



REPORT ON THE IMPLEMENTATION OF ARTICLE 66.2 OF THE TRIPS AGREEMENT

UNITED STATES OF AMERICA

Addendum

The following communication, dated 20 September 2019, from the delegation of the United States of America is being circulated pursuant to paragraph 1 of the Decision on Implementation of Article 66.2 of the TRIPS Agreement (IP/C/28).

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1 INTRODUCTION

1. The United States is committed to continually enhancing its activities pursuant to Article 66.2 of the TRIPS Agreement, and reporting those activities, in keeping with the guidelines established in the TRIPS Council's Decision of 20 February 2003 (IP/C/28). Consistent with this decision, developed country members shall provide yearly reports to least developed country (LDC) Members on actions taken or planned in pursuance of the commitments of developed countries under Article 66.2 to provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to LDC Members, in order to enable them to create a sound and viable technological base. USG funding of these multifaceted activities and collaborations are incentives to the many partners in the US that work with LDC recipients and institutions to promote, encourage, and enable technology transfer.

2. The intellectual property (IP), trade capacity, training, development assistance, educational, financing, entrepreneurship, and infrastructure-related programmes described in this report are integral elements of the efforts of the United States to support LDCs in fostering the necessary environment to encourage the effective, voluntary transfer of technology to LDC Members. No report can represent every activity that directly or indirectly incentivizes enterprises and institutions for the purpose of promoting and encouraging technology transfer, but this report attempts to describe the most significant activities and programmes and to convey the breadth and depth of US efforts.

3. The US Government attaches great importance to providing the incentives to help LDCs obtain technology transfer. A key element to that objective is that the US Government, in collaboration with many national and regional government agencies and IP organizations, such as the World Intellectual Property Organization (WIPO), work to assist LDCs, to improve the functioning and utilization of their IP systems to promote economic, social and cultural development. Our goal is to help LDCs establish an environment that attracts and sustains technologies that address local needs and are valued in local markets. The strengthening of IP protection is an essential measure to promote technology transfer.

4. Much of the United States Government research conducted by federally operated laboratories and federally funded research and development (R&D) centres results in inventions or findings that contribute to the development of new technologies and processes. Commercialization of these outputs can yield economic and social benefits that increase returns on the investment in federal R&D.

5. The United States continues to believe that the effective functioning of Article 66.2 of the TRIPS Agreement requires a robust dialogue between developed country and LDC Members, in order to target incentives in a way that is most responsive to the self-identified technology transfer interests and needs of LDC Members. The United States encourages the efforts of the TRIPS Council Secretariat and Members to organize discussions among Members regarding Article 66.2 implementation. The United States has taken note of past discussions regarding the use of focal points with respect to Article 66.2 reports. Focal points for LDC Members could play an important role in disseminating information from Article 66.2 reports about technology transfer programmes and their effectiveness to broader audiences, so that technology transfer projects could be better leveraged in their territories. The United States is always willing to meet with interested Members to discuss ways to ensure that US programmes and reports are as helpful as possible.

2 GENERAL TECHNOLOGY TRANSFER PROGRAMS, INCENTIVES, AND PARTNERSHIPS

6. The 2018 President's Management Agenda (<https://www.performance.gov/PMA/PMA.html>) includes a Cross Agency Priority Goal to Improve Transfer of Federally-Funded Technologies from Lab-to-Market.

7. Similarly, through the Bayh-Dole act of 1980, the US Congress directed that inventions that result from federally funded research be used to promote commercialization and public access through practical application. United States laboratories often partner with external organizations to conduct cooperative research and development.

2.1 Federally Sponsored Research and Development

8. Federal initiatives on technology transfer are being implemented through the aforementioned Cross Agency Priority Goal to Improve Transfer of Federally-Funded Technologies from Lab-to-Market. New programmes will streamline technology transfer and accelerate the pace of commercialization of federal research. Specific strategies are:

- Identify regulatory impediments and administrative improvements in Federal technology transfer policies and practices;
- Increase engagement with private sector technology development experts and investors;
- Build an entrepreneurial R&D workforce;
- Support innovative tools and services for technology transfer; and
- Improve understanding of global science and technology trends and benchmarks (see https://www.performance.gov/CAP/CAP_goal_14.html).

9. The National Science and Technology Council (NSTC) workgroup on Lab-to-Market coordinates federal initiatives on technology transfer. Federal agencies implement these initiatives, which include development of human capital, and small business innovation. The National Institute of Standards and Technology prepares an annual report that summarizes government-wide technology transfer efforts. This report can be found at <https://www.nist.gov/tpo/federal-laboratory-interagency-technology-transfer-summary-reports>.

2.1.1 Federal Laboratory Consortium for Technology Transfer

10. Technology transfer is most effective when the technology is requested by the entity that will use the technology. The Federal Laboratory Consortium for Technology Transfer (FLC) plays a key role in providing information about technologies that are available for licensing and the availability of laboratories for collaboration and partnership. The FLC is a national network of approximately 300 US federal laboratories and centres that provides opportunities for linking laboratory mission technologies and expertise with the marketplace (see <https://www.federallabs.org/>). The FLC promotes technical cooperation among the federal laboratories and large and small businesses, academia, and federal, state, and local government agencies. FLC collaborates with organizations that promote technical cooperation, and works to improve the effectiveness of technology transfer through training, recognition, awards, and evaluation. Moreover, the FLC encourages technology transfer and, through its member laboratories, seeks partners around the world. The FLC offers a broad set of tools including the ability to search available laboratory technologies, find laboratory expertise and facilities, and find available partnership mechanisms for different agencies. The FLC Toolkit is available at <https://www.federallabs.org/node/567>.

2.1.2 Partnerships for Enhanced Engagement in Research

11. The Partnerships for Enhanced Engagement in Research (PEER) programme directly supports scientists in USAID-presence countries through institutional research awards ranging up to USD 300,000. US scientific agencies such as National Aeronautics Space Administration (NASA), National Institute of Food and Agriculture (NIFA), National Institutes of Health (NIH), National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA), Smithsonian Institution, US Forest Service (USFS), US Department of Agriculture's (USDA) Agriculture Research Service, and US Geological Survey (USGS), as well as National Instruments, General Electric, and universities and research institutes around the world, have partnered with scientists in developing countries through PEER awards. Since its launch in 2011, PEER has supported more than 280 projects in 50 countries with a USAID investment of more than USD 55 million. PEER aims to build capacity among local scientists and research institutions, strengthen research partnerships worldwide, and better translate data and evidence into policy.

2.1.2.1 PEER Project: Delivering Crop Yield Nowcasts and Forecasts - Uganda

12. Several PEER projects are using cutting edge digital technologies to facilitate climate-smart agriculture. For example, in Uganda, Makerere University is partnering with California State University Monterey Bay, and the NASA Ames Research Center for Earth Science and Technology to

develop and deliver crop yield forecasts to farmers in Sub-Saharan Africa. These forecasts will integrate satellite data and advanced crop modelling. In 2019, the final platform, CropWIS, has been designed and is now the smartphone mobile application can be downloaded here for android phone; <https://play.google.com/store/apps/details?id=com.gfd.cropwis&hl=en>. The research teams have started training end users, university staff and students, and extension workers in Uganda and Zambia. The project leader reported that there is interest in CropWIS mobile phoneApp developed under the project to be used as early warning platform for crop health & drought information system by Ministry of Agriculture, National Agricultural Research Organization (NARO), and the Office of the Prime Minister.

13. In the next quarter, the project leader and his team are planning to scale the use of their platform through country wide trainings in Uganda and Zambia aimed and build the farmers on nowcast and forecast data retrieval for farm decision making and national policy awareness workshop on climate risk and early warning information. They also plan on carrying out capacity building of Formation Farmer field schools (FFS) learning groups at community level and national staff capacities to access and use daily weather and crop early warning system for agricultural planning.

2.1.2.2 PEER Project: Optimization of SMC Delivery and its Effects on the Acquisition of Malaria Immunity - Mali

14. Through a PEER grant, a researcher in Bamako is studying the best way to deliver Seasonal Malaria Chemoprevention (SMC), a World Health Organization-recommended method for malaria prevention in children under five, across Mali. Through a series of randomized control trials supported by the PEER programme and the US National Institutes of Health, the researcher has shown that a door-to-door approach to treatment administration increases antimalarial coverage by 14 % compared to a fixed-point distribution strategy. He has also identified effective methods for administering medicine and the optimal number of doses. The results of this research are directly informing the government of Mali's roll-out of SMC through the National Malaria Control Program, which works directly with the US Presidential Malaria Initiative. While the team is working closely with the Government of Mali during the scale-up of SMC during FY 2019-2020, the team continues to study the impact of SMC on antibody generation to see if SMC prevents the normal progression of innate immune protection generated by constant exposure to malaria. The team also developed new collaborations with Sanaria for testing the PfSPZ malaria vaccine in Mali.

2.1.2.3 PEER Project: Affordable Technologies for Cervical Cancer Screening - Mozambique

15. Maputo Central Hospital, in collaboration with University of Texas MD Anderson Cancer Center, Universidade Eduardo Mondlane, Rice University, and Population Services International, are promoting and testing affordable technologies for cervical cancer screening for low income countries to improve early detection of cervical cancer. The project aims to screen 2,000 women for cervical cancer, using a novel point of care HPV test developed by Rice University, through existing cervical cancer prevention and voluntary family planning programs.

2.1.2.4 PEER Project - Open Mapping Nepal

16. There is huge potential to engage digital volunteers to map unmapped parts of the world (Goodchild, 2007). Nepal has one of the most active open mapping communities in the world and has leveraged this capacity to better respond to natural disasters such as the 2015 earthquake. The Lab is supporting research into how to best sustain and expand open-mapping in Nepal post-earthquake through a partnership between a Nepalese NGO, Kathmandu Living Labs, and researchers supported by the National Science Foundation at the University of Colorado Boulder.

17. Despite the critical contribution of open mapping to earthquake relief efforts, local NGO Kathmandu Living Labs (KLL) recognized that more work needed to be done to sustain open mapping in Nepal. Little was known about how to engage and retain local citizens to contribute to mapping and there were gaps in the geospatial information infrastructure in Nepal. Through PEER-supported action research and expertise from the University of Colorado Boulder on social media use during crisis, KLL developed a model to conduct outreach and motivate, train, and engage citizen volunteers, particularly youth, in open-mapping. The team is also integrating open mapping in

university curriculum and working with the Nepalese government to engage local youth in city mapping.

2.1.3 END Wildlife Trafficking- AF/SA PKO Counter Poaching Programme - Tanzania

18. As part of Embassy Tanzania's END Wildlife Trafficking Strategy, this State-PKO funded programme is focused on assisting the Government of Tanzania in its efforts to prevent, deter, and respond to poaching activities by increasing mobility, improving infrastructure, strengthening command and control, and strengthening technical skills of rangers. In 2018, the US Government funded telecommunications training and equipment to all Tanzanian Wildlife Management Authority (TAWA) headquarters and game reserve units, and for the first time TAWA rangers can communicate with each other across game reserves and to TAWA headquarters. For example, the Rungwa Game Reserve is now fully equipped with seven base stations, nine mobile radios, 11-man packs, and two air-to-ground base units and cross gate components. The reserve has 99% radio coverage and patrol response rates are at 95%. From 1 to 8 July 2019, the joint US Embassy and Dar es Salaam -TAWA Telecommunications Assessment assessed the interoperability and operation of current telecommunication systems of TAWA to identify needs and solutions.

2.1.4 Global Innovation Exchange

19. Global Innovation Exchange (GIE), a USAID programme launched in 2015, is a digital platform that connects innovators, donors, academia, and the private sector to innovative devices, data, technologies, approaches, processes, and funding opportunities.

20. In FY 2019, GIE reached new heights surpassing 11,000 innovations on the platform as well as more than 1,000 funding opportunities for more than USD 1 billion worth of cumulative funding. Innovations on GIE span across 13 global development sectors and 24 cross-cutting topics in 137+ low- and- middle-income countries (LMICs). In a commitment to data quality on the platform, GIE launched a partnership programme with funders and other ecosystem players to identify and "verify" innovations based on funding or other recognitions they have provided to innovations. With these partners, or "Data Champions," GIE has verified over 45% of the innovations on the platform, helping surface up the most promising innovations. GIE is also increasingly being used by funders and others in the ecosystem in a variety of ways, such as to discover and research innovations through GIE's Innovation Finder Service, to map the innovation ecosystem, and to track the progress of their portfolio innovations through GIE's Milestones section.

21. GIE is also supporting several USAID programmes such as the Bureau of Food Security's Feed the Future (FTF) initiative by powering the FTF Innovation Exchange to showcase FTF's portfolio of transfer-ready innovation and accelerate innovation. Other leading international development agencies are using GIE to power their initiatives and improve pipelines. For example, the International Development Innovation Alliance (USAID is also a member) is using GIE to power the Million Lives Club applications.

22. As highlighted by GIE's Global Development Innovation Landscape report published in June 2019, innovations from least developed countries are prominently represented on GIE. For example, Uganda ranks third for the most innovations on GIE amongst the full list of LMICs. GIE's funding opportunities also serve LDCs, where five of the top ten LMICs by funding are LDCs (Tanzania, Uganda, Mozambique, Rwanda, Malawi). Within regional innovation ecosystems, LDCs are prominently represented amongst the list of LMICs, for example Bangladesh is ranked second for innovation ecosystem in the Asia Pacific region and Haiti is ranked first for innovation ecosystem in Latin America and the Caribbean.

2.1.5 Innovation Discovery & Testing

23. Generating new ideas for innovation, building evidence of their efficacy, and helping attract further investment helps development solutions reach more people more quickly and sustainably. The US Global Development Lab serves as an innovation hub. Working collaboratively with the Agency and our external partners, the Lab's mission is two-fold: 1) To produce breakthrough development innovations by sourcing, testing, and scaling proven solutions to reach hundreds of millions of people; and 2) To accelerate the transformation of the development enterprise by opening development to people everywhere with good ideas, promoting new and deepening existing

partnerships, bringing data and evidence to bear, and harnessing scientific and technological advances.

24. The Lab uses two approaches to identify promising innovations, which are then rigorously tested, iterated, and put in use on a broad scale for global impact. The first approach - open innovation - includes the Development Innovation Ventures (DIV) programme, a year-round grant programme open to nearly any individual or organization for any sector in any country where USAID operates. Grants are awarded based on cost-effectiveness, evidence of impact, and the potential to scale. DIV's FY 2018-2019 Annual Programme Statement also established a separate category of evidence grants, used for research and evaluation of development practices and innovations. The second approach, directed innovation, develops solutions to specific challenges, such as scaling water-saving agricultural solutions, accelerating off-grid energy access in sub-Saharan Africa, and supporting humanitarian assistance in complex emergencies. The Lab's innovation discovery and testing programming specifically seeks to engage local innovators. Through 2018, the Lab supported over 1,100 development innovations through DIV, Grand Challenges for Development, and other programmes.

2.2 Science and Technology Agreements

25. The United States utilizes science and technology (S&T) agreements as frameworks for increased international collaboration by facilitating cooperation between US technical agencies and foreign counterparts on topics including public health, watershed management, agriculture, environment and biodiversity protection, biotechnology, earth sciences, marine science, and alternative energy. These agreements support relationships that strengthen science education systems, build institutional and human resource capacity, and promote a deeper appreciation of innovation and its role in technology transfer and commercialization. The United States supports programmes that strengthen institutional capacity to translate research into commercial activity, while improving individual capacity to enter labour markets (see <https://www.state.gov/key-topics-office-of-science-and-technology-cooperation/>). Through these efforts, US scientific and technical agencies and their counterparts promote economic growth and jobs creation.

2.3 Programming to Advance Entrepreneurship

26. The Global Entrepreneurship Summit (GES) is a unique opportunity for the Administration to promote economic prosperity and innovation around the globe. This US Government -led event combines entrepreneurs, investors, educators, and business representatives who embody the full measure on entrepreneurial talent from diverse backgrounds across the United States and the world, including the developing world. GES 2019 took place in The Hague, the Netherlands in June and welcomed over 2,100 participants, including over 1,000 entrepreneurs from 142 countries and more than 350 investors. The Summit's programme delivered over 50 content sessions and communicated the theme of "The Future Now" to highlight the role of current innovation in solving future challenges. Preceding GES's have taken place in the United States twice, Turkey, the United Arab Emirates, Malaysia, Morocco, Kenya, and India. More than 23,000 participants attended the nine Global Entrepreneurship Summits.

2.4 Regional Programmes

2.4.1 Smart Infrastructure for the Mekong (SIM) - Lower Mekong Initiative

27. Founded in July 2013, the Smart Infrastructure for the Mekong (SIM) programme offers governments participating in the Lower Mekong Initiative (LMI) an array of technical advisory, capacity building, and support services related to climate-smart, environmentally sound and socially equitable infrastructure, clean energy development, and land and/or water resources use related to sustainable management of the Mekong. Through a multi-agency US Government agreement, SIM has access to some of the US Government 's best engineers, scientists, and technical and policy experts to support such activities.

2.4.1.1 One Health Capacity Building in the Lower Mekong – Myanmar, Thailand, Lao PDR, Cambodia, Viet Nam

28. Under the Lower Mekong Initiative (LMI), the US Department of State supported an October 2018 Information Sharing Programme that brought 13 scientists and practitioners from Myanmar, Thailand, Lao PDR, and Cambodia to Houston, TX and Miami, FL. The activity transferred expertise and know-how related to vector-borne diseases (e.g., dengue, Zika, West Nile Virus).

29. The group's itinerary was designed to focus on three common challenges: 1) bolstering cooperation between environmental management, public health, and health care; 2) strengthening public outreach to affected communities; 3) incorporating innovative technologies and approaches to model, surveil, and control mosquito vectors. State and local governments are often the best places to see how to address these challenges and to understand how programmes work; the group also visited with community and academic partners in each locale.

30. The activity included transfer of expertise and know-how related to:

- Distribution of mosquito traps and surveillance sites and use of data for effective targeting of mosquito control;
- Creation and distribution of multi-lingual, science-based public information products;
- Piloting of novel techniques for mosquito control, include "smart" (Internet of Things) devices as well as biological, chemical, and genetic techniques to control mosquito populations; and
- Design of rigorous methods for testing effectiveness of novel techniques.

31. Results from the activity were used to frame and motivate the July 2019 LMI Young Scientist Programme in Vientiane, Lao PDR. The programme, which included 33 students and young professionals from Myanmar, Thailand, Lao PDR, Cambodia, and Viet Nam, featured participants from the 2018 Information Sharing Programme as speakers and mentors for participants. The theme of the programme was teaching and motivating participants to build informatics tools to support vector-borne disease control in the region. Additionally, participants acquired knowledge related to ideation, design thinking, teamwork, and prototyping. One team will be awarded a seed grant to scale up their prototype at a conference in January 2020.

32. The programme evaluations indicate a high level of satisfaction with the programmes. Each week's content relevancy earned "satisfied" ratings from 75% or more of participants; several of the individual modules received "satisfied" ratings from more than 95% of participants.

Scholar applauds LMI

33. A Laotian specialized in Epidemiology at Michigan State University recalled and shared her experiences about the memorable field trip to Savannakhet: "I have been working in public health area, and my works have had its focus just on immunization. I had no idea about the severity of Dengue outbreak in Lao PDR before I joined the programme. LMI open my perspectives on a very importance issues such as vector borne diseases control and prevention. I got to meet brilliant entomologist from Cambodia and learned from them how to identify mosquitos. And I got to meet a mathematician from Thailand who taught me the principle of machine learning."

2.5 Country Projects

2.5.1 mHero Mobile Communications Platform for Health Workers – Liberia

34. USAID works with the Ministry of Health (MOH) in Liberia to improve its ability to communicate priority information with frontline health workers and to receive feedback from health workers on priority issues as well as outbreaks. Communication during the Ebola outbreak was a critical challenge. To address this, USAID worked with MOH to integrate a text message platform, mHero, into their existing health information systems. This allows MOH to send information to health workers in specific counties in a matter of minutes. Today, mHero is used on a regular basis by the MOH to inform health governance and service delivery.

