

BIFAD REVIEW
OF
THE COLLABORATIVE RESEARCH SUPPORT PROGRAM (CRSP) MODEL

A Report Commissioned By BIFAD
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CRSP Review Team

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Executive Summary

Background, Overview and Charge

The Congress declares that, in order to achieve the mutual goals among nations of ensuring food security, human health, agricultural growth, trade expansion and the wise and sustainable use of natural resources, the United States should mobilize the capacities of the United States land-grant universities, other eligible universities, and public and private partners of universities in the United States and other countries...

Famine Prevention and Freedom from Hunger Act of 2000

For more than 30 years the Collaborative Research Support Program (CRSP) has served as a principal strategy to implement the grand vision of strengthening USAID's research engagement with U.S. universities under Title XII of the Foreign Assistance Act of 1961, as amended (ibid). This review study assesses the CRSP model in the current context of international agriculture and food security research and capacity building. It was initiated in response to USAID Administrator Dr. Raj Shah's request to the chair of the Board for International Food and Agricultural Development (BIFAD), Dr. Brady Deaton, that BIFAD commission a study of the CRSP model for USAID research and capacity building partnerships with U.S. universities, in the areas of agriculture and related sciences.

The Statement of Work charged the review team to conduct a formative review of USAID and relevant global experience and provide recommendations going forward on how USAID can most effectively engage the U.S. university community in agriculture/food security research and related capacity building, to meet USAID and Feed the Future (FtF) goals and objectives. The review team was asked to give particular emphasis to assessing the CRSP model as part of strengthening USAID's research engagement with U.S. universities under Title XII. The study's scope also includes an examination of the CRSP model, potential modifications or alternative models for university-led research and capacity building in international agriculture development and food security, and the current context for USAID-sponsored research in this arena.

The review study focused on four key questions concerning the CRSP model and related models for international agriculture and food security research focused on how to: **1)** more effectively engage the U.S. university community; **2)** strengthen human and institutional capacity development (HICD); **3)** most effectively integrate USAID-supported, U.S. university-led research in the context of FtF and developing country priorities; and **4)** advance strategies to improve the coordination of CRSPs, other USAID-supported and university programs with the broader U.S. university research agenda and other national, regional and global initiatives in research and education.

In order to complete an effective formative review, the team mapped out a series of study elements including stakeholder interviews (more than 120 individuals were interviewed) and a review of strategic documents to facilitate a SWOT analysis of the CRSP model. The report and attached annexes contain details of interviews conducted, documents reviewed, findings and specific recommendations. It is also important to note that the review was commissioned in the context of a range of significant changes in U.S. Global Development Policy (GDP) that provide a window

of opportunity to revitalize the CRSPs and related agricultural and food security programs. The GDP guidelines call for focused efforts and resources on select countries, sub-regions and sectors where impacts are achievable.

The Feed the Future (FtF) Initiative announced in 2010 is one of three major initiatives for implementing the GDP (www.feedthefuture.gov). FtF goals and objectives are to sustainably reduce global hunger and poverty by tackling their root causes and employing proven strategies for achieving large scale and lasting impact. Research and innovation are at the core of the FtF Initiative, and as such the CRSP review emphasizes integration with its research parameters.

The CRSP Model

The CRSPs are a partnership between U.S. universities, developing country institutions, and USAID designed to apply science and technology and build HICD to address issues of hunger and poverty. Although CRSPs vary significantly, seven core elements define and characterize the overarching CRSP model: **1)** a Management Entity at a major U.S. university leads the CRSP and assembles a consortium of institutional partners in both the U.S. and developing countries; **2)** a defined research agenda that brings good science to the solution of significant development challenges in the agricultural and related sciences; **3)** capacity building in host countries, especially human capacity development, linked to research; **4)** an expectation to provide mutual benefits to the U.S. and partner countries from research and HICD activities; **5)** long-term investments in research and HICD, some with roots going back as long as three decades; **6)** the leverage of additional resources to supplement the core budget provided by USAID/Washington from varied sources as the missions, private sector producer organizations, philanthropic foundations, and university partners; and **7)** variability in CRSP management, governance, monitoring and evaluation, and resource deployment processes reflects the flexibility of the CRSP model and the ability to seek the best organizational arrangement for unique needs of individual CRSPs.

Historical Context and Evolution

CRSPs have evolved over more than three decades from the adoption of the 1975 Title XII Amendment and early CRSP planning grants. The focus of the CRSP portfolio was refined as priority research themes emerged in the 1977-1979 period: sorghum and millet, fisheries and aquaculture, small ruminants, human nutritional deficiencies, beans/cowpeas, soils management, basic food crops/integrated pest management, post-harvest food losses, and peanuts. (Rubin 2008: 6).

Over the ensuing years, BIFAD oversaw the expansion of the CRSP portfolio. An increased interest in the environment drove the establishment of the SANREM and IPM CRSPs in the 1990s. More recently established CRSPs including Livestock and Climate Change, Horticulture, and Global Nutrition focus on a broader, globally oriented theme and many CRSPs have taken additional steps to incorporate a wider range of social sciences in their work, with a particular focus on beginning to incorporate gender considerations in both research and HICD activities.

There are currently ten CRSPs: AquaFish; BASIS/Assets and Market Access; Dry Grain Pulses (Pulse); Global Nutrition; Horticulture; Integrated Pest Management (IPM); Livestock-Climate Change (LCC); Peanut; Sorghum, Millet and Other Grains (INTSORMIL) and Sustainable Agriculture and Natural Resource Management (SANREM).

SWOT Analysis: The Findings

Strengths

We concluded that the pre-eminent strength of this model is the intentional integration of developmentally focused agricultural research with HICD. An interdisciplinary approach enables CRSPs to draw on a range of analytical approaches to address local conditions and complex farming, family, and community systems. In many instances, CRSPs have successfully recruited a group of world-class scientists embedded in the consortia institutions to facilitate a high quality research agenda. CRSP research is marked by several key attributes. Mutuality of benefit to both United States and host country agriculture and science is expected (e.g., germplasm exchange). In addition, CRSPs demonstrate the capacity to leverage substantial external resources (financial, personnel, networks) beyond core USAID funding. The CRSP allows USAID to tap into the significant investments made over the last 150 years in U.S. university system agricultural science research human resources and infrastructure at the relatively minor cost of \$30 million per year. CRSPs have also developed unique partnerships, often nurtured over decades, including over 60 U.S. universities and approximately 200 agricultural research institutes worldwide in addition to researchers from government agencies, non-governmental organizations and private sector associations. Finally, the CRSP model has demonstrated significant impacts on the ground in improving peoples' lives and economic well-being.

Weaknesses

We identified nine major weaknesses of the CRSP that, if addressed, could greatly enhance CRSP performance. First, there is a need for more systematic priority setting for the total CRSP portfolio in the context of USAID's overall agricultural development and food security programming. There is currently no explicit rationale for the existing CRSP portfolio. As both development challenges and science constantly change, the portfolio needs to evolve accordingly using a process and mechanism for renewal. The funding model of equal fixed dollar amounts for each CRSP award (~ \$3 million per year) hampers the ability to address emerging development challenges in a strategic manner and the small dollar amounts are dispersed very broadly over too many projects and institutions. There is also a lack of sufficient USAID technical and administrative oversight and coordination with USAID (Washington and Mission). The CRSPs are unevenly aligned with national and regional development strategies. Many also lack rigorous analysis of impact pathways and measurement of results and outcomes.

Although they have excelled in human capacity building, we believe the CRSPs have given insufficient attention to broader institution building. Training does not assure that returning young scientists will necessarily build institutional strengths. Two final weaknesses are poor coordination among the CRSPs and poor communication and outreach. Both USAID and the CRSPs bear responsibility to assure that these are improved and we commend the recent initiatives to strengthen these areas.

Opportunities

The Review Team believes that there are many opportunities the CRSP could exploit to become even more influential in contributing to agricultural development and more effectively serve as the core platform for the overall USAID-University agricultural and food security program. The current favorable donor attention to agriculture offers a critical opening for CRSPs to expand their role in the development assistance

portfolio as a university-led contribution. There is great opportunity for the CRSP work to be fully compatible with food security objectives. Many CRSPs already operate in FtF countries and are taking actions to expand this linkage moving forward. Beyond USAID, the broader global research context offers additional opportunities, such as the high degree of potential alignment of CRSP and the recently approved CGIAR research programs (CRP). The newly constituted CRPs are cross cutting global programs organized around major themes and with annual budgets averaging over \$50 million. CRSPs could greatly increase their leverage through strategic alliances with these CRPs (and vice versa).

There is great opportunity to further exploit the recently increasing focus on value chain work by CRSPs, USAID and country research strategies, moving beyond production alone to take account of post-harvest losses, processing, distribution, food safety and nutrition considerations. Increased private sector interest in development provides a further opportunity for the CRSPs, as seen in the private sector partnerships of the Peanut and INTSORMIL CRSPs. The Review Team strongly believes that the CRSPs have potential to improve knowledge management and outreach through steps such as centralization of data and results reporting so that accomplishments as well as lessons learned are more widely shared.

Threats

Five threats faced by the CRSPs deserve attention and action. The first is uneven communication to stakeholders of accomplishments and impacts, particularly among USAID Missions. As a result Missions do not feel ownership of the CRSPs. The CRSPs also face problems of perception and the lack of what we call a “wow” factor because innovation and impacts are not appropriately highlighted nor communicated when and where they take place. Perhaps due in part to their longevity, there are also perceptions--inaccurate in our view--that the CRSP model is outmoded, CRSPs are too silo-prone, and that they are entitlements that operate as a closed system. We believe that the core elements of the CRSP model are not outmoded and that many positive changes have occurred in recent years. Inaccurate perceptions must be combated with improved communications, management and alignment with USAID. The final threat is that USAID does not actively integrate CRSPs with the overall agency development agenda, making it difficult to exploit real opportunities to play a stronger integrative role as a broader development platform.

Findings and Recommendations for the Four Key Questions

Question 1: How to Improve Engagement of Universities in International Agricultural and Food Security Research?

Recommendation 1: BIFAD should assist USAID in developing an overarching and coordinated strategy for engaging U.S. universities in agriculture and food security research and HICD that includes the CRSPs as a central component.

Currently, an array of university-led research and HICD activities focuses on development challenges related to agriculture and food security issues ranging from climate resilient cereals to post-harvest food safety and socioeconomic research. In each instance there are significant potential complementarities to the current CRSP portfolio. Engagement of U.S. universities with USAID in agricultural and food security research and associated HICD, including the CRSPs, should be considered in its totality. Consistent with our charge to improve this engagement, we propose an

expanded overarching USAID strategy to encompass all university-led research and HICD including the CRSPs. This strategy should be developed with leadership from BIFAD. Our report describes seven key attributes of the CRSP programs (see page 19). Most of these attributes are or could be central characteristics of an expanded and re-characterized portfolio of university-led activities that would enhance the engagement of the U.S. university community in support of USAID's agricultural and food security priority agenda both with respect to research and HICD.

Recommendation 2: BIFAD should appoint a small Science Advisory Council to advise on emerging research themes critical to agriculture and food security research priorities and their implementation.

The main aim of the Science Advisory Council would be to provide objective scientific advice (free from political pressures) to USAID through BIFAD for all of its research-related support and especially for the CRSP. The Council would be a small, multidisciplinary team charged by BIFAD to address priority setting, integration, access and communication across research projects and with extramural partners. Representation should be broadly inclusive of disciplines and institutional representation with a budget sufficient to commission special studies such as those related to priority setting.

Recommendation 3: USAID should appoint a full-time principal scientist to provide leadership, oversight and centralized management for CRSPs as well as to guide their alignment with the broader agriculture and food security research portfolio.

This recommendation responds to the CRSP weakness of insufficient oversight and coordination and the related need for stronger representation within USAID. Accordingly, the Principal Scientist should be a highly respected scientist with excellent knowledge of universities and extensive experience in research management whose duties would be to: promote excellent science in CRSP work; facilitate coordination and communications between CRSPs and their USAID CRSP managers; provide management and technical guidance for USAID staff; serve as ex-officio member of the Science Advisory Council; serve as the "one-stop shop" for missions and others for CRSPs and ensure alignment and integration of CRSPs within the broader portfolio of USAID engagement with universities in agricultural and food security research and HICD.

Recommendation 4: Redesign and more narrowly focus CRSPs around two basic models for the future: We envision CRSPs as five-year projects with potential one-time renewal base on quality and impact.)

Model 1: Strategic research on a global problem. These CRSPs would focus on advancing, through cutting edge research, solutions to narrowly defined problems of global strategic importance to food security. These problems would be defined by USAID with advice from BIFAD (after consultation with its Science Advisory Council), although additional priority areas might emerge through open competition. USAID would request proposals from consortia of U.S. universities or through open competition that meet specific strategic criteria. **Model 2: Demand driven research to enhance food security at the country and regional level.** The second model would be closer to the strategy utilized to date for most CRSPs, but with important changes. Key characteristics of this model include: focus on demand driven themes (e.g., farming systems, value chains or common problems within a well-defined

geographic space) with priorities set from the bottom up through participatory stakeholder processes; an aim to achieve tangible development outcomes in terms of adoption, food security, poverty reduction and sustainable management of natural resources in the medium term; and a focus on a small number of priority countries (e.g., five), especially FtF countries.

Recommendation 5: Strengthen USAID management and CRSP management through centralized functions, use of technology and application of best practices

The CRSP Review Team's findings suggest that more centralized scientific direction from USAID, improved linkages with missions and other stakeholders, improved outcomes data analysis and communications through use of technology and the sharing of best practices would significantly enhance the potential impact of CRSP research and HICD. These changes would also strengthen the capacity of USAID staff working with the CRSPs, help to define the CRSP portfolio and assure more seamless integration with FtF and regional and country priorities. The documentation of CRSP impacts would be improved by using centralized strategies and leveraging new technologies to communicate impact more effectively, share data on key outcome indicators and collaborations and more effectively track trainees over time. For example, the development of databases of peer-reviewed and other types of publications could also be implemented as a CRSP reporting requirement. The databases should be accessible to all CRSP management entities and key indicators could be documented in searchable format. Such a system would increase transparency, efficiency and timeliness of monitoring progress of the CRSPs. Collaboration at the country level among CRSPs and coordination with missions could be increased by providing a one- stop shop through the new CRSP web site on all CRSP activities and partners in each country. The database could also include travel dates and e-mail contacts.

Question 2: How to Improve Human and Institutional Capacity Building in Developing Countries?

Recommendation 6: Foster and enhance the institutional capacity building dimension of CRSPs and other USAID projects

Frequently referred to as a "gem" embedded within the CRSP model, the capacity building element (HICD), particularly degree training, is one of the keys to the enduring legacy of the CRSPs and one that is not replicated by any other development model, thus should be continued. CRSPs reported that collectively about 20-25% of their resources are invested in long-term degree training programs in more than 60 U.S. universities and has supported at least 3,280 degree students from 72 countries. The particular merit of the CRSP is HICD built around research as the training vehicle, an approach that equips young scientists with a set of skills to more effectively apply science to pressing development challenges. This approach also develops relationships with U.S. scientists that enhance the capacity of the CRSP and other host country research efforts to deliver relevant new knowledge and ultimately make impacts in the host country or region. We conclude that a rigorous study of the HICD component of the CRSP Model is desirable to insure that it continues as an effective tool. Such a study would seek to assess outcomes and impact of HICD that is mediated through the CRSP model and would identify mechanisms for improved tracking of HICD outcomes. In general, institution building has been less prominent

and a less intentional component of CRSP HICD. We recommend an increased emphasis on institution building as a recurring element of a newly configured CRSP portfolio and a focus on strengthening host country universities' ability to train future generations of scientists.

