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**BANGLADESH AGRICULTURAL TRANSFORMATION PROGRAM
PUBLICATION No. 9**

TRANSFORMATION OF AGRICULTURAL RESEARCH, EDUCATION AND EXTENSION IN BANGLADESH

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Submitted to:

USAID/Bangladesh

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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

GUIDE TO THE BANGLADESH AGRICULTURAL TRANSFORMATION STRATEGY PUBLICATIONS

The Bangladesh Agricultural Transformation Strategy (BAT) Program assessment implemented by Weidemann Associates generated 21 studies that are presented here as numbered reports.¹ The assessment also generated additional documents that complement those reports. The following provides a guide to the BAT Program reports.

Publication No. 1 - Bangladesh Agricultural Transformation Assessment and Design – provides a summary and rationale for the BAT Strategy plus description of 10 recommended interventions (activities). It includes summaries on gender, nutrition, climate change, use and development of local capacity, geographic targeting and other cross cutting issues called for in the SOW.

Publication No. 2 - Cereals Sector Analysis - provides the evidence base for the strategy and recommended activities related to increased rice productivity.

Publication No. 3 - Maximum Yield, Intensity, Diversity (MYID): Activity Design, AAD, and Budget – provides data on the recommended activity for rapidly and economically increasing rice and other grain yields together with detailed implementation budgets. This activity design includes two of the interventions recommended by the assessment team. One proposed intervention supports demonstration of maximum yield potential in farmers' fields; a second intervention activity supports acquisition of advanced germplasm and other technologies from other countries by private and public seed businesses. In addition, a methodology was suggested that transform public sector extension services.

Publication No. 4 - Small Scale Irrigation: Activity Design, AAD and Budget - provides data on the recommended activity for increasing field crop output through dry season farming in non-irrigated areas of the targeted SW region of Bangladesh through a pilot program of a community-managed small scale irrigation scheme, with detailed implementation budgets.

Publication No. 5 - Fruits, Vegetables & Spice Sector Analysis and Recommendations – provides the evidence base for strategies and activities designed to assist smallholders to improve yields, margins and income through growing high value crops and to contribute to improved nutrition through production and marketing of fruits, vegetables and spices.

Publication No. 6 - Modern Value Chain For Fresh Fruits, Vegetables, and Spices: Activity Design, AAD and Budget – provides data and analysis of the recommended activity designed to increase access to higher value (and higher margin) markets for small scale producers of fruits, vegetables and spices, improving market efficiencies, with a detailed budget for implementation of the activity.

Publication No. 7 - Livestock Sector Analysis and Enhancing Productivity and Profitability of Black Bengal Goat Farming – provides the evidence base and analysis for BAT Program strategies in the livestock sector. The publication provides detail on a recommended activity for increasing smallholder family incomes while closing the consumption-production gap for meat protein in Bangladesh via an upgraded black Bengal goat production and marketing system that has potential to reach national scale. The publication also provides a simple cost/benefit analysis and annual budgets estimates.

Publication No. 8 - Aquaculture And Fisheries Improvement: Activity Design, AAD and Budget - provides the evidence base and three separate recommended interventions for increasing smallholder fish production through improved broodstock, double cropping aquaculture, and penning/fencing fisheries in rivers/canals together with an estimated budget for each activity.

¹ Weidemann Associates implemented this assessment under the RAISE Plus AKPS Task Order *“Technical Services for the Bangladesh Agricultural Transformation Program Strategy”*, Work Assignment No. 6 Phases 1, 2 & 3.

Publication No. 9 - Transformation of Agricultural Research, Education and Extension In Bangladesh – provides the evidence base for strategies to create a new generation of agricultural research, education and extension professionals in Bangladesh.

Publication No. 10 - Institutional Assessments – provides data and analysis of potential GOB, private sector, and NGO partners in Bangladesh for *USAID Forward*-compliant implementation of the BAT Program with prioritization of institutions for specific recommended activities.

Publication No. 11 - Rural Credit in Bangladesh – Challenges and Opportunities – provides the evidence base for demand and supply of rural credit to support the BAT Program strategy of agricultural transformation in Bangladesh. Included is a recommended alternative institutional model for addressing the “missing middle” of agriculture and agribusiness in the targeted southwestern region of Bangladesh.

Publication No. 12 - Adaptations to and Mitigations of Climate Change – provides evidence base and recommends incorporating climate change elements to BAT Program activities.

Publication No. 13 - Monitoring & Evaluation Plan & Impact Indicators – provides an overall evaluation plan for recommended BAT Program investments - proposed baseline data, FTF standard indicators, targets and M&E strategy including development hypothesis, and the M&E Plan for Bangladesh Feed the Future Strategy Framework.

Publication No. 14 - Nutrition Aspects for the BAT Program Assessment and Design – provides the evidence base and recommendations for interventions to improve BAT Program nutritional outcomes and impacts.

Publication No. 15 - Enabling Environment Assessment – provides the evidence base for needed policy change, a detailed example of how policy change is actually effected in Bangladesh and recommends key interventions in the area of policy and enabling environment.

Publication No. 16 - Geographic Description and Geographic Targeting Analysis – provides detailed information on key characteristics of the Southwest region of Bangladesh as well as the evidence base and analytical results to substantiate the selection of the region as the area in which to focus BAT Program activities.

Publication No. 17 - Gender Assessment – provides summary information on gender issues and the current status of women in Bangladesh and recommendations for assuring that BAT Program investments are inclusive.

Publication No. 18 - Social Soundness Analysis – provides summary evidence of the geographical variation of poverty, social diversity, existing participation of different groups, suggestions for improving participation and social status of disadvantaged groups and in particular women and youth, and commentary on social factors and feasibility of four specific BAT Program interventions.

Publication No. 19 - Stakeholders Meetings – identifies people and institutions contacted during the BAT Program Strategy team’s field work and stakeholder meetings. Feedback from stakeholder meetings is included in respective sector weekly reports and activity designs.

Publication No. 20 - Data on Production, Prices, and Margins for Selected Crops – provides data on production costs, prices and margins on a wide range of crops, grains, vegetables, fruits, and spices In Bangladesh.

Publication No. 21 – Priority Ag Research Projects – provides summary description of ten recommended priority agriculture development research projects in Bangladesh.

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Our special thanks go also to the USAID staff in Bangladesh and in Washington for their support in facilitating this study, for providing us with direction and assistance in obtaining the information needed to conduct the study.

The Team

Dhaka, May 2011

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ACRONYMS

ABSP	Agricultural Biotechnology Support Project Phase II
AIS	Agricultural Information Service
BARI	Bangladesh Agricultural Research Institute
BAT	Bangladesh Agricultural Transformation
BAU	Bangladesh Agricultural University
BFRI	Bangladesh Fisheries Research Institute
BINA	<i>Bangladesh</i> Institute of Nuclear Agriculture
BJRI	<i>Bangladesh</i> Jute Research Institute
BLRI	Bangladesh Livestock Research Institute
BRAC	Bangladesh Rural Advancement Committee
BRRRI	Bangladesh Rice Research Institute
BSRI	Bangladesh Sugarcane Research Institute
CGS	Competitive Grants System
CIG	Common Interest Groups
DAE	Department of Agricultural Extension
DAM	Department of Agricultural Marketing
DLS	Department of Livestock Services
DOF	Department of Fisheries
FACs	Farmer Advisory Committee
FIACs	Farmer Information and Advisory Center
FTI	Fisheries training Institute
GDP	Gross Domestic Product
GKF	Grameen Krishi Foundation
NATP	National Agricultural Technology Project
NGOs	Non-Governmental Organizations
RDRS	Rangpur Dinajpur Rural Service
RFA	Request for Application
SAAO	Sub-Assistant Agricultural Officers
SABINCO	The Saudi-Bangladesh Industrial and Agricultural Investment Company
SRDI	Soil Resource Development Institute

Selected Bengali Words:

Season of Rice Production

Aus
Aman

Geographical Political Areas

Upazila

PREFACE

This publication is one in a series of 21 documents that constitute the Final Report of a team of Weidemann Associate experts that assisted the USAID/Bangladesh Mission to develop a strategy – the *Bangladesh Agricultural Transformation (BAT) Program* – that was envisioned to form the core of the Mission’s *Feed the Future Initiative* investments.

Summary descriptions of the publications that constitute the products generated by the Weidemann BAT Program Strategy Development team are presented as a front piece to this and every one of the 21 publications that constitute the team’s work product.

The Strategy Development team worked in Bangladesh over 17 weeks, in three phases:

- Phase I: November 30th to December 14th - Scoping mission;
- Phase II: January 15th to April 2, 2011 - Strategy development and activity design; and
- Phase III July 1-22, 2011.

Halfway through the second phase the Strategy Development team presented to the Mission a draft evidenced-based strategy for the BAT Program with very cursory potential activity descriptions included. That document included annexes with data related to different agricultural sectors – cereal grains, livestock, aquaculture -- and cross-cutting themes – gender, climate change, natural resources management, etc. In order to make the BAT Program Strategy Assessment and Design document less ponderous, it was decided to convert the main document into a summary strategy Assessment and Design (this Publication 1) and put the annexes into separate documents (Publications 2 through 21).

In addition to a sector development strategy, the Strategy Development team proposed ten potential interventions that would result in a transformation of the Bangladeshi agricultural sector and suggested priority development of five of the most urgent interventions that promised greater impacts. Given that agricultural transformation is much more likely if USAID investments coincide with market signals the Strategy Development team’s underlying approach was to suggest agriculture sector investment strategies that build on rather than try to confront current and emerging market signals in the agricultural sector. Many potential interventions were rejected because their contribution to a transformation of the agricultural sector would have been limited.

Though the original BAT Program Strategy Development SOW called for a complete analysis of the business enabling environment for agribusiness in Bangladesh, the team’s preliminary work revealed that needed policy change in Bangladesh related to the recommended activities is usually accomplished more effectively by private sector agribusinesses consulting with government rather than through what some considered formal policy change processes. The team recognized that USAID/Bangladesh is supporting a policy research and change process, led by the International Food Policy and Research Institute (IFPRI).ⁱ In support of this on-going investment, the Strategy Development team created an inventory of laws relevant to the BAT Program Strategy (Publication 15) provided a detailed example of how policy change is currently being effected under the current political environment in Bangladesh and recommended specific needed policy changes but did not recommend investment in a short-term policy change agenda. That knowledge was then used in preparing cost effective activity designs (Publications 3, 4, 6, 7, & 8).

