



STRENGTHENING PLURALISTIC AGRICULTURAL EXTENSION IN GHANA

A MEAS Rapid Scoping Mission
October 19 to November 7, 2012



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STRENGTHENING PLURALISTIC AGRICULTURAL EXTENSION IN GHANA

Report on the MEAS Rapid Scoping Mission
Field work conducted October 19 to November 7, 2012

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ACRONYMS

AEA	Agricultural Extension Agents
ADRA	Adventist Development and Relief Agency
ADVANCE	Agricultural Development and Value Chain Enhancement
AGRA	Alliance for a Green Revolution in Africa
AusAID	Australian Agency for International Development
CAADP	Comprehensive African Agriculture Development Plan
CIDA	Canadian International Development Agency
CRS	Catholic Relief Services
DAES	Directorate of Agricultural Extension Services
DAO	District Agricultural Officer
DDA	District Director of Agriculture
DFID	Department for International Development of the UK Government
EAS	Extension and Advisory Services
FAO	Food and Agriculture Organization
FBO	Farmer Based Organization
FtF	Feed the Future
GIZ	Deutsche Gesellschaft fuer Internationale Zusammenarbeit
GoG	Government of Ghana
ICT	Information and Communication Technology
IFDC	International Fertilizer Development Center
INGO	International Non-Governmental Organization
IRRI	International Rice Research Institute
IVR	Interactive Voice Response
JICA	Japan International Cooperation Agency
MEAS	Modernization of Extension and Advisory Services (a USAID LWA Project)
METASIP	Medium Term Agriculture Sector Investment Plan
MoFA	Ministry of Food and Agriculture
M&E	Monitoring and Evaluation
NGO	Non-Governmental Organization
RADU	Regional Agricultural Development Units
RELC	Research Extension Linkage Committee
SAFE	Sasakawa Africa Fund for Extension Education
SARI	Savannah Agricultural Research Institute
SMS	Short message/messaging service
USAID	United States Agency for International Development
WAAPP	West Africa Agricultural Productivity Program
WV	World Vision

EXECUTIVE SUMMARY AND RECOMMENDATIONS

INTRODUCTION

At the request of the USAID Ghana Mission, the MEAS project (Modernizing Extension and Advisory Services – a USAID funded project) conducted a rapid scoping mission to examine the pluralistic extension system in Ghana and to develop recommendations for strengthening extension and advisory services in the country. The fieldwork for the assessment work was carried out from October 19 to November 7, 2012 and included in-depth interviews with Ministry of Food and Agriculture (MoFA) staff at all levels, international and national non-governmental organization (NGO) directors and staff, lead farmers, university faculty, agricultural researchers and private sector representatives. To the extent possible, interviews were carried out on the “shop floors” of the different respondents, allowing the MEAS team to visit farms, area and district extension and project offices, universities and training centers, and research facilities. The mission aimed to understand the institutional landscape, identify the principal actors, and ascertain respective resource levels, targets, operational modalities, inter-organizational relationships, areas of conflict and gaps. Based upon the information collected and observations made, the team identified a number of key issues within the pluralistic extension system in Ghana that will need to be addressed in order to develop a more sustainable, farmer-led and market driven system of extension and advisory services.

Overall, our rapid scoping assessment found very positive aspects of extension in Ghana, as well as some significant weaknesses and deficiencies. Extension assets we identified included some examples of good extension practice in a number of public sector and NGO run extension programs that employ key approaches like market-oriented extension and use of innovative ICT approaches. Additionally, Ghana is home to some promising private sector input marketing and market access approaches, which have the virtue of being financially sustainable. However, we also identified gaps in the current extension programming approaches in Ghana. Perhaps most importantly, we found a need for coordination at the national level because of the sheer number of actors and organizations operating in the agricultural extension area. Also, we heard many reports of the need for improved performance from the public sector extension services. Furthermore, the mindset of much of the extension work we observed focuses on production increases, without sufficient concern for farm-level profitability, which is necessary to induce further agricultural innovations and thereby boost productivity. At the same time, the riskiness of many proposed agricultural innovations deserves additional analysis and attention. The team also found many examples of extension programs that were not market oriented. There is a need for extension program structures that are explicitly and consciously farmer-led. In this vein, we also found gaps in the ability of some current extension programming efforts to reach women farmers. We also identified gaps in the training and capacity of MoFA Agricultural Extension Agents (AEAs) and other extension field agents as for many staff no regular in-service training programs have been available for several decades. Training in the area of ICT use and applications, as well as in extension process skills is also indicated. Furthermore, we identified numerous reports and examples of farmers and farmer groups not receiving extension services, in some cases because of lack of funds for transport for AEAs, but also due to poor staff motivation. Lastly, addressing the role and position of extension in the increasingly decentralized governmental structure of Ghana was identified as a critical need in northern Ghana.

SUMMARY OF RECOMMENDATIONS FOR CONSIDERATION

Measurement and Evidence

Measurement is necessary to guide extension policy and program development and coordination. Yet this function of gathering and analyzing and disseminating widely the results of extension program measurement and evidence is lacking in Ghana. Measurement at the farm level should occur annually for a panel-type sample of northern Ghana farmers and their farms so that the needed focus on farm profitability and net family farm income can be tracked, as well as providing measurements on yields and farm investment behaviors as well as food security and poverty measures. Ideally, such data gathering would be independent of major agricultural projects and MoFA extension so that some measure of the breadth and depth, as well as targeting gaps, in extension programming efforts in northern Ghana could occur. Such information could be used for improving the reach of efforts over time. Additionally, measurement efforts should include improved monitoring and evaluation (M&E) frameworks for any ongoing and new agricultural development projects that involve extension in northern Ghana. A major weakness is the lack of a suitable comparison or control group and the inability to establish real program impact, particularly beyond the life of a project.

Action Research

Action research, meaning applied research involving farmer's organizations and others involved directly in extension, should be conducted to:

- determine best-fit approaches to market-oriented extension in Ghana;
- examine the impacts of nucleus farms (hub and spoke model) on small-holder farms in terms of technology adoption and net farm revenues;
- identify best-fit methods to improve market access for farmers groups; and,
- examine good practices and their impacts in the NRM area in northern Ghana.

The learning from such action research projects would inform the design and implementation of extension programs in Ghana.

Governmental Extension and Advisory Services

In the area of public sector extension and advisory services, an overall objective should be to improve system performance, especially through better AEA motivation and incentives, particularly in the context of governmental decentralization. Also, farmers groups and organizations should receive capacity-building training to advocate for their receipt of agricultural extension services. Third, local government (District Assembly) capacity to utilize extension to improve small-holder incomes and food security should be strengthened so that decentralization does not further damage the ability of small-holder farmers to receive extension services. Fourth, capacity building at the national level is necessary to improve coordination of extension activities and programs across a wide variety of extension providers. Fifth, support and improvement via strengthening should be provided to MoFA ICT-based extension efforts. Sixth, ensure that widely available training materials and supporting supplies exist for all the major crops in northern Ghana, particularly rice, maize, and soya. These materials should be available on the internet with encouragement for their wide use. Additionally, these materials can be made available on tablets for AEAs and other staff to use and deploy at the village level. Seventh, increase the media development capacity of the MoFA Extension Directorate through training, coaching and learning by doing. Eighth, develop a properly catalogued and shared (via the internet and via a

resource library) set of all extension training materials for Ghana. This will lower the costs of material development and will promote information sharing and extension programs.

Extension and Advisory Services Training Programs

We recommend that AEAs and other front-line extension workers be able to access in-service training programs through a variety of delivery platforms. Using the MoFA e-extension platform to deliver existing training materials such as the Five Skill Sets¹ and a to-be-developed training program on climate change adaptation should be pursued. Additionally, the ability of Ghanaian university and other extension training programs to offer the strongest possible degree and certificate training programs should be enhanced through faculty-strengthening and exchanges.

Enhanced Private Sector and Civil Society Involvement

In order to promote and strengthen private sector and civil society involvement in the pluralistic extension system we recommend the following actions:

- Establish a program to pilot and enable the ability of farmers' organizations to directly hire, finance, and utilize agricultural extension agents;
- Build upon existing and previously developed and implemented programs of community extension volunteers (lead farmers, etc.) via strengthening, training, and support so that farmers' groups and their extension needs are met;
- Develop and promote small-scale independent farm advisors who provide services to farmers on a fee-for-service basis;
- Implement an extension program targeted to mechanization service providers (tractors, combines, threshers, etc.) in northern Ghana to strengthen business skills and technical capacity, as well as their business lines and offerings.

Given what we have observed in our assessment, we hold the view that with sufficient effort and carefully targeted investments, the existing extension assets can be amplified and built upon, and the gaps in the extension system addressed, so that a better functioning and supportive agricultural extension system would be in place to promote improved farm profitability in northern Ghana and concomitant increases in agricultural productivity and reductions in rural poverty. Such a well-functioning pluralistic extension system could quickly become a model for all of West Africa.

¹ Available at www.meas-extension.org/meas-offers/training/five-skills.

STRENGTHENING THE PLURALISTIC AGRICULTURAL EXTENSION SYSTEM IN GHANA

“A major and as yet unresolved challenge is to develop cost-effective and demand-driven advisory services through effective partnerships among farmers, public agencies, and civil society.”

(World Bank, Awakening Africa’s Sleeping Giant, 2009, p. 18)

INTRODUCTION

How best to develop demand-driven agricultural extension services that display a cost-effective level of performance and an orientation to markets and serve the information, training, and market access needs of small-holder farmers in northern Ghana? This report aims to answer this question for Ghana with an emphasis on agriculture in the northern savannah zone, basically north of the 8 degrees above the equator line. To get to our answer to this question, we present our analysis of the current pluralistic extension system in Ghana and diagnose what we see to be the major issues affecting the performance of the system at the current time.

Ghana has achieved an enviable economic growth rate over the past two decades. Radelet (2010) reports that over the time period 1996-2008 Ghana’s average growth rate per capita was 2.6 percent, a rate above the global average of 1.9 percent. The result is, according to Radelet, that the “income of the average Ghanaian has increased by more than 40 percent” over the time period (p. 9). This growth puts Ghana in the position of being able to “become the first Sub-Saharan African country to achieve the first Millennium Development Goal (MDG1) of halving poverty and hunger ahead of the target year 2015” (p. 141, Breisinger, Diao, Thurlow, Benin, and Kolavalli). Agriculture remains an important sector in Ghana’s economy even though its share of overall GDP of more than 30 percent represents a decline over the past two decades. The fact that agriculture employs about 60 percent of the labor force emphasizes the importance of agriculture and agricultural productivity growth for employment and poverty reduction in Ghana (Breisinger, Diao, et al., p. 142.). While the agricultural sector in Ghana has grown at a rate of 5.5 percent from 2001-05, its growth has primarily occurred as a result of increases in land area cultivated and not in land productivity (Breisinger et al., p. 143). Yield growth represents perhaps the most important dimension of land productivity and in Ghana the rate of growth in land productivity over the period 1994 to 2006 was 0.91 percent (in Ghanaian cedis per hectare). As Breisinger et al. (p. 144) point out, significant opportunities for agricultural growth exist simply in increasing yields to levels that are achievable with existing improved practices combined with improved seeds and other inputs. Such growth could address market opportunities for import substitution or for regional or international export. Additionally, as Ghanaian incomes increase, demand for foods like poultry and high value vegetables and fruits tend to increase, generating further opportunities for markets. A key challenge for the pluralistic extension system in Ghana will be to facilitate these market opportunities in ways that small-holder farmers can benefit from and thereby realize higher incomes.

As the above quote from the World Bank’s Awakening Africa’s Sleeping Giant report asserts, improved agricultural extension services linking small-holder farmers to markets and responding to farmer input and voice constitute a critical part of the agricultural productivity equation. Other observers focusing on Ghana have also raised the importance of extension and advisory services in actually realizing the gains possible from new cropping technologies. For example, in an analysis of improved maize technology in Ghana, Winter-Nelson and Aggrey-Flynn (2008) report that additional research is needed to identify the

best means of promoting improved maize production technology among small-holder farmers. Breisinger et al. (p. 155) point out the importance of the quality of public spending in agriculture, including public extension investments, in determining the precise amounts of investment needed to achieve higher agricultural growth rates. All three of these observers make the connection between extension and the agricultural sector goals of reduced rural poverty and higher agricultural productivity. Investing carefully in extension in Ghana is all the more important once one considers that the level of adoption of agricultural technologies is low in the country, and the potential to improve productivity and farm net incomes is high if economic technological progress were facilitated.