Question 3: How to Ensure that USAID/University Programs Are Well Integrated with Country and Regional Strategies and Priorities?

Recommendation 7: Establish a new funding paradigm with funding aligned with development priorities and research strategies

USAID has already conducted an impressive exercise to better articulate priorities for its whole research and HICD portfolio as part of implementation of the Feed the Future research strategy. The Review Team (along with USAID) sees this as a good starting point for restructuring the CRSPs and related activities to better serve the objectives of the agency. The Science Advisory Council (see Recommendation 2) should be charged with periodic assessment and updating of priorities to take account of changes in science, food security challenges, and new partnership opportunities. Additionally, specific steps should be taken to set priorities responsive to regional and national development needs. The focus and level of funding should serve as the key tool to shape the CRSP portfolio.

It is apparent that the current practice of providing approximately equal funding (~\$3 million) per CRSP is not sustainable and should be replaced with a more strategic approach to align funding levels with priorities of the host country or region and USAID, merit of the proposals, and past performance of the grantee. We believe that more narrowly focused research would result in larger grants provided per country and potentially greater impact. To further enhance impact, USAID Washington could provide matching grants to missions to incentivize multi-CRSP or CRSP-CGIAR CRP collaborative activities that promote synergies, out-scaling and diffusion of impacts. The transition to this model will require a thoughtful, sequenced approach (for details see page 35).

Question 4: How to Coordinate USAID/U.S. University Efforts with Broader U.S./University Research and Education Agendas and Other Global and Regional Efforts.

Recommendation 8: Leverage impact of CRSP investments by strengthening links across universities, U.S. government, global programs, foundations, and other donors

CRSPs represent critical investments in specific key areas and institutions, but are small programs in the context of total agricultural research investment (representing less than 0.1% of agricultural R&D spending of the land grant universities and less than 5% of the nearly \$800 million spent globally by CGIAR). However, CRSPs do not consistently forge strong linkages to other research initiatives in the United States, host countries and the global research system. Similarly, in the whole-of-government context of development research and HICD including connections with significant USDA Research Programs, CRSPs do not uniformly or strongly integrate with other government efforts. For instance, the more than \$1 billion in USDA Agricultural Research Service funding is not always connected with potentially relevant CRSP

projects, often co-located on university campuses. We recommend that CRSPs, under the leadership of the principal scientist and with input from BIFAD and its Science Advisory Council, implement strategies to work with and leverage larger development research initiatives. This should include linking CRSPs with USDA research projects and other multidisciplinary centers and more clearly defining their role in the new CGIAR CRPs by pro-active participation in CRP design and planning meetings. In the context of the university research community, CRSPs should more intentionally take a ‘whole-of-university’ approach.

Cross-Cutting Recommendation: An Expanded Role for U.S. University-USAID Partnerships in Food Security Research and Capacity Building

Recommendation 9: Consistent with the recommendations in this report, USAID should significantly increase funding for university-led agriculture and food security research and HICD

The U.S. research community, universities and food system are exceptionally well positioned to address global food security challenges. CRSPs offer an effective framework for producing high quality agriculture and food security research and HICD that should be maintained *and* enhanced. The collaborative, interdisciplinary and development-focused work of CRSPs, particularly when linked to related investments, offers an opportunity to leverage the exceptional capacity of the U.S. research community. The United States, relative to other countries, now provides very modest levels of resources to exploit its vast university capacities in the agricultural and related sciences. Particularly with the implementation of the recommendations of this report, a revitalized CRSP portfolio will be well positioned to lead an enhanced program of USAID engagement of universities. The Review Team recommends that BIFAD, in consultation with its Science Advisory Council, should advocate for a significantly higher overall level of funding for university-led agriculture and food security research and HICD. To address emerging issues and retain funding flexibility to meet key development challenges, BIFAD should set target funding levels for new awards on an annual basis.

Acronyms and Abbreviations

ACIAR	Australian Center for International Agricultural Research
ADS	Automated Directive System (USAID's operations manuals)
AMA	Assets and Market Access CRSP (formerly BASIS CRSP)
AMR	Administrative Management Review
AORs	Agreement Officer's Representative/USAID CRSP Managers
AOTRs	Agreement Officer's Technical Representative/USAID CRSP Managers
APLU	Association of Public and Land Grant Universities
ARS	Agricultural Research Service of USDA
BASIS	Building Assets for Sustainable Recovery and Food Security (AMA CRSP)
BFS	Bureau for Food Security (USAID)
BHEARD	Borlaug Higher Education for Agricultural Development Program
BIFAD	Board for International Food and Agricultural Development
BREAD	Basic Research for Agricultural Development (National Science Foundation)
CAADP	Comprehensive Africa Agricultural Development Program
CGIAR	Consultative Group on International Agricultural Research
CRPs	CGIAR Research Programs
CRSP	Collaborative Research Support Program
DCC-PRG	Developing Country Collaborative in Plant Genome Research (National Science Foundation)
DOS	Department of State
EGAT	Bureau for Economic Growth, Agriculture and Trade (USAID)
FTF, FtF	Feed the Future
FSP	Food Security Program (Michigan State University)
GCARD	Global Conference for Agriculture Research for Development
GDPRD	Global Donor Platform for Rural Development
HBCU	Historically Black Colleges and Universities
HED	Higher Education for Development
HESN	Higher Education Solutions Network
HICD	Human and Institutional Capacity Development
iAGRI	Innovative Agricultural Research Initiative

IARC	International Agricultural Research Center
IDC	Indirect Costs
INTSORMIL	Sorghum, Millet and other Grains CRSP
IPM	Integrated Pest Management (Also, IPM CRSP)
LCC	Livestock and Climate Change (LCC CRSP)
LDC	Less Developed Country
JCAD	Joint Committee on Agricultural Development
JCARD	Joint Committee on Agricultural Research and Development
JCC	Joint Career Corps
JEM	Joint Enterprise Mode
JRC	Joint Research Committee
LWA	Leader with Associate Award
MAETS	Modernizing Agricultural Education and Training Systems Program
ME	Management Entity
MEAS	Modernizing Extension and Advisory Services Program
MSU	Michigan State University
MOU	Memorandum of Understanding
NARS	National Agricultural Research Systems
NASULGC	National Association of State Universities and Land Grant Colleges
NGO	Non-Governmental Organization
NIH	National Institutes of Health
NSF	National Science Foundation
PI	Principal Investigator
RFP	Request for Proposals
RIR	Registry of Institutional Resources
SAC	Scientific Advisory Council
SANREM	Sustainable Agriculture and Natural Resources Management CRSP
SWOT	Strengths, Weaknesses, Opportunities and Threats
TITLE XII	Title XII of the Foreign Assistance Acts of 1961 and 1975
U.S.	United States
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
USG	United States Government

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A. Purpose and Goals of the Study

Board for International Food and Agriculture Development (BIFAD) commissioned this review at the request of the U.S. Agency for International Development (USAID). The team was charged to “conduct a formative review of USAID and relevant global experience and provide recommendations going forward on how USAID can most effectively engage the U.S. university community in agriculture/food security research and related capacity building, to meet USAID and *Feed the Future* (FtF) goals and objectives.” (Statement of Work for the BIFAD Review of Collaborative Research Support Program Model, Award Number: AEG-P-00—08-00011). In particular the review will assess the Collaborative Research Support Program (CRSP) model as part of strengthening USAID’s research engagement with U.S. universities under Title XII of the Foreign Assistance Act of 1961, as amended” (ibid).

As charged, the review team has examined objectives of the CRSP model, reviewed evidence of its performance over time in terms of research advances, human and institutional capacity development (HICD) and impacts. The review has explicitly integrated a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis in its review while considering the relevance and efficiency of the CRSP paradigm.

The Team addressed four key questions in this study focused on how to:

- 1) Enhance engagement of the University Community in international agricultural development and food security research strategy via both potential enhancements to the CRSP model and better alignment with Feed the Future;
- 2) Strengthen human and institutional capacity development (HICD) in partner country contexts;
- 3) Ensure effective integration of USAID and U.S. university programs in agriculture and food security (focusing on CRSPs) with country and regional strategies and priorities;
- 4) Coordinate USAID/U.S. university efforts with broader (whole-of- university) and country- and region-led efforts including the CGIAR/CRPs, programs of other donors, multilateral institutions and the private sector (Achieve better CRSP linkages).

The detailed Statement of Work is given in Annex 3.

B. Study Background and Methodology

Background

In November 2011, USAID Administrator Dr. Raj Shah met with Dr. Brady Deaton, BIFAD Chair, and requested that BIFAD commission a study of the CRSP model for USAID research and capacity building partnerships with U.S. universities, in the areas of agriculture and related sciences. As CRSPs operate under Title XII of the Foreign Assistance Act of 1975, Title XII universities are particularly important in this study context. BIFAD, with support of the USAID Bureau of Food Security, proceeded to develop a scope of work for the study, make recommendations on the composition of a study team and the selection of candidates, and USAID utilized an existing service agreement partnership with USDA (PASA AEG-P-00-08-00011) to implement the study arrangements.

The Review Team held five meetings (four in Washington, DC, and one in Minneapolis) from March to July 2012. The team targeted a study completion date of

July 2012. In order to complete an effective formative review, the team mapped out a series of study elements including stakeholder interviews, review of strategic documents, and analysis of findings. The team conferred in a biweekly series of conference calls as the report developed.

Elements of Study: Documents Reviewed

The Review Team gathered and reviewed a range of strategic documents to inform this study (see Annex 1), including foundational documents such as the Title XII of the Foreign Assistance Act of 1961 and CRSP Guidelines-08-30-00; CRSP Guidelines, 2005, BIFAD Approved; CRSP Guidelines 2008 Draft Guidelines. In addition, various CRSP review papers (including Swindale 1995, Rubin 2008, Gunther 2007) provided critical background information. The Team collected current information from a range of sources such as the official *Feed the Future* website, USAID country websites, and literature regarding other research and capacity building models.

Elements of Study: Interviews

The Review Team developed an interview instrument (see Annex 4) focused on several aspects of the CRSP model: objectives and performance over time and potential variations in CRSP and other models for research and capacity development. The interview instrument allowed for flexibility in focus and was effective for both CRSP stakeholders and other research and capacity building models (with different versions of the interview instrument used in each case). Based upon initial review of documents, informal discussions with USAID staff, and team member expertise in international development research and capacity building and university research administration, the Review Team defined a purposive interview sample to obtain a diversity of views. The Team adjusted the list of interview subjects throughout the study process as informational needs became more sharply defined. The Team ultimately interviewed more than 120 stakeholders in individual and, occasionally, group settings. The interviews were conducted primarily in person and by phone, with a few email interviews. Interview subjects were drawn from multiple stakeholder groups: USAID staff, USDA staff, CRSP directors and PIs, USAID country mission staff, host country partners for CRSPs, APLU staff, BIFAD members, senior university research administrators, representatives of organizations supporting alternative models (NSF, HED, McKnight, ACIAR, Master of Development Practice, etc.), and private sector stakeholders.

In order to gain a more in-depth understanding of the connections among CRSP researchers, USAID staff in Washington and in missions, and host country researchers and institutions, team members focused on several countries hosting multiple CRSPs. For these countries, team members interviewed stakeholders in the relevant missions and projects. While these country case studies were not uniformly comprehensive, they did provide important insights to the CRSP model.

Elements of Study: Analysis of Other Models

In preparation for analysis of the interview and documentary data, interviewers shared their individual interview summaries with the full team. In addition to individual interview summaries, team members each summarized information on specific CRSPs and alternative models. One critical aspect of the analysis was a SWOT analysis of the CRSP model, complemented by a review of alternative models for international development research and capacity building. The analysis of alternative

models – including the Australian Center for International Agricultural Research (ACIAR), the Food Security Project (MSU), Higher Education for Development (HED), and National Science Foundation (NSF) programs - focused on key features and relevance to the CRSP model. Team members then collaboratively identified emerging themes and findings from this body of data and, from this analysis, consolidated and refined a set of key recommendations. This report represents the outcome of this process of data gathering and analysis.

C. Study Context

This review was conducted in a broader context of major changes in U.S. Global Development Policy that provides a window of opportunity to revitalize the CRSPs and related agricultural and food security programs.

The Presidential Policy on Global Development issued in 2010 highlighted international development as vital to national security. The guidelines state the intention to focus efforts and resources on select countries, sub-regions and sectors where impacts are achievable. The United States will “invest in game-changing innovations with the potential to solve long-standing development challenges” and, importantly, will leverage the power of research and development both at home and abroad. The United States will emphasize building sustainable capacity in the public sectors of our partners at their national and community levels. The Directive seeks to draw on the capabilities of new partnerships globally and contributions of agencies across the U.S. government. (White House Fact Sheet: U.S. Global Development Policy: 2010)

The *Feed the Future* Initiative announced in 2010 is one of Three Major Initiatives for implementing the new policy (www.feedthefuture.gov). At the 2009 G8 Meeting in L’Aquila, Italy, held in the wake of the 2008 food crisis, President Obama committed the U.S. to invest \$3.5 billion over three years to support food security objectives. FtF goals and objectives are to sustainably reduce global hunger and poverty by tackling their root causes and employing proven strategies for achieving large scale and lasting impact. Key elements of the FtF framework include: a comprehensive approach to food security by accelerating economic growth, raising incomes through greater agricultural productivity, increasing incomes and market access for the rural poor and enhancing nutrition. Investments are focused on selected countries driven by country-owned strategies and coordinated closely with other donors. Success will be measured by changes in the prevalence of poverty and underweight children.

Research and innovation is at the core of the FtF Initiative. A Global Food Security Research Strategy was developed in 2010 through a consultative process within the U.S. Government involving USAID, USDA and the Department of State. The strategy is to invest in agricultural research that will help increase agricultural productivity (affecting the **availability** of food) but also increase income to purchase food (affecting **stable household access** to food) and the quality of food consumed (affecting **utilization** and nutritional status) as well as contributing to overall economic growth. “FtF adopts a new paradigm to catalyze agriculture-led economic growth by focusing on environmentally-sustainable productivity gains through research that is purpose-driven, impact-oriented and operates in close coordination with deployment of research outputs, extension, education, evaluation and feedback at the individual country level.” Thus, FtF stresses the importance of purpose-driven

research (targeted objectives) effectively linked to extension in focus countries and necessary policy reforms and strengthened institutions, including markets.

FtF advocates a whole-of-government philosophy to “identify and generate synergies between domestic and international research investments and join with other major development partners to ensure that country, regional, and global investments are integrated for maximal impact.” A key partnership between the USAID and USDA, the Norman Borlaug Commemorative Research Initiative to Reduce Hunger and Poverty, as well as partnerships with U.S. and other universities, and CGIAR institutions can help produce global public goods and that are “dual use” generating benefits in both the U.S. and other countries.

FtF also calls for more explicit program linkages to national and regional investments by our partners and with the U.S. overseas missions and offices to address both human and institutional constraints. “New efforts will be aimed at strengthening institutional and policy environments and higher education” and value-chain constraints. “This envisions linkages among U.S. research partners, international research centers, national and regional research partners as well as relevant user communities at the local level. . .”

Both BIFAD and the Association of Public and Land Grant Universities (APLU) helped engage the university community in a critical review of the FtF research strategy—especially from the perspective of the CRSP and the CGIAR portfolios.

USAID’s implementation of the FtF Global Food Security Research Strategy, recognizing program strengths and gaps, additionally prioritizes the following three big ideas:

1. Heat and drought tolerance for climate-adapted cereals
2. Advanced technology solutions for animal and plant diseases
3. Legume productivity for improved nutrition and household incomes.

