



Title XII Report to Congress FY 2016

August 2017

This report is submitted to Congress pursuant to section 300 of Title XII of the Foreign Assistance Act of 1961, as amended.



LETTER FROM THE ADMINISTRATOR

The purpose of foreign assistance should be ending its need to exist. We should be working to help move countries along the development continuum from aid recipients, to partners, to donors. I believe that Feed the Future, in partnership with U.S. universities and the agricultural community, is helping to move us closer to that day. Interim results in the areas where we work show promising advances in reduction of poverty and stunting. Millions of people are now able to feed themselves and their families. And our partner governments are stepping up to channel even more of their own budgets toward food security.

During Fiscal Year (FY) 2016, the United States took important steps to build on this impact. Congress passed the Global Food Security Act of 2016, which charged the U.S. Government with continuing Feed the Future's efforts in countries that are committed to working with us. The United States launched *A Food Secure 2030: A Global Vision and Call to Action* to rally public and private stakeholders around a single vision for solving global hunger. And Feed the Future expanded its partnerships with U.S. and global universities.

Feed the Future's work with more than 160 Title XII universities has helped drive its success. The deep experience and ingenuity of universities have spurred innovation and helped Feed the Future bring the most effective tools to the table. The higher-education community continues to be vital to our ongoing efforts to advance dignity and prosperity around the world.

When I was Ambassador to Tanzania, the U.S. Embassy regularly received new Treasury officers—someone in Washington thought they would prove useful as we worked to strengthen the local economy. But I knew that they were not the answer. To solve Tanzania's challenges, I needed agriculture officers. Food insecurity underpins many problems around the world, and it is one of the most significant impediments to countries' ability to lead their own development. With the largest refugee crisis since World War II—as millions of children die each year from undernutrition and as food insecurity drives violence, perpetuates instability, and undermines economic opportunity—our partnerships to increase global food security have never been more important. I look forward to working with the Title XII institutions to solve these challenges and move us closer to a world in which foreign assistance is no longer needed.

Sincerely,

Mark Green
USAID Administrator

ACRONYMS AND ABBREVIATIONS

APLU	Association of Public and Land-grant Universities
ASHA	American Schools and Hospitals Abroad
BIFAD	Board for International Food and Agricultural Development
BHEARD	Borlaug Higher Education for Agricultural Research and Development
CIMMYT	International Maize and Wheat Improvement Center
CLA	Collaborating, Learning, and Adapting
CGIAR	Consultative Group on International Agricultural Research
FIP	Frugal Innovation Program
F2F	Farmer-to-Farmer Program
FY	Fiscal Year
HEI	Higher Education Institution
HESN	Higher Education Solutions Network
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
iAGRI	Innovative Agricultural Research Initiative
InnovATE	Innovation for Agricultural Training and Education Program
ISP	Innovation Scholars Program
KNUST	Kwame Nkrumah University of Science and Technology
LUANAR	Lilongwe University of Agriculture and Natural Resources
MSI	Minority-Serving Institution
NGO	Nongovernmental Organization
OHCEA	One Health Central and Eastern Africa

OHW	One Health Work Force
OTS	Organization for Tropical Study
PEER	Partnerships for Enhanced Engagement in Research
PICS	Purdue Improved Cowpea Storage
PYD	Positive Youth Development
SARI	Savanna Agricultural Research Institute
SEAOHUN	Southeast Asia One Health University Network
SUA	Sokoine University of Agriculture
TB	Tuberculosis
TTARP	Tractor Training and Research Program
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
YALI	Young African Leaders Initiative

EXECUTIVE SUMMARY

The Fiscal Year (FY) 2016 Title XII Report to Congress summarizes the partnerships and priority activities of the U.S. Agency for International Development (USAID) with U.S. higher-education institutions under Title XII of the Foreign Assistance Act of 1961, as amended¹. The report focuses on the Agency's important collaboration with its Title XII partners to address the global food-security challenge through investments in agricultural research, education, and extension, as well as through related programs in nutrition, the sustainable management of natural resources, policy formulation, and trade. In addition, the report describes efforts by the Title XII community to contribute to broader development challenges—efforts that reflect the evolution of these schools since their founding to address a broader disciplinary range. The report also documents efforts by institutions that heretofore have not belonged to the Title XII community and are now tackling the important problems of food security, climate resilience and energy, extreme poverty, and violent extremism.

FY 2016 was a landmark year, with passage of the Global Food Security Act of 2016 and the launch of the U.S. Government's *A Food Secure 2030: A Global Vision and Call to Action*² for public and private stakeholders to invest more catalytically to achieve a food-secure future. USAID continued to implement Congressional and Executive Branch mandates for greater emphasis on food security in development activities, coupled with increased partnership between U.S. and global universities.

Feed the Future and the Global Food Security Act of 2016: USAID leads the U.S. Government's efforts in agricultural development to tackle the root causes of global hunger through the whole-of-government initiative known as Feed the Future, authorized by the Global Food Security Act of 2016³. This initiative involves 11 Federal Departments and Agencies, each of which contributes unique programming that advances global food security. In FY 2016, Feed the Future continued to report dramatic progress. Since the initiative began, in 11 out of 17 focus countries with publicly available data, there were statistically significant reductions in poverty, and in 8 out of 17 focus countries with publicly available data, there were statistically

¹ USAID uses an inclusive definition of a Title XII institution in alignment with the provisions of the Famine Prevention and Freedom from Hunger Improvement Act of 2000, P.L. 106-373. This amended legislation broadened Title XII from preventing famine and establishing freedom from hunger to achieving, "The mutual goals among nations of ensuring food security, human health, agricultural growth, trade expansion, and the wise and sustainable use of natural resources." Title XII institutions, therefore, comprise: 1) those listed in the First Morrill Act (1862) or the Second Morrill Act (1890); 2) those listed in the Sea Grant College and Program Act (1966); and 3) other U.S. colleges and universities which: a) have demonstrable capacity in teaching, research, and extension (including outreach) activities in the agricultural sciences; and b) can contribute effectively to the attainment of the objective of Title XII.

² Online at <https://www.usaid.gov/what-we-do/agriculture-and-food-security/a-food-secure-2030>

³ Online at <https://www.congress.gov/bill/114th-congress/house-bill/1567>

significant reductions in child stunting⁴. In 2008, only one African country had a National Agricultural Investment Plan; by 2016 that number stood at 42, and African governments are increasingly defining and leading the drive to eradicate food insecurity within their borders.

In Africa, Feed the Future partner governments have outpaced their neighbors' domestic investment in agriculture⁵. These accomplishments would not have been possible without the expertise, creativity, innovative spirit, and energy brought by U.S. Title XII institutions.

Research and University Engagement: FY 2016 was a year of transition. Many programs ended and underwent evaluation. USAID supported agricultural research within 24 Feed the Future Innovation Labs, led by 15 Title XII institutions, two of which are Minority-Serving Institutions (MSIs). Overall, 79 different colleges and universities in the U.S. were part of an Innovation Lab, 19 of which are MSIs. The newest partner, the Feed the Future Innovation Lab for Livestock Systems, awarded to the University of Florida at the end of FY 2015, commenced operations in FY 2016. USAID sponsored an Education Summit that highlighted good practices from a number of university partners to inform USAID's work in the education sector.

Human and Institutional Capacity Development: USAID has a long history of providing training opportunities to develop human capital. In FY 2016, USAID supported graduate degree training for a total of 1,594 individuals at institutions around the world, 48 percent of whom studied in the United States. In addition, U.S. universities delivered short-term training to approximately 95,000 individuals globally; nearly half of the trainings were provided by Feed the Future Innovation Labs. USAID recognizes the importance of working with partner countries to strengthen the capacity of local institutions that can generate knowledge and develop a work force that meets local and regional needs. As such, USAID's focus on organizational capacity development has increased. The John Ogonowski and Doug Bereuter Farmer-to-Farmer Program (F2F), the Borlaug Higher Education for Agricultural Research and Development (BHEARD), the Global Center for Food Systems Innovation, part of the Higher Education Solutions Network (HESN), the Innovation for Agricultural Training and Education (InnovATE) program, and the Innovative Agricultural Research Initiative (iAGRI) all undertook innovative efforts to target enhanced institutional capacity for agricultural education, training, and research, some in collaboration with the private sector.

Focus on Youth: The world's changing demographics demand a greater focus on preparing youth for a productive future. The 1.8 billion young people alive today represent the largest youth population in history, and 90 percent of them live in the developing world. The youth bulge, the rise of violent extremism, and high youth unemployment (approximately double that

⁴ USAID. 2016. FY 2016 Feed the Future Progress Report. Online at <https://feedthefuture.gov/progress2016/>

⁵ USAID. 2016. Feed the Future Impact Statement. Online at https://feedthefuture.gov/sites/default/files/resource/files/Feed_the_Future_Impact.pdf

of adults) all provide a new urgency to invest in youth. Agriculture in Feed the Future partner countries represents a huge potential source of employment for youth, particularly at a time when the average age for farmers worldwide is about 60⁶. USAID supported a major initiative called “YouthPower” to address the needs of youth in development and to implement USAID’s two major youth-related policy objectives: 1) strengthen youth programming, participation, and partnership in support of overall USAID development objectives; and 2) mainstream and integrate youth issues and engage young people across all USAID initiatives and operations.

Board for International Food and Agricultural Development (BIFAD): Members of the Board participated in public meetings and outreach events that addressed a broad range of topics in FY 2016, including the changing nature of partnerships between the Consortium of International Agricultural Research Centers (CGIAR) and U.S. universities, public-private partnerships, nutrition, and the new U.S. Government Global Food Security Strategy. The FY 2016 BIFAD comprised Brady J. Deaton, Chair and Chancellor Emeritus of the University of Missouri; Waded Cruzado, President, Montana State University; Gebisa Ejeta, World Food Prize Laureate and Distinguished Professor of Agronomy at Purdue University; Harold L. Martin, Sr., Chancellor, North Carolina A&T State University; Cary Fowler, former Executive Director of the Global Crop Diversity Trust; James Ash, Food and Agribusiness Group Leader, Husch Blackwell LLP; and Pamela Anderson, Director General Emerita, International Potato Center.

USAID Support to Universities: USAID invests in universities throughout the world. In keeping with the commitment to develop research and teaching capacity in partner countries, direct investments at foreign universities increased for the fourth straight year. In FY 2016, the Agency made 78 percent (\$327,802,508) of its obligations to Title XII universities, 21 percent (\$86,494,611) to institutions outside the United States, and less than two percent to non-Title XII U.S. universities (\$6,405,585).

Institutional Type	FY 2016 Obligations (\$, in millions)	FY 2011–FY 2016 Total Obligations (\$, in millions)
All Higher Education Institutions (Foreign and U.S.)	420	2,818
U.S. Higher Education Institutions	334	2,439
-U.S. Title XII Institutions	328	2,341
-U.S. Non-Title XII Institutions	6	98
Foreign Higher Education Institutions	86	379

⁶ Jöhr, H. 2012. Where are the Future Farmers to Grow Our Food? International Food and Agribusiness Management Association. Volume 15, Special Issue A. Online at http://ageconsearch.umn.edu/record/129168/files/_2_%20Johr.pdf?version=1

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INTRODUCTION

This report documents development activities undertaken by Title XII higher education institutions (HEIs) during Fiscal Year (FY) 2016. As a group, they take an active role in solving the problems of food insecurity and malnutrition, both at home and abroad, bringing a vast array of expertise and knowledge to bear on complex problems. The Famine Prevention and Freedom from Hunger Improvement Act of 2000 (P.L. 106-373) broadened the provisions of the original Title XII legislation from “preventing famine and establishing freedom from hunger” to achieving “[t]he mutual goals among nations of ensuring food security, human health, agricultural growth, trade expansion, and the wise and sustainable use of natural resources.” As such, more higher education institutions rightfully qualify as Title XII institutions, and schools traditionally working in agriculture have become increasingly transdisciplinary in their approach to global development.