The importance of higher quality and more accessible agricultural extension services in Ghana, particularly northern Ghana, has been highlighted by a number of observers and agricultural analysts. However, what is meant by the term “extension” can differ according to writers and analysts. Some people use the term extension to refer to a distributional system for new seeds and other improved inputs including chemicals and fertilizers and equipment, along with the training necessary to use these. Some people use the term extension to refer group formation at the village level and the training and capacity building in the group so that villagers might organize “block” farms or shared agricultural marketing activities. Others might use the term extension to refer to the production and distribution of farm radio shows or internet or cell-phone delivered information services.

An extension program might consist of all of these activities, but from our vantage point a well-functioning extension system usually has the following four key elements (see Swanson and Rajalahti, 2010). A well-functioning extension system will:

1. address both the major food grain crops of a country or region;
2. development of village-level farmer groups with increased capacity over time to serve market opportunities and to respond to market demands;
3. training in activities (particularly small ruminants and high value horticulture crops) that can help poor households achieve higher incomes; and
4. natural resource management training.

The work with farmer groups brings the ability to conduct farming as a business as well as financial and marketing skills for which many small-holders need continued training. As the groups become more established and develop their own capabilities, particularly to market together, the groups can be linked into broader farmer associations with an APEX organization as the head of a set of associations. An organizational structure such as this allows farmers the ability to realize marketing economies from larger contracts and pre-arranged marketing opportunities. Farmer organizations operating along these lines, assuming capable management, allow farmers to gain a higher percentage of the market price for their crops, particularly as they learn to respond to market demands on quality and delivery timeliness.

In the sections that follow, an overview description of each of the principal actor groups is provided, followed by a summary of findings and conclusions, and recommendations in ways that their collective efforts can be strengthened.

DESCRIPTION OF CURRENT EXTENSION SERVICE PROVIDERS, THEIR ORGANIZATION AND CAPACITY

Governmental Extension System

Ministry of Food and Agriculture Extension Services

The primary provider of extension services in Ghana is the Ministry of Food and Agriculture (MoFA). MoFA, while not the sole provider of extension services, has the largest number of extension staff and has a footprint around the country. In the current drive to decentralize government services the national government is shifting budgetary resources directly to District Offices. Going forward, it is anticipated that District Assemblies will have the day-to-day role of managing and hiring extension field officers. However, in District Offices we spoke with in the Northern Region, MoFA staff reported that while their salaries had been paid and were current, funds that were supposed to have been received at the District level to support transportation and programmatic costs had not been received.

The MoFA extension program is directed by the National Extension Directorate. At the national level the Ministry has decided to pursue an extension strategy that involves e-extension, in part to harness the potential economies of sharing information electronically, as well as to help bridge the staffing gap. At the present time MoFA has roughly 3,500 Agricultural Extension Agents (AEAs) and yet there are approximately 4 to 5 million small –holder farmers in the country. If all these staff persons are in the field, it implies a ratio of roughly 1 field agent to 1,300 farmers. However, many of them are in fact not in the field, which implies the ratio is closer to 1 to 2,000 or 1 to 3,000 farmers. Assuming a ratio of 1 to 2,000 farmers, and if the farmers are grouped in farmer groups of 30 farmers each, it would imply that each extension field agent is working with roughly 66 farmers groups. This is a high number, particularly when one considers that agricultural extension agents have other demands on their time beyond simply conducting extension programs. Thus, the MoFA senior staff in the area of extension makes the argument for the need for additional extension field staff. However, it should be noted that in some Districts at the operational level, because of other constraints such as very bad roads, lack of transport and operating funds, the ratio of extension staff to farmers that are actually reached by programs is too high. That is, because of a lack of funds to mobilize and provide transportation for AEAs, the number of farmers actually reached to AEAs is probably very, very low.

The organizational structure for extension programming for MoFA should not be thought of as a tightly defined and closely managed hierarchy. Instead, extension programming and extension activities at the local level receive attention from AEAs but the AEAs might assist with other activities as directed, too, and certainly the AEAs are assigned to support the projects that MoFA is implementing in their District. MoFA follows an approach to extension which they call the “unified extension” approach, meaning AEAs work as generalists and do not aim their extension programming in a single focus. There are roughly 200 District Agriculture Offices in Ghana. In each District Office, subject matter staff (at the District Agricultural Officer, DAO, level) assist with technical support on areas such as monitoring and evaluation, crops, extension, livestock, veterinary services, women in agricultural development, and engineering. The District Office is directed by the District Director of Agriculture (DDA). Districts also have a staff person tasked with collecting market information. Additionally, District Offices have some staff (driver, watchmen, secretary, and store keeper) to provide support functions. Along with extension activities, the District Offices serve as the MoFA’s “feet on the ground” and they assist with gathering data on agricultural conditions, weather conditions, block farming activities, and progress on major agricultural development projects. Additionally, they also collaborate with projects and organizations not being directly implemented by MoFA, such as activities with the Savannah Agricultural Research

Institute (SARI), World Vision (WV) and other NGOs, and groups like the Alliance for a Green Revolution in Africa (AGRA) and Purdue University (cowpea storage and post-harvest loss prevention).

We visited several district offices and surveyed their numbers of staff. As an example the Tolon/Kumbungu District near Tamale had a staff complement as follows: 1 DDA; 7 DAOs; 15 AEAs; 1 Market Enumerator; 2 Secretaries; 2 Watchman; 1 Driver; and, 1 Store Keeper. Furthermore, of the 15 AEAs in the District, 6 are women and it is likely this high a number because of the proximity to Tamale and the desirable location of that urban center. According to our interviewees, in more isolated and more rural districts it is less likely to find female agricultural field staff. In terms of age distribution of the 41 total District staff, 12 are 50 years and older and 24 are 40 years of age and older. While the age and gender distributions will vary district by district, it was commonly reported that many of the field staff had been in the service a long time, without substantial upgrading in skills and that in many districts there was a lack of female field agents, despite the fact that many farmers (likely a majority) are women and despite the fact that in some communities cultural norms make it uncomfortable or difficult for male AEAs to work directly with groups of women farmers.

In terms of educational levels of the AEAs in Tolon/Kumbungu District, some have BSc degrees in agriculture, some hold Certificates, and some hold Diplomas. All of the Zonal Supervisors hold BScs. For in-service training, the District does not have its own budget to fund travel or meals or accommodation for such trainings. Furthermore, there is no set in-service training program from the Regional Office that addresses needed updates and skills for AEAs and DAO staff in the District. However, on an ad-hoc basis AEAs and DAOs receive invitations to trainings provided by SARI, NGOs, and projects working in the area. These training workshops and seminars constitute the major opportunity to benefit from training yet many of the MoFA field staff are not ever reached by these offerings. Furthermore, the lack of coordinated training program demonstrates the extent to which the MoFA agricultural extension program is simply a function of its ongoing partnerships and the agricultural development projects currently being implemented in a given area. Outside of these two sources, resources for program development, extension program implementation, and training appear to be lacking at the District level.

The Regional Offices of MoFA (also known as RADUs, or Regional Agricultural Development Units) provide coordination and support to the District Offices on technical and programmatic issues. Additionally, the Regional Offices coordinate implementation of the agricultural development projects which MoFA is delivering (for example, projects funded by the African Development Bank or the World Bank). They have senior staff in the functional areas that support extension services in the District, namely crops, livestock, extension, engineering, women in agricultural development, monitoring and evaluation, and veterinary services.

RELCs

Research Extension Linkage Committees (RELCs) exist at the Regional level and meet quarterly to discuss the nature of agricultural issues and needed research and extension concerns voiced by farmers. While the RELCs exist and appear to be functioning in some capacity, it was clear from interviews with others outside of MoFA that many farmers have concerns and agricultural issues which cannot find voice or attention in the current structure of the links between extension and research. Additionally, some observers expressed the view that the RELCs were dominated by the research side and that field extension staff (i.e., AEAs) and farmer organizations may participate but they do not have the ability to influence the research agenda much.

Policy and Enabling Environment for Agricultural Extension in Ghana

For agricultural extension services to make an impact, the broader agricultural enabling environment needs to present farmers with incentives and a policy framework that will increase the chances that investments in agriculture, such as adoption of new seed technologies, will pay off for small-holder farmers.

Overall Agricultural Policy Approach

The Government of Ghana (GoG) has developed the Medium Term Agriculture Sector Investment Plan (METASIP²) to implement the Food and Agriculture Sector Development Policy (FASDEP II) over the medium term 2011-2015. It emphasizes:

- growth in small-holder farmer incomes,
- food security and emergency preparedness,
- greater commercialization and competitiveness along with increased integration of the Ghanaian agricultural sector in international markets,
- environmental sustainability of agricultural practices,
- the application of science and technology into agricultural development, and
- heightened institutional coordination.

Implementation of the current agricultural policy approach will certainly benefit small-holder farmers and strengthen the overall enabling environment for agriculture. This will serve to increase the impact of effective agricultural extension programs, as things such as farm to market roads are improved, and as greater connectedness to international markets allows new marketing channels to appear for farmers. However, some people we spoke with and interviewed expressed a concern about the quality of government efforts, particularly in large agricultural development projects. To the extent that project implementation is not of a sufficient quality, then project outputs such as rural roads improved, farmer organizations developed in a sustainable manner, new techniques and improved inputs disseminated and adopted, will not be of as high a level as possible and will be an opportunity lost for enhanced agricultural growth in Ghana.

Decentralization

The Government of Ghana (GoG) is in the middle of a drive to decentralize government services and channel funds directly through District Assemblies and link staff directly to Districts. The overall goal of this program is to create a greater level of accountability of government officers in line roles to the local people they serve. At the time of our mission to Ghana, these steps were in the middle of implementation, with some steps likely to take longer to be fully implemented. Within calendar year 2012 it was reported to us that the District Assemblies did not receive the promised funds for operations (fuel, transport, supplies, and other expenses). However, AEA' salaries and other local MoFA staff salaries were being paid directly by the national level of government.

² METASIP is the framework of interventions for the agriculture sector to play its role in the national economy in the context of the Ghana Shared Growth and Development Agenda (GSGDA) which is the national program of economic and social development policies coordinated by the National Development Planning Commission (NDPC). METASIP is also in fulfillment of Ghana's participation in agriculture related initiatives of the Economic Community of West African States (ECOWAS) and the Africa Union Commission (AUC) under the framework of the ECOWAS Agriculture Policy (ECOWAP) and the Comprehensive Africa Agriculture Development Programme (CAADP). See http://mofa.gov.gh/site/?page_id=2754.

Decentralization and its connection to agricultural extension has been a theme in developing country agriculture policy over the past twenty or thirty years (India, the Philippines, and Uganda are some examples). Mixed evidence exists concerning the outcomes of decentralization and its impact on the performance of public sector extension services. Much depends upon the specific implementation and the nature of bureaucratic politics at the national and local levels. In some cases, the Philippines for example, evidence exists that where local government leaders saw benefits in providing extension services to farmers and their organizations, these services were strengthened under the decentralization. Similarly, in Uganda evidence exists of some cases where extension services were strengthened under decentralization but other areas observed poorer outcomes from decentralization.

The current time period and the next several years promise to be a pivotal time for the organizational development of Ghanaian agricultural extension, given the current program of decentralized government services. Nearly all of the supporting extension services (programs such as Farm Radio, internet-delivered information and cell-phone delivered information and private sector delivered information) and allied providers (NGOs and INGOs) build in some way or rely in part upon government extension services. However, the nature of these public sector agricultural extension services in the future may either improve or worsen because of decentralization. Influencing and shaping this path of decentralization so the good outcomes for extension services are more likely should be a programmatic priority at this time. A program to influence and support the decentralization process in agricultural extension could build upon best fit approaches identified elsewhere in this report, as well as on an action oriented research and evidence framework that develops information and learning about what works in the new decentralized extension service and works to support “best fit” approaches in the Districts.

Projects

A main venue for agricultural extension delivery, whether by NGOs or MoFA or other actors, is through agricultural development projects. A primary limitation of the reliance on projects for the funding and delivery of agricultural extension services to farmers is that implementers and funders target projects into a geographically limited area. Furthermore, projects usually run for a limited time period, sometimes as short as two or three years. Thus, many farmers are not reached by the projects at a given time and many receive services for a limited time. Farmers and farmer organization representatives reported that extension services stop when the project funding ends. However, without projects, under the current financial structure of MoFA extension, no or very limited resources are available for payment of the costs of extension such as fuel, vehicles, supplies and demonstration plots, etc.

Another issue raised by the dominant project focus is that nearly all the extension activities delivered currently orient themselves around projects and the themes and goals of projects. Many of the projects have a very top-down design and delivery mechanism, even if they pay some lip service to issues of farmer-led and demand-driven and market-oriented extension. For example, many projects have designs driven by consultants from Europe or the United States or by policy edicts from development organization headquarters in Rome, Washington or other foreign capitals. This makes it difficult for farmers to exercise voice and control over the agenda of what extension services are delivered, unless these project designs explicitly build in farmer voice over what crops/livestock receive attention and what activities (marketing, post-harvest handling and processing, etc.) receive attention and what problems get analyzed and researched. Some projects just focus on one crop or several crops and this can have the unintended consequence of leaving some groups out of the program due to geography or reasons around the gender-patterns of agriculture.