FtF also targets policy research to help provide an enabling environment for agriculture; social science and nutrition research to improve food utilization, understand behavioral change and household decision making—including gender dynamics; as well as increased availability and access to high quality foods for improved diets (animal sourced food, horticulture and aflatoxin control).

Finally, the FtF program is anchored in four major production systems-- each exemplified by a “deep dive” country--that will make a significant difference to large numbers of poor, malnourished people. Systems prioritized for sustainable intensification include:

- 1) Indo-Ganges Plains, Bangladesh, rice-wheat system to be intensified through conservation agriculture, legume intercropping, nutrient use efficient crops
- 2) East Africa, Tanzania, mixed maize system
- 3) Sudano-Sahelian, Ghana, transect from maize-based to agro-pastoral systems, to include irrigated rice systems
- 4) Ethiopian Highlands, Ethiopia, new sustainable intensification programs including legumes, wheat, sorghum, use of conservation agriculture and integrated pest management.

In short, the FtF strategy and related initiatives provide specific guidance on priorities for research including the CRSPs as well as the way that this research is to be implemented.

D. Overview of the CRSP Model

Objectives of CRSPs

The CRSPs are a partnership between U.S. universities, developing country institutions, and USAID designed to apply science and technology and build human and institutional capacity to address issues of hunger and poverty. This objective clearly flows from the various revisions of Title XII legislation dating from 1961. Most recently the “Famine Prevention and Freedom from Hunger Act of 2000” states that:

The Congress declares that, in order to achieve the mutual goals among nations of ensuring food security, human health, agricultural growth, trade expansion and the wise and sustainable use of natural resources, the United States should mobilize the capacities of the United States land-grant universities, other eligible universities, and public and private partners of universities in the United States and other countries, consistent with sections 103 and 103A of this Act, for: (1) global research on problems affecting food, agriculture, forestry, and fisheries; (2) improved human capacity and institutional resource development for the global application of agricultural and related environmental sciences; (3) agricultural development and trade research and extension services in the United States and other countries to support the entry of rural industries into world markets; and (4) providing for the application of agricultural sciences to solving food, health, nutrition, rural income, and environmental problems, especially such problems in low-income, food deficit countries.

What is the CRSP Model?

Although CRSPs vary significantly, seven core elements define and characterize the CRSP model:

1. All CRSPs are led by a **Management Entity at a major U.S. university that in turn assembles a consortium of institutional partners** in both the United States and developing countries. These institutional partners are usually identified through a competitive process and are selected because of their unique capabilities within the thematic element of the particular CRSP. The CRSP-assembled consortium typically includes a mix of some or all of the following entities: universities, research institutions, Ministries of Agriculture, NGOs, and private sector partners. The consortium collectively defines and plans a research program to address the theme of the given CRSP.
2. A defined **research agenda that brings good science to the solution of significant development challenges in the agricultural and related sciences** is at the core of each CRSP. The research agenda is tied to the thematic focus of each CRSP but evolves over time and commonly is broadly based in its implementation. The research is typically strongest in the physical and biological sciences and less strong in the social sciences, although there are exceptions (like the AMA CRSP which concentrates on agricultural economics). The research itself spans the spectrum from quite basic upstream research to downstream adaptive research.
3. **Capacity building, especially human capacity development**, linked to research is central to the CRSP model. A major goal of the CRSPs is to strengthen the human capacity of developing/host country nationals but at the same time

there is an effort to build the capacity of emerging young scientists in the United States to work internationally on important development problems. The capacity building element of the CRSPs is played out through the research program, which becomes the vehicle by which capacity development occurs. This element of the CRSPs also aims to strengthen institutional partners in host countries as trained young scientists return home to take up pivotal positions in their home institutions while remaining linked to the CRSP which trained them originally. The CRSPs engagement in training/capacity building manifests itself in two forms: long term degree training (M.S. and Ph.D.) and shorter term non-degree training, often resulting in a "certificate" or similar document crediting participating individuals with completion of the training program.

4. It is expected that CRSPs provide **mutual benefits to the United States and partner countries** from CRSP research and HICD. The design of the CRSP model, backed by the Congressional language creating the CRSPs, presumes such mutuality. To a greater or lesser degree such mutuality has occurred over the history of the CRSPs and has, to a significant extent, helped build a significant domestic constituency for the CRSPs.

5. Each of the CRSPs is characterized by **long-term investments**, some with roots going back as long as three decades. Investment in research requires long term, sustained support to promote development impacts. CRSP longevity also recognizes the time it takes to develop human capacity, especially at the graduate degree level. Such long-term presence has also provided a mechanism for the development of regional networks, "spillover" benefits to non-participant countries from a given CRSP, and the emergence of new institutional partnerships that further enhance the CRSP consortia.

6. Typically, the CRSPs **leverage additional resources to supplement the core budget** provided by USAID/Washington. The leveraged resources take many forms and come from such varied sources as USAID Mission buy-ins to a CRSP, private sector producer organizations, philanthropic foundations, and university partners (frequently through graduate assistantships, cost sharing, and reduced indirect cost rates). In many instances, the CRSPs have leveraged more money than the core USAID funds provide, but such leverage of resources could not occur without the core Agency funds.

7. Although the above characteristics occur in virtually all CRSPs, there are variations across the spectrum in areas including management and governance structures, monitoring and evaluation mechanisms, and resource deployment processes. The variability in these components of the CRSP reflects **the flexibility of the CRSP model** and the ability to seek the best organizational arrangement for unique needs of individual CRSPs. This flexibility represents an additional core characteristic of the model.

Current CRSPs and Their Evolution

Ten CRSPs are currently in operation:

- AquaFish
- BASIS/Assets and Market Access
- Dry Grain Pulses (Pulse)
- Global Nutrition
- Horticulture

- Integrated Pest Management (IPM)
- Livestock-Climate Change (LCC)
- Peanut
- Sorghum, Millet and Other Grains (INTSORMIL)
- Sustainable Agriculture and Natural Resource Management (SANREM)

The current CRSPs have evolved over more than three decades. After the adoption of the 1975 Title XII Amendment, the first CRSPs grew from planning grant funding received in the late 1970s. The focus of the CRSP portfolio was refined as priority research themes emerged in the 1977-1979 period: sorghum and millet, fisheries and aquaculture, small ruminants, human nutritional deficiencies, beans/cowpeas, soils management, basic food crops/integrated pest management, post-harvest food losses, and peanuts. (Rubin 2008: 6).

Over the ensuing years, BIFAD oversaw the expansion of the CRSP portfolio. An increased interest in the environment as a key factor affecting international development and agriculture drove the establishment of the SANREM and IPM CRSPs in the 1990s driven. While many CRSPs were initially focused on commodities or categories of commodities, more recently established CRSPs including Livestock and Climate Change, Horticulture, and Global Nutrition also include a broader, globally oriented theme. This shift reflects the Title XII 2000 revision and reauthorization that broadened its disciplinary scope, expanded the eligibility criteria for U.S. university partners, and included themes such as food security and trade expansion. (Gunther 2000: 3) Many of the CRSPs have also taken additional steps to incorporate a wider range of social sciences in their work, with a particular focus on beginning to incorporate gender considerations in both research and HICD activities.

E. CRSP Model: SWOT Analysis

On the basis of over eighty interviews and the review of extensive background documentation, the Review Team conducted a SWOT analysis of the CRSP Model.

SWOT Analysis: Strengths

We concluded that the preeminent strength of this model is the **intentional integration of developmentally-focused agricultural research with human and institutional capacity building**. Title XII of the Foreign Assistance Act of 1961 specified the importance of capacity building and in 1975, its relation to the CRSP: “[d]egree and non-degree training are integral parts of CRSP-supported collaborative projects—both in the United States and African universities as well as in the field.” (Gilboy et al 2010: 32)

The CRSPs empower host country institutions to address recognized needs and constraints through the creation of new technologies and knowledge while concurrently developing human resource capacity and competencies in strategic areas of agriculture and natural resource sciences, thus leading to institutional self-reliance and sustainability. (Widders and Maredia 2005).

Permeating the CRSP approach to research is a focus on **research for development impacts**. Graduate theses frequently address development problems relevant to students’ home countries and institutions. The CRSP Model’s key to successful research for development is the vision and the adaptive mechanisms to apply rigorous

upstream research to downstream development challenges. When the impact pathways are an integral part of the CRSP planning process and partnerships are identified to carry the impacts forward to a user community, results are amplified. A number of studies have demonstrated significant measured impacts for individual CRSPs including the Integrated Pest Management, INTSORMIL, Pulses, Peanut, and Global Livestock CRSPs through new research paradigms and dissemination of new and improved varieties and ecologically-sensitive pest management strategies (see Box 1). In other cases, CRSPs have made significant contributions in the form of institutional innovations and policy changes. Examples from the CRSPs includes the development of weather index-based livestock insurance schemes to mitigate risks of small holders in East Africa (BASIS/AMA), research on factors leading to success in up-scaling nutrition interventions in communities in East Africa and Nepal, and identification of factors leading to integrating women in science (IPM, Livestock and Climate Change, etc.). Other CRSPs have contributed significantly to the knowledge base. For example, the Peanut CRSP has worked to demonstrate the nutritive value of peanut in the diets of poor people and the Global Livestock CRSP helped to demonstrate the beneficial impacts of animal source food on young children's cognitive development.

Box 1: Economic, Social and Environment Impacts of CRSPs.

Some CRSPs have assessed economic, social and environmental impacts over time while others are now in the process of tracking impacts and others are too new to have achieved impacts. The following is a summary of highlights of ex post (i.e., realized) impacts that have been published in the past decade for four CRSPs. Although impacts have been incompletely documented, the Net Present Value of the studies highlighted below sums to over \$1 billion, sufficient to more than cover the \$600 million invested in all CRSPs over the past 30 years.

INTSORMIL: Over the past decades, impact assessment case studies led by Purdue University have been conducted in several nations for sorghum and millet research. These studies generally find rates of returns to INTSORMIL research ranging from 23 percent to over 97 percent (Figure 1). The largest benefits have been in Sudan, where the annual economic benefit attributed to sorghum research over the 30-year life of INTSORMIL was estimated at \$460 million (Zereyesus and Dalton 2012). The highly successful variety, Hageen Dura 1, developed in collaboration with INTORSMIL in 1983 continues to be grown, and the cumulative benefits of this variety alone may justify the total investment in INTSORMIL. More recently, Villacís (2012) estimated the net present value of the introduction of new photo-insensitive sorghum varieties into the Salvadorian dairy industry of \$8.8 M to producers and \$5 M to consumers during 2003-10. INTSORMIL research has also been very beneficial to U.S. producers. Using germplasm exchanged through the INTSORMIL network, Texas breeders developed insect resistant lines to sorghum midge that have generated extremely high rates of return, in excess of 300 percent, largely because of the low cost of accessing exotic germplasm through the CRSP to fight this pest.

Dry Grains Pulses: Impacts of the Pulses CRSP have been widely documented in Latin America. Since 1991, national programs of Costa Rica, El Salvador, Honduras, Nicaragua and Ecuador in collaboration with the Pulses CRSP and CIAT have released some 90 improved bean varieties that have been adopted on two-thirds of the area in the Central American countries and half the area in northern Ecuador. Reyes (2012) estimated the NPV of benefits of \$362 M with a return on the investment in bean research of 33 percent (Reyes 2012). In West Africa, the CRSP developed several non-chemical cowpea grain storage technologies including hermetic storage in airtight containers, improved ash storage, and the solar heater. Based on adoption studies in seven countries, the NPV of this technology was estimated at more than \$295 million, providing a return of 21 percent on the research investment.

Peanuts: The Peanut CRSP has recently mounted a series of impact studies. The best documented impacts are in Uganda, where Kassie, Shiferaw and Muricho (2011) estimate the impacts of peanut breeding efforts with support of the Peanut CRSP and ICRISAT to develop disease and drought tolerant varieties. They found that farmers adopting these varieties have higher income per hectare for groundnuts (approximately from \$US134- 254/ha) and 7- 9 percent lower poverty rates, as measured by the headcount index, than non-

adopters. A variety resistant to Rosette disease has also been released with an expected NPV based on initial adoption levels of about 15 percent of at least \$30 million (Moyo et al. 2007)

IPM: While other CRSPs have largely documented impacts through development of improved varieties, the IPM CRSP has achieved substantial benefits through reduction in pest losses and/or pesticide costs. Rakshit (2011) assessed the economic benefits of managing fruit flies infecting sweet gourd using a pheromone called Cuelure imported by Bangladesh at \$2.7 million to \$6.3 million. Subsequent information on the sales of Cuelure suggests that this is a substantial underestimate. A very large benefit is likely for the identification and control of Papaya Mealy Bug by the IPM CRSP in India using parasitoids. Impacts are now being assessed. The IPM CRSP is the only one to have assessed environmental benefits, albeit on a small scale, accruing to reduced pesticide use on onions in the Philippines (Cuyno, Norton and Rola 2001).

In many instances, the CRSPs have successfully recruited **a group of world-class scientists embedded in the consortia institutions**. These individuals are frequently distinguished professors and/or leading scientists with superb credentials pertinent to the CRSP theme. These scientists devote their considerable expertise to the development challenges of the CRSP as well as to training programs to mentor young scientists from host countries and, in some instances, from the United States.

A fourth important CRSP strength is **mutuality of benefit** to both United States and host country agriculture and science. Examples of mutually beneficial research include germplasm exchange, understanding of traits conferring drought resistance and salinity tolerance, identification of mycotoxins (Aflatoxin), diagnosis and control measures for plant and animal diseases with a global reach, the relationship of animal source foods to cognitive development in children, nutrition and food safety hazards, and better understanding of techniques and policies to manage risk throughout the agriculture and food system.

A fifth strength of the CRSP derives from its **interdisciplinary approach**. For scientific technologies to be successfully adapted to local conditions and adopted in complex farming, family, and community systems, a range of disciplinary analytical approaches is relevant. The integration of biological, physical and economic sciences strengthens the problem solving capacity of trainees as well as the ultimate results achieved from research efforts. However, there is much potential to broaden the scope of social science involvement to disciplines beyond economics.

A sixth major strength demonstrated repeatedly by the CRSPs is the **capacity to leverage substantial external resources (financial, personnel, networks) beyond core USAID funding**. The CRSP allows USAID to tap into the considerable significant investments made over the last 150 years in the agricultural science research infrastructure of the U.S. university system at the relatively minor cost of \$30 million/year. Thus, a host of laboratories, equipment, field test plots, library resources and the like are accessible to USAID and to foreign partners through investment in the CRSP. Additionally, faculty frequently contribute significant portions of their time to CRSP work in order to participate in international development activities and build relationships with partners overseas. University administrators often grant tuition waivers or provide other sorts of compensation to CRSP participants. Many university professors are “entrepreneurial” in finding non-USAID Washington funds to support a portion of the research.

A further strength of the CRSP has been the development of **unique partnerships** often nurtured over decades of CRSP engagement. These partnerships include over 60 U.S. universities and approximately 200 agricultural research institutes worldwide. In addition, researchers from government ministries and government agencies as well as

non-governmental organizations and private sector associations form part of these networks, many of which constitute a long-term presence in developing partner countries. Through such networks, returning CRSP-trained developing country scientists can stay plugged into ongoing scientific trainings or regional conferences. A review of long-term training has noted:

Long-term participation in CRSP research prior to, during, and after formal degree training greatly strengthened the capacity of the individual and the African host institutions. Continuing networking not only by participants but also by their colleagues, broadened and sustained the capacity building beyond the degree experience. (Gilboy et al 2010:33)

Finally, the CRSP model might best be summed up by the comment of one of the PIs whom we interviewed. When asked about his role in the CRSP with respect to the attributes of the model, he stated: —“You need to know this about CRSP scientists. We do this for our souls. It’s not about the money. It’s about doing the right thing with our science.” Such commitment to the ideals of **the CRSP Model as a means to improve people’s lives and communities** should not be underestimated.