FY 2016 represented a year of transition and milestones. The Feed the Future initiative entered its sixth year. Since the initiative began, in 11 out of 17 focus countries with publicly available data, there were statistically significant reductions in poverty, and in 8 out of 17 focus countries with publicly available data, there were statistically significant reductions in child stunting⁷. Additionally, a number of activities implemented by U.S. universities reached the end of their program cycles. Underscoring U.S. national commitment to ending hunger, the Global Food Security Act of 2016 (P.L. 114-195) institutionalized food security goals embodied in Feed the Future. Two elements of Section 3 of the Act are especially relevant for U.S. universities and reinforce a mandate for their efforts: 1) “demonstrably meet, align with, and leverage U.S. strategies and investments in ... science and technology, agriculture research and extension...” and 2) “strengthen partnerships between U.S. and foreign universities that build agricultural capacity.”

Many developing countries have gained considerable capacity to drive their own development and now seek investment, infrastructure, trade, and broader linkages to the global community in all domains.⁸ However, a number of struggling states pose a significant risk to national and global security. The development challenge today for Title XII institutions is to forge innovative partnerships that support countries in achieving lasting solutions to food insecurity and extreme poverty, while helping to enable the integration of struggling states into the larger global community.

⁷ USAID. 2016. FY 2016 Feed the Future Progress Report. Online at <https://feedthefuture.gov/progress2016/>

⁸ Runde, D. 2017. *A Tale of Two Paths: Divergence in Development*. Center for Strategic and International Studies Blog. Online at <https://www.csis.org/analysis/tale-two-paths>.

Today nearly all Title XII institutions work in the fields of medicine, governance, engineering, business, and trade—disciplines that are increasingly important to food security and rural prosperity. Urban universities that have not heretofore worked in agriculture are entering the field in response to the challenges of environmental degradation, post-harvest loss, and changing climate. This year’s Title XII report highlights constructive U.S. university engagement in all domains of U.S. Agency for International Development (USAID) investment.

Higher Education as an Engine of Opportunity and Enabler of Development

USAID recognizes the vital importance of the higher education community in advancing the goals of agriculture and food security, as well as economic and social development writ large. This commitment is underscored by the levels of USAID investment globally in higher education institutions, totaling more than \$2.8 billion from FY 2011 through FY 2016, 83 percent of which went to Title XII universities.

Table 1 shows obligations to U.S., foreign, and Title XII institutions for FY 2016 and over the last six fiscal years. FY 2016 overall university obligations do reflect a drop relative to FY 2015 levels. These figures are affected by a delayed funding cycle since USAID did not receive its funding until the first quarter of FY 2017. Therefore, the FY 2016 appropriation was obligated during FY 2017, thus affecting FY 2016 obligations. As of the data access date of May 3, 2017 for this year’s report, over \$300 million of vendor obligations to universities had posted in FY 2017 from the FY 2016 appropriation.

Table 1: Summary of Investments in Higher Education Institutions Worldwide.

Institutional Type	FY 2016 Obligations ^a (\$, in millions)	FY 2011–FY 2016 Total Obligations (\$, in millions)
All Higher Education Institutions (Foreign and U.S.)	420	2,818
U.S. Higher Education Institutions	334	2,439
-U.S. Title XII Institutions ^b	328	2,341
-U.S. non-Title XII Institutions	6	98
Foreign Higher Education Institutions	86	379

^a All data contained in this report are based on financial obligations for direct awards to HEIs, as well as (1) a very limited number of large sub-awards made through non-HEIs to HEIs and (2) awards to non-HEIs that support universities in their international development efforts, *e.g.*, the Association of Public and Land-grant Universities (APLU).

^b USAID uses an inclusive definition of a Title XII institution in alignment with the provisions of the Famine Prevention and Freedom from Hunger Improvement Act of 2000, P.L. 106-373. This amended legislation broadened Title XII from preventing famine and establishing freedom from hunger to achieving, “The mutual goals among nations of ensuring food security, human health, agricultural growth, trade expansion, and the wise and sustainable use of natural resources.” Title XII institutions, therefore, comprise: 1) those listed in the First Morrill Act (1862) or the Second Morrill Act (1890); 2) those listed in the Sea Grant College and Program Act (1966); and 3) other U.S. colleges and universities which: a) have demonstrable capacity in teaching, research, and extension or outreach activities in the agricultural sciences; and b) can contribute effectively to the attainment of the objective of Title XII.

Source: USAID Phoenix Financial Management System. Accessed May 3, 2017. Figures are rounded to the nearest million.

Global Distribution of Investments at Higher Education Institutions

USAID invests in universities throughout the world. In keeping with the commitment to develop research and teaching capacity in our partner countries, direct investments at foreign higher education institutions have increased for the fourth straight year. In FY 2016, 78 percent (\$327,802,508) of obligations were made to Title XII universities, 21 percent (\$86,494,611) to universities outside the United States, and less than two percent to non-Title XII U.S. universities (\$6,405,585) (Table 1).

Figure 1 shows the distribution of funding outside the United States. In cases where funding went directly to foreign universities, many were partnered with U.S. collaborators and were eligible for their awards because of technical assistance provided by a U.S. institution, often through collaborative and advisory relationships with U.S. faculty. The Partnerships for Enhanced Engagement in Research (PEER) is a good example of such collaboration. PEER leverages domestic investments in research to improve development results in USAID-presence

countries. A U.S. mentor pairs with a developing country colleague working on a local research question. With the U.S. scientist in an advisory role, funding goes to the foreign scientist via a sub-award from the National Academy of Sciences. By empowering scientists in the developing world, USAID is helping local scientists solve local problems, leveraging U.S. expertise. In FY 2016, an additional \$7.7 million went to foreign universities participating in PEER.

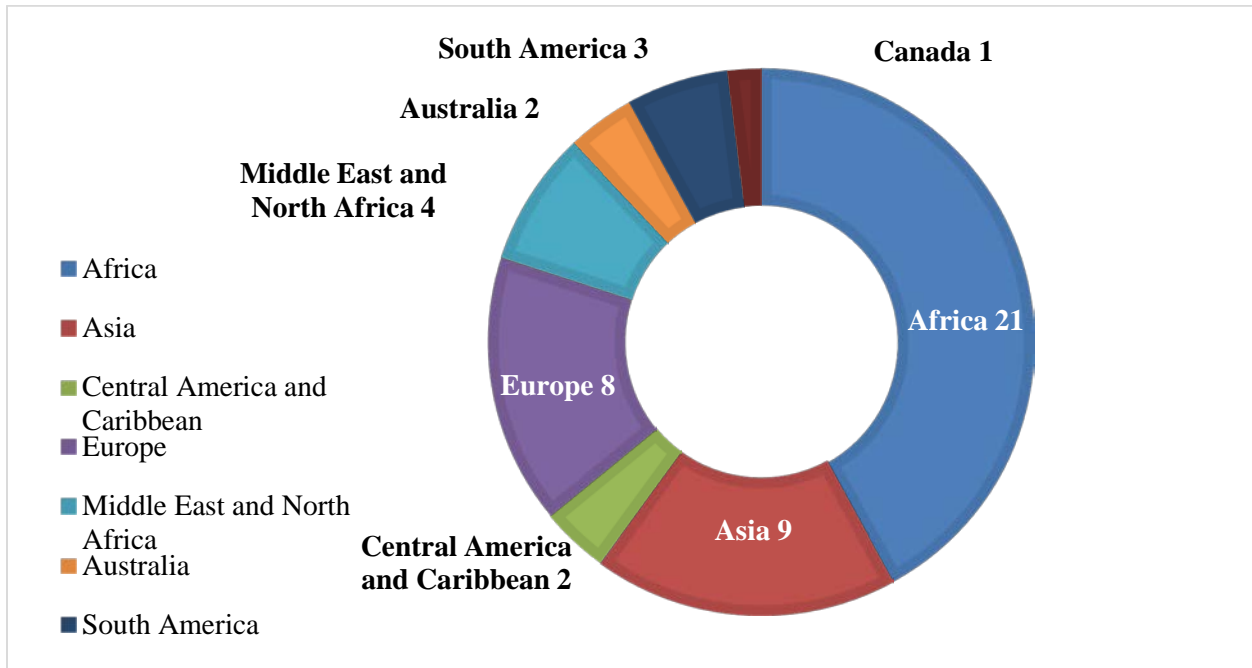


Figure 1: Geographic Distribution of Number of Foreign Higher Education Institutions Funded by USAID. In FY 2016, a total of 50 foreign higher education institutions in 33 countries received funding from USAID. The chart reflects the number of universities in the region getting funding. Forty-six percent of total funding to foreign universities went to 21 institutions in 11 sub-Saharan Africa countries (Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mozambique, Nigeria, Senegal, South Africa, Tanzania, and Uganda). Eighteen percent of the total foreign university funding went to four institutions in the three countries in the Middle East and North Africa (Egypt, Jordan, and Lebanon). Eleven percent of the total foreign university funding went to nine institutions in six Asian countries (Afghanistan, India, Indonesia, Kyrgyzstan, Pakistan, and Thailand). Nine percent of the total foreign university funding went to eight institutions in six European countries (Albania, Armenia, France, Greece, Portugal, and the United Kingdom). Seven percent of foreign university funding went to two Australian institutions. In the Americas, five percent of the foreign university funding went to one institution each in Canada, Chile, Colombia, the Dominican Republic, Guatemala and Peru.

Source: USAID Phoenix Financial Management System. Accessed May 3, 2017.

Distribution of Investments at U.S. Higher Education Institutions

In FY 2016, USAID invested a total of \$334,208,093 in U.S. institutions of higher education, only one of which cannot be designated a Title XII university (it is a stand-alone medical school). Of this total, \$327,802,508 was awarded to Title XII institutions for implementation of activities across all development sectors supported by USAID. Moreover, U.S. universities received an additional \$48 million from USAID in sub-awards under grants and contracts from private sector entities and non-profit organizations, according to USA Spending⁹.

I. KEY USAID ENGAGEMENT WITH TITLE XII INSTITUTIONS

In line with its goals of reducing extreme poverty and improving nutrition through agriculture-led economic development, USAID continued its extensive engagement with Title XII universities in FY 2016.

Feed the Future Innovation Labs

USAID supported 24 Feed the Future Innovation Labs that tapped into the expertise of 79 different colleges and universities around the country, 19 of which were Minority-Serving Institutions (MSIs). Of the 79, 15 were lead institutions, two of which were MSIs. (See Appendix 1 for a complete list of institutions affiliated with the 24 Innovation Labs.) The newest, the Livestock Systems Innovation Lab, led by the University of Florida, commenced operations in FY 2016.

In FY 2016, both the Feed the Future Grain Legumes Innovation Lab¹⁰, led by Michigan State University, and the Feed the Future Peanut Productivity and Mycotoxin Control Innovation Lab¹¹, led by the University of Georgia, underwent external performance evaluations. Both Feed the Future Innovation Labs will be redesigned and re-competed for award in FY 2018. As an integral part of the design process, USAID hosted two online AgExchanges, one on legumes (March 22–23, 2016) and the other on peanuts (June 14–21, 2016), to solicit public input on research priorities from the global university community, private sector, non-governmental organizations (NGOs), and all other interested stakeholders.

USAID field missions that sought the deep expertise and extended networks of Feed the Future Innovation Labs for in-country support. Examples include the Feed the Future Horticulture Innovation Lab, led by the University of California, Davis, which is collaborating with

⁹ USA Spending. Online at <https://www.usaspending.gov>

¹⁰ Alwang et al. 2016. External Evaluation Team Report on the Feed the Future Innovation Lab for Collaborative Research on Grain Legumes. Online at http://pdf.usaid.gov/pdf_docs/pa00mfgj.pdf

¹¹ Fulton et al. 2016. External Evaluation Team Report on the Feed the Future Innovation Lab for Collaborative Research on Peanut Productivity and Mycotoxin Control. Online at http://pdf.usaid.gov/pdf_docs/pa00mfgk.pdf

USAID/Guatemala on a project aimed at increasing farmer incomes through diversification into horticultural produce and adoption of improved agronomic practices, *e.g.*, drip irrigation, rainwater harvesting, and reduced tillage. The Feed the Future Food Security Policy Innovation Lab, led by Michigan State University, is working together with USAID/Mali in capacity development for policy formation to promote inclusive agricultural development, improved nutrition, and enhanced resilience for rural populations. The total new funding for these initiatives is \$7.7 million.