The point is that in some cases, the design of the project is antithetical or counter the design of a sustainable extension service that helps build farmer group and farmer business organization capacity.

The MoFA AEs can readily serve as field staff for such projects, but the overall project efforts may not result in effective farmer organizations being strengthened or established. Instead, in interviews we heard that many farmer groups and farmer organizations have been developed by projects but that most of them in the north were dormant since they had not progressed to the stage of actually doing business together in a functional and sustainable manner (group marketing, group trainings, etc.).

Community Level Challenges – Infrastructure

At the community level, particularly in the more isolated sections of the rural north of Ghana, challenges arise for programs of agricultural extension. Perhaps most important among these is the poor road infrastructure in many areas. While improvements have been made and new rural feeder road investments are underway in northern Ghana, more remains to be done.

Poor infrastructure leads to several impacts on agricultural extension programs. First, bad roads make it difficult and more expensive for agricultural extension agents to travel to villages and work with local farmers. Poor roads increase time costs as well as vehicle running costs, and both of these dimensions become more important in an organizational environment (such as the MoFA offices we visited) with limited staff and severely limited funding for motor bike fuel, maintenance, and repairs.

Additionally, poor infrastructure and bad roads specifically, tend to lead to lower farm gate prices received by farmers since the farm gate prices need to reflect the higher transport costs necessary to get the farm produce to market or the processor. This lower overall price level tends to dampen the enthusiasm and ability of farmers to adopt new technologies and expand production, relative to the situation where better infrastructure serves the community.

Improvements in the infrastructure, especially all-weather rural roads and farm to market feeder roads will serve to improve the overall enabling environment for small-holder agriculture, and concomitantly for agricultural extension, in northern Ghana.

NGOs and Project Based Extension Efforts

Participants

A plethora of non-governmental organizations (NGO, national and international, INGO) operate in the crowded agriculture sphere in Ghana. Both national and international, of all stripes and sizes, these NGOs all engage in agriculture extension to some degree or another, although they may not be using the term extension as such. While the rapid scoping mission team had the opportunity to meet with quite a number of the key NGOs working in agricultural extension/development, there may be other organizations doing good work in agricultural extension that may have been unintentionally overlooked. A more comprehensive assessment that would include all organizations involved in the sector was beyond the scope of this team's mission. The experiences and insights of the following organizations informed this section: ACDI/VOCA, ACDEP, ADRA, CARE, CRS, IFDC, Engineers without Borders, Farm Radio International, TechnoServe, and World Vision.

Market-led approaches dominate the agricultural projects landscape. The majority of the organizations depend on donor funding for their projects and activities. As such, the focus of their efforts, while not exclusively, is primarily on the North (above the 8th parallel) since this is where the majority of donors are focused. While the main offices of NGOs tend to be in Accra, many have field offices in this region as well.

With the need to show results in typically short project timeframes, there is limited engagement amongst NGOs on coordinating their efforts at all levels. The Agriculture Sector Working Group (ASWG)

in Accra partially fulfills this role at the national level, but primarily serves as a means for donors and MoFA to ensure common understanding. Despite the competitive environment for funding, most organizations expressed an interest and willingness for better coordination, especially at the local level. Most indicated that MoFA would be well-placed to convene such a forum, though may not have the human resources or incentive to do so. With no mechanism in place for sharing best practices, learning about new initiatives, and accessing knowledge generated from past projects, there is considerable room for increased efficiency and effectiveness.

Organization

Despite the variety in projects and organizations, most employ variations of the same model and approach: a community-based volunteer who functions as the lead farmer/nucleus farmer/promoter that works with a group of farmers in his/her village to promote new practices supported by the project. These groups may be existing groups or new groups that are formed for the purpose of the project. This chosen individual usually benefits from extensive training from the project, which he/she is expected to pass on to farmers in his/her village. This individual may or may not get incentives (a bike, top up cards for cell phones, stipends) from the project. In addition, in some cases, community members may offer them something for their efforts (small payment, labor, gifts in kind). In other cases, the pride from having a recognized status in the community provides the incentive.

This lead farmer then serves as the go-to person for agricultural advice in the community and links community members (in the form of groups) with the MoFA AEAs. Many organizations have shown the effectiveness of using community groups as a platform for agricultural extension.

Despite the popularity of this model, there is very little if any evidence that such a structure would continue beyond the life of a project. It is possible that it is a sustainable model, if the community members value the service they are receiving and show their appreciation in ways that match the expectations of the lead farmer (i.e., small payment, recognition).

A variety of methods are being utilized for agricultural extension, with the most popular being: demonstration fields, Farm Days, trainings, videos shown in communities, various aspects of information and communication technology (ICT; radio, mobile phones, internet, etc.). As mentioned in the above section, without a practitioners' forum, lessons learned and materials developed under previous projects are under-utilized, often resulting in re-inventing the wheel.

Capacity: Most NGOs have field-based staff to support the implementation of projects, yet these staff may not have specialized agricultural knowledge. In addition, many NGOs recruit staff from MoFA for their projects. While this may help the effectiveness of that particular project, in the long-term, it results in brain drain of many capable staff from within the Ministry ranks.

Virtually all NGOs seek to engage the district-level MoFA agriculture extension agents in their projects. As one interviewee bluntly stated, "They [MoFA] don't have the funds and you [NGO] don't have the personnel." This can lead to an environment where various projects are competing for the attention of the very same over-stretched AEAs.

The issue of "projectization" was a theme throughout all the interviews and stakeholder meeting. With the time horizon of projects often too short to create and sustain real change, NGOs are under pressure to show results. In order to meet project goals and establish sustainability by working through local institutions, each project seeks to engage with MoFA via their AEAs. With an already over-burdened and under-resourced workforce, "top ups" provided by projects enable AEAs to reach farmers they may not otherwise serve. "Top ups" can take many forms, including stipends, funds for transport, transport to the field in project vehicles, and multiple trainings. Although almost universally mentioned as a real

problem, most NGOs provided some form of “top up” to the AEAs with whom they work. With already not enough extension agents, this approach further ties up the ones who are there and likely results in farmers who are not in project areas receiving even less attention than they would normally.

Private Sector Extension

For-profit companies’ involvement in agriculture in Ghana is rapidly growing and expanding (suppliers of inputs such as seeds, fertilizers, agro-chemicals, equipment; processing and marketing companies). This involvement is growing in terms of numbers of firms involved as well as their revenues derived from the sector and expanding in the depth and breadth of involvement in agriculture. Part of this expansion is the provision of information and advisory services in the agriculture sector.

Embedded Services/Nucleus Farmers

An approach that is becoming more common in the private sector is the embedded services model. In this approach, companies (primarily input supply companies and dealers) provide information and advice of the product as an unidentified component of the sales price. This information and advice has a wide range and multiple delivery methods. It may be as simple as providing basic advice on use and application at the point of sale. In some circumstances it may entail one or more visits by technical specialists to the production site. This is more likely when there are multiple sales in an area, particularly if the sales process includes a farmer group. An alternative/accentuation of the farm visit is through on-farm demonstration plots. In this way farmers can see results first hand and get more direct interaction with sales/technical representatives who are likely to visit the sites often.

The USAID-funded Advance project is supporting this approach in their promotion of input supplies and improved seeds. Input supply companies are establishing demonstrations, usually on the farms of the project’s nucleus farmers. This allows their contract farmers to observe and contemplate the use of products that will increase production and income. Doing this as part of the satellite farmer scheme also limits the cash outlay of the potentially cash strapped satellite farmer by providing for crop in-kind payback through the nucleus farmer.

Direct Private Provisions

A more direct approach for provision of advisory services is private processors/marketers provided information and advisory services. In this approach the company generally wants to ensure a specific amount of production and often with a specific market quality requirement. Therefore it is in the company’s self- interest to provide advisory services. There is usually no direct charge for this service but there may be an “in-kind” payment through part of the crop produced or the cost of the system is factored in as part of the determination of profit margin.

Olam International employs such a service in its cotton enterprise. The company sends representatives into villages and arranges a large meeting where they explain who they are and what they plan to do. If there is sufficient interest they work with the village to form farmer groups to ease the burden of working with hundreds of individual farmers. Once they have farmers identified, they map out the farms for each farmer group. At the beginning of each season a contract price is determined and the company provides mechanical support/mechanization services (provided by hired individuals from the local area) and input support for the cropping season. All of these inputs and services have a cost assigned them by farmer group and the cost is ultimately subtracted from the ultimate production income earned by the group. They are presently working in 175 villages producing on 10,000 hectares of land (1 hectare per farmer on average).

For the provision of advisory services, the company has hired 100 extension agents (and other technical specialists) to conduct training on good agricultural practices on 100 demonstration plots. About 20 percent of the extension agents are former employees of the former state conglomerate that was responsible for cotton production. The rest of the agents are recent graduates from local agricultural colleges with either certificates or diploma level degrees. The twenty experienced agents act as supervisors to the 80 new agents (4 to 1 ratio). The 80 receive what is essentially on the job training from the experienced agents so there is no formal additional training process utilized by the company for the young agents. In general the company is satisfied with the level of technical training. Their young employees generally understand the terms and concepts of agricultural production, which eases the on the job training they receive from the older agents in the field.

Results of the venture to date have been favorable. In the first year they started at 6,000 ha with 600kg/ha yield, 2nd year 10,000 ha with 750kg/ha yield, and last year 14,000 ha with 900 kg/ha yield. So there has been a 50% increase in productivity over the three years that Olam International has been operating in this region. This has generally translated to a greater than 50% increase in income to participating farmer families, due to an increase in world cotton prices from \$110 to \$160 from year 2 to 3.

Of particular interest is that the company plans to expand into maize and soya to integrate with the cotton area. But unlike cotton, where they are the only available buyer, farmers have multiple outlets for selling maize and soya. In a multiple buyer system there is the risk of contracts being broken when a buyer offering a better price comes into play. If the company does not take delivery of the commodity from participating farmers the in-kind pay back system for inputs (including extension services) falls apart at the expense of the company.

Olam is attempting to decrease the risk of this by selecting only their top 20 to 30 percent of cotton producers who they most trust to integrate maize and soya and adhere to the contract. If these producers do not deliver to Olam they risk losing their cotton contracts too. Through this method they hope to be able to influence producers to honor contracts. Maize and soya trials have just started but they hope to be producing on 15,000 hectares in 3 years and on 60,000 hectares in 5 years.

Farmer Organization Provision

Another method of direct supply of advisory services is through direct provision by producer cooperatives/associations. Through these types of organizations advisory services are paid for by the cooperative/association as part of the cost of doing business. Payment can be made by farmer cash contributions as part of the cost of being a member of the cooperative/association or if the cooperative/association handles the marketing of the commodity, the cost of the provision of advisory services is part of the cost of the cooperative/association doing business.

One such example is Kuapa Kokoo, which is a cocoa production union. The union is made up of 65,000 members and has its own marketing/trading business unit that was formed in 1980. Kuapa Kokoo is Fair Trade certified. They operate in 57 districts of the 5 southern most regions of Ghana and produce 42,000 tons of cocoa. The union itself conducts some technical and social research and also undertakes capacity building and infrastructure development.

In terms of provision of advisory services, the union has 32 extension staff in the districts who are employees of the union. There is one supervisor for every 8 extensions staff. The extension advisors and supervisors are responsible for transmission of technical production information as well as fair trade requirements and certification. While now at approximately 1 extension staff for 2 every districts, their goal is to get the ratio to 1 to 1. Ninety percent of their extension staff have certificates or diplomas.

The agents are mostly fresh agriculture schools graduates. Kuapo Kooko provides them with additional training on technical aspects of cocoa production as well as how to communicate with farmers and how to build relationships. The agents work through local community “groups” of union members, which have already been formed. The program cooperates with MoFA on farmer field schools on cocoa and they generally do training twice a year.

For Free Trade certification purposes, agents hand pick 2 or 3 community members to do checks on local community growers for adherence to Fair Trade regulations. The agent then comes back and randomly spot checks a sample from the community to make sure data is accurate

Other Extension Providers and Training Institutions

Agricultural extension departments and programs at universities contribute to the strengthening of extension through the delivery of pre-service training and degree attainment opportunities for in-service extension officers. Ensuring that such programs contain up-to-date curriculum and faculty who have access to the international trends and scholarship in extension is a necessary component of this pillar of a well-functioning agricultural innovation system. To examine the state of university training in extension in Ghana, the study team met with faculty and instructors from the Department of Extension, Rural Development and Gender at the University of Development Studies (UDS at Nyankpala) and the Department of Extension at the University of Cape Coast.

