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REPORT ON THE IMPLEMENTATION OF ARTICLE 66.2 OF THE TRIPS AGREEMENT

UNITED STATES OF AMERICA

The following communication, dated 16 September 2021, 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 (document 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 (document IP/C/28). Consistent with this decision, developed country Members shall provide yearly reports to least developed countries (LDCs) on actions taken or planned in pursuance of the commitments of developed countries under Article 66.2. Under this article, developed country Members have committed themselves to provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to LDCs, in order to enable them to create a sound and viable technological base. United States government funding of these multifaceted activities and collaborations are incentives to the many partners in the United States 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 LDCs. No report can represent every activity that directly or indirectly incentivizes enterprises and institutions for the purpose of promoting and encouraging technology transfer. This report attempts to describe the most significant activities and programmes and to convey the breadth and depth of efforts by the United States.

3. The US Government attaches great importance to providing incentives to help LDCs obtain technology transfer. A key element to this objective is that the US Government, in collaboration with many other national and regional government agencies and IP organizations, such as the World Intellectual Property Organization (WIPO), works 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 US 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 Members and LDCs. This targets incentives in a way that is most responsive to the self-identified technology transfer interests and needs of LDCs. The United States encourages the efforts of the TRIPS Council Secretariat and Members to organize discussions among the Members regarding Article 66.2 implementation.

## 2 GENERAL TECHNOLOGY TRANSFER PROGRAMMES, INCENTIVES, AND PARTNERSHIPS<sup>1</sup>

6. Through the Bayh-Dole Act of 1980, the US Congress directed that inventions resulting from federally funded research be used to promote commercialization and public access through practical application. US laboratories often partner with external organizations to conduct cooperative research and development.

### 2.1 Federally Sponsored Research and Development

7. The National Science and Technology Council (NSTC) workgroup on Lab-to-Market coordinates federal initiatives on accelerating and improving the transfer of new technologies from the laboratory to the commercial marketplace. 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

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<sup>1</sup> Paragraphs 6-8 describe technology transfer policies and legislative tools that are used by the US Government to derive much of the technology that is transferred to LDCs.

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 (FLC)**

8. 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 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/T2-Toolkit>.

### **2.1.2 Partnerships for Enhanced Engagement in Research (PEER)**

9. The Partnerships for Enhanced Engagement in Research (PEER) programme directly supports scientists in USAID-presence countries through institutional research awards typically ranging up to USD 200,000. US scientific agencies such as the National Aeronautics and 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 (ARS), 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 370 projects in over 50 countries with a USAID investment of over USD 100 million. PEER aims to build capacity among local scientists and research institutions, strengthen research partnerships world-wide, and better translate data and evidence into policy. The programme is implemented by the National Academies of Sciences, Engineering, and Medicine. Of the 3,000 students that are working on PEER research teams, 50% are women. PEER researchers have contributed to over 900 publications and journal articles. More than 75% of PEER awardees secure further funding to continue their research in: Agriculture; Biodiversity; Disaster Mitigation; Education; Energy; Family Planning; Food Security; Infectious Diseases; Nutrition; Reproductive Health; and Water and Sanitation.

#### **2.1.2.1 PEER Project: Affordable Technologies for Cervical Cancer Screening – Mozambique**

10. The project has provided over 3,500 cervical cancer screenings using the GeneXpert HPV testing platform. A subset of samples was stored and will be tested on a novel point of care (POC) HPV test, which was developed by Rice University, and has the potential to dramatically decrease the costs of HPV-based cervical cancer screening. Results will be compared to those from the "gold-standard" GeneXpert platform. After a pause due to COVID-19 pandemic, POC testing resumed in August 2021. The project runs between January 2019-June 2022.

### **2.1.3 Strengthened Counter-Poaching in the Rungwa/Kizigo/Muhesi Game Reserve Complex - Tanzania**

11. This project supports the Government of Tanzania's counter-poaching effort. Working with the Tanzanian Wildlife Authority (TAWA), the project: strengthens technical skills to prevent, deter, and respond to poaching activities; supports mobility to and within the Rungwa Game Reserve complex; builds capacity of the Rungwa Game Reserve wardens; and increases the impact of environmental law enforcement activities in the Ruaha-Katavi Landscape and more broadly within Tanzania. In particular, the project is currently focused on SMART data collection by using smart phones or tablets and reporting software as a wildlife monitoring/management law enforcement tool by: training and

mentoring on SMART and integration of the data collection and analysis platform for wildlife law enforcement thru September 2021.

### TAWA, Game Warden, and Rangers Applaud the Project

12. The acting Conservation Commissioner for TAWA continues to voice support for the SMART data collection system and hopes to expand its use even after the current project ends. Rangers also report appreciation for the added tool in the anti-poaching tool kit. Equipment maintenance (for system computers and data servers, especially) remains of critical importance, and faces substantial challenges in the bush. Game Warden Chifuno Jembe, Manager of the Lukawati/Piti Game Reserve, reports that using and becoming proficient with SMART as a data collection and analysis tool allowed him and his patrol teams to better target their anti-poaching patrol efforts. It also helped them better allocate personnel, vehicles, and field gear.

## 2.1.4 Innovation Discovery & Testing

13. Generating new ideas for innovation, building evidence of their efficacy, and attracting 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 USAID 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.

14. 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 assesses each applicant through the lens of these principles, commensurate to the stage or type of funding sought. DIV has supported innovation in 47 countries during 2010-2020 (<https://www.usaid.gov/div/about>).

## 2.2 Science and Technology Agreements

15. 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 Regional Programmes

### 2.3.1 Smart Infrastructure for the Mekong (SIM) - Lower Mekong Initiative

16. 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.

### 2.3.1.1 Wonders of the Mekong – Cambodia

17. The activity seeks to provide technical assistance, tools and training to Cambodian natural resource managers to establish data collection and monitoring networks that will enhance existing capacity and complement ongoing projects within the Lower Mekong Basin. The objectives are:

- a. to improve capacity for monitoring of the freshwater environment, hydrology, and fishery resources within Cambodia;
- b. to gain critical biological information necessary to promote sustainable environmental management for key areas and fisheries, including the Tonle Sap Lake to River and Lower Mekong Rivers; and
- c. to provide information to communities, fishery managers, and policy makers at multiple levels of government and civil society to support sustainable environmental pathways and policies.

18. Wonders of the Mekong activities have addressed several key uncertainties related to monitoring and managing impacts to the Mekong River's health and productivity from threats like overfishing, loss of biodiversity, dam-modified flows, pollution, deforestation, and climate change. Project results have been shared at numerous conferences, workshops, and forums including the US State Department's Mekong Virtual Symposium: "An Uncertain Future: Working Towards a Thriving Tonle Sap", the Stockholm Environment Institute webinar "Can the Mekong be Saved?", the Mekong-US Partnership Track 1.5 Policy Dialogues, and a hosted discussion with the US Ambassador to Cambodia and delegates from the four countries of the Lower Mekong River Basin.

19. Wonders of the Mekong research results are available to the public and project activities have been featured in many national and international media outlets including National Geographic "New Project Targets Mekong River" (now a 17-part news series), the Khmer Times "Spotlight: Celebrating Woman in Conservation" and Circle of Blue "Five Bright Spots in the Mekong."

#### Government Officials and Private Sector Laud Wonder of the Mekong

20. Mr. Bunthang Touch, Acting Director of Inland Fisheries Research and Development Institute, Cambodian Fisheries Administration expressed appreciation for Wonders of the Mekong collaboration. "The Wonders of the Mekong project plays a critically important role in fisheries research, capacity-building, and education including development of the largest, most highly trained team of Cambodian fisheries scientists in our country, design of research and monitoring protocols to guide sustainable fisheries policy, and establishment of partnerships with the Mekong River Commission for data sharing and analysis. The Wonders of the Mekong Project is the single most important entity guiding scientific freshwater fisheries and biodiversity research in Cambodia today, and the results of this research will guide and improve future natural resource management for sustainability."

21. Dr. Ratha Sor, former Development Manager of the RUPP Graduate Programme in Biodiversity Conservation, expressed appreciation for Wonders of the Mekong support for the RUPP PhD Programme in Applied Ecology and Management and Master of Science in Biodiversity Conservation. "Wonders of the Mekong support has funded three master's students and four PhD students. Wonders of the Mekong is the largest single supporter of students in our programmes. Wonders of the Mekong-supported students have shown extraordinary improvements in ability and commitment, as demonstrated by the excellence and breadth of their research and continued record of high-quality publications. The project's contributions to capacity-building and social network development have led to international scholarly exchanges, data sharing, national and international level collaborations on fisheries research and biodiversity conservation."

### 3 EDUCATIONAL AND UNIVERSITY-LED PROGRAMMES

22. US agencies such as the Department of State and USAID work closely with universities to promote appropriate technology transfer and knowledge sharing through academic exchanges and programmes that harness the intellectual power of professionals, students, and researchers to address challenges including climate variability, food security, and global health.

### **3.1 Educational Enrolment in the US University System**

23. The US university system constitutes a major avenue for the appropriate transfer of knowledge and technology. Foreign students employ acquired knowledge and skills in their home countries, and some continue to collaborate with their US colleagues on mutually beneficial research.

#### **3.1.1 University Enrolment by Foreign Students**

24. During the 2019-2020 academic year (the most recent data), there were 38,687 students from LDCs enrolled in US institutions of higher education, representing an increase of nearly 1.5% over the 2018-2019 academic year, and 3.6% of the total US higher education international student enrolment. US institutions of higher education hosted many students from LDCs, including large numbers from Nepal (12,730 students) and Bangladesh (8,838 students). The top five most popular fields of study for all international students in the United States in academic year 2019-2020 were Engineering (220,542); Math and Computer Science (205,207); Business and Management (174,470); Social Sciences (84,440); and Physical and Life Sciences (81,971).

#### **3.1.2 International Visitor Leadership Programme (IVLP)**

25. In support of the Department of State's strategic goal of enhancing economic development, the Education and Cultural Affairs Bureau continues its International Visitor Leadership Programme to assist partner countries, including LDC member countries. Under normal conditions, IVLP projects take place in-person with visits to the United States. As a result of travel restrictions due to the ongoing COVID-19 pandemic in 2020, all IVLP programming took place virtually.

##### **3.1.2.1 IVLP Women and Entrepreneurship - Angola, Burkina Faso, Chad, Democratic Republic of Congo, Guinea, Liberia, Niger, Senegal, Zambia**

26. This virtual IVLP project was for participants from the Africa region including Angola, Burkina Faso, Chad, Democratic Republic of Congo, Guinea, Liberia, Niger, Senegal, and Zambia. It illustrated the impact of women-owned businesses on the US economy and explored the progress of women in participating more fully in the global economy. During 17 May – 12 June 2021, the group engaged a variety of actors to discuss the social, economic, and political factors that influence and encourage women as entrepreneurs and owners or managers of small, medium, and large-scale businesses. Participants examined leadership development, job creation, access to capital, marketing, education, and innovations in encouraging entrepreneurship in the United States. Participants learned about incentives for entrepreneurship offered at the federal, state, and local levels of government.

##### **3.1.2.2 IVLP Combating Infectious Diseases - Benin, Burkina Faso, Mali, Mauritania, Mozambique, Rwanda, Togo**

27. This virtual IVLP project supported the State Department's goal of protecting the health and well-being of global populations. Participants from the Africa region including Benin, Burkina Faso, Mali, Mauritania, Mozambique, Rwanda, and Togo explored how communities identify and prioritize responses to disease outbreaks and reviewed new practices and techniques to prevent and treat infectious diseases at the local, state, and federal levels. During 8 March – 2 April 2021, the project examined ways to raise awareness of health issues and introduce participants to US public health and media networks working on outreach and global health awareness strategies. In addition, participants explored how the public and private sectors foster partnerships to assist in finding, mobilizing, and sharing resources and best practices.

##### **3.1.2.3 IVLP Sustainability and the Extractive Industry - Mali, Mozambique, Niger, Uganda**

28. This virtual IVLP project focused on best practices in the extractive industry, including labour protections, environmental regulations, transparency in bidding, and profit management. Participants from the Africa region including Mali, Mozambique, Niger, and Uganda learned about the Foreign Corrupt Practices Act (FCPA) as a gold standard to bring transparency in business and governance, and the Extractive Industries Transparency Initiative as a global standard for the good governance of oil, gas, and mineral resources. During 14 June – 9 July 2021, the project addressed



indigenous land rights regulations and policies that preserve human rights, sustain cultural diversity, protect the environment, and ensure collective survival. Participants learned how transparency and accountability help ensure public trust, as well as how these same values promote financial stability and economic growth. In addition, the project addressed the roles of civil society and the media as watchdogs and catalysts for the creation and maintenance of transparent and accountable government and business practices.

#### **3.1.2.4 IVLP Empowering Youth through Workforce Development - Benin, Burkina Faso, Chad, Guinea, Liberia, Mozambique, Tanzania, Togo**

29. This virtual IVLP project supported US efforts to promote stable democratic governance and global economic growth and development through workforce development among youth and those in job or career transition. Participants from the Africa region, including from Benin, Burkina Faso, Chad, Guinea, Liberia, Mozambique, Tanzania, and Togo explored the important role that vocational/technical education plays in providing Americans with training and skills tailored to fit targeted employment needs. During 8 February – 5 March 2021, participants examined how to adapt curricula to economic demands and ways to interest youth in careers of the future, including technology, communications, and other innovative fields that will allow them to foster new industries. Participants visited businesses that offer targeted internships and/or employment for young people, including at-risk youth. Participants also explored the federal government's investment in innovative programming for youth.

#### **3.1.2.5 IVLP Managing Foreign Aid and Foreign Direct Investment - Angola, Democratic Republic of Congo, Liberia**

30. This virtual IVLP project explored new and existing development finance avenues and identified best practices in analysing and implementing finance options to maximize efficiency and minimize additional costs. Participants from the Africa region including Angola, Democratic Republic of Congo, and Liberia learned about recent US efforts to promote a common set of global standards for infrastructure lending and investments, explored the underpinnings of the US support for transparent and sustainable financing, and examined how the US uses developmental finance to advance its foreign policy interests and enhance its overall global economic competitiveness. During 19 July – 16 August 2021, the project incorporated meetings with federal agencies, think tanks, private finance companies, and donors on the variety of funding options available and best practices to secure economically sustainable development.

#### **3.1.2.6 IVLP US Energy Policy - Security, Independence, and Innovation - Bangladesh, Cambodia, Nepal**

31. This virtual IVLP project included participants from Bangladesh, Cambodia and Nepal examined domestic and international cooperative efforts to promote energy innovation and US policies that enhance energy security. During 14 October – 6 November 2020, participants examined US efforts to reduce pollution, promote clean energy sources, mitigate environmental impact, ensure secure power grids and waterways, and enact sound energy policies. Participants met virtually with policy makers, industry leaders, academics, scientists, and citizen groups to discuss their views on local and regional energy resources, production, and sustainability.

#### **3.1.2.7 IVLP Strengthening Economic and Commercial Ties: Fashion Ecosystems - Senegal**

32. This virtual IVLP project brought together 15 fashion professionals from Senegal to examine the fashion industry from the US perspective. During 9 November – 4 December 2020, this project supported the Department of State's goal of promoting broad based economic growth and the mission's goal to strengthen commercial ties between Senegal and the United States. The project enhanced understanding of US methods of small business development and digital marketing, leveraging diverse contacts through meetings and workshops. Participants focused on US examples of fashion-based business models including brands, events, educational institutions, and professional associations. Participants explored ways to strengthen international commercial ties in the fashion industry.

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### **3.1.2.8 IVLP Strengthening Economic and Commercial Ties: Fashion Ecosystems II-Senegal**

33. This two-part IVLP Virtual Activity included Senegalese participants from a November 2020 IVLP Virtual project as well as other fashion professionals in the US Embassy's network. During 16 June – 24 June 2021, the primary goal was to build on contact with a Seattle-based non-profit organization from the original programme, the Refugee Artisan Initiative (RAI). RAI presented their organizational model to promote skills building and work opportunities for home-based, small batch manufacturing and engaged participants in a dialogue of how such models could be useful in Senegal. Time was set aside for fashion professionals and artists from both Senegal and those in the Seattle area to share their culture and work with each other. Refugee artisans based in Seattle shared how they have continued their home communities' unique forms of art and design in the United States and how they participate in local events/markets, combining business opportunities from the United States with their knowledge from home to create economic opportunities.

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

34. 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 Additional Programming from ECA**

35. Through its programmes, ECA enables students, exchange alumni, and young adults to pursue higher education, leadership, and professional development opportunities globally. The Fulbright Programme sponsored approximately 4,000 participants in fiscal year (FY) 2020. This number represents a reduction due to the global pandemic from the typical annual total of 8,000 participants from the United States and more than 150 countries, many of whom do in-country work in LDCs. These programmes included participants in FY 2020 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 Regional and Country Programmes**

#### **3.3.1 MoLab – Togo**

36. MoLab is a US Embassy's mobile STEM (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, in FY 2021 it is still looking to achieve full financial independence.

#### **3.3.2 Female Tech Camp – Togo**

37. 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. This programme is still ongoing.



### 3.3.3 Girls Coding Camp – Togo

38. Girls Coding Camp is a programming camp designed to train and encourage high school girls to take an interest in the field of technology and STEM in general. The Public Affairs Section awarded a grant to local tech NGO Minodoo to hold this camp during CY 2020 (postponed due to the COVID-19 pandemic). The week-long camp will teach design thinking, 3D modelling and printing, and programming language, among others.