2.5.2 WAHO West African Health Informatics Team (WAHIT) - Burkina Faso

35. USAID works with the West African Health Organization and Economic Community of West African States (ECOWAS) Member States to improve their ability to fix, maintain, and adapt national level health information systems. Specifically, USAID has supported the launch of a West African Health Informatics Team (WAHIT) - an innovative technical assistance model to build local health informatics leadership in West Africa. WAHIT is a regional team comprised of software developers and informatics experts whose mission is to provide on-demand technical assistance while building local software engineering capacity to support long-term sustainability of health information systems in the region. In its first two years of operations, 2018 and 2019, WAHIT has trained over 150 HIS (health information system) experts, conducted ten missions to West African countries, and held three regional workshops to strengthen capacity on server administration, DHIS2 data administration and One Health data reporting.

Government Officials Praise WAHIT

36. A Benin MOH informatics team (IT) official said that WAHIT's three biggest strengths are "...preparation of the mission by seeking inputs from the country, division of tasks within the WAHIT team, and very good willingness to share knowledge."

37. A Togo MOH IT official also talked about WAHIT's three biggest strengths: "explanations of the benefits and disadvantages of the proposed solutions, availability of WAHIT, courtesy of WAHIT team member in their explanation."

38. A Benin MOH IT official commented on the overall satisfaction with WAHIT: "Benin is satisfied with this valuable mission and awaits further support to improve the capacity and performance of its IT staff."

2.5.3 Private Sector Lauds US Trade and Development Agency (USTDA) East Africa Enterprise Solutions Feasibility Study

39. USTDA awarded a feasibility study grant that will expand and improve access to telecommunications services in Uganda, Rwanda, Kenya, and Tanzania. SEACOM Limited, the regional submarine communications cable operator, is the project's grantee, and USTDA's study will help determine where to expand ICT infrastructure in East Africa and assess the market for fibre telecommunications services and recommending potential investments in areas including fibre optic cabling and network equipment.

Private Sector Lauds East Africa Enterprise Solutions Feasibility Study

40. SEACOM's Chief Development Officer Suveer Ramdhani said: "USTDA has been a valued partner to SEACOM since its early beginnings and has been fundamental to the launch and growth of the Internet in Africa."

2.5.4 IRI: Enhancing Fiscal Transparency in The Gambia

41. US Embassy Banjul, via the Fiscal Innovative Transparency Fund, funded USD 550,000 and USD 400,000 in FY 2018 and 2019 respectively, to the DC-based International Republican Institute (IRI) for its work on fiscal transparency in The Gambia. The IRI will use this grant funding to train various Gambian government officials, media, and civil society to better operate with fiscal transparency in mind. This grant intends to see the development of a legal framework for combatting a lack of fiscal transparency, as well as build capacity for future legal guidelines and understanding of public finance. On 19 July 2019, the IRI held a conference on the transparent management on the extractives industry in The Gambia, at which US Ambassador gave the opening remarks. This conference represented the launch of part of the grant purpose, which combats fraud and corruption in the extractives industry. Notably, the conference aimed to develop a legal framework for financial transparency in the extractives industry.

2.5.5 Access to Information (A2I) – Bangladesh

42. USAID's A21 programme aims to increase transparency, improve governance and reduce the time, difficulty, and costs of obtaining government services for under-served communities of

Bangladesh. The objectives are to strengthen existing e-services and launch a second generation of integrated, inter-operable e-government applications, as well as sensitize government officials, train service providers and expand digital literacy among the general public. The programme also forges strong policy and strategy links to ensure implementation of needed legal and regulatory changes in support of the activity.

43. To decentralize delivery of public services and take them to the doorsteps of millions of underserved citizens, A2I established more than 5,321 Digital Centres across the country. The total projected investment in this project was USD 6.1 million. The project was completed in 2019. These centres use modern technology to provide both free and fee-based access to public services, such as land records, birth registration, telemedicine, life insurance, passport and overseas job application, as well as application to various other government services, and private services, including mobile financial services, insurance, various types of computer and vocational training.

44. During 2018, more than 39 million citizens received e-services across the country, accessing 150 types of services more than 76 million times. The entrepreneurs running the Digital Centres have increased their incomes - more than half the centres have earned more than BDT 15,000 per month, strengthening their sustainability. More than 3,000 centres have been covered under the ek-Shop (rural assisted e-Commerce) platform intended to bring e-commerce services to the public. Some 50% of underserved citizens have received e/m-payment for Social Safety Net services, and those without bank accounts or bank access have obtained financial services 3.5 million times. The access of the underserved citizen to any sort of information has been heightened through the Citizens' Helpline 333 has received more than 1.5 million calls about such social problems as child marriage and food adulteration.

45. The use of Nothi (e-filing System) at the government offices has increased efficiency, accountability and transparency in movement of files and documents. More than 4,300 government offices have been using Nothi and have disposed of some four million cases through December 2018. The Agriculture Service Portal and Farmers' Call Centre (3331) has offered information to more than 8 million farmers on increasing production, quality food, market-oriented agriculture, and decent pricing.

3 EDUCATIONAL AND UNIVERSITY-LED PROGRAMS

46. US agencies such as the Department of State and USAID work closely with universities to encourage student exchanges and other programmes that promote technology transfer and knowledge through harnessing the intellectual power of students to address challenges including climate variability, food security, and global health.

3.1 Educational Enrolment in the US University System

47. The US university system constitutes a major avenue for technology transfer. Foreign students employ acquired knowledge and skills in their home countries.

3.1.1 University Enrolment by Foreign Students

48. During the 2017-2018 academic year, there were 34,123 students from LDCs enrolled in US institutions of higher education, representing an increase of 5% over the 2016-2017 academic year, and 3% of the total US higher education international student enrolment. US institutions of higher education hosted many students from LDCs, including large numbers from Nepal (13,270 students) and Bangladesh (7,496 students). The top five most popular fields of study for international students in the United States in academic year 2017-2018 were Engineering (232,710); Business and Management (196,054); Math and Computer Science (186,003); Social Sciences (83,708); and Physical and Life Sciences (78,700).

3.2 Exchange Programming from the Department of State's Bureau of Educational and Cultural Affairs

49. The Department of State's Bureau of Educational and Cultural Affairs (ECA) designs and implements educational, professional, and cultural exchange programmes that increase mutual

understanding between people of the United States and the people of other countries (see <https://eca.state.gov/>).

3.2.1 Programming from ECA

50. Through its programmes, ECA enables students, exchange alumni, and young adults to pursue higher education, leadership, and professional development opportunities globally. The Fulbright Programme sponsors approximately 8,000 participants annually from the United States and more than 150 countries, many of whom do in-country work in LDCs. These programmes included participants in FY 2018 from almost every LDC country. The students enter the United States as non-immigrant exchange visitors ("J-1"), which make them ineligible to remain in the United States after their studies. Thus, students participating in these education programmes generally return to their home countries, thereby bringing back knowledge and training.

3.3 USAID's Higher Education Solutions Network (HESN)

51. HESN, launched in 2012, is a constellation of eight development laboratories that promote the creation and application of new science, technology, and engineering approaches to solve the world's most challenging development problems. With USD 137 million over five years from USAID and leveraging nearly equal investments from the institutions, the universities established the laboratories by collaborating with a network that extends beyond 650 partner institutions in academia, civil society, and government across 69 countries, including developing countries. HESN Labs partner with institutions and support individual innovators in other countries and engage entire communities of local innovators in problem-solving in order to ensure a culture of entrepreneurship will continue and grow (see <http://www.usaid.gov/hesn/>).

3.3.1 HESN 2.0

52. In 2018, USAID launched several new programmes under the "HESN 2.0" portfolio. HESN 2.0 leverages a vast network of higher education institutions, local stakeholders, private enterprise, and other development actors to increase the use of scientific research for development, refine and translate complex data, build local scientific potential, and test new and innovative development approaches. The original HESN programme and PEER programme are augmented by the Long-term Assistance and Services for Research (LASER) network, a myriad of technical experts organized by the Research Technical Assistance Center (RTAC), and an open source platform, the Science, Technology, Innovation, and Partnerships Annual Programme Statement (STIP APS).

3.3.2 Long-term assistance and services for research (LASER)

53. LASER engages universities in co-created, long-term (typically one year or more), technical and research assistance with USAID Missions, Bureaus, and Independent Offices (M/B/IOs) as they seek to solve their most pressing development challenges. It allows interested USAID M/B/IOs the opportunity to rapidly access a network of international universities and associated researchers that are interested in refining and solving development challenges together with USAID. Through this network, LASER researchers' partner with USAID M/B/IOs to identify new research questions, conduct demand-driven research, translate research results into development impact, and build technical and research capacity of universities and researchers in developing countries. Beyond USAID M/B/IOs on their specific research needs, LASER independently identifies research questions that cross regions or sectors and then funds associated research activities to provide knowledge that will benefit USAID and the development community as a whole.

3.3.3 Research technical assistance centre (RTAC)

54. RTAC helps USAID Missions, Bureaus, and Independent Offices make evidence-based, strategic choices and programming decisions, drawing on the combined expertise of more than 250 academics affiliated with 128 organizations. RTAC provides technical assistance for USAID through preparation of in-depth research and evidence-based reports, development of easily understood research communication materials like summary reports or evidence-based policy briefs with recommended courses of action for USAID Missions, support for technical meetings such as expert panels, USAID stakeholder convenings, forums, and other gatherings in which the higher education community plays an important role, consultations to inform the research activities, monitoring and evaluation

plans, and programme designs outlined in USAID strategies and Project Appraisal Documents (PADs).

3.3.4 US Global Development Lab's Science, Technology, Innovation, and Partnerships Annual Programme Statement (STIP APS)

55. STIP APS - USAID's Global Development Lab (the Lab) seeks to provide a flexible mechanism for USAID Missions, Bureaus, and Independent Offices (M/B/IOs) to co-create with global academic communities, NGOs, the private sector, and other key stakeholders to 1) Generate targeted evidence and solutions around complex development challenges by sourcing new ideas and supporting interdisciplinary partnerships 2) Accelerate the translation of evidence to impact by facilitating collaboration between universities, implementers, local governments, the private sector, end-users; and 3) Strengthen global innovation and R&D ecosystems to support long-lasting development impact through individual and institutional capacity building.

3.4 Common Practices for University-Led Technology Transfer

56. Common practices that encourage technology transfer from US universities include:

- Publication of research results in open academic literature that is accessible globally through the Internet or other public systems, enabling the free-flow of research to be utilized by scientists, engineers, and researchers in all sectors;
- Interaction between creators and users of new knowledge (e.g. through professional meetings, conferences, seminars, industrial liaison programmes and other venues);
- Collaborative research projects;
- Entrepreneurial activity of faculty and students outside the university without involving university-owned IP; and
- Licensing of IP to established firms and new start-up companies.

3.5 Regional and Country Programs

3.5.1 Department of State English Language Training – Madagascar

57. The US Department of State supports multiple initiatives to increase English language training in order to increase access to the internet, training opportunities and business. For example, in FY 2019, US Embassy in Madagascar funded a full-time English Language Fellow for one year and placed two fellows at the University of Antananarivo.

3.5.2 Environment Global Learning and Observations to Benefit the Environment (GLOBE) – Togo

58. On 4 June 2018, the US Ambassador to Togo and the Togolese Environment Minister joined the GLOBE Implementation Office Director for an opening ceremony to commemorate a week of training on GLOBE protocols at the American Corner on the campus of the University of Lome. The Programme is an international science and education programme managed by US National Aeronautics and Space Administration (NASA) with support from the National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA) and Department of State. GLOBE provides students and the public worldwide with the opportunity to participate in the collection of scientific data. The US Embassy facilitated Togo's joining of the GLOBE network in 2018. In FY 2019, GLOBE activities took place at several pilot schools. GLOBE activities were also implemented by MoLab, the US Embassy's mobile science lab.

3.5.3 MoLab – Togo

59. MoLab is the US Embassy's mobile S.T.E.M. (science, technology, engineering and math fields) learning lab. Built by young Togolese inventors, it is a vehicle filled with science, engineering, chemistry, and math activities. The US Embassy and Contour Global, an American energy company with a plant in Togo, financed MoLab. The vehicle runs as a non-profit organization. Its mission is to

bring STEM education to under-resourced rural schools, and it has a full calendar of activities. While MoLab continues to operate year-round, it is still looking to achieve full financial independence.

3.5.4 Female Tech Camp – Togo

60. Since 2014, the US Embassy's Public Affairs Section has supported the organization of an event called Female Tech Camp, which encourages young Togolese women to be more active in STEM fields through specialized training on coding, e-business, web design, and more. In its most recent editions, the event has attracted significant private sector support, including a major contribution from TogoCom, the country's biggest internet operator. It also has strong support from The Minister of the Digital Economy, who in 2018 took the founder and several alumni to Paris for a technology conference called Viva Tech. The event has launched several successful e-businesses and applications. By August 2019, 300 girls across the country were trained at the tech camp.

3.5.5 Robotics Bootcamp – Togo

61. US Embassy's Robotics Bootcamp programme is a youth camp focusing on robotics, which features several young Togolese inventors in the robotics field. For example, one inventor uses a 3-D printers to create prosthetic limbs, and another inventor designed a robotic teacher for classrooms when teachers are absent. The bootcamp was held in August 2018 and trained 50 participants generating increased interest in pursuing a career in STEM fields.

3.5.6 NASA's ARDC Training Programme – Senegal

62. Scientists from NASA and the Virginia-based engineering and technology company Analytical Mechanics Associates (AMA) led a workshop in Dakar on 18 and 19 April 2019, attended by more than 50 participants from over 25 government, nonprofit, and private organizations in Senegal. The aim of the workshop was to train organizations to analyse earth observation data in support of development objectives like food security and water access. The workshop was part of a larger project, the Africa Regional Data Cube (ARDC), which supplies satellite data to Kenya, Senegal, Sierra Leone, Ghana, and Tanzania. The ARDC also works to increase countries' own capabilities to apply satellite information in response to local needs. In an example of how US-Senegalese cooperation can leverage cutting-edge technology to meet development goals, NASA and AMA experts will maintain contact with Senegalese users for day-to-day guidance and will provide online training later in the year based on demand.

4 COMMERCIAL AND LEGAL PROGRAMMES TO STRENGTHEN CAPACITY

63. US agencies such as the Commercial Law Development Programme (CLDP), National Institute of Standards and Technology (NIST), and others provide commercial law technical assistance to the governments and private sectors of developing and transitional countries. The programmes are demand-driven and customized to address priority issues in countries' business climates. The programmes help improve the commercial, legal, and regulatory environments to attract foreign investment and promote private sector-led growth and technology transfer.

4.1 Country Projects

4.1.1 Borlaug International Agricultural Science and Technology Fellowship Programme – Myanmar

64. USDA's Borlaug Fellowship Programme promotes agricultural productivity, food security, trade and economic growth by providing training and collaborative research opportunities to early and mid-career scientists, researchers, or policymakers from developing and middle-income countries. The proposed fellowship would provide the selected candidate from the Ministry of Agriculture's Plant Protection Division (PPD) an opportunity to conduct research on pest risk assessments (PRA) and provide insight into how the United States does PRAs, so they can better align their regulations to ours and help them to try to apply for the first access to the US market for fresh products (possibly mangoes). The increase in understanding will enhance the confidence of the US inspection and food safety system to Myanmar officials. In the long run, such trust and confidence will greatly promote cooperation and facilitate trade. This will benefit the food industry in Myanmar that seeks export markets, and in turn increase imports of US goods, which is an initiative of national interest.

65. A USDA Borlaug Fellowship (2018) candidate and a staff officer from the Plant Protection Division successfully finished the research on pest risk assessments (PRA) at Michigan State University during 2 April - 24 June 2019.

4.1.2 Department of State Criminal Justice Reform/Law Enforcement Development – Myanmar

66. State Department's Bureau of International Narcotics and Law Enforcement Affairs (INL) provides financing to implementing partners (Myanmar's Union Attorney General's Office, Myanmar Police Force, and Supreme Court) to provide training and technical assistance to the law enforcement and justice sectors. This training strengthens criminal legislation and provides tools and practices to fight domestic crimes, transnational organized crime, and corruption. It also includes working with financial intelligence units to prevent and investigate financial crimes and money laundering activity by training the Myanmar Police Force on the basic principles of community policing. Implementation of the project will assist Myanmar criminal justice system to fight transnational criminal activity and corruption, and promote a more predictable justice system rooted in the rule of law and aligned with international standards. INL collaborates with DEA on addressing precursor chemical flows and have donated MPF chemical detection devices to enhance counter narcotics-interdiction. Supported establishing ACC branch offices in Yangon and Mandalay as well as to the Department of Rehabilitation. Homeland Security Investigations have conducted first in-country training focusing on Human Trafficking investigations

5 INTELLECTUAL PROPERTY PROTECTION (IPR) AND ENFORCEMENT CAPACITY BUILDING

67. US agencies, including the Department of State, the Department of Commerce's International Trade Administration (ITA) (see <http://www.trade.gov>), the Department of Homeland Security (DHS), US Patent and Trademark Office (USPTO) (see <http://www.uspto.gov>) and others deliver IPR technical assistance programmes to LDCs to strengthen IPR protections and thus increase the likelihood of foreign direct investment (FDI).

5.1 USPTO Training and Technical Assistance Collaboration with International Organizations

68. USPTO offers training and technical assistance on IPR protection and enforcement to many countries, including LDCs. USPTO supports the LDC assistance efforts of international organizations such as with the Association of Southeast Asian Nations (ASEAN) and the World Intellectual Property Organization (WIPO). For example, USPTO works with WIPO on its *Re:Search* and WIPO Green programs, to promote access to IPR and technical know-how for relevant policy concerns, including neglected tropical diseases and environmentally-friendly technologies (see <http://www.wipo.int/research/en/>, and <https://webaccess.wipo.int/green/>). USPTO also collaborates with ASEAN on Intellectual Property (IP) Capacity-Building Programmes, covering all areas of IP, in which LDCs participate.

5.1.1 USPTO Global Intellectual Property Academy (GIPA)

69. USPTO provides IPR training at its state-of-the-art GIPA in Alexandria, Virginia and throughout the world. USPTO delivers targeted training to foreign IP office administrators, examiners, judges, prosecutors, customs officers, and other government and law enforcement officials. Additional support is provided by IP Attaché Offices and the Departments of State and Commerce. A Rwanda government official is scheduled to attend a training on intellectual property in August 2019.

70. In FY 2019 GIPA conducted more than 120 training, technical assistance, and capacity building programmes for over 9,000 participants from over 110 different countries, including the following LDCs: Afghanistan, Bangladesh, Bhutan, Cambodia, Chad, Democratic Republic of the Congo, The Gambia, Guinea, Lao PDR, Lesotho, Liberia, Malawi, Mali, Mozambique, Myanmar, Nepal, Senegal, Sierra Leone, Sudan, Tanzania, Uganda, Vanuatu, Zambia. (For more information about GIPA, see www.uspto.gov/gipa).

71. Notably, in July 2019, GIPA conducted a Workshop on Technology Transfer and Management of Government Intellectual Property at its Alexandria, Virginia headquarters, in cooperation with the

World Intellectual Property Organization and AUTM. Government officials from both Cambodia and The Gambia took active part in the programme.

72. In October 2018, USPTO together with the ASEAN Secretariat conducted a workshop in Bangkok, Thailand on Promoting Excellence of Collective Management Organizations in Transparency, Accountability and Governance for the ASEAN region. Officials from Cambodia, Lao PDR and Nepal participated.

73. In October 2018, USPTO GIPA hosted a global programme at its headquarters, Intellectual Property Protection for Designs: An International Perspective. Officials from Cambodia, Lao PDR, and Nepal participated.

74. In November 2018, USPTO with the IP Attaché Office in Bangkok, Thailand and the ASEAN Secretariat organized a regional Workshop on IP Enforcement and Public Awareness. Officials from Myanmar, Cambodia and Lao PDR participated.

75. In November 2018, USPTO with the International Union for the Protection of Plants (UPOV) organized a programme in Windhoek, Namibia for ARIPO members. Officials from Lesotho, Sierra Leone, Sudan, Tanzania, The Gambia, Uganda and Zambia participated.

76. In January 2019, USPTO with UPOV organized a multiregional Workshop on Drafting Legislation in Accordance with the UPOV Convention in Geneva, Switzerland. Officials from Afghanistan, Myanmar, Cambodia, and Zambia participated.

77. In February 2019, USPTO with the ASEAN Secretariat organized a regional Advanced Workshop on Three-Dimensional and Other Non-Traditional Marks, a Trademark programme held in Kuala Lumpur, Malaysia. Officials from Myanmar, Cambodia and Lao PDR participated.