At UDS faculty reported their program emphasizes participatory approaches in agricultural extension. Furthermore, the students spend one trimester a year in their first three years of study in community-based practicals. Usually the practicals involve affiliations with community-based organizations and NGOs in the field. These attachments provide the students with a good appreciation for the challenges faced by farmers in northern Ghana and in the realities of extension field work. At the present time, with MoFA hiring on a very limited basis, the graduates from UDS in agricultural extension take positions in a wide range of organizations and sectors. For example, graduates become teachers, work in banks, go to private business, work in NGOs, and take positions in MoFA. The extension training program at UDS could be strengthened with better access to the global academic community in extension via better internet and through small grants for travel to international conferences sponsored by GFRAS, MEAS, and AFAAS and other organizations. A strengthening plan based upon a detailed curriculum review and study of training and upgrading skills needed for the current 25 faculty in the Department would also improve this extension asset in northern Ghana.

At University of Cape Coast the extension program in Department of Agricultural Economics and Extension has been the focal point of a unique strengthening effort with the Sasakawa Africa Fund for Extension Education, SAFE. In addition to providing further training opportunities for the faculty and staff of the Department, SAFE has sponsored candidates to the Department from other African countries. Another critical contribution of the UCC extension training program is the training of mid-career officials from MoFA. Roughly 25 to 30 students per year join a class and MoFA controls admission for the mid-career training opportunities. A difficulty has been the identification and recruitment of women into the program. Presently the Department does not have any women faculty. However, several women are abroad presently and receiving PhD-level training and hopefully they will return and contribute to the Department. The UCC extension program is currently undertaking a curriculum revision and the new curriculum will take an integrated view of agriculture from farm to market and across types of farms and crops and activities. Additionally it will incorporate value chain concepts into the pedagogy. Furthermore, teaching will emphasize global markets and international dimensions of agriculture as well as teaching about innovation platforms. At UCC there remains a need for further

linkage of extension faculty to other scholars in Ghana in the extension area, as well as with international extension conferences and scholarly communications.

FUNDING OF EXTENSION

In Ghana, funding for extension comes from multiple sources. First, some GoG resources go into covering a portion of the budget of MoFA and the field staff, however, it is unclear due to the role of projects exactly what percentage of the overall extension activities of MoFA are paid by domestic revenues. In the extension area, the GoG through MoFA partners with a number of donors who support and engage with MoFA extension. At the present time these partners include CIDA, AusAID, the World Bank, FAO, and GIZ among others. It is clear that these projects form a core source of MoFA funding for extension activities. Furthermore, it is clear that this patchwork quilt of project-based funding has downside of making all extension activities inherently time-bound to the project cycle as opposed to the needs of farmer groups and farmer-based organizations. Furthermore, the predominance of this type of funding has the effect of shaping the extension teaching agenda into themes of projects and not necessarily themes identified by farmers, thus this sort of funding mechanism can, if great care is not taken in project design and implementation, work against extension principles of farmer-led extension in terms of topic of focus and identification of research and extension needs. If projects adhere to bottom-up planning principles there is still a possibility that the time frames of projects do not match up with the extension needs in a given community or that extension needs identified by the community (such as cassava or natural resource management and land access for vulnerable farmers and youths) do not make it on the agenda of a given agricultural development project. Overall, MoFA staff reported funding shortages as demonstrated by their inability to hire needed staff, and by the shortages of funds for operating expenses to fund transportation and program development and delivery costs.

Another stream of funding of extension services in Ghana is of donor-funded projects which NGOs and other agencies implement. These projects form a large percentage of the projects in Ghana. Some of these projects collaborate closely with MoFA in their implementation despite the fact the NGO serves as the management unit for funds, and others distance themselves from the MoFA AEAs in their implementation. The challenge posed by these efforts is more at the policy-level where very little accountability and information sharing occurs across the projects. Some projects have different approaches on things such as the pricing of inputs and other agricultural equipment and credit. These variations make coordination and communication challenging.

A last stream of funding is private sector funding either generated through marketing margins of companies such as Olam or with nucleus farmers or through input dealers, or through farmer direct payment either individually or through farmer business organizations. These types of funding sources have the benefits of the potential for a long-lived presence if the underlying business model is sustainable and profitable. A downside that has been noted for these types of funding is that the types of extension activities that will be provided through these private sector channels usually will not address more public good dimensions of extension such as natural resource management, farmer group and farmer business organization management and capacity, and other public good dimensions.

To sum up, several types of funding for extension services exist in Ghana at the present time. The most significant in terms of size is the project-based funding, either channeled through MoFA or through NGOs and other agencies. Opportunity exists to increase the flow of funding in the private sector channel by increasing capacity of marketing channel-based extension providers as well as the ability of farmers and farmer organizations to directly hire and contract for extension.

CROSS-CUTTING THEMES

Gender

The assessment found widespread acknowledgement that addressing gender issues around agricultural extension are critical. However, in almost all interviews and discussions, “gender” and “women” were used interchangeably. While in the Ghanaian context the understanding may be blurry, USAID’s distinction is clear: *Sex is the classification of people as male or female. At birth, infants are assigned a sex based on a combination of bodily characteristics including: chromosomes, hormones, internal reproductive organs and genitalia. Gender is the socially defined set of roles, rights, responsibilities, entitlements, and obligations of females and males in societies.*³

In regards to agriculture extension, consensus emerged that it is a supply side problem: there are not enough women in the agriculture sector at all levels (e.g., universities, extension agents). Yet, the shortage of women engaged in agriculture is not a new issue, but rather a persistent one that has not been adequately addressed. Cultural biases about what women can/should/want to do undoubtedly perpetuate the problem. Assumptions—held by both men and women-- that “women are not interested in science” or only want to live in cities persist. While these assumptions may hold in many cases, they are not universal or unique to women. For example, preference for city living is actually common for both male and female extension agents, in part due to better access to schools and health care and the prestige factor. More needs to be done to understand the true barriers and design strategies to remove or minimize those barriers.

Promising efforts are underway to better understand and address the shortage of female extension agents. For example, many NGOs use female community-based volunteers as extension agents/lead farmers who are better able to address the needs of women farmers. MoFA is also replicating this model in some districts. USAID’s continued support to WIAD will contribute to the assuring it is a priority. The forthcoming MEAS Ghana case study *Exploring the Women Extension Volunteer (WEV) Programme as a Tool for Increasing Extension Provision to Rural Female Farmers* will provide further insights and recommendations. If truly moving to farmer-led advisory services, at a minimum, more female extension agents need to be brought on board and retained.

USAID Ghana committed to support gender equitable agricultural growth and nutrition programming by using the following principles to guide its investments: 1. **Overcome** gender-based constraints to agricultural productivity; 2. **Address** the distinctive needs of women; 3. **Improve** resiliency of vulnerable rural populations; 4. **Design** equitable access to the rewards from agricultural enterprises; 5. **Engage** men and women in improving nutrition of all household members; 6. **Foster** equitable participation in decision-making processes at all levels; 7. **Promote** the use of gender analysis by policymakers and analysts as a tool for improving the enabling environment; 8. **Improve** knowledge of the performance of USG investments in supporting women and reducing gender inequalities in agricultural and nutrition programming; 9. **Strengthen** capacity and confidence of USAID personnel to lead gender-equitable agriculture and nutrition programs.⁴ Until all stakeholders genuinely share this commitment, the gender issues will likely see limited improvement, despite donor interests and intentions.

³ March 2012. USAID Policy on Gender Equality and Female Empowerment, p. 3

⁴ USAID Ghana Feed the Future FY2011-2015 Multi-Year Strategy

Utilization of Information and Communication Technology

Ghana is one of the leading countries in Sub-Saharan Africa with regards to telecommunications infrastructure and access. Ghana's mobile network covers approximately 85% of the country, and more than 65% of rural residents have access to mobile phones. There are approximately 225 radio stations in Ghana which allows for more than 80% of the population to have access to radio. Ghana was one of the first African countries to liberalize its telecommunication sector in 1994, embracing the potential of ICT to contribute to innovation and generate economic growth. The telecommunications sector has benefitted from massive infrastructure investments from private companies and the government of Ghana has invested heavily in training for the ICT sector⁵.

The extensive development of Ghana's ICT infrastructure has facilitated the application of various ICT platforms in the delivery of extension and advisory services. Several different actors in the extension space, including MoFA, NGOs and the donor community, have launched initiatives utilizing a wide variety of ICT tools for agricultural extension in recent years. Ghana has become something of an incubator in Sub-Saharan Africa for incorporating ICT into extension/ agricultural development. The overall goal has been to be able reach more farmers in remote areas with timely and actionable information. Many of these farmers were not able to receive consistent contact from government or NGO extension providers because of their remote locations. ICT has allowed for extension and advisory services to access more farmers than was possible before.

The Directorate of Agricultural Extension Services (DAES) is making a significant investment towards the use of mobile technology in their extension and advisory services provision. This new approach places the use of ICT at the center of their service delivery framework. With the financial assistance of the World Bank's West Africa Agricultural Productivity Program (WAAPP), Ghana is in the process of piloting the 'e-Extension' platform⁶ for their AEA. They are now in the process of piloting the e-extension platform in 50 districts across the country. These districts will also serve as labs or hubs for the e-extension platform as it is rolled out across the country.

The new e-extension platform is a phone based application, and the plan is for each AEA to be provided with a smartphone. Each unit is loaded with an application that allows the AEA's to remotely access information while in the field with farmers. The platform integrates information from MoFA, WAAPP and Ghana's agricultural research institutes. District Officers will have a desktop version of the software, which will allow them to provide effective management oversight of the AEAs. The underlying software was developed by Prep Eez Limited, an Accra software development firm. The World Bank had supported travel by MoFA officials to Uganda to study the Grameen Knowledge Worker model. After initially agreeing to adapt the Grameen model, MoFA eventually decided to develop its own software. Private software developers were invited to submit proposals and Prep Eez was selected by a review panel consisting of MoFA and World Bank Officials. Prep Eez is providing the training and technical support for the platform.

USAID's own Agricultural Development and Value Chain Enhancement (ADVANCE) Program has a significant ICT component. The lead agency for the ADVANCE Program, ACDI/VOCA, states that they have found radio to be the most effective method of transmitting information to small farmers. They have formed listening groups to discuss the content of the respective broadcasts. The radio is used to deliver market information, make meeting announcements, and pass on cropping information.

⁵ Bell, M., Bohn, A. (2013 – publication pending)

⁶ <http://e-extensionMoFA.com/web/MoFA>

ADVANCE also utilizes Esoko's short message/messaging service (SMS) based mobile platform, which provides nuclear farmers with up to date weather and price data.

There are approximately twenty seven other projects currently being implemented in Ghana⁷ that include the use of ICT to provide information to farmers. These projects utilize a wide variety of applications and are targeted at farmers at various levels of sophistication and have a wide array of business models. A sample of the more promising initiatives includes:

- **Africa Cashew Initiative**, serving approximately 400 farmers in the Brong-Ahafo Region, which provides pricing, weighing and other advisory services via SMS.
- **Cocoalink** is an outreach program created by the Hershey Corporation in collaboration with the World Cocoa Foundation and the Ghana Cocoa Board. It currently serves 25,000 cocoa farms with an aim to expand to 100,000 by 2014. The Cocoalink program combines voice and text messaging which provides farmers training on technology usage, agronomy and social issues, such as child labor. The platform is a two way vehicle which provides farmers the opportunity to send inquiries to experts via SMS.
- **Farm Radio International** is executing the Ghana portion of a multi country African Farm Radio Research Initiative (AFFRI) project in Ghana. They worked with five radio stations in each country, training station personnel on how to create engaging and entertaining programming which would be responsive to farmer's needs. The programs are based on farmer interest and listening habits, The AFFRI project is funded by the Bill and Melinda Gates Foundation.
- **Esoko** is a mobile applications platform development company that currently focuses on the provision of market and weather information by SMS. Currently, their main application is more suitable to sophisticated farmers who have a high degree of literacy and numeracy skills, such as the lead farmers in USAID's ADVANCE Project. Their platform could be used more extensively and intensively to provide a broader range of information to farmers. They had previously utilized this program in the Techima region under a GIZ funded project. Their own internal survey suggests that up to 50% of those farmers would be willing to pay for the service. They are currently piloting a product which would expand their offering to include production information backstopped by a multi-lingual call center for trouble shooting.
- **Nutrient Manager for Rice**, is a decision making tool utilizing web-based and mobile applications to provide rice farmers with specific information about growing rice. The program is being set up by the International Rice Research Institute (IRRI) and is expected to be released in Ghana sometime this year.
- **Prep Eez**, which is developing the e-extension platform for MoFA, has also developed a mobile application called Farm Direct. Farm Direct is an interactive voice response (IVR) mobile service allowing farmers to call in and receive pre-recorded production and market information. It will initially be launched over the MTN network and talks are underway to implement the service through another mobile provider.