Training Experiences Delivered by U.S. Universities

Obtaining a U.S. education, particularly at the graduate level, is highly valued throughout the world. For the first time during the 2015–2016 academic year, the number of international students in the United States exceeded one million.¹² Nigeria and Nepal were among the top 25 countries of origin of international students in the United States. The education of less than one percent of these foreign students is funded by U.S. government sources. As a group, foreign students contributed approximately \$36 billion to the U.S. economy in the 2015–2016 academic year.

USAID has had a long history of providing training opportunities in order to strengthen human capital and build enduring partnerships to advance development goals. In FY 2016 the Agency supported graduate degree training in a broad range of disciplines. A total of 1,593 degree-seeking individuals were supported at institutions around the world, 48 percent of them in the United States. Nine percent of these individuals were American students undertaking independent international research, while another five percent were U.S. citizens working with Feed the Future Innovation Labs at U.S. universities. The remaining 84 percent of individuals were international students from Africa, Asia, and Latin America. Figure 2 illustrates the range of disciplines in which the FY 2016 cohort of supported graduate students studied. Where disaggregated data are available for programs, female participation ranged from 32 percent to 60 percent. In addition, U.S. universities delivered short-term training to approximately 95,000 individuals globally; nearly half of this training was provided by Feed the Future Innovation Labs. The nature of this training varied widely, *e.g.*, scientific methods, equipment maintenance, safe pesticide use, planting techniques, data collection, grant writing, financial management, leadership, etc. Where disaggregated data are available, men and women benefited equally from these short-term opportunities.

¹²Institute for International Education. 2016. *Open Doors 2016*. Online at <https://www.iie.org/Research-and-Insights/Open-Doors/Data/International-Students>.

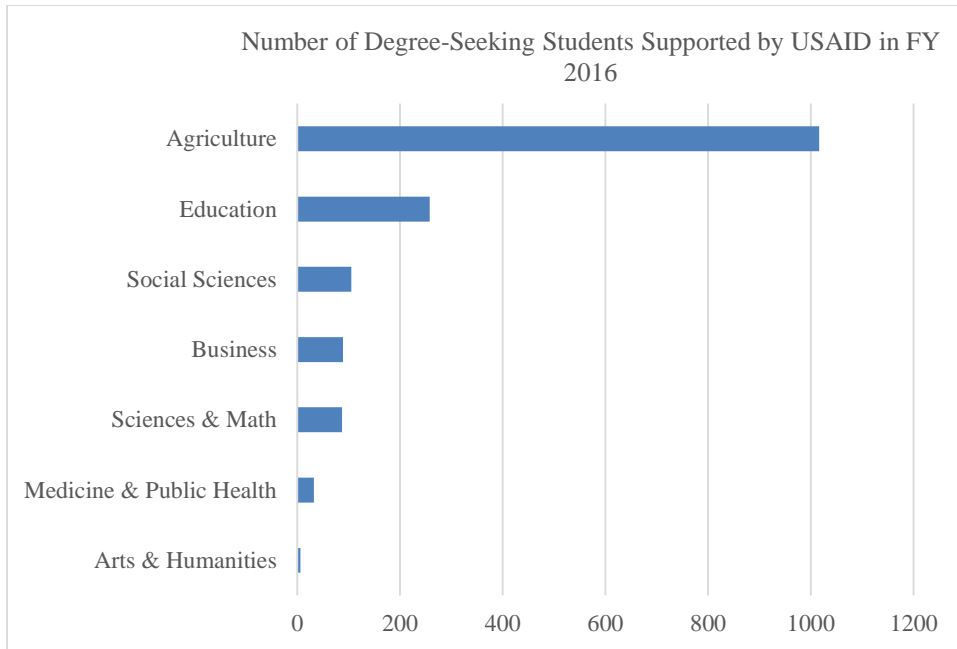


Figure 2: Distribution of USAID-Supported Degree-Seeking Students by Field. Of the 1,593 degree-seeking individuals that USAID supported, the most-sought degrees were in agriculture (1016), followed by education (258), social sciences (105), business (89), science and math (87), medicine and public health (32), and arts and humanities (6). Approximately half of the students were based at U.S. universities.

Source: TraiNet System and Feed the Future Monitoring System.

Organizational Capacity Development Assisted by U.S. Universities

USAID and other donors have been making investments to strengthen agricultural education and training institutions to enable partner countries to develop a work force that is responsive to local and regional challenges. For example, the Innovation for Agricultural Training and Education (InnovATE) Program, implemented by a consortium of schools led by Virginia Polytechnic Institute and State University, hosted a workshop on designing more effective agricultural education and training programs to promote sustainable development and youth entrepreneurship. Discussions yielded consensus about important design elements: high-quality leadership, trust-based stakeholder relationships, more-flexible contracting mechanisms, experiential learning, and strong implementation based on both clear communication and a good understanding of organizational structures and change processes. Workshop participants recommended an iterative and incremental phased approach to design and implementation that relies on frequent stakeholder feedback and flexibility so that lessons learned in earlier phases can be incorporated into later phases of implementation. This approach aligns with the USAID Collaborating, Learning, and Adapting (CLA) Framework. In another example, the Borlaug

Higher Education for Research and Development (BHEARD) program is putting these same principles into action in an institutional capacity development partnership between Kansas State University and Uganda's Makerere University Department of Agribusiness and Natural Resource Economics, which was awarded in FY 2016.

In FY 2016, the John Ogonowski and Doug Bereuter Farmer-to-Farmer Program (F2F) also continued its support for agricultural education and training in FY 2016. Of the volunteer projects implemented through F2F this fiscal year, 17 percent involved agricultural education and training, nine percent involved rural enterprise development, and eight percent involved producer organization development or market systems development. Twenty-seven percent of F2F volunteers were faculty from U.S. educational institutions (241 volunteers) and five percent were students (55 volunteers). The student volunteers were primarily veterinary medicine trainees sent to Ethiopia and Uganda to help set up surveillance systems for livestock health. In another example, F2F supported Purdue University to work with Colombian partners around organizational development. At the request of the Colombian government, Purdue began engaging with Colombian counterparts to craft a master plan for sustainable development of the Orinoquía region, with a strong focus on agriculture and tourism.

In a novel partnership between the Global Center for Food Systems Innovation at Michigan State University and Lilongwe University of Agriculture and Natural Resources (LUANAR) in Malawi, faculty and administrators—collectively called Innovation Scholars—are challenging the “classroom-as-usual” approach to tackle regional food insecurity. Faculty and administrators are guided through a 12-month transformative professional development program designed to help them connect their research and teaching to food systems challenges vital to Malawi's development. Topics addressed by the program include design thinking, community engagement, teaching and learning, organizational change, resource mobilization, and communication in science. Collaboratively created by members of Michigan State University and LUANAR, the Innovation Scholars Program (ISP) was launched in June 2016. The ISP model taps regional experts from university settings, the private sector, and the public sphere. The 20 members of the first cohort will become trainers for other institutions that might like to host an ISP professional development program in the future. A first round of small grants to Innovation Scholars totaling approximately \$300,000 leveraged over \$1 million in new grants to the university and brought the university and the private sector together for mutual benefit.

USAID Global Education Summit

USAID hosted a Global Education Summit in November 2015 that brought together a broad array of stakeholders in the field of education—including USAID education staff from missions around the world, representatives from the U.S. Government, partner countries' Ministries of Education, NGOs, think tanks, and thought leaders—to review current best practices and to demonstrate new and innovative approaches in the sector. The summit featured numerous sessions on higher education programming and policies, including topics on partnerships in

higher education, achieving key development outcomes for youth, education in conflict zones, and the transition from school to work. Other sessions were led by or highlighted the work of U.S. academics and researchers, including faculty and staff from American University, Arizona State University, the University of Chicago, Florida State University, Gallaudet University, George Washington University, Georgetown University, the University of Hawaii, Johns Hopkins University, the University of Massachusetts, Ohio State University, Stanford University, and the University of Washington. Recommendations and identified good practices will inform USAID's work in the education sector, including future strategy development.

Youth: The Next Generation of Food Producers

The world's changing demographics demand a greater focus on preparing youth for a productive future. Currently, about 65 percent of the world's population is under the age of 35. The 1.8 billion young people alive today represent the largest youth population in history and 90 percent of them live in the developing world. The youth bulge, the rise of violent extremism, and high youth unemployment (approximately double that of adults) all provide a new urgency to invest in youth.

Agriculture represents a huge potential growth area for employment among youth. Throughout the world, farmers are aging and young people will take their place, farming in very different ways from their parents. YouthPower represents USAID's approach to addressing the needs of youth in development and implementing USAID's two major youth policy objectives: 1) strengthen youth programming, participation, and partnership in support of overall USAID development objectives and 2) mainstream and integrate youth issues and engage young people across all USAID initiatives and operations. The total funding allocated to the YouthPower initiative is up to \$375 million for implementation and \$72 million for learning, evidence, and evaluation. Several U.S. universities are contributing to the evidence and evaluation work streams. For example, the University of Washington developed a Positive Youth Development Measurement Toolkit, which provides indicators, tools and references for integrating Positive Youth Development (PYD) principles into program monitoring and evaluation in low- and middle-income countries.

Title XII universities are doing their part to advance YouthPower objectives. For example, 37 U.S. universities hosted 1,000 high-potential, young African leaders selected as Mandela Washington Fellows through the Young African Leaders Initiative (YALI). The Fellows fanned out across the country for a six-week leadership and skills development program in one of three tracks: business and entrepreneurship, civic leadership, and public management. The program ended with a conference and networking event held in Washington, DC. Another example is the 4-H Positive Youth Development in Agriculture program under the Education Research in Agriculture project, led by Virginia Polytechnic Institute and State University and funded by USAID/Senegal. Launched in 2015, the program is designed to empower and give a voice to young people, motivating them "...to understand agriculture, to become agriculturalists, and to

be involved in family farms and their communities,” true to the guiding principles of 4-H clubs in the United States and throughout the world.

II. TITLE XII PROGRESS IN FY 2016

Section 297 of Title XII authorizes activities within four broad program areas, which achieve distinct and specific outcomes as outlined below. USAID has active programs that directly address all four components.

Component 1 addresses strengthening institutional capacity and human capital in organizations that promote food security in partner countries. During FY 2016 this goal was achieved directly through such programs as the Feed the Future Innovation Labs; the BHEARD program, implemented by Michigan State University; the Borlaug Leadership Enhancement for Agriculture Program, implemented by the University of California, Davis; the U.S. Borlaug Fellows in Global Food Security Program, implemented by Purdue University; and the InnovATE program, implemented by a consortium led by Virginia Polytechnic Institute and State University.

Component 2 addresses long-term programs for U.S. university global agricultural, natural resource management, and environmental collaborative research and learning. USAID responds to component 2 primarily through the Feed the Future Innovation Labs. See Appendix 1 for a full listing of Feed the Future Innovation Labs and collaborating partner universities in the United States.

Component 3 addresses integrating U.S. universities into the international network of agricultural science. This component is addressed through the Feed the Future Innovation Labs, Higher Education Solutions Network (HESN), and the PEER program.