### 3.3.4 USAID's Girls Leadership and Empowerment through Education (GLEE) – Mali

39. USAID's Girls Leadership and Empowerment through Education (GLEE) activity addresses persistent gender gaps in education enrolment partly through the payment of school fees to locally-based School Management Committees (SMCs) via Orange Money, a mobile money service. GLEE collects data on the number of girls in the partner schools and provides money to cover distribution school supplies, hygiene and sanitation materials, school furniture, repairs of shutters, rehabilitation of classrooms and management offices, fences to improve school security, and secure transport of funds. GLEE favours transparency in the management of the school fees funds and the funds are used following a SMC's action plan for promoting girls education.

40. As a result of the GLEE activity that spans over FY 2018 – FY 2022, a total of 35,786 students from primary and lower secondary schools have benefited from this support; 5,564 out-of-school adolescent girls were enrolled and 5,448 successfully transitioned to formal public schools. Facilitators, grandmothers and aunts, and teachers mentored girls about reproductive health, gender equality, and leadership. More than 8,000 mentoring sessions were attended by about 170,000 participants. Also under GLEE, 92 school management committee members were trained on gender, school-related gender based violence, and school safety.

#### School Director Lauds GLEE

41. Mobile transfers go directly to SMCs, which builds their capacity to better manage their funds. Seydou Filifing Keita, Director of the Djidjan-Kenieba 1st Cycle School commented that, "The transfer of school fees by Orange Money is a quick and secure way to send money to SMCs. The transfer allows SMC members to avoid having to travel to the bank in town to collect money, which incurs other additional costs. With mobile transfer, the SMC can receive the resources in the village without moving and this also helps to avoid robberies on the main roads when traveling to collect money. Also, with the mobile transfer system, we can check all the money movements that have been made on the mobile account and this is a good means of verification for a good management of its resources. In our school, we really appreciated the transfer of school fees by Orange Money."

### 3.3.5 Learn to Read – Lao PDR

42. USAID supported the development of a digital Teaching and Learning Platform titled Khangpanya (in Lao ອັງບັນຍາກວາ). The digital platform provides access to storybooks and decodable readers, digitalized official curriculum textbooks with interactive quizzes, and interactive international resources available in both Lao and English that promote STEM learning for pre-primary and Grades 1-12 school children. This digital platform can be accessed via a web browser for use online and on mobile devices. The programme started in August 2018 and is ongoing.

### 3.3.6 Lecture Pour Tous – Senegal

43. The USAID Lecture Pour Tous activity pivoted its support for Senegal's Ministry of Education (MoE) to advance COVID-19 pandemic prevention efforts and keep the estimated 3.5 million children affected by school closures learning while out of school. USAID developed new activities using technology to support distance learning; developed and implemented a radio and SMS-based COVID-19 prevention communication campaign; and adapted pre-service training modules to an online format.

44. To date, the programme achieved the following: 40,000 prevention text messages to school personnel and education officials; 308,000 individual prevention and home-learning messages sent to over 121,000 stakeholders; 1,400 WhatsApp messages sent to youth empowered as community

liaisons; nine instructional videos produced & aired on television; 24 radio lessons series produced and broadcast. The programme is ongoing.

#### **4 COMMERCIAL AND LEGAL PROGRAMMES TO STRENGTHEN CAPACITY**

45. US agencies such as the Commercial Law Development Program (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 Community Resilience in Central Africa – DRC & CAR**

46. USAID is extending a system of high frequency radios across south-eastern Central African Republic (CAR) and north-eastern Democratic Republic of Congo (DRC) as an early warning network against the LRA (Lord's Resistance Army insurgent group) and other security threats. This programme saves lives, reintegrates former combatants, and assists communities with recovery through trauma healing and economic activities. This programme targets communities and combatants and is ongoing.

###### **4.1.2 Building Resilient Communities in Solomon Islands**

47. USAID, along with the International Federation of Red Cross and Red Crescent Societies, will build national, provincial, and community level capacity to strengthen community resilience to the effects of climate change, natural disasters, and severe weather events through training on disaster risk reduction and preparedness planning in designated areas. Building Resilient Communities in Solomon Islands will increase the resilience of communities in Solomon Islands and increase the capacity of Solomon Island Red Cross Society branches to support disaster risk management. The project will: 1. increase resilience of target communities; 2. enhance capacity of the Solomon Islands Red Cross Society to deliver disaster management and community-based health programmes; and 3. support the Solomon Islands Red Cross Society in developing effective partnerships and programme learning. Training and capacity-building will directly reach 2000 volunteers, staff, and community members at two branches, contributing to increased safety in communities with 20,000 members. The programme spans between FY 2018-2022.

###### **4.1.3 People to People Peacebuilding Activity – Central African Republic**

48. USAID is building capacity in communities to build and maintain peace within and across identity lines. It trains community members in savings and entrepreneurial skills to manage their financial affairs and build socioeconomic networks. The programme targets local news organizations and the Association of Journalists for Human Rights.

#### **5 INTELLECTUAL PROPERTY PROTECTION (IPR) AND ENFORCEMENT CAPACITY-BUILDING**

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

##### **5.1 USPTO Training and Technical Assistance Collaboration with International Organizations**

50. 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

programmes, 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 Capacity-Building Programmes, covering all areas of IP, in which LDCs participate.

### **5.1.1 USPTO Global Intellectual Property Academy (GIPA)**

51. 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 Officers around the world and the DC-based IP interagency. For more information about GIPA, see [www.uspto.gov/gipa](http://www.uspto.gov/gipa).

52. In FY 2021 GIPA conducted more than 188 training, technical assistance, and capacity-building programmes for over 11,000 participants from over 110 different countries, including the following LDCs: Afghanistan, Angola, Bangladesh, Bhutan, Cambodia, Ethiopia, The Gambia, Lao PDR, Lesotho, Liberia, Malawi, Myanmar, Mozambique, Rwanda, Sao Tome and Principe, Sierra Leone, Solomon Islands, Sudan, Tanzania, Timor-Leste, Tuvalu, Uganda, Vanuatu, and Zambia. USPTO partnered with: Department of State; US Department of Justice; US Department of Homeland Security; US Copyright Office; and US Food and Drug Administration.

### **5.1.2 USPTO IP e-Learning Modules**

53. In FY 2021, GIPA continued its decade-long commitment to produce on-demand content through distance-learning modules on the USPTO website. These modules are available in five languages and cover six different areas of IP protection. In addition, self-study materials—including recordings of events, training slides, and IP toolkits—were updated for asynchronous learning.

54. This on-demand content collectively has drawn more than 176,000 unique views, with the most recent videos covering patents and trade secrets receiving a combined 56,300 views.

### **5.1.3 USPTO Intellectual Property Attaché Training and Technical Assistance**

55. 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 programmes. 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>). A full list of USPTO IP Attachés is available at <https://www.uspto.gov/ip-policy/ip-attache-program>.

### **5.1.4 USPTO Patents for Humanity Programme**

56. 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 virtual USPTO ceremony 17 September 2020 (for video recording, and more information, see <https://www.uspto.gov/patent/initiatives/patents-humanity>).

57. The award category for COVID-related patents remains open until 30 September 2021. More at <https://www.uspto.gov/ip-policy/patent-policy/patents-humanity>.

### **5.1.5 ARIPO-USPTO IPR Capacity-Building Programme Series for Officials in ARIPO Member States**

58. In partnership with the African Regional IP Office, USPTO provided a series of more than ten IPR trainings through its Global IP Academy (GIPA) for ARIPO (African Regional Intellectual Property Organization) Members and Observers, as well as African Union representatives in FY 2021.

59. By the first quarter of FY 2021, ten programmes reached over 470 African officials through the ARIPO Members and Observers network as well as African universities and research institutions. Notably, in June 2021, ARIPO and USPTO conducted a programme on Fostering Technology Transfer in Africa. Government officials, university representatives and researchers from 15 Sub-Saharan African countries took part in the programme.

#### **ARIPO Official Thanks USPTO**

60. ARIPO DG Bemanya Twebaze wrote in a letter of thanks to USPTO March 2021: "The initiatives go a long way in enhancing intellectual property awareness and capacity in the ARIPO region and the continent. ARIPO looks forward to continued collaboration with USPTO in promoting IP awareness and the use of IP systems and tools for socio-economic and technological development of Africa."

## **5.2 Country Projects**

### **5.2.1 Global Cybercrime, IPR, and Cybercrime Foreign Law Enforcement Training and Technical Assistance Initiative**

61. A USD 15 million Bureau of International Narcotics and Law Enforcement Affairs (INL) centrally funded and managed, DOJ and DHS-implemented, cybercrime and IPR training programme is administered cooperatively by INL, the DOJ Office of Overseas Prosecutorial Development Assistance and Training (OPDAT), the DOJ Computer Crime and Intellectual Property Section (CCIPS) and the DHS National Intellectual Property Rights Coordination Center (Center). This centrally managed funding supplements existing bilateral rule of law programmes to specifically build the capacity of partner foreign law enforcement agencies to combat cybercrime and IPR crime. These programmes operate as part of the US Transnational and High-Tech Crime Global Law Enforcement Network (GLEN), which features: DOJ International Computer Hacking and Intellectual Property Law Enforcement Advisors (ICHIPs); DOJ Global Cyber Forensics Advisors (GCFAs); and long-term federal agent mentors. Under the framework of the GLEN, DOJ and DHS coordinate closely with the US Patent and Trademark Office (USPTO), who also receives INL funding designed to complement the GLEN, in order to develop and deliver IPR and computer crime investigative, prosecutorial, judicial and customs and border enforcement training and technical assistance to foreign partners designed to improve their capacity to cooperate with US law enforcement in matters involving transnational organized crime.

### **5.2.2 Intellectual Property Programme – Rwanda**

62. In May 2021, the US Mission in Rwanda facilitated IP law discussion sessions between Professor Justin Hughes from Loyola Law School in Los Angeles, the Rwanda Development Board, and the Ministry of Trade and Industry. Rwanda is in the process of creating its own Patents and Trade Office. Professor Hughes gave an overview of patents and trademarks and how a patent and trademark office runs. Professor Hughes is expected to give his thoughts on the Government of Rwanda's new IP law which the Cabinet presented to Parliament. He will also conduct a geographical indication seminar focusing on how tea and coffee growers can take advantage of their Rwandan origins to secure IP protection. The programme is ongoing.

## **5.3 IPR Enforcement Coordination**

### **5.3.1 National IPR Coordination Center (IPR Center)**

63. The US Immigration and Customs Enforcement/Homeland Security Investigations (HSI) leads the National Intellectual Property Rights Coordination Center (IPR Center), 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 Center 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 Center's Operation Joint Venture (OJV) trains domestic and international law enforcement to build strong enforcement capabilities. The IPR Center, 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.

64. The IPR Center works closely with partner USG agencies, overseas Attachés, and US embassies to deliver training and support capacity-building efforts across the globe. In FY 2021, the IPR Center participated in eight international trainings in support of country specific and regional programmes funded by INL. More than 470 customs, police, and prosecutors attended the training programmes. The effects of the COVID-19 pandemic had a significant impact on the IPR Center's international training activities in the field, forcing IPR Center leadership to condense and move many of these programmes to virtual platforms. Despite the impacts of the global pandemic, the IPR Center hosted the HSI-led Caribbean Regional IPR and Global Trade Enforcement Workshop in August 2021 for eighty customs, police officers, and prosecutors from the Dominican Republic, Haiti, Jamaica, St. Kitts and Nevis, Guadeloupe, Aruba, Bahamas, Curacao, Trinidad and Tobago, Barbados, Turks and Caicos, Sint Maarten, the Cayman Islands, and the US Virgin Islands. DOJ, CBP, USPTO, and other private sector partners supported the workshop that focused on interdictions, investigations and enforcement operations related to IP crime. The workshop emphasized the health and safety issues related to IP and global trade violations, their connection to transnational crime, and the need for broader cooperation between countries and agencies to disrupt and dismantle transnational criminal organizations. In FY 2021, the IPR Center also supported DOJ/ICHIP (International Computer Hacking and Intellectual Property Coordinators) and USPTO-led workshops held for foreign counterparts in Botswana, Brunei, Cambodia, the Cook Islands, Dominican Republic, Fiji, the Gambia, Ghana, Hong Kong, Honiara, Indonesia, Kenya, Lao PDR, Liberia, Malawi, Malaysia, Micronesia, Myanmar, Namibia, Nigeria, Northern Mariana Islands, Philippines, Rwanda, Sierra Leone, Singapore, South Africa, Tanzania, Thailand, Timor-Leste, Uganda, Vanuatu, Viet Nam, and Zambia.

#### **5.4 STOPFakes.gov**

65. The Department of Commerce's International Trade Administration's Office of Standards and Intellectual Property (OSIP) leads the StopFakes.gov programme including creating resources provided on the STOPFakes website (<http://www.stopfakes.gov/>). The website includes industry sector toolkits focused on IP, which provide guidance to US companies seeking to acquire, use, and protect copyrights, patents, trademarks, and trade secrets in overseas markets. Additionally, the STOPFakes website includes 79 IP Snapshots which provide IP information about a foreign country and numerous country IP toolkits with detailed insight focused on IP protections in foreign markets. The STOPFakes Roadshows/Webinars are designed to assist businesses with IP outreach and education including the dangers presented by counterfeits. For example, OSIP recently presented to several hundred businesses focused on IP via a trade association webinar.

66. OSIP provides IP business guidance and insight for entities as they seek to expand their opportunities for exporting. Further, OSIP participated as a panelist on webinars for businesses and consumers seeking to provide IP information for a variety of audiences.

### **6 TRADE AND INVESTMENT POLICY, CAPACITY-BUILDING, AND INCENTIVES**

67. 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**

68. 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

69. 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 has signed five BITs with WTO Member LDCs: Bangladesh, Democratic Republic of the Congo, Mozambique, Rwanda, and Senegal.

### 6.1.2 Trade and Investment Framework Agreements

70. 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 12 trade and investment agreements in Sub-Saharan Africa, including three bilateral TIFAs with LDCs: Angola, Liberia, 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, Cambodia, Lao PDR, Myanmar, 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, Burundi, Cambodia, Democratic Republic of the Congo, Djibouti, The Gambia, Guinea, Guinea Bissau, Haiti, Lao PDR, Lesotho, Madagascar, Malawi, Mali, Mozambique, Myanmar, Nepal, Niger, Rwanda, Senegal, Sierra Leone, Tanzania, Togo, Uganda, Yemen, and Zambia (see <https://ustr.gov/trade-agreements/trade-investment-framework-agreements/>).

71. 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

72. 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 has lapsed as of 31 December 2020. GSP benefited 119 developing countries and territories during October-December 2020 and provided special, additional benefits for products from 31 least developed WTO Member beneficiary countries. Nearly 5,000 types of products were 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

73. 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 May 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 to identify



and develop new market opportunities through AGOA (see <https://agoa.info/about-agoa/>). As of July 2021, 39 countries are eligible for AGOA: Angola, Benin, Botswana, Burkina Faso, Cape Verde, Central African Republic, Chad, Comoros, Cote d'Ivoire, Democratic Republic of Congo, Djibouti, eSwatini, Ethiopia, Gabon, The Gambia, Ghana, Guinea, Guinea Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mozambique, Namibia, Niger, Nigeria, Republic of 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**

74. 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.

75. Recognizing the importance of trade to the economic growth of LDCs, USTDA works closely with its US government partners, 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 12 August 2021, USTDA has approved USD 4,935,956 in appropriated funds and USD 606,350 in transfer funds from the US Department of State in FY 2021 to support assistance activities that enhance increased trade and investment in LDCs.

#### **6.3.1 USTDA Reverse Trade Missions - FY 2020-2021**

76. 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 2020, USTDA approved funding for an RTM of delegates from Bangladeshi entities responsible for the development and maintenance of the country's inland waterways and water resources. This complements the Bangladeshi government's existing plans, and the RTM will familiarize delegates with the best practices and advanced technologies of US firms for dredging and inland waterway management. This activity has been paused during the COVID-19 pandemic and will resume once travel restrictions are lifted.

### **6.4 Country Projects**

#### **6.4.1 USAID Innovations for Social Accountability in Cambodia (ISAC) Activity**

77. The ISAC activity uses technology to expand and enhance citizen engagement on issues of pressing concern for the Cambodian public through increased access to credible information, strengthens coalitions for collective actions, improves evidence-based policy analysis and dialogue, and develops effective social accountability tools using cutting edge information and communications technologies (ICT) in order to provide citizens with venues in which to hold the Cambodian government accountable. ISAC has four objectives:

- a. Improved information access to government decisions and processes, and the planning, spending, and investment of public funds;
- b. Increased citizen participation and collective initiative to increase accountability for public services;
- c. Increased utilization of new or existing technologies, enabling citizen engagement to increase accountability for public services;
- d. Education and outreach to raise awareness of accountability and integrity in public Administration.

78. ISAC supported its six local Implementation Partners (IPs) to customize and roll out digital tools and create digital content to improve citizen engagement and knowledge on social accountability. With ISAC's support, the IPs introduced digital tools into their activities to do online *Information for Citizens* (I4C) dissemination and meetings, especially during the COVID-19 pandemic, which

restricted large gatherings of people and traveling. Thousands of citizens learned about civic rights, standard services, and local government performance and budget in the areas of primary school education, health centres, and Sangkat administration from these digital tools. Moreover, citizens lodged complaints about public services directly in these digital tools for local authorities to address. ISAC saw an increase in the user uptake of the digital tools therefore more citizens are now receiving I4C information through the digital tools and have learned about their civic rights and enhanced skills resulting into them being more confident to engage with local authorities and demand better service delivery.