Overall, the landscape for the use of ICT in extension in Ghana presents a number of opportunities. Many of these recent initiatives have been implemented only in the last two to three years, and have yet to prove their long term viability and effectiveness; however the opportunity for experimentation of a variety of approaches provides a good basis for what to scale up and how.

⁷ Bell, M., Bohn, A., (2013, publication pending)

Going forward, here are some thoughts about ICT in extension in Ghana:

- There are concerns that that DAES might not have the capacity to effectively manage the requirements of the e-extension platform. One of the main features of modern ICT has been decentralization and interactivity. The DAES seems to be geared more towards centralization and control. A more open approach to ICT development can contribute to continuous improvements and ensure that the systems will be flexible enough for the inevitable changes that are also characteristic of modern ICT development.
- Most applications are from donor or NGO funded approaches and are all fairly recent. What approach will be most sustainable is still an open question at this point, and there is need for additional experimentation in various models which include fee based services or ones that can facilitate the be underwritten by advertising from input suppliers. Input suppliers and implement dealers are conspicuously absent from the use of ICT in extension and there could be an opportunity for them to assist in developing sustainable business models.
- Even though mobile phone applications can be cheapest and quickest means of reaching farmers, they are limited by the ability of farmers to read and effectively understand the information. This is a particularly acute problem in the Northern parts of the country. This means that projects utilizing radio and video need to be supported as they are able to overcome this limitation. MEAS experience in other countries has emphasized the need for linkages between ICT extension efforts and other aspects of extension service provision, for example, face-to-face services and links to farmer groups and farmer business organizations. Also, ICT extension efforts can target extension intermediaries such as community “knowledge workers” and extension volunteers or extension agents (AEAs) and NGO field staff.
- Very few of the existing initiatives are aimed at assisting farmers to communicate with each other. ICT projects could operate in efforts aimed at capacity building of farmers and farmer group formation and strengthening. Also market information could be expanded beyond prices, to include information about how farmers could work together in purchasing inputs and other services and jointly marketing their products.

Demand-driven Services

To what extent is farmer demand driving the design and delivery of agricultural extension services in Ghana? While we observed some examples of farmer input and farmer ability to shape extension services, in general what we did not observe strong responsive to farmer demands in both public sector and in NGO extension services.

An example of extension programs that strongly responds to farmer demand are the community based extension volunteer or extension worker programs of the NGOs CRS and CARE. Both of these programs display elements of strong farmer voice into the topics of extension work and the support of the extension volunteer.

While farmer input is solicited into many of the donor-funded efforts that provide extension services via NGO staff and AEAs from MoFA, the ability of farmers to affect the crop of emphasis or other dimensions of the extension program is limited.

To help extension services become more demand-driven, some experimentation with alternate forms including vouchers and performance-contracting and farmer representation on District-level advisory councils for extension is indicated. The changes underway in Ghana presently, including the drive for decentralization, offers room for some of this to be tested in a pilot manner.

Market Orientation

Our assessment found some evidence of extension field agents (i.e., AEAs) and other extension actors discussing their work and programs in terms that demonstrated a market orientation to the extension programming. We also observed and heard about specific actions by extension providers which demonstrated a distinct market orientation. For example, in Kolon/Tumbungu the District Agricultural Director, Ms. Hawa Musah, reported about how their extension office was actively linking a major rice company from the Kumasi area to an APEX organization of rice farmers in her area for the purpose of large scale marketing and access to finance for the farmers. Many other examples in the field were observed of these types of linking and brokering activities being conducted by AEAs and other MoFA staff as well as by NGO field staff and private sector company staff. This is a heartening trend and represents an asset for agricultural extension programming in Ghana that can be built upon and amplified through peer training and support.

While examples of market-oriented extension approaches exist, we also saw ample evidence of extension approaches which ignore the market dimension and market realities of small-scale farmers in northern Ghana. Many people defined extension simply as the task of getting “new seeds” and “improved varieties” or fertilizer in the hands of farmers, ignoring the risk farmers face, particularly if trusted and proven market channels are not available for their (hopefully increased) production. Such a reductionist working definition of extension does not augur well for the implementation of market oriented extension. For the agencies and staff which focus their extension work on dissemination of improved varieties and training on input use, the danger exists that farmer groups and organizations will not develop capacity overtime to respond to market opportunities in a proactive manner and as such will miss substantial value added opportunities on the marketing side that can come about through bulk supply contracts, grading and quality improvements, and long-term marketing relationships that reduce farmer-side risk. We recommend that an action research project on best-fit approaches to market-oriented extension in Ghana be conducted and that from the research a training program for extensionists is implemented.

Human Resources, Infrastructure, Operating Support

Looking at extension in Ghana through a human resources lens raises a number of different issues. A starting point is the simple issue of coverage and the ratio of extension agents to farmers. The team heard a number of different ratios from the people we interviewed and the range of extension agents to farmers went from 1:1500 to 1:4000. If one bases the calculation on the number of MoFA extension employees (about 3500) and an estimate of 4 or 5 million farmers in Ghana, then one gets a ratio of 1:1,142 to 1:1,428, or closer to 1:1500 ratio. However, many of the MoFA staff involved in extension assignments but also other duties so the full-time equivalent of extension staff in MoFA may be lower than 3500. Furthermore, the number of farmers in Ghana is not precisely known and it could be different from the estimates used here.

A second issue concerns the age structure of the MoFA staff. Numerous interviewees reported that the extension field staff include a significant cohort of older agents who are 50 years old or older. Some of these agents have a wealth of agricultural experience and knowledge. Others have not been able to advance in their careers and were categorized as not very dynamic and active. A common trait for most of the older cohort is limited ITC ability with computers, video, electronic equipment, though cell phones are a good platform for these workers. Another dimension of these older workers is that they have not received a steady exposure to strengthening in extension technical and process skills. They

would benefit from an in-service training program that addressed these limitations, though some of these workers may retire within a relatively short amount of time.

A younger group of MoFA field extension staff exists and these too would benefit from a dedicated in-service training program that addressed process skills as well as technical skills and topics. Training on internet, computer skills, and ICT skills in extension would also benefit these workers. Past experience has shown that a significant number of these workers will move into the NGO world or private sector agriculture over time, so this cohort of workers is a strategic pool of staff to invest in for both the shorter term as well as the longer term human capacity in Ghana's pluralistic extension system. This younger group should also receive priority for longer term investments in human capacity, such as the degree program at University of Cape Coast in Agricultural Extension.

Another significant cohort of extension workers is the volunteers mobilized by various NGO projects and donor-funded initiatives over the years. While less is known about these extension workers in terms of their level of activity past a given project, they might also represent a group which would benefit from strengthening, particularly if they are currently active in serving a farmer's group, no matter whether they are unpaid, paid in-kind or paid a modest payment. Innovative low-cost means of reaching these workers would need to be developed in a manner that takes into account their literacy and formal education backgrounds.

Other private sector workers, such as agents for agricultural marketing companies and input supply dealers, tend to be better educated and have education levels closer to that of the AEAs. These workers would also benefit from training resources tailored to their crops and activities of main focus. These training materials might be developed in partnership with an agro-input dealers association or other groups.

Climate Change and Adaptation

Climate scientists and agriculturalists working on climate change have generated some future climate scenarios that indicate changes in rainfall patterns and average daily temperature may lead to future yield losses compared to the present or recent climate, assuming no changes in technology. Nutsukpo, Jalloh, Zougmore et al. (2012) describe results from global climate models (GCMs) and their projections of the impact of climate change on agriculture in Ghana. They report the GCMs as indicating diverse projections of climate change impact on agriculture. While two models they review indicate small changes in average annual precipitation in Ghana in 2050, two other models (namely, the CSIRO model and the MIROC model) indicate significant changes for agriculture (p. 1, Nutsukpo et al., 2012). By 2050, the CSIRO model projects rainfall decreases annually of 50 mm or more in southeastern Ghana, 50-100 mm in the Northern Savanna, and 100-200 mm in the middle section of the country. Likewise, the MIROC model projects decreased annual rainfall in the north, but a decrease in the south.

In terms of average daily temperatures all the GCMs reviewed by Nutsukpo et al. (2012) show increases by 2050 on the order of 1 degree Celsius to 2.5 degrees Celsius depending on the model. The different GCMs vary in the geographic distribution of the changes in the average daily temperatures projected. Together with the rainfall projections Nutsukpo et al. (2012) present projections for yields with climate change in 2050 compared to yields under the 2000 climate. In general, for rainfed maize, rainfed rice, and rainfed groundnuts, they project a decline in yields of ranging from 5 percent to 25 percent, assuming no technological advancements. Hence, increasing agricultural productivity in Ghana over the next four decades requires a functioning and highly engaged agricultural innovation system with strong linkages between farmers, extension programs and institutions, and research programs and institutions.

While few of the agricultural leaders and extension staff from NGOs, the public sector, or the private sector mentioned the role of climate change and the possible role of extension in mitigating the impacts of climate change in Ghana, others have noted the link. For example, De Pinto et al. (2012) state:

“Existing institutions, such as community organizations, NGOs, and extension services, play a fundamental role in the farmers’ uptake of climate change adaptation and mitigation practices. Investing in their capacity to tackle these new challenges and engage with small-holder farmers would be a first step towards tackling the challenges of climate change in Ghana.” (p. 5)

Others have identified specific research and extension topics related to climate change in Ghana. In the case of cassava, yams, and cocoyams, Sagoe (2006) notes the need for improved technologies extended to small-scale farmers for irrigation. Akon-Yamga et al. (2011) researched the state of farmers experience and knowledge concerning rainfall variations and their responses in The Gambia and Ghana. They conclude that a pressing need is for extension agents to be trained on available climate adaptation technologies and innovations for dissemination to farmers.

Based upon our field meetings and interviews, it is clear that climate change is not very high on the list of priorities of extension players (MoFA, NGOs, private sector) in Ghana at the current time. It will be necessary to develop and catalogue suitable climate change adaption innovations and technologies as well as organizational and institutional innovations, so that extension efforts can be supported. Further, participatory rural appraisal of methods employed by small-scale farmers in northern Ghana to adapt to rainfall variations and stress from dry periods could be employed to document “bottom-up” best practices for these agro-ecological zones. Additionally, further emphasis should be placed upon natural resource management topics and extension capacity in this area. MEAS has an ongoing theme regarding extension for climate change adaption and management and Ghana would be an appropriate country to develop training materials and supportive training.

RECOMMENDATIONS

In northern Ghana we observed some promising and useful extension practices and these represent “assets” for the extension effort and can be built upon. Examples of such good practices include public and private partnerships, an example of which is the nucleus farmer approach or the linking of a rice company with an agricultural APEX organization of farmers groups and farmers associations. Other good practices include community-based and farmer-led extension programs at the village level such as promoted and implemented by the NGOs CARE, CRS and others. Additional good practices include lessons for extension in northern Ghana gleaned from extension within the cocoa sector, where public and private partnerships support extension programming aimed at small-holder cocoa growers.

Overall, though, the extension system in northern Ghana at the present time lacks some critical elements of a well-functioning or “best fit” extension system. Importantly, the current system fails to reach a significant proportion of the farmers, yet MoFA pays for substantial staff resources in the form of AEAs and others more senior staff who dedicate their time to extension. At the financial level, the MoFA system provides staff resources, but practically it is mostly donor funded projects that provide the supporting financial resources necessary to mobilize and utilize field staff well. This may simply be the environment of agricultural development in West Africa circa 2012 but it has the effect of making AEAs not linked to a project more or less ineffective due to lack of resources. A number of other weaknesses in the system were identified above, including a large number of NGO actors and others implementing extension or “extension-like” activities but a lack of coordination, communication, sharing of information, and open learning from experiences among these actors.

The recommendations laid out below aim to strengthen the extension system in Ghana, with a particular focus on northern Ghana. The end we have in mind is an extension system that reaches the broad majority of small-holder farmers in one manner or another and that increases their farm incomes and commensurately reduces poverty. Right now is an opportune time for targeted investments that are most likely to bring about improvements in the performance of the pluralistic extension system over the longer term.

Measurement and Evidence

Organizations and programs intending to change or improve something rely on information that can indicate impacts attributable to the program and they measure the key variables related to producing the outcome of interest. In the case of extension services and agricultural information systems that will lead to agricultural innovation among small-holder farmers in northern Ghana there are currently no organized information systems that are above the within-the-project Monitoring and Evaluation (M&E) efforts. Hence, there is no organized information system that can indicate the scope of the extension challenge in northern Ghana or potentially measure the aggregate impacts of investments.