The work of the Weidemann Associates Strategy Development team left team members with an understanding that Bangladesh has excellent natural resources that facilitate high productivity agricultural, including deep and potentially fertile top soils, plentiful water, a climate favorable for year-round agricultural production, and a high percentage of tillable land. The scene is set for an agricultural transformation that will be built on the skills of Bangladesh's hard-working farmers and small entrepreneurs, the country's established public institutions that support agricultural research, extension and education, and an emerging group of private investors that are adopting modern systems for delivering input supplies and post-harvest processing and marketing services. Indeed, the Weidemann Associates BAT Program Strategy Development team concurs with the many experts that highlight the enormous progress Bangladesh has made over three decades in creating a more food secure future for the country's 160 million people. By making appropriate changes in policies, processes, and incentives, Bangladesh will continue the trend toward a highly productive agricultural sector that is remunerative and sustainable for agricultural sector stakeholders and for the nation.

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August 2011

EXECUTIVE SUMMARY

It will be impossible for Bangladesh to achieve long-term food security unless a transformation of the country's agricultural research, education and extension systems is achieved. In an area of 143,998 square kilometers Bangladesh has a population of from 152 to 165 million (BBS, 2008) making it one of the ten most densely populated countries in the world. Due to rapid population increase, an additional 2 million new mouths need to be fed each year. Even now, Bangladesh imports about 1.5 to 2.0 million tons of food grains annually to feed its people. This may increase if crop production is hampered due to frequent natural disasters such as flood and drought. There is limited scope for expansion of cropped land. In fact, it is decreasing every year due to many infrastructural developments. The only remaining option is to increase per unit production of different crops, as well as other commodities such as fish and livestock. As summarized in the following sections, is a major challenge, for which Bangladesh's research, education and extension institutions are not well positioned to address.

This report describes a potential component of the BAT Program design and addresses how transformation can be achieved in agricultural research, education and extension in Bangladesh. The information supporting the description is based on interviews by a study team with administrative and scientific leaders at four research institutes (BARI, BRRI, BINA and BFRI), five universities (BAU, SBAU, BSMRAU, SAU, and PSTU), three private organizations (BIID, Ispahani Biotech, and ACI Ltd.), two NGOs (Katalyst and BRAC), IRRI-Bangladesh and two USAID-funded projects, namely the IPM-CRSP and ABSPII. Information from these interviews was complemented by analyses of documents from the institutions visited, from other national and international development organizations in Bangladesh, and from the global scientific and international development literature. Details of institutions visited and many of the key stakeholders interviewed are shown at the end of this report.

I. ROLE OF AGRICULTURE IN ACHIEVING FOOD SECURITY

Agriculture is the mainstay of Bangladesh's economy, contributing to nearly 25 percent of the GDP (Steffin and Jackson, 2009) and engaging 63 percent of its labor force. Major items in the national food basket are rice, wheat, pulses, potato, vegetables and fish. These food items account for almost 85 percent of the total calorie and protein intake. Rice and wheat alone contribute to 74 percent and 57 percent of the total per capita calorie and protein intake respectively.

To achieve long-term food security in Bangladesh, a sustained increase in rice and wheat production will be essential, even in the face of continuing climate change. But significant challenges exist. For example, wheat acreage is decreasing in northern Bangladesh, the primary wheat growing area, because of difficulties in releasing land to plant wheat on time; this is due to the widespread cultivation of long duration *aman* rice. This, combined with severe and frequent outbreaks of rust, results in significant wheat yield reduction. If short duration *aman* rice and updated rust resistant wheat varieties were available increased wheat cultivation would be possible, thus reducing the need for wheat imports and the frequency of the acute food crises in the northern region of Bangladesh.

While work on rice and wheat will always be of primary concern to Bangladesh, a boost to production and marketing of other commodities, such as vegetables and fruits, pulses, and fish, is also urgently needed. Vegetables, for example, are the best means of overcoming many of

the micronutrient deficiencies that have such devastating effect on the nation. But crop protection measures are inadequate, vegetable seed quality is variable, post-harvest losses are serious, and transaction costs in local and regional markets are high. Similar conditions apply to fruits and pulses which, like vegetables, could also play more important roles in addressing national nutritional issues and food security.

Approximately three-quarters of Bangladeshi farmers are classified as small or marginal and almost 50 per cent of total households cannot maintain their livelihood from their own land and are often sharecroppers on others' land. The technologies and extension strategies developed to date primarily address the farmers with more land. The small and marginal farmers and landless sharecroppers have benefited far less from new technologies and from extension activities.

Most of the technologies that have been developed have focused on field crops, which are cultivated mainly by men. Agricultural practices suitable for women farmers have received very little attention. Such technologies would relate, for example, to cultivation of homestead vegetables such as bottle gourd, teale gourd, brinjal, lady's finger, garlic, onion, ginger, turmeric, tomatoes, and beans. Women also play leading roles in raising poultry, milking cows, and raising pond fish.

2. COMPONENTS OF AGRICULTURAL RESEARCH, EDUCATION AND EXTENSION SYSTEMS

Overall coordination of public agricultural research in Bangladesh lies with BARC, which is responsible for planning, integration, implementation, and evaluation of research. There are 10 research institutes under the BARC umbrella, namely BARI, BRRI, BJRI, BSRI, SRDI, BTRI, BINA, BLRI, BFRI, and BFRI. Limited applied research is conducted at the agricultural, and science and technology, universities. Ten universities, namely BAU, SBAU, BSMRAU, SAU, HSTU, PSTU, CVASU, KU, RU and DU offer higher degrees in agriculture in Bangladesh.

There are several government and non-government organizations that conduct advisory and extension services in Bangladesh. The major extension organizations include: Department of Agricultural Extension (DAE), Department of Livestock Services (DLS), Department of Fisheries (DoF), Agricultural Information Service (AIS), and Department of Agricultural Marketing (DAM). Among these organizations the DAE is the largest extension service provider in Bangladesh with personnel working at a wide range of organizational levels, from the headquarters down to the Unions (the lowest functional units in Bangladesh).

There are approximately 12,600 SAAOs (Sub-Assistant Agricultural Officers) working at the Blocks, each comprising two or more villages, to provide advisory services to farmers (Swanson, 2011). The major NGOs involved in extension activities are: Bangladesh Rural Advancement Committee (BRAC), PROSHIKA, CARE International, Rangpur Dinajpur Rural Service (RDRS), Grameen Krishi Foundation (GKF), and World Vision. The leading private companies that deal with extension activities - through providing agricultural inputs, such as seeds, fertilizers, pesticides and other agro-chemicals - include ACI (Advanced Agro-chemical Industries) Ltd, Advanced Animal Science Ltd., RENATA Agro-industries Ltd., EON Animal Health Ltd., Supreme Seed Company, Lal Teer Seed Company, Alfalfa Seed Company, ACME Laboratories, and D-Net.

Several institutes train field level workers and officers engaged in the agricultural development. The most important training institutes include: GTI (Graduate Training Institute located at the

BAU campus), NATA (National Agricultural Training Academy, Joudebpur, Gazipur), ATIs (Agricultural Training Institutes, now 13 in number located in different districts under the umbrella of MoA), BARD (Bangladesh Academy for Rural Development, Comila), RDA (Rural Development Academy, Bogra), VTI (Veterinary Training Institute, Khagdohor, Mymensingh), FTI (Fisheries Training Institute, Chandpur) and PRTC (Poultry Research and Training Institute, located at the CVASU, Chittagong). The facilities of these training institutes need to be improved in order to provide more effective and need-based training to the trainees. The staff of these institutes also needs to learn from industrialized and emerging countries about modern training methodologies.

3. KEY ELEMENTS NEEDED TO IMPROVE FOOD SECURITY

3.1 Human Resource Issues: The Priority for Agricultural Transformation

Top-level administrators of research institutes and universities consistently and strongly emphasized in our interviews that agricultural transformation for improved food security in Bangladesh will not be achieved unless critical deficiencies in human resources are urgently addressed. This key issue is inextricably linked to the need to improve the country's inadequate infrastructure and overall support for agricultural research, education and extension. Inadequate facilities and research support directly affect the efficiency of research, scientists' morale, and their desire to remain in Bangladesh.

Hiring and retention of quality researchers, educationists, and extensionists was highlighted by almost all of the interviewees as the top priority pre-requisite for effecting agricultural transformation. Bangladesh's best personnel, especially junior scientists, are leaving Bangladesh in search of more attractive opportunities abroad. The 'brain drain' is severe. Besides the inadequate research support and facilities, other incentives are also lacking. Promotions occur infrequently and salaries are inadequate; Indian counterparts are often paid three times as much. Few opportunities are available to travel abroad in order to exchange knowledge with colleagues at international conferences and workshops, or to engage in short-term international collaborative projects.

While the loss of scientists to foreign institutions or through early retirement is critical, the quality of agricultural education in Bangladesh is equally disconcerting. All of the educationists interviewed stressed that many of the university curricula haven't been updated for 20-30 years. Modern technologies, such as agricultural biotechnology, need to be better incorporated into syllabuses. Meanwhile, key field level topics are given very low priority with students often lacking the opportunities to gain practical education and experience that could complement their theoretical studies and make them better prepared to have direct impact in farmers' fields. Environmental and policy topics are poorly represented in the curricula while agribusiness studies – so critical for the country's food security - are almost non-existent. Gender and nutritional issues are currently receiving little or no attention in the university system. Quality of education also suffers from the low number of Ph.D. degrees earned abroad. Advanced studies in the USA and in the UK have been particularly effective in the past and need to be increased.

3.2 Sub-optimal Research to Market Continuum

Agricultural research, education and extension in Bangladesh are not demand-driven. A top-down approach is characteristic of researchers, educationists and extensionists with market conditions having little or no effect on their decision-making or day to day work. Even when new technologies and products have been developed at the institutes and universities, the impact at the field level can be minimal. For example, BRR has developed 55 modern rice varieties, and BARI has developed hundreds of varieties of other crops. However, farmer adoption of these varieties has been extremely limited, especially by small and marginal householders and landless sharecroppers.

