mitigate effects of failed harvests and that participating communities had seen modest increases in food security.

The **MADARA “milk” Project** was to enhance food security and strengthen livelihoods of vulnerable households. The program helped rebuild livelihoods of 4,666 households, while strengthening the dairy value chain. Project activities included: training on improved livestock management; training animal health workers; rehabilitating degraded pastureland; and increasing availability of fodder. The project supported new and existing businesses and cooperatives through: grants and training for 174 micro-enterprises; training and construction of processing centers for seven dairy cooperatives and six other groups; and creation of six animal feed banks. The project also: provided \$270,000 in cash to vulnerable households through cash for work activities; trained 112 local community health and nutrition workers and 32 midwives; and supported awareness raising sessions, culinary demonstrations, home visits, and radio women’s listening clubs, and screening of short films.

The project trained 15 animal health workers and provided grants for them to purchase necessary equipment and medicines. Regular monitoring of animal health worker services was done with the GON and local private veterinarians. Animal health workers treated 8,000-10,000 animals per quarter, earning about \$40 per month. Target communities identified 133 respected individuals to serve as livestock value chain coordinators. These coordinators participated in a training-of-trainers program with GON agencies and then returned to communities to train 1,162 livestock owners on improved livestock management. Cash-for-work rehabilitated 640 hectares of degraded pastureland through construction of half-moon earthworks and planting of 99 hectares with locally-produced tree seedlings. The project created and trained seven new pastoral land management committees to manage rehabilitated areas and worked with six dairy cooperatives to create animal feed banks, providing grants for purchase of stock and construction of storehouses.

A final evaluation found evidence that the project had achieved its agriculture objectives. Livestock health had improved; mortality was lower; and herd sizes had increased. Farmers had adopted many practices promoted by livestock value chain coordinators. Overall, 76 percent of livestock owners reported improvement to their livelihoods. A key lesson learned was that GON counterparts must be involved in project implementation to the fullest extent possible.

The **Livelihoods, Agriculture and Health Interventions in Action (LAHIA) Project** was to reduce food insecurity and malnutrition among poor rural households. Objectives were: improved nutritional status; increased access to food; reduced vulnerability; and improved participation by women at the household and community levels. The project worked with farmers in cowpeas, millet, goats, moringa, vegetables, and seed multiplication. Project field agents encouraged use of natural resource management techniques to increase soil fertility and conserve grazing land. Goats were to be given to 7,500 women with the understanding that recipients would reimburse the project with a kid to share with another woman.

The project hired an agricultural supervisor, three EAS agents, and two rural development agents. Project EAS agents organized community members into topical groups or business units depending on interests. By year two, it was working in 72 communities with 112 producer organizations and 200 revolving credit groups. Project EAS agents collaborated with national research institute staff to support farmer field schools that provided improved seeds for participant test plots. Improved seeds were available through a private seed dealer and some farmer field school farmers who became distributors for the dealer. GON livestock EAS agents trained 26 para-vets and encouraged project

para-vets to be formally enter into the GON national para-vet system. GON livestock agents were quite positive toward the project; the crop agriculture work was less well-structured and not as well linked with GON services.

A mid-term evaluation found that the project had been very successful in: drilling wells; handing out rations; and educating people on health, nutrition, and hygiene, but, aside from goat distribution, other activities had not yielded tangible results. Most other activities required a longer-term perspective and greater investment of time and resources. Farmers criticized project-promoted innovations as being too labor intensive. Few farmer field school participants understood purposes of test plots, and most felt that recommended practices were inappropriate.

A **multi-project evaluation** of rural projects concluded that there had been considerable uptake and spillover of recommended conservation agriculture, crop productivity, and crop storage practices, but that there was need to improve value chain linkages for product marketing and more targeted support for producer groups. All three projects adopted the farmer field school model with a lead farmer coordinating a communal field plot. Farmers found this to be very effective. Farmers felt that farmer field school demonstration plots and interactions with lead farmers had enabled them to double or triple yields through use of improved seed and chemical fertilizer. PICS sacks enabled storage of grain and cowpeas for several additional months a year. Two different approaches were taken to improve availability of improved seed. One involved a franchise model with local seed producers trained by project EAS agents and certified by the GON. The second was a spoke-and-hub distribution model that used retail sales points covering a network of villages. Private service delivery by community para-vets was effective in increasing access to veterinary supplies and services on a fee-for-service basis.

Staff turnover was a problem for projects and GON EAS agents, due to isolation in community posts with different languages and ethnicities and due to varied levels of remuneration among GON, NGO, and other organizations. A significant portion of community volunteers burned out due to participation in multiple activities and lack of incentives and remuneration. Survey results suggest that the percentage of farmers using recommended practices more than doubled in some cases and that both direct and indirect beneficiaries experienced substantial improvements.

### EAS System Issues

The client base for EAS is resource-poor, largely illiterate (with 19 percent adult literacy rate country-wide), and challenged by climatic and soil fertility limitations on production systems. Producer groups are easily formed, but largely informal and project-dependent.

The EAS operating environment is difficult due to security issues and the low level of overall economic and market development.

EAS provider capacity is weak. For-profit firms find limited opportunity in smallholder and pastoral production systems with little marketable surplus. NGOs tend to be focused on relief response needs and have less capacity in agricultural development.

EAS program content needs are heavily focused on increasing production for home consumption, conflict mitigation, natural resource management, and climate change adaptation. Additional

research is needed to provide options for increasing productivity and sustainability of production systems.

Incentives for EAS delivery are low due to limited surplus production, low purchasing power of smallholders, and heavy public goods nature of needed EAS.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Niger EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment.

Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Request DLEC to carry out a full assessment of the national EAS system and options for strengthening EAS provision.
- ❖ Fund an activity to strengthen livestock EAS systems and provide quality EAS services to livestock producers.
- ❖ Design and implement a capacity development project to support youth in agriculture with a focus on women entrepreneurship and areas not currently served by EAS providers.
- ❖ Fund a livelihoods-oriented EAS program focused on strengthening producer and community organizations and developing capacity, especially among youth, for future participation in more commercialized agricultural production systems. Draw on good practices of the that link training with facilitation of access to credit and on-going coaching by mentors and itinerant training centers.
- ❖ Engage with government to support training, program development, and management improvement to enable the public EAS system to improve effectiveness in working with private EAS programs.
- ❖ Fund a pilot program for farm youth entrepreneurship at the district level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support development of ICT-based extension by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. Focus activities on involving youth in delivery of services and as clients for services.

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## *Nigeria*

### Country Extension and Advisory Service (EAS) System Status

Nigeria has a long history of extension and advisory service investments, leaving a legacy of a relatively large EAS system. This benefits, but does not adequately serve, the needs of the 127 million people in the agricultural sector. Crops are varied, including beans, sesame, cashew nuts, cassava, cocoa beans, groundnuts, gum arabic, kolanut, maize, melon, millet, palm oil, plantains, rice, rubber, sorghum, soybeans, cowpea, bananas and yams. The country has seven agro-ecological regions, ranging from rainforest and swamp areas in the south to the arid areas in the north. Farm sizes average 0.88 hectares. The population consists of about 500 different ethnic groups.

The public EAS grew under past donor projects, but deteriorated since the 1990s, with drop in donor funding and inadequate government support. Some state extension services are said to have gone 30 years without training for agents or new recruitment. Private EAS activities are diverse and expanding, but poorly coordinated with the overall EAS system. The public sector has about 7,000 extension agents under the Agricultural Development Programs (ADPs) of 36 state governments with an additional 100,000 or more agricultural volunteer extension workers being recruited under a new N-power Agro Program. At the national level, a Federal Department of Agriculture Extension (FDAE) is charged with system coordination. The decentralized system with funding from the federal, state and local governments is still developing its operational systems. A Research-Extension-Farmer-Input-Linkage System, established in the early 2000s, functioned well, but has since become less active.

Private EAS providers, many supported by donor funding, are active in country. Input supplier-based EAS activities seem to have been particularly effective, but have also had management problems and issues with the quality and availability of inputs. Input subsidies are a complicating issue for stable market development. Product buyer-based and financial service-based EAS have also shown promise, but these too have had problems with honoring product sales agreements and with loan repayments. Private EAS fits best with export crop market chains where opportunities for side-selling are more limited. For the cocoa sector, 70 percent of EAS is privately provided. A number of promising ICT initiatives are underway, but with market-based sustainability and effectiveness yet to be confirmed. Private EAS provision has potential, but a strong public EAS system is probably essential to facilitate its development on a significant scale.

While government funding for EAS is inadequate, there has been a renewed commitment to EAS system strengthening. A national extension strategy that promotes demand-driven and all-inclusive extension services has been finalized and is pending approval by the Federal Government. The country has a strong base of dedicated extension professionals in agricultural universities and has both an Agricultural Extension Society of Nigeria (AESN) and a Nigeria Forum for Agricultural Advisory Services (NIFAAS).

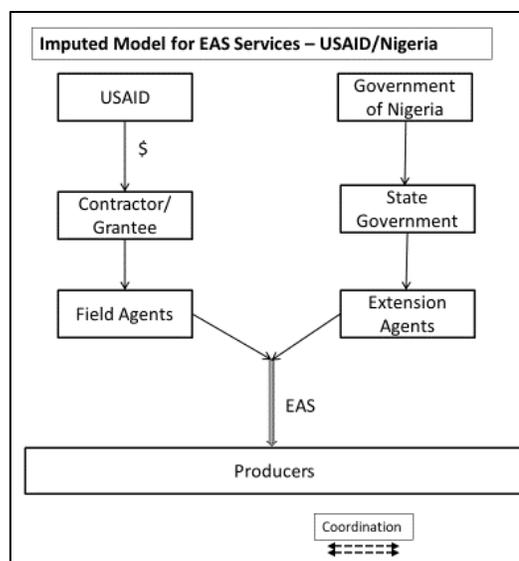
### Recent EAS USAID Project Experience

USAID budget and planning documents do not indicate a strong commitment to EAS support. CBJs from 2010 to 2019 made only one reference to extension, in FY2017 proposing EAS for

assisting persons displaced in the northeast. The 2018 Global Food Security Program Country Plan proposes strengthening private EAS and enhancing use of ICTs. Recent project reports and evaluations reveal a fairly extensive role for EAS in projects.

**The Feed the Future Nigeria Livelihoods Project** reached 33,273 farmers with innovative agricultural extension and advisory services, empowering 853 lead farmers to become local extension workers, strengthening 1,411 producer groups, building capacity of 121 community field agents to become agriculture extension agents, and training 24 seconded government extension agents as trainers in the latest agronomic practices and farming techniques. The project also provided cash transfers and payment vouchers; strengthened farmer linkages to input suppliers and markets; and promoted participation in producer associations. Participating farmers reportedly increased yields 160 percent for focus crops between 2013 and 2018. Extension methods were generally traditional training and demonstrations, though with considerable emphasis on strengthening local community groups and facilitating access to inputs and credit. The implementing partner, concluded that linkages to existing private value chain actors, whose businesses depend on success of smallholder farmers, are necessary for sustainability and reaching farmers at scale.

The multiple activities under the project were beneficial. Cash transfers and payment vouchers enabled clients to purchase farm inputs, producing for home consumption and sale. Sustaining this increase in productivity will depend on the continued access to inputs and financing. Additional support was considered important to strengthen Local Government Areas capacity to replicate activities in other areas. For this, establishing extension agents as liaison to Local Government Areas was beneficial, as they stay in communities after the project.



The project encountered some major challenges. Security was a major factor for implementation in the Northeast. Donor dependence was a recurring theme, as all volunteers, groups, committees, government partners, and traditional leaders expected some form of payment to participate in project activities. ICTs were constrained by: lack of telecommunication networks; lack of electricity; and low smartphone penetration. Counterpart support from government was generally weak throughout project implementation. The project evaluation did not look very deeply at the extension element.

The **Maximizing Agricultural Revenue and Key Enterprises in Targeted Sites (MARKETS II)** (\$64.9 million) was a second phase activity to promote sustainable agriculture by increasing private sector participation and investment, raising income, increasing employment, attaining food security, and reducing poverty. The value chain project focused on smallholders with one to five hectares of land. The project supported the development of farmer associations and community extension agents and mobilized public and private sector actors for training and capacity-building. It used fairly traditional extension methods and promoted a range of technologies and management

practices. Participating farmers reportedly increased sales by \$762 million and productivity by between 63 and 335 percent for different target crops. Reports do not indicate the major basis for productivity increases, although this would be quite useful information.

The project contracted local consulting firms as “service providers” to arrange farmer training, provision of technical assistance, and project monitoring and evaluation. Service providers worked with GON state extension agents who provided EAS to lead farmers and others. This collaboration with GON state ADPs was the key sustainability factor for the project. The project worked with 924 extension agents (including lead farmers) and through farmer groups of about 25 members. Each farmer group had two lead farmers, seen as “junior extension agents.” Thus, the state Agricultural Development Programs played a central role in the system with the project providing their staff with training on technologies, extension methods, group dynamics and leadership, and management improvement.

The project touted its model for extension under which: 1) the project trained 20 ADP extension agents; 2) each agent then trained 40 lead farmers, for a total of 800, who working in pairs worked with farmer groups; 3) each group had 25 members including the two lead farmers, for a total of 10,000 group members; and 4) each group member then “networking” with 16 others farmers to reach a total 160,000 farmers. It is difficult to see this as a strong model. Effectively, the ratio of trained extension agents to farmers would be 1:8000 – not an ideal base for strong EAS. Lead farmers can be effective, but have significant limitations in that they must attend to their own farms and tend to ‘taper off’ in their leader roles over time. The dilution of technical messages and advice in the chain from extension agents through to networked farmers must be questioned.

The project seemed somewhat ambivalent as to the relationship with the ADPs. ADPs were central to EAS delivery and were able to perform their roles effectively. Project training reduced costs and time that EAS agents spent in performing duties, while project allowances and logistical support provided incentives for them to deliver on their mandate. Still, the number of public extension agents was deemed insufficient to reach all farmers and the evaluation found it doubtful that ADP EAS would continue after the project. A recommendation for future investments was to have private sector partners fund EAS delivered by the public sector or develop their own private extension systems. However, it is difficult to see how this could replace the ADPs. Alternatively, efforts to increase government funding and training for ADPs could be made a priority.

The project had 146 public-private partnerships (PPPs), apparently mostly for facilitating market access and financing. The final evaluation concluded that “the PPP initiative had limited positive effects” and “there is a reasonable chance that some (or possibly all) PPPs created under the project umbrella, may not survive post-activity.” Cessation of donor funding to subsidize the PPPs was the main reason for lack of sustainability. More consultations would improve future joint public and private activities. One option suggested was a Value Chain Innovation Platform with a mandate to facilitate interaction between actors in the value chain.

**The Nigeria Agro-Inputs Project** targeted 4,000 smallholder farmers for a range of improved production technologies with special emphasis on a modified urea deep placement technology. Work was focused in 25 Technology Transfer Centers. Technologies reportedly increased yields by 25 to 200 percent over conventional practices. The project worked with 1,400 mid- to downstream

agro-input dealers to strengthen technical and entrepreneurial capacities, preparing Master Trainers to support “New-Generation Agro-Input Dealers” providing effective private sector EAS to smallholders. The project used traditional extension methods, but concluded that “continuous farmer education through off-farm training and through on-farm visits and extension advice is essential for technology use and adoption.” The project worked with many local and international input suppliers, with the Nigeria Agro-Input Dealer Association (NAIDA) a key partner. By the end of the project, input dealers were serving 583 farmers per dealer, a number that had gone up initially, but then dropped with an observed need to provide more quality and customized advisory services. Of the participating dealers, 92 percent provided EAS to farmers. Lack of consistency in government fertilizer policy was a major disrupter to project activities, which may have suffered also from the focus on the one specific technology of urea deep placement. Government involvement in fertilizer procurement and distribution risks crowding out private sector efforts. Quality issues and labelling were other constraints.

The **Feed the Future Nigeria and Nestlé Maize Quality Improvement Partnership** between USAID/Nigeria and Nestlé Nigeria, PLC aims to enhance quality, safety, and transparency in Nigeria’s grain supply chain through a whole-of-supply-chain approach. The project is implemented in 53 communities of five local government areas with 76 extension agents and 59 National Youth Service Corps volunteers training beneficiaries. At start-up, available National Youth Service Corps volunteers did not have necessary qualifications to implement activities, and government extension agents with greater technical capacity and understanding of the context for training replaced the volunteers. The project features training, training material development, and radio messaging broadcasts.

### EAS System Issues

The client base for Nigeria’s EAS system is large, requiring an extensive EAS system segmented to meet needs of different groups of clients with clear distinction between large commercial farms and small farmers. Client resources vary, but most are clearly small farmers, few of whom are likely able and willing to pay for services. Project experience and logic suggest that attention is needed to organizing client groups (i.e., producer organizations) of various sizes to participate in the EAS system.

The operating environment for EAS is challenging. An obvious concern is security in parts of the country, an issue which may warrant priority EAS activities focused on stabilization and peace-making. Markets are developing with apparent increases in private investment. This is positive, but inconsistent public policies, especially as regard agricultural inputs is a serious constraint. EAS system sustainability beyond donor funding has always been an issue due to a lack of coordination and lack of capacity by the private sector. A very positive factor is the apparent general recognition of the importance of EAS and a commitment to strengthen EAS systems.

EAS provider capacity is an issue. The public ADP systems is large and established, but is underfunded and in need of reforms. Decentralization has positive aspects, but may fragment services and requires new support and coordination arrangements, similar to what is required for effective private EAS activities. Donor programs and others rely on ADP EAS, and replacing this is unlikely. While the number of private entities engaged in EAS is growing, they are likely to continue to rely on the

public sector, as their programs expand. Promising ICT innovations are being tried, but are still to be proven.

EAS program content appears not to be a problem in the short term. Recent projects have reported impressive impacts on small farm productivity and the potential for services to aid in market linkages and group strengthening is substantial. Over a longer timeframe, there may be need to assess improvement options in the agricultural research system.

Incentives for EAS delivery are complicated. Much of the clientele and much of the innovation needed is suited to public financing. Private financing and delivery are highly desirable where markets provide a basis, but, even here, public sector facilitation is indicated. Public EAS reforms should support private EAS where possible, even though public-private partnerships involving financial transfers may be problematic.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Nigerian EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Target support to areas affected or potentially affected by insecurity. Activities would seek to address underlying conflict issues and/or mitigate impacts of the conflict. Implementation would likely involve both public and contracted private EAS as in past USAID activities.
- ❖ Support public sector EAS institutional development, including policy and institutional reforms, extension agent training, improved linkages and relationships with relevant partners, and program development to restore capacity lost over recent years, and establish clear arrangements for encouraging and facilitating private sector engagement in EAS.
- ❖ Support strengthening of farmer groups and associations to enable them to access, fund, and facilitate EAS delivery, including services for market linkage development.
- ❖ Fund comprehensive support for input supplier development, including provision for EAS provision, but also addressing issues across the input supply sector (policy, quality control, coordination, management, etc.) that affect both the ability to provide EAS and also the availability of inputs necessary to impact from other EAS programs.
- ❖ Test ICT innovations in EAS by private (or public) sector 'owners' of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.
- ❖ Activities should seek to strengthen EAS by integrating modern communication networks, efficient marketing outlets, well-informed farmers, a functional extension policy, sustainable research programs, and sound credit facilities.

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## *Rwanda*

### Country Extension and Advisory Service (EAS) System Status

Rwanda's rural population of 11.9 million requires EAS to facilitate intensified production on and conservation of the limited agricultural resource base. Farms are small with 60 percent less than one-half hectare and with soils that are generally nutrient-depleted and prone to erosion. Much production is for home consumption. Poverty rates are high, but have fallen substantially, and the country's economy has performed well recently, as it continues to recover from the genocide and chaos of 1994.

