Improving the Effectiveness of the Research-to-Translation Value Chain

2019

Kampala, Uganda

LASER PULSE

RESEARCH FOR DEVELOPMENT (R4D) CONFERENCE

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ABOUT LASER PUSLE

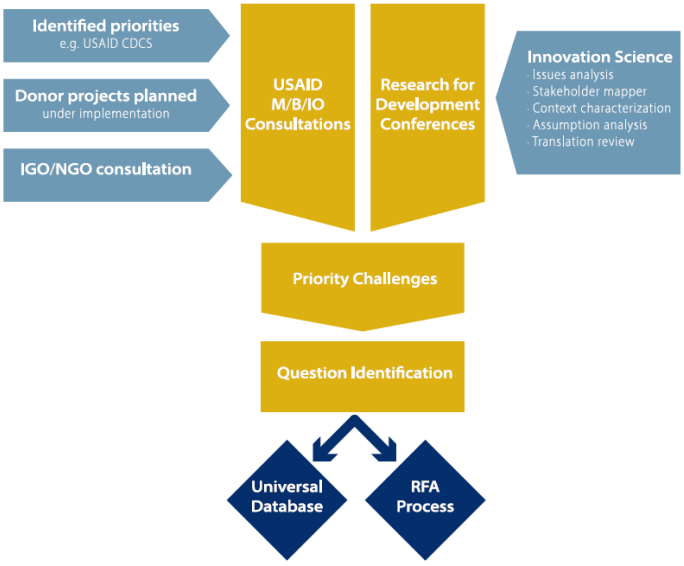
Delivering practical, research-driven solutions to global development challenges

We are a global network of university researchers and development practitioners from government agencies, non-governmental organizations (NGOs), and the private sector collaborating on research-driven practical solutions to critical development challenges in low- and middle-income countries (LMICs).

What exactly is LASER PULSE?

• A collaborative approach for developing, strengthening, and supporting a global network of research universities and field-level development actors (NGOs, private sector, etc.) for:

- *better identification of research questions,*
- *funding research projects in various development sectors, and*
- *successfully adapting results into usable development products.*



• A connection point for researchers and field-level development actors to find each other for collaboration opportunities, and to exchange information and data.

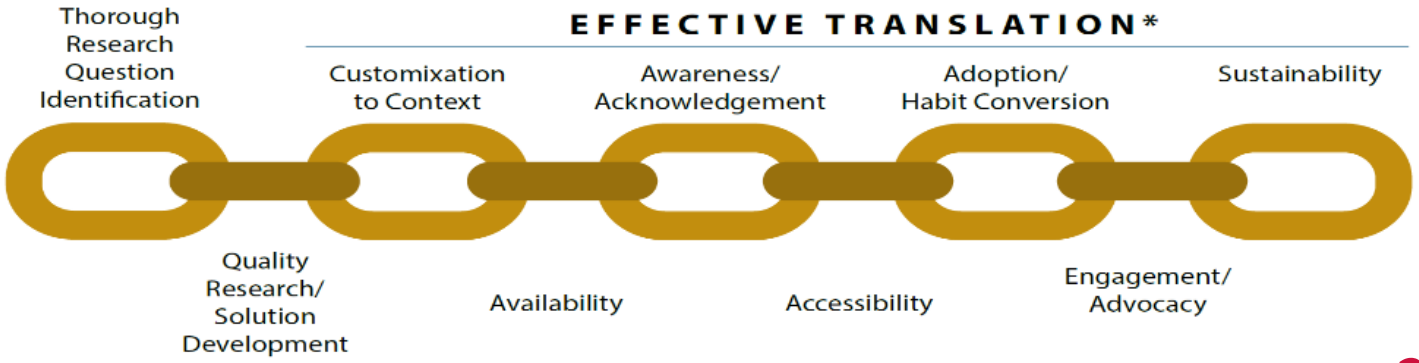
• A forum for learning: through Research for Development (R4D) conferences held each year; and via this website, which contains various learning and instructional
modules and downloadable information.