78. In April 2019, USPTO together with EUIPO and the US Food and Drug Administration (FDA) and US Department of Justice, conducted an Asia Regional Workshop on Trade in Counterfeit Food, Beverages, Cosmetics, and Fast-Moving Consumer Goods in Ho Chi Minh City, Viet Nam. Officials from Myanmar, Cambodia, Lao PDR, Nepal and Vanuatu participated.

79. In April 2019, USPTO together with Department of Justice ICHIP Africa Office and the African Regional Intellectual Property Office (ARIPO) conducted an Africa Regional Intellectual Property Enforcement Training for Judicial Instructors in Gaborone, Botswana. Officials from Lesotho, Liberia, Malawi, Mozambique, Sierra Leone, Tanzania, The Gambia, and Zambia participated.

80. Another multiregional programme held at the USPTO GIPA headquarters, Advanced Trademark Examination Training, convened trademark examiners and officials, including those from Cambodia and Uganda, for an in-depth programme lasting eight days in June 2019.

81. In June 2019, USPTO, together with the Department of Justice ICHIP Africa Office and the US Embassy in Senegal, conducted a Workshop to Build Enforcement Capability and Improve Coordination in Combatting Pharmaceutical Crimes and Illicit Pesticides in Dakar, Senegal. Officials from Burundi, Chad, Democratic Republic of the Congo, Guinea, Mali, Mauritania and Senegal participated.

82. In June 2019, USPTO with the ASEAN Secretariat and the US Department of Justice conducted an ASEAN-regional Workshop for Public Prosecutors on IP criminal enforcement. Officials from Myanmar, Cambodia, and Lao PDR participated.

83. In August 2019, USPTO GIPA hosted a global programme at its headquarters, IP Office Administration Training. Officials from Bangladesh, Myanmar, Cambodia, Lao PDR, Nepal participated.

84. In September 2019, USPTO with the ASEAN Secretariat conducted an ASEAN-regional Workshop on Utilizing Alternate Dispute Resolution in Intellectual Property Disputes in Manila, Philippines. Officials from Cambodia, Lao PDR, and Nepal participated.

85. In September 2019, USPTO with the ASEAN Secretariat and the US Department of Justice conducted an Asia Regional Workshop on IP Border Enforcement in Bangkok, Thailand.

5.1.2 USPTO IP e-Learning Modules

86. In FY 2019, GIPA continued its nearly decade-long commitment to produce and maintain in-depth, on-demand content through free distance-learning modules on the USPTO website. These modules are available in five languages and cover six different areas of IP protection. New modules and micro-learning videos include an updated video, "Introduction to Patent Protection," and a short, "Trade Secrets." Both are available on the GIPA website and on GIPA's YouTube playlist. This on-demand content collectively has drawn more than 85,000 unique views.

5.1.3 USPTO Intellectual Property Attaché Training and Technical Assistance

87. USPTO posts IP Attachés at select US embassies and consulates around the world. These Attachés work with host governments, academia, advocacy groups, international organizations, non-governmental organizations (NGOs), and the private sector to provide IPR technical assistance and capacity building programs. Programmes have focused on IPR enforcement, as well as patent, trademark, and copyright policy engagement and best practices (see <http://www.uspto.gov/ip/global/attache/index.jsp>).

5.1.4 USPTO Patents for Humanity Programme

88. The USPTO Patents for Humanity programme encourages assistance to LDCs by providing business incentives for patent owners and licensees to apply their technology towards humanitarian purposes. Participants submit descriptions of how they are improving lives in five broad categories of global challenges: household energy, living standards, medicine, nutrition, and sanitation. Independent experts review submissions and recommend awards. Winners receive accelerated processing of a patent application or certain other matters. (See <http://www.uspto.gov/patentsforhumanity>). The latest award winners were honoured at a ceremony at USPTO in Alexandria Virginia 27 November 2018 (for video recording, and more information, see <https://www.uspto.gov/patent/initiatives/patents-humanity>). Those honoured include:

- US National Institutes of Health for creating a low-cost, temperature tolerant rotavirus vaccine and teaching Indian manufacturers how to produce it, with 3.8 million doses ordered by the government of India's childhood immunization program;
- Because International for distributing 180,000 pairs of resizable shoes in over 95 countries, with local manufacturing taking place in Ethiopia and plans for Haiti and Kenya;
- Brooklyn Bridge to Cambodia Inc. for creating an affordable rice planting device that helps Cambodian farmers improve their crop yields, and which minimizes the number of farmers, mostly women, who have to work in the most exhausting and unhealthy conditions;
- Russell Crawford for creating tools for low-cost drilling of water wells to reach deep aquifers free from soil contaminants;
- Little Sparrows Technologies for creating a portable low-cost phototherapy device for treating jaundice in infants, which causes 100,000 new-born deaths a year;
- Kinnos Inc. for creating time-sensitive colour chemicals to ensure proper disinfection procedures by health workers in Ebola treatment centres and other health care settings;
- Solight Design for designing a portable solar light that has been distributed to over 200,000 people worldwide including many in refugee camps; and
- Medtronic for creating a portable, low-water kidney dialysis machine for potential use in a wide variety of care settings, including those that lack the infrastructure required for traditional dialysis.

5.2 Country Projects

5.2.1 Capacity Building Programme for IP Stakeholders with focus on enforcement officials – Bangladesh

89. The USPTO New Delhi Attaché office has taken steps to strengthen overall IPR regime and incorporate strong IPR as part of high-level industrial policies in Bangladesh. The IP Attaché's Office in New Delhi provided IP border enforcement training for senior customs officials from Bangladesh. The goal of the training was to facilitate an exchange of best practices in order to improve protection and enforcement of IP laws in the region.

5.2.2 USPTO IPR Training – Madagascar

90. USPTO, with the support of the Department of State, provided training to the Malagasy Office for Industrial Property (OMAPI) and to practitioners in August 2019. The Trademark Examination training equipped OMAPI staff to improve protection of IP in order to benefit US companies - and all businesses – investing in Madagascar.

5.2.3 USPTO IPR Training - Bangladesh

91. In August 2019, USPTO organized an IPR Workshop for Bangladesh at the USPTO GIPA headquarters. The programme provided a strong overview of IP issues as they relate to border protection and interdiction of pirated and counterfeit goods. Participants were Bangladeshi law enforcement officials, namely customs and police.

5.2.4 USPTO IPR Training – Myanmar

92. In July 2019, USPTO organized a Training Workshop on Brand Protection and Customs Enforcement in Yangon, Myanmar at the Myanmar Customs Training Center with PSI and INTA and support from the IP Attaché Bangkok. Participants were Burmese Enforcement and Customs Officials.

5.2.5 Capacity Building Programme on Customs Enforcement - Cambodia

93. The USPTO Bangkok Attaché Office held a training programme for Cambodia customs officials on how to develop and implement a computerized system for custom recordation. The goal of the programme is to improve the effectiveness of the border measures and IPR enforcement mechanisms in Cambodia.

5.2.6 Department of State Programming - IPR Unplugged Event – Cambodia

94. On World Intellectual Property Day, the Bophana Center held a USD 2,200 US Department of State funded concert in celebration. Focusing on empowering women in innovation and creativity, the event featured popular Cambodian singer-songwriter Nikki who played music and talked about the importance of IP protections. The audience consisted primarily of members of the business, legal, government, and academic communities that have a stake in strong IP protections. The objectives of this event included raising awareness about the importance of IPR in protecting businesses and society as a whole, as well as empowering women and innovation.

5.2.7 Department of State Programming - Rebuilding the Cambodian Music Industry - On-Demand International Visitor Leadership Programme (IVLP)

95. The "Rebuilding the Cambodian Music Industry" IVLP on-demand leveraged the popularity and reach of ten popular figures in the Cambodian music industry to highlight the importance of intellectual property rights (IPR) and its value to American entertainment and cultural innovation. On their tour through Washington D.C., Austin, Texas, and Los Angeles, California, the musicians learned about copyright basics, alternative pricing models, and music business ventures with a special focus on IPR. Through engagement with lawyers, musicians, copyright activists, the programme aimed to educate the participants on how to protect their original cultural contributions to Cambodia's burgeoning original music scene. This programme supports American companies' efforts to prevent pirating of American IPR in Cambodia. This programme helped the participants understand the key professional, governmental and personal steps necessary to transition from

artists and music lovers to full-fledged business owners. One participant noted that the programme completely changed their view of copyright and creative rights.

5.2.8 Global Cybercrime, IPR, and Cybercrime Foreign Law Enforcement Training and Technical Assistance Initiative

96. A USD 5 million INL-funded, DOJ-led cybercrime and IPR training programme is administered cooperatively by the DOJ Office of Overseas Prosecutorial Development Assistance and Training (OPDAT) and the DOJ Computer Crime and Intellectual Property Section (CCIPS). OPDAT provides justice sector assistance around the world through bi-lateral and regional development programmes to build the capacity of partner law enforcement agencies to combat a number of international crimes, including cybercrime and IPR crime, through close partnership with INL, CCIPS and other US and foreign law enforcement partners.

97. These programmes enable the Department of Justice to continue to support International Computer Hacking and Intellectual Property Law Enforcement Advisors (ICHIPs) as they coordinate and deliver IPR and computer crime prosecutorial and judicial training and technical assistance; deliver regional training workshops to foreign enforcement officials to improve their capacity to cooperate with US law enforcement in the sharing of electronic evidence; and enable the US Transnational and High Tech Crime Global Law Enforcement Network (GLEN), of which the ICHIPs are a part, coordinate delivery of US Government regional cybercrime and IP crime training workshops to foreign law enforcement officials to improve their capacity to cooperate with US law enforcement in cybercrime and IP theft investigations and prosecutions involving transnational organized crime.

5.2.9 Preventing Counterfeits in Mali

98. Mali is experiencing a proliferation of illegal agricultural inputs. These agro inputs include adulterated or counterfeited seeds, fertilizers, vaccines, farm equipment, and crop protection products. These products can be extremely harmful, affecting both farmers' revenues and national food security but also likely causing environmental damage that can extend to water supplies. In order to protect the rural and agricultural communities being affected by this problem, CLDP works with FTF and the Government of Mali to implement best practices in the oversight of the movement of agricultural products and to raise public awareness of the dangers of fake products. A solution to prevent counterfeiting and improve consumer education is Mobile Product Authentication (MPA™) technology. Product authentication works at point of purchase: on the product, the consumer finds a special security label with a panel that, when scratched, reveals a unique, one-time use PIN. The PIN is texted for free to a secure phone number and the consumer will receive a text message (SMS) reply stating that the product is genuine, or potentially fake or stolen.

99. The project, still in progress until September 2020, has already achieved notable improvement in Malian stakeholders' understanding of the impact of counterfeits. The project has also facilitated implementation of a national database administered jointly by Malian Customs, the Malian Intellectual Property Office (CEMAPI), and the Malian Copyright Office (BUMDA) where producers and importers can register brands/trademarks to facilitate the seizure of counterfeited products.

Government Official Lauds Law Enforcement workshop in Senegal

100. Representatives from the US Departments of State, Justice, and Homeland Security held a four-day workshop for law enforcement and regulatory officials from 11 francophone African countries from 11 to 14 June 2019 in Dakar on combatting illicit pharmaceuticals and pesticides. Participants discussed challenges and best practices in protecting intellectual property rights (IPR) and prosecuting IPR crimes in Central and West Africa with US and foreign government experts and private sector representatives. The Communications Counsellor for the Senegalese Intellectual Property Protection Agency, commented that the seminar was an effective measure to increase the technical capacity of law enforcement officials to understand the risks of the illicit pharmaceutical trade.

5.3 IPR Enforcement Coordination

101. The US Immigration and Customs Enforcement/Homeland Security Investigations (HSI) leads the National Intellectual Property Rights Coordination Centre (IPR Centre), which works to protect

public health and safety and the US economy, and to stop predatory and illegal trade practices that threaten the global economy. The IPR Centre brings together 25 partner agencies, consisting of 20 federal agencies, INTERPOL, EUROPOL, and the governments of Canada and Mexico along with the City of London Police in a task-force setting. The task force structure enables the IPR Centre to effectively leverage the resources, skills, and authorities of each partner and provide a comprehensive response to IP theft (see <https://www.iprcenter.gov/>). The IPR Centre's Operation Joint Venture (OJV) trains domestic and international law enforcement to build strong enforcement capabilities. The IPR Centre, through the financial support of Department of State's Bureau of International Narcotics and Law Enforcement Affairs (INL), provides IPR enforcement capacity building training to many countries, including LDCs.

5.3.1 National IPR Coordination Center (IPR Center)

102. The National Intellectual Property Rights Coordination Center (IPR Center) works closely with partner agencies, overseas IP Attachés, and US embassies to deliver training and support capacity building. In FY 2019, the IPR Center participated in 16 international trainings in support of country-specific and regional programmes that are funded by INL. From 12 to 14 September 2017, the IPR Center, in collaboration with Immigration and Customs Enforcement (ICE)/Homeland Security Investigations (HSI) Attaché Dakar and Department of Justice (DOJ) Intellectual Property Law Enforcement Coordinator (IPLEC) - Abuja, Nigeria, provided IPR Enforcement Training for customs, police officers and prosecutors from Benin, Guinea, Liberia, Senegal, Sierra Leone and The Gambia. With the approval of INL and the aforementioned country officials, this training was combined into a joint regional training for all countries in Dakar, Senegal. Participants received presentations from HSI, DOJ, and Customs and Border Protection (CBP) subject matter experts, as well as industry. The training emphasized; 1) health and safety issues related to IP crime; 2) the need for cooperation between countries/agencies; 3) the leading role of international organized crime groups in IP crime and; 4) the developing threat of IP crime on the Internet. There were a total of 40 participants who attended and received certificates of completion. Additionally, the IPR Center participated in 77 international outreach events.

5.3.2 StopFakes.gov

103. The Department of Commerce developed and maintains a website that hosts online resources, including information about key US agencies and programmes (see <http://www.stopfakes.gov/>) aimed at helping businesses protect IPR. The IPR Training Module, hosted on STOPfakes, is available in English, French, and Spanish. The United States encourages LDCs to use the module, which familiarizes small businesses with IP issues, and provides tips on how to protect and enforce IPR. LDCs and other countries can use this resource free of charge. Inventors, investors, and businesspersons from the United States and around the world may use the "Contact Us" function on the website to ask questions about IPR enforcement. Additionally, STOPfakes enables businesses to report IPR trade barriers and enforcement issues to the Department of Commerce.

6 TRADE AND INVESTMENT POLICY, CAPACITY BUILDING, AND INCENTIVES

104. Because most technology is developed and owned by the private sector, technology transfers are often private sector decisions. Technology transfer should not be required as a precondition for investment.

6.1 Investment and Trade Policy Negotiations

105. US bilateral and multilateral free trade agreements aim to improve the protection and enforcement of IP, thereby improving environments for foreign investment and technology transfer often associated therewith.

6.1.1 Bilateral Investment Treaties

106. US bilateral investment treaties (BITs) establish a framework of reciprocal protections that include the free transfer of investment-related funds, investor-state dispute arbitration rights, limitations on specified performance requirements, non-discriminatory treatment, protection against expropriation, and transparency in governance. These treaties improve the climate for FDI in partner countries that can lead to the transfer of technology and know-how. To date, the United States had

signed five BITs with WTO Member LDCs: Bangladesh, Democratic Republic of the Congo, Mozambique, Rwanda, and Senegal. As of August 2018, the United States also has a Trade and Investment Working Group (TIWG) with Kenya.

6.1.2 Trade and Investment Framework Agreements

107. USTR-negotiated Trade and Investment Framework Agreements (TIFAs) enhance trade relations between the United States and other countries. Over the last several years, the United States has launched 13 trade and investment agreements in sub-Saharan Africa, including three bilateral TIFAs with LDCs: Angola, Mozambique, and Rwanda. Additionally, the United States has launched regional TIFAs with the Common Market for Eastern and Southern Africa (COMESA), East African Community (EAC), the Economic Community of West African States (ECOWAS), and West African Economic and Monetary Union (UEMOA); and a Trade, Investment, and Development Cooperative Agreement with the five countries of the Southern African Customs Union (SACU). The United States also has bilateral agreements with several LDCs outside of Sub-Saharan Africa, including Afghanistan, Bangladesh, Myanmar, Cambodia, Lao PDR, Nepal, and Yemen, as well as with ASEAN and the Caribbean Community (CARICOM). Together, these agreements cover 30 WTO LDC Members: Afghanistan, Angola, Bangladesh, Benin, Burkina Faso, Myanmar, Burundi, Cambodia, Democratic Republic of the Congo, Djibouti, The Gambia, Guinea, Guinea Bissau, Haiti, Lao PDR, Lesotho, Madagascar, Malawi, Mali, Mozambique, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Tanzania, Togo, Uganda, Yemen, and Zambia (see <https://ustr.gov/trade-agreements/trade-investment-framework-agreements/>).

108. The United States views trade as an effective means to encourage broad-based economic development. Trade constitutes an important means of sustaining momentum for economic reform and liberalization. It affords developing countries access to technologies that would otherwise be difficult to obtain, and simultaneously opens new market opportunities for US companies.

6.2 Trade Preference Programmes

6.2.1 US Generalized System of Preferences Programme

109. The US Generalized System of Preferences (GSP) programme, established in 1976, promotes economic development by providing duty-free access to the US market for a wide range of products from developing countries. GSP promotes sustainable development in beneficiary countries via trade with the United States. The programme is periodically re-authorized by Congress and is currently set to expire on 31 December 2020. GSP benefits 120 developing countries and territories and provides special, additional benefits for products from 31 least developed WTO Member beneficiary countries. Nearly 5,000 types of products are eligible for duty-free treatment under GSP, including most manufactured products (except apparel and footwear), agricultural and fishery products, consumer products, chemicals, minerals, and building materials (see <https://ustr.gov/issue-areas/trade-development/preference-programs/generalized-system-preference-gsp>).

6.2.2 African Growth and Opportunity Act

110. The African Growth and Opportunity Act (AGOA) expands US-Africa trade and investment, by promoting open markets, stimulating economic growth, and encouraging sub-Saharan Africa's integration into the global economy, while supporting progress toward good governance, poverty reduction, and respect for human rights through its eligibility criteria. Since the enactment of AGOA in 2000, the United States has worked closely with African governments, the private sector, and civil society stakeholders to help them make the most of AGOA's trade benefits. In 2015, the US Congress renewed the AGOA legislation for its longest extension period to date, through 2025. The US Government has actively promoted AGOA throughout Africa, developing trade capacity-building programmes to help African governments and both African and US firms identify and develop new market opportunities through AGOA (see <https://agoa.info/about-agoa/>). As of August 2019, 39 countries are eligible for AGOA: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Cote d'Ivoire, Djibouti, Eswatini, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Democratic Republic of the Congo, Rwanda (limited benefits), Sao Tome & Principe, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Uganda, and Zambia.

6.3 Programming from the US Trade and Development Agency

111. The US Trade and Development Agency (USTDA) connects the US private sector with infrastructure projects in developing and middle-income countries. USTDA also supports overseas infrastructure development by funding feasibility studies, technical assistance and pilot projects. These early-stage preparation activities lay the groundwork for projects to attract financing and reach implementation.

112. Recognizing the importance of trade to LDC growth, USTDA works closely with other US Government agencies as well as regional and multilateral development banks to develop trade capacity and apply private-sector solutions to development challenges around the world. As of 25 July 2019, USTDA has obligated or reserved USD 9.3 million in appropriated funds and USD 1.5 million in transfer funds in FY 2019 (from the US Department of State for the US-Africa Clean Energy Finance Initiative) in support of assistance activities that enhance increased trade and investment in LDCs.

6.3.1 USTDA Reverse Trade Missions

113. Another example of USTDA's commitment to promoting and encouraging technology transfer to LDCs is through reverse trade missions (RTMs). RTMs bring key foreign decision makers to the United States to observe the design, manufacture, and operation of US equipment and technologies in advance of major procurements. In FY 2019, USTDA conducted the following RTMs involving LDCs:

West Africa Smart Grid Reverse Trade Mission

114. This RTM took place from 25 November to 4 December 2018, and introduced officials from Côte d'Ivoire, Ghana, Senegal, and the West Africa Power Pool to US technologies that support smart grid and microgrid projects in West Africa. Delegates participated in meetings and site visits with US firms active in the microgrid and energy storage sectors and expressed great interest in US services and technologies.