The public EAS system began during colonial times with a focus on export crop production (tea, coffee, pyrethrum, quinquina). The system retained this focus until 1980, when it shifted to staple food crop production EAS under top-down, technology-transfer approaches, such as T&V. The 1994 genocide forced a reset and a period of emergency EAS delivery by NGOs. The public EAS system was reconstituted under a 2004 extension strategy to decentralize EAS through Ministry of Local Development activities in the country's 30 districts, 416 sectors, 2,148 cells, and 14,876 villages. Each district is to have a crop and a livestock health EAS agent, most with BSc level qualifications. This level of agent qualifications is higher than for most countries in the region, but the lack of expertise in marketing, postharvest handling, and natural resource management may be a weakness in the system. The country has 1,244 public sector EAS staff, of which 974 are field-level agents. Services are provided through the "Twigire Muhinzi" EAS model that integrates farmer field school and farmer promoter approaches. The two approaches work in parallel, both relying on farmer leaders at the community level. The 2,500 farmer field school facilitators are somewhat better trained and facilitate experiential learning in 8,782 farmer field school groups involving 200,000 households. The 14,200 farmer promoters, with somewhat less training, mobilize 75,000 Twigire groups with 10,000 production demonstrations reaching 1,100,000 agricultural households and facilitating links to inputs and markets. Separate EAS for export crops (coffee, tea, horticulture, etc.) and livestock is provided by the National Agricultural Export Board. The GOR has demonstrated a strong commitment to EAS and claims to be reaching 75-80 percent of all farmers.

The profile of private EAS provision differs from most other countries. For-profit firm EAS is limited. Input supply firms are closely regulated and inputs often subsidized. They provide limited EAS. A few agricultural product buyers provide EAS, but these too are limited in scale. NGOs are quite active and have developed some innovative EAS programs and approaches, such as the One Acre Fund model of a complete package of services, CABI's plant doctors, and several livelihood-focused programs. Many NGOs work with and support the Twigire Muhinzi program. ICT capacity is quite strong with 95 percent of the country having mobile phone coverage and a relatively high internet coverage and usage. A number of ICT EAS applications are in use – community radio, a web-based platform for maize and rice, mobile SMS, and farmer videos.

Farmer groups and cooperatives are numerous, often focused on a particular commodity. Programs and capacity vary, but many are important actors in farmer services, including EAS delivery and facilitation. The Twigire Muhinzi model is based on farmer-to-farmer extension, community groups,

and collective action. Social consciousness appears high, as is the ability to organize for the common good and facilitate group action.

The national EAS system is quite strong with an extensive network of providers linked with a comprehensive public service system that appears to be responsive to farmer demands.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest significant commitment to EAS as a means of achieving program objectives. Three of the CBJs from 2010 to 2019 made reference to extension, in FY12 proposing to assist the research service disseminate results through an improved extension service; in FY15, proposing to support the decentralized public EAS system; and in FY17 proposing to facilitate farmers' access to EAS through implementation of an EAS action plan. The FY2011-15 Multi-Year FTF Strategy had a limited assessment of EAS, noted its importance to climate change and natural resources management issues, and included a modest commitment to support for both public and private EAS with strong support for application of ICTs to EAS provision. Recent project reports and evaluations reflect the commitment to EAS provision and alignment with GOR EAS program and policy to meet Mission objectives.

The **Feed the Future Rwanda Dairy Competitiveness Program II** (\$15.0 million), designed as a follow-on to RDCP I, was to reduce poverty by expanding marketing of quality milk. In contrast to its predecessor, the project took a market-oriented, facilitation approach rather than direct delivery approach. The project improved production of high-quality milk and developed milk collection centers. A promotion campaign raised awareness of benefits of hygienic milk consumption. A competitive grants program engaged many local organizations and companies through: business innovation grants to reduce risk associated with introducing new services and technologies; competitive service subcontracts for training and EAS by commercial service providers; institutional development grants for government, NGO, parastatal, or private institutions in the dairy sector; and competitiveness investment grants for research, policy reform, and industry investment. The project benefited 63,109 people and reported that 85 percent for beneficiaries applied at least one recommended practices or technology. Economic analysis of the dairy investment found an 18.7 percent economic rate of return and a net present value of US\$ 36.4 million.

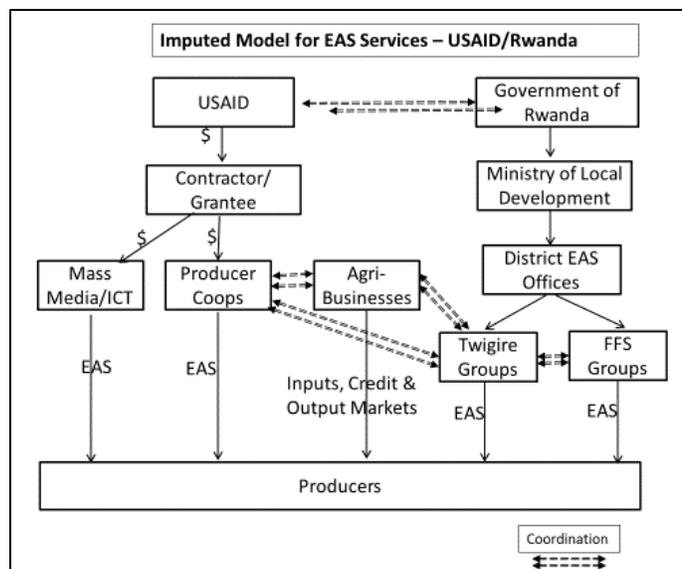
The EAS approach relied on a network of model farmers, who received specialized training as community change facilitators, and then provided training and follow up with other farmers to reinforce EAS messages channeled through local leaders and EAS staff. Collaboration with government agencies was instrumental in building strong service provider networks. Local government participated in farmer trainings, workshops, and dairy sector working groups. The model farmers (probably as farmer promoters) were integrated into the national Twigire Muhinzi program as part of the project exit strategy. Collaboration with district veterinary extension staff was essential to hands-on training and developed a network that will continue with supervision and support of livestock EAS officers. A communication program informed farmers and consumers of dairy product standards, using flyers and materials on basic quality standards and milk processing and handling. Milk processors and milk producer cooperatives were supported with EAS and equipment to test the milk quality.

A case study found strong evidence of adoption of the milk collection center model and of quality standards for milk. Adoption of farm technologies varied significantly between years, perhaps due to the high level of program activity intensity and provision of trial inputs to dairy farmers during initial years. The project found that productivity must continue to increase for dairy farming to be profitable. Farmer groups and cooperatives also need further strengthening to improve service delivery and milk marketing.

There appeared to be relatively little attention to EAS in the project, though adoption of new standards and new marketing systems required learning by farmer and adoption of new management systems.

The **Private Sector Driven Agricultural Growth Project** was to increase smallholder incomes by promoting private investment for “transforming agriculture into a market-oriented, competitive, and high-value sector.” The project had two objectives: increase private sector investment and upgrade agricultural value chains. The project provided grants to 34 cooperatives for co-investment in postharvest handling equipment and developed recommendations for professionalizing cooperatives.

Consultations with farmers identified their priorities, of which the top three related to EAS: providing mobile laboratories for soil testing, veterinary services, and pest control; providing affordable irrigation technologies and timely weather forecasting; and developing agricultural technical skills, entrepreneurship, and food processing skills. Analysis of the maize value chain found farmers lacked knowledge on: use of quality seed (or perhaps lack of access to seed rather than knowledge of it!); proper postharvest handling techniques; and proper storage facilities, grading and sorting. Recent input subsidies have negatively impacted profit of agro-dealers, with 27 percent of agro-dealers having low sales volumes and negative pre-tax net incomes. This impacts ability for input suppliers to provide EAS.



Analysis of the maize value chain found farmers lacked knowledge on: use of quality seed (or perhaps lack of access to seed rather than knowledge of it!); proper postharvest handling techniques; and proper storage facilities, grading and sorting. Recent input subsidies have negatively impacted profit of agro-dealers, with 27 percent of agro-dealers having low sales volumes and negative pre-tax net incomes. This impacts ability for input suppliers to provide EAS.

A grant to a local service provider seeks to make ICT accessible and affordable to farmer promoters, agribusinesses, buyers, and aggregators without hidden cost burdens of mobile data, smartphones, or an Internet connection and will provide a comprehensive package of agricultural, extension and climate-related information. For the first year, the service was free to farmers with monthly fees thereafter.

The **Integrated Improved Livelihoods Program Project** (\$14.0 million) was to improve livelihoods of 140,000 Rwandans. The project reported improved production by 85,000 farmers in maize, bean, and dairy value chains. Work with 44 cooperatives promoted use of improved seeds and provided farmer field school training on postharvest handling and storage and pest and disease

control. Maize and bean cooperatives increased production by 182 percent and 98 percent respectively. The project also provided cooperatives with materials for drying sheds to reduce postharvest loss; supported 2,011 Integrated Savings and Lending Groups with 43,000 members; promoted health and nutrition improvements for 140,000 households; and established 400 adult literacy centers that graduated 37,000 participants.

The **Climate Change, Agriculture and Food Security Project (\$5.0 million)** seeks four outcomes: climate services for farmers, climate services for government, climate information provision, and climate services governance. The project strategy for work with farmers is based on partnerships with local organizations to reach 20,000 farmers. Each partner is to: field 10-15 staff to attend a series of six training-of-trainer workshops; train 75 farmer promoters and five sector agronomists; train 6,000 farmer members of Twigire Muhinzi groups; and support farmer promoters training village Twigire Muhinzi groups. Four other partners provide mass media climate information services, largely through radio broadcasts. Initial post-season assessments confirmed that farmers are changing crops, livestock and livelihood activities as a result of climate information.

The **Innovative Approaches to Incentivizing Twigire Muhinzi's Farmer Promoters Activity** was a small DLEC research activity to test ways to improve impact and effectiveness of 11,523 farmer promoters under the Twigire Muhinzi program. Significant improvements resulted from use of a radio campaign to promote awareness and participation in the program and from providing farmer promoters with additional training and a modest amount of free inputs for use in demonstration plots. The training and input incentives increased the average number of farmers trained per promoter to 59.5 from 32 the previous year. This likely confirms a general principle that effective EAS delivery requires that the EAS agent must have adequate training and support.

A **2011 Audit of USAID/Rwanda's Agricultural Activities** found mixed results. It concluded that the Dairy Competitiveness Project had mixed results. The market did not respond to improved milk quality with a price differentiation that would incentivize farmers. However, dairy EAS for people living with HIV/AIDS increased incomes by 400 percent. A chili export project failed, as the private company promoting farmer production of bird's eye chili peppers for export did not purchase all export-grade chili pepper produced, leaving 22 tons unsold with farmer cooperatives.

### EAS System Issues

The client base for EAS consists of small, resource-poor farmers, who are relatively well organized under the Twigire Muhinzi program and within established producer groups.

The EAS operating environment is relatively good. Subsidies and other government interventions may distort markets and constrain some EAS activities, and there may be need for close coordination with GOR agencies, but there is a good framework for public-private EAS coordination.

EAS provider capacity is strong, though much additional training is needed for the many farmer field school facilitators and farmer leaders under the Twigire Muhinzi. Government EAS agents may need additional training on marketing and natural resources management.

EAS program content needs to focus on climate change and natural resource management issues. Entrepreneurship and effective cooperative and producer group management are other issues of

importance. Continued research is needed on innovations to increase farming systems productivity and environmental and natural resource conservation.

Incentives for EAS delivery are fairly well established in Twigire Muhinzi program, though additional incentives may be important to encourage continued active EAS efforts by farmer leaders. A trial program has demonstrated that providing a limited amount of free production inputs to farmer promoters can substantially improve their performance.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Rwanda EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Fund a program to strengthen agricultural education and training institutions that prepare EAS leaders and technical staff with a better appreciation for and understanding of private sector and market-led development and of natural resource and climate change implications for sustainable production systems.
- ❖ Fund a pilot program of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Senegal*

### Country Extension and Advisory Service (EAS) System Status

Senegal has a rural population of 8.4 million potential clients for EAS. Groundnuts and millet are the most common crops; livestock are owned by most farm families. The country has enjoyed long stability and has considerable agricultural potential, but ranks very low in most developmental indices with 54 percent of the population below the poverty line.

The public sector EAS has evolved through periods of a socialist government and a T&V top-down technology transfer approach. The current lead agency for EAS, the National Agency for Rural Advisory Services (ANCAR in its French acronym) was formed in 1997 and has a national mandate, but only 156 extension staff. ANCAR is a decentralized parastatal with control split among the national government (51 percent), producer organizations (28 percent), private sector (14 percent), and local governments (7 percent). Funding is mainly from the government. ANCAR generally works through contracts with producer organizations and within its first ten years had 3,800 of these, some of which co-finance EAS activities. Supplementing ANCAR programs are special development agencies, such as the Senegal River Development Agency, which focus on a particular region or crop and have their own EAS staff. Total EAS staff in these development agencies number about 318. ANCAR's EAS approach is participatory and demand-driven, taking a holistic approach to address household needs. These participatory approaches often emphasize farmer-to-farmer learning, farmer field schools, and whole farm management advisory services. Farmer trainers or lead farmers are important in most programs, and such leaders often emerge as leaders in local producer organizations.

Private for-profit firm EAS is relatively limited. Cotton and groundnut exporters are likely providers (though no examples are well documented), as are input suppliers for whom EAS may align with normal marketing efforts. Cereal millers and rural finance entities may be involved with EAS, as in the Senegal River Valley. Other initiatives are typically on a limited scale. A mobile phone and web-based platform offers market price information and community radio is widely available. Numerous NGOs are active in country and many provide EAS.

Producer organizations have a long history and well-accepted role in the agricultural sector. Many local organizations are linked in regional or national federations. They engage in collective market activities for members and undertake a wide variety of community welfare and development programs, including facilitation of EAS. They are key stakeholders in most rural EAS activities.

The national EAS system has a strength in the sophisticated understanding of extension as an integrated system involving active client participation and a responsiveness to their needs. It is however constrained by being quite fragmented, lacking an overall policy framework, and having limited funding.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. CBJs from 2010 to 2019 made no reference to extension. The FY2011-15 Multi-Year FTF Strategy indicated modest support to agricultural EAS, but strong

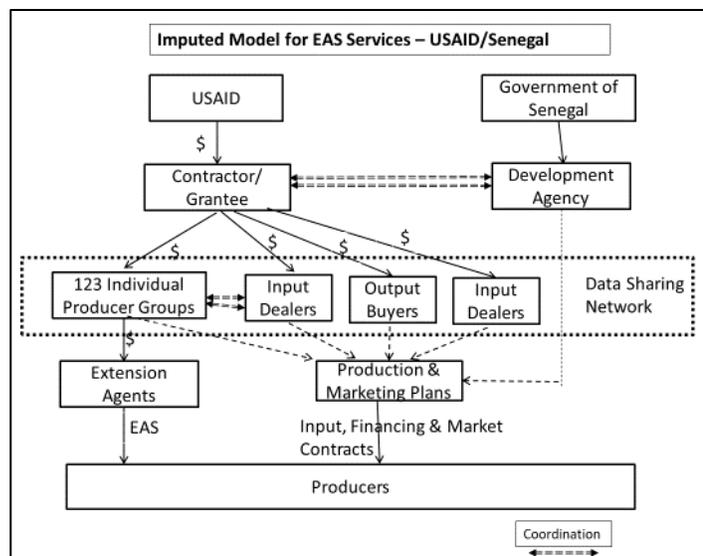
commitment to nutrition education extension. In contrast, the 2018 FSSP Country Plan makes a significant commitment to private EAS service development, especially from input suppliers, and a commitment to producer organization strengthening. Recent project reports and evaluations, reveal an extensive attention to and an important role for EAS in projects, especially in the Senegal River Valley.

The experience with cereal production projects in the Senegal River Valley is a well-known success story within USAID. The experience there provides a wealth of lessons and insights on private sector and value chain development. An elegant and complex model of relationships support an effective cereal production and marketing system, in which an EAS system and producer organization structure seem to have evolved as an increasingly important foundation for the program. There are some caveats to this success. The irrigated Senegal River Valley differs greatly from other areas of the country and less information is available on projects and EAS models in the others areas. The Senegal River Valley has had extensive support from donors and government, with USAID support going back to the 1970s. The recent projects have also enjoyed an admirable continuity in implementation support for about 15 years. An exceptionally strong understanding of local conditions, institutions, and opportunities seems to underpin recent projects – likely due to participation of implementing partners with extensive experience in the area.

**The Economic Growth Project (or Proj Croissance Economique - PCE)** promoted food security by linking

small cereal farmers to improved seed and commercial grain value chains to boost productivity and diversify incomes. Project activities supported seed production; agricultural processing; market linkages and standards; farmer access to financial services; policy reform; and capacity development of government, farmer organizations, and financial institutions. Project beneficiaries were small farmer members of diverse farmer groups (called “networks”), which were community-level owners of project implementation activities. Project technical support enabled partner networks to establish demonstration sites used by networks for training on new technologies. The project also supported network access to equipment, financing, and output markets. Integration into the national cereal value chains required networks to efficiently manage input needs, monitor their own performance, and build credibility with other value chain actors.

Several key lessons emerged. Demand-driven interventions were most appropriate for fast adoption of new technologies by producers, though a proactive approach was also needed to introduce new practices that push farmers beyond their comfort zone. Simple and appropriate technology packages were the best point of entry for interaction and exchange within and across value chains. Networks benefitted from seasonal debriefing workshops to discuss experience, lessons learned, and future



plans. Underlying project successes were the partnerships established among institutions at the local and national levels.

The **Feed the Future Senegal Naatal Mbay project** expects to reach 130,000 smallholder farm households in the Senegal River Valley to scale innovative cereal production and marketing technologies. The project has four components: agricultural productivity (input and production systems, post-harvest systems); markets (market access and linkages to smallholders, private-sector investment, access to finance), policy (formulation, analysis, and implementation); and cross-cutting (local capacity building, climate change mitigation, gender). Activities focus on partnerships for production and processing. Two project regional offices and two satellite offices support the producer network extension system. The project team has 15 staff supported by 16 agents of the sub-contract Senegalese Association for the Promotion of Grassroots Development that supports the networks to ensure the quality data collection.

Production partnerships are with 123 farmer groups referred to as Consolidation Networks for their role in coordinating input procurement; tracking production and loan repayment; and monitoring rainfall for 60,000 farmers. Each Consolidation Network forms a team of Lead Farmers, Field Agents, and a Database Manager to manage the data collection and analysis efforts. Field Agents are responsible for collecting data and delivering EAS and training with support from Lead Farmers. There is roughly one Field Agent for every 200 producers and one Lead Farmer for approximately 35 farmers. The Database Manager centralizes and consolidates data, which is then shared with network decision-making bodies and the project. In 2016 the CN extension system consisted of 146 Database Managers, 708 Field Agents, and 6,451 Lead Farmers.

The project promotes a farmer-led extension model with the producer Consolidation Networks conducting training on agricultural technologies and market requirements. Trainings strengthen network capacity for input purchases, negotiating loans and insurance, and recommending production technologies. The networks facilitate contract farming arrangements. Network seasonal debriefing meetings are a channel for focused training that is reinforced with broadcasts from 10 community radio stations. Radio programs involve producer network teams and topics relevant to farming operations. Networks emphasize communication and information sharing among members. As they become more professional, networks have developed partnerships with government bodies and increasingly benefit from support offered by public programs. Communication activities include: production of videos, newsletters, success stories, training materials, booklets, and posters; organization of exchange visits; TV panel debates; radio programs; workshops; and local cereals promotion events.