3.3 Slow Adoption of Modern Technologies

Adoption of modern agricultural technologies in Bangladesh, such as crop biotechnology, has been slow. Yet activities by the USAID/Cornell University led Agricultural Biotechnology Support Project II (ABSPII) (see Gregory et al, 2008) on genetically modified (GM) crops over the past several years have clearly shown how quickly and effectively new technologies could be adapted and utilized to good effect in Bangladesh. The country has quickly progressed from having no crop biotechnology to safely conducting multi-locational field trials on such GM products as the insect-resistant Bt brinjal (eggplant). The political climate is right for biotech crops and farmers are demanding them. Products in the pipeline, in addition to the Bt brinjal, include rice varieties that are tolerant to both salinity and drought, as well as late blight-resistant potato. Such GM products provide solutions that cannot be achieved by conventional research approaches.

3.4 Organizational Constraints to Effectiveness of Agricultural Research, Education and Extension Systems

Government investment in agricultural research, education and extension/adult education services is sub-optimal to that required for achieving food security. Donor funding has played a major role in filling some of the gaps, especially through World Bank credit, which has enabled Bangladesh to make considerable investments in its infrastructure and equipment. Despite increases in recent years, the level of the country's agricultural research investments remains low. A primary goal of a recent World Bank project was to improve the efficiency of the agricultural research system, but the wide ranging institutional reform necessary for the successful achievement of this goal did not occur.

For example, BARC has very limited control over the allocation of financial resources at the institutes it oversees since these are administered by four different government ministries and have individual, legally enacted management boards. In addition, the efficiency of the system continues to be poor because of overlapping mandates of its research stations and substations, each with their own management teams and support facilities. This has been recognized by the government as a serious on-going problem and plans to address the issue are apparently in preparation.

Conditions in the extension system also result in sub-optimal performance. Some specific issues are highlighted here (also see Swanson (2011)):

- Very limited relationships between the DAE, DLS, DoF and NGOs.
- Very limited research-extension linkages.

- SAAOs encumbered with many duties of governmental service that limit time to serve farmers.
- Limited facilities for the SAAOs to provide better service to respond to farmers' needs and aspirations.
- Inadequate training of the field extension staff. The SAAOs do not have sufficient knowledge in terms of current and emerging crop technologies and, especially, the emerging new farming systems; the SAAOs need up-to-date training on fisheries and livestock management practices, since most small-scale and marginal farmers produce crops and livestock products and many also produce fishes (ibid).
- Lack of Union and Block level Fishery and livestock Extension Workers. On an average there are 60,000 – 70,000 farm households in an Upazila, yet there are only 2 or 3 livestock or fishery extension workers at the Upazila level. Given that there are no livestock or fisheries extension workers at the union and block levels, then most farmers have little or no access to these current technologies and management practices.
- Inefficiency of Farmer and/or Producer Groups. The DAE has so far formed 18,000 CIGs (Common Interest Groups) under the NATP (National Agricultural Technology Project), but only the better off farmers have been selected as the CIG members and not the rural poor or small-scale farmers who need the service most from the extension service provider. The training provided to CIG members is seldom need-based; instead senior extension officials take this decision.
- Ineffective Farmer Information and Advisory Centres (FIACs) have been formed at the union level; they consist of two small offices and furniture. Specific types of meetings and training courses are arranged; the purpose and technical content to be determined by the CIG members but seldom are.
- Lack of Farmer Advisory Committee (FACs) and/or Steering Committees (SCs), which are expected to allow representative men and women farmers to help shape extension's priorities and contribute to an effective, farmer-led extension system. The DAE will likely to remain a "top-down" and not farmer-driven extension system until SAAOs can devote most of their time to helping farmers, FACs or SCs are organized and provide effective direction to the work agenda of the extension service, and funding is available for SAAOs to visit farmers' fields.

4. RECOMMENDED INTERVENTIONS TO ACHIEVE AGRICULTURAL TRANSFORMATION

4.1 Competitive Grants System

Several of the issues described in the previous section as key to agricultural transformation in Bangladesh could be addressed through creation of a competitive grants system (CGS). Specifically, the CGS could improve prospects for food security in Bangladesh by:

- Resolving priority human resources issues;
- Developing an improved research to market continuum; and
- Accelerating adoption of modern technologies.

The CGS will focus primarily on research but, in special cases, higher education, training and extension/adult education could be integrated into product- or task-oriented projects. If the CGS were funded at US\$25 million over 5 years, administrative costs over that period would be expected to total \$3 million, leaving about \$22 million for grant awards. Initial grants would be in

the range of \$100,000 to \$300,000 for up to three years and be renewable for an additional two years depending on performance. A suggested share of the funds for each function would be 50 percent for research, 30 percent for higher education and training, and 20 percent for extension.

Grants will be available to government research institutions and universities, international research institutions, private sector companies and NGOs. Grant funding may be used to provide incentives for the grantees when based on performance, necessary equipment, limited in-country training, national and international travel for collaboration and conferences, and modest contributions to overhead of the grantee.

Grant funding will not purchase vehicles or other major equipment, or support long-term training. It is expected that such items would be sought from government sources or from international development donors other than USAID.

USAID/Bangladesh will engage a partner to implement the CGS program. The implementation partner will finalize the design of the CGS, draft and gain approval for the Request for Applications (RFA), train potential applicants on how to apply, organize the proposal evaluation, obtain approval of the review committee, brief and guide the review committee, and select the proposals to be recommended to an Advisory Committee for approval.

After approval of applicants, the implementation partner will work with the principal investigator to initiate each research project properly, which is a critical activity. The partner will monitor projects and provide periodic feedback to grantees, as needed, to keep the research projects on track, and to maintain communications with USAID and with the project Advisory Committee.

Criteria for success of the CGS include:

- **Research Facilities:** Viewed collectively, Bangladeshi institutions have adequate research facilities for the type of adaptive research needed. Because resources and equipment at many locations are limited, grant applicants will be encouraged to collaborate with other institutions to share resources. Acquisition of minor equipment not available can be funded within the grant. The government or other donors will need to commit to provide needed equipment and resources, not otherwise in place, to the successful grantees. The grant program will permit a modest contribution to overhead for the grantee, which could be used to acquire needed equipment.
- **Educated, Experienced and Motivated Personnel:** Bangladesh has trained researchers, though they may be few and with limited skills or experience in some areas of investigation. Collaboration among institutions will help to resolve deficiencies in personnel. The grants will allow short-term training or the ability to bring in specialists from outside Bangladesh for short periods to provide the needed skills and experience. It is anticipated that, in close coordination with the government, the CGS will be able to offer performance incentives to the grantee teams through the grant agreements.
- **Potential for Adoption of Improved Technologies:** Few, if any, single institutions in Bangladesh, working alone, can achieve the desired level of results within the five years contemplated for the funded work. Multiple institutions will need to combine their strengths to conduct the research and to deliver the results to users. There are some effective incentive systems now used by private companies and NGOs to motivate delivery of technology and production inputs to producers. These models could be incorporated into the research proposed to the CGS.

Beginning during the second year of the CGS, an annual workshop could be conducted for grantees to present their results to peers, with an added benefit that small rewards will be provided to those research teams that best achieve the results in their project plans.

4.2 Matching Grants for Training

The BAT could support technical training on agricultural topics for staff of agri-businesses and NGOs through a program to provide matching grants for relevant short-term non-degree training.

Training would be provided through existing organizations such as NGOs, consulting companies, government agencies, universities, or private companies. The criteria for selecting training institutions include (a) existing expertise across one or more agricultural fields, (b) the number of specialists available with advanced degrees and experience in the needed specialties; (c) willingness to go beyond current staff to bring in other expert trainers as needed; and (d) commitment on the part of senior staff to make the contract training program work, and to build it into a continuing service.

The training partner can use their own staff or draw trainers from other institutions or as individuals. The concept is that if trainers were from BAU they could receive extra income according to their agreements with BAU. This is similar to consulting services linked to universities in the US. The provided training would be flexible to offer courses in any location in Bangladesh, and to provide trainers and curricula agreed in detail by those who are receiving the training.

The training is expected to: (a) accelerate technology and skill transfer to agribusiness and NGO agricultural staff; and (b) assist orientation of government experts and government-funded degree programs to the needs of the private sector.

To assist in getting such training programs underway, the activity would provide (a) a small grant for administration of the training program; and (b) funds to pay for training, all of which money would be disbursed as a matching grant against training offered on contract and paid for in part by whoever asks for the training.

In the first 2 years, the project could offer to pay 70% of training expenses against 30% by the companies and NGOs asking for training. In years 3-4, the project could reduce its contribution to 50%, with another minor reduction in year 5. The program would (a) set the range of topics for which training could be funded; (b) set a range on the number of trainees in each course; (c) set a range on the duration of training; and (d) set a range on the number of trainees in each course.

4.3 Updating University Curricula

Internship programs at the undergraduate level in the universities will be funded so that selected students can be offered opportunities to work with farmers, learn about farming systems, ecosystems, field level technological problems, farm business issues and many others aspects of rural social development, livelihood improvement, and food security.

Topics of high relevance to food security, such as environmental issues, policy, agribusiness, nutrition and gender should be added to the curricula. In the cases of nutrition and gender, the BAT could support preparation of course materials and also prepare materials for all USAID implementation partners to incorporate gender and nutrition education into their programs.

4.4 Supporting Changes to the Extension System

The following interventions would be supported by BAT (also see Swanson (2011)):

- Transforming and Modernizing the Public Extension System. An integrated extension approach needs to be introduced for providing services from the DAE, DLS and DoF to farmers at the Union level, if not possible at the upper levels. The activities of FACs or SCs should be strengthened in order to have farmers' voice as well as to get demand-driven information. This would also empower the farmers in taking their own optional rational decisions.
- Providing In-service Training to SAAOs. In order to make the integrated advisory and extension service effective it would be necessary to arrange in-service training to existing SAAOs similar to pre-service training to new SAAOs. Training is needed on current crop, livestock and fishery systems, how to organize farmer/producer groups, and helping build value chains. To be effective the participating SAAOs or other specialists must have removed most of their current duties to provide governmental services.
- Strengthening Capacity of the Agricultural Training Centres (ATCs) at the Upazila Level. Since NATP is supplying one computer for each upazila extension office, providing a wide-band Internet Access is necessary so that the trainers could use appropriate audio/video e-conferencing software to conduct training sessions via internet for SAAOs as well as the CIGs and other producer groups.
- Providing Resources to SAAOs. Due to inadequate or out-of-date training, the SAAOs do not have much impact on farm households; they have no transportation, have limited resources to conduct extension programs, as well as they lack needed communication equipment. However, given the current on-line availability of both technical and marketing information through AIS, field extension workers could easily access this information if they had smart phones and other needed resources.
- Updating the AIS Capacity and Information. Government has already given considerable emphasis on the use of Information and Communication Technologies (ICTs) through AIS. These emerging resources would be very valuable and useful to both the field extension workers (SAAOs) and farmers if they have access to this information via the AIS web site. The AIS can play a vital role for quick and timely transfer of technology through *e-krishi* (e-agriculture) by establishing the Agriculture Information and Communication Centres (AICCs) at the village. The AICCs would act as a catalyst for poverty reduction, yield increase, food security, modern agriculture, safe environment, market information etc. Through the AICCs demand-led agricultural technologies and information will be available at the door-step of the farmers so that the rural people can get the benefit from it and develop their livelihood. In the centres the rural people would be able to learn new agricultural technologies by watching documentary films, TV fillers, and spots through the multimedia facilities. A few private sector organizations have also come forward in the name of 'Call Centres', 'Community Information Centres', 'Palli Tathya Kendra' etc.