SWOT Analysis: Weaknesses

The Review Team identified nine major weaknesses of the CRSP that, if addressed, could greatly enhance CRSP performance.

First there is a **need for more systematic priority setting for the total CRSP portfolio in the context of USAID’s overall agricultural development and food security programming**. We recognize considerable “portfolio inertia” where particular CRSP themes and managing entity universities have endured for decades. Although longevity is a strength as noted above, **we found no explicit rationale for the existing CRSP portfolio**. As both development challenges and science constantly change, the portfolio needs to evolve accordingly. A process and a mechanism for renewal is needed to address issues of overall priority setting. Should future CRSP themes be problem-based, country-based, or commodity-based? Should CRSP research efforts emphasize upstream, risky, but high-impact research questions or more downstream adaptive research? We recognize and appreciate that individual CRSPs receive periodic, often positive evaluations, but we believe that an overall CRSP-wide priority setting process is required.

Associated with the lack of systematic priority setting, the use of **equal fixed dollar amount for CRSP awards** hampers the ability to address emerging development challenges in a strategic manner. Currently, each CRSP receives an annual allocation of about \$3 million regardless of actual research priorities and needs.

In addition, **small dollar amounts are dispersed very broadly over too many projects and institutions**. As mentioned above, over 60 U.S. universities and hundreds of institutions in partner countries are currently involved in the ten CRSPs at an annual budget of \$30 million, far too small an investment for the dimensions of the work described. In some cases, individual grants to country partners are as low as \$5,000 annually.

The **CRSPs lack sufficient USAID technical and administrative oversight and coordination with USAID (Washington and field)**. Nine USAID staff devote variable portions of their time to managing the current CRSP portfolio based at ten U.S. universities. The Review Team found a lack of effective coordination of many

of the CRSPs with USAID Washington, many of the Missions, and with each other. Factors contributing to this include an ill-defined overall CRSP strategy, few meetings of CRSP directors and USAID leadership, a lack of overall CRSP program direction at USAID, and challenges in communicating about the CRSP to the USAID missions and their partners. USAID mission agricultural personnel often had inadequate knowledge of the CRSPs present in their countries. USAID agricultural officers often stated that they were interested and supportive of CRSP efforts but often had not learned about those operating in their countries. Contributing to this is the lack of a centralized source of information on CRSPs organized by country as well as the turnover of the U.S. staff in missions.

Poor coordination among CRSPs represents an additional identified weakness. With insufficient coordination via the CRSP Council, CRSPs have found it difficult to undertake coordinated planning, produce unified impact assessments or communicate overall CRSP accomplishments.

CRSPs also **align unevenly with national and regional development strategies**. Prior CRSP strategies and the more recent USAID FtF priorities do not consistently align although due to the importance of food security to both the CRSP and to FtF, there is often a strong correspondence between FtF and existing CRSP research programs. However, there are often gaps, particularly in the focus on priority FtF countries. The Review Team has concluded that CRSP strategy prioritization should even more explicitly take into account national and regional development strategies to achieve developmental relevance in the future. As one of the Mission agricultural officers interviewed stated, “[i]t would be very useful if CRSP scientists could report their efforts in support of the Country Feed the Future Strategy.”

Generally, the CRSPs **lack sufficient impact assessment**. As noted in the strengths analysis, some CRSPs have economists and other social scientists with the skill sets to conduct broad impact assessments, but on the whole this was identified as a systemic weakness. Without rigorous analysis of impact pathways and measurement of results and outcomes, the CRSP must rely on anecdotal evidence that will not support adequately the needs by policy makers to demonstrate developmental impacts to justify funding levels.

Although one of the acclaimed accomplishments of the CRSP has been human capacity building, the Review Team believes that CRSPs have given **insufficient attention to broader institution building**. Training does not assure that returning young scientists will necessarily build institutional strengths. A USAID-sponsored analysis delivered to the agency in 2010 (Gilboy et al 2010) found that over time, criteria and strategies have evolved to assure that development approaches to HICD moved beyond training the “brightest of the bright” in isolation from their institutional environment. The review suggested that an analysis of the trainee’s home institutional environment is just as important as selecting individuals to be trained. Institutional constraints including funding, incentives, equipment, management practices, and trainee reentry strategies all impinge on success of HICD.

A final weakness has been **poor communication and outreach**. Because CRSPs are “a little fish in a big pond,” they have tried to get the most out of limited funding by leveraging resources of others. This often results in the CRSP becoming a minor partner in an overall effort. The contribution of the CRSP may not be appreciated or communicated well enough to clients or to USAID Missions to gain enduring support.

Communication and outreach require specific skill sets that need to be addressed by competent personnel. Both USAID and the CRSPs bear responsibility to assure that this happens well and the Review Team commends the recent initiatives to strengthen communication and outreach.

SWOT Analysis: Opportunities

The Review Team believes that there are many opportunities the CRSPs could exploit to become more influential in contributing to agricultural development and to better serve as the core platform for the overall USAID-University agricultural and food security program.

Opportunities noted by the team include the current **favorable donor attention to agriculture**. After nearly two decades of donor neglect, various factors including the persistence of hunger and food insecurity, problems of stagnant agricultural productivity growth, burgeoning demands for food, feed and biofuels, food and energy price spikes, and the necessity to adapt to climate change have all put agriculture squarely on the agenda of donors, including USAID. The CRSPs have been USAID's major entry point into the vast agricultural science resources of the U.S. land grant university system. With some modifications, the CRSP can take advantage of the current situation to expand their role in the current development assistance portfolio as a university-led contribution.

Another major opportunity is that **CRSP work is fully compatible with food security objectives**. CRSPs address food security issues broadly through emphasis on productivity improvement of food staples, sustainable management of natural resources, post harvest issues, value chains of importance to poverty alleviation, income generation for limited-resource households and nutrition. However, these dimensions could be enhanced through more strategic priority setting in designing the CRSP portfolio.

Many CRSPs already operate in Feed the Future countries and are taking actions to focus on FtF countries moving forward. USAID wants to demonstrate impact from its investments in agriculture and agricultural research and believes it can do that best by mounting strong efforts in a select number of countries and sectors. CRSPs have shown a willingness to adjust to this strategy and have the advantage to the Missions of already having a credible presence in many FtF countries.

A further opportunity is presented by the **high degree of potential alignment of the CRSP and the recently approved CGIAR (CRP) research programs**. The newly constituted CGIAR Research Programs (CRPs) are cross cutting global programs organized around major themes and with annual budgets averaging over \$50 million. In the past, there has often been competition between the CGIAR centers and the CRSPs for resources and partners. Because there is a high degree of correspondence of the themes for the current CRSP portfolio and that of the new CRP portfolio, as seen in Table 1, CRSPs could greatly increase their leverage through strategic alliances with these CRPs (and vice versa).

Table 1: CGIAR Research Programs corresponding to each CRSP

CRSP	CRP	Potential synergies	Lead CGIAR Center
AquaFish	Aquatic Agricultural Systems Livestock and Fish	Medium High	World Fish ILRI
BASIS/AMA	Policies, Institutions and Markets	High	IFPRI
Global Nutrition	Health and Nutrition	High	IFPRI
INTSORMIL	Dryland cereals Dryland systems	High Medium	ICRISAT ICARDA
Livestock & Climate Change	Livestock and Fish Climate Change, Agriculture and Food Security	High High	ILRI CIAT
Peanut	Grain Legumes	High	ICRISAT
Pulses	Grain Legumes	High	ICRISAT
SANREM	Water, Land and Ecosystems Maize Dryland Systems	Medium High Medium	IWMI CIMMYT ICARDA
	Non CGIAR		
Horticulture	World Vegetable	High	
IPM	World Vegetable	Medium	

Another opportunity is to further exploit the value chain work that the CRSPs have undertaken in recent years. Both **USAID and country research strategies have increasingly focused on value chains**, moving beyond production alone to take account of post-harvest losses, processing, distribution, food safety and nutrition considerations.

An **increased interest of the private sector in development** provides a further opportunity for the CRSPs. As demonstrated by the Peanut and the INSTORMIL CRSPs, private sector partners very much support CRSP research efforts with developing country partners. At the G-8 meeting in Summer 2012 President Obama announced significant U.S. agribusiness commitment to agricultural investment in Africa—a potential opportunity for CRSP researchers.

The Review Team strongly believes that the CRSP have **a potential to improve knowledge management and outreach** and could significantly benefit by doing so. There have been some positive measures taken recently through a CRSP Council contract with Cultural Practices to produce some summary materials describing important aspects of the CRSP program. The Review Team strongly encourages the centralization of data and results reporting so that accomplishments as well as lessons learned are more widely shared.

SWOT Analysis: Threats

We highlight five threats facing the CRSPs. The first is an **uneven communication to stakeholders of both accomplishments and impacts**. Importantly, stakeholders include USAID Missions where we found in interviews that too often Mission

agriculture officials were unclear as to the various CRSP research programs or their importance to their FtF priorities. **As a result Missions do not feel ownership of the CRSPs.** The Review Team believes that best practices for engaging Missions should be shared among the CRSPs. Also, CRSPs should institutionalize mechanisms such as inception workshops and other measures to jointly plan, consult with stakeholders and share results. Similarly, USAID in Washington is one of the client groups for the CRSP. CRSPs should seek means to feed CRSP research results and operational capacity into USAID programming in the field.

The CRSPs also face problems of perception. We noted what we call **the lack of a “wow” factor because innovation and impacts are not properly highlighted.** The CRSPs have been around for a long time. They cannot be complacent about highlighting and communicating their significant scientific innovations and accomplishments. Perhaps because of the longevity of the CRSP, **perceptions exist--inaccurate in our view--that the CRSP model is outmoded and too silo-prone, and that they are entitlements that operate as a closed system.** The Review Team believes that the core elements of the CRSP model are *not* outmoded and that many positive changes have occurred in recent years. It is important that CRSP management combats these perceptions and, in collaboration with USAID, makes a concerted effort to counter what we believe to be myths.

An additional threat identified is that **USAID does not actively integrate CRSPs with the broader agency development agenda.** We believe that real opportunities exist for reformulated CRSPs to play a stronger integrative role as a broader development platform.

F: Findings and Recommendations for the Four Key Questions

Question 1: How to Improve Engagement of Universities in International Agricultural and Food Security Research?

The Review Team found a diversity of approaches within the CRSP model. While all CRSPs share a core mission of research for development and an integration of research and capacity building, specific CRSPs vary along several dimensions. Some CRSPs offer a relatively greater emphasis on ‘_upstream’ or ‘_downstream’ research, resulting in a range of research outcomes and readiness for application of findings on the ground.

CRSPs also vary in terms of approaches to capacity building. All CRSPs provide important mechanisms for building individual and institutional capacity (some with efforts directed more specifically at institutional capacity), and sharing best practices in this area could benefit all CRSPs. An additional significant difference among CRSPs pertains to geographic scope. Some CRSPs support research projects in a wide range of host countries, while others (e.g., Nutrition) limit their scope to a very small number of countries. With the implementation of the FtF research strategy, some CRSPs have moved toward a smaller number of host countries emphasizing FtF priority locations.

Efforts by CRSPs to be all embracing with respect to upstream vs downstream research and capacity building, and a broad geographic spread that may engage over 20 countries often leads to considerable tension with respect to the objectives of tapping cutting edge science for global problems, solving food security challenges in

the short term on the ground, human resources development, and broader institutional capacity development. The result is often that CRSPs attempt to do too much over too wide a geographic range with too few resources.

The Review Team also finds that the CRSP Model could be modified to better align with university, U.S. government, USAID, global programs, and developing country priorities. Senior research administrators at universities serving as CRSP managing entities or holding sub-awards are not typically well informed about the CRSPs hosted on their campuses. Better information for university leadership could result in more effective integration in the overall university research portfolio and recognition of the significance and quality of the research undertaken by CRSP scientists.

In addition, the CRSPs do not consistently and proactively align with the broader USAID and developing country priorities. For example, the review team found that mission staff have a very inconsistent understanding of the CRSP projects operating in their countries and often lack a strong engagement with CRSP researchers. That said, CRSP projects are generally defined and implemented in close consultation with local stakeholders in host countries. The integration of the CRSP with central USAID priorities is also uneven, hindered by the absence of authoritative scientific leadership overseeing the CRSP portfolio and a centralized approach to priority setting and communications. The Review Team proposes that more sharply defined CRSP models and a more flexible funding strategy (less emphasis on long-term commitment of CRSP grants and on a fixed funding strategy under which every project receives the same size award) would most effectively shape the CRSP research portfolio to support USAID priorities.

Finally, our findings were shaped by the review of other models of university engagement in support of agricultural and food security research and capacity building, including the Australian Centre for International Agricultural Research (ACIAR), the Food Security Program of Michigan State University, the Higher Education for Development program, the National Science Foundation, and the new Borlaug Higher Education for Agricultural Development (BHEARD) program. Table 2 summarizes objectives and brief characteristics of each of these programs and the lessons for the CRSP that we took away from interviews with key people engaged in these programs. Full details are provided in Annex 5.

Table 2. Summary of objectives, features and lessons from other models for engaging universities in research and capacity building for development (see Annex 2 for further details)

Model and objective	Brief summary of program	Lessons for CRSPs
<p>Australian Centre for International Agricultural Research (ACIAR)</p> <p>To reduce food insecurity, improve livelihoods and increase sustainability by tapping Australia’s recognized scientific capacity to develop solutions to agricultural problems in developing countries through research and capacity building.</p>	<p>Established as part of the Australian development assistance program in 1980, it allocates over \$70 million annually to partnerships of Australian research organizations with developing country scientists in over 40 countries. It also supports the CGIAR and other global programs. A strategic framework for international research and country operational plans guides priorities. The Centre has a professional technical staff of 14 as well as staff for administration, communication, and impact assessment</p>	<ul style="list-style-type: none"> • The development of priorities at the country level through consultative processes to guide allocation of the research budget within an overall strategic framework for all ACIAR supported research. • The importance of a senior scientific team under strong leadership to formulate programs, interact with the wider development assistance community, and to monitor and evaluate progress. • The opportunity to build synergies between bilateral support and support to international agricultural research. • The development of an impact culture with metrics tailored to the type of support—upstream research, applied and adaptive research, and institution building.
<p>Food Security Program of Michigan State University (FSP)</p> <p>To cut hunger and poverty through integrated programs of applied policy research, capacity building and policy dialogue in Africa.</p>	<p>The program has been funded through ten year programs of USAID support since the 1980s A small core USAID grant leverages a total grant program of \$40 M in 2010. USAID missions provided the bulk of the support in the three focus countries. The FSP focuses on a small number of countries and includes substantial on the ground presence of U.S. faculty.</p>	<ul style="list-style-type: none"> • More in-depth focus on a few countries around critical food security policy themes has allowed the FSP to successfully tap USAID mission funding as well as other donors on a sustained basis. • Despite the focus on a few countries, a modest investment in dissemination and regional networks and workshops has allowed results to spillover to other countries. • Sustained on the ground presence of MSU researchers has been important in building local capacity and enhancing impacts. Even in the stronger countries, such as Kenya without MSU presence, MSU provides frequent follow up in country. • Long-term support of over 10 years and up to 30 years in Mali has been important in realizing impacts and building human and institutional capacity.