Component 4 addresses programs for (a) international agricultural research centers, (b) research projects identified for specific problem-solving needs, and (c) strengthening of national research systems. USAID is an active participant in the Consultative Group for International Agricultural Research (CGIAR) and has research partnerships with most of the CGIAR centers. Research partnerships between U.S. universities and international agricultural research centers engage the complementary strengths of both, such as the Heat Tolerant Maize for South Asia program, bringing together the International Maize and Wheat Improvement Center (CIMMYT) with Purdue University, in collaboration with Pioneer Hi-Bred Inc. and local seed companies throughout South Asia to develop heat-tolerant maize and bring it to farmers through commercial pathways.

Extensive problem-oriented research is carried out through the university-led Feed the Future Innovation Labs and HESN’s Global Center for Food Systems Innovation and Resilient Africa

Network. USAID's climate-smart agriculture and biosafety activities also respond to this mandate. Nearly all Feed the Future research programs provide capacity development and training, most often with national research institutes. The F2F program recruits individual faculty members from U.S. universities for capacity development at agricultural universities and training colleges. In addition, targeted capacity development investments tap the U.S. university community for direct involvement in building capacity, as well as program design and evaluation.

Section 297 authorizes establishing and carrying out special programs consistent with the amended general provisions of the Act (Sec 296), and Title XII activities are now more broadly defined to include trade expansion, rural livelihoods, nutrition and agribusiness. Title XII universities are engaging in a much broader range of activities than in the past, including health, good governance, energy, disaster readiness, and conflict mitigation, as well as the traditional Title XII agricultural production activities. Moreover, universities that historically were not part of the Title XII community have begun addressing complex, large-scale issues in agriculture, environment, natural resources, nutrition, food security, and poverty alleviation.

U.S. Distribution of Investments

In FY 2016, USAID invested a total of \$334,208,093 in U.S. institutions of higher education, only one of which was not a Title XII university (it is a stand-alone medical school). Title XII schools received \$327,802,508. Figure 3 illustrates the distribution of these Title XII partnerships across all development sectors funded by USAID. The health, economic growth, and education sectors best tap the expertise found within the U.S. university community, as they are the most highly funded.

Within these overarching sectors, USAID has prioritized certain categories of activities according to its mandate to reduce extreme poverty and food insecurity, as well as to promote democracy and prosperity. Figure 4 presents a more refined breakdown of funding within the top three of these sectors. To summarize, the total funding in the health sector going to Title XII institutions was \$178,152,314. Within the nine health sub-sectors, the distribution was as follows: (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome (HIV/AIDS) (37%), Family Planning and Reproductive Health (21%), Malaria (17%), Maternal and Child Health (9%), Public Health and Emerging Threats (7%), Water and Sanitation (5%), and Tuberculosis (TB) (3%). An additional \$6,405,585 was awarded to a non-Title XII medical school for HIV/AIDS activities. Within USAID, agriculture-related activities compose the bulk of economic growth funding. The \$58,858,646 obligated to economic growth activities was in three main areas: the traditional Title XII fields of Agriculture (76%) and Environment (16%), with various forms of capacity strengthening for trade and business (Private Sector, Financial Inclusion, Microenterprise, and Business Enabling Environment) capturing the remaining eight percent. Geographically, the number of U.S. universities involved in development partnerships with USAID spans 45 states plus the District of Columbia and Puerto Rico. Figure 5 shows the

geographic distribution of U.S. universities contributing to global development in partnership with USAID. At least 169 higher education institutions contributed to USAID development efforts in FY 2016.

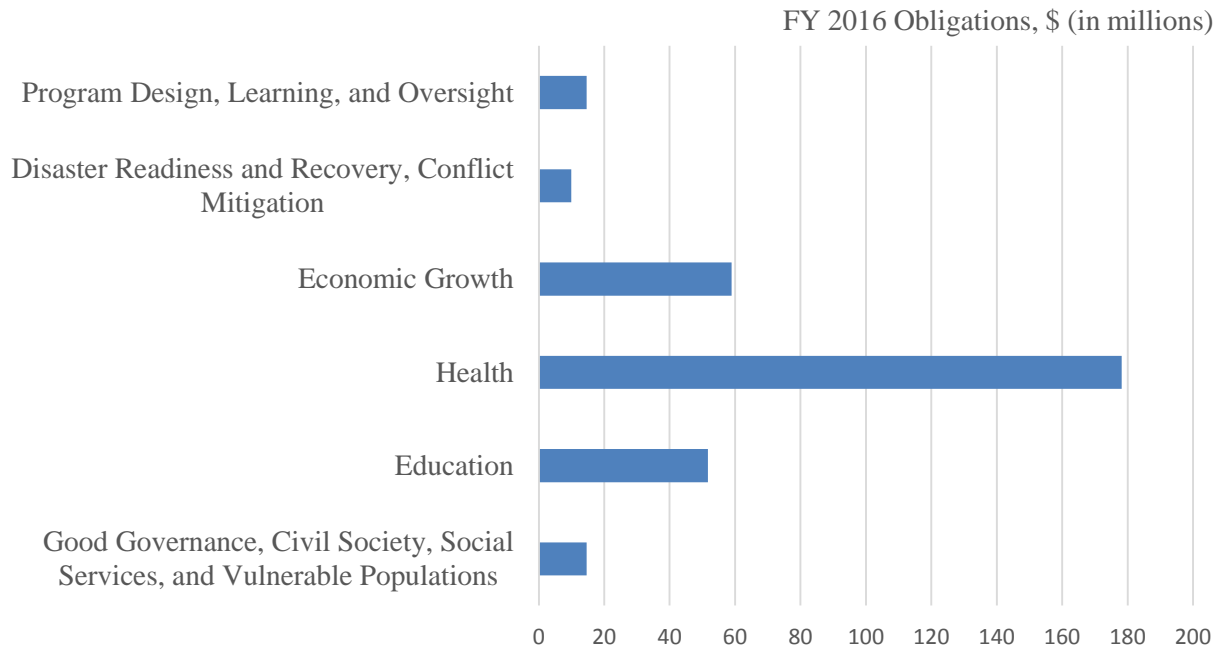
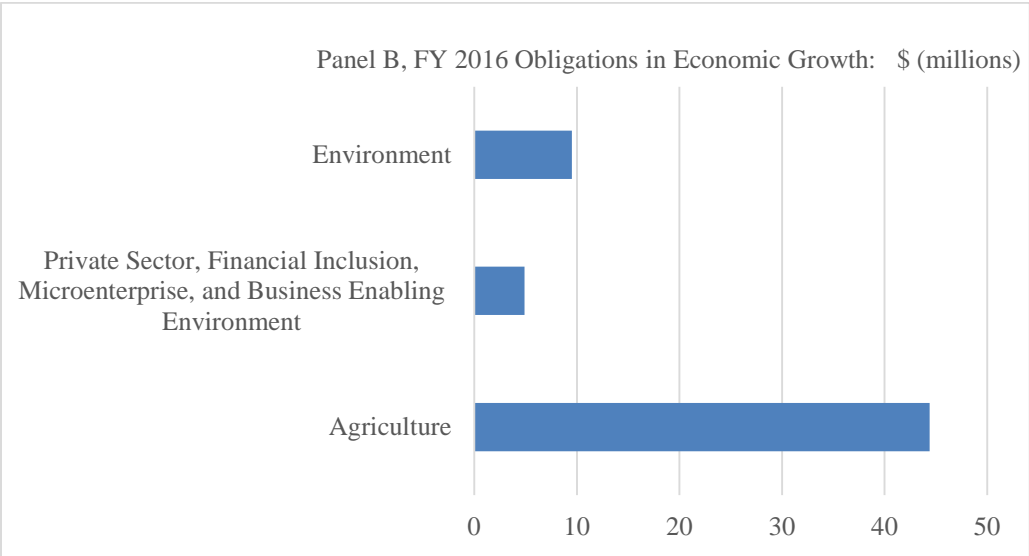
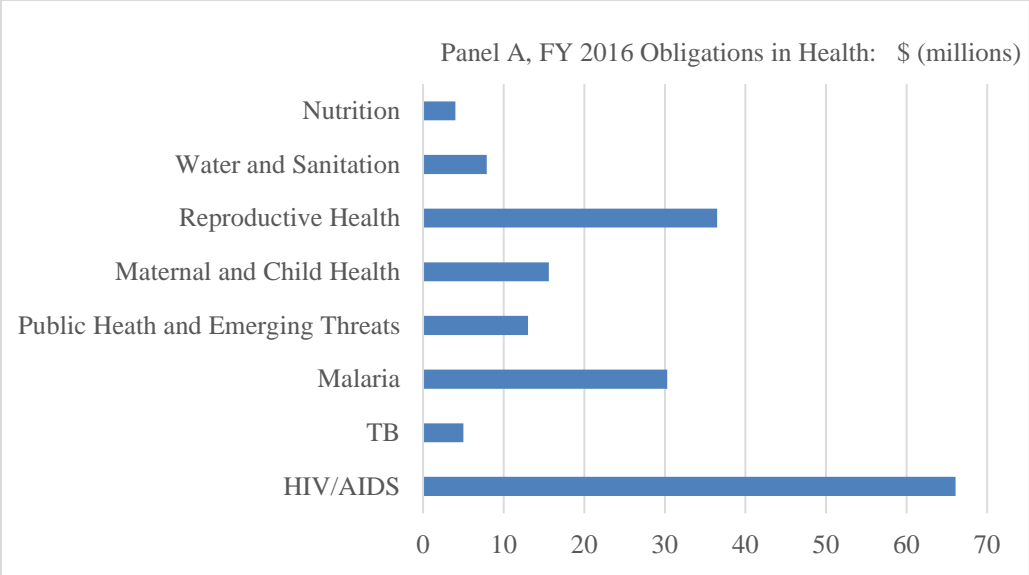


Figure 3: Distribution of USAID FY 2016 Obligations at Title XII Institutions by Sector. Health programming (54%) received the largest proportion of funding, followed by economic growth (18%), education (16%), governance and program design (4.5% each), and disaster readiness (3%).

Source: USAID Phoenix Financial Management System. Accessed May 3, 2017.



