USAID RESEARCH DRIVING GLOBAL DEVELOPMENT





THE RESEARCH DIVISION IN USAID'S INNOVATION, TECHNOLOGY, AND RESEARCH HUB

Research drives progress for every major global challenge, from climate change to public health. Progress may come from a local entrepreneur or begin in a university lab. As seen with the lifesaving mRNA vaccines for COVID-19, years of research can lay the foundation for breakthrough innovations when they are needed most.

Research is therefore an essential tool for the U.S. Agency for International Development (USAID) in its mission to save lives, reduce poverty, and advance democracy around the world.

USAID-funded research encompasses all branches of science—the social, physical, life, and data sciences, as well as engineering—and generates far-reaching benefits. It fuels the creation of new practices, technologies, businesses, and even industries; offers solutions for under-resourced communities; and provides evidence for decisionmakers to shape policies for more equitable and just societies.

At the same time, USAID-funded research collaborations advance the U.S. government's science diplomacy and empower the next generation of researchers to tackle global challenges.

RESEARCH FOR THE FUTURE

The Research Division in USAID's Innovation, Technology, and Research (ITR) Hub advances research across all sectors to benefit international development. The Research Division works to achieve four main goals:

- I. Enhance USAID's own research capacity and culture;
- 2. Harness expertise and generate evidence to develop breakthrough solutions to development challenges;
- 3. Apply those research-based solutions to improve lives, policies, and economies, locally and globally; and
- 4. Strengthen the science and technology (S&T) capacity of partner countries, particularly through collaboration with higher education and research institutions.

To meet these goals, the Research Division catalyzes diverse partnerships at home and abroad; helps guide USAID policies for research; and provides cross-Agency services to ensure the quality, integrity, open sharing, and best use of USAID research.

BOOSTING THE IMPACT OF RESEARCH THROUGH PARTNERSHIP

The Research Division invests in partnerships between higher education institutions (HEIs) in the United States and countries around the world. Scientific expertise in U.S.-based universities has long generated astounding breakthroughs across societies. Likewise, HEIs in Africa, Asia, and Latin America nurture expert researchers with a rich understanding of local and national development challenges.

Fostered by the Research Division, HEI research partnerships create fertile fields for innovation in global development. Research partners in HEIs often have strong ties to their communities, engaging those communities to identify key challenges and create solutions. These collaborations strengthen the S&T capacity of partner institutions to address development challenges—an important goal for USAID.



ENHANCING USAID'S RESEARCH CAPACITY AND CULTURE

The Research Division optimizes and encourages the Agency's conduct and use of scientific research. Through policies, training, and strategic coordination, the Research Division works to integrate scientific research and research evidence more seamlessly into USAID programming and decision-making at every level.

Policies developed with the Research Division articulate requirements for USAIDfunded research, ensure public access to research results, and set standards to safeguard scientific integrity, including in the use and communication of research evidence. The Research Division also created and leads the Research and Development Council, an Agency-wide advisory body led by USAID's Chief Scientist. The Council is a champion for research and development (R&D) at the Agency and advises USAID's leadership on cross-cutting, multisectoral research issues and on advancing policies and procedures related to R&D.

Science and technology fellowships are integral to the Research Division's approach. The Research Division manages dozens of U.S.-based fellows—from physicists to anthropologists—and places them in assignments across the Agency every year. Fellows lend their expertise to USAID to address challenges from the national climate policy to the use of artificial intelligence in equitable development. Other fellows supported by the Research Division aid partner country governments and institutions in tackling tough development challenges.

IN SHORT, THE RESEARCH DIVISION:

- Leverages the key roles of the Agency Chief Scientist and Scientific Integrity Official to lead improvements in USAID's ability to conduct and use responsible, solutions-oriented scientific research through policies, training, and strategic coordination;
- Strengthens the capacity for scientific inquiry in USAID partner countries;
- Increases the creation and use of knowledge and innovations;
- Provides decision-makers with the best available, locally informed evidence to guide policy development;
- Strengthens the U.S. government's use of scientific research for international development; and
- Increases localization through partnership with local research institutions and scientists.