Senegal Liquefied Natural Gas Reverse Trade Mission

115. This RTM took place from 29 September to 11 October 2018, and introduced public and private sector officials from Senegal's power sector to US liquefied natural gas (LNG) technologies, services, and equipment.

East Africa Cybersecurity Reverse Trade Mission

116. This RTM took place from 28 October to 8 November 2018, and focused on cyber solutions for commercial and public banks, as well as government financial institutions in East Africa. The RTM provided US firms with the opportunity to showcase their technologies, services, and best practices in cybersecurity and connected them with public and private sector representatives from Kenya and Rwanda. The international project sponsors expressed confidence that these US services and technologies would be able to address their needs.

6.4 Country Projects

6.4.1 USAID Mobile Solutions, Technical Assistance, and Research (mSTAR) – Liberia

117. USAID supports the Government of Liberia to roll out mobile salary payments for Ministry of Education and MOH workers. With mobile salary payments, these workers no longer need to leave their workplaces to receive their salaries. Since mSTAR launched, 3,724 education and 1,180 health workers have enrolled to receive mobile money salary payments in 14 counties. They have been able to save on average 33 hours and LRD 1,500 per month in picking up their salaries, which translates into increased income and more time attending to health and education facilities in their communities. The mSTAR programme in Liberia closed in March of 2018, but efforts on behalf of the USAID Mission in Liberia to support digital development remain.

Government Officials Praise mSTAR

- A Liberian government official said: "Currently in Liberia, because of bad road network and even the limited banking system in our country, health workers find it very difficult moving from one facility to another in receiving their salary so this is the reason why we thought it was wise to introduce another option for them, because there are a lot of challenges." "So, for us at the Ministry of Health, or as the government, we are very happy to embrace this process in order to reduce the challenges our health workers face."
- A Salayae District Health Office said, "Mobile money will be good for my employees because of the distance they cover to go for their salary."
- The Director of Pay at Benefits and Pension, Civil Service Agency "Mobile money process is what everyone should be gearing toward because it makes a lot sense...if you compare mobile money with any other mode of payment, anyone will choose mobile money."

Civil Servants Laud mSTAR

- A Nimba County Teacher said: "Mobile money transfer has drastically reduced our transportation problem for collecting our salaries."
- Another Nimba County Teacher "The problem of spending [too much] time at the bank to collect our salaries has been taken care of by mobile money salary payment."

6.4.2 USAID Development Innovations – Cambodia

118. USAID's Development Innovations enables innovation by building civil society's capacity to design and implement information and communications technology (ICT) solutions to accomplish their missions, and works to sensitize technologists and technology companies to the needs of Chief Security Officers (CSOs). Recent examples of grants include the development of smart phone app "Khmer Smart Keyboard" which enables Cambodians to type in Khmer, thus granting them wider access to information, and a grant to promote the use of cell phones for widely disseminating fees for public services, in order to counter corruption and promote transparency; and a grant to scale up deployment of a flood warning system called "Tepmachcha" that provides flood monitoring alerts to subscribers in the community on flooding, which is one way to help them mitigate the risk when the flood actually comes. 26,018 beneficiaries (including 163 CSOs) are using ICT-based solutions because of engagement with the US Government. Through this approximately USD 10 million program, 50 ICT solutions were developed and implemented, and reached more than 1.4 million direct beneficiaries, of whom 39 % were female. Key successes in FY 2019: developed and delivered fee-based training courses on video production and social media management to more than 500 trainees; supported 443 young girls, through the Technovation training program, to learn business, coding, prototyping, communication and teamwork skills. The programme is ongoing until 30 November 2019.

Doctor Praises USAID's ICT System

119. A Lake Clinic TLC medical team doctor said: "Since going from paper to digital, the new EMR has allowed the medical team to see more patients. The digital system allows us to take only five to ten minutes to complete service delivery for each patient. Before, it was 15 minutes or more:" <https://www.development-innovations.org/success-stories/transitioning-from-paper-to-digital-delivers-improved-health-services/>.

7 DEVELOPMENT PROGRAMMING AND INCENTIVES THROUGH PRIVATE SECTOR MODELS

120. Through the use of the public-private partnership (PPP) model, US development agencies have gained additional financial resources for development activities, as well as new technologies, intellectual capital and technical and managerial expertise that address emerging development challenges.

7.1 Development Assistance Programming from the Millennium Challenge Corporation (MCC)

121. The Millennium Challenge Corporation (MCC) is a US Government corporation that forms partnerships with some of the world's poorest countries, but only those committed to good

governance, economic freedom, and investments in their citizens. MCC provides countries with large-scale grants to fund country-led solutions for achieving its mission of reducing poverty through sustainable economic growth. MCC has approved over USD 13 billion in compact and threshold programmes worldwide that support projects in energy, agriculture and irrigation, anticorruption, business environment improvements, education, health, enterprise development, finance, land rights, trade and transport, and water supply and sanitation initiatives. MCC is currently implementing compact agreements or threshold programmes with seven WTO LDC Members: Benin, Liberia, Nepal, Niger, Senegal, Sierra Leone, and Togo. In the past, MCC has implemented compact and/or threshold programmes with Benin, Burkina Faso, Lesotho, Madagascar, Mali, Mozambique, Niger, Rwanda, Senegal, Tanzania, Uganda, Vanuatu and Zambia. Currently, MCC is developing new programmes with Burkina Faso, The Gambia, Lesotho, Malawi, and Solomon Islands (see <http://www.mcc.gov/>).

7.1.1 Togo Threshold Program

122. MCC's Togo Threshold Programme signed on 14 February 2019, includes a USD 20.5 million Information and Communication Technology (ICT) Project designed to improve citizens' access to high quality and affordable Internet and Communications Technology (ICT) services—both mobile phone services and Internet—by encouraging private sector investment, developing an independent regulatory regime, expanding service to underserved areas, and increasing the use of ICT among women and small businesses. Producer framework and power sector restructuring implemented by the Government of Malawi with technical assistance from the compact, more independent power producers are expected to enter the market. These challenging reforms have fuelled great progress in establishing a healthier power sector and expanding opportunity for the people of Togo. By strengthening this vital sector, the Government of Togo is building a foundation for the delivery of reliable electricity to more households, schools, and businesses to power the country's long-term economic growth and reduce poverty.

Prime Minister Lauds MCC

123. Togo Prime Minister said: "The two areas covered by the threshold program, namely land and information and communication technologies, are very important areas and part of a major reform programme initiated by our own country. We are delighted to have taken in hand these areas that you have identified, and which are part of our partnership namely the MCC partnership."

7.1.2 MCC Malawi Compact

124. Malawi's USD 350.7 million MCC compact was a single-sector programme designed to increase individual and business incomes and reduce poverty by improving the availability, reliability and quality of the power supply, expanding access to power, reducing the cost of doing business, and revitalizing Malawi's power sector. The compact was composed of three projects to increase the capacity, efficiency, and stability of the national electricity grid and the capacity and sustainability of hydropower generation at the Nkula A generation plant. The Government of Malawi also invested in new power generation capacity by completing the construction of the Kapichira II hydropower plant. Project activities aimed to enhance future expansion opportunities by strengthening sector institutions, enhancing sector regulation and governance, and creating an attractive environment for private sector investment. The compact was designed to reduce energy costs for businesses and households; improve productivity in the agriculture, manufacturing and service sectors; and preserve and create employment opportunities.

7.2 Global Development Alliance Model

125. Since 2001, Global Development Alliances (GDAs) have been USAID's premier model for public-private partnerships, helping to improve the social and economic conditions in developing countries and deepen USAID's development impact. As the private sector plays an increasingly critical role in shaping sustainable economic and social development, USAID continues to engage corporations, local businesses, financial institutions, investment firms, private foundations and others as core partners in our efforts to drive economic growth, reduce poverty, and improve business outcomes in developing countries. In addition to a strong and essential focus on development impact, GDAs have several other core characteristics, including but not limited to: 1). Based on Complementary Interests and Objectives; 2). Market-Based Approaches and Solutions;

3). Extensive Co-Creation and Shared Responsibility; and 4). Private Sector Contributions for Increased Impact.

7.3 Country Projects

7.3.1 Tworore Inkoko Twunguke – Rwanda

126. University of Tennessee Institute of Agriculture (UTIA), implementing partner of a USAID funded poultry Global Development Alliance "Tworore Inkoko Twunguke," provided technical training on broiler chicken production technologies and value chain management to five staff of Zamura Feedmill. The main purpose of the training was to build local capacity in broiler production technologies and strengthen extension services given to broiler producers. The five broiler technicians were trained in the following areas: training of trainers in broiler production, broiler chicken health, efficient use of feed, biosecurity for broiler chicken, environmental health, project monitoring, nutrition behaviour, and change communication. As a result of this activity, availability of extension services for broiler farmers in Musanze District have increased and as of March 2019, 262 broiler farmers in vulnerable households in Musanze District were trained and are applying broiler production technologies.

7.3.2 Sproxil Public Private Partnership – Mali

127. In order to protect the rural and agricultural communities being affected by counterfeit products, CLDP has been working with USAID Mali and the Government of Mali to implement best practices in the prevention of the movement and use of counterfeited agricultural and pharmaceutical products and to raise public awareness of the dangers of fake products. This has been done: a) through the extensive training of stakeholders including Mali's Customs, its judiciary, police and gendarmerie; b) through consumer education; and c) through the introduction of Mobile Product Authentication (MPA™) technology at the point of purchase, which will reduce the prevalence of counterfeit products in the marketplace and reduce their impact on agriculture and health of both livestock and human alike.

128. In this context, on 15-19 July 2019, CLDP organized a workshop in Bamako, Mali, to discuss, among other topics, the implementation of a national database administered jointly by Mali's Customs, Mali's Intellectual Property Office (CEMAPI) and Mali's Copyright Office (BUMDA), a database in which producers and importers can register marks to facilitate the seizure of counterfeited products.

7.3.3 Africa RISING's Large-scale Diffusion of Technologies for Sorghum and Millet Systems - ARDT-SMS - Mali

129. In a separate USAID grant and part of ICRISAT's ARDT-SMS project, a public-private partnership with US company Sproxil helped farmers distinguish quality inputs approved by competent authorities from counterfeits on the market. In Mali, as in many other African countries, there is a proliferation of counterfeit agricultural inputs and illegal pharmaceuticals and food products. This programme closed in April 2019 when the funds committed by USAID/Mali were fully spent. Through this partnership, Sproxil was able to execute six contracts which resulted in over 225,000 anti-counterfeit labels entering the marketplace. Sproxil also reports ongoing negotiations with an additional seven national and international companies with a potential for an additional 1.16 million product authentication labels. Challenges faced by Sproxil included the need for greater public awareness of the dangers associated with counterfeits and the need to raise greater attention on the part of the Government of Mali.

8 PROGRAMMES AND INCENTIVES RELATED TO AGRICULTURAL DEVELOPMENT AND FOOD SAFETY AND SECURITY

8.1 Agricultural Technology Transfer Programming from the USDA

130. To facilitate technology transfer, USDA uses contractual instruments such as Cooperative Research and Development Agreement (CRADAs), invention licenses and material transfer agreements, and supports public dissemination of research results. USDA pursues patent protection and licensing only when a private sector partner is needed for effective technology transfer.

Generally, this occurs when the complementary assets needed to manufacture, market, and distribute a new technology are provided by a commercial partner that must protect its investment. The USDA annual report on technology transfer provides details about the mechanisms used for technology transfer and types of technologies transferred (see <https://www.ars.usda.gov/office-of-technology-transfer/tt-reports/>).

8.1.1 Agricultural Technology Transfer Programming from the ARS

131. By sharing knowledge and technology through close collaboration with national and international research institutions to increase research capacity and speed technology development, ARS transfers technology and enhances international trade and diplomacy (see <http://www.ars.usda.gov/Research/docs.htm?docid=1428>).

8.1.2 Feed the Future Initiative (FTF)

132. FTF is the primary US global hunger and food security initiative. It supports country-driven approaches to address the root causes of hunger and poverty in target countries: Bangladesh, Ethiopia, Ghana, Guatemala, Honduras, Kenya, Mali, Nepal, Nigeria, Senegal, and Uganda. Through this initiative, the United States helps countries transform their agricultural sectors to grow enough food sustainably to feed their people and build resilience to shocks like drought or extreme weather. As a result, food aid can be used for unforeseen catastrophes rather than for chronic food insecurity or predictable cycles of drought or flooding. Technical experts in nutrition have been brought together from agencies including ARS and USAID, and from the private sector, to guide and coordinate efforts around food security (see <https://www.usaid.gov/what-we-do/agriculture-and-food-security/increasing-food-security-through-feed-future>). FTF catalyses technology transfer through agricultural-led economic growth and development by bridging the gap between innovative agricultural productivity solutions and sustainable market demand; improving the enabling environment for market led growth; and linking large commercial institutions with smallholder partners.

8.1.2.1 Rice and Diversified Crops – FTF Bangladesh

133. The FTF Bangladesh Rice and Diversified Crops (RDC) activity improves food security through facilitating systemic changes that increase rural incomes. RDC catalyses changes in market systems that promote a diversified farm management approach oriented to intensified rice production and/or diversification of higher-value nutrient rich crops in the FTF zone. Diversified crops that RDC will initially target include: maize, oilseeds (mustard, sunflower, ground nuts and sesame) and pulses (lentils and mung bean). The initiative targets:

- 500,000 farmers from the FTF zone in southwestern Bangladesh;
- 50% expansion of commercial outreach in the FTF zone of production and post-harvest related inputs and services; and
- 50% expansion of commercial procurement by collaborating companies in the FTF zone.

134. RDC will reach these targets through facilitative interventions (targeted technical assistance) that create scalable market system impacts that ultimately benefit rural households with the added value of expanding opportunities for women and youth. The USD 1.5 million Market Accelerator Fund will support strategic public-private partnerships with national and regional agribusinesses and business development service and facilitation providers. The Market Accelerator Fund will have a minimum leverage requirement of 1:1 but will be established on an individual basis where co-investments will be determined based on the level of facilitation intensity required. The project is ongoing until 2021 with a total investment of USD 24.5 million.

8.1.2.2 Digital Development for Feed the Future (D2FTF)

135. D2FTF is a collaboration between the USAID Global Development Lab and Bureau for Food Security to demonstrate how leveraging digital technology holistically and according to best practices can improve the cost effectiveness and development results of the US Government 's FTF Initiative. D2FTF is focused on four categories of digital tools, based on evidence of their impact: 1) precision agriculture (including sensor technology), 2) digital financial services, 3) data-driven agriculture, and 4) ICT-enabled extension. D2FTF is scaling the use of these tools in LDCs through various

methods of engagement including: technical assistance to FTF programs, capacity building for Feed the Future teams, and strengthening the knowledge base on best practices and is focused primarily on Feed the Future target countries.

8.1.2.3 Technology for Financial Inclusion for Rural Unbanked – Uganda

136. Feed the Future Youth Leadership for Agriculture (YLA) partners Ensibuuko Technologies, MobiPay AgroSys, and Mastercard Labs are increasing financial inclusion for Uganda's rural unbanked. Through support from YLA, Ensibuuko has enabled 165,000 youth, in 500 Village Savings and Loan Associations, and 50 Saving and Credit Cooperative Organizations to access financial services by using its proprietary cloud-based mobile phone micro-finance application. Mastercard Labs is working with YLA to digitize school fees payments and improve social and financial literacy skills for over 17,000 youth in 140 schools. Under this project, students in school savings clubs are able to track their savings and receive social and financial skills training. The software also enables parents to pay school fees in instalments, and school management to better track incoming payments and teacher attendance.

8.1.2.4 Feed the Future Tera Imbutu Nziza (Seed Activity) – Rwanda

137. This Activity is co-funded by USAID in Rwanda and Alliance for Green Revolution in Africa (AGRA) under the Partnership for Inclusive Agricultural Transformation in Africa (PIATA). AGRA is also responsible for its implementation in Rwanda. The goal of this 2019-2022 program, Tera Imbutu Nziza, is to sustainably increase agricultural productivity and incomes through increased production and commercialization of improved crop seeds. The increase in crop productivity is expected to increase smallholder farmers' incomes and promote food security. Tera Imbutu Nziza will achieve this goal via the three following objectives: 1) Increase the production and utilization of improved seeds; 2) Enhance the operational capacity of the domestic seed market system and 3) Support the operationalization of policies that regulate the seed sector. The expected achievements are:

- At least three improved varieties of Irish potato and four varieties of hybrid maize released;
- At least 40% increase in maize seed production yields; and
- At least 50% increase in Irish potato plantlets production; At least 25% of planted potato seeds acquired from the formal seed system (10% certified seeds and 15% quality declared seeds).

138. This first year focused on opening an office in Rwanda, staff recruitment, grant awards to local partners and service providers. The targeted results will be available starting FY 2020.

8.1.2.5 Feed the Future Ongera Ubucuruzi – Rwanda

139. Under the Ongera Ubucuruzi activity, technological interventions are used to improve the availability and transparency of trade process information for informal traders to reduce the time and cost to trade. The goal of the programme is to reduce in average clearance and transit time from lodgement to release and to improve efficiency in the delivery of standards and quality services. The average time to sort and grade coffee for export is expected to be reduced from 20 days per to seven days per container. Support for the development of Trade Community Information Systems (TCIS) includes:

- The development and implementation of a Single Window Information for Trade (SWIFT) portal for government trade agencies, which is expected to reduce customs processing time and costs and further improve the efficiency of the single window.
- The development and delivery of an interconnected East African Community-wide SMS reporting system connecting the current national SMS reporting systems to a regional network. This will bolster reporting by making it real time at the regional level. It will also facilitate communication between the various partner states' SMS systems.
- Automation of the current sorting and grading service the National Agricultural Export Board offers to cooperatives in order to reduce the time it takes them to process their coffee for export. USAID will authorize the purchase of a colour sorting machine and accessories to be connected to the bagging machines and additional hand sorting tables.

8.1.2.6 Feed the Future - Tanzania Mboga na Matunda

140. The purpose of Mboga na Matunda is to increase the competitiveness and inclusiveness of the horticulture sector, while improving the nutritional status of Tanzanians through: 1) scaling improved technologies and practices that lead to increased productivity of smallholders, including large numbers of women and youth, in targeted commodities; 2) scaling market system models able to reach large numbers of direct and indirect beneficiaries, including vulnerable populations, while increasing trade for targeted commodities; and 3) strengthening the overall capacity of the industry. Interventions encourage the adoption of innovations at the farm level, and efficient business models at the market level will create a more broad-based distribution of benefits all along the chain, including the smallholder, particularly women. The activity will run during 2017-2021 and will use a value chain approach to deliver good agricultural practices, basic technologies, and nutrition education to 40,000 rural households.

8.1.3 NASA/USAID SERVIR Program

141. A joint development initiative of the National Aeronautics and Space Administration (NASA) and USAID, SERVIR works in partnership with leading regional organizations worldwide to help developing countries use information provided by Earth observing satellites and geospatial technologies. The tools, products, and services that SERVIR creates empower decision makers to better address critical development issues including food security. SERVIR's food security thematic service area includes agriculture, rangeland management and pastoralism, and fisheries and aquaculture, particularly through the lens of adaptation to increasing environmental extremes. Key topics include linking agricultural productivity assessments, crop yield models, and use of climate scenarios for assessing impacts.

142. SERVIR connects space to village by helping developing countries use satellite data to address not only critical challenges in food security, but also in water resources, weather and climate, land use, and natural disasters. SERVIR develops innovative solutions to improve livelihoods and foster self-reliance in Asia, Africa, and the Americas. USAID brings the users; USAID's development expertise and field presence in 100 countries provides the connections and local partnerships with local, national and regional stakeholders. NASA brings the science; with 19 research collaborator teams located in 14 states across the United States, and more than 20 satellites with free and open data, NASA is focused on ways to leverage US science to replicate successes and innovate around the world, hand in hand with developing country organizations and scientists to leave behind increased technical capacity and societal benefit. SERVIR is improving awareness, increasing access to information, and supporting analysis to help people in West Africa, Eastern and Southern Africa, Hindu Kush Himalaya, the Lower Mekong, South America and Mesoamerica manage challenges in the areas of food security, water resources, land use change, and natural disasters. With activities in more than 45 countries and counting, SERVIR has already developed over 70 custom tools, collaborated with over 250 institutions, and trained more than 3,000 individuals, improving the capacity to develop local solutions. See <https://www.servirglobal.net/>.