#### **6.4.2 USAID Promoting Advocacy and Rights – Bangladesh**

79. The USAID-supported Promoting Advocacy and Rights (PAR) activity helps civil society address challenges they face in the digital space and strengthen civil society's ability to reinforce broader democratic values and institutions that help support political pluralism and the rule of law. Select Bangladeshi civil society organizations (CSOs) and five PAR grantees are anticipated to receive advanced information, digital safety tools such as software installation support, a user-friendly manual on the Digital Security Act, and necessary skills to navigate through the digital space. As a result, CSOs and grantees that received PAR support will be able to roll out training knowledge to vulnerable populations such as women's groups, gender minorities and other marginalized populations. These interventions benefit from collaboration with the USAID's Greater Internet Freedom (GIF) Project and USAID's Illuminating New Solutions and Programmatic Innovations for Resilient Spaces (INSPIRES) project.

##### **NGO Official Lauds PAR**

80. When discussing the PAR project launch of the CS Legal Manual App, the Bangladesh NGO Affairs Bureau (NGOAB) Director General said, "What it does - it opens up a door of opportunity for millions of people to access legal information, that would be otherwise forced to get through printed manuals when we know that the digital wave is the wave of the future, so it's important to have the digital access."

#### **6.4.3 International Cybersecurity Seminar – Burkina Faso and Other Countries**

81. US Embassy Ouagadougou in June 2021 partnered with Germany and the George C. Marshall European Center for Security Studies to sponsor an international cybersecurity seminar for Burkina Faso and other African partners. The Embassy nominated three Burkinabe officials covering cybersecurity and information services portfolios for the seminar. The training allowed our Burkinabe partners to gain insights into the Framework for Responsible State Behavior in Cyberspace, in particular on the value of implementing confidence building measures (CBMs) to reduce the risk of misperception that results from cyber disruptions. It also allowed for our Burkinabe partners to interact with other partners and to learn from one another by sharing information, best practices, and experiences.

### **7 DEVELOPMENT PROGRAMMING AND INCENTIVES THROUGH PRIVATE SECTOR MODELS**

82. 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)**

83. 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 14 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 or threshold programmes with six WTO LDC Members: Benin, Burkina Faso,

Nepal, Niger, Senegal, and Togo. Currently, MCC is developing new programmes with The Gambia, Lesotho, Malawi, Mozambique, Sierra Leone and Solomon Islands (see <http://www.mcc.gov/>).

### 7.1.1 MCC Togo Threshold Programme

84. MCC's Togo Threshold Programme entered into force in November 2020 and includes a USD 20.5 million Information and Communication Technology (ICT) Project designed to improve citizens' access to high quality and affordable 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.

#### Prime Minister Lauds MCC

85. Commenting on the project, the Togo Prime Minister said, "The two areas covered by the threshold programme, 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 Power Compact – Benin

86. The USD 375 million Benin Power Compact entered into force on 22 June 2017 and is expected to complete in FY 2022. The compact seeks to unlock private investment by supporting policy reforms and investing in electricity generation, distribution, and off-grid electrification to increase business and household access to reliable electricity. The compact includes a strong emphasis on strengthening the independence and management of Benin's national utility, reforming electricity tariffs, developing an Independent Power Producer framework, and creating policies to enable off-grid electrification. The compact is modernizing Benin's electricity distribution infrastructure to reduce losses, improve reliability, reduce outages, and accommodate rapidly growing demand. Over a twenty-year period, an estimated 10.6 million Beninese are expected to benefit from MCC's investment.

#### Minister Praises MCC

87. Praising the MCC project in Benin, Minister of Energy Dona Jean-Claude Houssou said "[MCC's Electricity Distribution Project] is historic, inspirational and the first of its kind in Benin...These works, which are the result of exceptional preparations, align with the Government's Action Programme and will considerably improve the quality and demand management of electric power for the next 20 to 30 years. Thanks to MCA-Benin II, a robust electricity distribution system is becoming a reality."

### 7.1.3 MCC Power Compact – Burkina Faso

88. The Government of Burkina Faso signed the five year, USD 500 million Burkina Faso II Power Compact on 13 August 2020. The compact is designed to address the high cost, low quality, and limited access to electricity. The compact consists of three related projects that also align with the Government's national socio-economic development priorities, and collectively contribute to increasing the supply and quality of, and expanding access to and the consumption of, cost-effective electricity. The Strengthening Electricity Sector Effectiveness Project focuses on energy sector reforms and capacity-building of key state actors in the sector. The other two projects aim to make improvements to energy infrastructure: The Cost-Effective and Reliable Electricity Supply Project (Supply Project), and the Grid Development and Access Project. The Supply Project will support activities to facilitate new solar Independent Power Producer (IPP) deals, targeted infrastructure improvements and equipment to improve reliability, and new equipment and studies to foster improved regional integration for electricity imports. The Grid Development and Access Project supports transmission and distribution infrastructure in and between Ouagadougou and Bobo-Dioulasso (which account for more than 80% of total electricity consumed in Burkina Faso), as well as activities to facilitate new electricity connections for households, business, and social institutions and to increase productive uses of electricity.

### **7.1.4 MCC Niger Compact**

89. The five-year, USD 437 million Niger Compact entered into force on 26 January 2018. The compact addresses two major constraints to economic growth and investment in Niger: lack of access to water for productive uses, and physical access and institutional barriers to trade. In partnership with the Government of Niger, the compact is increasing rural incomes by improving the sustainable, productive use of natural resources for agricultural production and improving trade and market access for agricultural products. The compact is expected to benefit approximately 3.9 million people. In February 2019, Radar Technologies International (RTI), in partnership with representatives from the University of Nevada Las Vegas (UNLV), contracted with Millennium Challenge Account – Niger (MCA-Niger) to conduct a remote sensing and hydrological analysis of 260,000 km<sup>2</sup> of Niger's ground water basin. The purpose of this work was to map out aquifer recharge potential across the study area and to develop models to verify those findings and demonstrate their sustainable rate of use. MCA-Niger coordinated the technical oversight of these studies through a working group comprised of experts from ministries, universities, and the private sector responsible for managing Niger's groundwater resources. This same working group will benefit from formal technical training led by UNLV representatives over the course of the coming year to ensure that the results and underlying science of these complex studies are fully understood and appropriately integrated into Niger's groundwater management planning and policies.

### **7.1.5 MCC Power Compact – Senegal**

90. The Government of Senegal signed the five-year, USD 600 million Senegal II Power Compact on 10 December 2018. The compact is designed to strengthen Senegal's power sector, by increasing reliability and access to electricity, and aims to help the Government of Senegal establish a modern and efficient foundation upon which the nation's power system can grow. One project supports energy sector policy and institutional and regulatory reform through robust sectoral training and technical assistance programmes, as well as through a performance incentive programme which will employ a results-based financing approach. The compact also allows for an upgrade of the high-voltage transmission network in and around Dakar through a second project, allowing for deployment of grid stabilization technology and installation of what is expected to be the longest subsea electric cable in Senegal. Another project will benefit the energy sector through the expansion of rural electricity access through distribution network upgrades and enhancements to consumer-side elements. Ensuring consistent and affordable access to energy in Senegal will allow businesses to grow, catalyse private sector investment, increase productivity and employment, and ultimately support diversification and growth of Senegal's economy.

## **7.2 Global Development Alliance Model**

91. 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:

- a. Based on complementary interests and objectives;
- b. Market-based approaches and solutions;
- c. Extensive co-creation and shared responsibility; and
- d. Private sector contributions for increased impact.

## **7.3 Country Projects**

### **7.3.1 US Technology for Energy Access and Minigrid Development – Benin**

92. In FY 2021, USTDA funded technical assistance to provide a proof of concept for a US-made digitalized system for solar minigrid management in Benin. The project is anticipated to support economic development and greater social and economic inclusion by generating new renewable

energy and providing energy access to thousands of people living in rural communities in Benin. The activity was obligated in FY 2021 and is estimated to be completed by April 2022.

### **7.3.2 Regional Sub-Saharan Africa: Affordable Internet Expansion in Southern Africa - Democratic Republic of Congo; Mozambique**

93. USTDA approved funding for a feasibility study that will assess the economic and technical viability of expanding connectivity infrastructure in South Africa, Eswatini, Botswana, Mozambique, and the Democratic Republic of the Congo. The study will support the expansion of affordable internet connections to rural areas in the target countries utilizing wireless technologies to lower the cost of international data transit. US firm Connectivity Capital (San Francisco, CA) will carry out the study. This activity was reserved in FY 2021.

### **7.3.3 East Africa Enterprise Solutions – Uganda**

94. USTDA funded a feasibility study to help SEACOM Limited (a regional submarine communications cable operator) expand and improve access to telecommunications services in Uganda, Rwanda, Kenya, and Tanzania. USTDA's study will help determine where to expand ICT infrastructure in East Africa, assess the market for fibre telecommunications services, and recommend potential investments in areas including fibre optic cabling and network equipment. The feasibility study is underway and is approximately halfway completed.

#### **Private Sector Praises USTDA**

95. 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."

### **7.3.4 Sukaabe Janngo – Senegal**

96. USDA-Foreign Agriculture Service funded the McGovern-Dole project that was implemented by Counterpart International. The objectives of the programme are to: increase the number of students and attendance rates by providing nutritious daily school meals for preschool and primary school students; improve health and dietary practices by providing access to deworming medications and increasing knowledge of safe food preparation and storage practices; improve school infrastructure and increase access to clean water and sanitation by rehabilitating latrines and water station systems; and improve the literacy of school-age children through the provision of improved quality of literacy instructional materials. The project also seeks to increase the capacity of government personnel to guide, implement, and maintain school feeding programmes; and to increase engagement of local organizations and community groups to build capacity and establish Sustainability Action Plans (SAPs). In response to the COVID-19 pandemic, USDA authorized distribution of 420 metric tons of food as emergency take-home rations to 47,767 McGovern-Dole students. USDA also donated deworming and vitamin A medication to the Regional Health Services for 55,000 vulnerable children under the age of five, including 5,740 McGovern-Dole preschool children. Through the provision of nutritious daily school meals and deworming medications for preschool and primary school students, improved quality of literacy instructional materials, and increased knowledge of safe food preparation and storage practices, Sukaabe Janngo has improved student literacy and increased student use of appropriate health, nutrition, and dietary practices.

### **7.3.5 ASTER – Burkina Faso**

97. USAID provides assistance to the Government of Burkina Faso to improve and secure access to land for vulnerable people in the nation's Center North, Sahel, and the East regions. Since 2019, USAID has supported the establishment, staffing, and effective operation of rural land tenure service offices and village land tenure councils through ASTER, the USAID land tenure security activity. Implemented by the National Land Observatory (ONF-BF), a local organization mandated by the government to improve the land tenure situation in Burkina Faso, ASTER works to facilitate delivery of land property rights certificates through the use of the Mobile Application to Secure Tenure (MAST technology) and to improve the arbitration and mitigation of conflicts arising over land. USAID developed the Mobile Application to Secure Tenure (MAST), a smartphone application that improves efficiencies and reduces time and costs associated with land titling and mapping in rural areas. With the MAST technology, the land tenure agents in the Boudry pilot commune were able to record 2,638

plots in 25 days compared to the 100 plots that was the maximum record made within a month by the same agents. This contributes to an enabling environment for long-term investment in land to improve agricultural productivity and enhance sustainable livelihoods. The National Land Observatory estimated that the number of Land Property Rights Certificates (APFRs) processed and issued using MAST in the pilot commune surpassed the total number of APFRs issued in the past four years across all other communes in Burkina Faso. Based on these successful results achieved, USAID extended the use of MAST in 27 additional communes of the Resilience zone through ASTER. USAID would like to see the Government of Burkina Faso adopt the MAST technology and expand its implementation in other parts of Burkina Faso.

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

### **8.1 Agricultural Technology Transfer Programming from the USDA**

98. To facilitate technology transfer, the US Department of Agriculture (USDA) uses contractual instruments such as Cooperative Research and Development Agreements (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/ott/technology-transfer-annual-report/>).

#### **8.1.1 Agricultural Technology Transfer Programming from the ARS**

99. By sharing knowledge and technology through close collaboration with national and international research institutions to increase research capacity and speed technology development, USDA Agricultural Research Service (ARS) transfers technology and enhances international trade and diplomacy (see <https://www.ars.usda.gov/ott/technology-transfer-annual-report/>).

#### **8.1.2 Feed the Future Initiative (FTF)**

100. 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 catalyzes 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 Digital Development for FTF (D2FTF)**

101. 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:

- a. precision agriculture (including sensor technology);
- b. digital financial services;
- c. data-driven agriculture; and



d. ICT-enabled extension.

102. D2FTF is scaling the use of these tools in LDCs through various methods of engagement including: technical assistance to FTF programmes, capacity-building for FTF teams, and strengthening the knowledge base on best practices. The programme is focused primarily on FTF target countries.

### **8.1.2.2 FTF - Mboga na Matunda – Tanzania**

103. 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:

- a. scaling improved technologies and practices that lead to increased productivity of smallholders, including large numbers of women and youth, in targeted commodities;
- b. scaling market system models able to reach large numbers of direct and indirect beneficiaries, including vulnerable populations, while increasing trade for targeted commodities; and
- c. strengthening the overall capacity of the industry.

104. 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 seeks to increase the productivity and profitability of horticultural value chains for 447,000 targeted beneficiaries, comprising 50% women and 30% youth. The activity is using a market systems approach to deliver technical support and encourage the adoption of farm-level innovations like improved technologies, farming practices, and efficient business models. To foster the sustainable competitiveness of the horticulture sector, the activity has worked with local partners including private sector entities and public extension officers. Mboga na Matunda will run from January 2017 to June 2022.

#### **Government Official and Farmer Praise FTFT-MnM**

105. Joyce Basibasi, GEO [government extension officer] at Maendeleo said, "FTFT-MnM is very helpful to GEOs. It helps us connect with more farmers so we can provide them with necessary farming services that help them prevail in their businesses" (see [https://pdf.usaid.gov/pdf\\_docs/PA00WP5B.pdf](https://pdf.usaid.gov/pdf_docs/PA00WP5B.pdf); [https://pdf.usaid.gov/pdf\\_docs/PA00XCC8.pdf](https://pdf.usaid.gov/pdf_docs/PA00XCC8.pdf)). The owner of a farm market stall, Christom Kachima, says the stall he used in the past contributed greatly to the deterioration of his produce, and reduced his profits because the products were placed on top of each other in a pile that increased pressure points, caused damage, and reduced air circulation. "The new stall is a game changer in local markets in terms of both consumption and business growth. My business is constantly surrounded by customers, helping to improve my income. Currently, I earn USD 180 a day, an increase of USD 50 per day compared to what I was making previously," said Kachima. The market stall initiative is one of among many other market facilitation support efforts by the USAID FTFT-MnM activity to promote the consumption of nutrient-rich crops in local communities.

### **8.1.2.3 FTF Bangladesh Livestock Production for Improved Nutrition – Bangladesh**

106. The goal of the Feed the Future Bangladesh Livestock Production for Improved Nutrition activity is to improve the utilization of livestock products by rural households through increased livestock productivity. The USAID activity provides technical assistance in the cultivation of high-yielding species of pasture crops and in livestock management practices and technologies for improving livestock productivity. Thus, with increased productivity, rural households get access to hygienic, diverse, and quality food resulting in improved household nutrition.

107. The programme ended on 14 June 2021. Over the past six years, the programme supported nearly 180,000 farm families providing improved access to livestock services, technologies, finance, and market linkages which resulted in significantly higher income and improved nutrition for rural Bangladeshis. Among participating households, milk and meat production increased by 233% and 188% respectively, thereby dramatically increasing the availability of nutrient-rich foods among rural families. The percentage of households consuming meat and milk on a regular basis went up by 40%. At the same time, the contribution of livestock to total household income increased by 141%.

Over 2000 livestock service providers have been trained to continue supporting livestock farmers, complementing government extension agents. To achieve these phenomenal results, USAID collaborated closely with the private sector and financial institutions, leveraging over USD 1.3 million in investment, making available over 3,000 metric tons of improved cattle feed to smallholder farmers, and accessing over USD 3.1 million in credit to farmers and small and medium enterprises.

#### **8.1.2.4 FTF Harvest II – Cambodia**

108. The programme works with the private sector to catalyse partnerships between agricultural producers, buyers, and distributors, with the goal of accelerating the growth of the commercial horticulture sector. The objectives of the programme are to:

- a. increase the capacity of farmer organizations and private sector to better engage in the market to increase both profitability of farming and investment into the sector;
- b. facilitate coordination of efforts, investment, and private sector engagement (including the provision of technical assistance) along the vegetable value chain;
- c. remove obstacles to market access for commercial horticulture crops in order to create job opportunities and increase rural on- and off-farm incomes; and
- d. strengthen Cambodia's commercial horticulture value chain so that farmers and other entrepreneurs are better equipped, not only to increase production, but to effectively compete in the local and regional markets.

109. Over the past four years, Harvest II has worked with 7,200 market actors in the horticulture sector, of which 54% were women and 27% were youth. Harvest II helped build the business skills of a number of local small and medium enterprises and producer organizations and promoted export growth in regional and international markets. As a result, Harvest II assisted market actors in generating USD 51.5 million in sales, leveraged USD 14.2 million in private capital investment, and created 1,870 new jobs. The programme is scheduled to complete in July 2021.