5. ANTICIPATED OUTCOMES

Anticipated outcomes closely follow the proposed BAT Program objectives and relate directly to the program's intermediate results. For the anticipated funding level of \$50 million over five years the following departments are expected to derive benefits:

- Research institutes would receive fund amounting to 50 percent of the BAT Program funding level for conducting research and purchasing minor equipment, which are not available now.
- Thirty percent of the funding amount would be spent for modernizing the course curricula, introducing internship at the undergraduate level, developing manpower at the universities.
- In order to update and make the extension and advisory services effective and participatory several interventions have to be initiated; 20 percent of the available funding would be utilized for this purpose. This includes training to make agricultural transformation vital and fruitful. Training would be provided to field level extension workers (SAAOs) on ICTs, integrated farming, and other aspects of food security and livelihood improvement.

6. CROSS-CUTTING ISSUES

6.1 Women

Research findings show that women in the rural areas work more than men. Without involving women in the mainstream development activities it would be impossible to achieve success in food security and livelihood improvements in the rural Bangladesh. In the BAT program emphasis would be placed on addressing women's problems as related to their contribution to agricultural development.

Priorities have to be given to developing technologies targeted to women farmers' involvement in nutrition, health and sanitation. Attempts would also be made to increase women's empowerment not only in financial aspects, access to inputs, accumulation of resources, and spending money, but also in overall decision-making in the family as well as in the community. Also, courses on gender need to be added to the existing course curricula at the universities.

6.2 Nutrition - Risk and Vulnerability

In Bangladesh acute food crises usually occur twice a year – one in January/February, and the other in September/October. During these periods the prices of food grains rise to a maximum. Meanwhile, the rural poor people cannot sell their labor. Such a situation requires urgent attention by the agricultural research, education and extension systems. For example, steps should be taken to develop short duration *aman* and *aus* rice varieties through breeding/biotechnology so that the biannual rice production crises would be minimized.

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ANNEX I

Stakeholders Interviewed

Name	Institution	Title	Telephone	e-mail
Dr. M. S. Alam	Sher-e-Bangladesh Agricultural University	Vice-Chancellor	01713-311332	alam_gpb@yahoo.com
Dr. M. A. Sattar Mondal	Bangladesh Agricultural University	Vice-Chancellor	01713-008807	vc@bau.edu.bd
Dr. Bahadur Meah	Bangladesh Agricultural University	Project Co-ordinator, IPM Project, USDA	01711-667234	bmeah@yahoo.com
Dr. Md. Ali Akbar	Bangladesh Agricultural University	Director, BAURES	01715-004752	baures84@gmail.com
Dr. Abdul Mannan Akanda	Bangabandhu Sheikh Mujibur Rahman Agricultural University	Vice-Chancellor	9205336	vice-chancellor@bsmrau.edu.bd
Dr. Shahid Ullah Talukdar	Sylhet Agricultural University	Vice-Chancellor	01711-957552	Talukder_iwm@yahoo.com
Dr. Syed Sakhawat Hussain	Patuakhali Science and Technology University	Vice-Chancellor	01715-280464	sshussain_bau@yahoo.com
Dr. M. G. Hussain	Bangladesh Fisheries Research Institute (BFRI)	Director General	01725-155980	dgbfri@gmail.com
Dr. M. A. Sattar	Bangladesh Institute of Nuclear Agriculture (BINA)	Director General	01716-523819	
Dr. Rafiqul Islam Mondal	Bangladesh Agricultural Research Institute (BARI)	Director General	01912-729230	dg.bari@bari.gov.bd
Dr. Nurul Alam	BARI	Principal Scientific Officer	01711-907886	entoipm@bdcom.com
Dr. A. N. M. Rezaul Karim	IPM CRSP South Asia Bangladesh Site	Co-ordinator	01711-907886	ipmcrsp@bdcom.com
Dr. M. Abdul	Bangladesh Rice Research Institute	Director General	01715-285096	-

Mannan Mr. Sudhir Chandra Nath	(BRR) BRAC	Program Co- ordinator	01714 091305	sudhir.cn@brac.net
Mr. Monirul Bashar	Katalyst	Director	01730-338545	monirul.bashar@swisscontact -bd.org
Dr. G. P. Das	ABSP II	Country Co- ordinator	01715-004465	absp2@mtlbd.net
Dr. M. Jainul Abedin	IRRI Bangladesh Office	IRRI Representative for Bangladesh	01713-069 598	m.z.abedin@irri.org
Dr. Jagadish Timsina	IRRI Bangladesh Office	Senior Scientist-II, Cropping System Agronomist	01730-334 660	j.timsina@cgiar.org
Mr. Shahid Uddin Akbar	Bangladesh Institute of ICT in Development (BIID)	Chief Executive Director	01819-243935	shahid.akbar@biid.org.bd
Mr. Habib Jahan	Advanced Chemical Industries (ACI) Ltd	Manager, Seed		-
Mr. Ibrahim Khalil	Ispahani Biotech	SSO	01937-900079	-
Mr. Ashrafuddin	Ispahani Biotech	Manager, Business Development	01937-900022	-

ANNEX 2

Agricultural Research and Education Work Completed by M. Abul Kashem (MAK) and Peter Gregory (PG)

February 6, 7, and 8

- Review background documents (MAK and PG)
- Orientation briefings with Arvin (PG)
- Review and sign contract (MAK)
- Informal discussions with other team members (PG)
- Meeting between MAK and PG to plan initial activities, including:
 - Draft a table (see below) showing suggested visits to government institutions, private sector companies, and NGOs; including names of principal interviewees and their contact details
 - Draft three lists of interview questions - to be asked of researchers, educationists and extensionists (completed)
 - Start drafting introductory paragraphs for the SOW (first draft completed) (MAK)

February 9

- Seek feedback from Zakaria on proposed visits (postponed one day)
- Discuss proposed work plan and finalize proposed visits with Arvin (postponed one day)
- Confirm meetings with interviewees (in process)

February 10 – 15

- Conduct interviews as indicated in the table on page 2
- Prepare tables showing results of interviews; also prepare a few sentences summarizing the main issues arising
- Submit weekly consultancy report (Saturday morning, February 12)

February 16-19

- Prepare draft Strategy Document (Arvin's deadline is before or on February 20)
 - Main elements of Burt Swanson's extension report will be incorporated
- Submit weekly consultancy report (Saturday morning, February 19)
- Additional visits and calls to NGOs and private sector companies (list near completion)

February 20-24

- Prepare draft SOW

February 25

- PG departs for the USA (morning)

February 26

- Submit weekly consultancy report (Saturday morning, February 26)

ANNEX 3

Program of Activities and Visits to Government Institutions, Universities, Private Sector Companies, NGOs and USAID Projects

February 10-16, 2011

Date	Activities/ Visits and Interviewing ²	Remarks/ venue
Thursday, 10 Feb.	1. Professor Dr. M. Shah-E-Alam Vice-Chancellor Sher-E-Bangla Agricultural University, Dhaka Mobile: 01713-311332 2. Work at office	Transport needed
Friday, 11 Feb.	Weekly Holiday	
Saturday, 12 Feb.	Analyses of documents	
Sunday, 13 Feb.	1. Dr. M. Ali Akbar Director, Bangladesh Agricultural University Research System (BAURES) Bangladesh Agricultural University (BAU) Mymensingh Mobile: 01715-004752 Time: 10.00 am 2. Dr. M. A. Sattar Mondal Vice-Chancellor Bangladesh Agricultural University (BAU) Mymensingh Mobile: 01713-008807 Time: 11.00 am 3. Professor Dr. Bahadur Miah Department of Plant Pathology, BAU, Mymensingh . Project Director, USDA-BAU IPM project Time: 12.00 pm Depart from Mymensingh Time: 1.30 am Meeting with Mr. Shudhir Chandra Nath, Program Coordinator, Agriculture, BRAC Address: Lift 10, BRAC Head Office 75 Mohakhali, Dhaka Time: 6.00 pm	1. Transport needed 2. Overnight at Mymensingh (MAK) 3. PG returns to Dhaka

² Interviews will be conducted jointly by MAK and PG unless otherwise indicated

17 Feb, 2011	<p>Dr. Shahid Uddin Akbar BIID Bangladesh. House: 165, Road: 23, New DOHS Mohakhali, Dhaka Mobile: 01819-243935 Time: 10.00 am</p>	
Stakeholder Consultations	<ol style="list-style-type: none"> 1. Mr. Habibur Rahman (MAK) Director General Department of Agricultural Extension (DAE), Khamarbari, Krishi Khamar Sarak, Dhaka Mobile: 01713-063569 2.. Mr. M. Ashraf Ali (MAK) Director General, Department of Livestock Services (DLS), Krishi Kham Sarak Dhaka Phone: 031659210 3. Professor Dr. Syed Sakhawat Hossain (to be called/no visit) Vice Chancellor Patuakhali Science and Technology University Patuakhali Mobile: 01714-075977 4. Professor Dr. Mahfuzul Bari (to be called/no visit) Vice Chancellor Chittagong Veterinary and Animal Sciences University Chittagong Mobile: 5. Professor Dr. M. Afzal Hossain (to be called/no visit) Vice-Chancellor Hajee Mohammad Danesh Science and Technology University, Dinajpur Mobile: 01715-280464 6. Professor Dr. Md.Shahid Ullah Talukdar (to be called/no visit) Vice-Chancellor Sylhet Agricultural Univesity Mobile: 01711-957552 7. Professor Dr. Saifuddin Shah (to be called/no visit) Vice-Chancellor Khulna University Khulna Mobile: 01711-218993 8. Professor Dr. M. Abdus Sobhan (to be called/no visit) Vice- Chancellor Rajshahi University, Rajshahi Mobile: 01732-625808 	

ANNEX 4

Assessment of Bangladesh's Pluralistic Extension System

Prepared by Burton E. Swanson,
Director, Modernizing Extension and Advisory Services (MEAS) Project

The purpose of this Scoping Mission was to assess the major extension/advisory service providers within Bangladesh to 1) identify the respective strategies and major gaps within and between these different advisory service providers, including their institutional capacity, human and financial resources, as well as other key factors, especially in reaching the rural poor; and then to 2) suggest some near- and/or long-term strategies and investments that could strengthen and improve the effectiveness, integration and sustainability of these different extension and advisory service providers within Bangladesh.