8.2 Country Projects

8.2.1 Solar Power International Trade Show

143. US Embassy in Rwanda is recruiting Rwandan business delegations to attend the Solar Power International trade show in Salt Lake City, Utah and the Big Iron Farm show in West Fargo, North Dakota, in September 2019. A US Embassy employee will lead the two missions and organize business to business meetings.

8.2.2 Strengthening Household Abilities for Responding to Development Opportunities III (SHOUHARDO III), SHOUHARDO (meaning "friendship") – Bangladesh

144. The goal of SHOUHARDO III is to improve gender equitable food security, nutrition and resilience of vulnerable people within Bangladesh for 549,000 poor and extremely poor people by 2020. SHOUHARDO III is working in most vulnerable and food insecure villages of the char's areas in Gaibandha, Kurigram, Jamalpur and Serajganj districts and areas of Kishorganj, Netrokona, Habiganj and Netrokona districts. SHOUHARDO III will be implemented in partnerships with six local

NGOs. The Total Projected Investment is USD 80 million. To achieve the overall goal- SHOUHARDO III will undertake the following activities:

- Provide training and technical assistance to increase agriculture productivity and market access;
- Improve enabling environment and opportunities for on-farm and off-farm income generating activities and assets protection;
- Increase access to savings and finance through capacity building and linkages;
- Improve access and availability to nutritious food by providing supplementary food rations and production of nutritious food;
- Improve water sanitation and hygiene infrastructure and services through community capacity building, awareness and linkages;
- Improve household health, hygiene, and nutrition behaviour through social and behavioural change communication, and awareness;
- Provide training on disaster preparedness and help to improve disaster risk reduction capacities communities and committees;
- Develop community's capacity to climate-resilient livelihoods;
- Organize women and adolescent groups and strengthen their leadership and life skill capacity; and
- Organize training, community mobilizations, advocacy support to village development committees, local government official and service providers.

8.2.3 Food Security and Livelihoods Trust Fund (LIFT) – Myanmar

145. LIFT strengthens Myanmar's resilience, particularly of the poor and vulnerable groups, through work on livelihoods, agriculture, food security and nutrition. LIFT organizes its programming into four thematic areas: Nutrition; Financial Inclusion; Agriculture and Food Systems; and Decent Work and Labour Mobility, and currently has 70 activities countrywide through 61 partner organizations, many of which are US NGOs. Michigan State University is a LIFT strategic research partner working on data-driven policy analysis with both the public and private sectors. During 2010-2019, LIFT has reached more than 9.2 million people.

8.2.4 Stress Tolerant Rice in Vulnerable Environments – Myanmar

146. In order to meet the demand for quality rice seed that is adapted to local conditions (salt and water stress tolerant), IRRI implemented an activity to improve the availability of appropriate rice varieties to smallholder farmers. The activity worked with rice farmers to identify stress tolerant rice varieties (farmer selection). These varieties were scaled up via self-selecting seed growers. IRRI supported these growers to meet the quality criteria for selling seed, and arranged for the Department of Agriculture to inspect the seed and certify it. At the end of the activity, these seed growers were sustainably producing stress tolerant seeds for the local market. STRIVE ended in 2018.

8.2.5 Africa RISING – PHASE II – Tanzania

147. The Africa Rising Phase II activity collaborates with the Feed the Future Tanzania Nafaka ("Grains") activity to address persistent constraints to smallholder agricultural productivity and rural well-being in three focus regions (Morogoro, Iringa and Mbeya). This includes introducing resilient crop varieties, diversifying and increasing food supply and income sources, improving nutrition, and addressing soil and land degradation.

8.2.6 Private Sector Driven Agricultural Growth (PSDAG) – Rwanda

148. Through PSDAG, USAID assists and partners with private entities (seeds producers and multipliers) to produce quality high yielding Irish potatoes in a country where utilization of improved seeds is under 15%. USAID utilizes technology (e.g. GIS, databases, and other IT equipment and improved technologies) to help solve information constraints in the agriculture sector. PSDAG

supported the Government of Rwanda to develop Agriculture Land Information System (ALIS I), a web-based interface called the Investor Application ("Investor App") to enable the Ministry of Agriculture and private sector to identify public land parcels that could meet the demands of prospective investors. This web-based tool makes available data such as: spatial data layers (aerial photos, satellite data, land, suitability analysis, and cadastral data for agriculture land); current investments (irrigation schemes and related cost, and large substantial private agricultural investment); current land use and proposed land use; agricultural datasets; soil types; and rainfall.

149. In FY 2019, PSDAG supported the expansion of the functionality of ALIS I to ALIS II, which includes a simplified investor app for public use and the addition of a management application. ICT continues to be an important part of PSDAG's M&E system to facilitate ease in data collection and reporting results of project activities implemented by various partners. For example, PSDAG's partners use the Map and Track digital data collection system to register farmers and cooperatives as well as submit quarterly indicator results. PSDAG continued to use Map and Track to collect GPS coordinates of project activities implemented through various partners. PSDAG uses this information to generate ArcGis maps of project interventions. The live map can be found at <http://arcg.is/2cpeuEx>.

150. PSDAG also facilitated private sector partners to pilot new improved technologies, management practices, and business models to boost farmers' productivity with better plants and techniques. As a result of capital investments in equipment, technology and related technical assistance, most grantees have been able to expand to new markets, invest in international quality certifications and attract new investors. In FY 2018, 35,633 farmers and others have applied improved technologies or management practices as a result of US Government assistance.

8.2.7 Creating Jobs and Increasing Production Capacity of Agribusinesses – Uganda

151. The activity has provided various agro-processing technologies to its partners, with the view to create and or increase opportunities for over 10,000 youth to supply agricultural produce. For example, YLA Uganda has procured a solar dryer and hot pepper crusher for Anchor Foods Ltd., which has enabled the firm to diversify its chili products and recruit 1,500 youth as suppliers. Other technologies procured include a pasteurizer for a soy product company, a milling machine to process quality nutritious baby products, post-harvest technologies including maize shellers, moisture meters and grain-drying tarpaulins, a sealing and packing machine for blended pumpkin products, and a potato processing and drying machine.

8.2.8 HarvestPlus Iron Fortified Beans & Orange-Fleshed Sweet Potatoes for Income and Nutrition – Rwanda

152. USAID supported the production and dissemination of new iron bio-fortified beans seeds and orange fleshed sweet potatoes planting materials for improved nutrition and food security purposes in a country where stunting is at 39% of the population. In doing so, USAID partnered with the Rwanda Agriculture Board (RAB), private seed producers and multipliers, to promote, produce and disseminate improved seeds and planting materials. Improved vines of orange-fleshed sweet potato (OFSP) produced and distributed to 45,541 beneficiary households (HH), especially those with women of reproductive-age and children under 5, with the goal of improving incomes and nutrition; 533 metric tons of iron bio-fortified certified seeds produced and distributed to 59,763 farming households. This programme successfully concluded in FY 2019.

8.2.9 National Agricultural Technology Project Phase 2 (NATP-2) – Bangladesh

153. USAID's development objective of NATP-2 is to increase agricultural productivity of smallholder farms and improve smallholder farmers' access to markets in selected districts. The USD 8 million project implementation will occur over a six-year period in 56 of the country's 64 districts and in up to 270 of the country's 493 sub-districts (or upazillas). The project intends to deepen the interventions initiated under NATP-1 in existing upazillas and expand the geographic coverage to include new districts and upazillas. In compliance with Government policies and strategies, the primary target group for NATP-2 will be smallholder farmers (with special emphasis on women) who account for over 90% of the country's rural population and make up for the vast majority of Bangladesh's poor. NATP-2 includes an agricultural research component and three sub-sector components: crops, livestock, and fisheries. This approach is expected to lead to a better integration

between agricultural research, extension, and production. It is estimated that over 1 million farming households will directly benefit from project activities, including from improved extension services, stronger linkages with research, on-farm demonstrations of new technologies, capacity enhancement through training and skills development, as well as from co-funding productive assets. The project will terminate in 2021 and specific objectives of the activities so far are:

- Enhancing agricultural technology generation;
- Supporting crop development;
- Supporting fisheries development; and
- Supporting livestock development.

8.2.10 SEMEAR – Mozambique

154. SEMEAR is a five-year seed replication project that builds upon years of USAID support to applied agricultural research, technology transfer and related capacity building. The activity uses win-win public-private partnership approaches to disseminate improved legume seeds (more than 27 varieties of common bean, cowpea, groundnut, pigeon pea and soybean) and complementary crop management practices. Most of the new varieties are drought tolerant, resistant to endemic pests and diseases, have end-user preferred traits, and show significant increases in yields on farmers' fields. Under the project approximately 10,000 tons of seed will be replicated and distributed. The project team reached over 100,000 beneficiaries and facilitated adoption of improved technologies on over 193 thousand hectares of land. Female farmers were specifically targeted and encouraged to invest in seed production, host field demonstrations, and participate in training activities. The project is still on-going until 2020.

8.2.11 Aflasafe – Mozambique

155. The goals of USAID's Aflasafe project are to reduce aflatoxin (toxin in foods) levels in the Mozambican national diet and provide additional ways for farmers, regulators, input suppliers, and exporters to produce, trade and export groundnuts and maize in compliance with aflatoxin standards set by CODEX Alimentarius through the development of a bio-control product, aflasafe-Moz, for aflatoxin mitigation. However, with limited data available on aflatoxin prevalence in maize and groundnut in Mozambique, a strong initial focus will be on mapping the incidence of aflatoxin in both crops. To support the development and registration of aflasafe, which has already proved effective in Nigeria, a training programme of national agricultural extension workers in the public and private sector followed by widespread training of smallholders will be carried out. The introduction of aflasafe-Moz will be accompanied by the reinforcement of the use of existing aflatoxin reduction strategies with smallholders through a widespread training programme. Other project activities will be the upgrading and equipping of laboratory facilities at UniLurio in Nampula for mycological work and mycotoxin testing. The project closed in FY 2019.

8.2.12 Viable Sweetpotato Technologies in Africa (VISTA) – Mozambique

156. Research and development investments over the past years have generated improved sweet potato technologies that can increase nutrition, income and food security in Mozambique. VISTA Mozambique is designed to improve nutrition, food security and incomes of beneficiary households. Increased production and better utilization of nutritious orange-fleshed sweet potato (OFSP) varieties will especially benefit children under five years of age and pregnant and lactating mothers. OFSP is a proven, cost-effective, tool to reduce vitamin A deficiency and provide additional vital nutrients to vulnerable populations. From 2014 to 2019, approximately 74,000 households (55% female-headed) were reached with OFSP planting material of 15 improved varieties, covering an area of 4,600 ha. Also, VISTA noted that from 2014 to 2019 vitamin A consumption has increased in the intervention households compared to the control households. The project closed in FY 2019.

8.2.13 RAMA-BC – Mozambique

157. USAID's RAMA-BC program's overarching goal is to equitably increase agricultural productivity and climate resilience by increasing adoption of resilient agricultural technologies and practices. Over the life of the project, RAMA - will implement activities under four component areas, to increase the adoption of resilient agricultural technologies in the Beira corridor. Components one and two will

increase demand by raising awareness and demonstrating effectiveness of key technologies and practices, including improved seed, conservation agriculture (CA) practices, and water management and irrigation solutions. Components three and four will support supply-side improvements, leading to increased availability, accessibility and affordability of inputs and other technologies, and improved private-sector led advisory services. The project will be ongoing until 2021.

8.2.14 Ambassador's Water Expert Programme (AWEP) – Uganda

158. In support of the President's Global Water Strategy, the Ambassador's Water Expert Programme (AWEP) sends US hydrologists abroad to provide technical assistance for water security, by promoting sustainable infrastructure and services, science, technology, and information. The US Department of the Interior's International Technical Assistance Programme (DOI-ITAP) manages AWEP, and the US Department of States Bureau of Oceans and International Environmental and Scientific Affairs (OES) funds the programmes

159. DOI-provided expert trained 25 rural district participants from the Ministry of Water and Environment (MWE) how to use the Water Point Data Exchange software system - developed by US companies and provided to Uganda at no cost. This system enables MWE officials to use rural water data to make more informed water management decisions.

8.2.15 Water Resources Integration Development Initiative (WARIDI)

160. WARIDI promotes integrated water resources management and delivery of services across multiple sectors. The goal is to improve water resources management, access to water-supply, sanitation and hygiene services, and climate change adaptation in the Rufiji and Wami-Ruvu water basins. WARIDI works to: 1) increase utilization of sustainable multiple-use water, sanitation, and hygiene services; 2) strengthen governance for sustainable and resilient management of water resources and services under a changing climate; and 3) increase livelihoods through private sector investment opportunities for sustainable water services, agriculture, and natural resources management.

8.2.16 Center of Excellence on Sustainable Agricultural Intensification and Nutrition (CE SAIN) – Cambodia

161. The objectives of CE SAIN are to coordinate and leverage Innovation Labs and other SAIN activities, build the human and institutional capacity of the Royal University of Agriculture, and to establish technology parks to highlight high-potential technologies and strategies to sustainably intensify smallholder farming systems. Funded by USAID, the USD 2.5 million programme has six US Government partners. iDE Cambodia, IRRI, University of Tennessee, Kansas State University, and World Vegetable Cambodia have demonstrated their agriculture technologies in CE SAIN Technology Parks. Key successes of the activity in FY 2019:

- Six US Government partners including iDE Cambodia, IRRI, University of Tennessee, Kansas State University, and ATEC private sector have demonstrated their innovative technologies in CE SAIN Technology Parks;
- Improved communication, coordination and knowledge sharing between six US universities, US partners, four private sector companies and other projects within Cambodia;
- Provided 24 scholarships (11 females), eight PhD, eight MSc, and eight BSc Degree scholarships;
- Provided six research grants to Royal University of Agriculture (RUA) faculties to increase lab activities, teaching materials and tools;
- Provided 33 lecture series to 310 RUA's students and faculty members; and
- 1,270 people from USG partners, students, researchers, and farmers visited CE SAIN's Technology Parks.

8.2.17 USAID| REGIS-ER Land Tenure Security Sub – Award

162. Land Tenure Security and Conflict Management component of USAID|REGIS-ER activity aims to strengthen partnership with the National Land Observatory (ONF-BF) and governmental structures in charge of land tenure issues to secure land tenure (focusing on women-owned sites and pastoral spaces). The objective is to provide technical assistance to the Government of Burkina in the establishment, staffing, and effective operation of Rural Land Tenure Service (SFRs) offices in the communes and village land tenure committees to improve arbitration and mitigation of conflicts arising from agriculture, pastoralism, mining and other matters arising due to land issues through the use of the USAID Mobile Application to Secure Tenure (MAST). Based on lesson learned from the pilot phase and the five initial communes targeted, USAID is extending the use of MAST tool in 12 additional communes under a direct award to ONF-BF for year 2020.

8.2.18 Integrated Land Resources Governance Programme (ILRG)

163. USAID's ILRG program, managed by E3's Land and Urban Office in Washington, is designed to provide technical assistance to improve land and resource governance, strengthen property rights, and build resilient livelihoods as the foundation for strong economic growth, stability, and self-reliance. ILRG's activities in Zambia are focused on building on momentum from previous USAID investments in supporting transparent customary land documentation and governance through the Tenure and Global Climate Change (TGCC) project that was implemented from 2013 to 2018. The ILRG programme will institutionalize customary land documentation through policy and law; facilitate cooperation among ministries on rural development issues through participatory, spatial data collection processes; and pilot community-based natural resource management approaches that reduce conflict, increase biodiversity and carbon sequestration, and generate income for rural communities. The programme targets are the following:

- Improve District Governance and Integrated Natural Resource Planning;
- Strengthen Natural Resource Management;
- Enhance Household Land Documentation, Administration, and Use.

8.2.19 USDA Millet Value Chain Project – Senegal

164. During 2019-2021, USDA's millet value chain project in Senegal transfers expertise and know-how in the agriculture sector to improve local processing of millet. USDA's Food for Progress millet value chain programme began in Fiscal Year 2014 and aims to work with over 19,000 millet farmers over the course of the award, which will end in 2019. This USD 14 million award has focused on increasing the agricultural productivity of the millet value chain by: 1) developing processing systems; 2) building capacity of producers to improve production and quality; 3) training producers and processors in improved production techniques, post-harvest handling, marketing, and seed production; and 4) providing grants and loans for equipment and inputs. This programme also seeks to expand the trade of millet by developing public-private relationships, facilitating trade relationships, researching export opportunities, building agricultural extension capacity, and helping to address food safety issues and requirements.

9 PROGRAMING AND INCENTIVES RELATED TO ENERGY DEVELOPMENT

9.1 Private Financing Advisory Network (PFAN)

165. PFAN is a multilateral public private partnership initiated by the Climate Technology Initiative and the United Nations Framework Convention on Climate Change (UNFCCC). It identifies and nurtures promising, innovative clean and renewable energy projects by bridging the gap between investors, clean energy entrepreneurs and project developers. PFAN mobilizes private sector expertise in financing climate-friendly projects and technologies to screen business plans and select projects that are economically viable, as well as environmentally and socially beneficial. For the selected entrepreneurs and businesses, PFAN provides guidance in areas such as economic feasibility, project structure, investment and financing, preparation of the business plan, and introductions to investors. PFAN's partners and donors include: Australia's Department of Foreign Affairs and Trade (DFAT); the Ministry of Economy, Trade and Industry (METI), Japan; the Norwegian Ministry of Foreign Affairs; the Swedish International Development Cooperation Agency (SIDA); and the United States Agency for International Development (USAID). PFAN is hosted by

the United Nations Industrial Development Organization (UNIDO), and the programme is executed in collaboration with the Renewable Energy and Energy Efficiency Partnership (REEEP).

9.2 Regional and Country Energy Initiatives

166. US regional energy development programming focuses on sub-Saharan Africa and South Asia. US agencies work closely with multilateral development banks, other US Government agencies, the private sector, and local banks or financial institutions to engage on regional energy collaboration programs.

9.2.1 Southern Africa Energy Programme (SAEP)

167. USAID's SAEP works to advance energy policy and regulatory reform, and accelerate investment to increase power generation and access to electricity throughout the region. Through strengthening the enabling environment and facilitating public and private transactions, SAEP leverages the momentum of private investment to help focus SAEP's resources in ways that best support the reform of national and regional energy ecosystems. At the same time, SAEP produces the tangible results needed to create a sustainable cycle of additional reforms, increased investment and continued political will. SAEP addresses the key constraints to investment in the Southern African energy sector by: improving regulation, planning, and procurement for energy; improving commercial viability of utilities; improving regional harmonization and cross-border trade; demonstrating and scaling renewable energy and energy efficient technologies and practices; and increasing human and institutional capacity.

9.2.2 South Asia Regional Initiative for Energy Integration (SARI/EI) – Bhutan, Bangladesh, India, and Nepal

168. USAID's SARI/EI focuses on supporting greater regional energy integration by promoting cross-border power trade in South Asia through harmonization of policy, legal, and regulatory mechanism; advancement of transmission system interconnections; and establishment of a South Asia Regional Electricity Market. These will be catalysed through three inter-governmental task forces (TFs) established under the programme with representation from national governments, power transmission utilities, regulators, and other relevant representatives from participating South Asian countries.

169. The project conducted focused analyses to support regional frameworks and institutions to support power trade in the region such as the open access guideline, compendium of energy sector regulations in the region, model framework for trading license regime and guidelines for grant of trading license, design of market and rules for South Asia Power exchange, a mock simulation of regional power exchange to assess its feasibility, and built the capacity of stakeholders from Nepal, Bhutan and Bangladesh to work on an exchange platform. The programme also modelled the benefits of power trade in the Bhutan-Bangladesh-India and Nepal (BBIN) region and partnered with local think tanks in Bangladesh, Nepal and Sri Lanka to create a discourse around benefits of regional power trade. It engaged regional institutions such as South Asia Association of regional Cooperation (SAARC), South Asia Forum of Infrastructure regulators (SAFIR) to build the capacity of energy regulators and get them on a common platform to discuss harmonization of regulations and legislations. The programme partnered with other regional institutions such as Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) to document and disseminate the status of energy sector in their member countries through an energy outlook 2030. The programme also supported a political-economical study on linking of South Asia with South East Asia.