#### **Government Official Lauds FTF**

110. Kean Sophea, Director of the Department of Horticulture and Subsidiary Crops at the Ministry of Agriculture, Forestry and Fisheries, said, "Previously, there was no national policy for the horticulture sector, so there is no concrete road map, which has made the implementation of policy in this sector challenging." He added that it is also difficult to attract the investors needed for sector growth as Cambodia does not have policy support in place. Sophea also noted that incentives to encourage investment in irrigation systems and infrastructure are also included in the policy as a means of hastening growth. "This policy will support, offer guidance and identify a roadmap that adds clarity to the path ahead for the Kingdom's horticulture sector. It is in the draft stage and, once completed, will be submitted to the Minister of Agriculture and other relevant ministries for additional input."

#### **8.1.2.5 FTF DRC Strengthening Value Chains (SVC) Programme – Democratic Republic of Congo**

111. With a budget of USD 23 million, the purpose of the programme is to increase household incomes and access to nutrient rich crops by linking small-holder farmers to strengthened and inclusive value chains and supportive market services. SVC applies a nutrition-sensitive value chain and market systems development approach to strengthen nutritional crops (beans and soybean) and specialty coffee value chain development in South Kivu. SVC works with the Government of DRC (Ministry of Agriculture, civil society organizations, and the private sector) to build the capacity of vertical and horizontal actors working within targeted value chains. The programme is scheduled to run for five years and complete in FY 2022.

#### **8.1.2.6 FTF "Hinga Weze" – Rwanda**

112. Through the "Hinga Weze" project, USAID promoted irrigation technologies using solar pumps and digital tools in agricultural inputs management. The project made post-harvest technologies easily accessible to farmers and reached its targets through:

- a. Small scale irrigation technology using solar pumps supported irrigation of 200 ha of land. Targeted crops included high-iron beans and maize, along with watermelons, chilis, onions, cabbages, and French beans. The use of solar energy for the pumps was a major step forward for sustainability of irrigation, since with no diesel costs for farmers there was more acceptance of the system over the long-term.
- b. A supply chain management system that allowed for end-to-end digitization of an agro-input subsidy programme. Currently, over 1,400,000 farmers are registered on the platform, 500,000 of whom are farmers located in 10 Hinga Weze districts.
- c. Via the Kumwe Harvest "Cob Model," farmers sold maize cobs immediately after harvest for eventual sale to a processor. Since the project started in early 2019, it has served 42,000 farmers across Rwanda, 15,125 of whom are from Hinga Weze districts. Using the granted equipment, Kumwe Harvest eliminated post-harvest losses for these farmers, reduced grains rejections due to aflatoxin contamination from 90% to below 1%, and processed over 16,000 MT of high-quality local maize in 16 months, ultimately providing farmers with reliable access to high-value markets.

#### **8.1.2.7 FTF – Burkina Faso**

113. USAID supported the Feed the Future innovation labs on various agriculture research through the local organization Inera and multiple US universities. Through the Innovation Lab for Legume Systems Research Projects with Michigan State University, USAID worked on research towards minimizing insect pests that can severely impact cowpea cropping systems. USAID also developed and deployed climate-resilient, environmentally friendly, and economically profitable integrated pest management approaches and tools. The aid organization also increased the understanding of the unanticipated consequences of fertilizer subsidies on the cowpea value chain in Burkina Faso.

#### **8.1.3 NASA/USAID SERVIR Programme**

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

115. SERVIR connected 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 developed innovative solutions to improve livelihoods and foster self-reliance in Asia, Africa, and the Americas. USAID brought the users; USAID's development expertise and field presence in 100 countries provided the connections and local partnerships with local, national and regional stakeholders. NASA brought 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 focused on ways to leverage US science to replicate successes and innovate around the world. NASA also worked hand in hand with developing country organizations and scientists to leave behind increased technical capacity and societal benefit. Today, 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/>).

##### **8.1.3.1 SERVIR Mekong – Cambodia**

116. This programme supported the ongoing development and implementation of the SERVIR Mekong geospatial platform, managed by the Asian Disaster Preparedness Center. This platform helped NGOs and government institutions improve environmental management and resilience to

climate change in the Lower Mekong region through the increased application of geospatial analysis to critical, urgent, or common policy and planning needs.

117. SERVIR-Mekong worked hand in hand with the USAID Greening Prey Lang activity to enhance the development and implementation of the Cambodia Environmental Information Monitoring System (CEMIS). The programme also supported capacity development and training for the Ministry of Environment, academia, and NGOs on how to use tools and apply remote sensing technologies to monitor forest cover and landscape management.

118. According to Matthew Edwardsen, Chief of Party for USAID Greening Prey Lang, "Discussions around deforestation in Cambodia tend to focus on the illegal timber trade, which, while an extremely serious problem, it is not the greatest cause of forest loss. What we are seeing is widespread illegal forest clearance for agriculture that is driven by land speculation. Early identification of these clearings and permanent expulsion of illegal farmers from them must occur if we want to see a decrease in the deforestation trends in the protected areas where we are working." To address some of these problems SERVIR Mekong developed the Cambodia Protected Area Alerts System. This system monitors near real-time forest changes and external threats such as forest fires within the Prey Lang Extended Landscape. The Cambodia Protected Area Alerts System is a key component of the Protected Area Monitoring Platform, launched recently by Cambodia's Ministry of Environment, which integrates ground-based and remotely sensed data to improve the efficiency and effectiveness of law enforcement and conservation activities.

#### **8.1.4 Linking Infrastructure, Finance, and Farms to Cashew (LIFFT) – Senegal, The Gambia, Guinea-Bissau (SeGaBi)**

119. USDA-FAS's Food for Progress (FFPr) project implemented by Shelter for Life (SFL) and Connexus Corporation aims to improve the marketing of raw cashew nuts and other cashew products in local and international markets through value chain improvement. During FY 2017-2023, the programme's objectives are:

- a. Increase quality of raw cashew nuts (RCN) by organizing and building the capacity of farmers to improve on-farm and post-harvest practices, and increase bargaining power;
- b. Increase processing of RCN within SeGaBi region by increasing access to financial services, capacity-building, and upgrading value chain linkages;
- c. Promote the collective sale of RCN by developing and upgrading value chain linkages necessary to support an integrated regional trade network, which includes creating durable market infrastructure and improved access to markets for value chain actors;
- d. Improve or maintain raw cashew nut quality at 52-54 lbs.

120. The programme has already reached three of its targets by strengthening associations/cooperatives, increasing collective sales of raw cashew nuts to 100,000 tons, and increasing raw nut processing capacity by an additional 30,000 tons per year in target countries.

## **8.2 Country Projects**

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

121. USAID, in partnership with Regional Integrated Multi-Hazard Early Warning System (RIMES), has planned for the improvement of flood forecast lead time and generation of upazila (subdistrict or administrative region) specific weather forecasts, forecast based advisories for Agriculture, Livestock and Disaster Management sectors. The activity has been working for operationalizing location specific weather forecasts for upazila level and this forecast data has used a visually intuitive format through iconography. As a result of these initiatives and technology transfer, the communities will have better preparedness and location specific information to reduce loss of life and assets from flood and other related disasters. Started in FY 2015, the activity has already operationalized both the system and facilitating the FFWC and BMD to implement the system in the current activity operation area and then scale up throughout the country by FY 2022.

### 8.2.2 SEMEAR – Mozambique

122. 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 was extended to September 2021.

### 8.2.3 RAMA-BC – Mozambique

123. USAID's Resilient Agriculture and Markets Activity (RAMA-BC) programme'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-BC will implement activities under four component areas to increase the adoption of resilient agricultural technologies in the Beira corridor. Components 1 and 2 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 3 and 4 will support supply-side improvements, leading to increased availability, accessibility, and affordability of inputs and other technologies, and improved private sector led advisory services.

124. The RAMA-BC project has assisted smallholder farmers to apply new and improved technologies to 13,037 ha of land for 15,684 farmers. This has led to increased sales by smallholder farmer that amount to USD 4.6 million. The project has also managed to establish 1,394 awareness events for several stakeholders, including smallholder farmers, private sector partners, partner government entities, and the local universities and agricultural colleges.

#### Farmer Praises RAMA-BC

125. Commenting on the RAMA-BC project, one local farmer from Mozambique said, "The yield from my field has motivated me to work harder and teach other farmers to adopt conservation agriculture techniques and improve their yield, without using fertilizer or ploughing. It's clear that we need to be patient, because yield improvement occurs from the second season onwards, as can be seen in the first season I reaped 840kg, in the second 1,240kg, and this last season I got 1,505kg from just 2,500m<sup>2</sup> (1/4 ha), what was not possible before from 1 ha and next season I hope to produce even more!"

### 8.2.4 Water Resources Integration Development Initiative (WARIDI) – Tanzania

126. WARIDI promoted integrated water resources management and delivery of services across multiple sectors. The goal was 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 worked 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. The programme ran during January 2016 – March 2021.

#### Programme Officials Praise WARIDI

127. Speaking about their project, WARIDI programme officials reported that they trained Basin water officers on how to interpret policies and information on sustainable management of water. They also provided modern equipment and software to aid in monitoring the flow of water in various rivers and streams which supply major rivers. Programme officers trained staff on how to measure and report data, especially in the area of data gathering which has been a major challenge for a long time. One local Basin water official stated, "Our instruments faced difficulties especially in big rivers because many of our rivers have ferocious animals such as crocodiles and hippos. As a result of the

help from WARIDI we have been able to get good boats that have enabled us to get into the water but also instruments that measure faster using modern methods. This has reduced the amount of time we use to measure the water flow in the river, but it also reduced the danger of being attacked by animals" (see <https://www.globalwaters.org/resources/assets/usaid-water-resources-management-tanzania>).

### **8.2.5 Center of Excellence on Sustainable Agricultural Intensification and Nutrition (CE SAIN) – Cambodia**

128. Through this programme, USAID established a center of excellence at the Royal University of Agriculture (RUA) to ensure research on agriculture innovations is disseminated to farmers, NGOs, and the private sector. The research is meant to meet market and farmer demand for information and technology to reduce production costs and increase efficiencies for farmers and agribusinesses, and ultimately to reduce poverty. The programme:

- a. established Technology Parks in different agro-hydro-ecological zones and demonstrated promising technologies;
- b. strengthened RUA's capacity to deliver vocational and non-degree training to extension professionals, government staff, NGO employees, and farmers;
- c. improved RUA faculty education, research and extension capacity through long and short-term training;
- d. provided technical expertise and research opportunities in the areas of sustainable agricultural intensification and nutrition;
- e. empowered farmers, both in the public and private sectors, to shift from conventional production systems to profitable soil and ecosystems, enhancing conservation agriculture production system; and
- f. engaged private sector to scale up agriculture services in conservation agriculture practices.

129. CE SAIN partnered with 16 US land grant universities to conduct off-farm trials to develop new innovative agriculture technologies in Cambodia over the past five years. The programme showcased approximately 28 innovative agricultural technologies and prepared those technologies for transfer to farmers and private businesses. Over 5,000 farmers and private businesses visited the showcases of these new technologies at five CE SAIN technology parks, and over 1,000 ha of farmland were cultivated with use of these improved practices. Eight PhD and nine masters degree candidates completed post graduate study in Cambodia through support from the CE SAIN scholarship programme, and over 1,250 farmers and other stakeholders attended CE SAIN short-term training programmes on innovative agriculture technologies.

#### **Cambodian Minister of Agriculture Lauds CE SAIN**

130. Cambodia's Minister of Agriculture, Forestry, and Fisheries remarked that "The Center of Excellence on Sustainable Agriculture Intensification and Nutrition (CE SAIN) project is very comprehensive, and it will be the model of USAID's agricultural programming in Cambodia."

### **8.2.6 USDA Millet Value Chain Project – Senegal**

### **8.2.7 Protecting Malian Farmers: Testing a Response to the Threat of Fall Armyworm Programme – Mali**

131. USAID/Mali partnered with myAgro to protect Malian farmers and their harvests from the Fall Armyworm (FAW). Due to the COVID-19 pandemic, myAgro changed their in-person farmer group agricultural training, and pivoted to focus on video, radio, and telephone training formats to continue delivering content to farmers and local planting interns despite the restrictions imposed by the pandemic. In the run-up to Village Farmer Experts (VFE) training and equipping outreach events, myAgro updated farmer and VFE training materials, including the development of training videos detailing proper insecticide treatment and storage. As part of their training offerings, myAgro produced five videos on peanut, maize, sorghum, and okra cultivation, as well as a video on FAW and IPM practices. They posted these videos to their YouTube channel, and shared them with field team members, VFEs, and planting interns via WhatsApp. With the videos on their phone, VFEs could



show or transfer the videos to farmers during their interactions throughout the payment, delivery, and planting periods.

132. Malian farmers participating in myAgro's FAW programme grew 88% more food than farmers in the control group and earned USD 135 of additional income per farmer. MyAgro maize farmers in Mali also had an average yield of 2.93 tons per hectare, which was 31% higher than the average yield of the farmers in the control group.

### **8.2.8 Mali Agricultural Integrated Survey (AGRIS) – Cambodia**

133. During January 2019 and July 2021, this USAID programme aimed to provide support in designing and implementing a customized Cambodia Inter-Censal Agriculture Survey (CIAS) to help inform agriculture investment, innovation, and policy to drive changes toward increasing sustainability in the agriculture sector. The survey data will ultimately benefit private sector agribusiness companies and the Ministry of Agriculture, Forestry, and Fisheries. The CIAS collected information on crop cultivation, livestock and poultry raising, aquaculture, and capture fishing. The survey used statistical methods to select a representative sample of Enumeration Areas (EA) throughout Cambodia, from the 2013 Agriculture Census Sampling Frame. Over 400 staff from the Provincial Departments of Planning and Agriculture, Forestry, and Fisheries conducted initial data collection between July and November 2019. They completed over 16,000 interviews with household and juridical (non-household) agricultural holdings. Authorities continued to use that initial data collected in 2019 to help them make better agriculture sector policy decisions in 2021.

#### **Government Officials Laud AGRISurvey**

134. The CIAS 2019 was part of the "AGRISurvey," a multi-year programme aimed at providing quality information to planners and policymakers and building national capacity on best survey practices. It was funded by the Royal Government of Cambodia (RGC), the United States Agency for International Development (USAID), the FAO (Food and Agriculture Organization of the United Nations), and the Bill and Melinda Gates Foundation. Her Excellency Hang Lina, Delegate of Royal Government of Cambodia in-charge of Director General of the National Institute of Statistics praised the quality of the partnership when she stated: "I wish to thank FAO for giving NIS (National Institute of Statistics, Cambodian Ministry of Planning) access to new technologies, which resulted in the first national tablet-based data collection. I also wish to express my gratitude to USAID for their significant financial support, which was fundamental in successfully completing the CIAS 2019." Mr. Alexandre Huynh, FAO Representative in Cambodia emphasized that, "The CIAS 2019 helps to close the agricultural data gap and will contribute to effective planning, financing, and implementing of agricultural development strategies. Timely and quality data will support the RGC to ensure food security and mitigate the economic impacts of the COVID-19 pandemic in Cambodia."

### **8.2.9 Capacity-building in Agriculture- Tanzania**

135. Implemented in collaboration with the US Department of Agriculture (USDA), the Capacity-building in Agriculture programme supports during 2015-2023 the government of Tanzania to improve data collection and information dissemination and to connect key actors in the agricultural sector to develop income-generating activities for smallholder farmers. Over 30,000 individuals in the agriculture sector have received short-term productivity or food security training. Over 12,000 farmers have applied improved agriculture technologies or management practices such as improved seeds, planting techniques, and pest management. Approximately 7,000 hectares of land are under improved technologies or management practices. Over 2,500 people are using climate information or implementing risk reducing actions to improve resilient agriculture.

#### **8.2.10 Burundi Coffee Alliance - Kahawatu Foundation**

136. USAID programming supports Kahawatu, which works with two private sector partners, GreenCo and Sucafina, to improve the health and care of coffee trees, planting, harvesting, and marketing techniques, to increase the quality of Burundian coffee and the value chain for farmers. Future funding is uncertain, given the parastatal's involvement, which includes banning collection from 200 coffee washing stations (which will hinder timely harvesting) and raising coffee cherry prices by 30%, affecting the business models of private sector investors. The World Bank, the US Embassy in Burundi, and private sector partners continue to engage the government on this issue.

The target is small-scale coffee farmers, encouraging them to join associations and increasing value chains.

## **9 PROGRAMMING AND INCENTIVES RELATED TO ENERGY DEVELOPMENT**

### **9.1 Private Financing Advisory Network (PFAN) – Global**

137. PFAN is a multilateral public private partnership initiated by the Climate Technology Initiative and the United Nations Framework Convention on Climate Change (UNFCCC), and is currently hosted by the United Nations Industrial Development Organization (UNIDO). It identifies and nurtures promising, innovative clean development 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 and assist projects that are economically viable, as well as environmentally and socially beneficial. PFAN's partners and donors include: Australia's Department of Foreign Affairs and Trade (DFAT); the Norwegian Ministry of Foreign Affairs; the Swedish International Development Cooperation Agency (SIDA); and the US Agency for International Development (USAID).