THE RESEARCH DIVISION LEVERAGES AND FACILITATES DIVERSE PARTNERSHIPS TO IMPROVE DEVELOPMENT OUTCOMES



THE RESEARCH DIVISION SUPPORTS INTERNATIONAL DEVELOPMENT THROUGH GLOBAL PARTNERSHIPS, TECHNICAL ASSISTANCE, AND ADVISORY SERVICES IN 129 COUNTRIES



ENGAGING HIGHER EDUCATION INSTITUTIONS IN PARTNERSHIP

Partnerships with higher education and research institutions in partner countries are pivotal to the success of the Research Division's initiatives. Researchers at these institutions, driven to solve challenges in their home communities, bring added urgency, local knowledge, and fresh perspectives to this research. They also help involve other local partners, from businesses to government agencies, in developing relevant solutions.

These dynamic partnerships often generate unexpected insights and novel solutions to pressing problems. At the same time, the Research Division's initiatives strengthen the capacity and leadership of local institutions across the global science and technology ecosystem to be central actors in development and nurture the next generation of global development researchers. Recent partnerships include:



PROMOTE PEACE IN CONFLICT-FRAGILE AREAS RESEARCH DIVISION PROGRAM: LASER

When ISIS occupied Iraq, it sought to destroy agricultural products and practices of strong cultural value to religious minorities in northern Iraq. Now, researchers at Iraq's University of Duhok, the University of Notre Dame (Indiana); Purdue University (Indiana), and the Stockholm International Peace Research Institute are working together to identify, recover, and reinstate the treasures lost to this cultural genocide. The project is strengthening the capacity of local universities and communities to recover important cultural practices and affirm the dignity, history, and religious individuality of communities devastated by conflict.



TACKLE ROOT CAUSES OF MIGRATION RESEARCH DIVISION PROGRAM: BRIDGE-TRAIN

In Guatemala, the Universidad del Valle de Guatemala (UVG), the Guatemalan Exporters Association, and the Massachusetts Institute of Technology have joined forces to launch the Achieving Sustainable Partnerships for Innovation, Research, and Entrepreneurship (ASPIRE) project. The project has two innovation centers at rural UVG satellite campuses in Escuintla and Sololá. The centers also connect local entrepreneurship, innovation, and job creation for indigenous communities, as well as connect research and policy to create a supportive social and legal environment to improve economic well-being. ST O RE FEI

STRENGTHEN RESEARCH CAPACITY OF PARTNER COUNTRIES RESEARCH DIVISION PROGRAM:

FELLOWSHIP PROGRAMS A lack of research capacity often holds back development in low- and middle-income countries (LMICs). The American Association for the Advancement of Science (AAAS) Overseas Fellowship, in which fellows support the research of partners in LMICs, helps overcome this obstacle As one example, multiple AAAS Overseas Fellows placed in Indonesia partnered with the Indonesian Academy of Sciences to establish a national grant-funding institution and supported USAID's efforts to launch five Centers for Collaborative Research (CCRs) within top Indonesian universities. These CCRs have worked with the Government of Indonesia, the private sector, and U.S.-based HEIs to research crucial development issues and share knowledge

with other Indonesian institutions.

EMPOWERING WOMEN IN AND WITH SCIENCE

The Research Division initiatives support women through training and mentorship to enter and succeed in fields typically dominated by men. Women's full participation in science and technology fields—whether in academia, government, or industry—is an important force for gender equity and increases the likelihood that innovations will drive more inclusive growth. Recent partnerships include:



MENTOR JUNIOR FACULTY AND RETAIN WOMEN IN SCIENCE RESEARCH DIVISION PROGRAM: PEER

Many women leave scientific careers due to gender discrimination, hostile work environments, worklife balance conflicts, and a lack of role models and mentors. One way to combat this attrition is through mentorship. Women junior faculty who are part of the Partnerships for Enhanced Engagement in Research (PEER) Women in Science Mentoring Program benefit from dedicated mentorship, training, and networking opportunities designed to hone their skills in negotiation, communication, and research publishing, among others. Since its launch in 2019, 53 mentees in Africa and Asia have successfully completed the program, with many going on to receive PEER grants, report improvements in their work environments, and further advance their careers.