Model and objective	Brief summary of program	Lessons for CRSPs
<p>Higher Education for Development (HED)</p> <p>To diversify and expand the engagement of higher education institutions in international development, focusing on human capital development and institutional strengthening for economic growth and social advancement.</p>	<p>HED is a non-governmental organization that receives core funding from USAID to develop U.S. university-developing country partnerships for capacity development. HED leverages two thirds of its resources from missions through a demand driven agenda. In Africa it has embarked on longer term larger grants that support PhD training. All contracting is centralized in HED.</p>	<ul style="list-style-type: none"> • The advantage of a central effort to coordinate awards in terms of interaction with countries and missions and its possible cost effectiveness. • The potential to leverage relatively small associate awards from USAID missions through regular field contact by HED staff. • The advantage of the long-term engagement <u>of the CRSP</u> in terms of funding graduate education beyond the MS degree.
<p>Basic Research for Agricultural Development (BREAD)</p> <p>To support innovative basic research designed to reduce constraints on small-scale farmers in developing counties</p>	<p>Provides \$50 M over five years in partnership with the Bill and Melinda Gates Foundation. Although focused on basic research, projects are expected to address outcomes in the context of broader societal impacts. Projects generally include a component of HICD</p>	<ul style="list-style-type: none"> • Leveraging of funding through strong partnerships with other donors • Taps a broad array of scientific capacity beyond universities • Use of a standing international panel for peer review that meets face to face for three days to adjudicate proposals
<p>Higher Education Solutions Network (HESN)</p> <p>To establish institutional partnerships that will create and leverage a virtual network of leading experts who will help USAID solve distinct global development challenges.</p>	<p>HESN has a very open ended RFPs emphasizing creativity and novelty. A major aim is to foster the development of trans-disciplinary centers of excellence that cut across sectors (agriculture, energy, water, and health for example) to test new ideas and technologies in support of the development agenda.</p>	<ul style="list-style-type: none"> • Too early to assess
<p>Borlaug Higher Education for Research and Development (BHEARD)</p> <p>To create strategic linkages among multiple stakeholder in FtF focus countries and the U.S. higher education community for capacity building</p>	<p>BHEARD supports long-term training for MS and PhD degrees in Feed the Future focus countries. An additional aim is to create an efficient entity through which USAID Missions and Bureaus can easily and cost-effectively conduct capacity building activities and share best practices for graduate degree training.</p>	<ul style="list-style-type: none"> • Too early to assess

Recommendation 1: BIFAD should assist USAID in developing an overarching and coordinated strategy for engaging U.S. universities in agriculture and food security research and HICD that includes the CRSPs as a central component.

Currently, an array of university-led research and HICD activities focus on development challenges related to agriculture and food security issues, including activities that contribute to HICD. Examples of current programs in agriculture and food security that are or will be university-led and are either USAID/Washington funded or USAID/Mission funded include the following:

Agricultural research:

- Climate resilient cereals
- Emerging crop diseases
- Grain and legumes productivity
- Horticulture, post harvest technology, food safety and nutrition
- Policy and socioeconomics research

Capacity development:

- Modernizing Agricultural Education and Training Programs (MAETS)
- Modernizing Extension and Advisory Systems (MEAS)
- Innovative Agricultural Research Initiative (iAGRI)
- Borlaug Higher Education Agricultural Research and Development Program (BHEARD)
- Higher Education Solution Network (HESN)

In addition, a variety of mission-funded activities support agricultural and food security research and/or HICD components.

In each instance, elements of the programs include agricultural and food security research/development activities and HICD, similar to the CRSP implemented programs. Thus the research and HICD activities implemented through the current CRSP portfolio are only a portion of USAID-supported agricultural and food security research and HICD activities at U.S. universities. Engagement of U.S. universities with the Agency in agricultural and food security research and associated HICD including the CRSPs should be considered in its totality.

Our report has described seven key attributes of the CRSP programs (see page 19). Most of these attributes are or could be central characteristics of an expanded and re-characterized portfolio of university-led activities that would enhance the engagement of the U.S. university community in support of USAID's agricultural and food security priority agenda both with respect to research and HICD. At the same time, the CRSP portfolio should be configured to specifically address the priorities of USAID in agriculture and food security.

Consistent with our charge to improve the engagement of the university community with USAID in agricultural development and food security research and HICD, we propose an expanded USAID strategy to encompass all university-led research and HICD including the CRSPs. Such a strategy should be developed in close consultation with BIFAD and its Science Advisory Council as proposed in Recommendation 2.

Recommendation 2: BIFAD appoints a small Science Advisory Council to advise on emerging research themes critical to agriculture and food security research priorities and their implementation.

The main aim of the Science Advisory Council would be to provide objective scientific advice free from political pressures to USAID through BIFAD for all of its research-related support and especially for the CRSP. The Council would address common elements of priority setting, integration, access and communication across research projects and with extramural partners.

The Council should be multidisciplinary with five to seven members, one of whom would be appointed as Chair, and with the principal scientist for CRSPs from USAID (see below) as ex-officio secretary-member. Representation should be broadly inclusive in terms of disciplines and institutional representation, including 1890 and 1994 land grant institutions. The Council should have sufficient budget to commission special studies such as those related to priority setting.

The major tasks of this Council would be to:

- Advise BIFAD and USAID on emerging research priorities critical to agricultural and food security
- Monitor research developments in U.S. universities, U.S. agencies, and abroad (especially in the CGIAR, priority countries and emerging centers such as China, India and Brazil) of potential relevance to USAID programs
- On the basis of the above, advise USAID on priority themes for new CRSPs when funding becomes available
- Monitor external evaluations and advise on future status of existing CRSPs (continuation, modification, sunset)
- Oversee peer review of new CRSPs and advise on funding levels

Recommendation 3: USAID should appoint a full-time principal scientist to provide leadership, oversight and centralized management for CRSPs as well as to guide their alignment with the broader agriculture and food security research portfolio.

This recommendation responds to the diagnosed weakness of the CRSPs of having insufficient oversight and coordination and the need for stronger representation within USAID. Accordingly, the Principal Scientist should be a highly respected scientist with excellent knowledge of universities (ideally recruited from a university) and with experience in research management whose duties would be to:

- Promote excellent science in CRSP work
- Facilitate coordination and communications among CRSPs and AORs (USAID CRSP managers)
- Provide management and technical guidance of the AORs
- Serve as ex-officio member of the Science Advisory Council
- Provide a “one-stop shop” for missions and others on the CRSPs
- Ensure alignment and integration of CRSPs with the broader portfolio of USAID engagement with universities in agricultural and food security research and HICD
- Ensure research and HICD results are integrated into USAID programming through linkages with USAID leadership and country missions.

Recommendation 4: Redesign and more narrowly focus CRSPs around two basic models for the future:

- **Model 1: Strategic research and HICD on a global challenge**
- **Model 2: Demand-driven research and HICD to address national and regional food security issues**

Based on the review of the CRSP model as well the analysis of other models of university partnerships for development, we recommend that future CRSPs should be more sharply focused than the current CRSPs with a primary focus on either strategic or demand-driven research.

Model 1: Strategic research on a global problem

In this model, a CRSP would focus on advancing, through cutting edge research, solutions to narrowly defined problems of global strategic importance to food security. The Science Advisory Council would define these problems, although additional priority areas might be sought through open competition. Past CRSP research on *Striga* and ongoing research on livestock risk insurance and *Aflatoxins* would fit this model.

USAID would request proposals from U.S. universities or consortia of universities through open competition that meet the following criteria.

- Innovative approaches to addressing a global strategic problem for food security
- Preferably involves a consortium of universities or other public or private research organizations that provides synergistic expertise, resources and impact potential
- Leverages additional resources and potential impacts through partnerships
- Includes a component for capacity building in developing countries
- Provides potential benefits to the US

The Review Team envisages that these CRSPs would have a duration of five years with a potential one-time renewal for another five years. Progress would be assessed through metrics related to the quality and influence of science, such as publications and their citation, in addition to critical outcomes relevant to development goals.

Model 2: Demand driven research to enhance food security at the country and regional level

The second model would be more akin to the model now used by most CRSPs, but with important adjustments. Key characteristics of these CRSPs would be:

- Employ demand-driven themes set from the bottom up through participatory stakeholder processes.
- Aim to achieve tangible development outcomes in terms of adoption, food security, poverty reduction and sustainable management of natural resources in the medium term
- Focus on a small number of priority countries (e.g. five), especially Feed the Future countries
- Preferably involve a consortium of universities or other public or private research organizations that provides synergistic expertise, resources and impact potential

- Leverage wider impacts through partnerships with larger research programs and tap additional resources especially from USAID missions
- Seek coordination and synergies on the ground with other actors such as CGIAR, private sector, and other donors
- Leverage wider spillover impacts from focus countries by fostering networks within a region
- Prioritize equally HICD and research
- Provides potential benefits to the US

The Review Team envisages that these CRSPs would be five years with a potential one-time renewal for another five years (with no presumption of further renewal). They might be organized around farming systems, value chains or common problems within a well-defined geographic space. Progress would be assessed through metrics related to adoption and on-the-ground impacts, as well as metrics concerning HICD and science quality.

Transitional arrangements

The Review Team debated how quickly to phase in the new CRSP model structures and suggests a sequenced approach.

- *Short term:* reduce the number of countries in the program of most current CRSPs and advise stakeholders of new models for advance planning.
- *Medium term:* at the five-year renewal point for current CRSPs, assess congruence of the CRSP with priorities to decide on whether to renew, and if renewed, modify in line with the new models and priorities .
- *Long term:* as CRSPs reach end of ten-year cycle, request new proposals to fit the two-model structure and a priority set identified by BIFAD and its Science Advisory Council. This approach does not preclude a CRSP from reapplying beyond ten years but it would be based on competitive selection **both** within the priority set as well as among institutions.

The Review Team's analysis suggest that CRSP governance and management would be strengthened and enhanced through a stronger role for BIFAD, central scientific direction from USAID, and improved linkages with missions and other stakeholders. Stakeholders reported that BIFAD's leadership role has varied over time and that CRSP work would benefit from a stronger leadership role for BIFAD; centralized and scientifically-based leadership and management from USAID would help to define and strengthen a CRSP portfolio better integrated with FtF priorities; and an increased focus on communication with and best practices for outreach to missions and other stakeholders would link CRSP work more closely to regional and country priorities.

Recommendation 5: Strengthen USAID management and CRSP management through centralized functions, use of technology and application of best practices

The CRSP Review Team's findings suggest a more centralized approach to management could strengthen the capacity of USAID staff working with the CRSPs through sharing best practices and establishing common approaches and expectations. The Review Team observed that the CRSP lacks consistent, central scientific direction and priority setting as well as focal points for communications and contact concerning the CRSP portfolio.

We have already recommended the strengthening of USAID management of the CRSP portfolio in several ways:

- Establish an independent Science Advisory Council to advise USAID through BIFAD on new priorities and to assist with evaluation of scientific performance of the university portfolio (see Recommendation 1 in this report)
- Appoint a full-time principal scientist to lead CRSP as a USAID “program” coordinated with other research initiatives (see Recommendation 2 in this report)
- Develop consistent, specific expectations about CRSP management for USAID staff managing individual CRSPs (AORs/AOTRs)
- Provide a central CRSP point of contact for missions in USAID/DC (position of Principal Scientist in Recommendation 2)
- Mission directors identify a point of contact for CRSPs operating in their countries

In addition, given widespread complaints about onerous and often ill fitting reporting requirements, the Science Advisory Council, in consultation with BIFAD, USAID staff, and CRSP Council, should identify a set of measures to improve program reporting and analysis.

At the same time CRSPs should strengthen their management and coordination by:

- Implementing a more active role for CRSP Council in coordination, communication and outreach to USAID-Washington and to missions (promote best practices for outreach to missions and country partners)
- Conducting systematic identification of good practices across CRSPs, with results synthesized and publicized through the periodic updating of CRSP guidelines
- Ensuring that individual CRSP are led by an established university professor to ensure integration in the university research portfolio
- Undertaking further analysis of a “single enterprise-service center” model for the CRSP to increase operational efficiency

A particular emphasis should be placed upon **improving CRSP outcomes data analysis and communications through centralized strategy and use of technology.**

Impacts, as well as documentation of impacts, of the CRSPs can be much improved using centralized strategies and new technologies for communication. Areas in which there would be particular advantages to shared data would be selected outcome indicators, collaborators and trainees, and travel. Databases of peer-reviewed as well as other types of publications could also be updated as a CRSP reporting requirement. Using standardized software, databases could be accessible to all CRSP management entities and key indicators could be documented in searchable databases. Such a system would increase transparency, efficiency and timeliness of monitoring progress of the CRSPs.

Collaboration at the country level among CRSPs and coordination with missions could be increased by providing a one-stop shop through the new CRSP web site on all CRSP activities and partners in each country. The database could also include travel dates and e-mail contacts.

New technologies for communication are evolving rapidly and several of these are widely used in the private sector. An example is Web-Ex that would allow efficient video/audio communication by U.S. CRSP directors at minimal cost. Furthermore, it is increasingly feasible to use such technology to communicate with international collaborators.

Question 2: How to Improve Human and Institutional Capacity Building in Developing Countries?

Frequently referred to as a "gem" embedded within the CRSP model, the capacity building element (HICD), particularly degree training, is one of the keys to the enduring legacy of the CRSPs and one that is not replicated by any other development model. CRSPs report that collectively about 20-25 percent of their resources are invested in long-term degree training programs in more than 60 U.S. universities. To date, based on data provided by the CRSP Council, at least 3,280 degree students (35 percent Ph.D.; 45 percent M.S.; 20 percent B.S) from 72 countries have been supported by the CRSPs. Return rates of trained students to their home countries following degree completion are very high at greater than 80 percent. In addition many thousands have participated in short-term (non-degree) educational programs delivered by the CRSPs.

The particular merit of the CRSP is HICD built around research as the training vehicle, an approach that equips young scientists with a set of skills to more effectively apply science to pressing development challenges. This approach also develops relationships with U.S. scientists that enhance the capacity of the CRSP and other host country research efforts to deliver relevant new knowledge and ultimately make impacts in the host country or region.

The CRSPs have the potential to leverage stronger institutional partners in host countries as trained young scientists return home to take up pivotal positions in their home institutions as researchers. In general, institution building has been less prominent as an intentional HICD component of the CRSP model than has human capacity development. Institution building does not just happen; it must be planned as a core component of HICD efforts by the CRSPs. We recommend that increased emphasis on institution building be a recurring element of a newly configured CRSP portfolio. The institutional strengthening component of the CRSP portfolio should focus not only on strengthening research institutions but also on strengthening host country universities to increase their ability to train a new generation of scientists to replenish the dwindling supply of professional research leaders in host countries.

There are a number of HICD-related questions that require further study to improve the HICD efforts led by the CRSPs (Box 2). A revitalized HICD element thus configured creates a pathway to enduring and sustainable impact that will leave a presence for the CRSPs long after their departure.

Box 2: Key Questions for CRSP to Address for Enhancing HICD Impacts

- How well are trainees tracked over time, particularly those who complete degree training and return home? Do the CRSPs know where these individuals ultimately are employed and if/how well they are re-integrated into the CRSP following their training? What have been the achievements of the returning CRSP graduates in terms of professional

appointments/advancement, citations and awards, publications, and contributions to their professional field of specialization? Can these outcomes be documented?