138. Since 2008, PFAN has raised USD 2 billion for 155 completed projects, representing 1.2 gigawatts of clean and renewable electric power generation capacity. The initiative mobilized USD 650 million investment in clean energy over the past five years, with over 70% from the private sector. PFAN has supported stakeholders in over 50 countries, and 28% of the current projects are solar energy (both on and off grid).

### **9.2 Regional and Country Energy Initiatives**

139. 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 programmes.

#### **9.2.1 Power Africa – Madagascar**

140. Power Africa is a US Government-led partnership that seeks to add 30,000 MW and 60 million electricity connections in sub-Saharan Africa by 2030. Off-grid electrification solutions, such as minigrids, can play a vital role in electrifying Madagascar's rural areas. However, private developers and operators capable of installing and operating minigrid systems often struggle to enter and expand the minigrid market because they lack access to project financing. Power Africa awarded USD 1.2 million in grants for the development of minigrids in Madagascar to bring electricity to more than 5,200 households and businesses in rural Madagascar.

#### **9.2.2 Power Africa – Burundi**

141. US Embassy's Deal Team, the U.S. Development Finance Corporation (DFC), and Power Africa are supporting a US energy company project to build two hydroelectric power stations in Burundi. The stations will provide much-needed electricity in rural areas of Burundi. In April 2021, after six years of negotiations, Songa Energy and Virunga Power signed a power purchase agreement (PPA) and public-private partnership (PPP) with the Ministry of Energy. Construction on the first station, a 1.65 MW project, is planned to begin later in 2021, while the second, a 9 MW project, should begin in 2022.

#### **9.2.3 USTDA Award to eleQtra – Mozambique**

142. The USTDA awarded in winter of 2018 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 study is currently underway.

#### **9.2.4 USTDA Award to Globeleq Calanga Wind - Mozambique**

143. USTDA awarded in autumn of 2020 a grant to Globeleq Calanga Wind, S.A. for a feasibility study to assess the technical, financial, and economic viability of a 130 megawatt wind power plant to be developed in two phases of 65 MW each, along with energy storage of 10-20 MW (20-40 MW hours), as well as associated transmission and interconnection infrastructure in the Manhica district in Maputo Province, Mozambique. The feasibility study is currently underway.

#### **9.2.5 USTDA East Africa Enterprise Solutions Feasibility Study - Rwanda**

144. USTDA awarded in 2019 a contract to Decision Analysis LLC to perform a feasibility study to determine how to improve telecommunications access in East Africa. The study is encountering delays due to the COVID-19 pandemic, but is ongoing.

#### **9.2.6 WindGen Village and C&I Minigrids – Sierra Leone**

145. In FY 2019, USTDA awarded a grant to the Ministry of Energy in Sierra Leone for a feasibility study to provide the technical and financial analysis to implement approximately 45 minigrids in the country. USTDA's study will specifically support a private-sector-led standard for off-grid development and serve as a model for other West African countries to replicate. The project is envisioned to increase energy access for more than 8,000 rural households and several hundred businesses in Sierra Leone. The feasibility study is underway and is expected to be completed in 2023.

##### **Sierra Leone Minister of Energy Lauds WindGen**

146. Sierra Leone Minister of Energy Alhaji Kanja Sesay said, "On behalf of the Government of Sierra Leone, the Ministry of Energy stands ready to work closely with USTDA and WindGen to prepare a world-class Feasibility Study for 45 minigrids in Sierra Leone. On the basis of the technical design and detailed planning work, we expect these minigrids will be readily financed and developed – in order to provide affordable, solar-powered energy for over 8,000 Sierra Leonean households and businesses. This new Study and the expected Project will be coordinated with our ongoing minigrid activities and initiatives, in particular the flagship Rural and Renewable Energy Project, to help achieve the overall energy sector vision of the Ministry of Energy and the Government of Sierra Leone."

#### **9.2.7 US Technology for Energy Access and Minigrid Development – Benin**

147. In FY 2021, USTDA funded technical assistance to provide a proof of concept for a US-made digitalized system for solar minigrid management in Benin. The project is anticipated to support economic development and greater social and economic inclusion by generating new renewable energy and providing energy access to thousands of people living in rural communities in Benin. USTDA obligated funds for the technical assistance project in FY 2021 and the projected completion date is April 2022.

#### **9.2.8 Solar and Battery Project Minigrid Project: Feasibility Study and Pilot Project – Madagascar**

148. USTDA funded in 2017 a feasibility study in Madagascar for the development of solar photovoltaic minigrids with battery storage for off-grid remote areas. The study was carried out by US firm Fluidic Energy Inc. (now NantEnergy), which partners with Henri Fraise Fils & Cie. The project also includes participation from additional US companies, including Caterpillar (Peoria, IL) and First Solar (Perrysburg, OH).

149. 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 programme. The study is projected to be completed in 2021.

### Private Sector Lauds USTDA

150. "We appreciate USTDA's support for our partnership with Fluidic, Inc.," said Nicolas Verbert, Vice President of Henri Fraise. "The funds will help develop our business model and broader deployment of minigrid solutions across Madagascar."

### 9.2.9 Regional Sub-Saharan Africa: West Africa Power Pool 225kV Cote d'Ivoire-Liberia Transmission Interconnection Project – Liberia

151. In FY 2021, USTDA approved funding for a feasibility study that will provide the West Africa Power Pool with a technical, economic, and environmental assessment for a 225 kV transmission line and related substation and distribution equipment from Côte d'Ivoire to Liberia. The project is anticipated to provide energy access to surrounding communities, as well as create greater resiliency and enable deployment of renewable energy generation for the West Africa Power Pool.

### 9.2.10 Namaacha Wind Power Plant – Mozambique

152. In FY 2018, USTDA awarded a feasibility study grant to power developer eleQtra 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 a benchmark for the industry in this country. The feasibility study is underway and projected to be completed in 2022.

### Regional Manager Praises eleQtra's Initiative

153. "We are extremely proud that eleQtra's initiative to develop a wind farm in Namaacha will receive this critical early-stage funding from USTDA," said Lauren Thomas, eleQtra's Regional Manager. "We hope that this support will lead to the strengthening of the Mozambican power supply with the first wind IPP in the country and bring new opportunities to the communities of Namaacha. We look forward to working with Worley Parsons and Mozambique's Energy Fund (FUNAE) to complete this essential feasibility study."

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

154. 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 the establishment of a South Asia Regional Electricity Market. These are 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. Currently the programme focuses on moving the region from bilateral trade to multi-lateral/tri-lateral power trade and facilitating participation of neighbouring countries in Indian power exchange. The programme also seeks to establish a platform and an investment forum for South Asia energy market players.

155. Many of the programme's workshops, trainings and consensus building events had to be postponed due to the COVID-19 pandemic situation in each of the participating countries. However, some of the key activities undertaken in 2021 included:

- a. An analysis of the role of regional energy cooperation in combating the COVID-19 pandemic economic impacts through two reports. One report examined India's "9 P.M. 9 Minutes" event, which looked at how India's system operators, in conjunction with Bhutan's hydro-resources, worked to address power load-fluctuation challenges. The second report highlighted how regional energy collaboration helped countries secure economic power resources to meet their demand. Programme implementers also hosted a webinar for South Asian Distribution utility company leaders in which they discussed the challenges and innovative solutions they adopted to better manage their operations during the COVID-19 pandemic;
- b. Continued support to regional bodies such as the South Asia Forum of Infrastructure Regulators (SAFIR) and the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). Project leadership assisted SAFIR in organizing a working

group to identify regulatory interventions for grid discipline as well as develop a regulatory roadmap for electricity trade and exchange in South Asia. To enhance knowledge and promote cross-learning, SARI/EI organized two regulatory conferences with SAFIR on energy cooperation in South Asia and sustainable infrastructure;

- c. Collaboration with BIMSTEC to organize a workshop for its member countries focused on developing a roadmap for regional energy cooperation in the BIMSTEC region, including the development of a background paper;
- d. A draft common minimum power grid code for South Asia which is under stakeholder consultations;
- e. Initial groundwork to establish two independent regional power forums, the South Asia Forum for Transmission Utilities (SAFTU) and the South Asia Forum for System Operators (SAFSO);
- f. A completed analytical study on the potential of gas as a power source in South Asia; and
- g. Virtual training programmes on power trading, power exchanges, and power sector market products.

## **10 PROGRAMMING AND INCENTIVES RELATED TO ENVIRONMENTAL PROTECTION**

156. 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.

157. The climate crisis represents an existential threat to the security and prosperity of communities in the United States and around the world. At the same time, responding to the climate crisis offers one of the greatest opportunities in history for innovation, sustainable economic growth, and the creation of high-quality jobs. This is why the Biden-Harris Administration has made tackling the climate crisis in the United States and abroad a top priority.

158. President Biden called for the preparation of a Climate Finance Plan (herein "Plan"). This Plan—the first of its kind in the US government—focuses specifically on international climate finance. For the purposes of this Plan, "climate finance" refers in part to the provision or mobilization of financial resources to assist developing countries to reduce and/or avoid greenhouse gas (GHG) emissions and build resilience and adapt to the impacts of climate change. The Plan also addresses the need to better align public and private financial flows consistent with what is needed to achieve the Paris Agreement's temperature and resilient-development goals.

159. Meeting the collective goal of mobilizing USD 100 billion per year for developing countries from a wide variety of public and private sources, in the context of meaningful mitigation actions and transparency on implementation, is a priority for the United States (see <https://www.whitehouse.gov/wp-content/uploads/2021/04/U.S.-International-Climate-Finance-Plan-4.22.21-Updated-Spacing.pdf?source=email>).

### **10.1 US Programme on SilvaCarbon**

160. SilvaCarbon is a technical cooperation programme under the Global Climate Change Initiative and a US contribution to the Global Forest Observation Initiative. SilvaCarbon works with more than 25 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/](http://www.silvacarbon.org/)).

161. 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, working with Google Earth Engine, Boston University, Oregon State University, USFS and USGS, SilvaCarbon delivered customized training to selected tropical forested countries to support the uptick of state-of-the-art forest monitoring technologies tailored



to country needs. SilvaCarbon has worked with counterparts from LDCs in Africa (Democratic Republic of the Congo, Ethiopia, Zambia) and Asia (Nepal, Cambodia, Lao PDR) to generate and use improved forest data to meet the needs of multiple users and stakeholders. In Asia, the programme is currently working to implement the latest deep machine learning methods for solving challenging tasks such as mapping agricultural crops under shifting cultivation and forest degradation due to selective logging. SilvaCarbon has also contributed to the development and dissemination of key global tools including the Collect Earth Online (CEO) forest monitoring platform, the Radar for Detecting Deforestation (RADD) deforestation early alert system, and the Agriculture and Land Use National Greenhouse Gas Inventory Software tool.

#### Government Officials Praise SilvaCarbon

162. Mr. Soukanh Bounthabandit, Deputy Director of Forestry Inventory and Planning Division (FIPD) in Lao PDR said on 7 June 2021, "Using Collect Earth Online (CEO) provides the team with an inexpensive approach to collecting sample inventory to estimate the area of degradation and assess uncertainty. It also allows the team to identify when key degradation activities like logging are occurring. CEO is easy to use and provides reference information to conduct the interpretation with high accuracy. As the FIPD Deputy Director, I encourage my team to use this tool."

163. Mr. Vang Seng, Director, Department of Agricultural Land Resources Management in Cambodia said in October 2020 at the training opening remarks: "Our current cropping mapping takes a long time to complete and stretches our human and financial resources. The possibility to use remote sensing to increase the frequency and quality of the mapping is very important for the Ministry of Agriculture, Forestry and Fisheries for international reporting and for food policy planning."

### 10.2 International Forestry Management Programming

164. 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

165. 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**

166. 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 and Regional Programmes**

### **10.5.1 Africa and Middle East Region**

167. 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), 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. Specifically, across the AME region, USFS 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.

168. 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.

169. 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 United States that can be adapted to help partner countries include landscape-level water conservation as part of water security strategies. As of the beginning of FY 2021, the programmes described here are active in Angola, Democratic Republic of the Congo, the Gambia, Guinea, Liberia, Madagascar, Malawi, Mozambique, Rwanda, Senegal, Tanzania, Uganda, and Zambia.

### **10.5.2 Climate Fellows (CF) Programme – Republic of the Congo**

170. The US Department of State Climate Fellows (CF) programme continues to provide technical assistance to the Government of the Republic of the Congo for sustainable management of forest resources and national efforts to reduce emissions and enhance removals of greenhouse gases (GHG) in the forestry and other land use sectors. Through the CF technical expert embedded within the Ministry of Forest Economy, the capacity of national staff involved in national forest monitoring and GHG accounting is being strengthened.

171. From FY 2018-2021, 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), GHG accounting and other relevant technical and policy processes/issues related to the sustainable management of forests, avoiding deforestation and forest degradation, and conservation and enhancement of forest carbon stocks (afforestation and reforestation).

### **10.5.2.2 CF Regional Initiative**

172. The CF programme has also launched a regional initiative to strengthen the capacity and involvement of women in measuring and reporting GHG emissions and removals to the United Nations Framework Convention on Climate Change (UNFCCC) in four countries in the Central African sub-region. These countries are Cameroon, Democratic Republic of Congo, and Gabon.

### **10.5.3 END Wildlife Trafficking - Keeping Operations Counter Poaching Programme - Tanzania**

173. As part of Embassy Tanzania's END Wildlife Trafficking Strategy, this Department of State-Peacekeeping Operations (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. Starting in 2018, the US Government funded telecommunications training and equipment to all Tanzanian Wildlife 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. The next steps are to expand the telecommunications system and to operationalize the use of an information system and management tool. Wildlife rangers from different game reserves can talk to each other and to TAWA headquarters via wireless radio communications infrastructure. Communications are ground-to-ground and air-to-ground to facilitate anti-poaching patrols. Installation of radio outposts has continued throughout the COVID-19 pandemic. Equipment warranty support, maintenance and training mentoring and assistance continues until 2022.

#### **Government Official Praises the Programme**

174. Tanzania Deputy Conservation Commissioner Prosper Kyssima said, "The US Government - supported radio project, including both equipment and training, has been key to improving the communication, coordination, and effectiveness of anti-poaching patrols. We are very appreciative of this support and partnership."

### **10.5.4 Nobo Jatra – Bangladesh**

175. During FY 2015-2021, USAID's Nobo Jatra Programmes uses Reverse Osmosis (RO), a water purification process that uses a semipermeable membrane to remove ions, molecules, microorganism, and larger particles from water. Asynchronous Transfer Mode (ATM) technology has been introduced and beneficiaries collect the water through the ATM card. Department of Public Health Engineering is providing technical support to Water Management Committee (WMC). The programme is providing safe water supply to selected targeted communities in Dacope and Koyra of Khulna district and Shyamnagar and Kaliganj in Satkhira district through 10 RO plants where safe water scarcity is acute. On an average, each RO plant is covering 400 HHS (2000 individuals) and WMC is selling water through water vendors at BDT.0.40 per liter to markets, institutions, and offices to earn revenue to manage operational costs.

#### **Government Official Appreciates the Programme**

176. Bangladesh Ministry of Disaster Management and Relief Additional Secretary Moyazzem Hossain visited the RO plant and highly appreciated the impacts created by water supply through Ros, especially during the ongoing COVID-19 pandemic and cyclone Amphan that hit Bangladesh in 2020.

### **10.5.5 Modern Cooking for Healthy Forests in Malawi (MCHF)**

177. USAID's MCHF reduces unsustainable wood fuel demand by increasing adoption of alternative cooking energies and fuel-efficient cooking technologies, increasing sustainable wood fuel supply, and strengthening Malawi's business and regulatory enabling environment. This includes support for the establishment of the National Forest and Landscape Monitoring Unit within the Department of Forestry to lead the collection, collation, and management and analysis of data on the forestry and restoration sectors, to inform policy- and decision-making. In support of Malawi's strategic and enabling framework, the National Forest and Landscape Monitoring Unit seeks to:

- a. Conduct the National Forest Inventory on an annual basis;

- b. Conduct the deforestation assessments annually; and
- c. Monitor restoration on "cropland."

## **11 PROGRAMMING AND INCENTIVES RELATED TO HEALTH**

178. Health research through biomedical and behavioural funding activities of US agencies, including the National Institutes of Health (NIH), USAID, and Centers 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 Innovative Mobile Health (mHealth)**

179. The NIH encourages exploratory/developmental research applications that propose to study the development or adaptation of mHealth technology specifically suited for low- and middle-income countries (LMICs) 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 general knowledge for the field.

### **11.2 NIH Harnessing Data Science for Health Discovery and Innovation in Africa (DSI-A) – All LDCs in Africa**

180. Data science is driving scientific discovery this decade, and data sets are the currency of the future, with essential applications to bridge disparities in global health. Through Harnessing Data Science for Health Discovery and Innovation in Africa (DS-I Africa), NIH will support African institutions that partner with governments and businesses to leverage data science technologies and develop solutions to the continent's most pressing health problems. Important potential topics include artificial intelligence tools to advance decision support for mobile and other point of care technologies, establishment and use of shared platforms to leverage large health datasets to reveal disease patterns and risks, and computational approaches and data sharing to accelerate discovery of new diagnostics, treatments and vaccines. The goal of the programme is to increase research and capacity for data science in Africa.

181. Applications are under review for awards in FY 2021 for a trans-African network of research hubs, training centres, a coordinating centre, and associated researchers in ethical, legal, and social implications of data science in Africa. The period for this initiative is FY 2021-2026.