Production and market information systems emerged as a critical need for integrating cereal value functions of multiple actors. Such information is often lacking and, when available, has generally been within government or proprietary to individual firms. The project has shifted ownership of data collection and analysis to partner firms, NGOs, and farmer associations or federations. Data reported by producers and other value chain partners is consolidated to improve decision-making across value chain actors. About 90 percent of the area farmers are recorded in databases through a suite of farmer-facing digital tools that are simple, yet practical. Smart phone apps reduce data entry errors and make data available in near real time. A project-supported system enables the Ministry of Agriculture to access key information from producer networks. Local ICT providers are refining

applications to integrate information across the value chains and link producer networks, banks, insurance providers, input suppliers, and others.

The **E3 Analytics and Evaluation Project** carried out five case studies on scaling of pro-poor agricultural innovations through commercial pathways, including one on the Senegal River Valley rice sector. Not surprisingly, the study confirmed well-known characteristics of technologies that scale or disseminate successfully. These include: easy of adoption; simplicity; strong financial benefit; immediate and tangible benefits; affordability; and low risk. Scaling up of cereal production and marketing innovations succeeded, because of: understanding markets, innovations, and the whole value chain; a solid business case for all actors in the value chain; an adaptive approach that identified and addressed weakness and gaps; a targeted marketing strategy; a private-sector partner with an attractive business case and direct financial involvement (“skin in the game”); subsidies and incentives to mitigate early risk (and an explicit strategy for phasing them out); and public-sector support and buy-in, even when government has little to contribute in actual implementation. This constitutes a pretty daunting set of pre-requisites.

USAID/Senegal has a fairly sophisticated approach to agricultural value chain development, targeting weaknesses in the chain, rather than attempting to “work at all levels” as is the case in many programs. The review noted that “USAID/Senegal specializes in assessing, diagnosing and remediating points throughout a value chain that may create inefficiencies or gridlock”. In its systems facilitation approach, the project minimizes market distortions by not taking on direct roles of any value chain. Private sector partnerships were essential in most successful scaling cases. They provided expertise in marketing, understanding of local markets, investment capital, and long-term sustainability. The review team found it generally better to work with partners on the upstream supply (or push) side of a value chain than on the downstream buyer (or pull) side. The key again was to engage partners with a solid business case.

Value added from public-sector EAS was variable across cases. Donor projects or their private sector or NGO partners delivered most training and EAS support. But the review found that partnering with public extension services was important in all cases. Public EAS played three roles: building awareness, encouraging adoption, and providing technical support. Public-sector participation legitimized activities, ensuring buy-in to, at a minimum, avoid political interference or opposition. The review concluded that impact of public EAS was limited, with no country reporting this as the primary source of information, factor for adoption, or follow-up support. It further concluded that involvement of the public sector was necessary, but far from sufficient in promoting scaling of an innovation.

A dilemma presents when an innovation is initially scaled up by a donor project with a fixed end date. The review concluded that the public sector cannot be expected to assume responsibility for continuing support for the innovation, but neither can commercial partners be expected to lead such efforts, if they cannot afford or profit from providing needed training and EAS support. This problem applies especially when multiple commercial entities are involved and EAS is a public good shared by all.

The **New Alliance ICT Extension Service Challenge** piloted ICT-based EAS activities in six countries, including Senegal. The activity focused on mobile phones and local radio. Radio proved a

good platform to facilitate substantive discussion, not only deliver messages. Mobile phones allowed farmers to call in to radio shows and in this and other applications gave farmers a greater voice in innovation issues. Local media based in local communities have a level of trust in farming communities. Farmers can learn of and debate issues, establishing a better base for decisions on change. Knowledge flow is not just top-down, but is facilitated between farmers. Thus, radio stations can provide a platform for interactions and can involve farmer organizations, service providers, and other stakeholders.

### EAS System Issues

The client base for Senegal's EAS system is much more varied than that of the Senegal River Valley, thus necessitating a diverse and flexible approach to EAS. Farmers generally have small landholdings with low productivity, varied cropping systems, and weak market linkages. They often do have an established producer organization or the ability to organize to meet community needs. Willingness and ability to self-finance EAS is limited, though some co-financing is possible.

The operating environment for EAS is reasonable with free markets and openness to private sector activities in agriculture. Public funding for EAS is limited and a new policy statement on EAS would be helpful. Government has not been consistent and direct in supporting EAS programs.

EAS provider capacity is adequate, though the fragmented nature of EAS activities means that individual organizations lack the scale needed to have adequate supporting services for communications, M&E, technical specialist backstopping, and training. Established agricultural education and training institutions are in place to provide technically trained personnel for EAS and these institutions have a new mandate to engage in outreach (i.e., EAS). New initiatives targeting youth will be very relevant as an element of the national EAS system.

EAS program content needs vary by region. The national agricultural research system is quite active and is needed to continue developing options for diverse crops and farming systems. With climate change threats and a low moisture regime for much of the country, mitigation and adaptation technologies will be greatly needed.

Incentives for EAS delivery vary. For producers and producer organizations there is substantial satisfaction in contributing to community wellbeing, as well as the financial incentives realized from improvements in productivity. Agribusinesses too have self-interest in expanding sales or purchases. The challenge comes in that much of the needed EAS is a public good, such that benefits are not easily captured by the provider.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Senegal EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.

- ❖ Engage with government to assess benefits from and options for new EAS policy providing a better framework for public EAS delivery and incentives for private EAS investments
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.
- ❖ Finance a program to adapt the Senegal River Valley EAS program to another area of the country with different production systems and lower levels of market development and public financing. Base any such activity on extensive study and understanding of local production systems, technologies, and institutions.

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## *Somalia*

### Country Extension and Advisory Service (EAS) System Status

Somalia's rural population of 8.2 million has a nearly complete lack of EAS. The country has exemplified the "failed state" over the period since 1991, through protracted civil war, political crises, clan and other violence, terrorism, lack of law and order, and drought. The Federal Government that emerged in 2012 has begun extending its control, though conflict continues in many areas. Rebuilding infrastructure and institutions will be a long-term process. With a poverty rate of 73 percent, it is one of the world's poorest countries. The literacy rate is 38 percent, but undoubtedly lower in rural areas. In 2017, nearly half the population was in need of humanitarian assistance. Recurrent droughts and potential impacts of global climate change pose further threats. Cereal production covers only about 22 percent of country needs. Livestock production in contrast has grown and accounts for up to 83 percent of agricultural sector production. Producers are pastoralists or agro-pastoralists. The country has adequate land and water resources to greatly increase production and become a substantial exporter of fruits and vegetables.

Effectively there is no public EAS. Local government at best provides a few, fragmented agricultural services. There is attention to livestock health services because of the importance of livestock to the economy and to rural livelihoods, but how much support comes from the state is unclear. The complex nature and length of the conflict has fragmented the country's administrative structure. In theory, there are six federal member states, but two of them – Somaliland and Puntland – have self-declared as autonomous states. Officially, the country is divided into 18 administrative regions and 90 districts. Prior to the breakdown of the state, public EAS was weak, but apparently improving. In 1978, headquarters of the agricultural extension service had only three or four persons. Subsequent USAID support made substantial progress, training EAS agents and increasing their ability to carry out applied research and extension programs. All such progress was lost. At least six universities currently have agricultural programs and quite a number of new universities and training institutions are opening, though quality of all the training provided remains somewhat in question. For the country, reestablishing a public EAS system will take time and investment, but first requires a permissive environment for development.

Private EAS is also very limited and fragmented. Again, livestock services exist in fairly informal institutional structures. Markets work and livestock traders facilitate exchange of market and price information. Veterinary drugs are available and input dealers may provide limited information on their use. In Somaliland, USAID support has enabled some agro-input companies to expand and provide technologies with EAS. Non-profit NGOs are engaged in country, but mainly focused on humanitarian assistance activities. Their EAS programs are limited and weak due to lack of support from poorly-developed technical agencies and other participants in the agricultural innovation system. Mobile phone penetration is quite extensive with very competitive pricing, making this a good potential channel for EAS. The high level of illiteracy presents a constraint for some ICT applications.

Producer organizations are weak. While the traditional clan structure is strong, it appears ill-suited to developmental activities. Multiple levels of prolonged conflict undermine the trust needed for

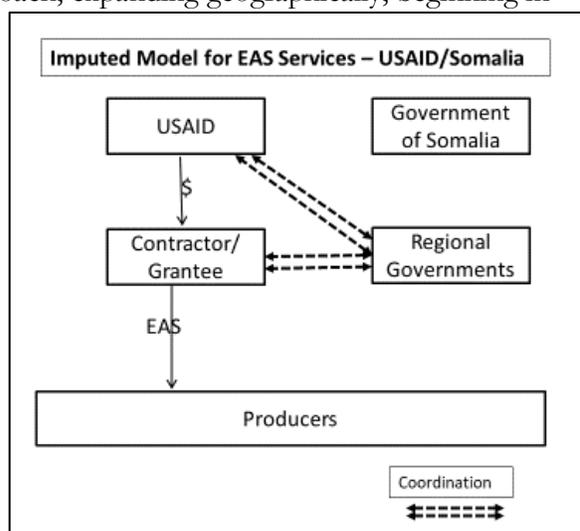
producer groups to form and work effectively. The lack of recognized government authority and rule of law does nothing to encourage sound business practice and transparency in producer organization commercial activities and management.

Building an effective national EAS system will be a long and complex process, requiring capacity development in all related institutions.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest little commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension. Recent project reports and evaluations suggest a role for EAS in aiding the country’s recovery from the lengthy period of conflict and political turmoil and in developing social and economic resilience.

The **Partnership for Economic Growth (PEG) Program** (\$20.9 million) goal was to increase stability through inclusive economic growth and employment in crop and livestock value chains. Project activities were implemented in a phased approach, expanding geographically, beginning in Somaliland, then extending to Puntland, and finally adding South-Central Somalia. The project worked with small and medium-sized enterprises, community and producer organizations, trade and business associations, and government entities to improve the investment climate. Work at all levels of government sought to develop policies and regulatory frameworks to enable business growth. Agricultural sector productivity training reached 7,500 farmers and reportedly resulted in an 82 percent adoption rate for recommended technologies and practices. The project co-invested in innovative agriculture technologies with the private sector through a small enterprise plan competition. Work with private veterinary health clinics and para-vets improved animal healthcare for 40,000 pastoralists and agro-pastoralists. A final performance evaluation concluded that the project had positive effects on household income and food self-sufficiency.



The project partnered with Amoud University to develop an agriculture extension service and improve horticulture production. Eight agriculture faculty and top graduates were selected and trained in vegetable production to work with contact farmers and support demonstration sites and field days. Three demonstration farms enabled farmers to test different varieties of maize and vegetables and learn better farming techniques. One of these was turned into an Agribusiness Incubation Center for testing and demonstrating improved production practices. A cascade training program for lead and contact farmers used a farmer field school approach and was linked to the demonstration plots. Targeted distribution of risk capital to lead and contact farmers ensured rapid uptake of improved practices. Reportedly horticulture lead farmers increased yields by 40 to 500 percent and decreased production costs for top-performing varieties. This EAS approach became a

model for Somaliland agriculture development programs with demonstration plot research results widely disseminated to agricultural NGOs and seed suppliers.

The project worked with the Somaliland Ministry of Livestock and the Puntland Ministry of Livestock and Animal Husbandry on a variety of animal health, feed, and marketing activities. These included: a standardized training curriculum and minimum certification standards for all Somaliland community-based livestock worker programs; supplying local pharmacies with certified livestock drug kits; developing veterinary-pharmacy-village level worker linkages; training and business matching grants for milk producers, traders, and processors; a livestock drug awareness campaign through local media outlets; and fodder demonstration plots managed by lead farmers for agro-pastoralists. Forty villages with about 40,000 people benefitted from better-trained community animal health workers. In Puntland, a new veterinary laboratory was built and staff trained in disease diagnoses. In the South-Central region, the project demonstrated fodder seed testing and disseminated best husbandry practices, providing technical and in-kind support to contact livestock farmers for control of ecto- and endo-parasites. Micro-grants and matching grants improved cold chain systems for better milk handling and hygiene.

Work in the challenging environment of Somalia provided significant lessons. Security, corruption, and the potential for exacerbating conflict are pressing practical challenges in such working environments. Do-No-Harm principles must be a priority for day-to-day implementation. In fragile and post-conflict environments, it is critical that a project not seem to benefit only certain clans or other groups. Broad stakeholder participation in planning and implementation is advisable, as decisions on activities, community participation, site selection, economic sector, staff hiring, and training participants all may have conflict implications. Staff recruitment was problematic as many local applicants embellished CVs and forged diplomas and former employers would not share true assessments of prior performance.

Farmers were highly risk-averse and skeptical of new practices. Demonstrations on their own farms were necessary to convince them. Agriculture activities did best when they involved influential stakeholders. Crop performance on farms operated by hired labor was generally lower than on owner-operated farms.

The cascade training model mitigated challenges of working in an insecure environment. Such cascade training was effective in transfer of knowledge at the top two levels of the cascade, i.e., between EAS agents and lead farmers and between lead farmers and their contact farmers. Beyond that, messages become diluted and uncertain. Knowledge and agricultural inputs often must go together to impact on production.

For the future, farming cooperatives or other organizations will be needed to facilitate marketing, EAS provision, and access to financing.

The **Somalia Emergency and Livelihoods Intervention Program II (\$6.5 million)** was to provide emergency life-saving and recovery services to 66,400 individuals in the most vulnerable disaster-affected households. The project provided: water, sanitation and hygiene services; economic recovery and market support; and agriculture and food security assistance to villages affected by drought, inter/intra clan conflict, or other conflicts. It provided potable water for 311,870 indirect

individuals and used cash-for-work activities to rehabilitate 57 community and agricultural infrastructure projects, such as irrigation canals, ditches, and farm-to-market roads.

The project distributed seed and farming tools to 9,900 farmers and supplied animal feed for 2,336 households to protect core breeding animals. It trained 290 community animal health workers and provided them with kits to provide veterinary services within local communities. After distributing agricultural kits to beneficiaries, project EAS staff visited farmers to monitor crops and livestock and provide additional advice. Group-training sessions discussed challenges in crop production and protection, weather, accessing inputs, security, and post-harvest handling.

Security deteriorated in the South/Central Zone due to attacks from insurgents, assassinations, and inter-clan conflicts. The government remains too weak to support or ensure sustainability of activities.

The **Somalia Livelihoods Support Project** was to save lives and reduce suffering by strengthening livelihoods of drought, flood, and conflict-affected families. Due to increased insecurity in the south, the project was implemented only in the northwest (Somaliland). Agriculture training and support benefitted 2,840 internally displaced people and 67 water sources were rehabilitated. Initial work focused on kitchen gardens and sack gardens, though ultimately these innovations were not adopted because of drought and water stress in the area and the concept of sack gardens not being acceptable to the people. In a second phase, eight farmer groups of 30 members each were trained and supported with tools and seeds to cultivate larger communal vegetable gardens. Of the 240 participants, 22 adopters continued producing for home consumption and sale. Most participants in the project were internally displaced people who had limited access to land and water.

### EAS System Issues

The client base for EAS is highly problematic. Farms are small and farmers resource poor. Illiteracy is high. Producer groups are few and weak. Farmers are often skeptical of innovation.

The EAS operating environment is extremely poor due to insecurity, fragmentation of administrations, poor infrastructure, absence of key institutions, and lack of an overall policy framework for EAS. Inputs and credit are not readily available, although such services are becoming available in more secure areas.

EAS provider capacity is extremely low. Few EAS providers are active in country and those that are have limited capacity. NGO programs focus on humanitarian assistance. Local partners have few technical and financial resources. Level of EAS staff training is quite limited and recent trainees suffer from heavy focus on classroom theoretical training and lack of practical skills.

EAS program content needs are great. With livestock the largest economic sector, demand for livestock health and production services is high. Crop yields are very low, thus providing a high potential for increasing productivity and profitability. Support for organizational development, marketing, and entrepreneurship is needed.

Incentives for EAS delivery are low.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Somalia EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government when possible to support development and implementation of a national strategy for EAS that encourages and enables the public EAS system to work with and support private (including NGO) EAS programs.
- ❖ Fund a program with a university or vocational training institution to provide pre-service and in-service agricultural education and training for public and private EAS staff and other agricultural sector technicians, building local training capacity, while producing a cadre of qualified technicians well-grounded in practical skills, agriculture-as-a-business, marketing, and organizational development.
- ❖ Fund a pilot program for farm youth entrepreneurship at district level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by local ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *South Sudan*

### Country Extension and Advisory Service (EAS) System Status

South Sudan's rural population of 10.1 million in the world's newest independent country poses a huge challenge for efficient EAS delivery. Independence came in 2011 after nearly 50 years of civil war and oppressive rule by the north. The country was devastated; lacked infrastructure (especially roads); had massive population displacements; and relied heavily on humanitarian assistance. The daunting challenge of development was then dealt a new blow in 2013 by outbreak of tribal conflict that displaced and killed many and brought the government and development efforts to a halt. A peace agreement and process for return to normalcy are underway, but the situation is fragile and restoring order and confidence is likely to be long process. On the plus side, the country has an immense natural resource base for agriculture.

The public EAS system is in disarray. Even before the recent tribal conflict, the Government of South Sudan (GOSS) was in an early stage of establishing an effective EAS system to cover the country's large land area and diverse production systems. In Sudan, agricultural extension was introduced in 1928 during British rule. After British rule, a national EAS system was formed, but focused mostly on the north. The Sudan People's Liberation Movement began planning for an EAS system in South Sudan, well before independence in 2011. A network of six agribusiness training centers was built in the 2000s to prepare future EAS staff and entrepreneurs, but the status of these is unclear. A National Agriculture and Livestock Extension Policy adopted in 2011 encourages pluralistic and participatory extension services from private providers to meet diversified client needs. Responsibility for EAS lies with the Ministry of Agriculture and Food Security, Ministry of Livestock and Fisheries, and Ministry of Environment and Forestry. Services are to be provided in 32 states and 183 counties, which are further subdivided into 540 payams (local government districts) and 2,500 bomas. Staffing at the payam and boma level has been slow due to the lack of qualified personnel, limited funding, and vast distances within the country. Even before the ethnic strife, EAS staff lacked transport, communications, operating and logistical support, and a staff incentive system. Current numbers of staff and status of offices is uncertain.

Private sector EAS is predominant and highly skewed toward NGO service provision. For-profit firm investment is limited due to security threats, political uncertainties, and high costs of doing business. Input suppliers are becoming active, though this is a gradual process and input use is limited. The country initially considered "going organic" and banning use of chemical inputs altogether, though this idea has passed. The huge agricultural potential should – given stability – attract agricultural investment and perhaps encourage roles for private firms in EAS. Another private sector option might be EAS funding from oil companies or other mining concerns to promote stability and local food production for company operational areas. Non-profit NGOs have been active in Southern Sudan throughout the period of civil war, providing relief to displaced populations. Some have impressive track records for work in the rural areas and in coping with political, social, logistical, and technical challenges there. With renewed conflict, the initial development programs were forced back to giving priority to relief efforts and will have to restart developmental EAS activities once conditions stabilize. ICT capacity is limited, but extremely important as a means to cope with the limited infrastructure and long distances within country.

Radio ownership reaches 34-65 percent in Greenbelt states (which may have relatively higher ownership rates). Mobile phone ownership rates there run 38-45 percent. Most areas are covered by the four mobile networks. There is reported to be tremendous appetite for radio programming on agriculture. Radio and other ICT applications will have to play a significant role in an efficient EAS system.

The producer organization infrastructure is in a nascent state of development. Traditional community groups exist, but more formal groups for collective action in non-traditional ways, such as cooperatives or cooperative unions, are not common. Most groups and associations formed by NGOs have not been sustainable. They disbanded as soon as assistance ceased with the end of projects. Producer organizations will be important and will need to develop capacity for group marketing and procurement activities, management of natural resources, and facilitation of EAS and other services. Strengthening community and producer organizations to operate as member-owned businesses will be very important to developing efficient agricultural value chains.