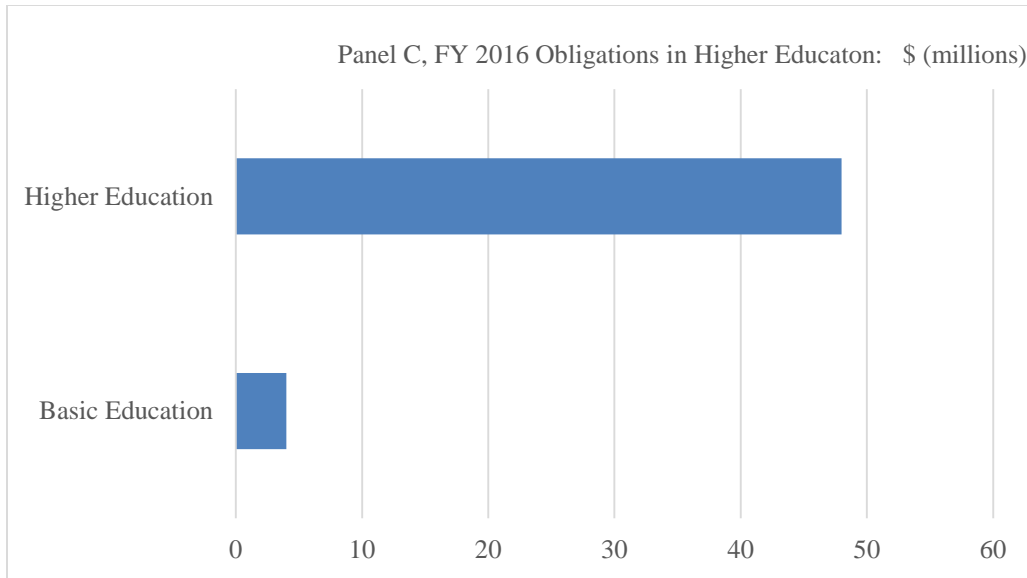
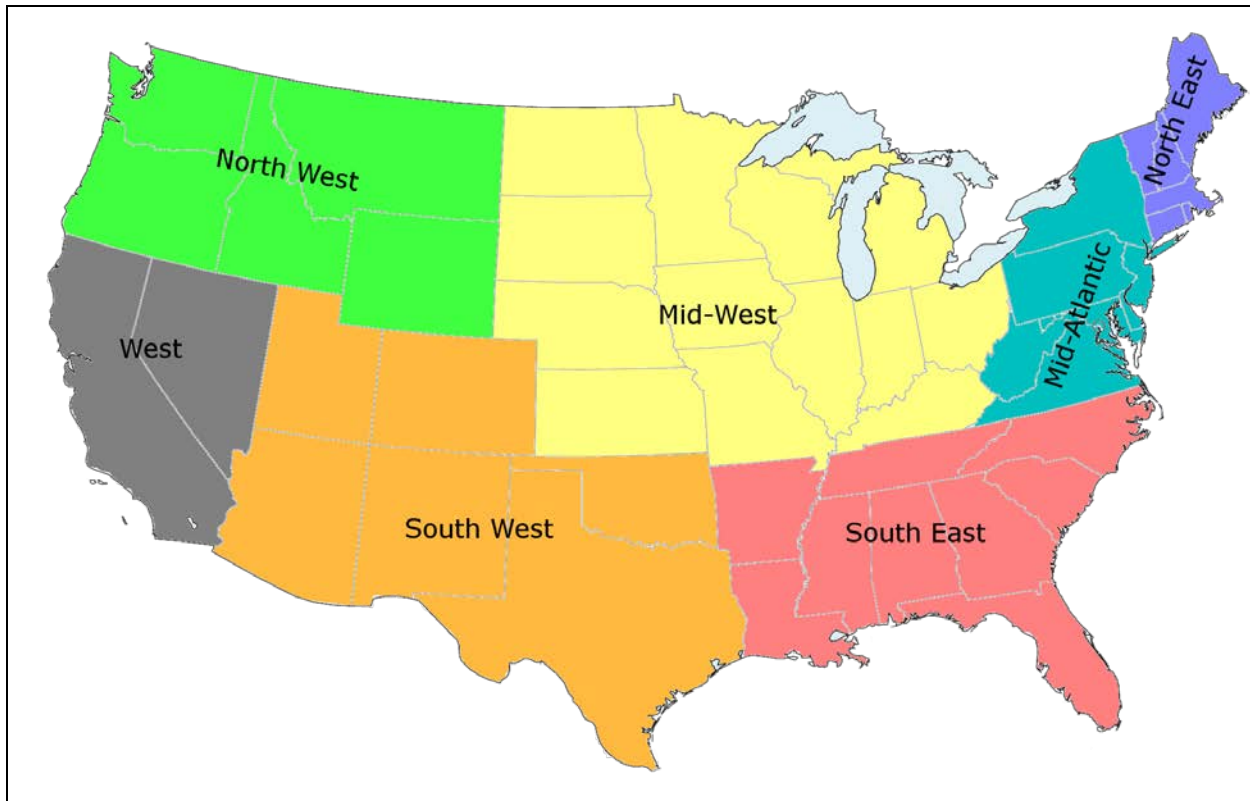


Figure 4: FY 2016 Distribution of USAID Funding at Title XII Institutions in the Health, Economic Growth, and Education Sectors. Panel A (top) shows the distribution of funding within nine major health areas: HIV/AIDS (37%), Family Planning and Reproductive Health (21%), Malaria (17%), Maternal and Child Health (9%), Other Public Health Threats (6%), Water and Sanitation (5%), Tuberculosis (3%), and Emerging Threats (1%). Panel B (middle) displays the funding distribution across economic growth areas, including Agriculture (76%) and Environment (16%), as well as the combined areas of Private Sector, Financial Inclusion, Microenterprise, and Business Enabling Environment (8%). Panel C (bottom) shows the distribution of funding across the educational levels of K-12 (7%) and higher education (93%).



Region	Number of HEIs	FY 2016 Funding (\$ millions)
North East	18	23.9
Mid-Atlantic	37	119.5
South East	32	74.7
Mid-West	33	30.5
South West	23	21.5
North West	8	3.7
West	18	20.8
All U.S. ^a		39.6
Total:	169	334.2

^a “All U.S.” refers to awards to non-HEIs that support U.S. universities in their global development efforts (e.g., APLU), including providing funding in the form of sub-awards directly to them, and consortia of universities throughout the country that cut across regional boundaries.

Figure 5: Geographic Distribution of U.S. Universities Contributing to Global Development in Partnership with USAID. Included in the numbers of HEIs are: 1) U.S. universities receiving either direct USAID awards or sub-awards from non-profits, private sector entities, or other universities under Feed the Future research programs, Feed the Future human and institutional capacity development programs, or the HESN; 2) U.S. universities participating in

the YALI (inclusive of the Mandela Washington Fellowship, funded by the Department of State, or the Regional Leadership Centers, funded by USAID); 3) U.S. mentor universities in the PEER program; and 4) U.S. universities producing early-grade reading materials for translation into local languages. Although many institutions hold multiple awards or sub-awards, these numbers reflect institutions and not number of awards. The funding per region amounts reflects the number of direct awards to universities within the region.

Source: Phoenix Financial Management System, Accessed May 3, 2017, PEER Program, HESN Program, YALI Program, USA Spending.

III. LOOKING FORWARD: TITLE XII—THE NEXT FIVE YEARS

A number of important trends are affecting our planet now and will continue to do so for the foreseeable future. Dynamic weather patterns will affect everything from agricultural yields to basic human safety at home and abroad. Shifting demographics pose a range of challenges. Within less than 20 years, approximately 70 percent of the global population will inhabit cities. Aging populations in the developed world, coupled with youth bulges in poorer countries, could promote large-scale migrations, with concomitant security and development implications. Violent extremism and political instability counteract development progress and represent major threats to both security and prosperity. At the end of 2016, an unprecedented 65.6 million people had been forcibly displaced from their homes, 22.5 million of whom are refugees from conflict areas. Syria (5.5 million), Afghanistan (2.5 million), and South Sudan (1.4 million) are currently the largest contributors to refugee flows¹³.

Coupled with these developments, modern disruptive technologies and global commerce will increasingly connect the world. Universities will continue to play a large role in helping to solve difficult problems and drive human progress, but the nature of engagement with developing-country universities is changing. This positive result emerges from investments for capacity development, a development landscape with more and varied actors, and enhanced internationalization of universities worldwide.

USAID has identified certain areas of work that it will explore in FY 2017 and beyond in response to these larger trends and recommendations of the Board for International Food and Agricultural Development (BIFAD).

- BIFAD and USAID will continue to engage with the global higher education community to promote *A Food Secure 2030: A Global Vision and Call to Action* and ensure successful implementation of Feed the Future under the Global Food Security Strategy. It should be noted that BIFAD has an important role to play with respect to the research

¹³ UNHCR. 2016. Global Trends: Forced Displacement in 2016. Online at <http://www.unhcr.org/globaltrends2016/>
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strategy that accompanies the U.S. Government Global Food Security Strategy. Because human and institutional capacity development is a cross-cutting element in the U.S. Government Global Food Security Strategy Results Framework, USAID will solicit BIFAD's guidance as it rolls out the Strategy.

- USAID will place increased focus on public-private partnerships connecting American companies, universities, farmers, ranchers, and NGOs to global networks, and deploying USAID funding to catalyze and leverage investments from the private sector and other donors.
- BIFAD will actively expand its efforts to understand the benefits accruing to U.S. agriculture (farmers and consumers) from global partnerships to end hunger and reduce food insecurity. Key areas include advances in crop and livestock pest and disease management, expanded trade opportunities, benefits to U.S. universities, and returns to the wider American economy from enhanced global partnerships and trade.
- BIFAD and USAID will prioritize attracting more youth into the agricultural work force and providing the training necessary for their success.
- BIFAD and USAID will continue to engage around the evolving nature of partnerships among U.S. and developing country higher education institutions, particularly in light of the success of capacity development programs and USAID Local Solutions mandates. Strategies to promote greater participation in USAID initiatives by MSIs, as well as by smaller colleges and military schools, will be explored.
- USAID will seek to integrate Feed the Future with the Agency's resilience programming, the development activities of Food for Peace, the efforts of the Office of Foreign Disaster Assistance, and other programming investments in water, sanitation, and nutrition.

IV. SUMMARY OF BIFAD ACTIVITIES IN FY 2016

The BIFAD is a presidentially appointed, seven-member advisory body that includes at least four representatives from U.S. universities, with additional representation from the private sector and civil society. BIFAD is authorized under Section 298 of Title XII of the Foreign Assistance Act of 1961 in recognition of the critical role that U.S. higher education institutions play in agricultural development and ensuring food security, both domestically and abroad. BIFAD plays an important advisory role to USAID on Title XII-related agriculture and higher education issues in developing countries. BIFAD is managed by USAID in compliance with the Federal Advisory Committee Act of 1972.

BIFAD members in FY 2016 included Brady J. Deaton, BIFAD Chair and Chancellor Emeritus of the University of Missouri; Waded Cruzado, President, Montana State University; Gebisa Ejeta, World Food Prize winner and Distinguished Professor of Agronomy at Purdue University; Harold L. Martin, Sr., Chancellor, North Carolina A&T State University; Cary Fowler, Former Executive Director, Global Crop Diversity Trust; James M. Ash, Food and Agribusiness Group Leader, Husch Blackwell LLP; and Pamela K. Anderson, Director General Emerita, International Potato Center.

BIFAD members provided input on two major milestones that will frame U.S. efforts to end food insecurity in the coming years. Building on the momentum generated globally by the adoption of the Sustainable Development Goals, the success of the World Humanitarian Summit and Feed the Future, as well as the passage of the Global Food Security Act of 2016, USAID championed a vision of a food-secure 2030 with the 2016 report *A Food Secure 2030: A Global Vision and Call to Action*. Three BIFAD members provided comments on drafts of the report. In September 2016, USAID held stakeholder briefings to introduce the Results Framework for the new U.S. Government Global Food Security Strategy, called for in the Global Food Security Act of 2016. Individual BIFAD members attended the public session to gather information for later discussions of the full board. Table 2 highlights the full range of BIFAD activities for FY 2016.

Larry Murdock, Distinguished Professor of Entomology at Purdue University, was honored with the BIFAD Award for Scientific Excellence for the Purdue Improved Cowpea Storage (PICS) bagging technology he created to help farmers in sub-Saharan Africa protect their stored crops from grain-destroying weevils. He received the award on October 21, 2015, at BIFAD's meeting at Purdue University. The award was presented by board member Waded Cruzado, who noted that for the millions of people using PICS bags, the technology has cut weevil damage losses virtually to zero and that the bags have doubled the income of most farmers who use them. For cowpea alone, PICS increased cash flow for West African farmers by about \$34 million in the 2012–2013 storage year.

Table 2: BIFAD Public Events, Engagement, and Outreach in FY 2016

Date and Location	Event	Highlights
October 14, 2015 Des Moines, IA	“Building Human Capital: Nutrition is Fundamental”	During a side event at the World Food Prize, an international panel of experts on human nutrition discussed important lessons learned from successful nutrition interventions. Research evidence for economic and social impacts of malnutrition was reviewed.
October 20, 2015 Purdue University, West Lafayette, IN	Outreach sessions by Brady Deaton, James Ash, Waded Cruzado, Cary Fowler and USAID research leadership, Nora Lapitan and Susan Owens	Sessions topics included women in leadership positions, characteristics of effective leadership, smallholder finance issues, careers in international development, opportunities for engagement with USAID, and crop diversity.
October 21, 2015 Purdue University, West Lafayette, IN	“Crossroads: Science, Innovation, Markets, and Policy for Feeding the World”	The BIFAD held a public meeting at Purdue University attended by then USAID Acting Administrator Ambassador A.E. Lenhardt. Panels presented key approaches for climate-smart agriculture and plant science research. Another panel focused on how to motivate a new generation of students in agricultural education. Successful public-private partnerships with Purdue were highlighted and the university community had an opportunity to meet BIFAD members and share ideas.
March, 2016 Tufts University, Medford, MA	Pamela K. Anderson met with the members of the Feed the Future Innovation Lab for Nutrition	Discussions and exchange were held to inform BIFAD about the activities, successes, and challenges in global nutrition.