Others analysts have pointed out the need for strengthened monitoring and evaluation around the pluralistic extension system in Ghana (see for example the report by Jeffrey Bentley and Paul Van Mele titled *Agricultural Extension in Ghana*, January 2011). Bentley and Van Mele observe “The formal sector in general places great emphasis on evaluating projects while they are being conducted, but pays scant attention to projects after they end” (p. 24). While in the field, we observed the same tendency in northern Ghana. Others repeatedly pointed out this phenomenon to us, too.

The top strategic priority for extension services in northern Ghana is to provide market-oriented and farmer led extension services in order to help make farming more profitable. However, very little is actually known about farm profitability in Ghana and measurement of actual farm budgets and uses of

resources and net returns is a critical need at this time. Agricultural analysts and policy makers need to keep in mind that it is possible to increase yields and output on a per hectare basis but still not increase farm net income very much at all. Thus, we recommend first that systems be developed to measure and track on-farm resource use and net incomes. This will help orient the entire agricultural development effort in the north from simply a production point of view to farming as a business point of view. A very useful tool for this purpose is the Farmbook system developed by MEAS partner CRS under the MEAS project. This tool provides an information platform that can be used to follow farmers and farmer groups over time and it can yield data on farm production, use of inputs, and net farm revenues. Such data on farm profitability should be benchmarked by district for a set of farmers who are followed over time and data should be analyzed and the anonymized results made publicly available on the internet. In following a sample of farmers from northern Ghana, the survey should examine: What extension services are they receiving? What improved practices are they familiar with? What is their access to a functioning farmer field school, demonstration plots, or extension agent to answer a question? For farmer groups/FBOs in their village or that they are a part of, what extension services has the group received within the past year? Who delivered them? What are their most pressing agricultural issues and questions?

Also, further M&E efforts for Feed the Future (FtF) investments in northern Ghana and other major agricultural development project should be improved so that learning can occur and conclusions about approaches and project-attributable outcomes can be made. M&E frameworks need to add components that are aimed at a random sample of farmers (not convenience sample) and farmer groups and farmer business organizations. They must include farmers not involved in the project and farmers similar to the target farmers but who are not targeted by the project. For sound conclusions to be drawn counterfactuals and comparison groups must be built in to the project design and M&E approach from the beginning. Else, there is no way to attribute to the project gains in farm productivity, farm net income, farmer household standard of living, etc. because the M&E design fails to account for general trends and other confounders.

Action Research

Action research, defined as applied and practical research involving organizations and individuals who face the question to be studied (farmers' groups, APEX organizations, NGOs, MoFA, District Agriculture Offices, private sector firms and organizations, as well as academics or researchers), could help build the knowledge base concerning extension and best fit approaches for Ghana. A number of areas for action research came to the attention of the team while we were conducting our field research. These potential action research themes include:

1. An action research project on best-fit approaches to market-oriented extension in Ghana be conducted and that from the research a training program for extension providers is implemented;
2. Examining the impacts of nucleus farms (hub and spoke model) and their links to other small-holder farmers in terms of technology (seed, chemicals, fertilizer, etc.) dissemination and small-holder incomes. Further, action research is needed regarding the gender impacts and dimensions of the hub and spoke approach.
3. A study of farmer groups and organizations to document best fit management practices that lead to improved market access for small-holder farmers in northern Ghana.
4. An action research project that emphasizes natural resource management themes in northern Ghana, particularly around good practices for access to good quality land for vulnerable groups

(youth and women) and water management, irrigation for rice, dry season irrigation, and soil conservation and soil fertility management.

These action research projects should be based in extension organizations and tied directly to farmer groups and farmer organizations. Learning and outputs from these efforts should be tied directly into extension programs, including radio spots and talks, fact sheets, facilitated peer farmer education events, presentations at agricultural fairs and at farmer group meetings. Other topics might arise from discussions with more farmer groups.

USAID has previously supported Innovations for Poverty Action (IPA) to conduct research related to agricultural development and extension themes. Previous IPA research on the role of risk versus lack of capital as an explanation for underinvestment by smallholders on inputs such as fertilizers and improved seeds showed that weather risk insurance led to farmers investing more into their use of inputs and land preparation and hired labor. In IPA research in Ghana with Mumuadu Rural Bank (MRB) on the impact of crop price insurance for maize farmers and eggplant farmers, they found that there were not large effects of a crop price insurance product on the agricultural investment behaviors of farmers. They suggest the reasons for a lack of a stronger effect might be due to a poor understanding on the part of farmers concerning the insurance, or an insufficient track record of the insurance product with the farmers. One broad level theme emerging from this research is potential importance of access to financial instruments (weather risk insurance in the above example) for agricultural development. Research in this vein is useful, but more research specifically on the issues of agricultural extension service delivery (quality, sustainability, willingness to pay, uptake of technologies, etc.) would be helpful and supportive of the national strategy to improve agricultural productivity and reduce rural poverty.

Government

At the top of the list of recommendations for the public sector's extension efforts is the implementation of systems and management practices that incentivize and reward extension agent performance of extension duties. The decentralization process underway allows working on performance-based extension systems since the Districts themselves will be having additional autonomy and control over staff and programs in the decentralized system. An example of a well-known extension system that relies on the pay-for-performance principle for field staff is the Uganda Grameen Community Knowledge Worker program. In this CKW program the field workers receive payments that are a function of their tracked calls into a call center on behalf of the farmers and farmer groups they work with. Other approaches to incentivizing extension program performance exist, and they can be targeted at the field agent level, the zone level or the District level or combinations. We recommend an approach of working with a subset of Districts that express willingness to pilot enhanced extension program monitoring and evaluation (measurement) linked to payments or rewards for performance. Such incentives do not have to include simply financial payments, though they are the most direct means of incentivizing. They could also include training opportunities, equipment or resources for the District extension office or the educator, or a higher level of support for transport. The overall point is that by strengthening the incentives for performance, more extension work will occur and more farmers will be reached. Such a system could involve third-party supervision or independent assessment of performance. Based on our interviews there is a great potential for increasing the extension system's performance.

Another recommendation for public sector extension involves a capacity-building program for farmers groups in advocating for public extension services. While this is not an intervention aimed directly at the public sector extension providers, it provides their clients with the skills needed to advocate for service provision. Similar programs have been implemented in the health sector and in local government services in Uganda and Liberia, respectively. This recommendation involves a non-governmental entity

providing training and coaching to farmers groups in expressing demand (advocacy) for agricultural advisory services aimed at the District assembly and then monitoring and evaluating the impact of the intervention in terms of improved service delivery.

A third recommendation for public sector extension involves building the capacity of Districts in the decentralized system of government provision of services to manage and deliver agricultural extension services under this new administrative model. Many District Assemblies may not appreciate the benefits of a well-performing extension system and management improvements may be necessary at the local level to help transition the District-level extension work to the new governance model. With the national extension Directorate focusing on ICT approaches in extension, there may be a strategic need to assist District-level extension with support for in-service-trainings for staff, assistance engaging with farmers in order to achieve farmer-led extension programming, and other aspects of the extension paradigm shift identified in this report. We recommend strongly for the development of formal and informal channels to allow farmer voice and control of extension efforts. At the District and zone levels this requires the development of extension services committees that would direct extension programming (including from projects) and would include at least 75 percent of the members from small-holder farmers and a significant fraction of the committee should be women farmers (perhaps 33 percent to 50 percent).

A fourth recommendation for public sector extension is to strengthen the capacity to coordinate and facilitate extension activities across the set of pluralistic providers, including public sector, civil society and NGOs, and private sector providers. While some good efforts are underway with the support of MoFA and agencies such as Engineers Without Borders, it was apparent to our team that coordination in the extension area in Ghana is in need of improvement. Such coordination requires time and resources, but also, importantly, commitment from both MoFA and the main development partners working in agricultural extension in Ghana, including GIZ, USAID, JICA, CIDA, DFID, the World Bank, the African Development Bank, and others. Hence, such technical assistance for coordination should engage a high level extensionist with a broad international agricultural extension experience. This person would be charged to assist the Directorate in furthering coordination of agricultural extension efforts in Ghana, with a focus on northern Ghana, in order to reduce geographic duplication of programs. He or she would assist with the sharing of information and program materials (including use of the web and other ICT tools to achieve this sharing), and ensure geographic and topical and vulnerable group (including gender, youth, minor ethnic groups, and remote rural areas) targeting.

A fifth recommendation is for strengthening of ICT-based extension in Ghana, including support of MoFA ICT-based extension efforts, as well as efforts by other providers. Fruitful areas for potential consideration include utilization of MEAS experience in Bangladesh in strengthening ICT-based extension and deployment of the Farmbook ICT extension platform (developed by CRS with partial support from MEAS) and other similar platforms. Also, utilizing the experience of MEAS in evaluating ICT efforts (Uganda with the Grameen CKW evaluation and in evaluation of the Farmbook deployment in Zambia) would also generate learning and evidence outcomes in this area.

A sixth recommendation is to assist MoFA in its ICT-based extension so that freely available extension training materials, particularly for the crops which FtF emphasizes (maize, soya, and rice), but also for other important crops and agricultural activities are available for use by anyone in Ghana. Such training materials include lessons on agronomics and cultivation (soil health, seed choice, soil and seed match, agronomic practices such as fertilizer application and spraying) as well as harvesting, post-harvest handling and processing, and marketing. For rice, additional training materials on field development and bund or berm construction as well as water management should be freely available. Lessons should include a set of training materials that are aimed at limited literacy level audiences (ample pictures or

videos), along with lesson plans for extension agents and extension volunteers. Supporting videos and audio materials in the local languages should be made available. Lowering the cost of delivering extension programs through the free availability of materials that agents and NGOs can adapt and modify for their purposes should be the goal of this assistance. Providing support through training of trainers on these materials will also have to be a component of this activity.

A seventh recommendation (related to the ICT efforts and freely available extension training materials) is to increase the capacity of MoFA and other extension agencies in developing professional quality extension materials, through training on educational writing, material development, filming and recording, audio and video and print editing, and production and dissemination. This training activity could be implemented as a learning-by-doing activity, in which the participants are charged and enabled and coached to develop high quality agricultural extension training materials such as mentioned under the sixth recommendation above.

An eighth recommendation for strengthening is to develop a repository and catalogue (both physical and online) of all relevant extension and agricultural training materials for Ghana's agricultural extension. The National Extension Directorate should have a complete collection of materials that have been developed by externally-funded agricultural development projects in Ghana. This collection should be scanned or saved electronically as well as having physical copies of materials (fact sheets, handouts, training books and notes, videos and audio files). The collection should be made available electronically. Relevant available international materials should also be placed in the online and physical collection.

National Agricultural Extension Strategy, Policy, and Coordination

Like many Sub-Saharan Africa countries, Ghana's MoFA has a policy approach to extension, expressed in presentations and agricultural policy documents, which is pluralistic and recognizes the multiple actors in extension and the multiple sources of funding. The key elements of MoFA's current extension policy include:

1. Utilization of e-Extension and ICT enabled extension programs (Farm Radio etc.);
2. Recognition and encouragement of pluralism in extension delivery;
3. Decentralization (an overall Government of Ghana policy implemented in the agricultural area as well) of extension services to units of local government;
4. Reliance on major donor funded projects (World Bank, ADB, etc.) for many key initiatives providing agricultural extension services (especially for provision of travel funds and other program expenses);
5. Use of multiple extension approaches including training and visit (modified T&V), participatory approaches, farmer field school;
6. Encouragement of private sector role in extension (input companies, marketing channel actors, and outgrowers); farmer business organizations as extension platforms and providers; and, other approaches in MoFA extension programming.

In analyzing a country's extension policy, both the stated policy and its implementation require examination. The MoFA extension program has received criticism in the past (and their senior staff are aware and open about the nature of these concerns) of their ability to reach farmers with needed agricultural advisory services. They acknowledge their own limitations due to lack of staff and also shortages of funding for travel and program funds to meet the needs of all farmer groups. However,

MoFA is committed to delivering and supporting extension services in the context of Ghana's pluralistic extension system. MoFA continues to deploy and support a significant number of field staff and it is developing important capacities in the area of ICT-enabled extension, including e-Extension.

The policy dialogue on extension in Ghana could be strengthened by the development of a clearly articulated national extension policy that involves input from all the key stakeholder groups including farmers and rural people, FBO representatives, women's agricultural group leaders, private sector input supply firms and other private sector entities, NGOs and civil society groups, MoFA, research institutes, extension staff and the Ghana national level extension forum, other government agencies and Ministries, as well as international donors and agencies. Such a national extension policy should hold the support of the national government and provide a framework and understanding regarding the roles of the public sector, private sector extension and advisory services, and civil society and NGO delivered services. Issues around resources for extension and the overall level of access to extension services should be addressed. Another issue sometimes addressed in a national extension policy includes government's approach towards critical inputs such as fertilizer and seeds and the role of the public and private sectors in their provision. An additional critical issue regards financing of extension staff and the provision of sufficient resources for their transportation to the field, demonstration plots and farm-level experimentation and demonstrations, in-service training, and other program costs. Such a national policy is best developed through a set of open meetings involving stake holder groups and the opportunity for public comment and discussion once a policy is drafted. Furthermore, development of a specific national policy on agricultural extension should not be undertaken unless MoFA has a strong commitment to seeing the process through and concludes such a specific policy on agricultural extension is in the national interest. A number of countries in Sub-Saharan Africa have developed national extension policies within the past several years including Kenya and Liberia, among others. Senior staff should note that in the case of Kenya, given the involvement of the parliament and the Minister in the Government's approval and vetting process, it took a long time (about 10 years) to arrive at the final approved national extension policy.