170. Going forward, the programme will focus on moving the region from bilateral to multi-lateral/tri-lateral power trade by developing institutional set up for coordinated transmission planning, development of common power system operating procedures, and exchange based platform. It will continue to work with regional institutions for pushing the agenda of regional power trade. SARI/EI will also engage national and regional industry associations to establish investment forum to address barriers and promote investments on regional energy projects.

171. SARI/EI will continue to support two key bilateral power trade initiatives i.e. India-Nepal and India-Bangladesh. The programme will prepare the institutional capacity of the Government of Nepal

and Bangladesh to support synchronous grid interconnection, undertake power-trading, and participate in Indian power exchange. The capacity building focuses on sharing of best practices between private-and-public sector system and transmission operators, as well as electricity traders within South Asia and the United States. SARI/EI will also focus on knowledge exchange and best practises in the region especially on renewable energy development and energy efficiency.

Foreign Government Official Applaud SARI/EI

172. The Secretary of Ministry of Energy, Water Resources and Irrigation of the Government of Nepal, in a workshop on Power Trading through Power Exchange in Nepal, thanked USAID for its continued support in the region through its SARI/EI programmes He mentioned of several positive changes including new and modification of policies and regulations aimed to support cross-border power trade, which can be attributed to SARI/EI.

9.2.3 MINIGRID project: Feasibility study and pilot project– Madagascar

173. The USTDA granted funds to US firm FLUIDIC ENERGY Inc., which partners with HENRI FRAISE FILS & CIE - Madagascar to undertake the feasibility study to develop solar PV minigrids with battery storage for remote area off-grid. The project also includes participation from additional US companies, including Caterpillar (Peoria, IL) and First Solar (Perrysburg, OH). The pilot project was installed in Belobaka (210km from Antananarivo), and local staff have managed the network and equipment well due to initial capacity building training. Other villages have not yet had minigrids installed under the programmes

9.2.4 Power Africa – Djibouti

174. USAID/DJIBOUTI supported the Djibouti Office for the Development of Geothermal Energy (ODDEG) in capacity building training for drilling geothermal fields. Twenty-six staff from ODDEG have received a five-day training on drilling techniques led by experts who have years of experience in drilling. The skills acquired through this training will be used for the drilling of eight geothermal production wells at Lake Assal (Northern Djibouti) which will generate clean energy for the country. However, the Ministry of Energy informed USAID/DJIBOUTI that it did not approve the implementation of project and the project was terminated.

9.2.5 First Solar and Neon – Zambia

175. USAID and Department of State supports and OPIC finances a solar project from American firm First Solar and French firm Neon. The project supports the development of a 47.5-megawatt (MW) solar photovoltaic power plant. The project will be Zambia's first utility scale solar plant. The solar plant was formally commissioned and went online in FY 2019, and is Zambia's first utility scale solar plant.

9.2.6 Rural Electrification and Renewable Energy Development (RERED II) Programme – Bangladesh

176. RERED II aims to support the Government of Bangladesh's vision of providing universal access to electricity by 2021. USAID's contribution to RERED II focuses on the development of solar renewable energy in rural areas focusing on solar home systems, solar irrigation pumps, micro and mini grid schemes and captive plants based on renewable energy. The estimate for the project is USD 8 million.

9.2.7 USTDA Award to eleQtra – Mozambique

177. The USTDA awarded a grant to Power developer eleQtra for a feasibility study to assess the viability of a 120-megawatt wind power plant, developed in two phases of 60 MW each, located in southern Mozambique. This will be the first Wind Power project in Mozambique, creating the benchmark for this industry in this country. The value of the grant was USD 1.1 million. The feasibility studies are underway and are expected to be completed in 2019.

9.2.8 SPEED+ - Mozambique

178. USAID's technical assistance to the Ministry of Energy and Mineral Resources (MIREME) established precedent for successful transactions and clarify and secure the rules for private power producers to attract increased investment in independent grid-connected generation. Expected outputs include improved ability to successfully conclude agreements such as Concession Agreements, to manage the renewable energy feed in tariff regime, and to clarify the legal framework for independent power producers. Speed+'s expected outcome is a stronger energy sector with more megawatts generated at lower prices to consumers. The project will be ongoing until 2020.

9.2.9 Climate Services for Agriculture – Rwanda

179. Developed by IRI, a member of the CGIAR (a consortium of research agricultural research institutions) and funded by USAID in Rwanda, Maproom is a collection of maps and other figures that monitor climate conditions at present and in the recent past. With USAID support, Rwandan authorities now employ a tool that facilitates various weather-related analysis and forecasting. Maproom makes the following data available online:

- Historical climate information (daily precipitation analysis, historical onset and cessation date, historical seasonal totals);
- Historical and forecast information for agriculture; <http://maproom.meteorwanda.gov.rw/maproom/Agriculture/#tabs-1>; and
- Under development is the Water Balance Maproom, which will be used to monitor crop yield and forecast food security in Rwanda <http://maproom.meteorwanda.gov.rw/maproom/Agriculture/#tabs-2>.

180. This tool has helped disseminate data derived from merging weather/climate data from physical stations and surface weather observation data from satellites to fill the gaps in Rwanda's historical weather data records. Now, Rwanda has historical weather data for more than 60 years. The plan is to make weather and climate Information accessible to all government institutions as well as private institutions. Because the project ends in December 2019, the implementing partner has already secured additional funds from WISER, a DFID funded project, to continue supporting the development of new features.

9.2.10 Minigrids Feasibility Study – Sierra Leone

181. USTDA awarded in FY 2019 a grant to the Ministry of Energy of Sierra Leone for a feasibility study to provide the technical and financial analysis to implement approximately 45 minigrids in Sierra Leone. USTDA's study will specifically support a private-sector-led standard model for off-grid development and serve as a model for West African countries to replicate. USTDA's study will also help increase energy access for more than 8,000 rural households and several hundred businesses in Sierra Leone.

9.3 Programme for Scaling-Up Renewable Energy for Low Income Countries

182. SREP focuses on deploying renewable energy to increase energy access in several developing countries, including LDC pilot countries Bangladesh, Benin, Cambodia, Haiti, Lesotho, Madagascar, Malawi, Mali, Nepal, Rwanda, Sierra Leone, the Solomon Islands, Tanzania, Uganda, Vanuatu, Yemen, and Zambia. To date, USD 264 million is approved and under implementation for 23 projects and programs, expecting approximately USD 1.9 billion in co-financing from other sources.

10 PROGRAMING AND INCENTIVES RELATED TO ENVIRONMENTAL PROTECTION

183. Since 2009, the United States has engaged in a wide range of activities with developing countries, with the goal of promoting the development and deployment of climate-friendly technologies and practices, and responsible management of the environment and environmental resources.

10.1 US Programme on SilvaCarbon

184. SilvaCarbon is a technical cooperation programme under the Global Climate Change Initiative, and a US contribution to the Global Forest Observation Initiative of the intergovernmental Group on Earth Observations. SilvaCarbon works with 24 tropical forested countries to build capacity in measuring, monitoring, and reporting changes in forest and terrestrial carbon, and collaborates globally to identify, test, and disseminate good practices and cost-effective technologies. SilvaCarbon draws on the strengths of cooperating US Government agencies including the Department of State, the Environmental Protection Agency, NASA, USAID, USDA Forest Service (USFS), and the US Geographical Survey (USGS) of the Department of Interior, as well as variety of non-governmental, academic, and industry partners (see www.silvacarbon.org/).

185. SilvaCarbon advances low-emission development and increases transparency through technical assistance and training on the use of free and open-source tools and methods for accurately tracking land use change. For example, in the first half of FY 2018, working with Google Earth Engine, Boston University, Oregon State University, USFS and USGS, SilvaCarbon delivered customized training to seven countries in Latin America and Africa to support the uptake of state-of-the-art forest monitoring technologies tailored to country needs. SilvaCarbon has also contributed to the development and dissemination of the Collect Earth Online forest monitoring platform, and facilitated the uptake of the Agriculture and Land Use National Greenhouse Gas Inventory Software tool in numerous countries including Viet Nam, which has officially adopted the tool at the national level. SilvaCarbon has worked with counterparts in Nepal and Cambodia to update national forest and land cover maps to increase accuracy and transparency and meet the needs of multiple users and stakeholders.

Nepal and the Democratic Republic of the Congo Government Officials Praise SilvaCarbon

186. A representative of the Nepal Ministry of Environment noted that SilvaCarbon has contributed significantly to the development of new skills and technologies in Nepal, and played an important role in enhancing the capacity of Nepali technicians in forest carbon measurement, monitoring, and reporting and REDD+.

187. A representative of the Democratic Republic of the Congo Ministry of the Environment and Sustainable Development noted that SilvaCarbon training has benefitted technical staff and raised the level of scientific knowledge in soil analysis, carbon capitalization, and forest zoning.

10.2 International Forestry Management Programming

188. US Forest Service (USFS) promotes capacity building for sustainable forest management and biodiversity conservation internationally by linking the skills of the field-based staff with partners overseas. These activities cover a wide range of topics, many of which are co-funded with the Department of State and USAID (<http://www.fs.fed.us/about-agency/international-programs/program-topics>). This work involves a variety of partners, including intergovernmental organizations, international research and conservation organizations, and other environmental NGOs. USFS scientists and other agency technical experts contribute specialized technical assistance to existing projects, conduct training, facilitate research, and publish technical guides to promote sustainable forest management and biodiversity conservation. These activities encompass many of the most pressing forestry issues, including fire management, climate change adaptation and mitigation, forest monitoring and remote sensing, forest health and invasive species, migratory species and habitat management, watershed management, protected areas and ecotourism, and sustainable forestry practices.

10.3 USFS-International Union of Forest Research Organizations Partnership

189. USFS and the International Union of Forest Research Organizations (IUFRO) signed a multiyear partnership agreement in 2014 to enhance the contribution of forest science to international forest-related policy processes and implementation of sustainable forest resource management, particularly in economically disadvantaged countries. The agreement achieves technology transfer through strengthening national forest research systems in Africa, Asia and Latin America, particularly through capacity development, assistance to scientists, and institution-building. Further, the initiative supports IUFRO's global initiatives on mobilizing and disseminating forest-related information through Internet and ICT-based channels.

(see <http://www.fs.fed.us/research/partnerships>). IUFRO has a long history of providing support to the forest science community in Africa, Asia and Latin America. IUFRO implements capacity building activities through its Special Programme for Development of Capacities (IUFRO-SPDC). These activities strengthen research programmes and enhance the development and implementation of sound forest management policies and practices through the generation and dissemination of quality-research results on forests and trees. IUFRO-SPDC's capacity-building activities concentrate on assisting forest research institutions in partner developing countries to effectively contribute to shaping national and local forest policies and sustainable forest management systems (see <http://www.iufro.org/science/special/spdc/>).

10.4 Supporting Information Services and Knowledge Dissemination

190. The United States supports the provision of information services to scientists and policymakers in developing countries through the Global Forest Information Service (GFIS). GFIS provides a framework for sharing forest-related data and information through a single gateway and promotes the dissemination and sharing of forest information and knowledge by developing a common information exchange platform, building capacity, and enhancing partnerships among forestry information providers and users (see <http://www.gfis.net/>).

10.5 Country Programmes

10.5.1 USFS Inter-Agency Agreement – Zambia (EDEV)

191. This activity supports USFS assessments to identify priority issues that address climate change, biodiversity, forestry and other natural resource management. Technical assistance to the Government of Zambia (GRZ) includes training in cartography, use of Geographic Information Systems software for analysis, and in remote sensing. Ongoing targets are to: facilitate short-term technical assistance to the Zambia Environment Management Agency (ZEMA) through embedding an Environment Advisor to help with Greenhouse Gas Inventory reporting; provide technical assistance to the Zambia Forestry Department (ZFD) by embedding a REDD+ and Forestry Advisor to support forest monitoring, reporting, and verification systems; provide short-term technical assistance on forest management, including workshops for provincial and district staff, and fire management training to enhance their capacity; facilitate technical expertise in GIS and forest boundary delineation as well as procurement of topographic maps for all the nine districts at the Forestry Department in Eastern Province.

192. In FY 2019, USAID embedded both the Environment Advisor in ZEMA and the REDD+ and Forestry Advisor in ZFD. The Advisor to ZEMA has already begun working across the Zambian government to support the compilation, analysis and reporting of the greenhouse gas inventory, and the development of the Nationally Determined Contribution Implementation Plan. Working with the ZFD, USAID supported numerous workshops and trainings that increased ZFD capacity on boundary delineation and forest cover change mapping, as well as for fire management. The Advisor has also led efforts on emission factor development.

10.5.2 Keo Seima Conservation Project - Cambodia

193. USAID's Keo Seima project aims to improve biodiversity conservation and ecosystem health in the Eastern Plains Keo Seima Wildlife Sanctuary (KSWS) and its corridors. This includes support to local authorities to monitor law enforcement effectiveness and adapt management using Spatial Monitoring and Reporting Tool (SMART) GIS technology. Also, the project establishes sustainable financing mechanisms, such as Payment for Ecosystem Services and sale of carbon credits, and sustainable intensification of agriculture. The key successes of the activity in FY 2019 are the following:

- Revealed 762 hectares of deforestation inside KSWS using remote sensing analysis from GIS technology;
- Discovered second otter species in KSWS, confirmed by camera trap photo;
- Completed a Non-Timber Forest Product (NTFP) value chain assessment in seven villages in KSWS. Facilitated dialogue between private companies and the Community Protected Area (CPA) management committee and bamboo entrepreneur group to match bamboo demand and supply, and form a long-term strategy for bamboo in the CPA;

- Improved facilities for ecotourism at Jahoo Gibbon Camp and conducted hospitality training to community members; and
- Supported Andoung Kraloeng in the rejection of an application by outsiders to clear land within their indigenous communal land title (ICT).

10.5.3 Africa and Middle East Region

194. In the Africa and Middle East Region (AME), the US Forest Service (USFS) works in over 30 countries to address natural resource challenges in the least and most forested countries in the world. USFS partners with a suite of organizations including US Government entities (USAID, State Department, Department of Defence), host country governments, academic institutions, and non-governmental organizations to promote technology transfer and the exchange of best practices to enhance natural resource management, economic development, and improve community resilience.

195. Specifically, the AME region provides targeted, long-term technical support and technology transfer to our partners on monitoring, reporting and verification for greenhouse gas emissions accounting for agriculture, forests and other land uses including systems development, land cover mapping, and land use change analyses. USFS also supports broader US Government efforts at mitigating environmental crime in the region by providing training on law enforcement and investigations, and wood identification techniques and technologies for countering illegal logging. The Agency draws on its deep domestic expertise to assist countries in the AME region with landscape restoration - from seed sourcing and management, to cutting edge science/technology for nursery/plant production, to best practices for planning and implementing restoration projects at different scales. Across Africa and the Middle East, USFS helps host country governments provide adequate support to local populations during and after fire and all-hazard disasters by supporting institutional strengthening and capability for national and on-site incident management, emergency operations and coordination, firefighting, post-incident response, and pre-preparedness, using USFS systems and technologies adapted for host-country contexts. Lastly, the Agency assists partners with watershed management at different scales, sharing tools and technologies from the US that can be adapted to help partner countries include landscape-level water conservation as part of water security strategies.

10.5.4 Climate Fellows (CF) Programme – Democratic Republic of the Congo

196. The CF programme provides technical assistance to the Government of the Democratic Republic of the Congo for sustainable management of forest resources and national efforts to reduce emissions and enhance removals of greenhouse gases in the forestry and other land use sectors. A CF (technical expert) has been embedded within the Ministry of Forest Economy and provides training and capacity building to technical staff of the National Centre for the Inventory and Management of Forest and Wildlife Resources (CNIAF) and the Directorate General of Sustainable Development in the Ministry of Tourism and Environment. Specific areas for capacity building and training include: remote sensing, interpretation of satellite images, forest inventory and management, Geographic Information System (GIS), Greenhouse gas (GHG) accounting and other relevant technical and policy processes/issues related to the sustainable management of forests, avoided deforestation and forest degradation, conservation and enhancement of forest carbon stocks (afforestation and reforestation).

10.5.5 High Level Policy Dialogue Agricultural Biotechnology (HLPDAB) and APEC Two Part Workshop: Agricultural Biotechnology Regulatory Cooperation and Genome Editing – Myanmar

197. USDA's workshops involve discussions about the current environment of agricultural biotechnology including issues and concerns along with the successes and the uses of the technology in response to climate change, scarce resources and food security. In Myanmar, government officials are responsible for agricultural biotechnology.

10.5.6 Lacey Act – Illegal Logging – Myanmar

198. A US NGO, The Nature Conservancy (TNC), collaborates with the Thailand-based Center for Peoples and Forests on a Myanmar initiative as part of the Responsible Asia Forestry and Trade

program, partially funded by the Department of State (a small part of a larger grant to TNC of USD 700,000 from 2013-2018). TNC recently concluded a multiyear in-depth study of Burmese production and trade cycles and forestry sector reforms to identify actions that can stabilize and restore Myanmar's production forests, with a focus on multi-stakeholder processes and civil society engagement. While the grant has concluded, TNC continues to work with stakeholders in Myanmar. US agencies, especially the US Department of Justice (DOJ), are actively exploring opportunities to build the capacity of Burmese counterparts through training on law enforcement related to natural resources, with a focus on forest crimes. DOJ (Environment and National Resources Division ENRD) organized a workshop to Combat Illegal Timber Trafficking in March 2019 and another workshop in Mandalay in September. The workshop included judges and prosecutors, with UAGO, Forest Department, the Supreme Court, and Forest Police sharing their experiences.

10.5.7 Community Wildlife Protection (CWP) Project

199. The CWP Project is implemented over 2019-2021 in Mumbwa and Namwala Game Management Areas (GMAs), two of the nine Game Management Areas that together with the Kafue National Park form the Greater Kafue Landscape (GKL). The aim of the project is to increase community action for combating poaching and other illegal activities in order to reduce poaching and increase conditions for communities to realize benefits from wildlife-based enterprises such as sustainable tourism, hunting and game ranching conservation, thereby contributing to the broader effort to conserve the GKL. The project targets are:

- Strengthen the Namwala and Mumbwa CRBs to improve the effectiveness and efficiency of Law Enforcement Operations and curb wildlife crime in the area;
- Create an Intensive Patrol Zone (IPZ) of approximately 1,700 km² in the western section of the Mumbwa GMA and the north-western Section of the Namwala GMA for increased anti-poaching operations; and
- Improve Fire Management in Mumbwa and Namwala GMAs.

10.5.8 Strengthening Earthquake Resilience in Bangladesh (SERB) – Bangladesh

200. USAID's SERB programme is implemented through a Grant Agreement with Asian Disaster Preparedness Center (ADPC). The project aims at earthquake capacity building of the Government of Bangladesh. This capacity building will be accomplished by enhancing the capacity of the hospital management staff (doctors, nurses, administrative staff, et al.) in 25 public hospitals in the cities of Dhaka, Chittagong, Sylhet, Gazipur, Mymensingh, Narayeangonj, Manikgonj, Rangpur, Tangail, Cox's Bazar, Bandarban and Rangamati for preparedness to manage mass casualties after an earthquake. Additionally, the capacity of Fire Service and Civil Defence (FSCD) will strengthen by providing equipment to volunteers for conducting search and rescue operations. The total projected investment for the programme is USD 1.9 million, and the programme will train 660 hospital personnel and will provide 171 sets of rescue and search equipment to FSCD. The programme will conclude in November 2019 and is in partnership with Asian Disaster Preparedness Center, Ministry of Disaster Management and Relief, Directorate General of Health Services, and Fire Service and Civil Defence Directorate.

10.5.9 Coastal City Adaptation Project – Mozambique

201. The goal of the Coastal City Adaptation Project (CCAP) was to increase climate resilience in selected Mozambican coastal cities. In partnership with the United Nations Human Settlements Programme (UN Habitat) and USAID, CCAP worked in the cities of Pemba and Quelimane to construct 24 model houses that are low cost, made of local materials, and resilient to high winds, flooding, and other climate related natural hazards. A key component of the activity was to disseminate the construction techniques to home builders, students, designers, government officials, and other decision makers across Mozambique. The project closed in FY 2019.