- In selection of trainees, what is the process that is used to assure that appropriate sectoral/disciplinary needs are met in the host country/region? Is there a training plan embedded in each CRSP that assures that sectoral/disciplinary needs are addressed for graduate degree training?
- With respect to gender and the empowerment of women, how well are the CRSPs assuring that young women scientists are provided with opportunities for degree training through implementation of the CRSP capacity building plans? Is there disaggregated data over time to demonstrate a bold attempt to empower women scientists through the CRSP training activities?
- Have the CRSPs analyzed the network-building elements of face-to-face degree-training, particularly in light of recent interests within the Agency to implement more online training as part of the commitment to reduce costs for capacity building efforts? Can online degrees satisfactorily substitute for traditional formal educational models of degree delivery by the CRSPs? What is the evidence?
- What funds have been leveraged by the CRSPs specifically to support HICD? Can these leveraged funds be disaggregated from other funds leveraged by the CRSPs? From whom have these leveraged funds for HICD been secured?
- With respect to short term training efforts, what have been the documented outcomes of those components of HICD? How are short term training programs planned and implemented? What are the priority goals that such programs hope to achieve? How are decisions made regarding short vs. long term training program implementation?
- Finally, in terms of institution building, what metrics do the CRSPs use to document that human capital development translates into stronger institutions? Can such connections be validated? Does institution building include strengthening post-graduate training capacity in relevant disciplines with host country universities to assure local production of a flow of needed scientific capacity to support research for development efforts

Recommendation 6: Foster and enhance the institutional capacity building dimension of CRSPs and other USAID projects

The conclusion of the CRSP Review Team based on our study is that HICD is and should continue to be a major and distinguishing feature of the CRSPs. It will contribute, as it has in the past, to highly desirable development outcomes for the CRSPs and has enormous potential to sustain CRSP programs over the long term. As such, rigorous monitoring of the HICD component of the CRSP Model is desirable to insure that HICD is done well and aligned with USAID priorities. Such a study would seek to assess outcomes of HICD mediated through the CRSP model. Outcome indicators based on the questions in Box 2 should be required reporting outputs for the CRSPs. Recommendations for best practices for an enhanced HICD effort by the CRSPs can be built on the reported outcomes.

Future human resource development through graduate training should be implemented within a broader strategy for institution capacity building. Specifically, the Team recommends the following several steps.

- Carry out a structured institutional assessment to diagnose major weaknesses and set priorities for HICD
- Formulate long-term leadership development goals in specific countries
- Consider sectoral personnel training needs and institution building goals in designing HICD initiatives

- Improve tracking of HICD impact over time to include: analysis of value of networking opportunities; tracking achievements of trainees including professional placements, awards, grants, publications, citations after training.
- Focus on building post-graduate training capacity in host country universities
- Explore distance learning for degree training, but retain formal face-to-face degree training (explore new degree models for program delivery)
- Promote the use of technology to facilitate virtual network-building, distance learning curricula, and e-Xtension as means to link researchers, trainees, and community stakeholders.

Question 3: How to Ensure that USAID/University Programs Are Well Integrated with Country and Regional Strategies and Priorities?

USAID has already conducted an impressive exercise to better articulate priorities for its whole research and HICD portfolio as part of implementation of the Feed the Future research strategy. The Review Team (along with USAID) sees this as a good starting point for restructuring the CRSPs and related activities to better serve the objectives of the agency.

Over the medium term, the Science Advisory Council (see Recommendation 2) should be charged with periodic assessment and updating of priorities to take account of changes in science, food security challenges, and new partnership opportunities. Additionally, specific steps should be taken to set priorities responsive to regional and national development needs. The focus and level of funding should serve as the key tool to shape the CRSP portfolio.

USAID's CRSP leadership, in consultation with BIFAD and its Science Advisory Council, should coordinate closely with other global priority setting mechanisms carried out by the CGIAR, GCARD, Foundations and the private sector. It will also be important to employ a bottom-up participatory approach that ensures ownership by national research systems, USAID missions, and regional research organizations.

Recommendation 7: Establish a new funding paradigm with funding aligned with development priorities and research strategies

As already noted USAID should replace the current equal funding formula per CRSP with a more strategic approach to funding individual CRSPs in accordance with the priority, the merit of the proposal, and the performance of the grantee. Also the more narrowly focused research would result in larger grants provided in selected countries to enhance impact (but to fewer countries). To further enhance impact, USAID Washington could also provide matching grants to missions to incentivize multi-CRSP or CRSP-CGIAR CRP collaborative activities that promote synergies, out-scaling and diffusion of impacts.

Question 4: How to Coordinate USAID/U.S. University Efforts with Broader US/University Research and Education Agendas and Other Global and Regional Efforts.

CRSPs represent critical investments in specific key areas and institutions, but remain small programs in the context of total agricultural research investment (representing less than 0.1 percent of agricultural R&D spending of the land grant universities and less than 5 percent of the nearly \$800 million spent globally by CGIAR). However,

CRSPs do not consistently forge strong linkages to other research initiatives in the US, host countries and the global research system. Nor are CRSPs consistently well integrated in the whole-of-university context, as evidenced by a lack of information about CRSP projects among senior university research administrators.

Similarly, in the whole-of-government context of development research and HICD including connections with significant USDA Research Programs, CRSPs are not uniformly or strongly integrated with other government efforts. For instance, more than \$1 billion in Agricultural Research Service funding is not always connected with potentially relevant CRSP projects, often co-located on university campuses.

Recommendation 8: Leverage impact of CRSP investments by strengthening links across universities, U.S. government, global programs, foundations, and other donors

We recommend that CRSPs, under the leadership of the principal scientist and with input from BIFAD and its Science Advisory Council, implement strategies to work with and leverage larger development research initiatives. The Review Team also found CRSP researchers and USAID staff have identified this issue, and we strongly endorse these efforts.

Linking CRSPs with USDA research projects and other multidisciplinary centers, many of which are co-located on university campuses, represents one key opportunity for this type investment leveraging. The Review Team believes that CRSP impacts can only be multiplied through such partnerships.

With respect to the CGIAR, some CRSP have made laudable efforts to define their role in the new CRPs by pro-active participation in CRP design and planning meetings. This is especially so for the Pulses CRSP which has a long history of collaboration with the CGIAR, but also for the Peanut CRSP. In other cases, linkages remain weak or non-existent, thereby missing a major opportunity for exploiting synergies. Where potential synergies are high, a criterion for CRP and CRSP USAID funding in the future, should be evidence of concrete actions to forge strong partnerships.

In the context of the university research community, CRSPs should more intentionally take a ‘whole-of-university’ approach. This could include further developing a breadth of disciplinary input and excellence (inclusion of social sciences, gender analysis, communications, information technology, and other fields) to inform and shape CRSP research and training. The focus of CRSPs should remain in the broad field of international agricultural development and food security, but with explicit strategies to bring a wider range of university resources to bear on development challenges. Raising the profile of CRSPs in their host universities and in the university research community as a whole could aid this effort.

Cross-Cutting Recommendation: An Expanded Role for U.S. University-USAID Partnerships in Food Security Research and Capacity Building

The U.S. research community, universities and food system are exceptionally well positioned to address global food security challenges. CRSPs bring a highly effective framework for producing high quality agriculture and food security research and capacity building that should not only be maintained, but enhanced. The collaborative, interdisciplinary and development-focused work of CRSPs, particularly

when linked to and building synergies with related investments, offers an opportunity to build upon this exceptional U.S. research community capacity. At the same time, the Review Team believes that the United States is providing very modest levels of resources relative to other countries, to exploit these vast capacities.

Particularly with the implementation of the recommendations of this report, a revitalized CRSP portfolio will be well positioned to lead an enhanced program of USAID engagement of universities. The Review Team recommends that BIFAD, in consultation with its Science Advisory Council, should advocate for a significantly higher overall level of funding for university-led agriculture and food security research and HICD. To address emerging issues and retain funding flexibility to meet key development challenges, BIFAD should set target funding levels for new awards on an annual basis.

Recommendation 9: Consistent with the recommendations in this report, USAID should significantly increase funding for university-led agriculture and food security research and HICD.

Annex 1: References and Documents Consulted

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Annex 2: Review of Other Models

The Review Team analyzed through available documentation and interviews, a number of models that have similar objectives to the CRSPs of research for development and capacity building. These models are summarized in Table 2. Several of the most relevant are described in some detail below.

Australian Centre for International Agricultural Research (ACIAR)

Of the models reviewed, ACIAR is closest to those of the CRSP in terms of research and capacity building objectives and implementation through collaborative research partnerships. The objectives of ACIAR are to reduce food insecurity, improve livelihoods and increase sustainability by tapping Australia's recognized scientific capacity to develop solutions to agricultural problems in developing countries. The Centre was established as part of the Australian development assistance program in 1980 in recognition of Australia's range of climates typical of the developing world that offers opportunities to transfer Australian knowledge and scientific skills to developing countries, while at the same time generating mutual benefits to Australian agriculture.

In addition to research, ACIAR puts special emphasis on human and institutional capacity development of national research institutions in partner countries through short and long term training, long-term relationships and a variety of exchange and twinning arrangements.

Collaboration with researchers and policy makers in partner countries is integral to the development and delivery of ACIAR research programs. In 2011-12, approximately \$72 million of the Centre's research budget of \$108 million was allocated to bilateral country research projects in over 40 countries in Asia and Africa. Projects are designed based on country priorities that are formulated through periodic participatory assessments at the country level, balanced against Australia's comparative advantage. More recently all ACIAR supported research is being guided by a [strategic framework for international agricultural research in Australia's aid program](#) formulated by an independent panel under the guidance of the Chief Scientist for Australia.

Most of the remaining research budget is allocated to multilateral development-related research through contributions to 19 international agricultural research centers, particularly those under the CGIAR. The joint management of bilateral and multilateral funds for agricultural research enables the Centre to exploit synergies between the two types of investments. Increasingly ACIAR is partnering with the Australian development aid agency, AUSAID to link research to development. Other budget expenditures include \$7 M for education and training (additional to that within research projects) and \$0.76 M for communication and outreach to ensure that the results of research and development activities are widely disseminated.

Approximately 10 percent of the budget (about \$10 M) is allocated to Center management. The Center has a strong technical staff of 14 at headquarters in Canberra, headed by a Chief Executive Officer. The Centre's Program Managers for each disciplinary research theme (economics and social sciences, crops, natural resource management, and livestock and fisheries) identify research priorities, investigate joint research opportunities, plan and develop programs, monitor and coordinate projects for delivery of benefits, manage resources and supporting funds, and organize periodic reviews. Projects are developed within a semi-competitive

mechanism with a lead research institution within Australia but often involving a consortium approach.

The Center has a culture of impact assessment. For 90 projects that have been assessed in detail, total benefits were estimated at around \$12.6 billion for a total investment of approximately \$234 million in 2008 dollar present value terms. Of the total benefits \$11.4 billion accrue to developing countries and \$1.2 billion to Australia. Note that depending on the nature of the project, impact metrics may be assessed in terms of community impact (as above), capacity building impact, and scientific impact.

Potential lessons for the CRSP from the ACIAR program include:

- The development of priorities at the country level through consultative processes to guide allocation of the research budget within an overall strategic framework for all ACIAR supported research.
- The importance of a senior scientific team under strong leadership to formulate programs, interact with the wider development assistance community, and to monitor and evaluate progress.
- The opportunity to build synergies between bilateral support and support to international agricultural research.
- The development of an impact culture with metrics tailored to the type of support—upstream research, applied and adaptive research, and institution building.

Food Security Program of Michigan State University

MSU researchers and their colleagues have been carrying out integrated programs of applied research, capacity building, and policy dialogue focused on food security—largely in Africa—since the early 1980s. Three ten-year food security cooperative agreements, spanning the period from 1982 through 2012, have been funded by USAID central offices and country and regional missions.

The strategic goal of these cooperative agreements has been to integrate research findings into national, regional, and international policy dialogue and program design to promote rapid and sustainable agricultural growth as a means to cut hunger and poverty. Research is carried out under three main themes (i) farm and household productivity and technology use, (ii) marketing and regional trade, and (iii) improving the food security of vulnerable groups

According to the MSU Food Security Group, the following characteristics of the approach have been critical to its success (Food Security Group, 2009):

- Demand-driven collaborative design and implementation;
- Integration of research, outreach, and capacity building;
- A team approach;
- Sustained focus on selected themes and countries/regions; and
- Institutional factors such as university support, and integration of the FSG program within its home department at MSU.

The FSP operates in a small number of countries through Associate Awards, most recently in Mali, Zambia and Mozambique. Country research programs are funded largely by USAID missions but with increasing participation of other donors. Of the total grants of \$40 M in operation in 2010, \$15 M was from closely related projects funded from other sources, and 88 percent of the remained was from USAID missions. The USAID Washington grant of \$3 M has leveraged major additional funding. Despite the limited number of countries, research findings often spillover to neighboring countries through regional workshops and citations of MSU reports. The long-term involvement in countries has enabled the collection of longitudinal household data sets that are now a major asset to monitoring micro-level changes and evaluating policy interventions.

More recently, the FSP has moved toward further institutionalization by supporting local research organizations who receive USAID mission funding, with MSU providing technical backstopping through a sub-contract from the local research organization. This mechanism is operating in Kenya and a similar approach is being established in Zambia.

While the FSP has similar objectives to the CRSPs, some differences provide important lessons.

- More in-depth focus on a few countries around critical food security policy themes has allowed the FSP to successfully tap USAID mission funding as well as other donors on a sustained basis.
- Despite the focus on a few countries, a modest investment in dissemination and regional networks and workshops has allowed results to spillover to other countries.
- Sustained on the ground presence of MSU researchers has been important in building local capacity and enhancing impacts. Even in the stronger countries, such as Kenya without MSU presence, MSU provides frequent follow up in country.
- Long-term support of over 10 years and up to 30 years in Mali has been important in realizing impacts and building human and institutional capacity.

Higher Education for Development

HED is a model of partnership between U.S. universities and developing country universities for capacity development (HICD). Its mission is defined to —diversify and expand the engagement of the higher education institutions in international development, focusing on human capital development and institutional strengthening for economic growth and social advancement.”

It receives core financing from USAID to leverage mission and other financing for partnerships. About two-thirds of funding comes from non-core sources, especially U.S. missions, that funds exchanges and joint curricula development. The overall aim is to achieve development impacts through HICD with mutual benefits to U.S. universities. HED works closely with U.S. missions to define demand and drive the agenda. Several of their projects are agriculturally related, such as a large water project in Ethiopia.

The major challenge has been the short-time period of grants that has not allowed PhD training. This is changing with the Africa-U.S. Higher Education Initiative that will award \$56 million in eleven African countries over five to ten years.

Also historically HED has brokered collaboration between two universities, one in the United States and one in a developing country. However, the bigger grants under the Africa initiative allow multiple institutions to participate. The Ethiopia grant involves five to six Ethiopian universities and two U.S. universities.

As with all USAID programs, the HED awards are emphasizing performance metrics. Notably, former trainees have been tracked after five years to assess impacts and sustainability.

The HED program suggest lessons for the CRSPs:

- The advantage of a central effort to coordinate awards in terms of interaction with countries and missions and its possible cost effectiveness.
- The potential to leverage relatively small associate awards from USAID missions through regular field contact by HED staff.
- The advantage of the long-term engagement of the CRSP in terms of funding graduate education beyond a MS degree.

National Science Foundation

International research and engagement are critical components of NSF's strategic plan –NSFGLOBAL 2020" vision, representing core elements of its strategy to internationalize U.S. science and engineering research and education. NSF seeks to support basic research and develop significant collaboration opportunities through which scientists and engineers work in trans-disciplinary teams as well as in partnership with researchers from diverse national and cultural backgrounds. NSF invests in internationalization strategies in its core directorates and also in the form of foundation wide initiatives.