• A network of Higher Education Institutions (HEIs) – more than 50 universities from across Asia, Africa, and Latin America and 8 US universities who will work in partnership to define research topics and conduct research grants awarded by the program.

• A program funded by the US Agency for International Development (USAID) for up to $70 million over 5 years.

• A process that ensures the optimal participation of development actors all along the research-to-translation value chain – such that meaningful interaction can take place between researchers and development practitioners in both the design of applied research, and the figurative translation (i.e. relevant adaptation) of the research results

• A consortium, led by Purdue University, that includes Catholic Relief Services (CRS), Indiana University, Makerere University (Uganda), and the University of Notre Dame. Each of these institutions is responsible for specific aspects of LASER PULSE and will receive support from one or more of the other consortium partners to fulfill its role.



SCHEDULED EVENTS

Monday, May 6, 2019

Time	Session
12:00-14:00	Lunch
12:30-13:00	Registration
13:00 – 15:30	University Leadership in Support of Development Research (University researchers and administraters) *Yuehwern Yih (Purdue), William Bazeyo (Makerere), Teshome Alemneh (Indiana), Michael Sweikar (UND)*
14:30-16:00	Poster Setup
16:00 – 17:00	Human Subjects Research Ethics, Processes for Eastern Africa *Roy Mayega (RAN), Yuehwern Yih (Purdue)*
17:00 – 18:00	LASER PULSE Network Searchable Database *Willie Burgess (Purdue), Frederick Rossi (Notre Dame)*
18:00-21:00	*Translation Poster Reception with Appetizers* *Welcome to Reception: Harriet Adong (Makerere)*

Tuesday, May 7, 2019

Time	Session
8:00 – 8:30	Registration Sign In
8:30 – 8:45	Welcome and Opening Words *Rick Samarriba, USAID Uganda Mission Director*
8:45 – 9:45	Plenary Speakers on Research in Service of Development: Why does research matter for development? *Speakers: Ticora Jones (USAID GDL), Janice Zdankus (HPE)* *The two plenary speeches will be TED Talk-like presentations addressing research for development. Dr. Jones will present opportunities and challenges for research in service of development from her perspective both as a researcher and as Director of the Center for Development Research and the Division Chief of the Higher Education Solutions Network in the U.S. Global Development Lab at USAID. Janice Zdankus will address lessons from private enterprise practice on ensuring application of research.*
9:45 – 10:15	Panel: What are the current barriers to effective research for development? *Roy Mayega (Makerere), David Plater & Kara Wools-Kaloustian (Indiana), John Hembling (CRS)* *Dr. Mayega, of Resilient Africa Network and Makerere University, will present findings about barriers to translating research from a LASER Gap Analysis report from a survey of 27 African universities. The other panelists will provide perspectives from Indiana University Global Health programs and from Catholic Relief Services partnerships with universities to discuss barriers - and opportunities, for researcher-practitioner collaborative to develop solutions.*
10:15 – 10:30	Coffee and Tea Break

Tuesday, May 7, 2019 (continued)