Along with a clearly articulated national policy, a second element of an effective national strategy towards agricultural extension is that MoFA has a set of clearly identified and widely available extension programs and accompanying materials. These core programs should be called "national programs" and should be seen as part of the core competency of field extension agents. In Ghana, given MoFA priorities, it is easy to imagine a set of five to ten crops, livestock species, and other management topics (natural resource management, including fire prevention and soil conservation techniques) that form the core of the national agricultural extension program. AEAs throughout the country would be supported in their access to training on the core programs and materials. While elements of the set of core programming topics would be determined by MoFA, given our assessment, crops and activities such as irrigated rice, maize, cassava and root crops, soya, vegetable production, small ruminants, poultry, and natural resource management should be considered for inclusion in the set of core programs supported and delivered by MoFA. Along with print materials, web-based materials and video (such as Digital Green-type or other agricultural videos) should be provided to AEAs, NGOs, and private sector extension staff freely via the internet, preferably through a well-maintained site or several sites, as well as on DVDs.

A third element of the national extension program should be a set of core competencies for national extension field staff. Defining and communicating and then supporting through in-service training should be a key element of the national extension strategy. These core competencies include both process skills as well as technical skills in agriculture, soils, NRM, and agriculture as a business. One process skill which is becoming more important throughout Sub-Saharan Africa in extension is the ability

for extension agents to link farmers not only to market opportunities but to financing and information from other actors in the value chain or supply chain. After definition of core competencies a program of in-service training, including through on-line or computer-based training should be provided to support development of these competencies. MEAS already has developed through its partner CRS a set of adaptable training materials on a number of key extension process skills and these are being field-tested presently with the Government of Kenya's Ministry of Agriculture as well as with CRS field staff in other parts of Africa.

A fourth element of a well-functioning national extension strategy is the development and support of a national level group such as the extension forum linked to AFAAS, or a national agricultural policy council, where MoFA staff and representatives from key stakeholder groups can share information and assist in coordination of extension in the country. Coordination or the lack of it was a concern voiced by a number of our interviewees. Making information widely available especially about the geographic targeting or the program focus of agricultural development projects is a significant public good for extension and development. Another useful thing to share via the country forum is program materials and supporting materials such as fact sheets and videos. Such a forum should also strive to make links with private sector actors involved in extension and with educational institutions providing pre-service and in-service training for extension workers. This country forum on extension should also be a focal point for research, learning from project and programs, and evidence on extension in Ghana. Meetings of the forum should occur regularly and involve senior figures from the Directorate of Agricultural Extension of MoFA among others. Minutes from the meetings should be available on a website and efforts should be made to facilitate guest speakers from a variety of organizations. Overtime the role of the forum should include advocacy for the extension needs of rural people and farmers so that policy makers outside of agriculture can see the importance of well-delivered and supported agricultural extension services.

A fifth element of a strong national extension system involves ensuring that farmer representatives have clear opportunities to communicate their needs and priorities to the extension system and that the system responds to this voice. This needs to occur clearly at the sub-District, District, Regional (including farmer representation on RELCs), and national levels. In the case of Ghana, with their move to decentralization, it is necessary to follow closely at the District and sub-District level how farmer input and voice feed into extension programming. Furthermore, it will be necessary to follow and likely provide support to Districts as they assume greater responsibility for delivery of agricultural extension services.

A last key element of a strong national extension strategy is the ability to utilize ICTs to further the extension program nationally. MoFA has already committed significant time and resources through a World Bank project into ICT enabled extension in the form of a website for e-Extension programming. Further capacity in video, audio, and other ICTs for extension, including print media such as magazines, newsletters, and fact sheets, should be developed in Ghana. Some of the capacity might be within MoFA and some might be within the private sector and NGO community. This ability to deploy programming through multiple means is a key component of a national strategy.

Extension and Advisory Services Training

The team identified a number of opportunities for improving the impact of AEAs in MoFA and for others involved in providing extension services through programs such as in-service training programs, the strengthening of degree and certificate programs, as well as providing widely and freely available training and support materials on the internet. Within MoFA, supporting their e-extension efforts through the adaptation of existing training materials such as the Five Skill Sets appears to be a very direct and easily implemented way to introduce and support themes such as financial management,

farmer group organization, farming as a business, marketing, natural resource management and participatory rural appraisal and participatory extension. Twinning the electronic delivery of these materials with some face to face training and group exercises might be the best way to ensure their long-term impact. Also, developing a cadre of trainers (domestic consultants and designated staff within organizations such as MoFA and NGOs) would support the sustainability of the training program and lower the costs of program delivery. Other topic areas that require training programs include ICT use and skills, climate change and adaptation, and reaching women farmers.

Strengthening of extension training programs in universities in Ghana as well as in the associated fields of rural development, agricultural economics, and community development will also serve to increase the quality of the human resource base in agricultural extension. Some efforts that would improve extension training programs at the university and other higher education institution level include the following measures. First, undertake an in-depth assessment of each training program in Ghana from the top group of programs, including UDS and UCC. Examine the training of the faculty and lecturers and identify candidates for both short-term intensive study abroad and longer term (PhD level) training abroad. The ability of Ghanaian university and other extension training programs to offer the strongest possible degree and certificate training programs should be enhanced through faculty-strengthening and exchanges. Additionally, PhD-level training in Ghana in extension can be strengthened by offering PhD students the opportunity to study abroad for one year at US universities with significant capacity in the agricultural extension education area. MEAS partner institutions are among the foremost providers of such education in the world.

Enhanced Private Sector and Civil Society Involvement

With a goal of enhancing farmer-led extension services and ensuring that extension services are responsive to farmers and that the farmers' voices are heard, programs that pilot and strengthen the ability of FBOs and APEX organizations and other farmer business organizations to directly finance, hire, and utilize extension staff should be developed. Such programs can build upon the Kuapa Kokoo model or the voucher experiments that have been implemented in Latin America and elsewhere. Additionally, they can start modestly with a co-pay model, where the FBO would perhaps pay 25% of an agent's costs, while the program would pay 75 %. Over several years they could transition through 50%/50% cost splitting and then on to an assumption by the FBO of 75% cost assumption. A third party could assist in implementing the program for a fixed period of time, and this implementing organization would ensure quality of services delivered by the extension agents through in-service training and support.

A second recommendation involves building upon the successful local community volunteer model of extension workers (such as developed and implemented by CRS, CARE and others in northern Ghana). Provide a level of training and support for these volunteers so the work continues and the village-level groups are promoted and can grow. Additionally, it is necessary to explore and further develop the village level savings and lending groups that are funded with member funds only (no outside funds) and study the potential links to agricultural activities of members. Can these microfinance groups help members insure against agricultural losses? Can they help provide financing for bottle-cap fertilizer applications in maize and other crops?

Third, in some African countries, bicycle-borne extensionists who receive payment in kind and in small amounts from farmers directly have proven to be a sustainable model for service provision that is private sector. This model has been developed and implemented in East Africa (Tanzania and elsewhere) and could be investigated through a pilot for northern Ghana.

Fourth, continue to support private sector extension efforts from seed companies and agricultural marketing firms through complementary investments in freely available training materials and training programs (on the internet and via agricultural fairs, etc.). Additionally, support these private sector extension efforts through targeted action research that will identify impact and any gaps through this approach.

Fifth, the private sector provision of mechanized services constitutes a critical link in the agricultural development chain in northern Ghana. Yet, these small businesses operate in a sparse supply chain for spares and financing and technical and business support. We recommend the implementation of a targeted agricultural mechanization extension program to support these private sector providers and help them build their own business and technical capacity, their capacity as a group to access spares and needed supplies as well as further develop their business lines through the provision of additional mechanized services to farmer group, block farmers, other commercial farms, etc. Such additional lines could include small-scale combine harvesting, threshing, automated irrigated rice planting, and other mechanized services. Such a program might include a public-private partnership with one or more major agricultural implement and equipment companies.

Sixth, strengthen ICT approaches through technical assistance to private sector providers and local NGOs who are implementing ICT extension programs. Such support could extension to Farm Radio and other providers working with video and television and audio and print extension programs. In Bangladesh, MEAS supports a local USAID Forward implementing partner on a major ICT extension program with a set of services including assistance with strategic planning, work with internet agricultural extension program design and implementation, as well as assistance with agricultural video and other technical areas.

Prioritized List of Investments to Improve Extension in Ghana

To meet the goal of improving overall extension services in Ghana we provide the following list of prioritized intervention. These interventions have been prioritized both on the grounds of leading to observable improvements in the pluralistic extension system in Ghana.

1. Policy level technical assistance and consultancy – on the areas of developing and communicating the national extension policy, improving coordination and communication, and assisting targeted Districts with the decentralization process to ensure agricultural extension services.
2. Deployment of ICT-enabled extension programs (Farmbook and 5 Skills Training) to both MoFA AEs and NGO and private sector extension workers. This would be done in a fashion that both built extension capacity as well as led to measurable impacts in the FtF target zone. An action research model would be employed (like MEAS is currently conducting with Min of Agriculture in Kenya with CRS) to facilitate learning and a wide number of farmers and farmer groups would be impacted. This would demonstrate capacities of MoFA AEs and NGO field workers and provide important measurements via the Farmbook platform.
3. Learning by doing agricultural media development effort involving video and other products to demonstrate good practices for maize, soya, and rice as well as vegetable and small livestock. This learning by doing training would involve MoFA staff as well as staff from NGOs and private sector providers. The effort would include an M&E component that allowed learning and evidence gathering. Deployment of the media would be a full part of the extension media development program and lessons learned from agricultural media efforts in East Africa would be employed, with sufficient resources allocated to deployment and measurement to produce knowledge gains and improved farmer practices. MEAS and its partners are involved in similar

efforts in Bangladesh and a number of other countries. The media products would be utilized in extension work by AEAs and they would be shared widely with extension offices and farmer groups and associations. MoFA would also have the ability to post them on the e-Extension web portal they are constructing.

4. Action research on natural resource management practices (climate change adaptation and extension, and soil fertility, water management, burning, and other specific topics) and development and deployment of a program and curriculum in the NRM area involving MoFA staff and NGO staff as well as resource people and an outside facilitator.
5. Action research on farmer groups in Ghana, particularly in the north, to lead to programs and efforts to strengthen groups and their capacity to do agricultural business together.
6. A learning-by-doing program of extension and training services for agricultural mechanization and tractor service providers in northern Ghana. This program would involve mechanization service providers and with a goal of linking them to sources of information and inputs in their supply chain, improving their technical skills and knowledge, as well as building their business practice skills (finance, marketing, budgeting, and planning). MEAS would facilitate a private sector partner(s) along with local agricultural mechanization expertise. The goal of the program would be improved access to mechanization services in the target zone.

This list is truncated and does not include many other necessary investments mentioned in the recommendations section of the report. Some of those recommendations such as work on performance improvement should be pursued if further discussions with MoFA indicate an interest or discussions at the District level indicate the feasibility of pilot testing approaches that would be developed at the local level. Other investments such as strengthened pre-service training should also be on the list. MEAS recently conducted an action-oriented training at KNUST with AGRA on improving field experiences for master's students in technical fields with in agriculture since many of these students find careers in extension and extension-related roles.