TRAIN WOMEN STATISTICIANS RESEARCH DIVISION PROGRAM: ALP

Across LMICs, there is a high demand for statisticians and data scientists who can collect, model, and analyze data to inform evidence-based policies. The Laboratory for Interdisciplinary Statistical Analysis (LISA) at the University of Colorado Boulder is the hub of LISA 2020, a program that creates statistical collaboration laboratories ("stat labs") in LMICs to train local statisticians and data scientists to solve development challenges. Through LISA 2020, the Research Division has supported the launch of 30 stat labs worldwide, including one at the Lahore College for Women University in Pakistan that has trained 77 women statisticians. Overall, the project has trained 936 women to date.



ENSURE WOMEN'S ACCESS TO BIOMEDICAL ADVANCES RESEARCH DIVISION PROGRAM: PEER

Women's economic empowerment starts with their good health, yet women often lack access to lifesaving prevention, diagnostics, and treatments. A PEER grantee is working to save lives in two African countries with high rates of cervical cancer, the leading cause of cancer deaths among women in LMICs. Researchers at the University of Malawi College of Medicine are working with the University of North Carolina at Chapel Hill, and researchers at the Universidade Eduardo Mondlane in Mozambique are working with Texas's MD Anderson Cancer Center, to scale up integration of screening and treatment for cervical cancer within voluntary family planning services. Their solutions are sensitive to local cultures and social norms and include technologies that are more effective and easier to implement methods to make cervical cancer screening more accessible.

ADAPTING TO AND MITIGATING CLIMATE CHANGE

Research is key to the development of the technologies, policies, and behavioral change needed to achieve global climate goals. The Research Division's research addresses a range of approaches to mitigate greenhouse gas emissions while adapting to the escalating impacts of climate change. Research Division initiatives include:



BUILD RESILIENCE INTO THE ELECTRICAL GRID RESEARCH DIVISION PROGRAM: PEER

Intense storms that have taken down power grids from Texas to the Dominican Republic highlight the need to improve grid resilience worldwide. PEER researchers at the Pontificia Universidad Católica Madre y Maestra in the Dominican Republic and Montana State University are working to incorporate solar-powered microgrids into the existing power grid. The project trains students and faculty in microgrid modeling and strengthens the local grid system by providing alternative power sources that can operate independently from the main grid when needed. Lessons learned should be widely applicable, including in the United States.



REPLACE COCA WITH SUSTAINABLE AGRICULTURE RESEARCH DIVISION PROGRAM: BRIDGE-U

In part of the Peruvian Amazon where coca was once cultivated to produce cocaine, a robust partnership is helping farmers develop new livelihoods, adapt to a changing climate, and conserve the carbon naturally stored in forests. Partners include Peru's Universidad Nacional Agraria La Molina, the University of Oklahoma, Purdue University, Utah State University, and the International Center for Tropical Agriculture (CIAT). Their work, centered at the Peruvian Extension Research Utilization Hub (PERU-Hub) in Lima, aims to reduce greenhouse gas emissions by more than 200 tons by 2026 through sustainable agriculture. Among other innovations, its weather modeling tool will enable farmers to select crops suitable to new climate patterns.



BOOST THE BENEFITS OF URBAN TREES RESEARCH DIVISION PROGRAM: PEER

The Dominican Republic is highly vulnerable to the effects of climate change, including rising sea levels, flooding, and water supply disruption. In the capital city of Santo Domingo, in particular, many people live in areas at high risk for these effects. In a PEER-supported program, the Instituto Tecnológico de Santo Domingo, in partnership with the Municipality of Santo Domingo, Universidad de Puerto Rico, and the U.S. Forest Service, is using a suite of digital apps to provide a roadmap for urban planning and improved resilience to climate change. i-Tree, developed by the U.S. Forest Service, maps and quantifies the many benefits of urban forests, including carbon sequestration, energy savings, air quality improvements, and stormwater interception.