Date and Location	Event	Highlights
March, 2016 North Carolina State University, Raleigh, NC	Pamela K. Anderson met with faculty and staff who collaborate with Feed the Future Innovation Labs	Discussions and exchange were held to inform the BIFAD about activities, successes, and unique challenges of faculty who hold sub-awards from Feed the Future Innovation Labs.
March 10, 2016 Washington, DC	“University and CGIAR Engagement in International Agricultural Research”	The BIFAD convened a constructive dialog regarding benefits, challenges, and constraints around effective partnerships around food and agricultural research between CGIAR centers and U.S. universities. Outgoing BIFAD members C. Bertini and M. McVey and former BIFAD Designated Federal Officer S. Owens were recognized for their significant contributions.
May 19, 2016 North Carolina A&T State University, Greensboro, NC	Outreach sessions by Pamela K. Anderson, James Ash, and Cary Fowler (BIFAD); Alex Winter-Nelson and Sandra Russo (university leaders); Jennifer Woodward-Greene (USDA); and Rob Bertram, Clara Cohen and John Watson (USAID) for students, faculty and staff at universities in the Greensboro area	USAID and U.S. Department of Agriculture (USDA) presented on engagement opportunities for Historically Black Colleges and Universities, and university leaders discussed international engagement programs. BIFAD members and others discussed what motivated them to choose careers in international development.

Date and Location	Event	Highlights
May 20, 2016 North Carolina A&T State University, Greensboro, NC	“Collaboration: Leadership, Innovation and Sustainable Technology to Meet the Demands of Global Agriculture”	The BIFAD held a public meeting at a Historically Black University, North Carolina A&T State University, where BIFAD member Harold Martin is Chancellor. Key results from Feed the Future were presented. The Global Open Data for Agriculture and Nutrition initiative was profiled. Observations and recommendations were made by North Carolina A&T State University faculty members experienced with international development. Innovative public-private partnerships were also highlighted.
June 28, 2016 Texas A&M University, College Station, TX	2016 Central America Summit hosted by the Borlaug Institute at Texas A&M University	BIFAD member Pamela K. Anderson gave a keynote presentation entitled “Investments to Accelerate Progress”
Sept 13, 2016 Washington, DC	Feed the Future Innovation Lab Council Meeting	BIFAD members attended a listening session with university partners about issues related to visas and other administrative issues that impact universities. Following the session, they met with USAID leadership in the Bureau for Education, Economic Growth, and Environment for discussions.

V. BIFAD RESPONSE TO THE FY 2016 TITLE XII REPORT TO CONGRESS

The Board is pleased to comment on this Title XII Report to Congress for FY 2016 (1 October 2015 to 30 September 2016). The Board commends USAID for establishing new avenues for working with universities to accomplish development goals while maintaining and strengthening its level of interaction with U.S. universities through a number of important traditional approaches described in the Report.

The Board applauds the passage of the Global Food Security Act of 2016 and looks forward to participating in the development of the implementation strategy. BIFAD congratulates USAID for measurable progress in reducing the levels of poverty and child stunting under the Feed the Future initiative, two critical aspects of development as revealed by review of the data presented in this Report to Congress. Feed the Future is a whole-of-government approach to international development. BIFAD hopes that Congress and broader audiences recognize the importance of these accomplishments and the critical cooperation among branches of government that was responsible for the accomplishments. BIFAD applauds the emphasis and recognition given in the Report to the linkages between food security and the stability of political society. Reduction of violence, especially among youth, is an important goal of the broader international development mission.

BIFAD endorses the sections of the Global Food Security Act that are quoted in the Title XII Report to Congress for FY 2016. The role of university partnerships will be particularly critical in the implementation of the Act. BIFAD notes that U.S. universities have a strong comparative advantage in broad-based contributions to partnerships concerning research, curriculum development, human and institutional capacity development and overall international development. The Board looks forward to monitoring progress in these areas.

BIFAD notes the trends in funding for research and university engagement described in the FY 2016 Title XII Report to Congress. The Board acknowledges how timing of funding availability can influence annual trends. We believe the ability and willingness of universities to provide limited ‘cushion funding’ during funding lags is a major strength of university partnerships with USAID. This flexibility is largely unrecognized but represents important federal-university cooperation.

USAID’s effort to leverage the capabilities of minority-serving institutions is highlighted in this Title XII Report. This effort has been, and continues to be, of concern to BIFAD. The Board held a public meeting at a minority-serving institution in FY 2016 (Table 2), and BIFAD observed the high level of expertise, current linkages to the private sector, and historical role(s) that minority-serving institutions have played in international development. The Board recognizes the interests and expertise found in minority-serving institutions and recommends careful consideration of new and/or novel funding mechanisms to further leverage their potential contributions and partnerships in future USAID programs.

BIFAD has a long history of supporting USAID’s efforts in human and institutional capacity development, and it appreciates the information provided in this report concerning the level of activity in this area. BIFAD strongly supports efforts to increase access of international students to the graduate programs of our universities and continues to encourage USAID to seek ways to reduce and simplify the administrative requirements for such students’ entry into, and residency in, the country.

The Board would suggest that further thoughtful consideration be given to the strategic mix of graduate students that receive their graduate education in the U.S. and abroad. The rich environments on U.S. university campuses provide an unparalleled opportunity to develop professional values and contacts that will serve the long-term development pathway being pursued in various countries of student origin. Developing the leaders of tomorrow is a critical outcome of such university experiences. The developmental consequences of higher education should be well recognized. Consideration should be given to further documentation of the outcomes of the higher education process.

The FY 2016 Title XII Report to Congress provides a description of the Horticulture Innovation Lab's collaboration with USAID/Guatemala. BIFAD notes that the 2014 graduate student recipient of the BIFAD Award for Scientific Excellence in a Feed the Future Innovation Lab was from the Horticulture Innovation Lab and that she did her research in Guatemala. The Board strongly supports the Innovation Labs and their continuing contributions to human capital, knowledge creation and evaluation of international development progress. In addition, it is worth noting that the Innovation Labs play an important role in enriching knowledge of our own agricultural and educational progress.

BIFAD is pleased to note the section of the report entitled "Looking Forward: Title XII – The Next Five Years." Such forward-looking thought provides stimulation and challenges for continuing deliberations that will capture the interest and enthusiasm of the university community. Certainly, BIFAD looks forward to participating in these efforts in FY 2017 and beyond. The Board considers the critical concept and challenge of preparing youth to be leaders in a science-based future to be one of the key components. The Report lists the two major youth policy objectives. The Board supports this initiative and the policy objectives. This initiative plays to U.S. universities' strong comparative advantage in addressing on a daily basis the educational and extracurricular needs of youth on their campuses, including sizable numbers of international students. Universities will be critical partners in building a broader pervasive support and educational environment for embracing international students on their campuses.

An additional critical issue is identified regarding the tragic situation of addressing the needs of 65.6 million refugees. Both emergency assistance and developmental strategies are called on in these circumstances. The best thinking and practical experience from university faculty disciplines, when combined with flexible development implementation approaches, may enable USAID to provide leadership for a pilot effort to address refugee needs in an integrated manner. University talent, trilateral relationships with universities in various countries, private sector entities in business, trade, finance, and experienced NGOs can be drawn upon for this kind of pilot effort.

BIFAD commends USAID for augmenting involvement of U.S. universities in development activities. The Education Summit was held in FY 2016, and the Board looks forward to reviewing any publications or reports that will result from the Summit. The Board recognizes

the importance of developing a better understanding of theoretical and philosophical foundations for the role of higher education in the development process. BIFAD thanks USAID for its excellent efforts and for the opportunity to help strengthen U.S. university participation in the noble goals of helping foster food security and reducing extreme poverty worldwide.

APPENDICES

Appendix 1: FY 2016 Feed the Future Innovation Lab U.S. College and University Partners

Feed the Future Innovation Lab	Lead University	Collaborating U.S. Partners
Applied Wheat Genomics	Kansas State University	Cornell University
Aquaculture and Fisheries	Oregon State University	<p><i>Alabama A&M University</i> Auburn University North Carolina State University Purdue University <i>University of Arizona</i> <i>University of Arkansas, Pine Bluff</i> University of Connecticut, Avery Point <i>University of Hawaii, Hilo</i> University of Michigan University of Rhode Island Virginia Polytechnic Institute and State University</p>
Assets and Market Access	University of California, Davis	<p>Columbia University Cornell University George Mason University George Washington University Harvard University John Hopkins University Michigan State University Montana State University New York University Ohio State University Stanford University University of California, Berkeley University of California, Los Angeles University of California, San Diego University of Georgia University of Illinois <i>University of Maryland, College Park</i> University of Wisconsin, Madison Weber State University (Utah) Yale University</p>

Feed the Future Innovation Lab	Lead University	Collaborating U.S. Partners
Climate Resilient Beans	Pennsylvania State University	North Dakota State University University of Missouri <i>University of Puerto Rico, Mayaguez</i>
Climate Resilient Chickpea	University of California, Davis	<i>Florida International University</i> <i>University of Southern California</i>
Climate Resilient Cowpea	<i>University of California, Riverside</i>	<i>None in U.S.</i>
Climate Resilient Millet	University of California, Davis	<i>None in U.S.</i>
Climate Resilient Sorghum	University of Georgia	Louisiana State University
Climate Resilient Wheat	Washington State University	Kansas State University
Food Processing and Post-Harvest Handling	Purdue University	<i>North Carolina A&T University</i> <i>San Diego State University</i>
Food Security Policy	Michigan State University	<i>None in U.S.</i>
Genomics to Improve Poultry	University of California, Davis	Cornell University Iowa State University University of Delaware
Grain Legumes	Michigan State University	Cornell University George Mason University (Virginia) Iowa State University Kansas State University North Dakota State University <i>University of California, Riverside</i> <i>University of Hawaii, Manoa</i> University of Illinois University of Nebraska, Lincoln Univ. of Nebraska, Panhandle Res.& Extension Center <i>University of Puerto Rico, Mayaguez</i> Washington University School of Medicine (Missouri)
Horticulture	University of California, Davis	Duke University Massachusetts Institute of Technology <i>North Carolina A&T State University</i> Ohio State University Pennsylvania State University

Feed the Future Innovation Lab	Lead University	Collaborating U.S. Partners
Integrated Pest Management	Virginia Polytechnic Institute and State University	Purdue University Rutgers University University of Florida University of Wisconsin, Madison City College of New York Colorado State University Cornell University Louisiana State University Montana State University <i>North Carolina A&T University</i> Pennsylvania State University Ohio State University University of California, Davis University of Florida University of Minnesota University of Tennessee University of Texas, Rio Grande Valley <i>Virginia State University</i> Washington State University
Livestock Systems	University of Florida	Colorado State University Iowa State University Johns Hopkins University Kansas State University Montana State University Texas Tech University University of California, Davis University of Georgia University of Tennessee

Feed the Future Innovation Lab	Lead University	Collaborating U.S. Partners
Nutrition	Tufts University	Auburn University Columbia University Harvard University John Hopkins University Michigan State University Oregon State University Purdue University Texas A&M University <i>Tuskegee University</i> University of California, Davis University of Georgia University of Illinois University of Massachusetts, Amherst
Peanut Productivity and Mycotoxin Control	University of Georgia	Albany State University Auburn University California Polytechnic State University Cornell University Mississippi State University <i>New Mexico State University</i> North Carolina State University Texas A&M University Tufts University University of Connecticut University of Florida Virginia Polytechnic Institute and State University Washington University School of Medicine (Missouri)
Reduction of Post-Harvest Loss	Kansas State University	<i>Fort Valley State University</i> <i>Oklahoma State University</i> Purdue University <i>San Diego State University</i> <i>South Carolina State University</i> University of Kentucky University of Illinois University of Nebraska, Lincoln
Rift Valley Fever Control in Agriculture	<i>University of Texas, El Paso</i>	University of Texas Medical Branch, Galveston
Small-Scale Irrigation	Texas A&M University	<i>North Carolina A&T University</i>

Feed the Future Innovation Lab	Lead University	Collaborating U.S. Partners
Sorghum and Millet	Kansas State University	Cornell University <i>Oklahoma State University</i> Purdue University Texas A&M University Virginia Polytechnic Institute and State University West Texas A&M University
Soybean Value Chain Research	University of Illinois, Urbana-Champaign	Mississippi State University University of Delaware University of Georgia <i>University of Maryland, Eastern Shore</i> University of Missouri
Sustainable Intensification	Kansas State University	Columbia University Iowa State University Michigan State University Pennsylvania State University Texas A&M University University of California, Davis University of Illinois

NB: “Partners” include sub-awardees, collaborators on a sub-award and/or lead award, training providers, and/or members of an advisory committee. MSIs are highlighted in red text with bold italics.