Time	Session
10:30– 10:50	**Government Representative, Presiding Remarks** *Dr. Elioda Tumwesigye (Ministry of Science, Technology, and Innovation)*
11:00 – 12:15	**Round 1 Case Study Workshops (2 concurrent)** *These sessions offer examples of translated research by sector. Each session comprises a facilator and two presenters, who will provide rapid overviews of these examples. The heart of each session is the discussion with the audience of translation in general, and how it was built into planning for the outcomes.* **Case Study 1: Successful Translation in MCH Health Systems** *Sheri Bucher (Indiana), Queen Dube (Queen Elizabeth Central Hospital - Malawi), Peter Waiswa (Makerere)* **Case Study 2: Successful Translation in Water & Sanitation (water for productive uses & WASH)** *Tom Purekal (UND), Seifu Tilahun (Bahir Dar U), Wendy Jepson (Texas A&M)*
12:15 – 13:15	**Lunch**
13:30 – 14:45	**Round 2 Case Study Workshops (2 concurrent)** *These sessions offer examples of translated research by sector. Each session comprises a facilitator and two presenters, who will provide rapid overviews of these examples. The heart of each session is the discussion with the audience of translation in general, and how it was built into planning for the outcomes.* **Case Study 3: Successful Translation in Food Security (agricultural and nutritional resilience)** *Tony Castleman (CRS), Dieudonne Baributsa (Purdue); Violet Mugalvi (University of Eldoret)* **Case Study 4: Successful Translation in Basic Education** *Aminata Jalloh (CRS); Maya Kalyanpur (University of San Diego); Amanda Moll (CARE)*
14:45 – 15:00	**Coffee and Tea Break**
15:00 – 16:20	**Capacity Building Workshop Session** **Capacity Workshop 1: The How-to of Research Translation and Communication (In three sessions)** *Paul Perrin (UND), Meghan Armistead (CRS), Christopher Rice (Indiana)* *The concept and the practice of research applied for development solutions is integral to LASER PULSE. Moreover, the ability to demonstrate planned translation and translation partnerships is key to success for LASER PULSE research grants. We therefore plan three simultaneous sessions on Translation practice so that all conference participants will have the opportunity to take this training, as well as one training from the next session.*
16:30 – 17:30 II.	**Capacity Building Sessions** **Capacity Workshop 2: Development Research Leadership in low-income countries: Building healthy and responsive ecosystems** - *Dr. Roy Mayega (Makerere)* **Capacity Workshop 3: Empowerment: Addressing asymmetries to ignite untapped development research potential in low income country universities** *(Makerere)*
17:30– 19:00	**Rest Break**
19:00	**Gala Dinner - BBQ**

SCHEDULED EVENTS

Wednesday, May 8, 2019

Time	Session
8:00 – 8:30	Registration Sign In
8:30 – 9:30	Plenary: Comprehensive Issue Analysis *Joe Sinfield (Purdue)*

Comprehensive Issue Analysis (CIA), created by Joe Sinfield (Purdue), identifies the key interrelated factors that define complex, multi-dimensional problems such as resilience. It uses patterns to organize and synthesize large amounts of qualitative information gleaned from multiple internet resources and stakeholder input. LASER uses CIA to frame and analyze success factors for region-specific development priorities. The goal is to highlight those systemic factors that are not being addressed adequately, for which research can contribute to solutions. Dr. Sinfield has applied versions of CIA with private enterprise partners for decades, and has applied it to community-focused projects in the Dominican Republic and in the US. In his plenary discussion, Dr. Sinfield will explain the process he and his team have used to identify priority sector issues, and to delve deep into the factors necessary for impact in each of the sectors identified.

9:40 – 13:00 Issue Tree Breakout Sessions (4 concurrent 3-hour sessions, by sector)

In these sections, mixed groups of researchers, NGO practitioners, government officials, and private sector representatives will lend their perspectives to honing the CIA issue trees for our four sectors. Participants will ensure that no consideration is lacking, and likewise will identify those issues that research cannot influence and therefore that should be removed from consideration.

Issue Tree 1: Basic Education
Arlene Benitez (Indiana), Hellen Inyega (Univ. of Nairobi)
Issue Tree 2: Water and Sanitation, and irrigation
Jamiat Nanteza (Makerere), Dorothy Okello (Makerere)
Issue Tree 3: MCH Health Systems
Roy Mayega (Makerere), Julius Ssentongo (Makerere)
Issue Tree 4: Food Security (resilience in agriculture and nutrition)
Betty Bugusu (Purdue), Emmanuel Okalany (Makerere)

13:00– 14:00	Lunch
14:00 – 16:00	Issue Input Sessions *Joe Sinfield (Purdue), with the facilitators listed above*

For these follow-on CIA sessions, participants will provide critical inputs on the priorities raised in the Issue Tree sessions to ensure we are well informed when developing the RFA. Our intent is to gather information like: what is the specific problem you are hoping can be solved? Who is working on this currently? What investment has occurred in this area? Why are current approaches not working? Who are potential collaborators and partners?