10.5.10 USAID Wildlife Sanctuary Support Programme – Cambodia

202. USAID's Wildlife Sanctuary Support Programme promotes biodiversity conservation and ecosystem health in the Phnom Prich Wildlife Sanctuary (PPWS), Srepok Wildlife Sanctuary (SWP), and their extended landscapes. The programme consists of: monitoring population and density of

ungulate species such as banteng, wild pig, and muntjac; monitoring deforestation trends and challenges in managing and preserving PPWS and SWS; ensuring timely responses to threats impacting SWS and PPWS, such as poaching and logging; and providing support to provincial authorities for effective law enforcement and Protected Area management, including patrolling with forest rangers and compiling case evidence for courts. The key successes in FY 2019 are the following:

- 217 checkpoints set up to strategically and effectively monitor and halt illegal forest and wildlife activities;
- A line transect survey in PPWS and SWS was conducted in 2018, which revealed a decrease in population size of 66% for banteng and 39% for muntjac, and an increase of 5.7% for wild pig compared to 2016 data; and
- An acoustic survey of the yellow-cheeked crested gibbon was undertaken and a comprehensive survey finding report is expected and will be shared with the relevant stakeholders by December 2019.

10.5.11 Environmental Governance Reform for Sustainable Development (EGR) – Cambodia

203. The objective of EGR is to assist the Royal Government of Cambodia to facilitate environmental governance reforms and create an enabling policy and legal environment for conserving and protecting environmental resources at risk. This will be achieved through operationalizing a new structure of the Ministry of Environment (MOE), a new National Council for Sustainable Development (NCSD) Organizational Structure and Authorities, enacting a new Environmental Code, and developing and operationalizing integrated ecosystem mapping. The total estimated cost is USD 3.5 million and funding is from USAID. Key successes of the activity in FY 2019 are the following:

- Installation of a new Human Resource Management system is underway to increase accountability for staff performance;
- Produced the final technical draft of the Environmental and Natural Resources Management Code and submitted it to the Ministry of Environment in April 2018. The MOE and NCSD are leading inter-ministerial coordination in preparation to submit the Code to the Council of Ministers and National Assembly for enactment;
- Ecosystem mapping: Created a Decision Support System (DSS), GIS portal which will assist decision makers in visualizing and identifying areas suitable for specific uses, such as areas for (i) intensified conservation and protection efforts, (ii) community tenure, and (iii) developmental activities; and
- Produced and endorsed a Strategy and Action Plan for the MOE GIS department to expand the application of the data in decision making using the DSS.

11 PROGRAMMING AND INCENTIVES RELATED TO HEALTH

204. Health research through biomedical and behavioural funding activities of US agencies, including the National Institutes of Health (NIH), USAID, and Centres for Disease Control and Prevention (CDC), have contributed to technology transfer and research capacity strengthening in many LDCs. For new technologies developed by US scientists, NIH licenses biological materials and/or patent rights, to institutions that can bring products to the market in or for LDCs.

11.1 National Institutes of Health (NIH)

205. In FY 2019, the NIH invested in over 1,550 research projects in low- and middle-income countries (LMICs) countries most of which were led by US Principal Investigators (PIs) who, in turn, collaborated with LMIC scientists at a myriad of research institutions throughout the world. These projects were supported by 23 of the 27 NIH Institutes and Centres (ICs), led by the National Institute of Allergy and Infectious Diseases, the Fogarty International Center, the National Institute of Mental Health, the National Institute of Child Health and Human Development, the National Cancer Institute, the National Heart, Lung, and Blood Institute, the National Institute of Diabetes and

Digestive and Kidney Diseases, and eleven other ICs. Many of these projects involved technology transfer.

11.2 Innovative Mobile Health (mHealth)

206. NIH encourages exploratory/developmental research applications that propose to study the development or adaptation of mHealth technology specifically suited for LMIC and the health-related outcomes associated with implementation of the technology. The most sought after are well-designed multidisciplinary projects that focus on tools or interventions for chronic diseases or technology for disease agnostic/cross-cutting applications. Innovative, well-designed, multidisciplinary projects are of highest interest and aim to generate generalizable knowledge for the field.

11.3 Health Information Systems for HIV Epidemic Control and Health Security – Uganda

207. As Uganda approaches HIV epidemic control and improves capacity to prevent, detect and respond to outbreaks, the US Government continues to provide substantial resource and technical support for building health information system (HIS) capacity. Through the President's Emergency Plan for AIDS Relief (PEPFAR) and Global Health Security Agenda (GHSA) programs, US Government staff, local NGOs, and the government of Uganda officials have developed electronic medical records, laboratory information systems, and specimen and commodities tracking systems. These analytical tools and dashboards help health professionals from community to national levels provide quality patient care, and monitor disease outbreaks and responses. Health Information Exchanges have enabled the automatic relay of data via the internet from remote health facilities across nationwide to a national repository dashboard to monitor priority tests, such as early infant diagnosis of HIV and TB (tuberculosis).

11.4 Africa Laboratory Information System – Uganda

208. To simplify, standardize, and maintain good laboratory practice towards accreditation, the Ministry of Health (MOH), with Center for Disease Control support, customized the open source Computing for Good Basic Laboratory Information System software, renaming it the Africa Laboratory Information System (ALIS). ALIS captures real time laboratory testing data used for both clinical decision-making and health indicator reporting. Using automated laboratory equipment, the MOH enhanced ALIS' capabilities enabling automatic relay of data over the internet from remote health facilities across the country to a central national repository used to populate dashboards for monitoring diseases, such as HIV and TB. ALIS is in process of being rolled out in Uganda, and will be adopted by the other four East African Community countries as a regional disease management information system.

11.5 Building Capacity for Lab Equipment Maintenance – Uganda

209. Building in-country capacity for lab equipment maintenance has significantly reduced equipment breakdowns and downtime (from more than a month to less than a week), thereby minimizing testing interruptions. With funding from the President's Emergency Plan for AIDS Relief (PEPFAR), the Ministry of Health (MOH) established a national lab calibration centre at the Central Public Health Laboratory. Ugandan biomedical engineers and technicians are now able to provide equipment calibration services to health facilities across the country, a service that previously had to be outsourced. This programme also supported the MOH to establish regional equipment maintenance workshops that are able to maintain lab equipment within their catchment areas at a fraction of the outsourcing cost. The capacity built serves the needs of the PEPFAR programme and benefits Global Health Security, and other laboratory surveillance systems.

11.6 The Human Heredity and Health in Africa (H3Africa) Initiative emailed NIH

210. H3Africa is a partnership between NIH, the African Society of Human Genetics, and the Wellcome Trust through the Alliance for Accelerating Science in Africa (AESAI). H3Africa fosters genomic and epidemiological research in African scientific institutions. Many Institutes and Centers across NIH have partnered to support H3Africa, and NIH leadership on the Initiative comes from the NIH Common Fund, and NIH's National Human Genome Research Institute (NHGRI) and Fogarty International Center. By FY 2019, H3Africa, funded at USD 180 million over ten years, and is focused

on capacity building, as well as specific scientific goals. These research grants are awarded directly to African institutions where principal investigators are based, which allow African scientists to develop and direct their independent research agendas. The programme encourages the formation of intracontinental collaborations and development of specific infrastructural elements, i.e., African-based biorepositories and a pan-African bioinformatics network. H3Africa also includes training programmes aimed at retaining African scientists on the continent to help build a sustainable, critical mass of researchers. H3Africa has funded research and training in the following LDC countries: Benin, Burkina Faso, Democratic Republic of the Congo, Ethiopia, The Gambia, Malawi, Mali, Rwanda, Senegal, Sierra Leone, Tanzania, Uganda, and Zambia. H3Africa is making a major contribution to technology transfer in sub-Saharan Africa. The goal is to ensure good science can be pursued in African countries.

11.7 Biomedical Engineering Programme - Zambia

211. CDC's Biomedical Engineering Program's goal is to establish three National Laboratory equipment repair and calibration centres. These centres are refurbished and are being equipped and mentored to calibrate or repair selected equipment from diagnostic laboratories. The centres will ultimately self-sustain by charging fees for services and/or internal charge back. Twenty-seven biomedical technicians have been trained, provided with repair and calibration equipment, and are beginning to utilize the facilities to service selected MOH equipment. CDC, through the Association of Public Health Laboratories, will continue to work with MOH in FY 2020 to co-manage the calibration centres and establish a target date for full hand-over to MOH.

11.8 Growing eHealth expertise knowledge and skills – Papua New Guinea

212. CDC PNG has continued its' strong partnership with the Papua New Guinea (PNG) National Department of Health (NDoH) to expand on technology solutions in the eHealth space. The deployment of PNG's first lab information system for viral load testing has resulted in reduced turn-around times and significantly improved the management of people living with HIV (PLHIV) on treatment to achieve viral load suppression. The GEEKS (Growing eHealth expertise knowledge and skills) programme coordinated by CDC has delivered the first decentralized disease surveillance system in the country while building technical capacity within NDoH. CDC PNG's second cohort of GEEKS trainees will be leading the development of a National HIV Data hub that will integrate all HIV data systems into the national health information system to give near-real time access to case-based disease reporting at the sub-national and national level. This is expected to have a major impact on the monitoring, coordination and effectiveness of the HIV response in FY 2019.

11.9 Integrated Decision and Analytics Support (IDeAS) for Zambia under Broadreach Inc. – Zambia (CDC)

213. Broadreach, in collaboration with CDC, supports the MOH in Zambia to develop and maximize the application of health information systems for data management through the increase data use by all cadres in the health sector to improve quality of data for evidence-based policy and decision-making. It supports the national electronic health record system (SmartCare) and has harnessed mobile technology to enhance the use of the EHR to support community services using hand held devices; in addition to linking the electronic health records (HER) with other systems like Laboratory Information Systems and Electronic Logistic Management Information Systems. Its targets are increasing access to and use of data from HIS for programme planning, policy and decision making in the health sector, to improve programmes in country using evidence-based and data driven approach, as well as to improve the quality of health care to help achieve the best possible outcomes for HIV/TB (tuberculosis) patients. In 2018 the Zambian government officially adopted SmartCare as the primary electronic health record system for Zambia and it has since been rolled out to nearly 700 health facilities all over Zambia with plans to reach 1,029 facilities by the end of FY 2020. CDC, through Broadreach, is currently in the early stages of integrating the EHR with a finger print Biometric identification system in order to improve unique patient identification. This system is being deployed initially to ten high volume sites in FY 2019 before further roll out to additional targeted sites countrywide in FY 2020.

11.10 Fogarty International Center

214. NIH's Fogarty International Center is dedicated to advancing the NIH by supporting and facilitating global health research conducted by US and international investigators, building partnerships between health research institutions in the United States and abroad, and training the next generation of scientists to address global health needs. These long-term investments in science help to promote technology transfer to LMICs.

11.11 NIH Research Training Programmes for Low-and-Middle-Income-Countries

215. NIH's Fogarty International Centre supports several research trainings programmes that include training for LMICs biomedical researchers and research institutions and contribute to technology transfer and capacity building. Programmes include the Global Infectious Disease Program, the Fogarty HIV Research Training Programme and the Health Professional Education Partnership Initiative. The programmes involve researchers and health professionals from LMIC countries (see <https://www.fic.nih.gov/Programs/Pages/default.aspx>).

11.12 District Health Information Software 2 (DHIS2)

216. DHIS2 is a free and open source health management data platform used by multiple organizations and governments worldwide.

11.12.1 DHIS2 – Mali

217. USAID deployed DHIS2 under the Measure Evaluation programme. The programme continues to work with the MOH to improve the National Health Information Management System for the purpose of getting real-time data for decision making. DHIS2 includes indicators of all Health Programmes and provides timely, quality and comprehensive data, as well as replaces the use of paper forms and cell phone technology for this purpose in FY 2019. In FY 2016, USAID/Mali through its projects continued the expanded use of cell phones for data collection and reporting in the regions of Mopti, Segou and Kayes. This data collection method is still in use for early detection of malaria cases in these epidemic-prone regions and helps provide information in a timely manner for prompt medical response. The deployment of DHIS2 has been completed in almost all the health facilities in Mali. In FY 2019, Measure Evaluation will improve the ability of Ministry of Health officials to collect, analyse and use routine health data for real-time decision-making. They will also build country capacity to self-manage the health information systems, resources and staff.

11.12.2 DHIS2 – Guinea

218. In Guinea, DHIS2 was implemented from the national to the prefecture level in FY 2019, with active participation and technical assistance from USAID and CDC partners. DHIS2 has now become the surveillance data system for the management of all routine surveillance data (e.g. malaria, diabetes, HIV, etc.) as well as those collected during emergencies (e.g., Ebola, Yellow Fever, Meningitis, Measles).

11.12.3 DHIS2 – Angola

219. The Government of Angola decided to join 60 other countries in 2017 and adopt the District 2 Health System Information (DHIS2) platform. In FY 2019, USAID, through the President's Malaria Initiative (PMI), supported Angola with USD 942,413 in assistance for the implementation of DHIS2. In FY 2018, Angola also adopted an Electronic Logistics Management System (eLMIS) to improve the management of its supply chain for health-related items. USAID supported this activity with an investment of USD 582,934 from PMI and Family Planning funds. In FY 2018, CDC, through the President's Emergency Plan for AIDS Relief (PEPFAR), supported Angola with over USD 250,000 in assistance for implementation of the HIV portion of DHIS2.

11.13 Additional Country Programs

11.13.1 Construction of National Reference Laboratory – Liberia

220. The Department of Defence is assisting the Government of Liberia with the design, construction, and operationalization of a national reference laboratory in Monrovia, Liberia. This effort is designed to establish a Liberian capacity to facilitate the detection, diagnosis, and reporting of pathogens and diseases of potential security concern. This effort also provides for safe and secure short-term storage of pathogens of potential security concern. In coordination with other US agencies, including USAID, the CDC, and the NIH, the US Government will also continue to train the technical staff and leadership of the newly established National Public Health Institute of Liberia to operationalize the laboratory facility, which will be completed by 2020.

11.13.2 Defeat Malaria – Myanmar

221. USAID's Programme "Defeat Malaria" supports comprehensive coverage of at-risk populations in three states covering three million people with malaria prevention, diagnosis and treatment interventions. Key objectives include strengthening the malaria surveillance system to monitor progress and respond to outbreaks; support the National Malaria Control Program; and promote the involvement of communities, private healthcare providers, and state-owned enterprises in malaria control and elimination initiatives. Defeat malaria will support Myanmar to introduce and demonstrate the effectiveness of new Rapid Diagnostic Test (RDT) technology for malaria.

11.13.3 Maternal and Child Survival Programme – Myanmar

222. USAID's Maternal and Child Survival Programme aims to improve maternal and child health in selected townships and communities by creating an enabling policy environment through support for development of policies, as well as improve the quality and effectiveness of midwifery in-service training, etc. This includes support to introduce and scale up the use of anatomical models and related health care technology for improving skills-based training for nurses, midwives, and other health providers in managing labour, delivery and neonatal care. The programme concluded successfully in June 2019.

11.13.4 Maternal and Child Health Survival Programme (MCSP) – Tanzania

223. In FY 2019, USAID's MCSP field support worked to end preventable child and maternal deaths. MCSP in Tanzania has continued supporting the Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC) to strengthen pre-service education of nurse-midwives, align national health information systems through one Health Information Mediator, and sustain quality cervical cancer prevention (CECAP) services. MCSP has designed the Ministry of Health's Enterprise Architecture (EA) within its eHealth Strategy to ensure that different health-related electronic information systems are interoperable. It also developed a data warehouse to facilitate data analysis for improved evidence-based decision-making. MCSP continued supporting the implementation of Health Information Mediator (HIM) - a platform for data exchange and sharing across multiple systems; and a Health Data Repository (HDR) to collate client level data from multiple health facilities through the mediator. Furthermore, MCSP has strengthened pre-service training institutions and promote the timely recruitment of competent new graduates to deliver quality MCH, HIV, malaria and FP services. With MCH funds, MCSP has supported the introduction of new vaccines and strengthened Tanzania's routine immunization platform. FP funds will co-fund EA efforts and strengthen FP components of pre-service training programmes.

11.13.5 Joint USAID & UN Programme on HIV/AIDS – Myanmar

224. The programme aims to advance access to HIV prevention and treatment, through support to civil society organizations (CSOs), and work with government and CSOs to promote a multi-sectoral response to injected drug use that includes access to HIV prevention and treatment and other services.

11.13.6 The Three Millennium Development Goals Multi-Donor Trust Fund (3MDG) – Myanmar

225. USAID funds support sub-grants to international and national NGOs for work on maternal and child health and health systems strengthening, with the overall aim of improving access to quality health services. USAID funds leverage funds from six other donors, including programming in HIV, TB, and malaria. This project ended in December 2018; in January 2019, USAID launched a follow-on fund, the Access to Health Fund, in partnership with Britain, Sweden and Switzerland. This USD 215 million fund operated by UNOPS improves access to essential health services by underserved vulnerable people living in conflict-affected parts of the country.

11.13.7 Global Health Procurement & Supply Management

226. USAID, along with Chemonics, supports the MOH to strengthen and unify the public health supply chain, and provide logistics technical assistance as well as procurement of selected commodities in support of malaria, HIV and TB programmes to improve the availability of essential medicines and supplies.

11.13.8 Global Health Supply Chain Technical Assistance - Tanzania

227. USAID's Global Health Supply Chain Technical assistance, running between 2019-2021, will improve the health commodities supply chain in Tanzania. The activity is expected to lead to better commodity availability and improved health outcomes for Tanzania. This activity will improve the health commodities supply chain by: 1) assisting the Tanzania Ministry of Health to implement relevant strategic plans; 2) establishing a governance platform to manage future system changes/updates to the electronic logistics management information system; 3) supporting key supply chain actors to use the Logistics Management Unit's performance monitoring plans for greater accountability; 4) strengthening the governance of the supply chain system at the district level by tracking stock availability; 5) institutionalizing supply chain data quality and use; 6) supporting the rollout of results-based financing in the country; and 7) assisting the Ministry of Health Pharmaceutical Services Unit and Policy Planning Unit to better budget for health commodities.

11.13.9 HIV Rapid Diagnosis Test (RDT) – Burundi

228. In FY 2019, RDT provided HIV testing and counselling in five supported provinces in Burundi. The USD 540,000 USAID programme procured the tests and managed the supply chain, as well as provided training for clinical staff of the Government of Burundi as well as civil society clinicians. In addition, USAID supported development of standard operating procedures (SOPs) and support supervisory visits to ensure quality. Implementation of the project resulted in 485,000 Burundians being tested for HIV and provided the Government of Burundi and civil society organizations with capacity, equipment, and procedures to continue HIV testing.

11.13.10 HIV Self Tests – Burundi

229. This PEPFAR programme provided in FY 2019 HIV testing in hard to reach populations such as female sex workers and men who have sex with men. USAID supported training of public clinic staff and peer educators by NGO implementers to teach key populations how to administer the test and link themselves to clinics for confirmatory reactive tests. The implementation of the project resulted in 10,000 Burundians in hard to reach populations being tested for HIV and knowledge transfer to government and NGO staff on administering the test and ensuring proper follow-up.

11.13.11 Abbott Viral Load and Early Infant Diagnosis tests – Burundi

230. This USD 450,000 USAID and Department of Defence programme provided in FY 2019 Viral Load and Early Infant Diagnosis tests in five supported provinces. USAID procures the test material and oversees the supply chain to ensure there are no stock-outs, and provides training of both public and civil society lab staff to conduct the tests and report the results back to patients. Implementation of the project resulted in 20,000 Burundian infants of infected mothers with HIV being tested and the Government of Burundi and civil society organizations having the capacity, equipment, and procedures to continue testing.

11.13.12 Measure Evaluation Phase IV – Mali

231. National Institute of Allergy and Infectious Diseases (NIAID) has been collaborating with Mali for almost 30 years on research related to malaria, vector biology, HIV/AIDS, tuberculosis, and other infectious diseases of interest. This longstanding partnership has led to increased research capacity and the training of over 150 Malian researchers at laboratories in Mali and on the NIH campus. Most of the trainees have returned to Mali and have been embedded within the NIH programmes in Mali as contractors to the University of Sciences, Techniques and Technologies of Bamako (USTTB), which is NIH's main partner in Mali. The collaboration between NIH and USTTB has allowed the publication of over 450 articles that have been published in very well reputed international journals to share research results.