Appendix 2: U.S. Universities with Direct Awards in FY 2016

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
AZ	Arizona State University	Vietnam, Brazil, Near East	x	x	x			
CA	Stanford University	Latin America and Caribbean	x					
CA	University of California System	Afghanistan, Brazil, Guatemala, Mozambique, Rwanda, Worldwide	x	x	x	x		
CO	Colorado Seminary	Worldwide		x				
CO	University of Colorado at Boulder	Asia, Indonesia, Worldwide	x	x	x			
DC	Georgetown University	Africa, Burundi, Jordan, Kenya, Nepal, Worldwide	x	x		x	x	
DC	George Washington University	Worldwide	x					
FL	Florida International University	Rwanda, Latin America and Caribbean, W.Africa	x	x		x		x

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
GA	Emory University	Worldwide	x					
GA	Georgia State University	Pakistan				x		
GA	Georgia University	Malawi, Worldwide		x		x		x
HI	University of Hawaii Systems	Indonesia and Vietnam						x
IL	University of Chicago	Brazil, India		x				
IL	University of Illinois	Georgia, Malawi, Tajikistan, Worldwide		x				
IN	Indiana University	Latin America and Caribbean	x					
IN	Purdue University	Tanzania			x			x
IN	University of Notre Dame Du Lac	Haiti, Worldwide			x	x		
KS	Kansas State University	Cambodia, Worldwide		x				
MA	Boston University	Ghana, Worldwide	x					
MA	Brandeis University	Worldwide	x					
MA	Harvard University	Kenya, Rwanda	x			x	x	
MA	Massachusetts	Near East, Uganda,	x	x	x	x	x	

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
	Institute of Technology	Worldwide						
MA	Tufts University	Bangladesh, Ethiopia, Malawi, Mozambique, Uganda, Worldwide	x	x		x	x	
MD	Johns Hopkins University	Angola, Bangladesh, Burma, Caribbean, China, Cote d'Ivoire, DRC, East Africa, Egypt, Ethiopia, Ghana, Guatemala, Kenya, Latin America, Liberia, Madagascar, Malawi, Mali, Mozambique, Nepal, Nigeria, Pakistan, Senegal, Sierra Leone, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe, Worldwide	x	x		x		

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
MD	University of Maryland	Worldwide				x		
MI	Michigan State University	Bangladesh, Burma, Cambodia, Caribbean, Ghana, Guatemala, Latin America, Malawi, Tanzania, Zambia, West Africa		x	x			
MI	University of Michigan	Ghana, Near East	x		x			
NC	Duke University	East Africa, Worldwide	x					
NC	University of North Carolina at Chapel Hill	Bangladesh, Botswana, Burundi, Cote d'Ivoire, DRC, Dominican Republic, East Africa, Ghana, Guatemala, Guyana, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Nepal,	x	x		x		

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
		Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Uganda, Ukraine, Zambia, Worldwide						
NV	University of Nevada	Asia		x				
NY	Bard College	West Bank and Gaza, Kyrgyz Republic			x			
NY	City University of New York	Central America					x	
NY	Columbia University	Ethiopia, Mozambique, Worldwide	x					
NY	Cornell University	Bangladesh, Malawi, Worldwide		x		x		
NY	State University of New York (SUNY) System	Bosnia-Herzegovina, Kenya, Worldwide	x	x			x	
OH	Ohio State University	Tanzania		x				

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
PA	Eastern Mennonite University	East Africa				x		
PA	Pennsylvania State University	Worldwide		x				
PA	Pittsburgh University	Worldwide	x					
RI	University of Rhode Island	Ghana, Senegal		x				
TN	Vanderbilt University	Caribbean, Guyana, Honduras, Latin America, Nicaragua, Paraguay				x	x	
TX	Baylor University	India, Malawi, South Africa, Tanzania	x					
TX	Rice University	Malawi	x					
TX	Texas A&M	Afghanistan, Africa, Worldwide		x	x	x		
TX	University of Texas	Worldwide				x		
TX	University of Texas - El Paso	Worldwide		x				
UT	University of Utah	Pakistan			x			

	Higher Education Institution	Primary Location of Activity	Health	Economic Growth	Education	Program Design, Learning, and Oversight	Good Governance, Civil Society, Social Services, and Vulnerable Populations	Disaster readiness and Recovery, Conflict Mitigation
VA	College of William & Mary	Colombia, Rwanda, West Bank and Gaza, Worldwide			x	x	x	
VA	Eastern Virginia Medical School	Worldwide	x					
VA	Polytechnic Institute and State University	Armenia, Senegal, Worldwide		x				
VA	Wake Forest University	Peru		x				
WA	City University of Seattle	Slovak Republic			x			
WA	University of Washington	Kenya, Worldwide	x					

Appendix 3: Success Stories

In Northern Ghana, SoyCows Are Boosting Protein in Kids' Diets

In northern Ghana, an estimated four out of 10 children are malnourished. Few have access to protein sources like meat, milk, and eggs. Fortunately, the protein contained in soybeans is comparable to animal protein. And, unlike animal protein, soy is readily available and affordable. An 8-ounce serving of soy milk can meet one-third to one-half of the protein requirements for school-aged children. Yet the know-how to produce soy foods and familiarity with the nutritional and health benefits of soybean are lacking.

To help increase the availability of soymilk, researchers from the University of Illinois are working with the northern Ghana-based Savanna Agricultural Research Institute (SARI) to develop a soy foods enterprise facility at their location. SARI and the Feed the Future Innovation Lab for Soybean Value Chain Research, led by the University of Illinois, partnered with the NGO Malnutrition Matters to install soy processing equipment known as a SoyCow, as well as provide training to its operators. A SoyCow is a device that grinds and cooks whole soybeans, turning them into soy milk and other soy foods like tofu. A SoyCow consists of a grinder, a 10-gallon pressure cooker, filter press and steam boiler, with all of the equipment easily fitting into the back of a small pickup truck.

There are currently three SoyCow operations in Ghana. The SARI facility employs three people and produces soy milk four times daily, three days weekly, yielding a total of 35 liters of soy milk per day. As the business becomes established, SARI hopes to also supply soy products to local supermarkets, hospitals, and restaurants. Providing soy milk daily to children in school encourages their regular attendance. The children look forward to their morning beverage and for many this will be their breakfast. Teachers report that this protein-rich snack improves their alertness and attentiveness, and increases their energy.



A SARI technician pedals a bicycle operated grinder at the SoyCow facility, while another technician adds ground soybeans to the cookers to produce soy milk.

Photo Credit: Marilyn Nash.

Student Teams Learn About Informal Food Markets in Malawi and Drive Innovation

The Global Center for Food Systems Innovation at Michigan State University, funded through USAID's Higher Education Solutions Network (HESN), is dedicated to educating the next generation of food security practitioners, scholars and advocates via an action-oriented, service-learning course that culminates in a trip to Malawi. The Frugal Innovation Program (FIP) at Michigan State University may be the only international experience available to U.S. students where the previous year's cohort raises funds so the current year cohort can convert their research findings into actual change in local food systems.

The first FIP was very successful. Research completed by teams of students from Michigan State University and Malawi's LUANAR was used to make recommendations to the Lilongwe City Council on how the informal food markets can better serve the urban population in Lilongwe. While the program improved communication and understanding between the informal market vendors and the City Council, it stopped short of actually implementing any of the student recommendations.

Motivated by the needs discovered during the first practicum, Trish Abalo, Michigan State University senior and FIP 2015 participant, raised \$1,200 so student recommendations could actually be implemented. Her donation triggered a crowdfunding campaign that raised an additional \$1,600. The money raised by Abalo, and via crowdfunding, allowed the FIP 2016 cohort to design small-scale interventions to improve the sanitation and safety of informal markets in Lilongwe and see their designs implemented. Now, the FIP 2016 is working to crowdsource funds for the FIP 2017 cohort.



Michigan State University student, Trish Abalo, interviews a market vendor in Lilongwe, Malawi. Photo

Credit: Stephanie White.

Peanut Butter Improves Nutrition for Both Moms and Babies

The Feed the Future Innovation Lab for Peanut Productivity and Mycotoxin Control, led by the University of Georgia, is working in Malawi with a St. Louis, MO-based pediatrician, Mark Manary, to track the results of treating malnourished pregnant women with nutritional supplements. Manary spent much of his career treating malnourished children in Africa. During his initial work in 1994, the common treatment for malnourished children involved hospitalizing them while they drank different milk-based products to recover. While milk is very nutritious, only about 45 percent of the children would get better. Manary thought there had to be a better

treatment and tried peanut butter which, unlike milk, doesn't have to be refrigerated or cooked, is full of fat and protein, doesn't spoil at room temperature, and bacteria can't grow in it. With peanut butter, recovery rates soared to 90–95 percent.

In the years since, peanut butter-based supplements have become the standard treatment for malnutrition around the world. Taking this knowledge, Manary is now working with the Peanut Innovation Lab to explore how much healthier a child will be if his mother had the right nutrition during pregnancy and how best to deliver that nutrition. Pregnant women need 1,000 extra calories a day late in their pregnancy, which can be very challenging for poor pregnant women.

Manary enrolled 1,900 pregnant, malnourished women in a trial that gave them a fortified food supplement to see if a peanut- or a corn-soy based product is best and how much impact it has on mother and child. Local nurses and research assistants at 15 clinics then took down the measurements of their babies within 48 hours of birth and continued to monitor them for the next three months. Manary found that the babies whose mothers took the peanut-based supplement gained nearly 5 ounces more than the babies born to mothers who had the corn-soy supplements. The project will now turn to breastfeeding mothers, who need even more nutrients than when they were pregnant.



Two moms who participated in the trial with their newborns. Mark Manary poses with one of the trial's young beneficiaries. Photos Credit: Mary Manary.

Emergency Response Training Mitigates Risk and Enhances Resilience in the Democratic Republic of Congo

Epidemics or catastrophes, whether natural or man-made, affect human and animal health, compromise agricultural production, and generally pose myriad risks. The USAID One Health Workforce (OHW) project is strengthening the capacity of the global health workforce to prevent, detect, and respond to emerging infectious diseases like Ebola or avian influenza. Teams at the University of Minnesota and Tufts University provide support for two regional university networks, the One Health Central and Eastern Africa (OHCEA) network and the Southeast Asia One Health University Network (SEAOHUN).

OHW is able to leverage these established university networks to sustainably transform the regions' health workforces and ability to respond to emergencies. The OHCEA university

network's Democratic Republic of Congo's country office, working with the University of Kinshasa and the University of Lubumbashi, recently completed training for local government territory administrators in collaboration with the Ministry of Interior and Security.