The national EAS system doesn't really exist at present. The National Agriculture and Livestock Extension Policy (2011 – 2016) advocates for a pluralist extension system in the country. Its implementation and coordination has been a challenge due to instability in the country. A national EAS system is likely to coalesce fairly quickly once there is a period of peace and stability that allows organizations to get back to agricultural development. When that happens organizations will be able to expand EAS activities, define their roles, develop appropriate linkages, and evolve as a national system.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Two of the CBJs from 2010 to 2019 made reference to extension, in FY12 and FY13, proposing to support linkages to regional and US institutions to foster development of agricultural extension. Recent project reports and evaluations reflect the importance of EAS in achieving program objectives.

The **Feed the Future South Sudan Food, Agribusiness, and Rural Markets (FARM) Project** (\$54.2 million) was to promote agricultural development in the Greenbelt region. The project aimed to increase production of staple food commodities and improve marketing of surplus product, thus, raising incomes of 20,000 farmers in 666 village farmers' associations across 36 payams and nine counties. Shortly after startup, USAID raised concerns as to project ability to meet targets for its broad range of activities and requested a shift in focus, de-emphasizing direct service delivery and providing a platform for a Greenbelt Transformation Initiative with four donor programs for extension, input supply, and feeder roads. Project components continued focus on increasing: agricultural productivity (through improved farm inputs and training); agricultural trade (helping farmers access markets); and capacity of the GOSS and farmer cooperatives.

The project developed an extension program that employed 39 EAS agents. The extension model used a group approach, working with producer groups of 20 members each. A training-of-trainers program trained selected farmers to train their peers. The main extension methods were demonstration plots, demonstration of technologies in front of groups, farm follow-up visits, field days, farmer-to-farmer visits, and agricultural shows. The project provided groups with small in-kind

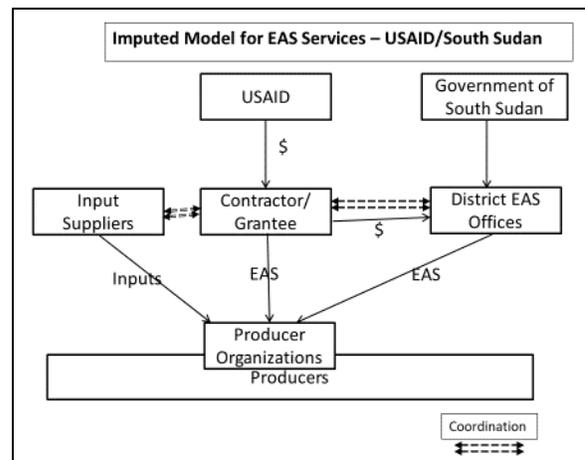
grants of improved planting materials and mechanized plowing services from private service providers. Reports mention farmer field schools managed by lead farmers, but it was not clear if, or how, these operated. The project established extension offices in three states, co-locating with GOSS county staff to facilitate exchange between project and government EAS agents.

The project established private sector input-supply enterprises to increase farmer access to improved inputs and replace seed distribution grants. It worked to develop management capacity of cooperatives and associations, focusing on leadership, technical training, and assistance with accessing finance from the few private sources available.

An early study on EAS needs assessed project plans and capabilities and recommended: participatory planning using simple value chain analyses and basic enterprise plans; strengthening farmer organizations as soon as they join the project; involving farmers in supervision and M&E activities; intensifying interaction with GOSS EAS offices; building GOSS EAS capacity for coordination and collaboration; streamlining activities; and translating materials into local languages.

A communications assessment recommended a short, but intense, communications initiative broadcasting short programs for farmers on 12 local radio stations in the project area and sending via short message service (SMS).

A mid-term evaluation found that the project had met targets for disseminating improved technologies and management practices, but had made little progress on improving access to markets or skills of the private sector. Data strongly suggested that the project had helped increase yields of targeted crops. The production training appeared to have been the most effective input. The project did have trouble with yield monitoring and comparability of data across years. Impact on EAS agent capacity appeared less positive, with most agents reporting that they felt they had not yet increased their skill level adequately to meet job demands. Project activities were basically continued in a short follow-on project.



**The Feed the Future South Sudan Food, Agribusiness, and Rural Markets II (FARM II) Project** (\$12.0 million) - a one year follow on to FARM I - provided technical assistance and other services to improve agricultural markets and food security in the Greenbelt region. Components were: agriculture markets, agriculture productivity, and capacity building. The project emphasized a market-pull approach to agriculture development, creating incentives for use of new technologies and farming practices to increase production. The operating environment was difficult due to: an insecure, unpredictable security environment; increasing crime; constant conflict in some areas; and rising inflation.

The project increased the number of project EAS agents to 47. A train-the-trainer program identified and trained lead farmers to quickly and systematically disseminate key messages and skills to other farmers in their communities. It planned for 800 lead farmers with at least two per farmer

group. EAS agents provided lead farmers with extension leaflets and other information on new technologies to be delivered to their peers and other community members. Training on post-harvest and storage practices emphasized quality control to meet requirements of the major maize buyer. It used demonstration plots, termed “farmer participatory learning centers” to disseminate innovation. The project distributed seed and hermetic storage bags to farmers and used business development grants to develop local capacity for service delivery. In addition to training and technical assistance for GOSS EAS offices, project grants provided some material support for the most urgent needs of these severely under-resourced entities.

The project continued organizing farmer groups to aggregate produce through cooperative societies. Cooperative union assistants were hired and embedded in each cooperative union to strengthen organizational and management capacity of the associations. Farmer-input supplier fora facilitated development of relationships between cooperative unions, cooperative societies, and input suppliers. A youth assessment concluded that many youths require foundational skills, such as basic literacy, numeracy, and life skills training, before they can move into entrepreneurship and business skills training. Youth expressed a clear preference for combined classroom and practical exercises to demonstrate new skills.

The two FARM projects influenced production and collective marketing – 58 percent of farmers reported participating in collective marketing actions, 94 percent felt they had benefited from new farming methods, and 85 percent reported better-quality harvests. The project reported yield increases averaged 29 percent for participants compared to non-participants.

### EAS System Issues

The client base for EAS is challenging with 60 different ethnic and 80 linguistic groups. The countrywide literacy rate is less than 30 percent. Tribal conflicts are a traditional part of the culture for some groups and are accentuated by conflicts over resources. At the community level group organization is relatively easy, though issues may arise due to traditional leadership structures that may not be representative or equitable. On a larger scale, group formation across ethnic groups, while important, is more difficult.

The EAS operating environment is near impossible due to civil conflict. Once that is resolved, the environment will remain difficult due to the state of infrastructure. The road network is among the worst in the world and inhibits access to inputs and EAS and getting products to urban or export markets. The GOSS policy environment is relatively encouraging for EAS providers.

EAS provider capacity is very low at both the individual and institutional levels. Institutionally, the uncertainties and lack of coordination of public programs is a problem. The same is true for the limited number of for-profit private providers. NGOs are focused on humanitarian relief and generally have less staff skills in agricultural production and marketing. EAS staff training needs are great for all providers, and especially severe for public EAS.

EAS program content must cover a wide array of topics. Perhaps most important are soft skills, such as literacy and numeracy, conflict mitigation, group organization, and basic marketing. Livestock management and health are critically important in pastoral areas and cultures. Farming as a

business and market linkages for internal and export markets will become more important, but for some time home consumption will be a major objective of production.

Incentives for EAS delivery are limited due to the highly non-commercial nature of agriculture. Public goods type EAS will be a priority for some time and will require public funding, if not delivery.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in South Sudan EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government to support training, program development, and management improvement to enable the public EAS system to improve effectiveness in working with private EAS programs.
- ❖ Fund a comprehensive agricultural education and training program to produce qualified EAS staff for future programs, including provision for both in-service and pre-service training, and strengthening skills in agriculture as a business, marketing and group organizational support, as well as technical skills. The program should both train needed personnel and develop local capacity for training.
- ❖ Fund a rural communications program emphasizing rural radio, but adding other (especially demand-led) communications as appropriate, providing information and news on agricultural production, marketing, entrepreneurship, community organization, and other relevant topics.
- ❖ Fund a pilot program for farm youth entrepreneurship at the county level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Tajikistan*

### Country Extension and Advisory Service (EAS) System Status

Tajikistan's rural population of 6.5 million is ill-served by EAS. The country is the poorest in Central Asia with about 30 percent of people below the poverty line. The 28 years since independence have seen civil war and a very slow pace of institutional development, both because of funding limitations and lack of political will. There is limited arable land and heavy reliance on irrigation.

The public EAS system is obscure. During Soviet times, there was no EAS system as such. Agricultural technical services were provided to state and collective farms by qualified specialists, who drew from research and university resources to provide technical direction to farm production operations. After independence, this system largely collapsed. The universities and research institutes withered for lack of funding. Many technical specialists left. Vestiges of the old system exist in that some large collective cotton farms remained in operation as private entities and contract technical advice, often from the previous state technical specialists. The 59 district (rayons) administrations retain agricultural specialists (typically 1 to 3), but these have varied duties relating to control, monitoring, and production targets and have little involvement with EAS. There is essentially no EAS for household plots and small farms. The government did begin drafting an agriculture extension policy in 2011 that would have committed to a pluralistic EAS systems serving all groups of farmers, included poor farmers, those in remote areas, and women. The policy initiative was never completed, though a department of agricultural extension was established with two staff members.

Private EAS is also limited. Input suppliers provide some advice on use of inputs from their shops. Some larger cotton farms contract their own specialists to advise on production technologies. While these arrangements are somewhat ad hoc and limited in number, they do demonstrate that a private market for EAS paid by clients is feasible. In response, some agronomists have formed agricultural advisory firms to provide fee-for-serve EAS. Still, most agricultural EAS in country is provided by donor programs. An estimated 200 donor organizations are in country, at least 90 with some sort of EAS activity. They have well-trained staff and established methodologies for service delivery, but nearly all are scale- and time-limited and their services may reflect their priorities rather than those of clients. Donor-funded NGOs often provide services free-of-charge, undercutting development of commercially viable consulting services. Lack of coordination is a problem in EAS for many countries, but appears to be especially serious in Tajikistan. Cellphones are widely available, but ICTs are not prominent in EAS applications.

Independent producer organizations were not encouraged, nor perhaps allowed, prior to independence and since then have not had a great deal of support. Groups have emerged for some critical natural resource management functions, such as water and pasture management, and others are promoted by donor projects. Other groups form at the community level to address varied needs. To-date these do not appear especially strong or vibrant, nor have they been very active in EAS. They do offer hope for expanded future roles in EAS.

At present the Tajikistan national EAS system is a fairly vague concept. A defined government policy and role would be helpful, but adequate public funding to meet EAS needs is unlikely. There

appear to be two viable models emerging. One is the fee-for-serve model, which may be applicable to larger commercial farms and producer organizations. An example is Sarob, registered as a non-commercial service provider under cooperative legislation, which provides EAS based on an annual fee set according to farm acreage. Individual advisor members of Sarob pay a fixed membership fee for services (training, information on new technologies, and access to inputs) that enable them to improved client services. The other model is a “community inclusiveness” approach grounded in community mobilization. This approach develops capacity at the mahalla level (essentially a neighborhood defined by a local mosque) to organize groups for self-help activities and economies of scale in markets and accessing services, including EAS. They can be partially self-funded, but can also mobilize outside resources. Together the two models address needs at two ends of the farm size spectrum.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Two CBJs from 2010 to 2019 made reference to extension, in FY13, proposing to develop and deliver public and private EAS and in FY17, proposing to develop EAS for small farmers. The FY2011-15 Multi-Year FTF Strategy had a sound assessment of EAS and a commitment to support both public and private service provision. Recent project reports and evaluations also reflect commitment – though perhaps uncertainties as to appropriate approaches – to EAS provision to meet program objectives.

The **Feed the Future Tajikistan: Potato production support and research to improve food security Project (\$0.4 million)** seeks to increase production and consumption of sweet potato varieties high in vitamin A, iron, and/or zinc. New technologies include early-bulking potato; breaking dormancy for a second growing season; and net houses to protect against insects. It also seeks to develop grower capacities. Key activities are: work with the research programs on varietal selection and multiplication; training of trainers for new technologies; nurseries/demonstration plots; demonstration plots for second growing season comparing commercial variety with new varieties; and a technical guide, booklets, and training materials for sweet potato production. The project is in its early phase and benefits from implementation by the International Potato Center, which has long experience in country and an excellent understanding of technology options.

The **Farmer Advisory Services in Tajikistan (FAST) Project** was to develop an EAS model targeting small farmers that could be sustained and used by other projects. The project designed an EAS program approach for the target Khatlon region, documented it in a comprehensive EAS Manual, and piloted the model in eleven districts, reaching 4,000 farmers through Household Farmer Learning Groups. The EAS model targets small farmers, mainly women, in a participatory approach with phased activities for: (i) community preparation meetings with local authorities to introduce the program; (ii) a general mahalla meeting to introduce the program to the whole community; (iii) selection and training of lead farmers; (iv) a Participatory Extension Workshop Product Analysis Workshop; (v) household farm schools; (vi) an end of season yield estimation event; and (vii) and end of season evaluation workshop.

An evaluation considered the model to have positive elements in: (i) using participatory methods to identify farmer needs, (ii) organizing female farmers in Household Farmers Learning Groups, (iii)

developing a training agenda based on the local crop calendar, (iv) providing practical field training with a focus on cost-saving and yield-increasing technologies, (v) assigning technical specialists and a group facilitator to each learning group, and (vi) organizing at the sub-district (Jamoat) level through the Jamoat Extension Coordinator.

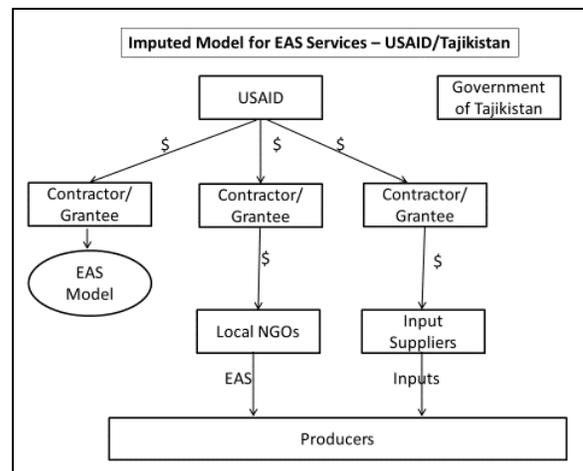
Sustainability was an issue from the beginning. The evaluation concluded that the project EAS model was suited to scaling up, if some cost reductions could be made in it. Financial support from the government was premised, but unlikely, even though public funding, if not public service delivery would be justified for resource poor-farmers. Options for cost reduction in the model seem quite feasible with: greater involvement of private providers, reduced staffing, and a larger role for local group leaders. The project had problems recruiting female field staff and technically-qualified agriculturalists. Considerable resources were needed for intensive training and coaching of staff on participatory approaches and production technologies. It is unclear if, and to what extent, the model has influenced subsequent projects' EAS programs, though the "community inclusiveness" approach seems to draw from it.

The **Family Farming Program (FFP) for Tajikistan Project** (\$21.1 million) was to improve agricultural productivity and irrigation water management. The project strengthened water user groups, rehabilitated irrigation infrastructure, and promoted on-farm productivity increase. A total of 12,394 farmers were members of new Water User Associations. The FFP EAS approach relied on: production demonstrations for greenhouse management, crop production, and fodder and livestock production. Demonstrations served also as test plots for new varieties, crops, and methods.

Field demonstrations were complemented by group meetings, training sessions, and formal and informal field days. Fourteen crop and animal production guides were produced and disseminated through other projects. The project assisted small farmers to access profitable markets and assisted small scale agricultural input dealers to open in the area. Not surprisingly, one lesson learned was that new technologies should be field tested for one or two seasons before being introduced in smallholder demonstrations.

The **Productive Agriculture Project** sought to increase agricultural productivity and profitability in food-insecure areas through a platform for work with the private sector. Activities included: market development, input supply, financial service development and investment promotion, and on-farm productivity enhancement. Target value chains were beef, stone fruits, lemon, watermelon, onion, and tomato. Project beneficiaries generated almost \$3.6 million in incremental sales. The project supported the development of a two-pronged EAS system combining private-sector-based and NGO-based services.

Two NGOs were contracted to provide 10 field agronomists and two senior agronomists for technical support to the farmers. The EAS program included open field days, demonstrations, trainings, fairs, marketing materials, voucher programs, other "smart" subsidies, and improved



linkages among producers, input suppliers, buyers, and financial institutions. The voucher program was a major element of the project, designed to reduce cost of initial trial of new technologies (seeds, fertilizers, pesticides, animal feed, greenhouses, drying trays, etc.). The project covered 30–40 percent of product cost for a farmer on a one-time basis. A total of 1,860 farmers participated in the voucher programs. The project focused other training, demonstrations, and individual visits on voucher farmers.

Input supply was an area of emphasis broader than just the voucher program. Tajikistan's input supply industry was in a nascent state, dominated by counterfeit products and low-quality inputs. The project expanded the number of certified input dealers to 45 by creating demand for improved inputs. The project selected wholesalers to import quality inputs for the voucher program and attempted to engage dealers to provide EAS. Some dealers did provide in-store advice, but none provided this as an embedded service to farmers. The project subsidized 50 percent of costs of extension agents to provide services to voucher recipients for six dealers. At the end of this pilot, two dealers kept the agents on staff.

Recruiting qualified EAS staff was a problem. Extension methodologies are not well known and technical knowledge is frequently out-of-date. The Agricultural University in Tajikistan graduates are not trained in modern technology. Additional training was needed for extension agents, a problem that is likely widespread in country. The project engaged international suppliers and experts (i.e., representatives from Turkish and Swiss firms Bayram and Syngenta) for training extension agents, dealers, and farmers.

There was an additional problem with the concentration of donor organizations in the target region, where the multitude of projects caused confusion among farmers. Projects offered different levels of subsidy or free inputs, thus reducing incentives for farmers to accept the commercial realities of farming.

The **Feed the Future Tajikistan Agriculture and Water Activity** (\$11.2 million) aims to increase production of nutritious foods by improving agricultural EAS and water management. The project employs 47 long-term local professionals and has conducted 1,690 trainings, demonstrations, and open field days for 20,982 farmers and has developed 43 different training courses. Twelve extension home economists have conducted trainings for 182 women's groups on: backyard compost production, backyard vegetable production, and dairy production and processing. The project uses a cost share program to scale up the production. The project purchases seeds, plastic cups, and wooden crates, and covers seedling production costs, while farmers cover land preparation, fertilization, irrigation, pest management, and harvesting costs. For new technology, cost share participants pay 50 percent of cost of technology to the supplier, while the project covers the remaining 50 percent plus all transportation expenses.

The **Tajikistan Nutrition-Sensitive Vegetable Technologies Program** (\$0.8 million) was to increase production and consumption of improved vegetable varieties high in Vitamin A, iron, and/or zinc. The project constructed 81 greenhouses for women farmers; assisted 24 established seedling producers; and introduced new production techniques for vegetables. Training needs were identified and then discussed and refined with community leaders. Trainings built awareness of new vegetable varieties, hybrids and technologies. Interactive learning methods included: brainstorming,

minilectures, group discussions, role-plays, group tasks, practical demonstrations, field days, posters and publications, demonstrations, and research trials. Over three years, more than 20 trainings reached 3,018 persons.

The **Women's Entrepreneurship for Empowerment Project** was to empower women to start microenterprises, assist women-owned microenterprises access new markets and business support mechanisms, and influence attitudes toward women's microenterprise. Activities included: vocational and business training; training center development; business and legal support; new technologies for women in agriculture; high school curriculum on economics and entrepreneurship; networking events; and selection of Women Entrepreneur of the Year. An evaluation concluded that project objectives were achieved. Introduction of strawberries production had been highly successful based on study tours to strawberry producers in Turkey and introduction of high-yielding American varieties.