11.13.13 EQUIP Consortium – Zambia (USAID Health)

232. USAID and EQUIP Consortium work to advance state-of-the-art models of [HIV] Anti-Retroviral Therapy (ART) service delivery, implement Test and Start strategies, and incorporate innovative approaches to support viral load scale-up. It also develops strategies and technologies to more effectively identify and link ART patients to treatment and foster ongoing adherence and retention, while targeting methods that address the needs of key populations. The targets are to provide experience and technical expertise in high-quality HIV services delivery, innovate new approaches to service delivery, scale-up viral-load technology, and analyse cost and outcome data to optimize cost-effectiveness of HIV programming. EQUIP has developed and continued to scale-up a Centralized Dispensing Unit (CDU). The CDU is a semi-automated health commodity warehouse and delivery system that delivers HIV treatment drugs to private pharmacies of a patient's choosing. By allowing patients to pick up drugs at locations that are convenient to them, they are more likely to stay on lifelong treatment.

11.13.14 Promoting the Quality of Medicines (PQM) – Bangladesh

233. The overall goal of the PQM is to provide technical assistance to the Directorate General of Drug Administration (DGDA) under the MOH & Family Welfare to improve pharmaceutical regulatory system through the strengthening of the DTL. The ultimate goal is for the drug testing laboratory (DTL) to obtain either WHO prequalification or ISO 17025-laboratory accreditation. The programme intends to implement a robust system that ensures the reliability of the data produced by the DTL, and improve the safety of medicinal products through the strengthening of the DTL to conduct quality sample testing of pre and post approval samples in order to address quality-assurance related aspects of procurement. Its goal is to improve the compliance of selected pharmaceutical manufacturers with regard to good manufacturing Practices (GMPs) and support them in dossier preparation for WHO prequalification systems for public health medicines, such as MNCH and TB drugs. The USD 6 million programme also fosters collaboration with SIAPS to expand the availability of quality-assured medicines and support system strengthening efforts directed toward improving the quality of medicines at the country level, and tests medicine samples, as needed, for USAID and USAID's collaborating partners. The programme will also develop pharmacopeia monographs and reference standards, as well as new medicines quality assurance tools, approaches, and methodologies as needed and concluded in September 2019.

11.13.15 Advancing Universal Health Coverage (AUHC) – Bangladesh

234. USAID's AUHC Project provides people of Bangladesh with high-quality essential health and family planning services, while offering financial protection for those who cannot pay for services. The specific objective of the project is to support a transition of 399 Smiling Sun (Surjer Hashi) clinics to a unified, sustainable, gender sensitive pro-poor social enterprise through developing innovative business models, expanding evidence-based quality health-service packages, and experimenting with new health-service delivery options that will increase access to a wider range of services. Another goal is encouraging systemic use of scientific evidence and technical knowledge to design, develop, test, and evaluate potential new products and services to advance Universal Health Coverage (UHC) in Bangladesh. With a total investment of USD 90 million, the project will support Bangladesh's journey towards UHC by improving access for the poor to an expanded range of essential services offered by a social enterprise in a financially sustainable model. The project is on track to be completed in 2022.

11.13.16 Research for Decision Makers – Bangladesh

235. The purpose of the activity is to conduct implementation research in response to Government of Bangladesh (GOB) priorities, provide advisory services to GOB for health policy work, and build health-sector research capacity in country. As the GOB plans its next health sector plan and USAID plans its next five-year health strategy, the need to improve and support the utilization of evidence for health sector decision-making becomes even more critical. The purpose of the award is to provide evidence-based policy analysis and programmatic guidance to assist the GOB, USAID, and partners in strategic decision-making on health.

236. The activity has three primary elements: 1) conduct implementation research on priority health, nutrition and population issues and facilitate use of research findings; 2) provide policy analysis and other advisory services to GOB/USAID/USAID partners to assist in health planning and decision making; 3) and build capacity within Bangladesh to implement high quality research and effectively communicate research findings among various stakeholders. The research and related activities examine policy and programmatic issues that will identify and support effective strategies for increasing access, use, quality and impact of maternal health, new born and child health, nutrition, population, and family planning/reproductive health, TB and selected non-communicable disease services in rural and urban areas of Bangladesh. This USD 15 million project will promote evidence-based policy analysis and programmatic guidance that will assist the GOB, USAID and its partners to align their programmes in effective strategic directions to support the GOB's USD 10 billion health sector programmes. The project is on track to be completed by 2022.

11.13.17 Cooperative Biological Engagement Programme – Uganda

237. The Defence Threat Reduction Agency (DTRA) provided lab equipment, renovation, and training for six labs and facilities throughout Uganda. The programme aims to improve biosafety and biosecurity standards; enhance Uganda's capability to detect, diagnose, and report infectious diseases; and facilitate collaborative research focused on dangerous pathogens.

11.13.18 Cambodia Malaria Elimination Project (CMEP) – Cambodia

238. USAID's CMEP objective is to develop a scalable, evidence-based malaria elimination model in Sampov Loun and support its dissemination and replication for malaria elimination in Cambodia. The project supports a scale-up of high-quality malaria control and prevention interventions, and works to strengthen national malaria surveillance systems and monitoring and evaluation appropriate for malaria elimination and control activities. CMEP also builds the capacity of MOH to manage, intensify, and sustain malaria control and elimination efforts. Through this USD 16.5 million programme funded by USAID, the key successes of the activity in FY 2019 are:

- Tested 46,883 people for malaria, of whom 16,285 were positive;
- 100% of cases were treated; Distributed 37,277 insecticide treated nets;
- Reached 277,710 people with health communication activities.

11.13.19 NOURISH/Save the Children – Cambodia

239. SAID's NOURISH programme works to reduce anaemia in women and children and the age of stunting among children through promoting diversified food intake. Through this USD 19.2 million programme funded by USAID, Community Agents conducted community Growth Monitoring Promotion sessions for 59,305 children under two years of age, of whom 29,774 are girls. A total of 15,782 "first 1,000 Days" household members attended integrated nutrition education sessions by caregiver group facilitators who have been empowered by NOURISH with new knowledge and skills. Here are the key successes in FY 2019:

- Stunting rates among children under five years old reduced from 34.3% in 2015 to 27.8% in 2018;
- Diarrheal incident among children under five years old reduced from 37% in 2015 to 16.9% in 2018;

- Children six-23 months received minimum Acceptable Diet increased from 25.5% in 2015 to 49.9% in 2018;
- 30,548 (F=15,846; M=14,702) people gained access to a basic sanitation service, 15,846 are women;
- 26,388 (F=13,279; M=13,109) children under two reached with community-level nutrition interventions;
- Households using an improved latrine increased from 37% in to 63.3% in 2018; and
- 73 villages are certified as Open-Defecation Free communities.

11.13.20 Quality Health Services (QHS) – Cambodia

240. USAID's QHS programme works to strengthen and improve the quality and availability of services in public health facilities by continuing training and coaching on a range of quality improvement methodologies in nine intervention provinces. QHS moved forward with several key training/coaching guidelines in maternal and new born care, such as the poster on signs of sick new-borns, updates of existing eclampsia/severe pre-eclampsia posters, and revision of the birth partograph. This USD 16.5 million programme recorded the following key successes in FY 2019:

- The number of children under five whose nutritional status was assessed increased markedly, from 353,795 in 2016 to 452,695 in 2018;
- The number of women giving birth who received uterotonics in the third stage of labour increased from 91,444 in 2016 to 531,693 in 2018;
- The number of women/ new born pairs who received at least three post national care visits increased from 25,423 in 2016 to 181,347 in 2018;
- Trained 95% of health centre staff in target provinces in intra-uterine device (IUD) and reached 73% of staff with implant training.

11.13.21 President's Malaria Initiative (PMI) support to the MOH for entomologic monitoring – Zambia (USAID Health)

241. Entomologic monitoring is an essential component of malaria vector control programmes such as indoor residual spraying (IRS) campaigns. Entomological activities assess the impact of IRS on vector density and behaviour; evaluate the quality of operations; and determine mosquito susceptibility to insecticides. At the district level PMI provided capacity building to district-level environmental health officers and human landing collectors to manage entomological data collection in six sentinel sites in four high malaria burden provinces. At the national level PMI provided training, mentorship and infrastructure development to the entomology laboratory. The National Malaria Elimination Center can now conduct its own analyses such as speciation of malaria vectors, sporozoite rates, and cone bioassays of insecticide longevity, which were previously outsourced. In response to changing epidemiologic patterns and programmatic needs, PMI supported the establishment of four new entomologic monitoring sites in Eastern, Luapula and Copperbelt Provinces in 2019.

11.13.22 Eradicate Tuberculosis, Support to Ministry of Health for TB elimination

242. In order to be able to reach the remotest areas, during 2017-2022, USAID and CDC's Eradicate TB will use a proven OneStop TB Clinic with a multifunctional EasyDR X-ray that is capable of screening more than 300 people per day. The EasyDR X-ray is powered by a battery/inverter set that allows operation for six-eight hours independent from the electrical grid. The batteries will be charged by solar panels on the roof of the OneStop TB Clinic, strongly reducing cost for generator fuel. The key innovation is in the software with today's digital X-ray systems, a high-quality chest radiograph is presented on a computer screen within few seconds. This has created new opportunities to detect TB cases faster and at lower cost. Computer Aided Detection software for TB (CAD4TB) automatically analyses digital images with superior performance.

Government Official Lauds GLOBE Initiative

243. US Embassy in Senegal supported the Global Learning and Observation to Benefit the Environment (GLOBE) Initiative's Engaging Citizens in the Forecasting and Observation of Mosquito Threats programme over the past year. In October 2018, the Embassy and representatives from Senegal's Ministry of Environment participated in a GLOBE training workshop, distributing research kits and providing instruction to more than 30 students at the African Institute for Development Studies in Dakar. In April 2019, the US Ambassador attended a demonstration of mosquito research techniques by GLOBE-trained high school students in the northern city of Saint-Louis. In her official report for 2019, Senegal's National GLOBE coordinator noted that Senegal's zika vector results were singled out at the GLOBE regional conference in April as the best on the African continent.

11.13.23 Global Health Security Agenda - Emerging Pandemic Threats (EPT) - Guinea

244. The activities under the Emerging Pandemic Threats Programme (EPT2) strengthen animal health laboratory capacity and networks, build surveillance systems in Guinea to quickly detect, and respond to important livestock and zoonotic diseases. EPT2 is implemented by the Food and Agricultural Organization (FAO) in Guinea. The livestock sector struggles with timely reporting of disease outbreak, often due to the use of paper format tools and inefficient information flow. Event Mobile Application (EMA-i), an electronic app developed by FAO under the USAID funded EPT2 activity, has been made available for public and private veterinarians to facilitate quality and real time reporting of animal diseases in the field and in remote areas, allowing improved direct communication between stakeholders and quick decision making. To date, over 60 veterinary agents from the public and private sectors have received EMA-i App equipped smartphones and report information from 22 of the 38 prefectures in Guinea. The goal in the coming years will be to cover all prefectures and enable an efficient reporting system that informs decision making for both human and animal sectors.

Government Official and Private Sector Doctor laud EPT

245. A Senior Adviser to the Minister of Livestock noted: "EMA-i improves greatly the transmission of health information from the district to the central level. We have a better understanding of epidemiological realities in the field, which enables quick decisions and collective action."

246. A private veterinarian in Faranah said: "Today, the reporting of diseases becomes really easy with this tool. Prior to EMA-i, we could spend days or weeks before disease outbreak information reached the central level. With the EMA-i tool on my phone, everyone in the veterinary network connected to the app is informed. This tool is more efficient because other prefectures are aware of an outbreak or a reported case instantly. The tool is user friendly and is customized for veterinarians. No need to print, it is cheaper and easier for reporting. I have installed the tool on two other phones for my staff. I am able to record GPS locations even without network availability. In remote areas, I am able to input information without need for network. As soon as I reach town, I can send out the report to the highest level and receive timely feedback."

11.13.24 Laboratory Project Extension for Community Healthcare Outcomes (ECHO) – Tanzania

247. Running during 2016-2019, CDC's Laboratory Project ECHO is a distance learning and mentorship model designed to build capacity for health care workers through satellite training. Using the hub and spoke approach, CDC provides training and technical assistance to two facilities (hubs), and the more than 40 health facilities (spokes) in Tanzania. As of July 2019, the CDC-supported programme has trained more than 25 MDR tuberculosis management experts, and more than 2,400 HIV rapid testers. This support involved more than 100 mentoring and training sessions. Participants are evaluated after each distance learning session and continue to show measurable gain in knowledge. The target for Lab Project ECHO is to train more than 15,000 HIV testing personnel at testing points in health facilities. Plan are also underway to expand Project ECHO to multiple hubs with the inclusion of all district hospitals as spoke sites.

12 PROGRAMMING AND INCENTIVES RELATED TO BUILDING LABOR CAPACITY

248. US agencies, including the US Department of Labour (DOL) and Department of State, seek to ensure that workers around the world are treated fairly and are able to share in the benefits of the

global economy. DOL has developed international projects and joint efforts that aid other countries and international organizations to better understand the problems facing workers throughout the world and to strengthen international labour standards and worker protections. These programmes build capacity in global labour markets and help to level the playing field among trading partners.

12.1 Country Programmes

12.1.1 SAVABE Project – Madagascar

249. DOL funds USD 4 million SAVABE project during November 2016 – July 2020 whereby the International Labour Organization (ILO), with its implementing partner the Sustainable Vanilla Initiative, works to sustainably reduce child labour in the production of vanilla as Madagascar produces 80% of the world's supply. The project seeks to fully implement the Vanilla Code of Conduct throughout the supply chain by, investing in education about child labour issues, ensuring capable systems for monitoring and addressing child labour issues, and investing in improving the livelihoods of vanilla producing communities including educational and vocational training opportunities for youth. The project is still ongoing.

Madagascar Government Officials Applaud SAVABE

250. Officials from the Ministry of Commerce and the Ministry of Labour wrote two letters to DOL saying that the SAVABE project is "relevant and will support the implementation of the National Action Plan to eliminate the worst forms of child labour."

251. In October 2018, the Prime Minister and staff from the project team collaborated in the launch of Alliance 8.7 Pathfinder Country in Antananarivo. In a meeting with the Department of Labour in August 2019, the Prime Minister also praised the project.

12.1.2 Strengthened Capacities for Improved Coordination, Protection and Prosecution on Trafficking in Persons – Madagascar

252. International Organization for Migration is implementing a USD 750,000 grant from the US Department of State's Office to Monitor and Combat Trafficking in Persons (J/TIP), in order to institutionalize victim-centred investigations and prosecutions of TIP cases and national TIP referral mechanisms between government actors and civil society, as well as develop and strengthen TIP data collection and reporting mechanisms. The project is still ongoing.

12.1.3 Cambodia Countering Trafficking in Persons (CTIP) Programme – Cambodia

253. USAID's CTIP enhances national and local strategies to prevent TIP by focusing on root causes of trafficking relating to education, employment opportunities, and livelihoods. The programme provides strengthened survivor protection and services for all forms of TIP through victim identification strategies and reintegration options for men, women, and children. It also increases the likelihood of successful prosecutions of TIP and reduced impunity for offenders. There are 356 partners in this USD 10 million programme (private sector partners, NGOs, IOs) providing material, in-kind, technical and financial support towards TIP prevention. Key successes in FY 2019:

- 249 partners (private sector partners, NGOs, IOs) providing material, in-kind, technical and financial support towards TIP prevention;
- New online job seeking platform Bong Pheak for low skilled and unskilled workers. Thus far, 780 Cambodians have secured employment through this platform;
- 23,801 new and existing Information Education and Communication (IEC) materials on TIP disseminated;
- Assisted 845 vulnerable people to TIP.

12.1.4 Rehabilitation and Prosthetics Programme for Persons with Disabilities – Cambodia

254. Funded by USAID, the objectives of the programme are to ensure the quality of services and devices, and to build the capacity of three rehabilitation centres for people with disabilities (PWDs).

It also intends to provide equalization of opportunities, poverty reduction, and social inclusion of PWDs through community-based rehabilitation (CBR) activities. In 2018, 2,725 PWDs received services and 15 trainings occurred in order to build the capacity of staff delivering rehabilitation services. The total estimated cost for this programme is USD 1.9 million. Here are the key successes recorded in FY 2019:

- 5,388 persons with disabilities (PWDs) received physical rehabilitation services from three physical rehabilitation centres in Phnom Penh, Prey Veng and Kratie;
- 712 PWDs supported through community-based rehabilitation activities (such as through small grants for income generation, self-help groups, skill training referral);
- 2,049 assistive devices (prosthetics, orthotics, and wheelchairs) were produced and distributed to PWDs;
- Eight Disabled People's Organizations (DPOs) provided financial and technical support to strengthen their representation for PWDs in their community;
- Three physical rehabilitation centres (in Phnom Penh, Prey Veng, and Kratie) were successfully transferred to the Cambodian Government.

12.1.5 Nyenyo City – Togo

255. The embassy's decentralization hackathon in June 2018 led to the creation of a promising online platform to help local governments deliver good services. The implementation of the model will occur during the "Nyenyo City" project. It will take place over eight months in the district called Zio about 45 minutes from Lome. A group of young civil society activists and coders will work hand in hand with the local authorities of Zio to integrate the platform and put it into use. Evaluation of success is if tracking of services provided improves and if services themselves become more efficient. As of 2019, the platform has received wide support in the cities where it has been implemented and is still expanding.

12.1.6 Workers' Empowerment Programme (WEP) – Component 1 – Bangladesh

256. WEP will improve labour conditions in Bangladesh by strengthening the ability of independent worker organizations to represent their rights and interests both inside and outside the factory. The WEP has discrete components consisting of a USD 3.1 million total projected investment, it will support the formation of independent worker organizations in the ready-made garment industry and strengthen the capacity of such organizations to defend their rights and collectively negotiate with employers. WEP Component 1 will specifically work to improve worker representation in the workplace through establishing active worker organizations in targeted factories, increasing skills of factory workers to represent their rights and interests in their workplace, and improving understanding of constructive labour relations. WEP component 1 will end successfully in September 2019.

13 PROGRAMME AND INCENTIVES RELATED TO TRANSPORTATION

257. US agencies, including the Department of State and Department of Transportation (DOT), operate programmes such as Safe Skies for Africa. The Safe Skies for Africa Programme (SSFA) is based on the premise that "Safe Skies" are a prerequisite for African economic development through increased trade and investment. SSFA works to promote sustainable improvements in aviation safety in Africa as a means of advancing economic development and increased investment for Africa. The overarching goal of the programme is to increase the number of African nations meeting International Civil Aviation Organization (ICAO) standards. Through the program, the DOT has directly trained African experts through the US Federal Aviation Administration, both in the United States and in-country. These capacity-building efforts have resulted in thousands of personnel receiving state-of-the-art training to address airworthiness, operations, air navigation, aviation security (in partnership with the Transportation Security Administration), as well as accident investigation processes and procedures (in partnership with the US National Transportation Safety Board). SSFA participants include several LDCs, including Angola, Cameroon, Mali, and Tanzania. SSFA's efforts have also included regional outreach through the EAC and the Banjul Accord Group - see [https://www.nts.gov/news/events/Documents/Safe Skies for Africa.pdf](https://www.nts.gov/news/events/Documents/Safe%20Skies%20for%20Africa.pdf).

13.1 Connectivity Squared Project - Liberia

258. In July 2017, in support of the US global strategy for Ebola emergency response, USAID, Google, and the Government of Liberia launched the Google Project Link to bring best-in-class, reliable, and affordable broadband infrastructure to Liberia's capital city of Monrovia. Through a USD 12 million co-investment of cash and in-kind support, this public-private partnership provides access to information and communications technology systems needed to prevent and detect future disease outbreaks before they start, to help Liberia transition from response to recovery and preparedness. The initiative serves to strengthen essential health, education and government systems through expansion of internet access across the capital, and could ultimately unlock the potential of the digital economy for Liberian citizens. Currently, only 5% of population has internet access. As of March 2019, the CSquared partnership has laid over 200 km of fibre infrastructure in Monrovia. With an additional USD 8.2 million of support through USAID's Digital Liberia and Electronic Governance Activity, internet connectivity has been brought to 51 government institutions, including two public hospitals.