### **11.3 NIH Mobile Health: Technology and Outcomes in Low- and Middle-Income Countries – All LDCs**

182. The focus of the NIH Mobile Health programme is to explore the potential for development, validation, implementation, scale up, and commercialization of mobile health technologies. The first two years of the programme will focus on development. If the milestones are met, NIH will dedicate three more years of support for the implementation phase. Private sector partner collaboration is strongly encouraged. To date, NIH completed the first two competitions for the exploratory awards and made FY 2020 awards. FY 2021 awards are pending.

### **11.4 MaMoni Maternal and Newborn Care Strengthening Project (MaMoni-MNCSP) - Bangladesh**

183. The USAID MaMoni Maternal and Newborn Care Strengthening Project (MNCSP) activity will reduce maternal and neonatal mortality and increase contraceptive prevalence by strengthening the capacity of health systems and facilities through the provision of quality maternal and new-born health care, postpartum family planning, and nutrition services. The activity will further strengthen new-born care at all levels, including essential new-born care through special care new-born units (SCANU), helping babies breathe, chlorhexidine use for cord care, and Kangaroo Mother Care. The activity will use the following systems:

- a. Electronic\_Management Information System (eMIS): The project designed, piloted, and scaled up an electronic health information system in two districts, Habiganj and Tangail. The Directorate General of Family Planning (DGFP) has decided to scale up the eMIS tools in all 64 districts by June 2022.
- b. mHealth: The project successfully tested mHealth SMS reminder technology in Madhabpur upazila of Habiganj. mHealth sends out SMS notifications to the registered clients who are due for their pregnancy related services. In addition to text messages, voice messages have been developed that will be included in the system. DGFP included the mHealth expansion in their operational plan.
- c. OpenMRS: The project implemented OpenMRS, an electronic patient record system in the district hospital and upazila hospital in Manikganj. Patients' registration and antenatal and postnatal care (ANC/PNC) outpatient consultation use the OpenMRS system. As per the DGHS operational plan, in two phases, 100 hospitals will start OpenMRS based hospital automation. The DGHS already awarded the contract to the third party for hospital automation services.
- d. Special Care Newborn Units (SCANU): MaMoni MNCSP has been supporting the MOHFW establishing SCANUs at national and district level hospitals to improve management of small and sick new-borns. The project established Special Care Newborn Units (SCANU) at district hospitals to improve small and sick new-born management. More than 25,000 sick new-borns received services from the SCANUs in the project districts in the last four years.
- e. KIOSK Based Client Feedback System: MaMoni developed a prototype digital client feedback system using Raspberry Pi technology for feedback on ANC, PNC, and delivery services. The system allows real time knowledge for hospital managers and administrators on clients' feedback. The system will be tested in the district hospital in Manikganj.

#### Government Officials Laud Mamoni-MNCSP

184. Nazmus Sadat Salim, Joint Secretary, Director (MIS), DGFP said, "For years, our service providers in the field had to carry very heavy registers for data collection during their visits. Later they had to spend about three to four days to generate reports based on these service data. With the introduction of electronic Management Information System (eMIS), our field workers can now concentrate more on the quality of services as this whole process has been digitized and simplified. This is a huge milestone for us in terms of going completely digital in every sector, that has been made possible with the technical support from our USAID funded development partners."

185. Bangladesh Member of Parliament and State Minister of Post, Telecommunications and Information Technology Junaid Ahmed Palak said, "In the first phase of automation, 50 healthcare centres will be digitized as pilot projects at the divisional, district and upazila levels of the country. All the Upazila Health Complexes and all healthcare service providers will be brought under digitized services in phases. Digitizing health services will lead to universal Electronic Health Records (EHR), which is directly linked with improved service quality on the clients' end and raised accountability on the service providers' end."

#### 11.5 NIH Human Heredity and Health in Africa (H3Africa) – All LDCs

186. The US National Institute of Health (NIH) leads H3Africa (<https://h3africa.org/>) that supports research and builds technical capacity in Africa for genomics, bioinformatics, and associated technologies to improve health in Africa. There are 51 projects led by African institutions and 500 consortium members, including members in LDCs. The programme is ongoing and open to all LDCs.

#### 11.6 Partnership for Research on Vaccines and Infectious Diseases (PREVAIL) – Liberia

187. PREVAIL is a partnership including the US Government (NIH and CDC), the Government of Liberia (Ministry of Health, National Public Health Institute of Liberia, University of Liberia and JFK Memorial Medical Center (JFKMMC)) and the World Health Organization. The mission of PREVAIL is to conduct collaborative biomedical and public health research in accordance with best practices, and to advance science, strengthen health policy and practice, and improve the health of Liberians and people worldwide. The goals are to conduct high quality research, establish and sustain the expertise required to conduct research, build sustainable research capacity, and optimize organizational effectiveness. PREVAIL's specific technology transfer initiatives include: providing

training and expertise in all aspects of clinical research studies including clinical operations, laboratory, pharmacy, social mobilization, and regulatory facets. It has provided improved infrastructure at four clinical sites in Liberia in terms of lab and clinical space. It has helped establish the West African Consortium which involves clinical research experts from Sierra Leone, Guinea, Liberia, Mali, and the Ivory Coast. PREVAIL has provided imaging capabilities at JFKMMC and is currently working with the team to build a microbiology lab in the same facility.

188. The Research Sustainability Initiative in Liberia (RETAIN) was initiated by PREVAIL and its partners and has established infrastructure at the University of Liberia to handle all facets of grant management. Currently, PREVAIL is helping Liberia respond to the COVID-19 pandemic by providing antigen and PCR (polymerase chain reaction) testing. PREVAIL's clinical research capacity has launched 11 clinical trials to date, involving diseases of Ebola, HIV, malaria, COVID-19, and is soon to launch a lassa fever Phase 1 vaccine study. The efforts have been published in the New England Journal of Medicine (NEJM), and efforts on Ebola research have helped lead to a licensed treatment for Ebola. Results from these trials have been published in the NEJM and resulted in changes to treatment guidelines for Ebola.

189. RETAIN is establishing the following Health Research Organizational Structure: Office of Health Research to support the curriculum development, teaching, and research training; an Office of Sponsored Research Services to support the grant/contract management, and administrative policies; and an Office of Financial Services to support the research infrastructure, finance, funds control, and audits.

190. After two years of operation and support to the centre from the Prevail/NIAID/NIH, the JFK imaging centre was transferred to be fully managed by the medical centre in May 2021. The Microbiology laboratory development project is underway, with the renovations completed and plans to become operational in August/September of this year. Staff are proficient in not only the use but also troubleshooting, maintenance, and basic repairs for multiple transferred technologies to allow for PCR using point of care or near point of care instruments, serologic assays, and routing clinical laboratory assessments. In addition, the teams are working to expand capacity to include advanced immune diagnostics for detection of cytokines and use of multiplex/bead-based assays, flow cytometry, and sequencing.

191. From the PREVAIL 2020-24 Strategic Plan: "The partnership was conceived during the largest and most complex Ebola outbreak since Ebola the virus was discovered in 1976. Prior to the outbreak, Liberia's healthcare infrastructure was weak and vulnerable, following years of civil war. The outbreak brought the health care system to a near halt. The programme combined all available resources to establish a functional infrastructure at four clinical sites and the research lab at the Liberian Institute for Biomedical Research (LIBR). It also built Liberian capacity to conduct clinical research. This success has led to the decision by the partners to protect and enhance this valuable resource by establishing PREVAIL as a sustainable enterprise that conducts ongoing research while retaining the ability to respond to future outbreaks."

#### Former Liberian Minister of Health Lauds RETAIN

192. Bernice Dahn, former Minister of Health in the Republic of Liberia, said that with the RETAIN partnership and financial support from different sources, the following programmes have been established:

- a. University of Liberia IRB (Institutional Review Board);
- b. Faculty Development Programme at the ULCHS (College of Health Sciences);
- c. A reformed seven-year AMD (A.M. Dogliotti College of Medicine) curriculum moving away from lecture -based didactic instruction to student- centred, team-based, inquiry-based, and active learning curriculum;
- d. CampXsel: A four-week vacation science education programme designed for high school students passionate for health sciences. The focus is on inquiry-based learning, data-driven critical thinking, rational and holistic concept understanding, and soft-skills building; and
- e. A clinical research training programme (to enable students and faculty conduct research and write scientific papers).

### **11.7 International Centers for Excellence in Research (ICER) – Mali**

193. NIH, The National Institute of Allergy and Infectious Diseases (NIAID), and the Division of Intramural Research (DIR) lead the Mali ICER programme. It builds on experience gained from NIAID's long-standing malaria research collaboration with scientists in Mali and hosts multiple projects, including studies on mosquito vectors, malaria drug resistance, and candidate malaria vaccines; research on neglected tropical diseases such as filariasis and leishmaniasis; research on emerging infectious diseases such as Ebola and Marburg virus, Lassa Virus, Crimean-Congo Haemorrhagic Fever virus, and Rift Valley Fever virus, and immunologic and microbiologic studies of patients co-infected with HIV and tuberculosis.

194. The Mali ICER consists of multiple laboratories, including a College of American Pathologists (CAP)-accredited clinical laboratory and a Biosafety Level 3 (BSL-3) laboratory at the Faculties of Medicine and Oral Surgery and of Pharmacy (which were separated when the University of Bamako—previously named the University of Mali—was divided into four universities with these faculties falling under the University of Sciences, Techniques, and Technology of Bamako (USTTB)) and several clinical field sites within a 100 Km radius of Bamako, in addition to one on the Bandiagara plateau. The programme is ongoing.

### **11.8 International Centers for Excellence in Research (ICER) – Uganda**

195. NIH, NIAID, and DIR lead the ICER site in Uganda. It includes a state-of-the-art field laboratory in the Rakai District and facilities at Makerere University in Kampala and the Uganda Virus Research Institute in Entebbe. Basic and clinical research on HIV and sexually transmitted infections, including studies on viral pathogenesis, transmission kinetics, treatment and prevention, is conducted. A major focus is the impact of antiretroviral drugs on community-level incidence in the Rakai community cohort, which consists of over 17,000 individuals. The programme is ongoing.

### **11.9 Disease Detection – Lao PDR, Cambodia, Thailand**

196. The US Department of Defense, Defense Threat Reduction Agency's Biological Threat Reduction Program (BTRP) is working with the Mahidol Oxford Tropical Medicine Research Unit (MORU) to provide training and education at the local level in field diagnosis, sample collection, and shipment. These activities are closely coordinated between BTRP, WHO, US CDC, and MORU. More than 80 veterinarian officers have been trained on and practiced biosafety and biosecurity, and the samples shipped from the field to the national laboratory correctly and safely. The programme started in 2016 and is ongoing.

### **11.10 Laboratory Diagnostics – Lao PDR, Cambodia, Thailand**

197. BTRP also supports MORU to assess and train relevant staff at the National Animal Health Laboratory (NAHL) in multiple areas, such as sampling, sample handling, and molecular diagnostics. These activities are being closely coordinated between BTRP and IPL, LOMWRU, and MORU. NAHL has increased qualified staff for field activities such as animal diseases surveillance, outbreak investigation through enhanced animal disease diagnosis techniques, and quality assurance. The programme started June 2021 and is ongoing.

### **11.11 Health Information Systems for HIV Epidemic Control and Health Security – Uganda**

198. 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) programmes, 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.

199. Over 1300 health facilities are implementing electronic medical records in HIV clinics. Health Information Exchanges have enabled the automatic relay of data via the internet from remote health



facilities nationwide to a national repository dashboard to monitor priority tests, such as early infant diagnosis of HIV and tuberculosis (TB). These earlier investments in information systems are now being leveraged to support the COVID-19 response in 2021. PEPFAR and GHSA programmes also established internet-based communications platforms at Ministry of Health, Regional Referral hospitals, some district health offices, as well some health facilities for industry standard tools like Zoom and ECHO to support remote implementation, training and mentoring (Project Echo), and monitoring of service providers to reduce costs and improve efficiencies.

#### Uganda Health Officials Laud US Centers for Disease Control (CDC)

200. Commenting on the programme, Uganda Ministry of Health National Health Laboratory and Diagnostics Services ICT Manager Proscovia Nambuya Mbabazi said, "With support from CDC, the Ministry of Health, Central Public Health Laboratories set up a Data Center at Butabika initially hosting the HIV Reference Testing Laboratory information Systems. With good internet, the facilities are able to access their test results immediately they have been uploaded by the reference laboratories. The Data Center hosting environment has engineered technological innovations to address public health issues."

201. Dorothy Ajambo, Principal Clinical Officer, Mbarara Regional Referral Hospital in Uganda said, "Thank you for this Build Uganda Health Informatics Capacity, ICT training for health workers. I had never received any ICT training in my life. With this training, I can now operate a computer, use it to write a report, analyse, and visualize data using graphs."

#### 11.12 Laboratory Project Extension for Community Healthcare Outcomes (ECHO) - Tanzania

202. Running during 2016-2021, 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 four facilities (hubs), and more than 260 facilities (spokes) in Tanzania. As of June 2021, the CDC-supported programme has trained more than 1,280 MDR tuberculosis management experts, and more than 14,000 HIV rapid testers. This support involved more than 500 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. Plans are also underway to expand Project ECHO to multiple hubs with the inclusion of all district hospitals as spoke sites.

#### 11.13 Building Capacity for Lab Equipment Maintenance – Uganda

203. With funding from the President's Emergency Plan for AIDS Relief (PEPFAR) through the CDC, the Uganda Ministry of Health (MoH) established the National Equipment Calibration Center at the Department of National Health Laboratory and Diagnostic Services (NHLDS). 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. This also led to a cost saving of USD 981,038 during FY 2018-2020, as opposed to outsourcing of the services, which reduced testing interruption for HIV and TB. The 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. The National Equipment Calibration Center attained fulfilment of both national and international requirements, which meets the technical competence requirements necessary for it to consistently deliver technically valid test results and calibration. This programme also supported the MoH to establish regional equipment maintenance workshops located in the different regional referral hospitals, which can 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. The programme is ongoing in FY 2021.

#### Health Officials Praise the Programme

204. During the commissioning ceremony of the National Equipment Calibration Center, Uganda Ministry of Health Permanent Secretary, Dr. Diana Atwiine commented, "The in-country equipment maintenance and calibration capacity that has been built is a good strategy that will help to ensure uninterrupted laboratory services which is key to the HIV epidemic control."

### **11.14 NIH Research Training Programmes for Low-and-Middle-Income-Countries**

205. 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.

206. NIH's Fogarty International Center supports several research training 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 Programme, 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>).

### **11.15 CDC Health Capacity-building Activities – Burkina Faso**

207. Through its International Reagent Resource (IRR) platform, the CDC provides Burkina Faso's registered laboratories with reagents. This establishes the country's capacity to facilitate the detection, diagnosis, and reporting of pathogens and diseases of potential security concern such as Dengue/Zika/Chikungunya, meningitis, and severe acute respiratory diseases.

208. The CDC provides support to Burkina Faso's Ministry of Health (MOH) to train the antimicrobial resistance (AMR) surveillance designated sentinel laboratories at national and subnational levels on the WHONET software (information system developed to support the WHO's goal of global surveillance of bacterial resistance to antimicrobial agents) for the reporting of AMR surveillance data. This contributes to the improvement of data quality and facilitates data analysis used to produce regular quarterly bulletins.

209. CDC resources supported the development and the expansion of an electronic based e-surveillance system (STELab-System for Tracking Epidemiological Data and Laboratory Specimen). This allows the MOH to link real time epidemiological and laboratory data for individual cases of reported priority diseases.

210. US government resources and CDC staff supported the MOH in the rehabilitation of the Operations Center for the Response to Health Emergencies (CORUS) building. CDC also provided equipment and training to MOH staff on leadership to help them better manage and respond to disease outbreaks and other public health emergencies, including emergencies of international concern.

### **11.16 District Health Information Software 2 (DHIS2)**

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

#### **11.16.1 Strengthening DHIS2 for the Management of Epidemics – Guinea**

212. The IT team of the CDC-funded partner AFENET assisted the Ministry of Health National Agency for Health Security (ANSS in French) in the adaptation and use of the DHIS2 COVID-19 and Ebola module to collect and analyse all epidemic data. The AFENET IT team incorporated the modules in the existing DHIS2 platform, adapted them to Guinea's needs, and trained users. The module collects data on cases and their contacts including information about their identification, testing, hospitalization, vaccination, and recovery. The system also automatically sends the results of tests to the cases/contacts. It is the first time that DHIS2 is used to document epidemics. The initiative played a significant role in strengthening the existing DHIS2 system and solidifying its use by health organizations, epidemiologists, contact tracers, and laboratories. The project promoted a wide use of tablets for the collection of data in the field. This is an ongoing project. CDC will continue to support the ANSS in using DHIS2 for all epidemic-prone disease data. In 2020, CDC has spent over USD 1 million to support DHIS2 in Guinea. Similarly, in 2021, the CDC expects to spend again about USD 1 million on DHIS2 activities. Efforts are being made to transfer the competence to the ANSS/MOH so that in a few years, DHIS2 can be fully managed by the Government of Guinea.

### Guinea Health Official Lauds DHIS2

213. Dr. Sakoba Keita from Guinea said, "The successful use of DHIS2 during the COVID-19 and Ebola epidemic made it possible for us to make evidence-based decisions during these epidemics. The use of DHIS2 during these epidemics also reinforced the DHIS2 in general. DHIS2 is the electronic platform the country has chosen to capture all of its routine and surveillance health data."