The overall goal will be to determine how additional funding could help Bangladesh both maintain its national food and nutritional security, while also increasing the incomes and improving livelihoods of small and marginal farm/rural households. Particular attention was given to how the public, private and/or civil society organizations (NGOs) are helping increase the household income of small and marginal farmers, especially poor rural women. In addition, the major research institutions in Bangladesh were visited to get their assessment about the current strength of research-extension (R-E) linkages and whether and how these linkages might be strengthened. During this scoping mission, the following institutions and organizations were visited and their programs and/or projects were reviewed with its leadership:

- Public Extension Institutions:
 - Director General (DG) and staff of the Department of Agricultural Extension (DAE)
 - DG and staff of Department of Fisheries (DOF)
 - DG and staff of Department of Livestock Services (DLS)
 - Director and staff of Agricultural Information Service (AIS)
 - Department of Agricultural Marketing (DAM)
- Public Research and Education Institutions
 - DG of Bangladesh Agricultural Research Council (BARC)
 - Director of the Bangladesh Agricultural Research Institute (BARI)
 - Director of the Bangladesh Fisheries Research Institute (BFRI)
 - Head of the Department of Agricultural Extension and Education, Bangladesh Agricultural University, plus other faculty members and students
- USAID funded Projects
 - Leaders of the Shouardo Project being implemented by CARE International
 - Leaders of the PRICE project being implemented by Chemonics International
 - Leaders of the ILSAFARM project being implemented by the IFDC
 - Leaders of the REAP project being implemented by Winrock International
- DANIDA Extension Projects. Met with the senior advisors for the DANIDA extension projects (DAE, DOF and DLS) being implemented through the Royal Danish Embassy
- World Bank funded National Agricultural Technology Project (NATP)
 - NATP Project Director, as well as the Directors of the NATP project components for agricultural extension (DAE), livestock (DLS), fisheries (DOF) & research (BARC)
 - Field visits to Upazila and Union DAE offices (NATP funded) in two Upazilas
- Asian Development Bank (ADB)
 - Head, Agricultural and Rural Development Division, ADB-Bangladesh regarding what was learned through the Northwest Crop Diversification Project (NCDP)
- Other Non-Governmental Organizations (NGOs) providing extension and advisory services

- Executive Director of BRAC—the largest NGO in Bangladesh, which is also working in other countries
- Director and senior staff at World Vision—now turning its attention to more market-driven extension activities
- Head of the Agricultural Advisory Society—a very small NGO which seeks donor funding to provide advisory services
- Leaders of the D-Net, which is building an ICT network, to provide better access to information on human health problems, but some attention is being given to agricultural extension.

I. SUMMARY OF MAJOR GAPS IN BANGLADESH'S PLURALISTIC EXTENSION SYSTEM

The following is a summary of the major gaps or weaknesses that were identified during this scoping mission of Bangladesh's pluralistic extension system:

A. Public Extension's Organization and Management Issues or Concerns

1. Very limited relationship between the Dept. of Agricultural Extension (DAE = crops), the Department of Livestock Services (DLS) and the Department of Fisheries (DOF), as well with the other NGO service providers within specific project Districts and/or Upazilas.
2. Also, very limited Research-Extension Linkages, since the DAE is a strongly top-down extension system (also DLS & DOF) and it was reported that the DAE does not maintain regular contact with the different research institutions.
3. Very limited resources (i.e., no transport, communications, office, or program funds) especially for the field extension staff at the Union and Block levels. This lack of resources severely limits the capacity and performance of these field extension workers. There are about 12,600 Sub-Assistant Agricultural Officers (SAAOs), but about the only resources they have and receive are their monthly salaries. Depending on the Upazila, about 15% have motorcycles, but most have to walk or take public transportation.
4. Current ICT Capacity should be strengthened to link farmers to needed technical and market information.
 - a) **Agricultural Information Service (AIS)** is making good progress in making technical and market information available on line for all crops, livestock and fisheries; however, very few people, especially farmers and the field extension staff (SAAOs) can access this web-based information. Also, the current on-line information covers all crops, livestock and fisheries management practices but this information, especially for crops, needs to be made more location specific, based on local agro-ecological growing conditions. However, if the AIS could be upgraded, using new ICT capabilities, then this more location specific technical information could easily be made available across different agro-ecological zones of Bangladesh.
 - b) **Department of Agricultural Marketing (DAM)**. DAM is generating market information on a weekly basis and some data is now available twice per week. This

- market information is also rapidly available through AIS's online service; the DAM system should be enhanced so they can disseminate daily market information across all major markets within Bangladesh.
- c) **Call Centers** are being created by both research and most extension departments (DAE, DLS, and DOF), as well as through the AIS at the national level. Since medium and larger scale farmers are using mobile phones on a daily basis to get more location specific input supply and market information (primarily from private sector firms), these call centers probably need to be decentralized to the major agro-ecological zones within Bangladesh (e.g. to subject matter specialists (SMSs) at the district level and/or to the BARI stations in each of the 22 major agro-ecological regions, so this technical advisory information can be communicated directly to SAAOs and/or farmers and made more location specific to local needs.
 - d) **Mobile phones.** Most small and medium “progressive” farmers routinely use mobile phones to speak with input supply dealers and wholesale markets. Some of the larger commercial farmers are now using “smart phones” and can access the AIS web site. The SAAOs have their own personal mobile phones, but most are conventional mobile phones that are limited to voice and SMS texting capabilities. The SAAO's seldom use their mobile phones for work except to respond to incoming farmer questions (since incoming calls are free). If the SAAOs had the appropriate type of “smart phones” along with funding for appropriate online charges, then they could quickly access and download rapidly expanding sources of both technical and market information. In addition, they could easily share this needed information directly with small-scale, marginal men and women farmers. With the appropriate ICT resource, they could bypass the DAE “top-down” DAE management structure and begin serving small and marginal farmers across their block with up-to-date technical and market information.
5. Training of the Field Extension Staff—Most SAAOs have diplomas from one of the 11 Agricultural Training Institutions (ATIs), but this training concentrates on cropping systems and these ATIs (and the SAAOs) may be largely out of date in terms of current and emerging crop technologies and, especially, the emerging new farming systems. Unfortunately, I was not able to visit an ATI during this visit, but with economic growth within Bangladesh and changing consumption patterns, the SAAOs need up-to-date training on how they can help the rural poor, especially in using their limited land and water resources more effectively. Even more important, the SAAOs need up-to-date training on fisheries and livestock management practices, since most small-scale and marginal farmers produce crop and livestock products and many also produce some fish.
 6. Lack of Union and Block level Fishery and Livestock Extension Workers—there are 60-70,000 farm households in an Upazila, yet there are only 2 or 3 livestock or fishery extension workers at the Upazila level. Given that there are no livestock or fisheries extension workers at the union and block levels, then most farmers have little or no access to these current technologies and management practices. Therefore, it is critical that the current SAAOs be trained and/or have access to technical and management information about producing both livestock and fisheries products.

B. How Farmer and/or Producer Groups are Being Organized

There is general agreement within the DAE that small-scale and marginal farmers should be organized into community, farmer and/or producer groups (within and between local communities). The purpose of these groups is to help different groups of farmers to refocus on intensifying and diversifying their respective farming systems by producing more high-value crops, livestock and fish products to increase farm income. In addition, if these groups can work together both for input supply and marketing purposes, they can also reduce the cost of these inputs, as well as to linking these producer groups to wholesale markets, so they will not be exploited by local “traders.” It should be noted that different approaches are being implemented across the different donor sponsored projects. For example:

1. Common Interest Groups (CIGs organized under the NATP) appear to be those farmers most closely connected with the extension staff at the Union and Upazila levels.
2. Integrated Pest Management (IPM) and Integrated Crop Management (ICM) Clubs being organized under DANIDA projects (generally 50% men and 50% women)
3. Village Groups being organized by BRAC have monthly meetings to discuss and solve immediate technical, management or marketing problems
4. Other donor projects (e.g. NCDP by ADB, as well as several USAID funded projects) seem to be focusing on organizing producer groups that are more specifically focused on particular crop, livestock or fish systems (e.g. horticulture groups, prawn groups, etc.)

There is broad agreement of the need to organize farmer or producer groups and that these groups are essential in successfully linking farmers to markets and in reducing the risk of poor farmers being exploited by local traders. Groups are being organized by different donors and NGOs, but most are using somewhat different methods of organizing these groups. There was inadequate time during this scoping mission to see these groups directly, but the BRAC approach seem the most logical and best approach, but again with some limitations.

It would appear that the CIG approach being used under NATP would not be recommended, since the primary purpose seemed to be in delivering about 9 training sessions/year to these CIGs at the Upazila level (primary on specific crop, livestock and/or fishery production practices). However, it did not appear to be the farmers themselves who were identifying what courses should be taught, nor was there much focus on organizing producer groups that could build value-chains to different markets for specific products. In short, the CIG training approach appeared to be largely top-down (courses were determined senior extension staff at the Upazila level or higher. Also, these CIGs may not be sustainable, since the focus seemed to be more on the fact that both the trainees and trainers getting paid to teach and attend these courses. In short, it could be that the senior DAE officials, who are being paid to conduct these training sessions, are also deciding which courses are offered, not what different farmer groups need/want in terms of producing new high-value crop, livestock or fish products, as well as getting organized into producer groups so they can link more effectively to accessible urban markets.