In total, 87 local government officials were trained. This collaborative effort was made possible through engagement with the Ministry of Higher Education and the Ministry of Interior and Security. The competency-based training on prevention and response to events of public health concern is articulated around three key topics: leadership, risk assessment, and emergency operations.



Local government officials learned about the leadership skills that influence collaboration across disciplines and sectors to address complex threats. Risk assessment skills strengthened the process of identifying and monitoring dangers with potential risks and the development of related contingency plans. Competencies in emergency operations will lead to better local government response to epidemics and catastrophes by improving emergency protocols, processes, and the establishment of virtual or physical Emergency Operation Centers.

Photo Credit: OHCEA Democratic Republic of Congo.

Drying Beads Keep Horticulture Seeds Viable Longer

Farmers need good-quality seed to produce high-quality horticultural crops. In the humid climate of Bangladesh, as in much of the southern part of Asia, this can be a real challenge. Storage methods without temperature and moisture control result in rapid deterioration of seed quality. Bangladeshi seed companies estimate that they lose 5–10 percent of their seeds to poor drying, causing losses of tens of millions of dollars in seeds alone. To address this constraint, the Feed the Future Innovation Lab for Horticulture, led by the University of California, Davis, partnered with Rhino Research, a seed technology company in Thailand, to improve the drying and storing of vegetable seed.

The company developed zeolite-based drying beads, which absorb moisture from air and can reduce seeds' moisture content to very low levels when sealed together in an airtight container. The beads are reusable after being reactivated in an oven. In Thailand, India, Nepal, and Bangladesh, the research team developed protocols for optimal use of drying beads with

vegetable seed and trained 3,686 people in their use. Preliminary economic analyses revealed that using drying beads could increase earnings of the onion seed industry in Nepal by an additional \$5.85 million. The Horticulture Innovation Lab is now funding a project in Bangladesh to scale up the use of drying beads by targeting seed dealers and helping them become distributors of the drying beads. If the distribution business model proves successful, diffusion to small-scale farmers will be rapid.



Drying beads from the large glass jar are placed together with seeds in the smaller jars to either side. Right; a woman is recycling used beads by drying them in an oven. Photo Credit: Brendan Dawson (left) and Kent Bradford (right).

American Students Promote Global Literacy as Volunteer Authors of Children’s Books

USAID is committed to helping children learn to read. The challenge of getting high-quality, early-grade reading materials into the hands of every child requires teamwork. Therefore, USAID is leveraging the power of science, technology, and innovation in partnership with higher education institutions to accelerate progress.

Through events hosted on U.S. campuses, USAID mobilized hundreds of students to produce books for children. Attendees of the event used a free, open-source book writing software to write, translate, publish, and share age-appropriate books in local languages. In FY 2016, USAID hosted events at Boston College, Gallaudet University, George Washington University, Indiana University, the University of Iowa, and the University of Texas at San Antonio.

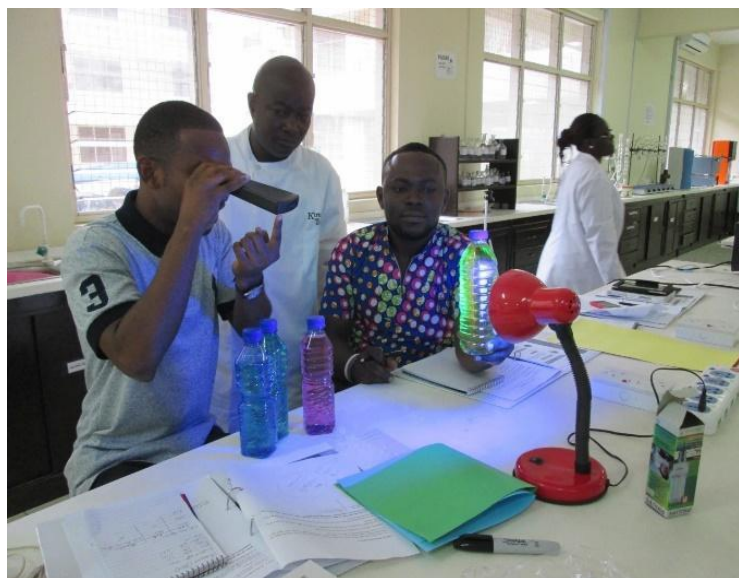


By the end of each event, students left with greater awareness of the global illiteracy crisis, as well as new skills to create books using the software. Students were also provided with a toolkit designed to empower anyone to host an event on their campus or in their community. To date, there are over 1,000 different titles in the library, thanks in large measure to the creativity and dedication of student volunteers.

At Indiana University, a student and young boy collaborate to create a story book about a dog with the software platform. Photo Credit: Amie Harris.

Direct Engagement Spurs Active Learning for Research Technicians in Ghana

Recognizing the need to develop capacity in research labs, USAID/Ghana opted to invest in research technician skill building for bioanalytical chemistry and professional development and turned to the Borlaug Higher Education for Agricultural Research and Development (BHEARD) at Michigan State University to help with implementation. Technicians hailed from National Research Institutes, universities, and the private sector.



The training program was crafted to be essentially developmental in nature, with a strong focus on deep understanding of scientific principles, critical thinking, independent discovery, and problem solving on the technical side. A professional development component focused on growth mindsets, leadership, communication, scientific integrity, and mentoring.

Technicians discover spectroscopic principles via simple experiments with colored solutions. Photo Credit: Karen Duca.

There was minimal lecturing, and active learning was central with hands-on exercises and small group discussions. Participants assembled their own colorimeters in small groups of four people, calibrated them, and used them for all of the experimental work throughout the workshop. Participants learned how to use simple chemical tests for water and food analysis, as well as more advanced spectroscopic methods, for routine testing of lab samples, as well as advanced research work. All participants reported that the active style of teaching was new and quite exciting to them and that they felt they had mastered the content through direct engagement.

The model was extremely cost-effective, tapping volunteer staff members at the host site, the Kwame Nkrumah University of Science and Technology (KNUST), as well as two BHEARD students from KNUST to deliver the instruction. The inexpensive teaching materials remain available at KNUST and can be checked out for use by technicians in other locations. On the final day of the workshop, the technicians planned out the next workshop on the topic of molecular biology and set up a digital platform to keep in touch and share experiences in bringing the training back home to their work sites.

Partnership with the Private Sector Boosts Smallholder Productivity: John Deere in Tanzania

The Innovative Agricultural Research Initiative (iAGRI) aims to prepare the next generation of agricultural leaders in the public and private sectors to strengthen the core institutions of agricultural research and education in Tanzania. Led by Ohio State University (OSU), a consortium of six U.S. universities, together with Sokoine University of Agriculture (SUA) and the Tanzanian Ministry of Agriculture, Livestock and Fisheries, launched the Tractor Training and Research Program (TTARP) in April 2016.

Designed to improve practical knowledge of farmers and boost agricultural production through mechanization, the program's launch event, which included an exhibition of agricultural inputs and demonstrations, brought 300 people to the Morogoro campus, including farmers, private sector companies, extension workers, students, faculty, input dealers, and traders. John Deere also donated a fully equipped, 75 horsepower tractor to SUA that will be used throughout the training. The comprehensive program consists of three short courses: (1) tractor operations, (2) tractor mechanics and (3) tractor-hire business management for farmers and tractor operators. The courses will be open to individuals throughout Tanzania. The curriculum of the TTARP was developed by John Deere and adapted to Tanzanian conditions by SUA instructors.

By taking a "Training of Trainers" approach, cohorts of trainees will eventually become instructors in subsequent rounds of the practical training. Initial instruction and mentoring will be provided by SUA faculty and John Deere staff. Course participants will also have access to affordable finance to facilitate the acquisition of equipment tailored to deliver higher yields to smallholder farmers as part of John Deere's campaign to raise productivity in African agriculture. The TTARP is just one element of the larger iAGRI project that is preparing teachers, researchers, extension practitioners, and students in Tanzania to cooperatively and effectively address the needs of smallholder farmers and the agribusiness sector through innovative partnerships with the private sector.

From Citizen Security to Food Security: Preventing Violence in Central America

Intentional homicide rates are among the highest in the world in Central America's Northern Triangle region (El Salvador, Guatemala, and Honduras), and youth—young men in particular—are dropping out of the agricultural education system at alarming rates. Researchers from the Innovation for Agricultural Training and Education (InnovATE) project, managed by Virginia Polytechnic Institute and State University, have undertaken a body of work investigating youth violence in the region and linkages to education and migration.

A published study by University of Florida's Rebecca Williams examined the drivers of youth violence, risk-factors to youth participation in violence, the impacts of youth violence on development in the region, and interventions that are being used or that are lacking. The study

recommended a number of education strategies, including school programs aimed at keeping students involved in school, life-skills programs, initiatives on gender norms and attitudes, school reintegration programs, alternative school programs, distance-learning programs, “second chance” avenues to continue education for those who may have left school early, investment in job skills training coupled with job placement and microenterprise development programs, and greater interaction and collaboration among schools, families, and community.

The paper concluded that any intervention strategy must be multi-sectoral and highly inclusive.



Adding to this body of work, InnovATE also hosted a series of blog posts and an online panel discussion on the AgriLinks platform in June 2016 to further explore the cross-sectoral nature of the problem. Key takeaways of the discussions included the need to start early with youth violence prevention, the role of cognitive behavioral therapy, the importance of sports and music in education, training staff with skills to deal with violence, and providing safe spaces for youth.

Photo Credit: Virginia Polytechnic Institute and State University Office of International Research, Education, and Development.

Cross-sectoral discussions and collaborations are critical to operating more effectively in violence-ridden areas. In other work, the project has been mapping the locations of agricultural technical and vocational education schools in the Central American region in a geographic information system overlay; the map can be used in conjunction with other mapping data as a useful tool for project implementers in guiding human and institutional capacity development investments to address food insecurity.

Improved Infrastructure in Costa Rica Opens the World of Tropical Ecology

USAID’s American Schools and Hospitals Abroad (ASHA) and the Organization for Tropical Study (OTS) began a collaboration to promote biodiversity and conservation. In FY 2016, USAID/ASHA awarded OTS \$621,832 to renovate and upgrade several buildings on the campus of La Selva Research Station in Costa Rica—modernizing the facilities and making more work and residential space available.

OTS is a consortium of nearly 60 universities, colleges, and research institutions around the world, including 39 U.S. universities. OTS promotes the best of what U.S. science and higher education have to offer. OTS Latin American alumni frequently continue their studies in U.S. universities before returning to their home countries. In Costa Rica, OTS manages three

biological research stations and oversees field-based education programs for U.S. and Latin American graduate students, undergraduates, secondary school teachers, and professionals (natural resource managers and environmental policymakers). In addition, OTS offers immersive, experiential field courses taught in English and Spanish on topics of tropical biology, environmental science, conservation, and public health. OTS has trained 10,000 students from around the world, of which one-third are Latin Americans, over its 50-year history.

The La Selva Biological Station is located in the Caribbean lowland at the northern base of Braulio Carrillo National Park and is recognized internationally as one of the premier sites in the world for ongoing research in tropical ecosystems. Each year, its largest research station, La Selva, provides thousands of students and scientists from the U.S., Costa Rica, and Latin America with cutting-edge laboratory facilities, large-scale research instruments, classrooms, herbarium and insect collections, and access to a ‘living laboratory’ of 1,615 hectares of protected rainforest.



More than 4500 scientific publications have been generated over the La Selva’s 48-year history. Unfortunately, these facilities were built half a century ago and are in need of repair. ASHA support is being used to renovate La Selva’s aging facilities using sustainable building techniques and environmentally appropriate technologies, which will provide proper ventilation for sensitive equipment and minimize the station’s environmental impact while reducing its operating expenses. The new buildings will make more efficient use of the space and be designed to absorb the current level of usage.

*A researcher collecting insects for study.
Photo Credit: Oscar L. de la Rosa.*