### EAS System Issues

The client base for Tajikistan's EAS system is bifurcated with a limited number of larger commercial farms, often producing cotton, and a large number of small farms – including household plots and farms up to five hectares. Many of the small farms, especially in the USAID Khatlon target area, have been effectively women-run, as many men have left to work in Russia. Water user groups, pasture management groups, and others have formed and are a good potential participant in EAS provisions, though groups are still in a formative stage of development.

The operating environment is not very conducive for EAS. A national EAS policy is needed and, though under discussion, the process has been anything but rushed. Public funding to support an EAS system is limited, at best. Donor efforts are not coordinated. And, perhaps most constraining is the fact that there is not a wide or sophisticated understanding of what an EAS system has to offer and how it may develop.

EAS provider capacity is low. EAS providers have not had consistent funding or encouragement necessary to develop organizations, linkages, and programs needed to establish capacity. The pool of available extension agents is limited with poor understanding of both EAS approaches and methods and of agricultural innovations. The agricultural education and training institutions do not have the strong programs needed to prepare well-qualified EAS agents. Cellphone and other ICT applications could increase efficiency in services delivery.

EAS program content needs run the gamut from production technologies for livestock and crops to farm marketing and management innovations; facilitation of linkages with markets and support services; and collective action in producer organizations. Cotton will remain important for larger farms, more commercial farms. Resource conservation is important, as climate change is expected to reduce water availability and reduce crop and rangeland productivity.

Incentives for EAS delivery are weak, though the existence of some fee-for-service EAS arrangements establishes this as feasible.

## Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Tajikistan EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government with a limited support to assess benefits from and options for an EAS policy providing a framework for public EAS delivery and incentives for private EAS investments.
- ❖ Fund a program to strengthen agricultural education and training institutions to better prepare technical staff with a better appreciation for and understanding of private sector and market-led development. (The GFRAS New Extensionist paper outlines some of the key training needs to prepare effective extension agents.)
- ❖ Fund a pilot program of farm youth entrepreneurship, using a 4-H, Future Farmers of America, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified.
- ❖ Fund a “community inclusiveness-type” of EAS program for the Khatlon region, recognizing the program will be limited to the project period.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. This might well be a part of other activity options.

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## *Tanzania*

### Country Extension and Advisory Service (EAS) System Status

Tanzania's rural population of 38.4 million has abundant need for EAS. The rural poverty rate is about 33 percent. Agricultural productivity is among the lowest in Africa. Smallholders account for 90 percent of production on farms that are less than three hectares. Seventy percent of cultivation is done by hand. Input use is low. There is considerable diversity in production areas, with Zanzibar and the country's four mainland topographical zones – lowlands near the coast, the central plateau, highlands in the north, and the mountain and lake region. Rainfall patterns vary across the country.

The public EAS system predominates. Colonial government policy focused on export crop production. Post-independence, production was liberalized, but from 1967 to the mid-1980s, the state was in control of the means of production and controlled essentially all services. The EAS system was tasked with multiple responsibilities for rural and community development. From the mid-1980s, the economy and state controls were liberalized, and, in the 1990s, a T&V technology transfer-type EAS program was introduced. In the early 2000s, decentralization shifted EAS responsibility to local governments, with national Ministries for Agriculture, Livestock, and Marketing responsible solely for technical support and national coordination. EAS system services are provided at the level of the 169 districts. The current system is coordinated by the Government of Tanzania (GOT) Ministry of Agriculture, Food Security, and Cooperatives and has 10,891 EAS officers – 6,925 for crops and 3,966 for livestock. Limited funding for transportation, logistics, and operating costs restricts activities and efficiency of EAS delivery, but public EAS agencies provide an estimated 95 percent of all EAS. Staff training and organizational arrangements to improve inter-institutional coordination may be priority capacity development needs.

Private sector EAS is expanding. For-profit firms include input suppliers and agricultural product buyers. Input suppliers are gradually increasing their EAS as a part of their product marketing efforts, as they realize that more profitable production makes for more loyal and committed customers. Large input firms and wholesalers have most capacity and ability to integrate EAS into their business models. They are also key to building capacity and commitment of retail input suppliers to provide EAS. Agricultural exporters and processors, especially for cotton, tea, coffee, and other export crops, provide EAS for target crops, sometimes as part of outgrower or contract grower agreements. Non-profit NGOs are quite active, with 200 NGOs estimated to be active in EAS provision. This number would probably be much higher, if all local NGOs were also included, though many of these are small in scale and capacity. There is considerable ICT capacity in country and expanding mobile phone coverage and internet use. New ICT applications for EAS are increasing, though none seem yet to have been established with major impact.

Farmer organizations are many and diverse – cooperatives, associations, informal common interest groups, commodity groups, and others formed for collective action. The cooperative movement was quite strong in country and continues to influence community and producer groups. There is a fairly high level of community solidarity and willingness to organize for marketing, natural resource management, EAS facilitation, or a myriad of other reasons. Farmer organizations need continued capacity development to function efficiently and effectively in group marketing and other

commercial operations. They will likely remain a key part of EAS systems in organizing the demand for services.

The national EAS system appears to have relatively wide coverage and reasonable technical capacity, but has not yet shown the ability to impact strongly on farm productivity and profitability.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest little commitment to EAS as a means of achieving program objectives. None of the CBJs from 2010 to 2019 made reference to extension, nor does the FY2014-19 Country Development Cooperation Strategy. Recent project reports and evaluations, however, reflect an importance of EAS in achieving program objectives. The EAS strategy appears to be that of working with private sector entities and relying on public EAS.

The **Feed the Future NAFKA Staples Value Chain Activity** was to improve smallholder farmer productivity and profitability within the rice and maize value chains. The program approach was built around: association development, demonstration plots, savings and internal lending communities, farmer field days, and market linkages. Program EAS was based on village-based agricultural advisors, lead farmers, grain processors, and agro-dealers. The village-based agricultural advisors were farmers selected by their community to provide training, EAS, and inputs to others. After extensive training themselves, village agents established demonstration plots as teaching platforms to showcase recommended technologies.

Project training of trainers covered agricultural technologies and business management. The project collaborated with GOT district extension officers in training village agents, lead farmers, and farmer organization members and in establishing demonstration plots. District extension officers assisted in selecting villages for project intervention, identifying village agents, and helping village agents acquire required trading licenses. Relationships with district EAS officers varied by district, but the project had strong collaboration and good relations with the country's research institutes for technology support and training.

The project sought to build sustainable input supply networks by facilitating linkages between agro-dealers and the village-based agricultural agents. While village agents were not certified agro-dealers, many became agents for agro-dealers. The project encouraged the use of these village agents by hub agro-dealers as retail sales agents, bulking orders from farmers and making a small commission on sales. Initial farmer demand for inputs was so high, village agents struggled to handle orders. The project experimented with a village agent small grants program to build their capacity in supplying inputs, but dropped this due to implementation difficulties.

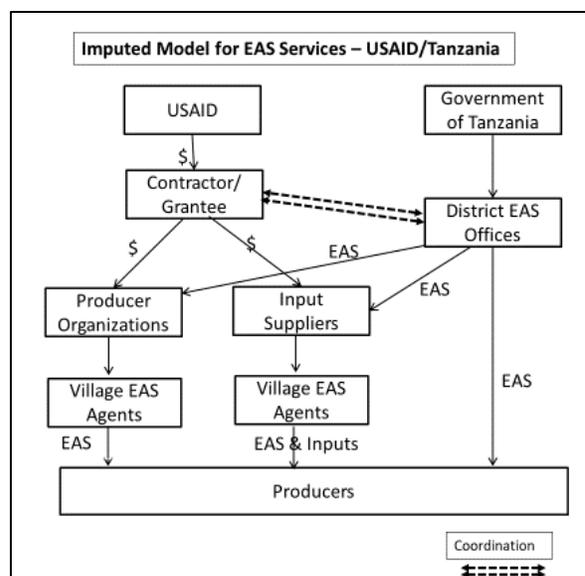
The project worked with 126 hub agro-dealers, input wholesalers supplying retail agro-dealers and farmer associations for direct sale to farmers. The project provided them training and created linkages to retail village agents. Agro-dealer association membership training in business planning and management strengthened capacity of the associations to manage their affairs. A wholesale agro-dealer grant program provided funds and technical assistance for management of demonstration plots.

Posters and radio spots were developed for use with demonstration plot visits, classroom trainings, farmer field schools, and other field events. Training videos were used in roadshow visits to increase

awareness of improved farming practices. After two years, an evaluation of effectiveness of the EAS campaigns (termed “behavior change communications” by the project!) found that: 42 percent of the target population (about 160,745 people) were reached with campaign messages; 74 percent had seen campaign T-shirts from the village advisors; 39 percent had seen campaign posters; and 17 percent (66,211 farmers) had adopted at least one recommended agricultural practice.

An evaluation concluded that the value chain approach and focus on two specific crops did not address farmers’ need to integrate all of their crops, livestock, and water resources into a

meaningful year-round farming system. EAS posters and materials were well done, but addressed only technical aspects of the change to commercial production. The project’s multiple sub-partners resulted in multiple approaches, some complementary and some not. The village advisor and lead farmer models operated differently, but sometimes overlapped, as they did with areas with agro-dealers outreach to farmers. Disparate messages to community leaders and farmers created competition and confusion. The cascade approach to training resulted in dilution of messages, such that reinforcement training was still needed. Having multiple sub-partners built local capacity and leveraged important organizational capacities. Individual village advisors and lead farmers varied widely in agricultural knowledge, understanding of inputs, and ability to advise farmers.



The **Tuboreshe Chakula Food Processing and Consumption Project** was to increase the supply of and demand for nutritious and fortified foods, increasing competitiveness of agro-processors and increasing consumption of nutritious processed products. The implementation approach used grants for purchase of machinery to fortify flour and training for private businesses to improve capacity for fortification and profitability. Grants appeared to increase profitability but were not tied to nutritional outcomes. The project reportedly resulted in consumption of fortified flour increasing from zero to 50 percent; 52 percent of shops stocking fortified flour; 35 percent of families with children using micronutrient powder; 7,960 individuals trained in fortification; and 60 percent of businesses operating more profitably. An evaluation concluded that consumers had received little effective information promoting fortification, and consumer demand for fortified flour remained low.

The **Mwanzo Bora Nutrition Program Project** (\$34.9 million) was to bring about measurable changes in nutritional status by strengthening government and NGO capacity to deliver integrated community nutrition services. The project collaborated with local agricultural extension workers to support community volunteers and community groups for home gardens and livestock enterprises. The project supported establishment of demonstration plots to build knowledge and skills and promote production of vegetables and fruits. Need for animal proteins led to adding services to promote rearing of small livestock (rabbits, poultry, guinea fowl, and guinea pigs). The project

trained 3,640 extension workers and 5,930 community volunteers to work with community groups. A rapid multiplication program was used to expand production of breeding stock and planting material for some crops, mainly orange-fleshed sweet potatoes. A total of 425,127 households were assisted with home gardens and small livestock.

An evaluation concluded that the strategy of strengthening existing government and community institutions was a sustainable approach and that training of trainers of community workers reached a large number of people quickly, even though the quality of training varied and resulting skills were uneven. Use of local organizations for implementation supported sustainability, but these organizations did not have the budget – and some not the capacity – to continue activities after the project ends.

The **Tanzania Agriculture Productivity Program** was to increase smallholder incomes, improve nutrition, and expand markets. The project focused on high-value horticultural crops. Activities included: transferring good agricultural practices; reducing logistical costs; leveraging resources and markets through partnerships; training rural enterprises in business management; increasing availability of inputs and financial services; creating buyer linkages; and market-led production and nutrition interventions. The project trained 85,590 individuals. Major accomplishments included: 61,584 rural households increasing average gross margins per hectare by 12 percent; increasing yields of high value crops by 203 percent; and adoption of improved technologies by 52,968 farmers.

In contrast to many projects, a list documented the technologies recommended to farmers. Fifty trained agronomists were embedded in partner companies and organizations to provide EAS to farmers. Field officers coordinated planting programs, quality oversight, harvesting, record keeping, and logistics. Specialist consultants addressed specific problems. Some formal outgrower programs used revolving credit programs to enable farmers access to necessary inputs, and farmers were linked to input retail outlets set up with project support. A consulting firm assessed ICT capacity and options. Even though mobile phones and mobile banking are common in country, there was limited use of ICT for smallholder engagement.

The **Feed the Future Tanzania Mboga na Matunda Activity** is to increase productivity and profitability of horticulture value chains to benefit 40,000 rural households. The activity uses a value chain approach to scale good agricultural practices, technologies, and nutrition education. The project has completed farmer group selection and begun technical support to farmers with training on recommended agricultural practices. A project grants program supports input companies in demonstrating and marketing their products and establishing local agro-dealer retailers. A partnership alliance fund co-finances activities with NGOs, small businesses, and commercial companies to expand program outreach and impact by providing EAS, logistics, business planning, nutrition, and other support to smallholders. Grants also assist agricultural product buyers with establishing and implementing outgrower schemes.

There has been strong support from over 50 GOT district EAS agents, who help identify farmer groups and participate in weekly visits and technical assistance to farmers. The project agronomy and value chain services staff involve local agro-dealers in demonstration plot development and trainings to link them with farmers. An internship program will support 20 interns a year as a means of building the numbers of trained and experienced commercial horticulturalists.

The **Innovative Agricultural Research Initiative** (\$25.5 million) was designed to strengthen training and collaborative research capacities of the country's agricultural education and training institutions. This has helped to link the national agricultural university to EAS programs and to improve relevance of training for future staff of EAS providers.

### EAS System Issues

The client base for EAS is largely the resource-poor smallholder farm family. The national adult literacy rate is 78 percent, though this is likely lower in rural areas. Ethnic diversity is high with 125 different tribal groups, though this seldom poses problems. Producers and community groups form easily, facilitating collective action on production and marketing activities.

The EAS operating environment is quite open to service providers. Clients have an appreciation for EAS services needed and there are few regulatory constraints. Improvement in the overall agricultural economy and greater commercialization of stallholder agriculture would significantly increase demand for services.

EAS provider capacity is relatively good, though revising and reinforcing curricula of local agricultural education and training institutions would be useful to improve EAS agent skills for marketing and business operations, group organizational development, and technical and management innovations for improved productivity.

EAS program content needs are varied by crop and farming system. Additional research investment is important to provide new technology and management practice options for farmers across the different areas and systems. Business skill and producer organization operation and management EAS are common needs.

Incentives for EAS delivery are generally considered poor, due to low productivity and profitability of small farmers. However, this doesn't reflect USAID project experience of high demand for production inputs and significant increases in gross margins due to use of improved practices. Such productivity improvements suggest significant potential for incentives to EAS provision.

### Options for Activities to Strengthen Private Sector EAS

Review of recent experience in Tanzania EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report. These draw on and incorporate analysis and options developed by the Mission.

- ❖ Improve USAID's analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Fund a program to strengthen pre-service and in-service training for public and private EAS agents, with emphasis on developing skills for moving farmers into more productive, commercial farming systems. This would address the problems of inadequate numbers of competent extension service agents, who currently are mostly unskilled, lacking adequate agronomic knowledge. Private sector EAS providers should participate in developing

agriculture curricula to ensure a match with industry needs and market driven training subject matter.

- ❖ Fund a program to strengthen public EAS organizational capacity to provide EAS to producers and to coordinate and support private EAS providers. Coordination could address disjointed extension-research-farmer linkages and improve consistency of messaging to farmers. The GOT could play a greater role as a clearing house for EAS materials used by both public and private providers, ensuring that recommendations are well suited to local farming systems and delivered by competent service providers. Regulatory oversight should ensure that input supplier and other private EAS providers' recommendations are realistic and beneficial to clients. EAS programs may emphasize use of modal and lead farmers and, as appropriate, delivered through ward agricultural resource centers that are well suited to engaging effectively with farmers and coordinating activities of both public and private EAS efforts.
- ❖ Fund a pilot program for farm youth entrepreneurship district level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector 'owners' of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself. Mass media has huge potential to deliver extension messages refined to address site-specific needs and existing potentials. Digital EAS delivery may ensure wider reach, and more timely sharing of information and innovation.

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## *Uganda*

### Country Extension and Advisory Service (EAS) System Status

Uganda's rural population of 32.9 million is open to and in need of effective EAS to better use and conserve the country's large agricultural resource base that includes nearly half the arable land in East Africa. Most agricultural production is in low-input, low-yield traditional systems. Total factor productivity has declined in recent years. EAS must help to modernize the agricultural sector, making it more profitable and attractive to the 400,000 youth entering the labor market each year.

The public EAS system has quite a history, much influenced by donors and changing global views on extension. Early colonial extension promoted export crops, shifting then to enforced production of cash crops coordinated by local chiefs, and then later to emphasis on input supply through work with progressive farmers. Following independence in 1962, extension was commodity-based using demonstrations for transfer of technology. The country went through a period of lost years from 1971 to 1992 with economic mis-management, political crises, and civil war, following which a unified extension approach based on the T&V system established a top-down, transfer-of-technology EAS system. Criticism of this system for poor performance and changing global thinking on extension led to introduction of a Village Level Participatory Approach in 1998. During the 1990s, the country adopted a policy of decentralization that shifted responsibility for EAS from central Ministry of Agriculture, Animal Industries, and Fisheries (MAAIF) to the districts and reduced Ministry EAS staff numbers from 4,300 to 2,000. Districts, which were to employ EAS staff, often had limited budgets and other priorities. In 2001, an interesting and controversial experiment with EAS started with passing of the National Agricultural Advisory Services (NAADS) Act that introduced a national system for contracting private EAS provision at the district level for priorities identified by local farmer groups. Implementation, political, and performance challenges led to the NAADS program being discontinued in 2012. The MAIRF retained its own EAS programs through the NAADS era and continues to coordinate the country's public EAS. A 2016 National Agricultural Extension Policy was enacted to better coordinate and harmonize work of multiple EAS providers under a standardized Village Agent Model. The public system has 2,000 EAS staff providing services in 127 districts. The GOU is currently recruiting substantial numbers of additional staff, probably for village level positions, and is providing motorbikes to EAS agents for transport. About 35 percent of EAS agent positions have been unfilled, and the government devotes too much effort and funding to distribution of subsidized inputs. The public system continues to evolve and benefits from the priority given EAS by national leaders.

There are many private EAS activities underway in country. For-profit firms focus on cash crops and the larger, more commercial farmers. Providing EAS as part of their business models is fairly new to most firms, but, as the agricultural sector grows and diversifies, this is becoming more common. The new Village Agent Model assumes major expansion in for-profit firm EAS, much by exporters and processors. Input suppliers, including 30-40 large importers and wholesalers, have the most obvious potential self-interest in providing EAS that supports product sales. The Uganda National Agro-Dealers' Association, CropLife, and the Uganda Seed Traders' Association are active in efforts to improve agricultural input supply, including EAS provision by their members. Non-profit NGOs are numerous and very active. Many started operations in country to aid recovery from

the civil war and have provided relief during the more recent unrest in the north. EAS activities are often part of their larger programs and many have introduced or piloted innovative approaches to EAS. The country has a very active ICT community and considerable capacity. In this too NGOs and for-profit firms have introduced or tested innovative approaches, some that seem to offer considerable potential, such as use of learning videos for farmer-to-farmer EAS.

Producers groups are quite common and well-accepted. Groups are organized at different administrative levels, around varied issues, and at varied levels of formality. Community collective action is an important tool for facilitating EAS provision. Some producer groups, such as the Uganda national Farmers' Union and the Uganda Cooperative Alliance have past experience with managing EAS programs for members.