NSF programs focused on global challenges relevant to agriculture and food security and the advancement of human and institutional capacity building are increasingly collaborative. These programs leverage the experience, investments and resources of government agencies (i.e. USAID, USDA) and the donor community (The Bill and Melinda Gates Foundation). The NSF programs and strategies that are most closely aligned with the CRSP goals and objectives are the Developing Country Collaborative in Plant Genome Research (DCC-PGR) and the Basic Research to Enable Agricultural Development (BREAD) programs.

The DCC-PRG, a sub component of the Plant Genome Research Program (PGRP), supports basic and collaborative research that links U.S. researcher with partners, resulting in critical networks of expertise to address problems of mutual interest in agriculture, energy and the environment. The DDC-PRC places specific emphasis on biotechnology to target economically important crops and those specific traits most relevant to local farmers and consumers. A typical award is \$100,000 for up to two years to support activities such as travel and research expenses, salaries for developing country partners while at the U.S. partner lab, and research related expenses for the U.S. partner while working in the developing country partner lab.

NSF's also administers the Basic Research to Enable Agricultural Development (BREAD) program. This \$50 million, five-year partnership with the Bill and Melinda

Gates Foundation aims to foster sustainable agricultural solutions in developing countries. The competitive awards support innovative basic research issues designed to advance solutions to key challenges facing small farmers (e.g., drought, pest, diseases, soil quality and germplasm improvement). BREAD's explicit focus on basic research with clear and direct relevance to agricultural applications in the developing country distinguishes it from other NSF programs. BREAD aligns most closely with the CRSP model in its expectation that projects will address outcomes in the context of broader societal impacts and its support to HICD via graduate student training in the U.S. and the host country. Distinguishing characteristics from the CRSP model include a standing international panel for peer review of projects (Gates sits in) that meets face to face to adjudicate proposals and a broader scope of eligibility ranging from U.S. academic institution (not just universities) to research labs and non-profit research organizations, museums, or professional society and international partners via sub awards. BREAD seeks to support innovative basic research designed to reduce constraints on small-scale farmers in developing countries, with Gates often funding the best applied research projects.

Other models being tested by USAID

The Review Team also noted a number of other models for research and HICD that are being tested by USAID and other funders. These include the Higher Education Solutions Network (HESN) and the Borlaug Higher Education for Agricultural Development program (BHEARD). It is too early to evaluate the experiences of these models in a comprehensive manner, but the Team did consider their attributes in the recommendations that follow.

HESN: The HESN under the Office of Science and Technology aims to bring in a consortium of universities to fund highly interdisciplinary and innovative research of global significance. However, the very open tender without setting priorities up front was deemed to be less suited to the agriculture and food security challenges where global priorities have been well articulated by a number of organizations, most recently by USAID itself.

BHEARD: The program will support human and institutional capacity building to support the goals of Feed the Future. BHEARD is primarily a long-term higher education program for MS and PhD degrees in Feed the Future focus countries. As a component of institutional capacity building, the program seeks to create strategic linkages among multiple stakeholders in the focus countries as well as in the higher education community. An additional aim of the program is to create an efficient entity through which USAID Missions and Bureaus can easily and cost-effectively conduct capacity building activities. The program emphasizes the need for testing and sharing of best practices for graduate degree training to enhance food security in the context of institutional capacity development, and the implementing entity will be collaborating with the Knowledge Center at Association of Public and Land-grant Universities (APLU) to identify and share lessons learned. Competition for the implementing entity for BHEARD is currently underway, managed by APLU, with applications accepted from individual universities or university consortia. USAID/BFS is contributing \$3.8 million in initial core funding and anticipates that with added funds from the missions there will be \$7.35 million dollars initially available.

Annex 3: CRSP Review Team Statement of Work

STATEMENT OF WORK FOR THE BIFAD REVIEW OF COLLABORATIVE RESEARCH SUPPORT PROGRAM MODEL

Award Number: AEG-P-00-08-00011

Purpose and Goals

This review is being commissioned by the Board for International Food and Agriculture Development (BIFAD), with support from the U.S. Agency for International Development (USAID). Its purpose is to conduct a formative review of USAID and relevant global experience and provide recommendations going forward on how USAID can most effectively engage the U.S. university community in agriculture/food security research and related capacity building, to meet USAID and Feed the Future goals and objectives. In particular the review will assess the Collaborative Research Support Program (CRSP) model as part of strengthening USAID's research engagement with U.S. universities under Title XII of the Foreign Assistance Act of 1961, as amended.

The study will examine the objectives of the CRSP model, and review evidence of its performance over time in terms of research advances, capacity building and impacts.

In addition, it will consider potential modifications or alternative models for university collaboration on research and capacity building related to international agriculture development and food security. Of special interest, is the relevance and efficiency of the CRSP paradigm after 30 years of USAID investment and the significant changes that have occurred in US university, governmental, and international research and higher education support.

The review should note the context for USAID-sponsored research, including linkages to national research programs, universities, extension, CGIAR System and the private sector. The study will consider how best to encourage creative and innovative approaches to solve mutually-defined problems that increasingly require thematic or functionally focused multidisciplinary research approaches.

Based on the results of the comparative analysis of the CRSP and other models, the study will recommend:

1. Agricultural and food security related research models that engage the U.S. university community most effectively in advancing the Feed the Future (FtF) Research Strategy, potentially including modifications to enhance or strengthen the current CRSP model;
2. CRSP and related research models best suited to simultaneously strengthen human and institutional capacity development (HICD), in research, education and extension in agriculture and food security in developing country contexts. The institutional context encompasses national research programs, ministries, universities and the private sector.
3. Strategies for ensuring that USAID supported US university programs related to agriculture and food security are well integrated with Country and Regional

Multi-Year Feed the Future Strategies and more broadly, respond to country priorities.

4. Strategies for ensuring that USAID supported university efforts are closely coordinated with the broader research agenda of US research universities and with broader country-and region-led efforts to strengthen host country research and education capacities, including programs of other donors, multilateral institutions and the private sector.

BIFAD will commission and set the direction for the study as well as identify the review team members. USAID will provide funding for the study, including honoraria, review management and travel. The results and recommendations presented in the study will be made available to USAID and to BIFAD. BIFAD, at its discretion, may further refine the recommendations based on its collective expertise before submitting to the USAID Administrator on or before June 30, 2012.

Background

In November 2011, Administrator Shah met with Dr. Brady Deaton, BIFAD Chair, and requested BIFAD to undertake a study of the Collaborative Research Support Program (CRSP) model for USAID research and capacity building partnerships with U.S. universities, especially Title XII universities. Dr. Shah asked that the study focus on US university contributions to agriculture and related sciences, with additional models for research and capacity-building partnerships examined as part of the review.

The Bureau for Food Security (BFS) supports BIFAD and will provide resources to allow BIFAD to undertake this important review. Given the short time-frame for completing the study, BFS proposed that the study be implemented through an ongoing Participating Agency Service Agreement (PASA AEG-P-00-08-00011) established with the U.S. Department of Agriculture, Foreign Agricultural Service (USDA/FAS).

Since BIFAD will commission the review, it is responsible for drafting the scope of work and making recommendations on study team composition and the selection of candidates. The USDA/PASA above will provide administrative support (travel, honoraria, etc.) to members of the study team. USAID's BIFAD Staff will and additional BFS staff will provide the review team with relevant identified and requested reports and information. BIFAD and BFS staff and principals will also be available to assist the study team, as required.

Scope of Work

- The study should focus primarily on the objectives of the CRSP model, review evidence of CRSP performance over time, including results and impact, and assess potential variations in models for USAID-funded food security related research and capacity-building with the university community.
- Key issues for consideration by the study team may include, among others:
 - How is central USAID research funding currently linked to field level programming in research, extension and capacity building?

- Given the longer term nature of research, how should USAID position itself between shorter term research/development objectives and longer term continuity of focus and management?
- Is the framework for CRSP research well-grounded and functional, do researchers have a clear understanding of the overall direction of the project?
- To what extent should leadership in problem and priority definition originate from the university community versus USAID and country leadership? Are there models for a shared leadership approach, and to what extent do current programs allow for/foster that?
- What are pros and cons of consortium approaches currently used by the CRSP, where one university leads a larger group and in effect manages the program? Could the model be refined to foster a greater sense of strategic engagement on the part of USAID or, importantly, the wider university community?
- How are multidisciplinary approaches integrated into CRSP or related research models? Is the predominant commodity focus of the CRSPs appropriate in today's context or is a broader functional approach more appropriate?
- How are current CRSPs governed and evaluated, taking into account efficiency, independence and cost:
 - ✓ What are lessons regarding management vs. operations costs balance; are there opportunities for streamlining management?
 - ✓ To what extent is evaluation a standing function, and where should that function be housed?
 - ✓ What are appropriate levels of independence and separation between governance and management of USAID-supported university-led research programs? Are there additional models that could be considered?
 - ✓ Does USAID management of the CRSPs provide sufficient leadership, technical and other support? How directed is USAID in the CRSP decision-making processes?
- Priority Setting: How has priority setting been carried out at both the overall portfolio and individual program levels?
 - ✓ Is some sort of over-arching priority setting process needed at the level of USAID's support for university research in the area of food security?
 - ✓ How are priorities set for research topics and how is the "flow" of research monitored? Is there a clear link between research and knowledge adoption? How are outcomes measured?
 - ✓ How are priorities set and how do they relate to priority setting elsewhere in the USAID research portfolio (e.g., in the CGIAR, in USDA), as well as Feed the Future priorities?
 - ✓ To what extent could a research advisory body reporting to BIFAD (and potentially including some BIFAD members) assist in achieving a greater degree of research prioritization? Should this body be permanently positioned within USAID itself?
 - ✓ Is priority selection influenced by the operation of the program (size of grant, emphasis on developing country capacity building, degree of risk/time horizon, etc.)? What is an appropriate stance for USAID's research funding, relative to that managed by USDA, NSF and others?

Should variable approaches be considered in order to accommodate different types of research?

Example Inputs/tasks for the Review Team, supported by USAID's BIFAD Staff

1. Collect and review relevant information on CRSP and other models for university-led agricultural research engagement with USAID. Review literature, draft abstracts, and generate selected bibliography on CRSP and other models; conduct interviews of key stakeholders; and gather input through a public BIFAD meeting. BIFAD and BFS staff will provide foundational list of approaches and models.
2. Identify core information repository on the CRSP portfolio including program descriptions, fact sheets, and performance evaluations. BIFAD and BFS staff will provide all relevant materials in PDF format to the study team.
3. Describe the generic CRSP model with a set of identified model attributes that facilitate comparisons with other models in agricultural and the related sciences. Review and report on variations and evolution of the model over time. BIFAD and BFS staff will provide the team with a set of previous reviews and relevant analyses as background.
4. Identify alternative collaborative research and learning programs and models in international agricultural and food security research supported by others employing the collaborative research model frameworks. BIFAD and BFS Staff will provide information on various governmental and non-government international agricultural research programs.
5. Clarify relevant U.S. government (USG) policy, strategy and program performance objectives that will guide the collaborative research and learning model selection process. BIFAD and BFS staff will compile the document list and provide access in PDF format to the team.
6. Compare and contrast the identified models by the following criteria: 1) relevance, 2) effectiveness, 3) efficiency, 4) impact and 5) sustainability.
7. Recommend and discuss collaborative research and learning models best suited to advance FtF including primary attributes that are necessary and secondary attributes that are desired.
8. Recommend and discuss alternative model options best suited to strengthening HICD program objectives related to agricultural and food security research, and relevant linkages to higher education and extension. BIFAD and BFS staff will provide relevant information on agriculture, food security and related fields in developing country national research programs, ministries, universities and private sector.
9. Discuss and recommend, as appropriate, the balance of research resources to be apportioned across research and related capacity building, as well as linkages to education and extension. Comment on the various pros and cons offered by different collaborative research models based on weighting if a portfolio approach to research is undertaken by USAID.
10. Consider any additional aspects that may have a bearing on the success and sustainability of USAID's U.S.-university-led agricultural and food security research. BIFAD and BFS Staff will provide, as requested, any additional staff support that is needed by the Review Team.

Study Report

A single report for distribution will be delivered to BIFAD Chairman Deaton in MS Word in Office 2007. The following is a suggested outline for the report:

- I Title Page
- II Table of contents
- III List of Acronyms
- IV List of Tables
- V List of Figures
- VI Executive Summary
- VII Findings and Conclusions
 - A. - F. Responses to each item in the SOW 1. - 6.
- VIII Recommendations
 - A. - D. Recommendations as per the SOW 7. - 10.
- IX Appendices
 - A. Statement of work
 - B. Itinerary
 - C. List of Persons Contacted
 - D. List of Materials reviewed

Level of Effort

The level of effort for the entirety of this scope of work will consist of no more than 40 person days for the Team Leader, 40 days for a Consultant/Report Writer, 40 days for a Consultant and 30 days for three Experts over a period not to exceed 122 days (March 1, – June 30, 2012.) Domestic U.S. travel for up to 12 trips of 2 days each will be required. The USAID AOTR and BFS/Title XII CRSP Study Work Group will be available to the team as a resource but will not contribute directly to preparation of the report. USAID Administrator Shah has requested that the study be completed and recommendations provided by BIFAD by June 2012.

USAID/University Partnerships Proposed Study Timeline

November 15, 2011- Administrator Shah asks the BIFAD to commission a study of USAID/university partnership models, with a focus on the CRSPs.

December 15, 2011- BIFAD Secretariat sends Chair Deaton a problem statement/concept paper to review. Two phone calls with Dr. Deaton clarify study scope and generate ideas for consultant names to undertake the study.

January 20, 2012- BIFAD Secretariat sends a proposed draft Statement of Work and consultant list to Dr. Deaton for distribution and comment by the board.

January 25, 2012- USAID working group on the study meets with USDA Foreign Agricultural Service to discuss the study and to share the draft SOW.

January 26-27, 2012- BIFAD members discuss and comment upon the proposed SOW and consultant list. Following this meeting the Secretariat finalizes both documents and formally shares with FAS.

February 10, 2012- BIFAD chair makes calls to consultants to determine availability and interest in working on the study. USAID/USDA will follow up once consultant names are confirmed and USDA will initiate contracting actions.

March 1, 2012- USAID brings consultants to DC to discuss study with consultants including content, process, anticipated product and interviews. The result will be an outline of the proposed study.

March 15, 2012- A conference call for consultants and team to finalize interview and research questions and begin outreach and desk study will be scheduled. (Starting on March 15, USAID and consultants will have bi-weekly conference call.)

April 12-13, 2012- USAID brings BIFAD members, USAID staff and consultants to DC for a brainstorming session. BIFAD approves direction of the study. At the BIFAD public meeting on April 13, BIFAD hosts a panel to inform the board on study dimensions and preliminary findings/issues.

May 1, 2012- USAID arranges conference call with consultants on status and findings.

May 31, 2012- USDA/FAS submits first draft of the study to USAID, which will review and submit to the BIFAD for quick review. (A second meeting in DC of consultants, USAID working group and BIFAD chair is possible.)

June 11, 2012- BIFAD Secretariat submits first draft of report to Administrator Shah for review and comments including a possible meeting with Dr. Shah, Dr. Deaton and USAID sr. staff to discuss findings.

June 30, 2012- Consultants complete revisions, and then submit final report to USDA/FAS for transmittal through the BIFAD Secretariat to the BIFAD, which will formally transmit the report to the Administrator.

Annex 4: Interview Instrument

CRSP Review Study: Interview Themes and Questions

What is the CRSP model?

How would you describe the CRSP model? To your knowledge, is there more than one model? If so, would you describe each model's main attributes?