C. Other Important Extension and Advisory Service Providers

1. Private Sector Firms
 - a) Input Supply Dealers (seed, fertilizer and pesticides) are the primary source of “input related” advisory services for most medium and larger farmers. Farmers routinely call their input suppliers to get their recommendations on what inputs to use and how to solve specific technical problems. The provision of these advisory services, by these

input supply dealers, will continue to increase as the production and demand for both staple and high-value food products increases. It should be noted that this *technology transfer* function, within pluralistic extension/advisory services, routinely shifts to the private sector (input supply dealers) as medium and larger farmers increase their productivity and marketing, as is clearly happening in Bangladesh. However, these private sector firms will have little or no impact on the small and marginal farmers, especially rural women.

- b) Wholesale Market Dealers—if farmers are organized into groups, to market their outputs, then this shortens the value chain and farmers receive higher prices. These cooperatives or producer groups for different high-value crop (e.g., fruits and vegetables), livestock and fish products are emerging. They are being established especially near Dhaka and other major cities, and specifically for high-value crop and fishery products (e.g., prawns) destined for major urban markets and for export.
- c) Local Traders—in most countries, including Bangladesh, these middlemen take advantage of the rural poor by offering minimal prices on farm gate products. This is difficult to change until small farmers, including women, get organized.

2. NGOs Providing Extension Services

- a) BRAC is the largest and appear to be the most effective NGO in Bangladesh, since it not only provides advisory services, but also micro-credit and help farmers build value chains for specific crops, livestock and/or fishery products. However, in the near future, BRAC is only expected to serve about 0.5 million farmers, while there are over 7 million (landless) farmers who are renting land.
- b) CARE International—the leadership of the current CARE project indicated that their earlier project was not very successful, but they think their new SHOUHARDO II project is now working effectively and having an impact on the rural poor. They work through local NGOs and together they have considerable field and support staff. In particular, they have far more program and operational resources than found in the DAE at the Upazila and Union levels, as well as the other public extension institutions.
- c) World Vision (WV) is starting to refocus their efforts on value chains, but they have just started this new initiative upon the recent arrival of their new director.
- d) Winrock International (WI)—Primarily working through local NGOs in providing advisory services to both horticulture and fish farmers; again, the WI focus appeared to be more on the medium-scale, more progressive farmers and getting them linked to both domestic and export markets.

3. Voluntary Farmers Providing Advisory Services—Several donors, including the World Bank and DANIDA, are recruiting progressive farmers through their different projects, who then get minimal resources (e.g. 600-16,500/month, plus a bicycle) for providing advisory services to other farmers within their respective villages or block). Some of these “voluntary farmer advisors” are:

- a) Fisheries Extension Advisory Farmers (FEAFs)
- b) Livestock Extension Advisory Farmers (LEAFs)
- c) Community Extension Agents for Livestock (CEAL)
- d) Community Extension Agents for Fisheries (CEAFs)

It wasn't clear how effective these voluntary farmers are in providing advice to other farmers in their village or block. It appears that some of these voluntary farmer advisors are effective and do help other farmers, while others primarily want the money and talk with their nearby neighbors and friends.

4. Other Important Issues:

- a) Lack of Farmer Advisory or Steering Committees among the Public Extension Departments, especially the Department of Agricultural Extension. To transform a public extension system from being too top-down and becoming more “farmer-driven,” then representative Advisory and/or Steering Committees must be created, especially at the Union and Upazila levels, and, if possible, at the District level. The reason why public extension systems fail to serve the needs and interests of all types of farm households within their service area is that they fail to listen to what farmers see as their opportunities and extension priorities. Also, these Advisory and/or Steering Committees must represent all major types of farmers (men and women) and size of farm households (landless, marginal, small, medium and large) within their respective service area. For example, the head of all community, farmer or producer groups within each block should become members of these Committees and then the head of the Union level Advisory Committee should serve on the Upazila level Steering or Advisory Committee. These committees are critical in making public extension more farmer-led and market driven.
- b) Developing Value Chains. Medium and larger farmers in some areas of Bangladesh are now shifting to more high-value crops/products and, thereby, diversifying their farming systems. These more progressive farmers are becoming more effective in seeking out better markets and prices, as well as getting organized into commodity or producer groups, since they can then negotiate higher prices from wholesale buyers, rather than being exploited by traders. However, in addition to medium and larger farmers getting organized and linked to markets, small-scale farm households also need to get organized and get linked to local and nearby markets.
- c) Access to Credit. Commercial farmers increasingly need access to credit as they intensify their farming systems. The Government is strongly encouraging banks to offer credit to these small and medium scale farmers. However, landless farmers and rural poor, including rural women, have very limited access to credit, except through NGOs like BRAC.
- d) Farm Household Decision Makers. For small, medium and larger scale progressive farmers, who are marketing their products, it is primarily the men within each household who are making most farm management decisions. However, for the very small and marginal farm households (<0.2 acres), it is primarily the women who are making most farm management decisions, in terms of backyard gardening (fruits and vegetables), livestock (poultry and goats) and fish ponds. The reason for this difference in making farm management decision is that the men in these very small households are pursuing off-farm jobs or working for nearby, larger commercial farmers.

II. ASSESSMENT OF MAJOR DONOR PROJECTS

A. National Agricultural Technology Project (NATP)

1. Organizing Common Interest Groups (CIGs)—the Upazila and Union level extension workers appear to be selecting better off farmers with whom they are already connected for these CIGs, not the rural poor or other small-scale farmers who are seeking improved advisory services. However, they reported creating 18,000 CIGs during the past 18 months, but their only extension activity seemed to be bringing them to the Upazila office for training, not in getting them organized into producer groups for high-value crop and livestock markets. In the case of the fishery groups, they could be moving forward in

linking these groups to wholesale markets, but there was insufficient time to specifically assess these fish and livestock CIGs.

2. Training of the CIG farmer groups. It appears that the main reason why both trainers and the farmers being trained participate in these scheduled courses (about 9/year) is to get paid (i.e. 500-1,000 taka for the lecturer and 120-200 taka/session for the farmer participants). Most farmers would prefer to have these courses at the Village, Block or Union level, not at the Upazila Training Centers, however, they have no choice over when, where and what will be taught. The senior extension officials make this decision.
3. Developing Farmer Information and Advisory Centers (FIACs) at the Union level—these FIACs consist of 2 small offices and furniture; not much else. In India, the FIACs also had a training center, so farmers could meet for their monthly Farmer Advisory Committee (FAC) meetings, during which they would set extension priorities for their specific block and then to participate in the specific types of meetings and training courses they wanted or needed.
4. Lack of Farmer Advisory and/or Steering Committees. As mentioned above, the key to creating an effective, farmer-led extension system is to allow representative men and women farmers to help shape extension's priorities through Farmer Advisory Committees (FACs) and/or Steering Committees (SCs) as done through NATP in India. These committees, which will make the public extension system more responsive to farmer needs, were not included in NATP design in Bangladesh. This is a major omission; therefore, the DAE will likely remain a largely “top-down” and not farmer-driven extension system unless these FACs or SCs can be introduced.
5. Weak Research-Extension Linkages. Based on conversations with all research institutions, it appears that there continues to be little or no relationship between the research and extension components of NATP. Again, this is a serious omission that needs to be addressed and could be done by enhancing the AIS to link research with the field extension staff, using smart-phones and/or comparable technologies.

B. Northwest Crop Diversification Project (NCDP)

It was not possible to visit the NCDP project and to learn firsthand information and feedback about this project. However, the following achievements were reported:

1. Farmer Training and Extension Activities—200,000 farmers were trained about how to produce high-value horticultural crops/products.
2. Mobilizing Farmer and Producer Groups—10,000 producer groups, focused on the production and marketing of horticultural crops were formed and linked to markets.
3. It was reported that BARI carried out much of the needed adaptive research for these selected HVCs (e.g. summer onions) and this information was then disseminated through the public extension system within this region.
4. Upgrading markets for these HVCs—16 wholesale markets were created at the district level and 60 new markets were established at the Upazila level and these new markets were expected to help build value chains that would engage these new producer groups to these new wholesale markets.
5. Micro-credit for local agribusinesses and the rural poor was pilot-tested. No feedback on the effectiveness of this project component.

C. DANIDA Projects

DANIDA has three separate extension projects that focus on 1) staple and high-value crops, 2) livestock, and 3) fisheries. The reason for these three extension projects is due to the separation of these three departments, within the MOA and MFL. Some key factors include:

1. Primary extension methodology or approach used—DANIDA concentrates on the Farmer Field School (FFS) methodology, which take considerable staff time and resources. The FFS approach generally concentrates on 15-20 farmers in each farmer group, and these groups meet weekly for about 10-12 practical training courses within a season. Using this methodology, the local extension staff can only cover a limited number of farmers each season and then move on to cover additional farmers groups in other communities in subsequent years.
2. It is important to note that DANIDA puts priority attention on the rural poor, including 50% of their focus on rural women. Due to the shortness of time, it was not possible to determine the overall impact and sustainability of this approach.

D. USAID Funded Projects

There was limited time, during this scoping mission, to actually assess the effectiveness and impact of the different USAID projects (e.g. SHOUHARDO II implemented by CARE, PRICE implemented by Chemonics, ILSAFARM implemented by the IFDC, and REAP implemented by Winrock). However, based on conversations with the leaders of each project and after making limited observations in the field, there seemed to be more focus on small and medium-scale progressive farmers who are already marketing their products, rather than focusing on the rural poor (i.e. the small and marginal men and women farmers with <0.5 acres). The obvious reason is that these USAID projects must empirically document specific outputs and impacts of these projects; therefore, they are able to achieve and measure more rapid and significant impacts by focusing on these more progressive farmers, most of whom seem to be male farmers.

Please note that these observations are not intended to be a negative observation about these projects. However, it is important to document who is being served. In addition, both the international and local NGOs engaged in these projects have adequate resources to successfully implement these projects (e.g. cars or SUVs with a sufficient fuel allowance, modern offices with computers and Internet access, smart-phones, program funds, etc.). None of these resources are available among the SAOs at the Block/Union level (except for the 2 small offices being created as part of the FIAC); also, the Upazila level agricultural officers have very limited resources available (i.e., they have a small office, a land-line telephone and some Upazilas have an Agricultural Training Center (ATC) building for meetings and training courses. Note: NATP is providing one motorcycle and laptop computer to each participating Upazila level extension office, as well as funding to cover the cost of offering 9 training courses/year at the Upazila level for the newly organized CIGs.