The national EAS system has gone through multiple changes in direction, but benefits from this experience in its community of EAS professionals engaged with on-going experiments and innovation in the sector. A Uganda Forum for Agricultural Advisory Services has been active in convening national dialogue on extension, passing the Guidelines, Standards, Code of Ethics and Procedures for Registration and Accreditation of Agricultural Extension Service Providers and offers professional development of extensionists. Past experience and attention to EAS auger well for continued development of an effective national EAS system.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Only one CBJ from 2010 to 2019 made reference to extension, proposing in FY18 to provide EAS for coffee, maize, and beans. The FY2010 Feed the Future Implementation Plan included a limited assessment of the current EAS and committed to support to private service provision, especially through input suppliers. Recent project reports and evaluations also reflect the importance of EAS to meeting program objectives.

The **Feed the Future Community Connector Project** sought to reduce poverty, food insecurity, malnutrition, and gender disparity through components for: nutrition, agriculture, and connecting nutrition to agriculture. Approaches used to introduce change were: behavior change communication, family life schools, small grants, and agricultural livelihoods training and support. A learning review of the project concluded that in all locations visited there had been improvement in lives of participants and income-generating activities had achieved financial goals and improved household income. Improved farming practices generally led to greater yields, but in some cases ran risks of market saturation. Agricultural knowledge and skills developed under the project are applicable beyond immediate activities. The project began by offering participating communities support from a large menu of potential activities, but then realized it could not provide such diverse technical support. The menu of activity choices was narrowed to six - chickens, goats, beekeeping, onions, passion fruit, and potato seed. Out of these, chicken and goat projects proved most successful.

The project employed a range of approaches to local EAS delivery. A Goods for Life approach trained local promoters in business skills and health messages and supplied them with goods (e.g., seeds, soap, salt, cooking oil, solar lamps) to sell and earn income while visiting households to promote project innovations. This suffered from problems in maintaining supplies of goods,

community assumptions that goods should be free; and market saturation due to too many promoters. Thirty-six agricultural service providers with business interests in target communities and crops were recruited to support farmers with training, resources, loans, and access to markets. These helped in providing EAS and providing markets for farm products, but worked best when linked to other activities promoting the same product. Community poultry vaccinators provided training on poultry production and health, earning income from vaccinations. Maintaining a cold chain for vaccines was problematic, but the vaccinators worked well when partnered with other agricultural service providers. Small grants to community groups (up to \$2,000) enabled them to use drama and music activities to promote project innovations to 300 households each. Groups were paid on completion of outreach activities and earned additional money by doing radio slots, selling CD/DVDs, and working on district council activities. Grants were difficult to administer, caused jealousy within the community, and did not result in high adoption of recommended practices. Community knowledge workers were volunteers, selected by communities, appointed by local government, and paid a performance-based allowance. They supported diverse income-generating activities. Village health teams were also composed of volunteers to promote basic health information and care, but needed more formal links to other partners or institutions.

The large number of approaches was confusing and not overly effective. Experience was clear that local community promoters must be linked to more formal support systems to be effective and sustainable.

**The Northern Karamoja Growth, Health, and Governance Development Food Assistance Project** (\$52.4 million) goal was to improve peace and food security among chronically food insecure households. Two major approaches involved: improving productivity of crops and livestock among the agro-pastoralist population and supporting growth of small businesses. A total of 21,769 individuals received short-term agricultural sector productivity training, resulting in a significant increase in percentage of farmers using at least three sustainable crop, livestock, or natural resource management practices. Livelihoods improved, as demonstrated by increases in per capita expenditures from \$0.58 to \$0.92 in assisted areas. Interventions for developing a commercial livestock industry made major progress.

Development of an effective commercial input value chain established a regular supply of improved seeds and other inputs by building capacity of input dealers at the district and sub-county levels. The project linked local agro-input dealers to wholesale suppliers and provided loan guarantees to ensure adequate stocking of inputs. It also identified local traders to function as village input agents and established farmer groups as focal points for training on use of inputs seeds and practices. A cascade training approach was used to train input suppliers, EAS agents, and lead farmers, who then taught other farmers on use of improved seed and crop management practices. Lead farmers established demonstration gardens to show case recommended innovations.

The project strengthened capacity of 129 community animal health workers to demonstrate animal health practices, linking them sources of vaccine and drugs for common livestock diseases. Agro-vet dealers and the community animal health workers promoted farmer and kraal leader adoption of improved livestock management practices and use of vaccines and drugs. Substantial numbers of farmers adopted the improved practices. Related investments in: feeder roads; organization of trader

associations; a market for skins and hides; access to drugs and vaccines; and advocacy with local councils to resolve constraints all helped strengthen livestock markets.

Project success was constrained by inability of many households to afford purchased inputs and by weather risks to production. A voucher program introduced to subsidize input costs did increase uptake of inputs, but farmers ceased seed purchase after the voucher program ended. Farmers adopted recommended production practices that had no or low cost and contributed to crop productivity.

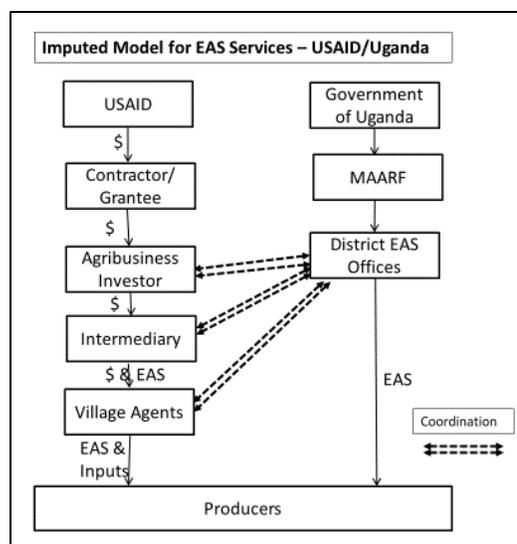
Project EAS agents that provided most training for farmers were recruited from outside the area, because locally available people lacked required qualifications. They were on one-year contracts and often left before the end of contracts. This high turnover prompted the project to shift to use of less-qualified, but high-performing, local farmers as EAS agents. This worked well, but was not acceptable to district agriculture officials, who were concerned with qualifications, potential for incorrect advice to clients, and need for closer supervision of their activities. The project also moved to selecting and training local input and service providers to advise farmers on new innovations.

The project concluded that the lead farmer approach may be viable and effective, if the better farmers within communities can be recruited, given a title other than “extension agent”, and closely supervised by qualified GOU personnel in sub-county agriculture offices.

**The Feed the Future Uganda Enabling Environment for Agriculture Activity (EEA)** aims to

improve the enabling environment for agricultural development, trade, and adaptation to climate change, focusing on coffee, maize, and beans. It supported GOU formulation of the 2016 National Agricultural Extension Policy, which envisions an institutionally pluralistic delivery system and seeks to improve coordination, efficiency, and effectiveness of the EAS system. The new policy proposes to harmonize EAS delivery through a private sector-led village agent model tested under the now-ended USAID Commodity Production and Marketing project. Under this model, village agents link EAS with input supply, product markets, and financial services. An exporter or other investor will select five to eight intermediaries (e.g., agribusinesses or farmer organizations) that will then select and train 10 trusted village agents to serve 200 to 300 farmers. The village agents interface with farmers, buying produce for exporters, processors, traders, or apex farmer organizations, and providing or arranging EAS and other inputs and services for farmers. The model envisions collaboration between village agents and local government EAS agents and will be an integral part of the normal EAS delivery system of district local governments. Program launch is underway with pre-selection of 38,000 village agents and 2,000 traders for training, starting with an initial batch of 4,300 village agents.

The **Uganda Livelihoods and Enterprises for Agricultural Development Project** was to improve rural livelihoods and transformation of the rural economy. Activities fell into three



categories: improving productivity; increasing trade capacity; and enhancing value chain competitiveness. The project worked through private/public sector partnerships and partners with long standing relationships with conflict-affected populations. It aimed to integrate farmers and micro- and small and medium enterprises into commodity value chains to improved access to markets and strengthen relationships with suppliers, processors and traders. Targeting households through producer organizations as the vehicle to transfer knowledge and skills increased understanding of improved technologies and practices. A substantial number of producer organizations participated, but issues remain as to how and how soon they should be weaned from assistance.

The project mobilized farmer groups to register as formal organizations to access inputs and services for production activities. The project utilized farmer field schools and technology observation plots for joint farmer learning to promote improved technologies and practices. Each producer organization has two key farmers trained to identify and resolve production, harvesting, post-harvest handling, and marketing problems. Recruiting these field facilitators in targeted communities enabled them to monitor activities and provide farmers with advice on a daily basis. Farmers strongly endorsed the farmer field schools as an effective and practical way of transferring knowledge and technology. Generally, technology adoption was low. There was wide adoption of low-cost/non-monetized management practices, but limited adoption of high-cost input technologies. Yields increased, but were still lower than expected.

A Mid-term Evaluation found that the producer organization approach and the farmer field school methodology had been effective in reaching target households and facilitating learning. Identifying input suppliers for grants, providing them with training, and linking them to farmers was quite effective, as farmers reported better access to quality inputs. Still, some farmers did not appreciate the links to input suppliers, as they considered inputs expensive and complained of cheap, counterfeit, or adulterated inputs in markets. In summary, strengthening producer organizations by linking them to other value chain actors has potential for significant impact. However, limited interaction with central and local governments may compromise project sustainability.

The **Feed the Future Uganda Agricultural Inputs Activity (\$10.0 million)** is to increase use of high-quality agricultural inputs and decrease prevalence of counterfeit inputs. A market systems facilitation approach supports agro-input wholesalers and distributors who in turn support performance improvement of village level retailers. Activities are implemented in close collaboration with 60 partners, including input related trade associations and farmer organizations. These include: expanding marketing efforts to increase farmer demand for inputs; promoting awareness of improved inputs; increasing inputs association capacity to serve members; increasing seed company capacity; strengthening firm quality assurance programs; and improving coordination among supply chain actors. The project has assisted 1,931 private enterprises or associations and disseminated 522 public informational messages.

An Anti-Counterfeit Task Force seeks to increase farmer trust in the input supply chain. The Uganda National Farmers Federation leads anti-counterfeit sensitization campaigns to sensitize farmers on this issue through media efforts and radio programs. A Regulatory Compliance Handbook for Agro Input Businesses summarizes all regulations to which inputs supply businesses must adhere. The Uganda Seed Trade Association runs a mass media education campaign on 11

radio stations focusing on climate-smart seed varieties for drought tolerance, disease resistance, and early maturity. An E-Verification Task Force provides farmers electronic assurance of purchase of genuine products and providers brand protection for quality-conscious suppliers. Radio spots are used for the e-verification campaign.

### EAS System Issues

The client base for EAS is open to and appreciative of EAS. There are problems with a mentality of expecting free or subsidized inputs and services, and many small farmers have limited resources for inputs or services. Productivity is low, but EAS has been proven effective in increasing productivity and incomes. The population is young and youth represent an important target and opportunity for EAS that provides employment opportunities. Local agribusinesses also express need for better EAS.

The EAS operating environment is relatively good. Many private EAS providers are active. Security may be a constraint in some areas. Transportation and communications are generally adequate. Government policy and regulatory requirements are not limiting.

EAS provider capacity is generally strong, though there is need for more and better training for EAS staff.

EAS program content needs include the standard issues for moving to a more commercial agriculture – business skills, market linkage facilitation, market information, and increasing productivity. Natural resource management and conservation along with adaptation to climate change are major issues. Research is needed to provide additional options for improving farming system productivity.

Incentives for EAS delivery are low in the public sector and may be the reason for difficulties in filling positions and improving performance.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Uganda EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Provide training and support to the government for overall institutionalization of the new Village Agent Model of EAS with systems for registration and regulation of participants and strengthen agricultural coordination and collaboration with and among private EAS providers.
- ❖ Fund a program of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified

- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Zambia*

### Country Extension and Advisory Service (EAS) System Status

Zambia's rural population of 9.7 million has critical need for effective EAS. The agricultural sector is split between a few large farms and numerous small farms, 72 percent of which are less than two hectares. An estimated 58 percent of the rural population lives in extreme poverty. The resource base is large. Only 15 percent of the country's arable land is cultivated. A few export crops – cotton, tobacco, sugar, and soybean – have well-supported commercial production systems. Maize is an important staple crop, emphasized and subsidized by public programs. Recurrent droughts increase agricultural production risk.

The public EAS system followed a common pattern of evolution from colonial era emphasis on export and cash crops through a technology-transfer T&V approach focused on basic food crops from the mid-1970s to mid-1990s, to a current more diverse participatory and pluralistic approach to EAS provision. The government recognized the importance of EAS in a 2013 National Development Plan that committed to strengthening EAS. Public EAS is the responsibility of the Ministry of Agriculture under a hierarchical system with ten provincial offices supervising 117 districts that are in turn sub-divided into Agricultural Blocks, each with 4-7 Agricultural Camps and multiple Agricultural Zones. There are 346 Blocks and 1,757 Zones. Each zone is intended to have at least one EAS agent and a Zonal Agricultural Committee comprised of local producer organizations, NGOs, and other stakeholders. Zonal Agricultural Committees set priorities, facilitate EAS delivery, and name representatives to Camp Agricultural Committees that coordinate activities at that level. A 2015 plan called for 4,965 crop and 2,611 livestock EAS agents for the system. Recruitment has been difficult and the latest data indicate only 742 total EAS staff of which 323 are field-level agents with secondary school diplomas. The current EAS approach builds on prior participatory approaches and farming systems research/extension work and emphasizes farmer field schools, on-farm demonstrations, lead farmer facilitators, and group-based approaches. The government routinely allocates much of the agriculture budget to fertilizer subsidies and under-invests in EAS.

Private EAS providers are seen as a legitimate and important element of the overall EAS system. For-profit export firms provide services for their target commodities, generally targeting larger farmers. Input suppliers are active in marketing their products and provide related EAS to improve profitability of input use. Agribusinesses coordinate activities and represent their common interests through a number of associations, including the Agri-Business Forum, Zambia Cotton Ginner's Association, Grain Traders Association of Zambia, Zambia Export Growers Association, and Zambia Seed Traders Association. Non-profit NGOs are also very active, providing EAS for varied objectives and through a variety of methodologies, often using the farmer field school approach. ICT capacity is substantial. As elsewhere, radio is likely the most important communications media, but mobile phones are common and internet access is growing. A number of innovative ICT EAS applications are in use, though not yet with extensive coverage.

Farmer organizations are very common and quite strong, though the organizations representing large farmers are the strongest. Local farmer groups form for specific commodities or other

common interests. These are important locally for expressing demand for EAS and facilitating service delivery. At the national level, a number of umbrella or national organizations include: Zambia National Farmers Union, Conservation Farming Unit, Farmer Organization Support Program, and National Peasants and Small-Scale Farmers Association. Producer groups contribute substantially to EAS delivery, but are also important clients as there remains considerable need for EAS to develop their capacity and commercial operations.

The national EAS system is relatively strong and quite pluralistic in operation. This is somewhat surprising given the weaknesses and vacancies in the public system, which in many ways provides the backbone for the EAS system. Considerable need remains for training and capacity development of EAS staff in all sectors.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Only one CBJ from 2010 to 2019 made reference to extension, with FY15 proposing to improve both public and private EAS. The FY2011-15 Multi-Year FTF Strategy had a very modest assessment of EAS issues and a commitment to support for public and private EAS, noting the need for EAS to address climate change and natural resources management issues. Recent project reports and evaluations reflect a strong commitment to EAS to meet program objectives and a heavy reliance on input suppliers as providers.

The **Production, Finance, and Improved Technologies (PROFIT) Project** (\$20.0 million) sought to increase the provision of inputs and services to farmers to improve production output and quality. The project worked with lead firms and communities to develop agent networks for supply of inputs and services. This required demonstrating value of inputs and services to farmers and helping lead firms shift to a business model based on low-margin, high-volume smallholder clients.

The project tried various approaches for linking smallholders with private sector input suppliers. Assistance to some input firms in mapping target smallholder customers led to helping the firm train individuals selected by their communities to become independent input providers, called ‘community agents.’ The project considered this community agent model to be its greatest contribution to Zambia’s development. The model is potentially applicable for any input supply for any value chain commodity and can be supported by any commercial firm that is either trying to sell inputs to farmers or purchase their produce. By the end of the project, 2,485 agents were working with about 10 firms supplying inputs and services to 182,729 smallholder households with a million people. Unfortunately, no data were available on the impact of increased input use, though the project reported that farmers claimed to have doubled and tripled their yields.

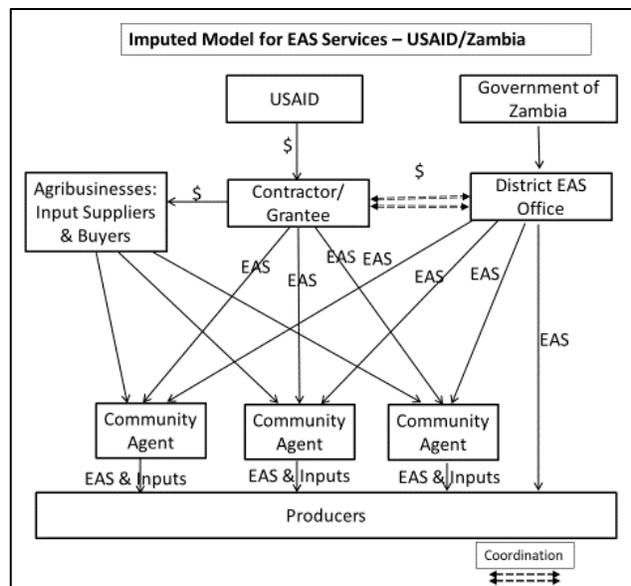
[Note: Terminology for “community agents” in the PROFIT and PROFIT+ Projects varied, sometimes being called “community advisers”, or “community agro-dealers”, or “rural agents.” It was not clear from the documents reviewed as to why different terms were used or if there had been some change in the program over time.]

The **Production, Finance, and Improved Technology Plus (PROFIT+) Project** (\$22.4 million) was to improve productivity, expand trade, and increase investments by developing market systems through public-private partnerships and better coordination with government services. The project

targeted six value chains (maize, groundnut, soybean, sunflower, onion, and tomato) and was to: increase productivity and income of 200,000 smallholders by 30 percent; create 1,000 new jobs; and generate \$50 million in private sector investment. By the end of the project, 15 firms representing nearly all of Zambia’s major agricultural inputs suppliers were working through community agents. The project through its 339 community agents reached 207,749 farm households. Cargill established its own network of 374 community agents.

The project worked closely with GOZ district EAS offices to select 1,200 high-potential smallholders as demonstration host farmers and community agro-dealers. GOZ agents advised project EAS staff on recommended agronomic practices and helped in training community agents for transfer of improved practices to farmers through project demonstrations. Training provided to community agents was comprehensive, including conservation farming, business management, marketing, and entrepreneurship. Demonstration plots for hands-on-training were used for “step down” training, whereby each of these trained farmers was linked with and trained five lead farmers. The lead farmers in turn were to link to and train another 120 farmers. Thus, in theory, each project-trained farmer would reach a total of 600 others.

Establishing the community agents as local input supply business owners created wide access to high quality inputs and services and also established entities with potential to assist in aggregating farmer production for sale. Later, the community agents were trained in community credit and savings approaches and required to establish 10 to 20 community savings and loans groups each. This created liquidity for purchase of inputs and became a part of the community agent outreach strategy. Agribusiness groups of 10 to 20 smallholders facilitated village banking and access to loans for smallholders. The project supported 1,163 groups with a total of 28,039 members.



The community agent program evolved to include several types of agents. The *input company agent* was a sales agent/franchisee with an exclusive relationship with one input supplier to serve as a retailer and after-sales support agent. The *distributor agent* was similar, but with the agent linked to a distributor that purchase larger volumes of inputs at discounted prices from multiple input companies and sold them through the distributor community agent. The *commodity buyer agent* combined input supply activities with purchase of farmer produce for an exporter, processor, or trader, usually through outgrower schemes or as a buyer-aggregator of production from smallholders. And, the *finance institution agent* worked with a financial institution to facilitate a variety of arrangements for farmer credit for input purchases.