STRENGTHENING HEALTH AND HEALTH SYSTEMS

Strong health systems are essential for outbreak preparedness and defense and to provide for the ongoing health needs of all people. Research Division-supported research builds health system capacity in LMICs, especially through its university partnerships. This work has strengthened university capacity over time, including preparing universities to pivot and respond quickly during the COVID-19 pandemic. Among the Research Division's health work:



TRAIN DOCTORS IN EBOLA'S EPICENTER RESEARCH DIVISION PROGRAM: PEER AND BRIDGE-U: LIBERIA

In the wake of the 2013 Ebola virus outbreak in Western Africa, fewer than 250 physicians served Liberia's 4.5 million people. This situation prompted the launch of the PEER/Liberia program to strengthen physician training at Liberia's sole medical school, the A.M. Dogliotti College of Medicine, Partners included Vanderbilt University Medical Center, the University of Massachusetts, Yale School of Medicine, and Eternal Love Winning Africa Hospital in Liberia. PEER/Liberia focused on faculty development, improving equipment and research capacity, and increasing the number of specialized physicians. When COVID-19 hit Liberia, these efforts enabled staff to promote safe practices quickly and effectively and prevent viral spread. This work continues under the BRIDGE-U Liberia program, which launched the Center for Teaching, Learning, and Innovation at the University of Liberia College of Health Sciences.



PROMOTE GOOD HEALTH THROUGH SOCIAL ENTERPRISE RESEARCH DIVISION PROGRAM: ALP

Local entrepreneurs can be key players in resilient health systems. In Ghana, Ashesi University partnered with the Massachusetts Institute of Technology's D-Lab to develop a social entrepreneurship incubator and fellowship program. Tech Era—the start-up venture of one fellow—focused on hygiene when COVID-19 arrived in the country, inventing a device that makes a popular handwashing system entirely contactless. The system is used where there is no piped water, and its full automation can significantly decrease the spread of communicable disease.

FORECAST THE IMPACT OF COVID-19 ON FOOD SECURITY RESEARCH DIVISION PROGRAM: RTAC

The COVID-19 pandemic has already changed patterns of food security. A Research Technical Assistance Center (RTAC) project modeled how the cascading effects of the pandemic could affect food security in 185 countries through 2040. It found that while some aspects of global food security will improve, the pandemic will continue to hamper progress toward eliminating extreme poverty, undernourishment, and child stunting, primarily through reducing food access in lower-income households and increasing income inequality. The project was led by the National Opinion Research Center at the University of Chicago with researchers from the Pardee Center for International Futures at the University of Denver.

PROMOTING DIGITAL DEVELOPMENT

Digital tools from remote sensing to artificial intelligence (AI) are transforming economies and social systems. These tools can both strengthen research and improve development outcomes. However, depending on how digital technologies are developed and used, they run the risk of widening digital divides and bolstering existing inequities. The Research Division applies digital technology to its work while addressing issues of equity and transparency, with the goal of accelerating gains across sectors. Examples of our work include:



TACKLE COVID-19 WITH DIGITAL INNOVATION: RESEARCH DIVISION PROGRAM: ALP

The Innovation Garage, launched by Malawi University of Science and Technology (MUST) and Michigan State University in 2019, supports faculty and students to solve local challenges by turning ideas into successful businesses. As COVID-19 spread, the project pivoted its attention to pandemic crisis response, focusing on two projects: a COVID-19 tracking app and a mobile, solarpowered sanitation station. The tracking app allowed self-reporting of COVID-19 symptoms, connected patients to providers, tracked disease hot spots, traced cases, and generated data to inform COVID-19 response. The sanitation stations brought steady streams of clean water to impoverished communities, and since 2020, multiple partners including the Malawi Revenue Authority, the United Nations Development Program, and the Roads Fund Administration purchased 21 stations for distribution across Malawi.



BUILD VILLAGE BASE STATIONS: RESEARCH DIVISION PROGRAM: HESN

Through connected cellular networks, vital communication services have become widely available globally, but nearly half a billion people worldwide still live in areas without mobile broadband coverage. The Development Impact Lab at the University of California, Berkeley created the Village Base Station (VBTS), a "network-in-a-box" that enables remote communities with basic technical skills to both own and operate cellular systems.VBTS attracted additional funding from USAID's Development Innovation Ventures program, allowing it to scale as a start-up called Endaga, which has been deployed in Indonesia, Mexico, Pakistan, and the Philippines. In 2015, Endaga was acquired by Facebook, and is now being developed as OpenCellular, with aspirations of connecting populations in the world's most remote areas.