### 11.16.2 Malaria SM&E (PMI Measure Malaria) – Madagascar

214. PMI Measure Malaria aims to strengthen host country capacity and systems to produce high-quality information for making decisions at the local, national, and global levels, with the ultimate goal of improving maternal and child health and reducing the burden of malaria and other emerging diseases. The activity helps the Ministry of Health to improve and expand Madagascar's national electronic health information system, known as DHIS2. DHIS2 is now fully functional across all health districts. It strengthens the national routine health information systems and strengthens malaria surveillance, monitoring, and evaluation.

### Madagascar Health Officials Praise DHIS2

215. The Ministry of Health uses DHIS2 to collect and analyse field data from health care workers across Madagascar to identify health care trends, progress, and needs. PMI Measure Malaria also supports the development of tools to better visualize and analyse the information in DHIS2. This is critical for a productive health care system because more reliable and accurate information allows for better decision making. Ministry of Health staff said about the project, "Smart public health decisions require access to good data." "The work under the PMI Measure Malaria project will provide more accurate and precise data, so Madagascar's health authorities can make data-driven decisions."

### 11.16.3 DHIS2 – Angola

216. DHIS2 is an open source, web-based health management information system (HMIS) platform. DHIS2 is the world's largest HMIS platform, in use by 67 low and middle-income countries. USAID supports the use of DHIS2 in the Angolan health sector through technical assistance at the municipal, provincial, and national levels and by jointly developing a quality assurance system with the government. These interventions help to strengthen health information systems nationwide. USAID has invested approximately USD 3.8 million towards implementation of the DHIS2 over the past four years including investment in equipment.

217. The programme targets District Health Care Centers and mostly maternal and new-born childcare. In addition, USAID supports an e-learning platform to strengthen the knowledge of healthcare providers on malaria prevention and treatment as well as family planning services. The programme seeks to increase the number of Ministry of Health staff trained on DHIS2 and increase digitization of health data collection. Due to USAID's advocacy and technical support, the government designated DHIS2 as the national Health Management Information System (HMIS). The programme spans between FY 2015-22.

### Angola Health Officials Laud DHIS2

218. Dr. Georgina Marques, coordinator of the Office of Research, Planning, and Statistics of the Ministry of Health in Angola said, "One of the greatest benefits that DHIS2 brought to the country was the preparation of health reports without having to go after technicians from the provinces and municipalities. In fact, the hospital movement report sent to the House of the President of the Republic is extracted directly from DHIS2, since no one reports on paper anymore (Note: The hospital movement report is a document that reports on the number of hospitalizations and ailments of the patients. End Note.). The next challenge now is to improve data quality."

219. Dr. Rafael Dimbu, Deputy Coordinator at National Malaria Control Programme (NMCP) in Angola said, "DHIS2 is a platform that brought benefits to Angola, and not only to [the] Malaria programme, but other health areas as well, such as HIV/AIDS and family planning, for example. Because of DHIS2 we stopped using manual M&E [monitoring and evaluation] reports, that were delayed by weeks to be consolidated; DHIS2 allowed us to have information available in real time, online. The country must not go back after the progress achieved so far. On the contrary, DHIS2 should continue expansion to most of the health facilities in our country."

#### **11.16.4 Health Information System (HIS) for Haitian Ministry of Public Health (MSPP) – Haiti**

220. The project goal is to empower the Ministry of Health and build a comprehensive and sustainable health information system (HIS) through 1) strengthening the national health information system (System d'Information Sanitaire Nationale Unique, or SISNU); 2) strengthening the HIS through stronger stewardship; and 3) creating an enabling environment. With funding of USD 21 million, the DHIS2 platform supporting the SISNU database is updated regularly.

#### **11.16.5 Okoa Maisha Dhibiti Malaria (OMDM) - Save Lives, End Malaria – Tanzania**

221. The OMDM activity seeks to institutionalize malaria surveillance and monitoring at all levels of the Government of Tanzania (GOT), maximizing the epidemiological impact of implemented malaria interventions by improving the targeting and implementation of interventions, refining approaches to manage transmission foci and respond to outbreaks, and providing key data to the GOT and stakeholders for policy development and programmatic decision-making.

222. Activities build upon the programmatic context of Tanzania's existing surveillance systems, including the health management information system (HMIS) / district health information system (DHIS2) platform, surveys, and studies, as well as programme-specific information systems to monitor and evaluate the country's health status and health sector performance, including for malaria. To further progress on their respective paths to malaria elimination, OMDM provides technical assistance to the National Malaria Control Program (NMCP) and Zanzibar Malaria Elimination Program (ZAMEP) to strengthen their capacity to analyse and interpret data for use in evidence-based decision-making. To mitigate the threat of antimalarial drug resistance to malaria control efforts, the NMCP, ZAMEP, and stakeholders must regularly evaluate — through use of therapeutic efficacy studies — antimalarial drug efficacy in a way that provides timely, relevant, reliable, and understandable information. OMDM provides grants to local stakeholders and technical support to the NMCP and ZAMEP to centralize TES data.

### **11.17 Additional Country Programmes**

#### **11.17.1 The Infectious Diseases Detection and Surveillance (IDDS) – Bangladesh**

223. The Infectious Diseases Detection and Surveillance (IDDS) activity will work closely with Bangladesh's National Tuberculosis Program (NTP) to build their capacity to diagnose different forms of tuberculosis in facilities all over the country. This activity will provide technical assistance to undertake diagnostic facility assessments and capacity-building of Regional TB reference laboratories (RTRLs) and diagnostic networks. IDDS support will also include optimization of GeneXpert use and the introduction of an external quality assessment system. IDDS is also supporting the Shymoli TB Hospital and Rajshahi Regional TB Reference laboratory for the installation of Line Probe Assay (LPA) and Mycobacterium Growth Indicator Tube (MGIT) to improve the efficiency of these laboratories for identifying drug resistance and testing the sensitivity of TB drugs.

#### **11.17.2 The Infectious Diseases Detection and Surveillance (IDDS) – Senegal**

224. USAID/Senegal has assisted the Ministry of Health and Social Action (MSAS) in setting up mInfoSanté, a SMS-based platform for community-based surveillance, which is also used by the Health Emergency Operation Center (COUS) to manage epidemic detection, communication, coordination, and information in times of crisis, such as the ongoing COVID-19 pandemic. Currently, mInfoSanté is being used in six districts by over 4,000 community health, animal welfare, and public health workers who have been trained on community-based surveillance and mInfoSanté use. During the COVID-19 pandemic, the platform was adapted to integrate COVID-19 vocabulary and is being used by the community to send information and reporting on COVID-19 to public health officials. The target is to train 100% health community workers from eight regions of the country.

#### **11.17.3 USAID - Community health programme – Madagascar**

225. The programme "Mahefa Miaraka" supports the Ministry of Public Health's efforts to reduce maternal, new-born, and child morbidity and mortality by strengthening community health service delivery and management for a population of 6.1 million people in seven regions of Madagascar. The

programme trained more than 9,500 community health volunteers on how to treat common childhood diseases and provide reproductive health and family planning services to mothers and youth in seven regions of Madagascar. USAID funded the programme with USD 31 million over five years (FY 2016-2021) to strengthen the planning, delivery, and management of community health service for the Malagasy people. The programme put special emphasis on improving family planning, reducing the practice of open defecation, preventing child marriage, and delivering health and nutrition services for pregnant women, new mothers, and young children.

#### **11.17.4 The Medicines, Technologies, and Pharmaceutical Services (MTaPS) – Bangladesh**

226. The Medicines, Technologies, and Pharmaceutical Services (MTaPS) USAID programme provides technical assistance to the Government of Bangladesh (GOB) to strengthen its logistics management and supply chain systems to ensure the availability of quality and effective medical products that are essential for family planning (FP); maternal, new-born, and child health (MCH); nutrition; and tuberculosis. This activity focuses on improving logistics management by supporting the GOB to better forecast and distribute essential MCH, FP, TB, and nutrition related commodities at the national and sub-national levels. Additionally, the activity works closely with the Directorate General of Drug Administration (DGDA) to strengthen the pharmacovigilance of essential health products in Bangladesh. The following are the project's targets:

- a. DGFP eLMIS and SCM Portal: MTaPS project developed and handed over the supply chain management software (DGFP eLMIS) and portal to ensure the commodity security of family planning products countrywide. The project contributed by developing institutional capacity of DGFP on supply chain management and improved procurement efficiency. The portal also acts as a gateway to access various other systems and dashboard under the ministry.
- b. eTB Manager App: The project developed an eTB manager app and positioned this app within 488 upazilas covering about 850+ TB DOT (Directly Observed Treatment) centers to ensure electronic reporting and TB surveillance.
- c. Asset Management System: The project developed an electronic Asset Management System (eAMS) as a part of procurement governance. It has been tested in six hospitals initially. Currently, the training for rolling it out to secondary level hospitals has been completed, covering 62 health facilities. The Ministry of Health and Family Welfare Planning plans to scale up the project implementation to other levels of hospitals within the country.

#### **11.17.5 Young Logisticians Professionals Programme (YLPP) – Benin**

227. USAID's YLPP supports 30 young professionals to work with decentralized civil and health authorities in 29 communes to improve data collection, supply chain reporting, and health commodities management. The YLPP aims to strengthen health commodities supply chain analytics and decentralized health governance by improving data visibility and quality and promoting accountability among mayors and health professionals and managers. The programme started with 15 YLPPs and scaled up to 30 covering 18 health zones and 29 communes. To promote sustainability and self-reliance, USAID has engaged the Benin Ministry of Health, mayors, and the Private Sector Health Partnership to commit to expanding the programme. Another 77 YLPs are expected to be placed in 2021 with the support of the Sahel Women Empowerment Demographic Dividend (SWEDD), funded by the World Bank in Benin. This will ensure coverage for all communes.

#### **11.17.6 Global Health Supply Chain Technical Assistance – Tanzania**

228. USAID's Global Health Supply Chain Technical assistance, running between 2019-2023, 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 has already improved 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. USAID also provides this technical assistance in Cambodia (2017-2021) and Guinea (2017-2022).

### **11.17.7 Ujjiban Social and Behavior Change Communication (SBCC) – Bangladesh**

229. USAID's SBCC activity generates demand for and increases the use of high-quality services for maternal, neonatal, child, and adolescent health; family planning; nutrition; and tuberculosis. The activity improves the adoption of healthy behaviours in selected districts in the Sylhet and Chattogram divisions. At the national level, Ujjiban strengthens the Ministry of Health and Family Welfare's capacity and systems to effectively design, develop, coordinate, and implement SBCC interventions.

230. SBCC uses two main methods, the HPN eToolkit and Online SBCC Materials Approval (OSMA):

- a. HPN eToolkit resource is a digital library of SBCC materials for interpersonal communication, and counselling. It is also used as a reference guide and job aid by the field health workers when they need to provide integrated messaging on health, population, nutrition, and TB related issues. USAID's Ujjiban activity supported the Ministry of Health and Family Welfare (MOHFW) in developing this eToolkit, which is currently hosted in the server of Director General of Health Services (DGHS) Management Information System (MIS) unit. It is managed and maintained by the Bureau of Health Education (BHE), Institute of Public Health Nutrition (IPHN), and Information, Education and Motivation (IEM) units of the MOHFW with technical assistance from Ujjiban. All three units have included eToolkit training in their Operation Plans and have been conducting training with Ujjiban's technical support. To date, over 6,000 health and family planning frontline workers in both Sylhet and Chattogram divisions have received the eToolkit training, with around 80% workers using this tool regularly for interpersonal communication and counselling with clients.
- b. Online SBCC Materials Approval (OSMA): Ujjiban also supported the development of the online SBCC Material Approval App (OSMA) for submission, processing, and approval of health, population, and nutrition related SBCC materials following standard criteria by the MOHFW's Information, Education and Communication Technical Committee. OSMA is hosted in the DGHS-MIS server. Ujjiban provided training to members of the IEC Sub-committees on managing OSMA.

### **Bangladesh Health Care Officials and Providers Praise SBCC**

231. Abinash Chandra Das, a Community Health Care Provider from Bangladesh made the following comment about the HPN eToolkit, "The benefit of using the e-toolkit is that there is less chance of having an information gap during counselling. For example, I was counselling a pregnant woman and I forgot some information. If I use this e-toolkit, there would not be any information gap. They can hear and see. I mean, I could fill the information gap." Bangladesh Ministry of Health and Family Welfare Additional Secretary Mostafa Kamal commented, "OSMA application has become a good example of capitalizing the advantage of ICT and a way forward with digital Bangladesh ideology." Bangladesh DGHS Primary Health Care Director, Dr. Rawshan Anwar, also said, "OSMA application helps to maintain standard quality for all HPN SBCC materials, facilitate avoiding duplication, and reduce timing for approval."

### **11.17.8 Health Policy Plus (HP+) – Madagascar**

232. During FY 2015-2022, HP+ aims to support the Ministry of Public Health (MOPH) and the Ministry in charge of water, hygiene, and sanitation, to improve the enabling environment in the areas of policy, advocacy, finance, and governance. HP+ provides support for the review, development, and dissemination of policies and strategies and health financing for health systems strengthening and universal health coverage. The targets for this programme are as follows:

- a. Contribute to the dissemination of the Family Planning law (training of journalists);
- b. Initiate the evaluation of the existing Family Planning Costed Implementation Plan;
- c. Elaborate strategic documents for a community-based approach (Guide PAC workshop), the Strategic Plan for Reproductive Health/Family Planning 2021-2025, and Demographic Dividend; and



- d. Support the Government of Madagascar to take strategic decisions on Health System Strengthening and Water, Sanitation, and Hygiene (WASH) initiatives, including developing and implementing the National Health Insurance Fund as part of the Universal Health Coverage system.

#### Madagascar Government Officials Laud HP+

233. Madagascar's General Director at the Ministry of Population, Social Protection and Promotion of Women said of the project, "HP+ Madagascar is committed to the popularization of the Family Planning (FP) law so that the changes made by the legal provisions on FP/Reproductive Health can be made available to users." The Secretary General of the Ministry of Public Health commented, "HP+ contributes to the achievement of the Malagasy government priorities for the reduction of maternal, neonatal and infant mortality and morbidity and access to drinking water through the support to the health policy and funding."

#### 11.17.9 Africa Laboratory Information System (A-LIS) – Uganda

234. Starting in FY 2017, PEPFAR and the CDC provided support to the Uganda Ministry of Health (MoH) to simplify, standardize, and maintain good laboratory practices. This helped the MoH meet national and international standards for accurate and reliable testing needed for accreditation. To accomplish this goal, the U.S.-funded PEPFAR and CDC programmes helped the MoH customize its open source computing for good basic laboratory information system software, renaming it the Africa Laboratory Information System (A-LIS) and the Results Download System (RDS). The A-LIS captures real time laboratory testing data used for both clinical decision-making and health indicator reporting, while the RDS allows real-time access to the lab results for HIV, TB, disease surveillance, and outbreak investigation.

235. Using automated laboratory equipment, the MoH enhanced ALIS' capabilities, enabling the 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. In 2021, this important upgrade assisted MoH efforts to manage the COVID-19 pandemic. The programme is ongoing.

#### Government Officials Laud HP+

236. Speaking about the impact of the HP+ system, Uganda Covid-19 Incident Commander said, "The RDS is the reliable data source for COVID-19 testing; we therefore MUST digitize all COVID-19 pandemic response systems from notification to testing, case management, discharge, and mortality with the RDS as the pivot system." Paul Ngobi from Fort Portal Regional Referral Hospital Laboratory said, "Oftentimes, before we started using A-LIS, we used to have issues with our Lab generated data management; especially in terms of specimen reception, result management, periodic reports compilation, analysis and reporting, result access and retrieval - all this used to be time consuming and labour intensive. With the introduction of A-LIS in 2019, we have seen tremendous improvement in our lab information management with ease of use of the system compared to paper-based systems previously in use."

#### 11.17.10 COVID-19 Training – Democratic Republic of Congo (DRC)

237. USAID donated 50 new state-of-the-art ventilators to the DRC. In addition to the ventilators, USAID is funding a tailored package of support that includes accompanying equipment, service plans, and technical assistance.

#### DRC Government Officials Appreciate Ventilator Donation

238. The Minister of Health, Dr. Jean Jacques Mbanda Mbungani, received the donation, welcoming the commitment of the US government through the CDC to support the Government of DRC during the pandemic. He challenged the COVID-19 technical secretariat to make good use of the equipment to improve the GDRC's response to the COVID-19 pandemic. Professor Jean Jacques Muyembe, Head of the COVID-19 technical secretariat and Director of INRB, hailed the timeliness of the equipment and the impact on laboratory personnel who often work with dangerous specimens, including COVID-19 and Ebola.

### **11.17.11 COVID-19 Preparation and Prevention - Burundi**

239. USAID has programming on COVID-19 pandemic preparation and prevention through a USAID grant for government health programme service providers who receive training. USAID also donated COVID-19 pandemic prevention equipment to a health center in Burundi. The project also includes rehabilitation of water reservoirs to meet critical water, sanitation, and hygiene gaps for health centres. The target population is rural Burundians, particularly those who cannot access health services that might be available in larger cities.