The agent network model faced several challenges. At startup, high demand for inputs commonly left community agents unable to fill all orders. This was due to a tendency to underestimate potential

demand. High attrition rates for community agents were due to communities selecting trusted individuals who lacked business aptitude or who were rejected by input companies for not generating enough business. The model failed to work in areas with highly dispersed populations and little commercial activity.

Near its end, the project encouraged groups of five to ten community agents to create Producer Companies, shareholding enterprises able to engage more effectively in markets and capital investments. The project provided grants to facilitate formation of these Producer Companies and their links with local traders and processors. The Producer Companies engaged in a variety of activities, embedding EAS with sales and providing in-field services through teams to spray, weed, prepare land, and provide other services.

Partnerships extended and strengthened project outreach and sustainable delivery of EAS and inputs to farmers. The project provided grants to input suppliers to buy down risk and expedite implementation of the community agent program. MRI Syngenta, Cargill, SeedCo, Zamseed, Monsanto, and DuPont Pioneer were key partners. Work with the Zambian National Farmers Union helped roll out a new e-voucher system and links to the Zambian Agriculture Research Institute facilitated access to new technologies. The Zambia Cooperative Federation supported work with 10 cooperatives.

The **Sustainable Health and Agriculture for Resilient Populations (SHARP) Project** was to strengthen resilience of households in disaster-prone communities through work on: agriculture and food security; water, sanitation and hygiene; and disaster risk reduction. Key results were: 1,955 farmers trained; 1,000 farmers provided with start-up food and fodder seed; 56,244 people benefitted from water and sanitation activities; 1,711 trained in disaster preparedness, mitigation, and response; and 111 community disaster risk reduction plans completed.

The project selected 1,000 farmers organized into 40 groups. Each group selected a lead farmer to be trained in group governance and dynamics, integration of food and fodder crop production, conservation agriculture, grain storage, use of herbicides, fodder storage, and recording weather data. Training was based at 22 Answer Plot (demonstration plots) sites established to compare improved crop management practices with traditional practices for both food and fodder crops. A training-of-trainers approach relied on farmer field schools led by the lead farmers at the Answer Plots. Each Answer Plot served 45 farmers and hosted farmer field days each agricultural season. Hands-on training at Answer Plots promoted high adoption rates for improved practices. The project reported that 78 percent of participants adopted at least one improved production practice. Reportedly, yield increases were substantial. Farmers purchased or built 112 metal silos and 45 fodder barns promoted by the project.

A major lesson learned was that collaboration with GOZ agencies was important and key to sustainability. GOZ EAS offices planned to continue supporting project-initiated activities after the end of the project. An evaluation concluded that 79 percent of participants were implementing recommended agriculture practices, compared to 29 percent at baseline. Distribution of seed expedited adoption.

The **Zambia Agribusiness Technical Advisory Center (ZATAC) Copperbelt Out-Grower Initiative** was to increase smallholder incomes from agriculture-based activities. The program

targeted ex-copper miners and other smallholder farmers, forming producer-group enterprises linked to agribusinesses buying specific commodities, e.g. banana, paprika, honey, vegetables, groundnuts, and dairy. ZATAC became a sustainable institution with a reputation for strong capabilities in assisting small and medium firms become viable businesses. ZATAC worked through varied models for organizing EAS and linkages to markets. These included: initial outgrower schemes with a large number of cooperative groups to supply two key commercial buyers (this failed when the two buyer firms collapsed); an irrigated farm run on communal principles of joint ownership of all assets; two irrigated areas run by cooperatives with collective sales but individual ownership of commodities produced; and 17 small enterprises owned by one or two individuals. The clear lesson from this experience was that the better the private sector focus, the clearer the objectives for commercial success, and the greater the individual freedom to manage assets, the more successful the venture was likely to be.

The **Agricultural Consultative Forum** was to give Zambian private sector firms and stakeholders a voice in sector issues of concern to competitiveness. The mission statement was to promote private-public sector consultation and participation in the development and implementation of agricultural sector policies. The Forum sponsored meetings for stakeholder groups and helped disseminate results. Later, it became proactive in applied research on policy initiatives and in setting the agenda for policy research. The **Food Security Research Project (FSRP)** was to provide objective socio-economic data to support policy decisions for agricultural and natural resources. The project worked with the Ministry of Agriculture and Cooperatives and other stakeholders through the Agricultural Consultative Forum. An evaluation concluded that the project had been outstandingly successful in the quality and relevance of its applied research papers and publications, but had missed an opportunity in not having actively and earlier begun creating a private Zambian research entity capable of continuing such research. These policy activities appear not to have focused on any EAS issues.

The **Drought Tolerant Maize for Africa Program** sought to scale up adoption of drought tolerant varieties. This became very much interlinked with adoption of hybrid varieties generally. A study on this experience with scaling up adoption found that hybrid maize use had grown from about 20 percent in the mid-1990s to about 60 percent by late 2015. Many factors affected this. With average yields, unsubsidized fertilizer prices, and low maize prices, hybrid seed is only marginally more profitable for farmers than traditional seed, and neither is profitable when imputed labor and land rent costs are considered. A GOZ Farmer Input Supply Program that subsidized inputs and grew to reach nearly 40 percent of maize farmers was key to making fertilizer affordable for small farmers. A GOZ maize purchasing program (the Food Reserve Agency) also grew and accounted for 50 percent of net sales, essentially guaranteeing farmers a market and good price for maize. These programs undeniably were critical to scaling up adoption of hybrid maize varieties.

EAS support for hybrid maize adoption, mainly through commercial private seed sector pathways, had focused on demonstration plots and field days, with some later emphasis on extensive radio, newspaper, and targeted promotions. These activities undoubtedly encouraged use of hybrid seed, but it appeared that adoption was spurred mainly by the GOZ input subsidy and maize procurement programs. Of note, of course, is the question of long-term viability and sustainability of the subsidy programs and the implications for continued use of hybrid seed. The input subsidy and maize

purchase programs were very costly, plagued by charges of corruption and inefficiency, and poorly targeted.

### EAS System Issues

The client base for EAS is a large number of small farmers, generally resource-poor and risk-adverse, but open to collective action and to innovations in their production and marketing systems.

The EAS operating environment is quite good, except for the market disruptions and uncertainties introduced by government subsidy programs. Weather and climatic threats add to production risk. Public EAS offices are open to collaboration with other providers.

EAS provider capacity is fairly strong. There are many private providers and extensive experience with varied EAS programs and approaches in both public and private EAS providers. The public EAS system needs to expand staffing and increase training and level of qualification for field staff.

EAS program content must address market linkages and commercial linkages for smallholders. Climate change and drought risk reduction are important factors for EAS, as is the larger natural resource conservation imperative. Research is needed to provide additional options for innovation in local farming systems.

Incentives for EAS delivery are possible and proven for EAS provided by input suppliers and – to some extent – by product buyers and financial institutions.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Zambia EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Engage with government with a limited program of support to strengthen coordination and support for private EAS activities.
- ❖ Fund a pilot program of farm youth entrepreneurship, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level if a viable institutional framework for the model can be identified
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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## *Zimbabwe*

### Country Extension and Advisory Service (EAS) System Status

Zimbabwe's rural population of 11.2 million has critical need for EAS to facilitate rebuilding lives after years of political and economic disruption. This must also include a transition from the agricultural economy formerly based on large farms to one much more reliant on productive and commercialized small farms. This transition should set the stage for renewed economic growth and poverty reduction.

The public EAS system has roots that go back to colonial times and the 1920s' establishment of a training center and demonstration plot program for small farmers. At independence in 1980, the government merged crop and livestock services into a Department for Agriculture, Technical and Extension Services (AGRITEX) with a mandate for EAS. Varied extension approaches were tried, including a Master Farmer training scheme that introduced hybrid maize and was the foundation of much of the early EAS effort, and the T&V system, which was found inappropriate. Farming systems research and extension was quite influential in the 1980s and helped orient R&D and EAS activities toward participatory and demand-driven approaches. For a period in the 2000s, the government folded AGRITEX into an organization with the research service, but, in 2009, it was again separated and regained its old name. AGRITEX provides services through eight provincial and 57 district offices. As of 2009, it had 6,159 technical staff. The Department of Livestock and Veterinary Services provides livestock-related EAS. These public sector agricultural agencies, which once boasted quite highly trained staff, have suffered greatly in loss of experienced technical staff due to political and economic disincentives in public service. A new program is to establish two Agricultural Centers of Excellence as focal points for EAS organization of innovation fairs, field days, and farmer training workshops. These will engage with public and private EAS providers and research and educators and support District Agricultural Centers of Excellence as district EAS hubs. Rebuilding capacity will be a major issue.

Private EAS providers are quite active in country, though programs are constrained by the generally poor policy and economic environment. Export crops, such as tobacco and cotton, are served by firms buying and exporting these commodities. Local food crops and those with less developed value chains and production systems are generally not served. Input dealers provide EAS in conjunction with their marketing efforts, though these programs are not well-developed or extensive. A large number of non-profit NGOs work in country, often in livelihood-related activities that provide EAS and often distribute subsidized or free inputs. A website lists 715 registered NGOs. These have varied levels of types of programs and levels of technical competency. The Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) was widely recognized for its innovative and effective local development work and EAS focusing on wildlife and natural resources management by local communities. Participating NGOs provided training, monitoring and evaluation, participatory rural appraisals, extension, and advocacy. ICT capability in general was late to develop in country, because of economic and policy constraints. A 2005 government policy encouraged ICT development, which has expanded since then. Smart phones are becoming common. There have been a number of rural ICT initiatives for telecenters and mobile phone applications, though none seem to have become major factors in EAS.

Producer organizations are well established for some crops and areas. The Commercial Farmers' Union is an umbrella body representing commercial farmers. Other producer groups represent specific commodity interests (e.g., dairy, cotton, cattle, coffee, maize, etc.) and have varied capabilities and involvement in EAS. At the community level, producer organizations are often informal, but important actors in collective action for accessing EAS and inputs, managing natural resources, and marketing produce.

The national EAS systems has far to go in developing capacity and (re)-establishing mechanisms to meet client needs. There are many talented and innovative people in country with technical skills and/or interests in agriculture and rural development. Many are committed to rebuilding the economy and addressing rural poverty. Once conditions encourage EAS system growth in public and private sectors, this pool of talent will be important. Meanwhile, coordination and collaboration among EAS providers has been problematic and needs to be improved to improve efficiency and effectiveness and help start the rebuilding process for system development.

### Recent EAS USAID Project Experience

USAID budget and planning documents suggest modest commitment to EAS as a means of achieving program objectives. Three CBJs from 2010 to 2019 made reference to extension: in FY10, proposing to rebuild the deteriorated public extension services; in FY12, proposing to revive the agricultural sector through EAS; and In FY15 proposing to emphasize farming as a family business and livestock health issues in the EAS. The 2018 Global Food Security Strategy Country Plan provides no assessment of EAS system issues or commitment to EAS, but notes that the EU supports EAS system strengthening. Recent project reports and evaluations, however, suggest a critical role for EAS in achieving program objectives, but by varied and somewhat ad hoc approaches, complicated by the overall country operational environment.

A portfolio evaluation noted that USAID projects in 2009-2011 began at a time of severe economic crisis and grave challenges in the agricultural sector. Particularly vulnerable were poorly-trained smallholder farmers. USAID activities at that time effectively responded to immediate needs. Later projects built on that initial experience. The agriculture growth and food security challenges continue, as do needs of vulnerable households. The project portfolio has operated in a challenging and changing environment.

The **Rebuilding Livelihoods and Resiliency in Zimbabwe (ZDL) Project** (\$5.8 million) was designed to rebuild livelihoods and promote food security through interventions in livestock and dairy value chains. The program had three components: providing farmers with heifers and links to high-value milk markets; increasing access to animal health services from Community Animal Health Workers; and increasing capacity for rangeland/fodder management; and promoting use of donkeys for transport and animal traction. The project reached 1,258 smallholder households. A final evaluation found the project to be a major success, promoting a pro-business approach and capacity building of local organizations. A focus on improved margins and returns for all value chain participants was a strength of the project. Annual dairy incomes reportedly increased by a dramatic 743 percent, from a \$312 baseline to \$2,943.

The project undertook multiple activities. Livestock production activities included: provision of in-calf heifers through a cattle loan facility; training (farm business management, livestock management,

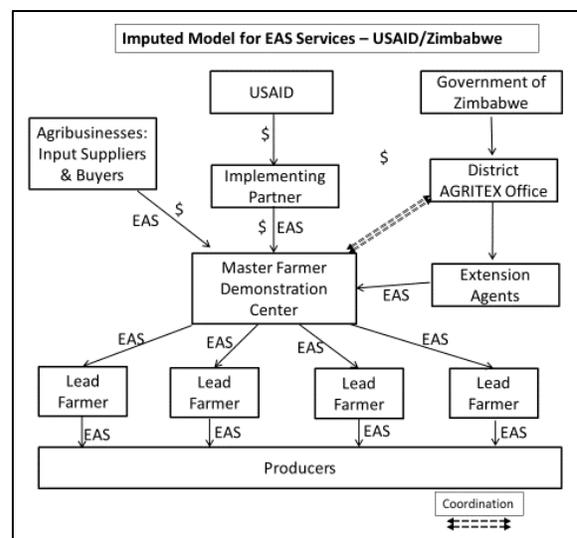
milk collection center management); grants and loans for milk collection centers; and exchange visits and dairy field days. Livestock health activities included: training Community Animal Health Workers; establishing revolving funds for supply of drugs; promoting farmer consultations by service providers; demonstration plots for forage and fodder production; training on forage production; and establishing of stock feed revolving funds. The donkey transport component activities included: facilitating acquisition of donkeys; farmer training (donkey management, donkey transportation, harnessing equipment); donkey training; and promoting donkey transportation.

Training and capacity building were a significant element of the project, building capacities at the farm, milk collection center, and community levels. This increased resilience of individual dairy enterprises and entire communities. Project staff and Zimbabwe Association of Dairy Farmers (ZADF) partner staff concentrated on participatory training approaches and on-farm training sessions. Field days played an important role in disseminating information and letting farmers learn by seeing performance of practices adopted by others. Government implementing partners included the Dairy Development Program, the Department of Livestock Production and Development, the Department of Veterinary Services, and the Department of Agricultural, Technical and Extension Services (AGRITEX).

Introduction of community livestock workers provided dispersed, active and locally-accountable service providers able to work on a range of activities, provide services on demand, and train more farmers. The project trained 60 community livestock workers, who became increasingly important, as the first responders for farmers facing challenges with dairy herds. They took on more responsibilities after receiving training in AI and were able to assist with breeding activities. Later they added duties for preventative health activities. Commercializing community animal health worker services was not fully appreciated by farmers prone to donor dependency and expectations of free services. Local committees were established to address specific issues: milk collection center management, cattle bank, fodder production, cattle breeding, marketing, and others. These and the community livestock and community animal health workers will aid sustainability. The project noted likelihood that some milk collection centers may not be sustainable for challenges inherent in their operations.

The **Zimbabwe Agricultural Competitiveness Program (Zim-ACP)** (\$15.0 million) was to improve the regulatory, policy, and business-enabling environment for agriculture. The difficult socio-political environment and USG restrictions on direct GOZ engagement did not allow the project to engage directly on policy issues and thus limited its influence and effectiveness.

The **Zimbabwe Agricultural Income and Employment Development (Zim-AIED) Program** (\$36.0 million) was to increase food security and household income of 150,000 households. Its ambitious range of activities included: increasing number of buyers purchasing from smallholders; disbursing working capital to agribusinesses; increasing direct credit to farmers; increasing staple



food crop production; increasing high-value crop production; supporting new agribusinesses; and commercializing irrigation schemes. The project trained 140,000 farmers, of which 106,472 farmers adopted recommended agricultural and business practices. Training and technical assistance covered agronomy, livestock husbandry, business skills, irrigation management, postharvest handling, processing, gender integration, environment, and natural resources management. The project reported increases in agricultural productivity across all value chains, along with impressive income increases. A strength of the project was its focus on enterprise and farm budgets and incomes.

EAS were obviously important to the project, but the EAS strategy was not entirely clear. The project supported agribusinesses to supply inputs and provide extension and training to growers as an embedded cost. It also built capacity of farmer groups to improve management and facilitate contract farming arrangements. And, farmer-led extension systems were to be developed by training lead farmers as a permanent knowledge base in communities to promote good agricultural and business practices. These latter farmer-led extension systems appear to be the key EAS strategy, established as “agribusiness hubs” that were demonstration centers to promote innovation and smallholder commercial agriculture, linking farmers with buyers and inputs suppliers and providing technical assistance. Over the LOP, 50 of a planned 100 agribusiness hubs were established, each with a central site for training, field days, and a demonstration plot managed by an extension worker. Each hub was to have up to 15 lead farmers within a 10-kilometer radius, each lead farmer contracted to grow maize or legumes on a practical learning demonstration plot. The program at one point had trained 526 lead farmers. Contracted crops were supported with full inputs with costs to be recovered at harvest. Hubs also promoted access to input and output markets and microfinance institutions. Project staff along with staff of partner organizations provided training and supervised demonstrations and field days. The program supported lead farmers with technical training for their farming system, introduction of improved inputs, and extension services. This produced good results in improved productivity, production, and sale of produce.

The project found that contract farming was not always the best option for smallholders. It was necessary for non-food crops with few buyers, but difficult for major food crops with many potential cash buyers. The project concluded that input provision should not be linked to contract farming, but emphasis should be on making inputs and training on their use available to all farmers.

AGRITEX EAS agents supporting project activities were relatively inexperienced in real-world farming operations, but benefitted from being paired with experienced project EAS field staff. This cooperation was based on relationships built by implementing partners and not through a formal institutional relationship with the GOZ. USAID policy did not allow for direct assistance and formal collaborative agreements. AGRITEX is actively involved in most activities and will continue to provide EAS after the project. The AGRITEX extension service is very weak, due to attrition of qualified staff over the years of economic and political troubles. Newly-recruited agents are poorly trained. The project also supported expansion of agro-dealer and credit facilities. A few of the larger, stronger firms are likely to continue relationships with clients and providing EAS beyond the life of the project, but for most it is unclear whether services will be continued post-project.

The **Feed the Future Zimbabwe Crop Development Activity** (\$8.0 million) goal is to sustainably reduce rural poverty and improve food security, nutrition, and hygiene for 28,500 households. Specific objectives include: doubling yields of all crops; regular business skills training for farmers;

increasing income for 28,500 smallholder households; creating 3,563 market linkages; linking 1,800 beneficiaries to sources of credit; improving nutrition; and improving hygiene.

The project uses interlinked implementation approaches. Agronomic demonstrations and farmer learning platforms are managed by Lead Farmers selected through a participatory process. Lead Farmers mentor 10-15 other farmers, who constitute Lead Farmer Producer Groups – platforms for discussions and sharing of information. Lead farmers are trained at Agribusiness Hub demonstration plots facilitated by project and AGRITEX field officers. “Farming as a Family Business” training that covers enterprise budgeting, decision making, record keeping, and market-oriented production planning is passed on by Lead Farmers to others in Lead Farmer Producer Groups through a cascade training process. The Agribusiness Hubs facilitate sustainable market linkages and partnerships among producers and agribusinesses providing inputs, technical advice, markets for production, commodity brokerage, processing, logistics, and marketing services. Farmer innovation adoption rates and income impacts appeared positive, but have been affected by unfavorable climatic conditions and issues with credit and input supply.

The project supports ICT platforms for information dissemination, providing information on produce markets and input prices. A social media platform - WhatsApp - allows farmers with smart phones to interact with different market players and extension staff.

Farm households are organized into Farmer Nutrition and Hygiene Clubs of 10-15 members, as platforms for cascading hygiene training.