BUILD UNDERSTANDING OF CYBERSECURITY BEST PRACTICES AMONG PARTNERS: RESEARCH DIVISION PROGRAM: RTAC

With cybercrime on the rise globally, RTAC conducted a review of prior Digital APEX assessments to gain further insights into their utility, approaches, and results. Digital APEX is a mechanism designed by the ITR Hub to empower our partners to better control their digital security. RTAC's analysis produced key findings and offered recommendations for future cybersecurity assessments conducted by Digital APEX or other cybersecurity assessment organizations, as well as recommendations for additional research to fill identified knowledge gaps and expand upon knowledge generated in this analysis. The rapid pace of global change continuously raises new research questions for both USAID and our partners. The Research Division in ITR helps answer these questions, beginning with strengthening research quality and scientific integrity across the Agency. This work lays the foundation for high-caliber research partnerships around the world, particularly with HEIs.

Through harnessing the unique expertise of HEIs, Research Division partnerships help USAID localize our work, strengthen partners' capacity for S&T, and build an interdisciplinary talent pool committed to international development.

There is rising demand across USAID for these HEI research partnerships and their innovative solutions, and the Research Division welcomes the challenges inherent in meeting this demand. Using research to solve global problems requires both strong internal capacity and a significant commitment of resources. Such investments support the deep expertise, creativity, tenacity, and time required to build trusting relationships with partners around the world.

The Research Division's university-based partnerships form one pillar of support for USAID's position as the world's premier development agency, able to generate and utilize essential evidence to offer solutions for crucial development challenges.

CONCLUSION

SNAPSHOT OF THE RESEARCH **DIVISION PORTFOLIO**





RESEARCH TECHNICAL ASSISTANCE CENTER (RTAC)

THE ACCELERATING LOCAL

POTENTIAL (ALP) PROGRAM

Strengthen the research and scientific

in USAID partner countries to address

development challenges and become

global leaders in science education,

capacity of higher education institutions

Supports USAID operations worldwide to make evidence-based decisions through a global network of more than 1,000 researchers and experts affiliated with more than 300 organizations.



THE HIGHER EDUCATION SOLUTIONS NETWORK (HESN)

A partnership between USAID, seven top U.S. universities, and universities in partner countries worldwide. It enables students, researchers, and faculty to deliver locally informed solutions to global development challenges.



LONG-TERM ASSISTANCE AND SERVICES FOR RESEARCH (LASER)

A global network of more than 2,500 university researchers and development practitioners across 60 countries collaborating on practical solutions to development challenges. It enables USAID to rapidly access an international network of university researchers and builds research capacity in partner countries.

FELLOWSHIP PROGRAMS

BUILDING RESEARCH AND

GENERATING EVIDENCE, AND

TRAINING (BRIDGE-TRAIN)

INNOVATION FOR DEVELOPMENT.

Supports partnership between universities in

the United States and USAID partner countries

to develop research, innovation, and training

centers for knowledge development aimed at

addressing local and/or national development

Provide researchers, scientists, and engineers the opportunity to apply their scientific thinking and expertise to solving critical challenges in development while gaining firsthand experience working at USAID. Fellows have backgrounds in life sciences, physical sciences, social sciences, mathematics, engineering, public health, and medicine.

RESEARCH POLICY & COORDINATION

research, and innovation.

Engage in critical internal agency functions and strategic external collaborations guided by the Agency Chief Scientist to improve, facilitate, and champion the coordinated generation and increased use of scientific research across USAID.



PARTNERSHIPS FOR ENHANCED ENGAGEMENT IN RESEARCH (PEER)

A grants program that funds researchers, scientists, and engineers in USAID partner countries to conduct research in partnership with U.S. governmentfunded researchers on local development challenges.



BRINGING RESEARCH TO IMPACT FOR DEVELOPMENT, GLOBAL **ENGAGEMENT, AND UTILIZATION** (BRIDGE-U)

Works with higher education institutions in USAID partner countries to promote the effective use of research; strengthen the pipeline of local researchers, policymakers, and development practitioners skilled in facilitating research utilization; and build a knowledge base for how to effectively advance the use of evidence to create development impact.



priorities.

SCIENCE, TECHNOLOGY, **INNOVATION, AND** PARTNERSHIPS ANNUAL **PROGRAM STATEMENT (STIP APS)**

Encourages higher education institutions to collaborate with USAID and local institutions to co-create interventions to solve complex local development challenges.



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