#### **Burundi Health Workers Praise USAID's Programme**

240. Health workers in the rural areas of Cankuzo and Ruyigi provinces said the programme was critical to being able to provide health services to local populations who cannot afford the costs of traveling to cities where hospitals are located. One healthcare worker expressed gratitude for the programming, noting that "the (USAID) programme allowed his clinic to build an incinerator to burn medical waste, build a cistern so that the clinic had a steady supply of clean water, and provided basic (PPE) equipment and training on corona (COVID-19 pandemic)." The health worker noted the PPE was especially critical, given that his province of Cankuzo is a border province and migrant workers and others transited the border informally, often arriving from Tanzania without testing, and would then seek treatment at his clinic.

### **11.17.12 Promoting the Quality of Medicines (PQM+) – Bangladesh**

241. The Promoting Quality of Medicines Plus (PQM+) programme strengthens the institutional capacity of relevant Government of Bangladesh (GOB) institutions, including the GOB's Directorate General of Drug Administration (DGDA), that are responsible for regulatory processes, quality assurance, and quality control systems to ensure that international standards are met. During FY 2020-2021, the programme will provide assistance to the DGDA drug testing laboratories in Dhaka and Chittagong to achieve WHO Prequalification accreditation. PQM+ also provides technical support to manufacturers of quality-assured priority medicines for TB, maternal and child health (MCH), and family planning/reproductive health (FP/RH).

### **11.17.13 Field Epidemiology Training Programme – Democratic Republic of Congo (DRC)**

242. During FY 2017-2021, the CDC supports the DRC in strengthening the capacity of its workforce to investigate and respond to disease outbreaks through the establishment of a Field Epidemiology Training Program (FETP). FETP trains field epidemiologists — or disease detectives — to identify and contain outbreaks before they become epidemics. Participants focus on "learning by doing" to develop the skills for gathering critical data and turning it into evidence-based action. The DRC FETP has trained 196 disease detectives who are crucial to accurately detecting and identifying outbreaks, including the recent Ebola outbreaks. The first cohort graduated in 2015 and helped support the responses to the 2014, 2017, and 2018 Ebola outbreaks. A total of 148 graduates have rotated to support the Ebola response in the North Kivu province.

### **11.17.14 SHOPS Plus (Sustaining Health Outcomes Through the Private Sector) – Madagascar**

243. The U.S.-funded Sustaining Health Outcomes through the Private Sector (SHOPS) Plus programme sought to harness the full potential of the private sector and catalyse public-private engagement to improve health outcomes in family planning, HIV/AIDS, maternal and child health, and other health areas. The programme manages two Development Credit authorities (Baobab Bank and ACCESS Banque) to provide needed financing for potential private sector participants in Madagascar. The programme ran during FY 2016-2021 and it is now completed.

#### **Madagascar Private Sector Praises SHOPS Plus Programme**

244. Mr. Patric, owner of a pharmaceutical supply point in Mahanoro, Madagascar, was the first recipient of a "Hasimbola Loan," the new loan product created by Baobab Bank in partnership with the SHOPS Plus Programme. Mr. Patric used the loan funds to renovate his facility and expand his pharmaceutical inventory. Mr. Patric explained: "Thanks to the financing from Baobab, I was able to invest to guarantee the availability of medicine, so that patients don't have to go home

empty-handed. My sales have increased, because clients are being referred to me by doctors who are sure that I'll have the prescribed medicines in stock."

#### **11.17.15 USAID Enhancing Quality of Healthcare Activity (EQHA) – Cambodia**

245. During 2018-2023, the Enhancing Quality of Healthcare Activity (EQHA) programme will work to improve the health of the Cambodian people by empowering national and provincial leaders, as well as public and private healthcare managers and providers. The programme aims to improve the quality of health services by scaling up modern quality improvement (QI) methods, strengthening healthcare regulation and transforming preservice education by 2023. The project intends to reach these goals through these steps:

- a. improve policies, guidelines and standards for streamlined quality assurance;
- b. increase efficiency and effectiveness of service delivery;
- c. strengthen implementation and enforcement of the regulatory framework; and
- d. strengthen preservice public health training.

246. The EQHA programme continues to support the Ministry of Health Human Resource Development Department and Nursing Council to transform the health workforce by adopting competency-based clinical education, which includes: 1) updating the vision and aims of the curriculum for the Associate Degree of Nursing, developing an educational glossary, and revising and updating the Nursing Core Competency Framework (CCF) to align with Association of Southeast Asian Nations (ASEAN) core competencies; 2) applying distance learning at four Regional Training Centers (RTCs) and the University of Puthisastra to facilitate e-learning, especially in the COVID-19 pandemic context; 3) providing simulation teaching equipment, including high-fidelity mannequins, to the Battambang and Kampong Cham RTCs to enable students to practice clinical skills and give them confidence to practice. The EQHA programme supports the establishment of the first National Health Accreditation System in Cambodia, including by developing the Cambodian Hospital Accreditation Standards, selecting 20 hospitals to field test the standards, and developing the Accreditation Surveyor Certification Course to contribute in building public trust and promoting a culture of quality within the healthcare system. EQHA has introduced a mobile platform, namely SwipeRx, to support the continuous professional development modules for self-learning by pharmacists to strengthen their capacity and knowledge related to tuberculosis and family planning. The project team is also developing initial Continuing Professional Development (CPD) modules focused on improving education related to HIV and other sexually transmitted infections (STIs). This platform will be potentially used by private pharmacists to refer presumptive TB patients to diagnosis and treatment services.

#### **Cambodian Government Officials and Private Sector Laud EQHA**

247. Professor Thir Kruey, Cambodia Secretary of State of Ministry of Health and Chairman of the Steering Committee of Health Professional Councils, expressed his appreciation to USAID/EQHA for the provision of Simulation Training Equipment for the Nursing Programme at the Kampong Cham and Battambang Regional Training Centers in September 2020: "As we all know, training in medical science is vitally important to ensure the quality and safety of health care services by health staff. Training requires students to learn theory and practice medical skills even if they are still in schools using simulation equipment before they can practice their learnt skills on patients at health facilities. This requires schools/training centres to have sufficient equipment for training and coaching. Today, we are fortunate to receive this equipment from USAID to support two of the four regional training centres in Cambodia." Dr. Tek Chheng Eap, a practicing paediatrician and lecturer, who has devoted his personal time to helping develop the Cambodia Hospital Accreditation Standard (CHAS) expressed his appreciation and the importance of USAID EQHA support, "CHAS, developed with the support from USAID/EQHA, is a roadmap and a strategic business tool designed to support the development and continual improvement of healthcare quality and patient safety in private and public hospitals." Ms. Khov Gechchou, Pharmacist and Owner of a local Cambodian pharmacy, expressed the importance of the mobile platform developed with the support from USAID/EQHA. "I see many good pieces of content posted through SwipeRx every day. As a pharmacist, I can say that this platform is very important and useful because it allows pharmacists across the country to be able to upgrade their skills. I also noticed that all of the TB posters have their own meaning and

key message. For example, I can now understand TB symptoms and recognize when I should refer the patients to the hospital for further advice."

#### **11.17.16 Promoting Healthy Behaviors (PHB) Programme– Cambodia**

248. USAID's PHB programme's objective is to improve healthy behaviours among Cambodians and ensure that Cambodians seek and receive quality health care with decreased financial hardship through more sustainable systems. There are two main objectives: 1) strengthen public sector systems for oversight and coordination of SBC at national and provincial levels; 2) improve ability of individuals to adopt healthy behaviours. Women and men in the six provincial communities of Kampong Cham, Battambang, Pailin, Tbong Khmum, Kampong Chhnang, and Phnom Penh are receiving health information/education about family planning, tuberculosis, hygiene and sanitation, maternal and child health, and nutrition and malaria. Communities in the targeted provinces appreciate the opportunity to learn more information on family planning and TB, and they will participate in the programme by referring those with suspected symptoms to health centres for screening.

#### **11.17.17 Global Health Security Agenda Programme -- Guinea**

249. The activities under the Global Health Security Agenda Program (GHS P) strengthen animal health laboratory capacity and networks and build surveillance systems in Guinea to quickly detect and respond to important livestock and zoonotic diseases, including antimicrobial resistance (AMR). GHS P is implemented by its USAID implementing partner, Food and Agricultural Organization of the United Nations (FAO) in Guinea. The capacity of the Central Veterinary Laboratory to detect AMR and residues in food is an important milestone moving Guinea toward its objective of food safety. The detection of AMR will greatly improve veterinary health care and food safety. The acquisition of materials, culture media, chemical and biochemical reagents, and consumables will allow the Central Veterinary Laboratory to participate in the monitoring of AMR microorganisms in Guinea, and possibly to detect resistant or multi-resistant bacterial strains so that appropriate measures can be taken to control them. Furthermore, the AMR laboratory will help fight against contaminated imported poultry products (e.g. meat and eggs) and medicated animal feed.

250. The GHS P programme upgraded Conakry's Central Veterinary Diagnostic Laboratory to detect Antimicrobial Resistant (AMR) microorganisms and drug residues in food and other commodities. Furthermore, this U.S.-funded programme refurbished the AMR laboratory and restocked it with all necessary reagents, consumables, and equipment. GHS P trained all lab technicians who specialize in AMR testing. Today, the lab is conducting routine tests of antibiotic residues in food and related items. Similarly, GHS P assisted in establishing the Laboratory Information Management System (LIMS) in the Central and Regional Veterinary Laboratories. The GHS P programme trained the laboratory personnel to maintain accurate data, which is shared with the national laboratory network in real time. The application employed allows good data management for results sharing and subsequent decision making, as well as stocking of reagents, consumables, and maintenance of equipment. Finally, GHS P trained four veterinary laboratory technicians in the Laboratoire des Fièvres Hémorragiques Virales (LFHV) of Guinea. As a result of the training, the technicians acquired skills in molecular and sero-immunological diagnostics to support the country in the advent of overwhelming outbreaks of COVID-19, Ebola, and other emerging and re-emerging diseases.

#### **11.17.18 Health Service Delivery (HSD) – Guinea**

251. The USAID/Guinea Health Service Delivery (HSD) programme runs during FY 2017-2022 and provides technical support for the national level management of the DHIS2 data platform. This includes ongoing support for the costs of the telephone network between healthcare providers and managers, including monitoring of use. HSD has been working closely with regional and provincial health directorates to integrate the costs of maintaining the network into budgets and plan for monitoring so that they can take over the functioning of the network. HSD also provides support for telephone follow-up to women for at least one year following fistula repair in order to identify risks for recurrence/failure of the repair and propose strategies and interventions for remediation. During FY 2020, despite the COVID-19 pandemic, HSD continued its technical assistance to Government of Guinea's Ministry of Health and Ministry of Health's Agency for Health Security. HSD supported the preparation and the implementation of the DHIS2/COVID-19 module and COVID-19 data

management. The HSD programme also created WhatsApp groups to support continued delivery of quality reproductive, maternal, new-born, child and adolescent health services.

#### **11.17.19 Ventilators – Mozambique**

252. The US Government, through the US Agency for International Development, donated 50 high-quality ventilators to Mozambique to assist with its fight against the COVID-19 pandemic. This donation is a key part of the US Government's provision of critical supplies and technical expertise to support Mozambique's urgent and ongoing response to the pandemic. The ventilators, produced in the United States by Zoll Medical Corporation, reflect leading-edge and in-demand technology. They can be used in the treatment of pediatric patients through adult patients. The ventilators have up to a 10-hour battery life. They are compact, deployable, and provide Mozambique more flexibility in treating patients who are severely affected by the COVID-19 pandemic. For patients whose lungs are not working adequately despite receiving oxygen, this vital resource can save lives. The US Government is working closely with Mozambican Minister of Health Armindo Tiago and other government counterparts to quickly distribute the ventilators to health facilities throughout Mozambique where COVID-19 is treated. To ensure the units are effectively used by trained professionals, the US Government is also supplying technical training for medical personnel.

#### **11.17.20 Presidential Malaria Initiative – Democratic Republic of Congo (DRC)**

253. During 2018-2023, USAID provides USD 5 million for technical assistance, leadership, and training to strengthen the monitoring and evaluation component of the National Malaria Control Programme and the National Health Management Information Systems in the DRC. PMI also implements the durability monitoring of insecticide-treated nets through the Kinshasa School of Public Health. The entomological surveillance will help improve future decision-making regarding choice of vector control tools. The programme is ongoing.

#### **11.17.21 CDC SARS-CoV-2 Genomic Sequencing – Malawi**

254. With increasing number of SARS-CoV-2 variants being identified, capacitating laboratories to perform SARS-CoV-2 genomic sequencing is imperative to track these variants to inform public health interventions, including informing COVID-19 vaccine choice. During FY 2020-2021, with collaboration from Johns Hopkins University, the KRISP Laboratory in South Africa, WHO, and Africa CDC, American CDC investments led to the sequencing of approximately 200 specimens, with an additional 260 samples pending at KRISP Laboratory. This allowed detection of variants of concern. Soon, Malawi's laboratories will be fully functional and have the capability to sequence COVID-19 specimens locally.

#### **11.17.22 Digital Business Solutions for Accredited Drug Dispensing Outlets (ADDOs) in Tanzania**

255. A January 2020-September 2021 partnership with SHOPS Plus, a USAID project, and Maisha Meds, a US non-profit NGO, aims to increase the business viability of, and increase access to finance by, small private pharmacies. Digital platforms provide data essential for suppliers, banks, and government to ascertain their role in meeting national health objectives. Maisha Meds is targeting 100 ADDOs in the Pwani and Mwanza regions of Tanzania. ADDOs purchase digital tablets that give access to a point-of-sale system that records expenses, sales, and inventory. A reordering platform with trusted suppliers is used to negotiate group discounts on medicines. Group sales records provide banks information to create lending packages tailored to ADDO credit needs. Customer purchasing history will be the basis to develop malaria, child health, and family planning data dashboards and increase government recognition of the vital role of the 12,000 ADDOs in meeting public health needs.

#### **11.17.23 Global Health Supply Chain Technical Assistance – Tanzania**

256. During 2016-2023, this USAID programme will improve the health commodities supply chain in Tanzania. The programme is expected to lead to better commodity availability and improved health outcomes for Tanzania. This programme has improved the health commodities supply chain by:



- a. Assisting the Tanzania Ministry of Health to implement its strategic plans;
- b. Establishing a governance platform to manage future system changes/updates to the electronic logistics management information system;
- c. Supporting key supply chain actors to use the Logistics Management Unit's performance monitoring plans for greater accountability;
- d. Strengthening the governance of the supply chain system at the district level by tracking stock availability;
- e. Institutionalizing supply chain data quality and use;
- f. Supporting the rollout of results-based financing in the country; and
- g. Assisting the Ministry of Health Pharmaceutical Services Unit and Policy Planning Unit to better budget for health commodities.

## **12 PROGRAMMING AND INCENTIVES RELATED TO BUILDING LABOR CAPACITY**

257. US agencies, including the US Department of Labor (DOL), Department of Justice, 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 AfrIdea Regional Hackathon – Togo**

258. From 18 June to 20 June 2021, the US embassy in Togo (organized by Africa Regional Services and PACT) held Afridea, a three-day tech event with young innovators, entrepreneurs, and tech lovers from each country to innovate digital solutions to pandemic-related challenges. Togo's 30 participants conducted their activities in two Lome-based tech labs: Nunya Lab and Ghyada Lab (the latter created by a US Government exchange programme alumnus). In Togo, judges selected the top ten projects to compete for additional funding. Projects from Togolese participants centred on health, women entrepreneurship, e-trade, and education. Togo's winning project, Scientific Kits, aims to enhance science and experiential learning in middle and high schools. Ambassador Stromayer gave virtual closing remarks to participants in each of the countries, and Togolese former Mandela Washington Fellow Claude Grunitzky was one of the key speakers.

#### **12.1.2 Nyenyo City – Togo**

259. 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 the capital city of Lome. A group of young civil society activists and coders worked hand in hand with the local authorities of Zio to integrate the platform and put it into use. Since its launching, the platform has received wide support in the cities where it has been implemented and is still expanding. To build upon this successful model, the Embassy applied for funding in April 2020 to implement this project in other cities. The project is currently being implemented during FY 2021.

#### **12.1.3 Criminal Defense Training – Burkina Faso**

260. DOJ/OPDAT (DOJ Office of Overseas Prosecutorial Development Assistance and Training) has provided training to attorneys in criminal defense skills for terrorism cases. Through the Burkina Bar Association, OPDAT offered ten Burkinabe lawyers training in 2020-2021. Since there is no public defender's office in Burkina Faso, all criminal defendants are represented by private attorneys. Instructors have included the Federal Public Defender's Office for the District of Alaska, former federal and military defense counsel and prosecutors, and the president of the Niger Bar Association.



## **13 PROGRAMME AND INCENTIVES RELATED TO TRANSPORTATION**

### **13.1 Bridges Project – Madagascar**

261. The Bridges Project is an agreement between the leading US based prefabricated metallic bridge company and the Government of Madagascar to provide and install hundreds of bridges in several regions of the country. This programme is divided into multiple phases. The programme aims to provide about 100 modular metallic bridges to the Government of Madagascar in phase 1 to replace existing bridges or install on new routes. The host countries' engineers, technicians, and workers will receive comprehensive training which will allow them to independently install bridges throughout the country. The programme will run during FY 2021-2023.

#### **Madagascar Government Official Supportive of the Bridges Programme**

262. The Minister of Public Works in Madagascar believes the flexibility of the prefabricated model is better-suited to the Madagascar geography and conditions; he would like to see this programme replicated in the future if this first set of 100 bridges can be installed without issue and believes it will make a huge contribution to the country's development.

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