USAID’s assistance resulted in a positive gain of \$ 1.33 million to the country, if USAID costs are excluded. The present value of the total financial gains to beneficiary farmers is \$13.19 million. Including USAID costs drops the economic return to a negative \$ 2.67 million. This may be justifiable on a welfare basis. Returns could be improved by higher participation and innovation adoption rates. Improvements in the country’s overall economic environment would also make a difference.

The **Feed the Future Zimbabwe Livestock Development Program** (\$12.0 million) is to reduce poverty and increase food security, hygiene, and nutrition status among 1,800 beef and 1,200 dairy smallholder farmers through increased production, productivity, and market linkages. Activities increase efficiencies in beef and dairy production systems; facilitate access to inputs, technology, finance, and credit; link producers to buyers; train farmers in agricultural and business practices; train farmers in good nutrition and hygiene; and strengthen capacity of local partners. The project collaborates with local companies, NGOs, the Division of Livestock Production and Development, AGRITEX, the Department of Veterinary Services, and other GOZ departments. Local NGOs and commercial companies co-fund inputs for demonstrations on a cost-recovery basis. Farmer business training follow up indicates that about 45 percent of participants are able to develop enterprise budgets; track income and expenses in record books; and calculate profit/loss for farm enterprises.

The program promotes good production and business practices through practical demonstrations, technical days, and theoretical trainings at 130 established centers of excellence. These are program demonstration sites where practices to enhance livestock productivity, genetic herd improvements, and nutrition and WASH can be exhibited with full participation of a host farmer and at least ten other farmers. The host farmer contributes herd, time, and inputs for hosting the center. Centers are

established in conjunction with private input suppliers, credit suppliers, buyers, NGOs, and EAS providers. Reportedly, 90 percent of participants have adopted improved technologies and management practices.

Project reports are a bit vague as to the EAS model, but it appears to be based on the “centers of excellence”, which are essentially similar to the “agricultural hub” model. One project report variously refers to “promoting farmer led extension systems,” “partner extension workers,” and “commercial partnerships through a national network of agribusinesses ... provides extension and training to growers as an embedded cost. Partnerships focus on establishing service provision options at market rates.”

An economic analysis of the project investment estimates the return on investment for USAID of 11.20 percent – below the internal rate of return (12 percent) used in the analysis. The low internal rate of return results from a negative return for dairy due to a very high cost per adopting beneficiary (\$ 9,550). Destocking over recent years, poor performance of local breeds, and poor results from AI contribute to low adoption rates and low numbers of beneficiaries.

A **Mission agricultural portfolio evaluation** based on project stakeholders and beneficiary interviews concluded that significant increases were achieved in productivity and volume and value of marketed surplus. Decisive factors in increasing productivity and production were training/capacity building provided by implementing partners and adoption of new technologies by farmers. Trained farmers showed remarkable performance improvements and shift toward commercial production. “Farming as a Business” was a fundamental concept in all projects and seemed to be changing farmer attitudes. The cascade training approach reached large numbers of farmers.

The evaluation found concerns with sustainability. Most training was provided by projects and there is need to move training from the project to local institutions to increase sustainability. Farmers that received training, inputs, and market linkages may be able to continue with improved production systems. However, further support will be necessary for continued progress. In some cases, contract farmers may continue to receive EAS from produce buyers, but few institutions have capacity to provide such services after the project ends.

### EAS System Issues

The client base for EAS is in great need of services to rebuild livelihoods and move out of poverty. Small farmers appear quite responsive to opportunities and are able to organize effectively to access and facilitate EAS.

The EAS operating environment is poor due to years of political instability and economic stagnation. Low public expenditure for infrastructure and services has left rural infrastructure, including irrigation, transport, and telecommunication in poor condition, making rural businesses more costly and unprofitable.

EAS provider capacity is weak, as many experienced EAS staff and research specialists left for better opportunities elsewhere.

EAS program content must address two critical issues. First is farm management as a business, encouraging a commercial perspective to farm operations and fostering farmer linkages with market actors for credit, inputs, and market opportunities. The second is to increase farming systems productivity and marketable surpluses through improved technologies and management and institutional innovations.

Incentives for EAS delivery are currently weak for private EAS and will likely remain so until economic and market conditions change to improve competitiveness and profitability of agriculture and rural businesses. The public sector has limited incentives in the form of logistics and operating costs to do their job well.

### Options for Activities to Strengthen Private Sector EAS

Review of the recent experience in Zimbabwe EAS and global experience with private sector agricultural EAS lead to the following suggestions for future support, all requiring further assessment. Generalized recommendations are summarized in the main report.

- ❖ Improve USAID’s analysis and planning for any future EAS-related activities, looking to design these in the context of and supportive of emergence of a sustainable, coordinated, and comprehensive EAS system.
- ❖ Fund programs for farm youth entrepreneurship at the community and district level, using a 4-H, FFA, or Junior Achievement model, with a view to scaling up to the national level.
- ❖ When political conditions allow, fund a comprehensive agricultural education and training program for pre-service and in-service training of public and private EAS staff, building capacity to support private EAS services and farmer entrepreneurship.
- ❖ Support piloting ICT innovations in EAS by private (or public) sector ‘owners’ of the ICT activity, with support limited to facilitating development of the models, but not directly funding of the activity itself.

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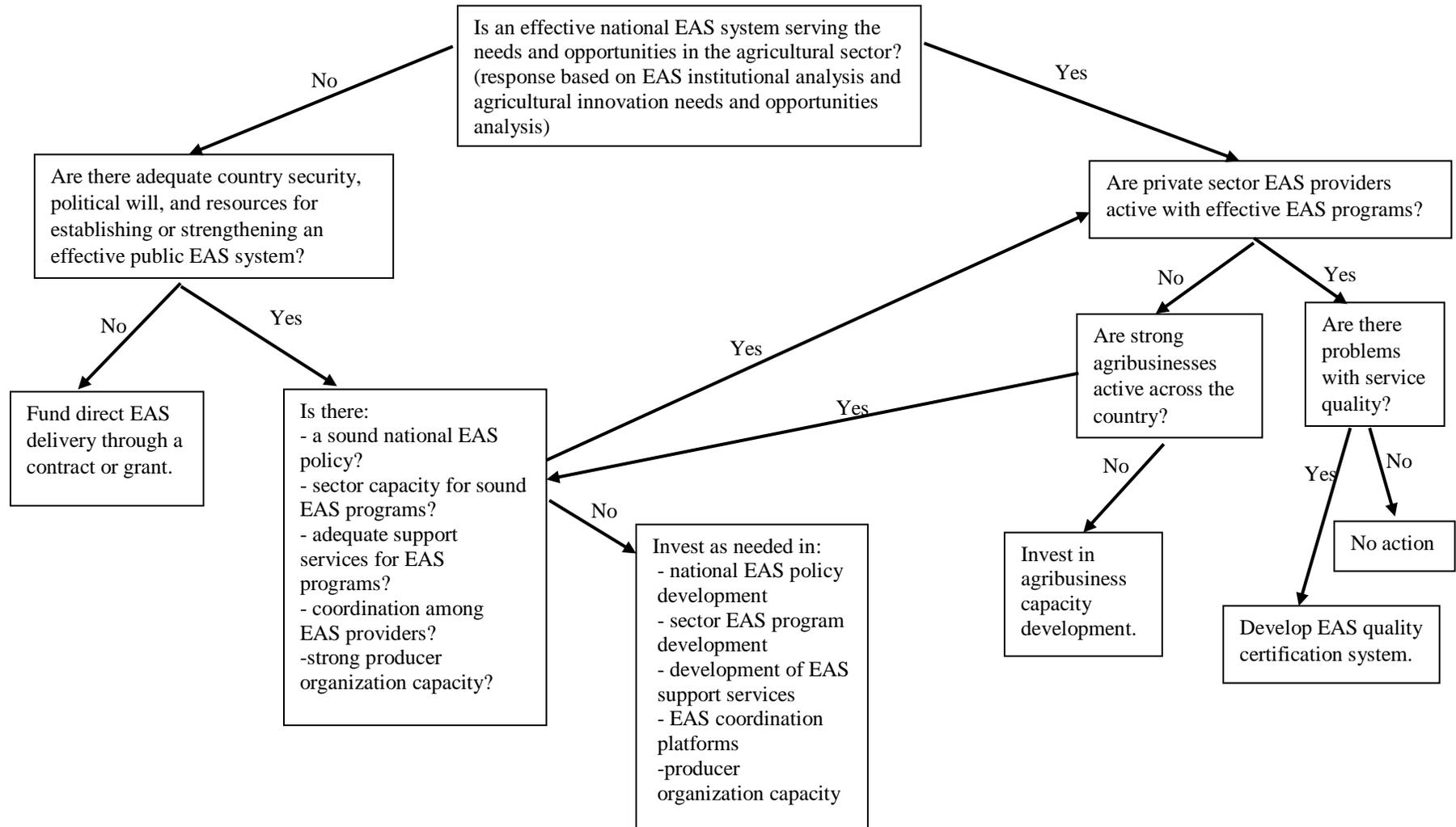
## Annex F: Key Reference Documents for Selected EAS Investment Activities

EAS Investment Issue	Recommended Reference
Analysis of EAS institutional architecture and capacity	<p>Agricultural Innovation Systems: An Investment Sourcebook: Module 3: Investment in Extension and Advisory Services as Part of Agricultural Innovation Systems (<a href="http://hdl.handle.net/10986/2247">http://hdl.handle.net/10986/2247</a>)</p> <p>Applying the Best-fit Framework to Assess and Strengthen National Extension and Advisory Services (<a href="http://www.ifpri.org/publication/applying-best-fit-framework-assess-and-strengthen-national-extension-and-advisory">http://www.ifpri.org/publication/applying-best-fit-framework-assess-and-strengthen-national-extension-and-advisory</a>)</p>
Analysis of farming systems potentials	<p>Analyses of potential farm impacts from EAS rely heavily though not exclusively on farm budget analyses with and without innovation. These are classic as feasibility analyses for businesses. For agricultural projects, analysis must consider the whole farm scenario and availability of labor and other inputs. Partial budget analysis is considerably simplified and appropriate to most situations. Data can come from prior survey or monitoring data or research work. Often EAS can focus on closing the “yield gap” between demonstrated potential yields and farmer yields, though profitability is usually more important than yield. Management or marketing innovations may also show impacts in budget analyses, though marketing margin analyses may be more relevant. Many US state extension agencies have formats for farm budget or partial budget analyses. Some examples follow:</p> <p>Farm Budgets - From Farm Income Analysis to Agricultural Project Analysis. World Bank. <a href="http://documents.worldbank.org/curated/en/898231468340864373/pdf/OCP29000Farm0B0ral0Project0Analysis.pdf">http://documents.worldbank.org/curated/en/898231468340864373/pdf/OCP29000Farm0B0ral0Project0Analysis.pdf</a></p> <p>Rutgers Cooperative Extension. A Guide to Partial Budgeting. <a href="https://sustainable-farming.rutgers.edu/wp-content/uploads/2014/09/Partial-Budgeting-Manual.pdf">https://sustainable-farming.rutgers.edu/wp-content/uploads/2014/09/Partial-Budgeting-Manual.pdf</a></p> <p>Budgeting for Agricultural Decision Making. <a href="https://extension.psu.edu/budgeting-for-agricultural-decision-making">https://extension.psu.edu/budgeting-for-agricultural-decision-making</a></p> <p>Flanders, A. 2017. Whole Farm Analysis with Crop Enterprise Budgets. University of Arkansas, Northeast Research and Extension Center. <a href="http://www.arkansas-crops.com/wp-content/uploads/2017/08/WholeFarm_August2017.pdf">http://www.arkansas-crops.com/wp-content/uploads/2017/08/WholeFarm_August2017.pdf</a>.</p> <p>Classic farming systems analysis documents include:</p> <p>Farming Systems Analysis: An Introduction. <a href="http://edepot.wur.nl/297005">http://edepot.wur.nl/297005</a></p> <p>Farming Systems Research: Procedures for Technology Development. <a href="https://repository.cimmyt.org/xmlui/bitstream/handle/10883/2200/9479.pdf">https://repository.cimmyt.org/xmlui/bitstream/handle/10883/2200/9479.pdf</a></p>
EAS strategy and methodology design for direct service delivery	<p>GFRAS Good Practice Note 24: Extension Campaigns (<a href="https://www.g-fras.org/en/good-practice-notes/24-extension-campaigns.html">https://www.g-fras.org/en/good-practice-notes/24-extension-campaigns.html</a>)</p> <p>GFRAS Good Practice Note 0: Overview of Extension Philosophies and Methods (<a href="https://www.g-fras.org/en/good-practice-notes/0-overview-of-extension-philosophies-and-methods.html">https://www.g-fras.org/en/good-practice-notes/0-overview-of-extension-philosophies-and-methods.html</a>)</p>
Developing national EAS	<p>Example - Bangladesh National Agricultural Extension Policy (2012) (<a href="http://dae.portal.gov.bd/sites/default/files/files/dae.portal.gov.bd/page/dd7d2be1_aeef_">http://dae.portal.gov.bd/sites/default/files/files/dae.portal.gov.bd/page/dd7d2be1_aeef_</a></p>

strategies and policies	<p><a href="http://452f_9774_8c23462ab73a/National%20Agricultural%20Extension%20Policy_%28NAEP%29.pdf">452f_9774_8c23462ab73a/National%20Agricultural%20Extension%20Policy_%28NAEP%29.pdf</a>)</p> <p>Example - Agricultural Extension Policy in Cambodia (<a href="http://extwprlegs1.fao.org/docs/pdf/cam152453.pdf">http://extwprlegs1.fao.org/docs/pdf/cam152453.pdf</a>)</p>
Strengthening public EAS systems	<p>Rural Extension and Advisory Services: New Directions <a href="http://documents.worldbank.org/curated/en/871281468739519439/pdf/multi0page.pdf">http://documents.worldbank.org/curated/en/871281468739519439/pdf/multi0page.pdf</a>)</p>
Strengthening training systems for EAS systems staffing	<p>GFRAS New Extensionist Learning Kit (<a href="http://g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html">http://g-fras.org/en/knowledge/new-extensionist-learning-kit-nelk.html</a>)</p> <p>GFRAS Good Practice Note 28: Rural Advisory Services Curriculum Development (<a href="http://www.g-fras.org/en/good-practice-notes/28-ras-curriculum-development.html">http://www.g-fras.org/en/good-practice-notes/28-ras-curriculum-development.html</a>)</p>
Strengthening mass media for EAS systems	<p>Farm Radio International (<a href="https://farmradio.org/">https://farmradio.org/</a>)</p> <p>GFRAS Good Practice Note 18: Using Radio in Agricultural Extension (<a href="https://www.g-fras.org/en/good-practice-notes/using-radio-in-agricultural-extension.html">https://www.g-fras.org/en/good-practice-notes/using-radio-in-agricultural-extension.html</a>)</p>
Strengthening communications support for EAS systems	<p>ICT in Agriculture: Connecting Smallholders to Knowledge, Networks, and Institutions (<a href="http://hdl.handle.net/10986/27526">http://hdl.handle.net/10986/27526</a>)</p> <p>GFRAS Good Practice Note 11: Navigating ICTs for Extension and Advisory Services (<a href="https://www.g-fras.org/en/good-practice-notes/navigation-icts-for-ras.html">https://www.g-fras.org/en/good-practice-notes/navigation-icts-for-ras.html</a>)</p>
Strengthening research and technical support backstopping for EAS systems	<p>Agricultural Innovation Systems: An Investment Sourcebook: Module 4: Agricultural Research within an Agricultural Innovation System (<a href="http://hdl.handle.net/10986/2247">http://hdl.handle.net/10986/2247</a>)</p>
Strengthening producer organizations	<p>GFRAS Good Practice Note 12: The Role of Producer Organisations in Rural Advisory Services (<a href="http://www.g-fras.org/en/good-practice-notes/producer-organizations-roles-in-ras.html?showall=1&amp;start=0">http://www.g-fras.org/en/good-practice-notes/producer-organizations-roles-in-ras.html?showall=1&amp;start=0</a>)</p> <p>MEAS Farmer Organizations and Modernizing Extension and Advisory Services: A Framework and Reflection on Cases from Sub-Saharan Africa (<a href="https://meas.illinois.edu/wp-content/uploads/2015/04/Bingen-Simpson-2014-Farmer-Organizations-MEAS-Discussion-Paper.pdf">https://meas.illinois.edu/wp-content/uploads/2015/04/Bingen-Simpson-2014-Farmer-Organizations-MEAS-Discussion-Paper.pdf</a>)</p>
Strengthening private input suppliers	<p>Developing and Strengthening Private Sector Input Supply Systems (<a href="https://www.landolakes.org/getattachment/Resources/Publications/Input-Supply-Systems-Manual/Ag-Inputs-Manual.pdf">https://www.landolakes.org/getattachment/Resources/Publications/Input-Supply-Systems-Manual/Ag-Inputs-Manual.pdf</a>)</p>
Strengthening private agricultural product buyers	<p>Investing in Resilience: A Shared Value Approach to Agricultural Extension (<a href="https://thegiin.org/research/publication/investing-in-resilience-a-shared-value-approach-to-agricultural-extension">https://thegiin.org/research/publication/investing-in-resilience-a-shared-value-approach-to-agricultural-extension</a>)</p>
Establishing EAS certification systems	<p>Example - American Society of Agronomy Certified Crop Adviser program (<a href="https://www.certifiedcropadviser.org/become-certified">https://www.certifiedcropadviser.org/become-certified</a>)</p> <p>Agriculture Investment Sourcebook: Agricultural Investment Note: Improving Animal Health Services Through Public/Private Partnerships (<a href="http://documents.worldbank.org/curated/en/633761468328173582/pdf/343920PAPER0Ag101OFFICIAL0USE0ONLY1.pdf">http://documents.worldbank.org/curated/en/633761468328173582/pdf/343920PAPER0Ag101OFFICIAL0USE0ONLY1.pdf</a>)</p>

<p>Establishing EAS coordination platforms</p>	<p>GFRAS Good Practice Note 1: Innovation Platforms (<a href="https://www.g-fras.org/en/good-practice-notes/innovation-platforms.html?showall=&amp;start=1">https://www.g-fras.org/en/good-practice-notes/innovation-platforms.html?showall=&amp;start=1</a>)</p> <p>Going to SCALE – System-wide Collaborative Action for Livelihoods and the Environment  (<a href="https://assets.ctfassets.net/njd4h9rwix5l/1JeLDf3zl6YgmSSSikk0s/3ea89cb2dd68d06c7fe5168712d1d6c3/FHI360_Systemwide_Collaborative_Action_on_Livelihoods_Environment_Tool_2011.pdf">https://assets.ctfassets.net/njd4h9rwix5l/1JeLDf3zl6YgmSSSikk0s/3ea89cb2dd68d06c7fe5168712d1d6c3/FHI360_Systemwide_Collaborative_Action_on_Livelihoods_Environment_Tool_2011.pdf</a>)</p>
<p>Developing an EAS program learning agenda</p>	<p>Improving the Monitoring and Evaluation of Agricultural Extension Programs  (<a href="https://meas.illinois.edu/wp-content/uploads/2017/02/Suvedi-2016-Extension-Evaluation-MEAS-Discussion-Paper.pdf">https://meas.illinois.edu/wp-content/uploads/2017/02/Suvedi-2016-Extension-Evaluation-MEAS-Discussion-Paper.pdf</a>)</p> <p>Guide to Evaluating Rural Extension (<a href="http://www.g-fras.org/en/101-guide-to-extension-evaluation.html">http://www.g-fras.org/en/101-guide-to-extension-evaluation.html</a>)</p>

## Annex G: Decision Tree for Investments in Extension and Advisory Services



*Note: This stylized decision tree attempts to lay out issues and options for EAS interventions. However, country and agricultural sector situation differ greatly such that the decision tree cannot be applied mechanically in assessing and planning country EAS investment options.*