II. OPTIONS FOR STRENGTHENING/TRANSFORMING BANGLADESH'S PLURALISTIC EXTENSION SYSTEM

A key question at the policy level is whether it might be possible to transform these public extension systems (DAE, DLS, DOF, AIS, DAM) into a) more integrated, decentralized (due to different agro-ecological conditions and access to markets), b) farmer-led (where farmers influence extension priorities) and c) market-driven approach, especially for appropriate high-value products that will increase farm income, especially among the very small, marginal farm households? In fact, these were the specific problems addressed by the NATP (and the Diversified Agricultural Support Project or DASP) in India. The problem is that NATP in Bangladesh is missing two important components. First, if an extension system is to address the specific needs of different categories of farmers within a Union, Upazila and/or District, then there must be either representative Farmer Advisory Committees and/or Steering Committees to help set extension priorities and to assess extension staff performance. In short, there needs to be a formal process of determining the needs and priorities of the different categories of farmers (marginal, small, medium, large, as well as men and women farmers) within each block, union and upazila. Without these committees, public extension remains top-down!

Second, the community, farmer and/or producer groups being organized must reflect the human (e.g. labor) and land resources of the different categories of households within each village or block. For example, marginal women farmers will primarily be interested in improving their backyard gardens, poultry and goat production and, possibly, their small backyard fish pond. In short, what most farm household will want and be able accomplish in increasing their household income (as well as family nutrition and other factors) will depend, in large part, on labor (including gender), land and/or pond size/type, and other key resources, as well as their access to different markets. In short, different farmer/producer groups will need to be organized within most villages, depending on their interests, resources and access to markets.

It should be noted that few, if any, SAAOs have been trained on how to organize producer groups, nor are they being encouraged to do so. Some NGO staff members have these skills and knowledge, but most do not have the technical skills and knowledge about how to intensify and diversify farming systems within different agro-ecological zones. Therefore, building a public-private partnership among these institutions is one approach. On the other hand, BRAC has secondary level graduates who are trained to first organize these community groups and then turn them over to their diploma-trained agricultural officers who meet monthly with these groups to address their specific priorities and concerns. As needed, BRAC has SMSs with BS degrees that routinely backstop their field advisory staff, as they need more information, advisory services or in training those farmer groups who wish to pursue new crop, livestock or fishery systems. This approach is largely the same as the NATP that was successfully implemented in India, and that is now being scaled up nationwide.

Next, we will consider different options that the USAID Mission might consider in helping organize the rural poor in Bangladesh and then improve their household incomes and nutrition:

Option 1: Transforming and Modernizing the Public Extension System—Since the DAE is in a different ministry (MOA) than livestock (DLS) and fisheries (DOF), which are under the Ministry of Fisheries and Livestock (MFL), it will be very difficult to integrate these three public extension systems. In addition, given the top-down management structure of all three departments (DAE, DLS and DOF), it will be very difficult to transform these different departments without major policy changes by the national government (especially organizing FAC or SCs at the Union and

Upazila levels). Therefore, attempting to integrate the extension systems of these two Ministries will be difficult, if not impossible to achieve, without major USAID or other donor investments.

Therefore, the following options will suggest possible changes that could make the field-level extension staff more competent, up-to-date and willing to provide useful extension and advisory services to all categories of farmers within their assigned block. In addition, the other options will outline how to link these field extension workers (especially the SAAOs as well as the Upazila extension officers) to important sources of available information through Agricultural Information Service (AIS) and the Department of Agricultural Marketing (DAM), especially through the AIS web site (which needs to be up-graded, as outlined below).

Option 2: Strengthening and Transforming the Extension System at the Union/Block levels.

It appears that most SAAOs are willing to provide farmers with assistance on different crop, livestock and fishery technologies (as well as emerging farming systems), but they have not been trained, nor do they have the authority to take on these additional advisory assignments (e.g. livestock and fisheries). However, with some encouragement and resources being allocated to the DAE at the field level, it should be possible to expand and improve the advisory services being provided by these SAAOs, especially from a farming systems perspective. However, here are some serious problems and issues to be sorted out. For example:

- a) Conduct In-Service Training for SAAOs. Nearly all SAAOs have diplomas from one of the 11 ATIs, but have received little or no training since graduation, except thru other donor sponsored projects. Therefore, in-service training (as well as pre-service training for new SAAOs) on: 1) current crop, livestock and fishery systems, 2) how to organize farmer/producer groups, and 3) helping build value chains (by training and linking these different farmer/producer groups to markets) are some of the skills and knowledge urgently needed by current SAAOs. Once these training courses are finished, then the SAAOs will be expected to begin organizing producers groups (generally organized by different categories of farmers), especially marginal women farmers (e.g., improving backyard gardening, as well as poultry and goats), as well as intensifying and diversifying the farms of these small-scale farmers, especially those with less than 0.5 acres.
- b) Strengthening the capacity of the ATCs at each Upazila. Since the NATP project is already supplying one computer for each Upazila extension office, with wide-band Internet access they could use appropriate audio/video e-conferencing software to conduct training sessions via the internet for SAAOs as well as the CIGs and other producer groups. These live training sessions could also be captured using appropriate software at the presenter level so that they could also be used, asynchronously, in training current and future extension staff, including training them how to use the AIS resource portal to train different groups of farmers within their representative blocks and villages. Of course, some training might also be needed by key AIS staff, so they can learn the best practices for accomplishing these objectives. The end-goal should be for these end products to be made available to public, private and NGO extension workers in a platform-agnostic manner so that they could be used on not only desktop and laptop computers, but also on smart phones and “learning tablets,” such as an iPad or Android-based tablet.
- c) Provide Resources for SAAOs. In addition to their inadequate (or out-of-date) training, another primary reason why these SAAOs don’t have much impact on farm households is that they have no transportation, resources to conduct extension programs, as well as needed communication equipment. As a result, they are not up-to-date on changing crop,

livestock and fishery management practices, as well as helping link producer groups to accessible markets. All SAAOs have their own personal mobile phones, but most are not “smart” phones and they are unwilling to use their personal mobile phone extensively, given that they must pay these costs themselves. In short, unless they have smart phones along with some level of government funding support for mobile phone usage, they will have 1) no access to available AIS information, 2) limited access and/or willingness to communicate with SMSs and/or researchers about helping farmers solve specific technical, management or marketing problems. In addition, given the current on-line availability of both technical and marketing information through AIS, field extension workers could easily access this information if they had smart phones and other needed resources. While the cost of equipping 12,600 SAAO’s with smart-phones (as well as covering their month usage costs) is not trivial, these investment costs would greatly and immediately enhance the capacity and impact of these field extension workers. In short, they would be both empowered and unleashed by using these new tools to provide needed technical and market information, especially for the rural poor.

- d) Updating the AIS Capacity and Information. As noted earlier, the government is already putting considerable emphasis on the Information and Communication Technologies (ICT), especially through the Agricultural Information Service (AIS) department (see: <http://www.ais.gov.bd/en/.html>) and the Department of Agricultural Marketing (DAM; see: <http://www.dam.gov.bd/jsp/index.jsp>). These emerging resources would be very valuable and useful to both the field extension workers (SAAOs) and farmers if they have access to this information via the AIS web site. The current problem is lack of internet access by both SAASs and farmers, since few if any have a smart-phone by which they could gain immediate access to these important and rapidly growing sources of needed information. This problem could be addressed through specific ICT investments by providing “smart-phones” to the SAAOs (or possibly even iPads or Android-based learning tablets), as well as similar tools to extension personnel at both the Upazila and District level (including crops, livestock and fishery extension specialists).

In short, the growing ICT capacity within Bangladesh (e.g. moving from 1G to 3G within 12 months) is rapidly increasing the availability of up-to-date technical and market information about different crops, livestock and fisheries systems. These developments will make it possible for all extension workers, especially those at the Block/Union level to gain immediate access to this needed information, so they can then quickly pass along this information to different groups of men and women farmers within their respective Blocks. To fail to make these necessary investments and, thereby, fail to link these field extension workers to these rapidly changing new sources of information, would undermine previous investments in creating this current AIS website and which now needs to be further up-dated and expanded.

If this course of action were to be adopted, however, one important change would have to be made to the way that multimedia assets are encoded and delivered from the current AIS website. Although the current technologies will support most desktop and laptop computers, the same cannot be said for all smartphones. Reliance on any one platform specific toolset (such as WMV or Flash or QuickTime) will limit the accessibility to those multimedia assets unnecessarily. Fortunately, some of our MEAS partners have technical expertise in how to avoid such problems and make online resources more fully accessible to all end users.

- e) Expand the role of SAAOs and Upazila level extension staff by allowing them to create up-to-date information (e.g. success stories on the production practices being successfully used by progressive farmers), using their new smartphone devices. Equipped with a smart-phone and working directly with the farmers themselves, the SAAO's and/or the Upazila level extension workers, would be in a perfect position to use the recording capabilities of these new smart-phones (video, audio, and still photos) to record the management practices or techniques used by innovative farmers in their service area. Video recordings of progressive farmers have the capacity to communicate convincing messages to other farmers, particularly those who are not literate. For example, these field-based recordings could be edited and uploaded by these SAAOs directly from their smartphones to "cloud-based" sites using social media membership for sharing information with other members within a defined community. The storage of these videos themselves could possibly use a "free" resource such as YouTube or Vimeo. These educational resources could then be accessed in a variety of ways by other SAAO's when they want to show different farmer groups about how other progressive farmers have successfully adopted a given practice or solved a particular problem.
- f) Pilot test the effectiveness of new presentation technologies at the Union, Block and/or Village levels. Most farmers prefer to attend meetings and/or training sessions at the Union, Block or village level. However, DAE does not have any training resources at the Union level. Under NATP, Farmer Information and Advisory Centers (FIACs) are being created in the participating Unions, but these consist of two small offices, plus desks, chairs, a file cabinet and not much else. There are large meeting halls in each Union government office that could be used for training or "informing" interested farmers about specific management practices, but making these presentations would require a TV with either a laptop computer with Internet access or a smart-phone that could quickly download the needed videos or other technical, management or market information. Some of the other options would include equipping SAAO's with iPads that could easily and quickly retrieve and display multimedia teaching resources (either from over the cellular network or from flash-based storage), as well as doing the same thing at the village level with smart-phones using a pico projector (cost approximately \$300) that could be used, for example, in teaching illiterate women farmers at the village level.