ANNEX A: ITINERARY AND MEETING SCHEDULE

- October 18, 2012: Dr. Paul McNamara and Oliver Ferguson arrive in Accra
- October 19, 2012: Meeting with USAID Mission
Joe Dale arrives in Accra
Meeting with Catholic Relief Services
Meeting with the Director and Deputy Director in the Directorate of Agricultural Extension Services in the Ministry of Food and Agriculture
- October 21, 2012: Canadian International Development Agency
ACDI/VOCA Advance
- October 22, 2012: University of Development Studies, Nyankpala
Savannah Agricultural Research Institute
Engineers Without Borders – Bolgatonga
- October 23, 2012: Travel to Kumasi
- October 24, 2012: Kumasi Institute for Tropical Agriculture
Agricultural and Extension Services, District Office – Kumasi
- October 25, 2012: Root and Tuber Improvement and Marketing Program
KUAPA KOKOO Farmers Union
- October 26, 2012: Joe Dale returns to Accra
- October 28, 2012: Paul McNamara and Oliver Ferguson return to Accra
- October 29, 2012: Jules Keane joins the team in Accra
APEX Farmers Organization of Ghana
- October 30, 2012: Cadbury Cocoa
Technoserve
World Vision Ghana
Engineers Without Borders – Ghana Country Forum Initiative
- October 31, 2012: Ecumenical Association for Sustainable Agriculture and Rural Development
Prep Eez Limited
Esoko Limited
CARE International
- November 1, 2012: Joe Dale and Oliver Ferguson travel to Cape Coast
University of Cape Coast
Olam Cocoa buyer in village near Cape Coast
Development Action Association

November 2, 2012: Joe Dale and Oliver Ferguson return to Accra
Paul McNamara travels to Tamale
International Fertilizer Development Center
Ministry of Food and Agriculture – Tamale District Office
Association of Church-Based Development NGO's
Apex Farmer Organization of Ghana – Tamale

November 3, 2012: Oliver Ferguson departs Ghana

November 5, 2012: German Agency for International Cooperation
Adventist Development and Relief Agency
Northern Region, Regional Agricultural Development Unit Office, Tamale
Tolon-Kumbungu District Agricultural Office
Tamale Metropolitan District Agricultural Office

November 6, 2012: World Bank
Farm Radio International
Stakeholder's Meeting at Orchid Hospitality Management

November 7, 2012: Out brief Meeting with USAID
Joe Dale and Paul McNamara departs

ANNEX B: ORGANIZATIONS AND KEY PEOPLE CONSULTED WITH DURING THE SCOPING MISSION

Abubakari Abdul-Halim	Lecturer, Faculty of Agriculture, University of Development Studies at Nyankpala
Francis Danso Adjei	Agricultural Content Editor, Esoko
Samuel Baba Adongo	Deputy Country Director, Technoserve
Amit Agrawal	Senior Vice President, Olam International Ltd
Samuel Akuamoah-Boateng	Lecturer, Faculty of Agribusiness and Communication Sciences, University of Cape Coast
Malex Alebikya	Director, ACDEP (Tamale)
Paul Amevor	Program Manager, Monitoring and Evaluation, Cadbury Cocoa Partnership
King David Amoah, PhD.	National Coordinator, Ecumenical Association for Sustainable Agricultural and Rural Development
Wiberforce Amoh	Project Officer, Extension and Environment, Cadbury Cocoa Partnership
Grace Antwi	Farmer Helpline Advisor, Esoko
Issac Asare	Agrodealer Development Center, International Fertilizer Development Center
Samuel Asante-Mensah	Director of Agriculture and Food Security, Adventist Development Relief Agency
George Bamumbe	Agricultural staff, ACDEP (Tamale)
Kwaku Boateng	Vice President, Apex Farmer's Organization of Ghana
Thomas Bonney	Technical Lead, Soybean, ADVANCE (ACDI/VOCA)
Thomas Carr	Chief of Party, ADVANCE (ACDI/VOCA)
Victor Attuquaye Clottley	Coordinator, Farmers Capacity Building Project International Fertilizer Development Center
Don D'Souza	Engineers Without Borders
Mritunday Das	General Manager, Olam International Ltd.
Nicholson Denwar, PhD	Soybean Researcher, CSIR-Savana Agricultural Research Institute
Dennis Sedem Ehiakpur	Agricultural staff, ACDEP (Tamale)
Benjamin Fiafor	Regional Field Manager, Farm Radio International

K. Osman Gyasi	Agricultural Economist, World Bank
Stefan Kachelriess Mathess	German Agency for International Cooperation
Victor Lolig	Lecturer, Faculty of Agribusiness and Communication Science, University of Development Studies at Nyankpala
N. Kabo	Research Scientist, CSIR-Animal Research Institute
Alh. Nashiru Kadri	President, APEX (Tamale)
James Kombiok, PhD	Principal Research Scientist, CSIR-Savana Agricultural Research Institute
Francis Koo	District Agricultural Officer, Tamale Metro. Agricultural Office, MoFA
Kweku Koranteng	Technical Lead, Maize, ADVANCE (ACDI/VOCA)
Bede Kuunyigr	Agricultural Staff, ACDEP (Tamale)
S.K. Nutsugah, PhD	Director, CSIR-Savana Agricultural Research Institute
Jepthah Memsah	Program Manager for Extension and Environment, Cadbury Cocoa Partnership
Godfrey Mitti	Senior Programme Coordinator, CARE International
Dante Mossi	Senior Operations Officer, World Bank
Baba Musah	District M&E Officer, Tolon-Kumbungu, MoFA
Hawa Musah	District Director of Agriculture, Tolon-Kumbungu District, MoFA
Rosemond Ohene	Business and Product Advisor, Esoko
Ernest Okorley	Head of Department - Faculty Of Agribusiness and Communication Sciences, University of Cape Coast
Catherine Phiri	northern Ghana Project Director, ADVANCE Project, ACDI/VOCA
Nick Railston-Brown	Country Director, TechnoServe
Annan Samuel	Secretary , Apex Farmer's Organization of Ghana
Gizaw Shibus	Director of Operations, Farm Radio International
Ahmed Tijani	Regional Agricultural Development Unit, Northern Region, MoFA
Stephen Yakubu	District Director of Agriculture, Tamale Metropolitan Office, MoFA
Kwabana Yeboah	Secretary, Vegetable Producers and Exporters Association of Ghana
Richard Yeboah, PhD	Head of Department - Faculty of Agribusiness and Communication Science, University of Development Studies at Nyankpala

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ANNEX D: TERMS OF REFERENCE AND SCOPE OF WORK



Terms of Reference: Modernizing Extension and Advisory Services (MEAS)/Ghana

I. Background

Ghana's agricultural sector holds high potential for generating employment and economic growth in the agriculture sector. It currently provides approximately 30% GDP and employs approximately 60% of the work force. But, the share of agriculture is declining and prospects for rewarding employment are not keeping pace with other sectors. The sector is suffering from low levels of productivity, loss of soil fertility, low returns to labor and a declining share of GDP. In order to achieve food security, economic growth, social stability, and adaptation/mitigation of environmental change, the sector depends on innovation, technologies, management systems, and institutions to meet evolving opportunities and needs. Among others, modern agricultural extension and advisory services play a key role in transforming the agricultural sector by disseminating good agricultural practice strategies and approaches thereby contributing in improving food security and enhancing the livelihoods of the rural poor, especially farm women. At present, Ghana does not have effective, sustainable, and efficient extension, information, and advisory services to rural people. As a result, Ghana has set the objective of modernizing the agricultural sector in an inclusive manner, such as improving the extension and advisory systems, to increase small holder capacity to profitably produce for commercial markets.

In support of the Government of Ghana's (GoG) own commitment to food security by increasing productivity and accelerating agricultural sector growth in a sustainable way, USAID/Ghana through its Feed the Future (FtF) initiative has proposed a focused and high-impact approach to transform the major rice, maize, and soya value chains – with particular emphasis on the north. USAID/Ghana has designed several activities which will assist the Ministry of Food and Agriculture (MoFA) to increase technical, managerial, and policy analysis capacity and enhance private sector investment in the agricultural sector. As part of this activity, USAID/Ghana is buying-in to the Modernizing Extension and Advisory Services (MEAS) project to provide a sequenced set of interventions which should ultimately result in making Ghana's extension services more effective in helping small holders achieve sustainable economic gains.

MEAS is a five year initiative funded by USAID/Washington to lead the strategic analysis of the activities and investments needed to strengthen pluralistic extension systems in various developing countries. MEAS supports development of efficient, effective and sustainable rural extension, information, and advisory service systems. MEAS is a strongly demand-driven service project that brings resources of US universities and their partners to bear on extension system development. MEAS emphasizes participatory approaches and collaborative development work with public and private commercial as well as not-for-profit extension and advisory service providers in developing countries together with other donors and a broad range of practitioners.

USAID/Ghana conceptualizes modernizing extension and advisory services in light of expanding the role of private sector entities, integrating ICTs into rural extension systems, ensuring extension service accountability to farmers/clients, and redefining roles of the government. Principles in MEAS emphasized in new approaches to extension include: local planning and implementation, institutional pluralism, private sector approaches, demand-driven response to client needs, participatory planning and implementation, cost sharing, effective use of mass media and ICTs, market-orientation, linkages with other government services, and results orientation. The additional resources provided by MEAS will give ongoing guidance to these capacity building activities so that they result in an extension service which is better equipped to conceive and implement programs which target sustainable market led economic growth in the agricultural sector.

II. Purpose

The primary objective of MEAS/Ghana is to assess the pluralistic extension system in northern Ghana, giving specific attention to the organizational structure, coverage, relationships and major advisory services being carried out by the public sector, non-governmental organizations, and farmer associations/firms. MEAS/Ghana will focus on the primary contributions and constraints of these different advisory service providers, as well as how each of these institutions and organizations might be strengthened. The study will give recommendations on establishing efficient, effective, and financially sustainable private sector led rural extension and advisory service systems in northern Ghana.

III. Required Project Activities

The following studies will be supported by USAID/Ghana mission at an estimated budget of \$99,795.18 to:

- (a) Conduct broad assessment of the extension delivery system in northern Ghana to:
 - determine key leaders and front line workers perception of strength and achievements,
 - human and financial resource constraints,
 - structural or management constraints,
 - technology dissemination mechanism including mobile agricultural extension services such as the Esoko model,
 - the robustness of extension-research linkage,
 - strengths and weaknesses.
- (b) Conduct focused assessment of the Directorate of Agricultural Extension Services (DAES) of MoFA to:
 - determine the strategic focus of the directorate,
 - investigate how its mandate is fulfilled in relation to productivity, food security and nutrition,
 - investigate the nature of the directorate's clientele including out-reach,
 - examine the status of demand-driven extension delivery.
- (c) Conduct stakeholder consultations on the performance of public extension in northern Ghana (involving Private Sector, academia, NGOs, FBOs, CBOs, etc.)
 - Solicit future direction of extension education in Ghana
 - Obtain private sector feedback on public extension system
 - Test robustness of the public extension system to meeting specific demand for sub-sectors such as high-value crops, livestock, fish and other products, such as floriculture
 - Validate the effectiveness of the extension-research linkage
 - Validate feasibility of demand-driven, private extension system

In summary, this study will focus on:

- 1) Identifying the major gaps within the DAES, the NGOs and other extension/advisory service providers, including institutional capacity, human competency, sustainability, and policy limitations. It will also analyze how/if the decentralization process will have an effect on extension services.
- 2) Recommending some near- and long-term investments that could substantially increase the effectiveness and sustainability of these different extension and advisory service providers.

The MEAS team will make in-briefing and de-briefing meeting with USAID/Ghana staff.

Output

- MEAS team will share its preliminary findings with USAID/Ghana during its de-briefing meeting and the scoping report will be submitted for review and recommendations within one month after the team returns home. The final report will be submitted to the USAID/Ghana within two weeks after receiving comments and feedback.
- The study report will determine the extent to which USAID/Ghana FtF programs can depend upon the pluralistic extension service to provide services to priority value chains.
- The report will provide recommendations on how the research and technology dissemination can be improved and effectively operationalized.

IV. Project Implementation

USAID/Ghana will buy-in to the Leader-With- Associate cooperative agreement funded by the Bureau for Food Security under the Modernizing Extension and Advisory Services (MEAS). The project will be implemented by MEAS consortium led by the University of Illinois. The MEAS AOR in the Bureau for Food Security will liaise closely with the MEAS/Ghana activity manager. The appointed activity manager for MEAS /Ghana will be delegated to oversee and work closely with the MEAS COP.

V. Budget

The total budget will be \$99,795.18 for all activities highlighted in section III above through the Leader-With-Associate Cooperative Agreement to MEAS (AID-OAA-L-10-00003). Out of the \$99,795.18, the MEAS project has allocated \$49,795.18 for Ghana and USAID/Ghana will fund the remaining \$50,000 from 2011 DA-GFSI Agricultural Enabling Environment funds (641-AA-A18-11-00).

VI. Performance Monitoring Plan

Within 60 days of signing this agreement, MEAS/Ghana will submit a work plan and budget for discussion and approval by USAID/Ghana. USAID/Ghana will have substantial involvement in the planning phase to make sure that the study is aligned with Ghana's FtF strategic priorities.

The final report of the study will include the organizational structure, coverage, relationships and major advisory services being carried out by the public sector, non-governmental organizations, and farmer associations/firms. It will also report on the primary contributions and constraints of these different advisory service providers, as well as how each of these institutions and organizations might be strengthened. Finally, the report will give recommendations on establishing efficient, effective, and financially sustainable rural extension and advisory service systems in northern Ghana.

VII. Leveraging

The proposed MEAS program in Ghana leverages additional funding of \$49,795.18 from USAID/Washington under the Modernizing Extension & Advisory Services (MEAS) project.