Do you consider your CRSP/the CRSP model primarily commodity focused, disciplinary-focused, subject matter focused, or primarily problem-solving? If none of these descriptors fit, what, in your view, is the simplest descriptive term for the role of your CRSP in solving development problems?

What is unique about the CRSP model?

Selection process (what is process? Competitiveness?)

Funding structure (level, duration, type)

Governance (consortium model)

What are pros and cons of consortium approaches currently used by the CRSP, where one university leads a larger group and in effect manages the program? Could the model be refined to foster a greater sense of strategic engagement on the part of USAID or, importantly, the wider university community?

Management

Who provides input and guidance regarding the management of the CRSP portfolio? Role of CRSP Management Entities? Guiding principles for the CRSPs?

Multidisciplinarity

How are multidisciplinary approaches integrated into CRSP or related research models? What disciplines does your CRSP bring together? Are social scientists part of your CRSP? How well do they work with physical scientists?

CRSP Outcomes/Performance

Evaluation (metrics of success for CRSPs)

How current CRSPs are managed, governed and evaluated for performance, taking into account efficiency, independence and cost:

- *What lessons are there regarding the balance between management vs. operations costs?*
- *Are there opportunities for streamlining management?*
- *To what extent is evaluation a standing function, and where should that function be housed to assure evaluation is independent and unbiased?*
- *How often do you conduct evaluations of the CRSP*

Effectiveness (in CRSP objectives and broader food security agenda)

Does the CRSP model (consortium) provide a viable mechanism for accomplishing CRSP objectives and for achieving Feed the Future goals?

Efficiency

Are CRSP objectives accomplished in a cost-effective manner?

Impact of CRSP research (broad view; examples)

Do CRSP research activities accomplish those impacts that are the objectives of the CRSP?

Are CRSP research activities making a difference in development activities (in local communities) and how do you know that (how do you measure impacts/metrics)?

Sustainability

Do CRSP partnerships lead to ongoing capacity building (individual and institutional) among U.S. and host country partners?

Relationship of CRSPs to other stakeholders

What is relationship with USAID and BIFAD? Oversight? Leadership?

Does USAID oversight of the CRSPs provide sufficient leadership, advocacy, technical and other support? How directed (involved?) is USAID in the CRSP decision-making processes? (Can you give examples?) How involved should the Agency be in this regard? What would be your suggestions for improvement of USAID management?

What are appropriate levels of independence and separation between governance and management of USAID-supported university-led research programs? Are there additional models that could/should be considered?

CRSP ME: What level of involvement do you expect from USAID? What has been the level of involvement from USAID in your experience? Has it been constructive or an impediment to your goals as CRSP director?

CRSP ME: Do you receive specific guidance from USAID and/or BIFAD about how to manage your CRSP? Describe that guidance if it exists.

With host country institutions?

With other CRSPs operating in the same countries?

With other universities?

Other researchers and/or funders?

The CGIAR system?

Country missions?

We are trying to understand how the CRSPs engage with the USAID missions at the country level. Is this a coordinated process led by USAID, or do the individual CRSPs initiate mission contact on a case-by-case basis. How is mission funding for CRSPs obtained and managed?

Local communities/farmers?

Do you see mutual benefit to the US and the host country from CRSP activities?

CRSP priority setting

How are CRSP priorities set?

We are trying to understand how research and other priorities are established in your CRSP. Who would you say has the major responsibility for formulating research priorities? To what extent should leadership in problem and priority definition of research originate from the university community versus USAID and host country leadership?

Are there models for a shared (balanced) leadership approach in establishing the research agenda for the CRSP, and to what extent do current procedures allow for/foster that collaboration?

If changes are needed for a shared leadership approach, would need to be changed?

Relationship of CRSP priorities to Feed the Future priorities and strategies?

Role of country missions?

Relationship to CGIAR centers?

Role of host country institutions?

Should host country institutions be more responsible for the development of the research agenda in the future? To your knowledge, how involved are host country institutions in research priority definition and development of research approaches?

Role of USAID (independence vs. direction)?

How is central USAID research funding currently linked to field level programming in research, extension and capacity building?

Role of university community (fit with institutional priorities)?

Focus on commodities vs. broad themes problems?

Is the appearance of a predominant commodity focus of the CRSPs appropriate in today's context or is a broader "multi-functional" approach more appropriate? Are the "commodity CRSPs" really commodity-focused or is the commodity the "backbone" of a more broadly defined research agenda?

Focus on (global) public good provision vs. country-specific solutions?

Do you see a difference between longer run, public goods-type research (say, research with broad applicability across countries) and shorter-run adaptive research (adapting crop

varieties to specific country or regional conditions)? Is the former more suitable for central funding and the latter for mission funding?

Capacity building

How do the CRSPs contribute to capacity building in host countries (institutional and individual scientists)?

Describe the role of capacity building in the CRSP program implementation both in terms of institution building and also in terms of individual scientist development.

How is capacity building (both individual scientist and institutional) valued, monitored and reflected in the work of the CRSP? How is capacity building rewarded?

How specifically do CRSPs address questions of gender in capacity building? (e.g., how are women scientists, stakeholders, trainees included in defining priorities and implementing research?)

What is the balance between the research and capacity building aspects of CRSP? When resources are constrained, what is the decision-making process for allocation of resources to research vis-à-vis capacity-building (especially training)? Is there tension between these two sets of expectations of the CRSPs?

Other models?

How does the CRSP model compare to other models for collaborative research (e.g., other USAID, USDA, NSF)?

Describe the other models you have in mind:

*Funding Instrument
Competition frequency and size of award
Duration of award
HCID emphasis
Stakeholder input
Partner selection
Governance
Priority setting
Impact evaluation
Extension/dissemination
Management*

Is one of these models more effective? Why?

Annex 5: List of Interviews

Jeff Alwang, Virginia Polytechnic Institute and State University, PI, IPM and SANREM CRSPs-Latin America

Howard Anderson, FAS/USDA

Scott Angle, University of Georgia, Peanut CRSP

Adrian Ares, Virginia Polytechnic Institute and State University Director, SANREM CRSP

Aminata Badiane, Economic Growth Office, USAID Mission-Senegal

Gloria Bateman, Michigan State University

Larry Beach, USAID, AOR, Dry Grain Pulses CRSP

Jim Beaver, University of Puerto Rico-Mayaguez, PI, Dry Grain Pulses CRSP

Steve Beebe, CIAT, Head Bean Program

John Becker, USAID

Maurice Bennick, Michigan State University

Catherine Bertini, BIFAD Member and Professor, Syracuse University

Rob Bertram, USAID, Director, Office of Agriculture Research and Policy

Shahidur Bhuiyan, Senior Bangladeshi Staff, Office of Economic Growth, USAID Mission-Bangladesh

Duncan Boughton, Michigan State University

Richard Bowen, Colorado State University, Director, LCC CRSP

John Bowman, USAID, AOR, IPM and Horticulture CRSP

John Brighenti, Agriculture Officer, Economic Growth Team, USAID/Uganda

Aaron Brownell, Director, Economic Growth Office, USAID Mission-Senegal

Douglas Buhler, Michigan State University

Malcolm Butler, Vice President, International Programs, Association of Public and Land Grant Universities

Michael Carter, University of California-Davis, Director and PI, BASIS/AMA CRSP

Ken Cassman, University of Nebraska-Lincoln, Chair CGIAR Independent Science Council

Saharah Moon Chapotin, USAID, Acting Director, USAID/BFS Agriculture Research and Policy Research Division

Alyssa Cho, University of Florida, Ph.D. Student, Peanut CRSP

Tully Cornick, Executive Director, Higher Education for Development

Darlene Coward, Birdsong Peanuts, GA, Board Member, Peanut CRSP

Eric Crawford, Michigan State University

Amanda Crump, Horticulture CRSP

David Cummins, University of Georgia, Peanut CRSP

Brady Deaton, BIFAD Chair & Chancellor, University of Missouri

Alex Dehgan, USAID, Director Office of Science and Technology and Science and Technology Advisor to USAID Administrator

William DeLauder, BIFAD Member and President Emeritus, Delaware State University

Montague Demment, Associate Vice President, International Development, Association of Public and Land Grant Universities

Machi Dilworth, Director, Office of International Science and Engineering, National Science Foundation

Cynthia Donovan, Deputy Director, Dry Grain Pulses CRSP

Jim Diana, University of Michigan, PI, AquaFish CRSP

David Eckerson, USAID Mission Director, Uganda

Hillary Egna, Oregon State University, Director and PI, AquaFish CRSP

Gebisa Ejeta, BIFAD Member; Director, Center for Global Food Security and Distinguished Professor, Purdue University

Ramona El Hamzaoui, Director, Economic Growth Office, USAID Mission-Bangladesh

Mervyn Farrow, Director of Agriculture, USAID Mission-Kenya

Brad Fenwick, University of Tennessee, USAID Jefferson Fellow

Kevin Fitzsimmons, University of Arizona, PI, AquaFish CRSP

Pattty Fulton, NIFA/USDA

Shana Gillette, Colorado State University, Deputy Director, AquaFish CRSP

Shibani Ghosh, Tufts University, Associate Director, Nutrition CRSP-Global

Robert Green, Michigan State University

Jeffrey Griffiths, Tufts University, Director, Nutrition CRSP-Africa

Kim Groop, Michigan State University

Marguerite Halversen, Michigan State University

Niall Hanan, South Dakota State University, PI, LCC CRSP

David Hansen, Ohio State University

Steve Hanson, Michigan State University

Jennifer Hart, Economic Growth Office, USAID Mission-Senegal

Ben Hassankhani, Michigan State University

Short Heinrich, University of Nebraska, Deputy Director, INSTORMIL CRSP

Lena Heron, USAID, AOTR, BASIS/AMA CRSP

Eileen Herrera, Deputy Director, Office of International Research Programs,
ARS/USDA

Julie Howard, USAID, BFS Chief Scientist and Senior Science Advisor to the
Administrator

Katherine Kahn, Senior Program Officer, Gates Foundation

James Kelly, Michigan State University

Hiram Larew, Director for International Programs, NIFA/USDA

John Leslie, Kansas State University, PI, INSTORMIL CRSP

Vern Long, USAID, AOR, Peanut, INTSORMIL CRSPs

Norman Looney, Principal Scientist Emeritus, Agriculture and Agri-Food Canada

Jo Luck, BIFAD Member and former President and CEO, Heifer International

Jonathan Lynch, Pennsylvania State University, PI, Dry Grain Pulses CRSP

Greg MacDonald, University of Florida, PI, Peanut CRSP

Mywish Maredia, Michigan State University

John McDermott, Director, CGIAR Research Program on Agriculture and Nutrition

Mike McGirr, NIFA/USDA

John McPeak, Syracuse University, PI, LCC CRSP

Peter McPherson, President, APLU

Marty McVey, BIFAD Member and President, McVey & Associates LLC

Elizabeth Mitchum, University of California-Davis, Director, Horticulture CRSP

R. Munippan, Virginia Polytechnic Institute and State University, Director, IPM CRSP
and Director, CRSP Council

Elsa Murano, BIFAD Member and Professor & President Emerita, Texas A&M
University

Emory Murphy, Georgia Peanut Commission, Board Member, Peanut CRSP

Jesse Naabe, Scientist, Savannah Agricultural Research Institute, Tamale, Ghana

Gretchen Neisler, Michigan State University

Mathieu Ngouajio, Michigan State University, PI, Horticulture CRSP

Alice Noel, Michigan State University

George Norton, Virginia Polytechnic Institute and State University, IPM and
SANREM Impact Assessment

David, O'Brien, USAID

Michael Osei, Kumasi, Ghana, IPM-CRSP Collaborator, Crops Research Institute

Susan Owens, USAID, Executive Director, BIFAD

Emmanuel Owusu-Bennoah, former D.G., Council for Scientific and Industrial
Research, University of Ghana, and Ghana PI, Peanut CRSP

Eija Pehu, Science Advisor, Agriculture and Rural Development, World Bank

Gary Peterson, Texas A&M University, PI, INTSORMIL CRSP

Steve Peuppke, Michigan State University

Barry Pittendrigh, University of Illinois, PI, Dry Grain Pulses CRSP

Kwamena Quagraine, Aquaculture Extension Specialist, Purdue University, Working in Ghana

Sonny Ramaswamy, Oregon State University, Dean, AquaFish CRSP

Kristina Ramos, FAS/USDA

Harry Rea, USAID, AOR, AquaFish and SANREM CRSP

Anita Regmi, Economic Research Service/USDA

Jeff Reidinger, Michigan State University

Phil Roberts, University of California-Riverside, PI, Dry Grain Pulses CRSP

Ann Robinson, Michigan State University

Ben Rosenthal, NIFA/USDA

Max Rothschild, Iowa State University, USAID Jefferson Fellow

Aniruddha Roy, Office of Economic Growth, USAID Mission-Bangladesh

Deborah Rubin, President, Cultural Practices, and Consultant

Fenton Sands, Agriculture Office, USAID-Mission-Ghana

Patricia Sheikh, Deputy Administrator, FAS /USDA

Adam Silagyi, Economic Growth Office, USAID Mission-Guatemala

Jane Silverthorne, Director, Division of Integrative Organismal Systems, Directorate for Biological Sciences, National Science Foundation

Emmy Simmons, former USAID Official

Sieglinde Snapp, Michigan State University

Meredith Soule, USAID Bureau of Food Security, Responsible for Ghana

Louis Tatem, Chief, Economic Growth and Development Office, USAID Mission-Haiti

Daniel Taylor, Virginia Polytechnic Institute and State University, IPM CRSP

Peter Trenchard, Agriculture Office, USAID Mission-Ghana

Theresa Tuano, Director, Economic Growth Team, USAID Mission, Uganda

Joyce Turk, USAID, AOR, LCC CRSP

Laurian Unnevehr, International Food Policy Research Institute

Gregory Varner, Michigan State University

Patrick Webb, Tufts University, Director, Nutrition CRSP-Nepal and Uganda

Curtis Weller, University of Nebraska-Lincoln, USAID Jefferson Fellow

Irvin Widders, Michigan State University, Director, Dry Grain Pulses CRSP

Tim Williams, University of Georgia, Director, Peanut CRSP

L. George Wilson, North Carolina State University, Chair of HortCRSP International Advisory Board, Professor Post Harvest Physiology/Technology

David Yanggen, Deputy, Office of Economic Growth, USAID Mission-Bangladesh

John Yohe, University of Nebraska, Director, INTSORMIL CRSP

Annex 6: Chronological CRSP History

The first CRSPs were established under BIFAD and USAID in the late 1970s. Since that time, a number of CRSPs have remained in operation for decades while others have been discontinued or newly established in response to changing development research needs.

CRSP Focus	Years of Operation
Small Ruminant CRSP	1978-1995
Bean/Cowpea CRSP	1980-2007
Trop Soils CRSP	1981-1996
Peanut CRSP	1982-2012
Human Nutrition CRSP	1982-1991
Pond Dynamics/Aquaculture CRSP	1982-2008
Fisheries Stock Assessment CRSP	1985-1994
SANREM CRSP Phase III and IV (2006-present) SANREM CRSP Phase I and II (1992-2005)	1992-Present
Integrated Pest Management (IPM)	1993-Present
Global Livestock CRSP	1995-2009
BASIS/Assets and Market Access	1996-2017
Soil Management CRSP	1997-2008
AquaFish CRSP	2006-2012
Sorghum, Millet and Other Grains (INTSORMIL)	2007-2012
Dry Grain Pulses (Pulse) CRSP	2007-2012
Horticulture CRSP	2010-2015
Livestock-Climate Change CRSP	2010-Present
Global Nutrition CRSP	2010-2015