However, developing this ICT capacity at the Union level reportedly faces many problems, which must be carefully examined and considered before pursuing this option. For example, the availability of electricity in rural areas, especially during the summer period is very limited (e.g., a maximum of 12 hours/day, generally at night). Also, it was reported that unexpected power surges that would permanently damage this equipment are a major problem. Among the range of possible solutions would be (1) to routinely include a surge protector with each purchased electrical device, or (2) purchase and install a solar energy panel or a small generator to maintain this equipment, especially during working hours.

In addition, it was reported that senior officials in some Unions might unofficially borrow laptops or other equipment on a "long-term" basis. Therefore, it may not be possible to enhance the training capacity, using on-line videos, at the Union level. It should be noted that NATP did provide one desk-top computer at the Upazila level (located in the Director's office), but this computer did not have internet access, except by using telephone land lines, which are very slow and not useful in gaining internet access to AIS and other sources of information. However, by merely providing this computer with wide band computer access

and using this computer with a larger TV or LCD projector would make it possible to conduct training sessions, especially for the SAAOs within the ATCs.

- g) Transportation Option. Since there are about 2,500-3,000 farm households in each block, most farmers never see or meet the one SAAO responsible for their area, given that the SAAO do not have a motorcycle or even bicycle. Therefore, one option would be to set up a revolving fund, whereby the SAAOs could buy a personal motorcycle on loan, which would then be repaid over the next 4-5 years. In this way, as new SAAOs are hired in future years, they could also take out a loan for their new motorcycle, as the earlier loans are being repaid. In short, it is not recommended to give extension workers (at any level) a government motorcycle, since they will not be maintained and these motorcycles will stop working within 2-3 years. However, if these personal motorcycles are purchased by and belong to these SAAOs, then they will maintain these motorcycles as these loans are repaid through payroll deductions from their regular salaries.

Option 3: Strengthening the Agricultural Information Service (AIS) Department.

The AIS already has a very useful web site that includes information (in Bengali or Bangla) on all different crop, livestock and fishery systems (see: <http://www.ais.gov.bd/bn>). There is technical information on all of these different crops, livestock and fishery systems, as well as some videos on production management practices. In addition, they have the capacity to both send in e-mail messages with specific questions, as well as a “video-chat” option. The video-chat option is not recommended, since most farmers do not have Internet access and most of these questions/problems are very location specific, in terms of specific technical and management problems. Overall, however, the AIS department is a very valuable resource for all advisory services providers (public, private and NGOs). However, as noted above at least the field extension workers need internet access, so they can quickly access this information and then share this information with the farmers they serve. Therefore, the key will be to link the field extension staff to this important resource that covers all crop, livestock and fisheries systems.

While all of this on-line information and data is in the form of general recommendations, more regional, agro-ecological and market specific information is needed. Therefore, the capacity of AIS needs to be expanded so that it includes more location specific technical and marketing information. For example, the Bangladesh Agricultural Research Institute (BARI) has 22 Technology Villages in the different agro-ecological areas in Bangladesh where they conduct on-farm trials and can make much more accurate recommendations to farmers. However, the Director General of BARI indicated that they have no way to disseminate this information and recommendations (such as new varieties, etc.) to farmers. However, with additional resources, the AIS could begin making this more location specific technical and marketing information more easily available to both farmers and the front-line extension staff across Bangladesh. Given that the Prime Minister wants Bangladesh to further enhance its digital capacity, to have greater impact on the rural poor, then these types of investments would be warmly received and could more quickly scale up the quality and range of extension and advisory services for all types of small and marginal farmers, including rural women.

Consideration of Future USAID Investments in Providing Advisory Services to the Rural Poor

One option of financing and providing extension and advisory services for small and medium scale farmers is to continue working through international NGOs and private sector firms (including the local NGOs who actually provide these needed services), since they are

accountable for both service delivery and impacts, as well as being accountable for project expenses (i.e., no corruption, which can be problem with the public sector). While these organizations and their local NGO partners are prepared to continue delivering these specified services, they will only reach and impact a very limited percentage of the millions of rural poor in Bangladesh. For example, the Executive Director of BARI said that they are currently working on a \$70 million government loan, yet they will only be about to reach 0.5 million of the 7 million landless farmers. In addition, there many more marginal farm households who have less than 0.5 acres of farm land. Most of these marginal farm households are managed by illiterate rural women who urgently need help from advisory service providers. Based on the current focus of most donor sponsored NGOs, it appears that the SAAOs could be best positioned to address these concerns, if they had smart-phones and other tools to serve these groups of marginal farmers.

In short, a key issue that the USAID Mission needs to consider is whether to continue providing these advisory services, through the international NGOs and/or private sector firms who are now reaching, at best, several thousand small and medium-scale progressive farmers or whether the Mission is ready to test some innovative approaches of enhancing and integrating the public extension system, including strengthening linkages between the research and extension organizations. In short, would the USAID Mission be willing to consider some different and innovative approaches of both strengthening and integrating public, private and civil society organizations, as well as enhancing farmer access to new and emerging technical and market information, using these new ICT tools. In addition, it will be critical in organizing small-scale and marginal farmers, including rural women, into producer groups. In short, making these investments and changes could substantially enhance the capacity of the field extension staff to organize producer groups and then build value chains for different high-value crop, livestock and fish products.

In closing, by giving the 12,600 DAE field extension workers immediate access to both technical recommendations and market information via the AIS web site; 2) leveraging the emerging Internet capabilities via the social media websites; 3) expanding and empowering the abilities of SAAO's to function as both knowledge brokers as well as possible content creators using new smart-phone technologies; 4) as well as enhancing the AIS's capacity to link-up with research recommendations from the different agro-ecological zones across Bangladesh, as well as the emerging domestic and international markets, could quickly enhance the capacity of small-scale and marginal farmers to improve their household nutrition and income.

This sort of invigorated and modernized extension system would have a strong chance of overcoming many of the current administrative constraints that are currently limiting the efforts of the field extension workers in helping the rural poor. It certainly would take specific steps to provide more direct farmer participation, as well as more access to current market information, and the usage of these new "game-changing" ICT Extension tools and techniques. However, if the USAID Mission is interested in exploring these options, which would better integrate the private sector, local NGOs (like BRAC) and the public extension system, then MEAS would be prepared to either send a team back to Bangladesh to develop more specific plans about how to develop and implement these proposed innovative investments that would help all types of farmers, but especially in bringing the rural poor out of extreme poverty and malnutrition. Thank you for your consideration.

ORGANIZATIONS AND KEY PEOPLE CONSULTED WITH DURING THIS SCOPING MISSION

Public Research and Extension Institutions

- Department of Agricultural Extension (DAE; see: <http://www.dae.gov.bd/>), including: Md. Habibur Rahman, Director General (DG); Zahurul Islam Mahmood, Deputy Director; Mukul Chandra Roy, Additional Director (Monitoring); and Md. Sayedur Rahman, Upazila Agricultural Officer, Gazipur Sadar, Gazipur District; and several other officers
- Department of Livestock Services (DLS; see: <http://www.dls.gov.bd/>), including: Md. Ashraf Ali, DG and several other officers.
- Department of Fisheries (DOF; see: <http://www.fisheries.gov.bd/>), including: Md. Mahbubur Rahman Khan, DG; Syed Arif Azad, DD (Administration) and several other officers.
- Agricultural Information Service (AIS; see: <http://www.ais.gov.bd/en.html>), including: Md. Nazrul Islam, Director; Mohammad Zakir Hasnat, Asst. Information Officers (Crops); and several other officers
- Bangladesh Agricultural Research Council (BARC; see: <http://www.barc.gov.bd/home.php>), including Wais Kabir, Executive Chairman and Md. Khalequzzman A. Chowdhury, Director (Crops)
- Bangladesh Agricultural Research Institute (BARI; see: <http://www.bari.gov.bd/>), including Md. Shirazul Islam, Director
- National Agricultural Technology Project (NATP), including: Md. Abdur Razzaque, Project Director; Md. Nurul Islam, Director (DAE); and Md. Goljar Hossain, Director (DOF)
- Bangladesh Agricultural University (BAU; see: <http://www.bau.edu.bd/>), including: Shahnaj Parveen, Head of the Department of Agricultural Extension Education (DAEE); M. Zulfikar Rahman, Director, Agricultural Extension Institute; M. Abul Kashem, Professor; Dr. M.A. Hahim, Professor of Horticulture; A.Q.M. Bazlur Rashid, Professor of Plant Pathology and Dr. M. Habibur Rahman, Professor of Pathology

USAID Projects and Officials

- SHOUHARDO II Project being implemented by CARE International, including Faheem Y Khan, Chief of Party (COP), H.J.M. Kamal, National Technical Coordinator and Tania Sharmin, Technical Manager
- PRICE Project being implemented by Chemonics, including Jules Lampell, COP, A.B. Siddiqui, Team Leader for Horticulture and Md. Abul Hossain, Team Leader for Aquaculture.
- ILSAFARM Project being implemented by IFDC, including Grahame Hunter, COP, and Ishrat Jahan, Resident Representative.
- REAP Project being implemented by Winrock International, including Md. Shamsul Kabir, Country Director and S.N. Choudhury, Project Coordinator
- USAID Mission, Economic Growth Officers, including Narem Chanmugam, Office Director; Mark Visocky, Deputy Director; Shahidur Rahman Bhuiyan, Sr. Food Security and Ag Policy Adviser and Aniruddha Hom Roy, Private Sector Advisor

Other Donor Projects and Non-Governmental Organizations

- Asian Development Bank; Arun Kumar Saha, Head, Agricultural and Rural Development
- Royal Danish Embassy; Mogens Strunge Larsen, Counselor and Asm Harun Ur Rashid, Senior Programme Officer, Agricultural Sector Programme

- BRAC; Mahabub Hossain, Executive Director
- World Vision; Jan De Waal, Executive Director, Makhan L. Dutta, National Agriculture Coordinator and Saibal Sangma, Associate Director for Khulna Region
- D-Net; and Mosharrot Hossain, Deputy Director & Md. Forhad Uddin, Deputy Program Director
- Agricultural Advisory Society, Harun-Ar-Rashid, Executive Director

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ⁱ IFPRI-led Policy Research and Strategy Support Program (PRSSP)