16:00 – 16:30	Final wrap-up and next steps *Yuehwern Yih (Purdue)*

GUEST SPEAKERS

Harriet Adong
Makerere University

Harriet Adong is Director Communications and Knowledge Management at ResilientAfrica Network (RAN) www.ranlab.org. She is trained and experienced in communication, public relations, public speaking, research, scientific writing and communicating findings to scientific audiences. Knowledge management and translation, advocacy, partnership building, leadership, disaster risk reduction and management, team building and networking are additional skills she has. She plans and moderates events at national and international levels closely working with government departments and development partners (IMF, CDC, UNAIDS, WHO and USAID) etc. At RAN, Harriet manages both internal and external communication across a network of 20 Universities in 13 African countries and USA. She is responsible for maintenance and promotion of RAN's brand and implementation of the Communications strategy as well as identification and engagement of strategic partners towards achievement of RAN's objectives. She oversees documentation and dissemination of content (RAN activities and research outputs) on various platforms and fora (RAN websites, Twitter, RAN Bulletin). Harriet holds a Post-Graduate degree in Sociology from Makerere University in Uganda.

Teshome Y. Alemneh, Ph.D.
Indiana University

Currently the Associate Vice President and Director of the Office for International Research and Development at Indiana University, Dr. Teshome Y. Alemneh leads IU's international institution-building initiatives, advancing IU's global reputation, and creating international opportunities for students and faculty. Before joining IU in 2015, Dr. Alemneh served as the Program Officer for Africa at the American Council on Education office of Higher Education for Development, and effectively led and managed more than a dozen multimillion-dollar higher education partnership projects in Burkina Faso, Ethiopia, Ghana, Kenya, Liberia, Malawi, Senegal, South Africa, South Sudan, and Uganda. He has taught graduate level courses and advised student research as Associate Professor of Soil Science and Land Evaluation at Hawassa Universit and Ambo University in Ethiopia. As the Deputy Minister of Higher Education in Ethiopia, he has led and managed multi-million dollar national higher education expansion and reform strategies and policies that resulted in the establishment of more than a dozen new universities, the drafting and promulgation of the first higher education law in the country, and the creation of the first national higher education relevance and quality assurance agency and a higher education strategy center. A Fulbright New Century Scholar, Dr. Alemneh earned his doctorate in Earth Sciences - Soil Sciences and Land Evaluation at Ghent University in Belgium. Dr. Alemneh has published Journal Articles, book and book Chapters; reports and presentation papers.

Meghan Armistead
Catholic Relief Services

Meghan is the CRS Key Personnel for LASER, focused on helping develop and implement the project's research translation strategy, with a special focus on fostering deep collaboration between practitioners and researchers. Previously, Meghan served as Senior Technical Advisor for Partnership and Capacity Strengthening at CRS, strengthening civil society and fostering partnership innovation, including with universities. Meghan has also worked as a technical advisor at Lutheran World Relief, including in East and West Africa, working to assess and strengthen organizational capacities, and to identify and scale civil society innovation and leadership. Meghan served in the Peace Corps in Haiti and has an MA in International Development and Economics from Johns Hopkins School for Advanced International Studies (SAIS).

Dieudonné Baributsa, Ph.D.
Purdue University

Dieudonné Baributsa is an Associate Professor of Entomology at Purdue University. He has more than 20 years of experience in international development. He currently leads the Purdue Improved Crop Storage (PICS - www.picsnetwork.org) Program aimed at reducing grain postharvest storage losses to improve food security and income of smallholder farmers around the world. Dieudonné focuses on applied research and innovative extension approaches to scale-up postharvest solutions in developing countries. His broad areas of interest include agricultural technology development/dissemination; supply chain and commercialization of agricultural technologies; and ICT innovations for technology scale-up.

William Bazeyo, Ph.D.
Markerere University

William Bazeyo an Assoc. Prof. of Occupational Medicine at Makerere University College of Health Sciences, School of Public Health and is currently the Dean of the School. He received a Doctorate of Public Health from Atlantic International University, M.Med in Occupational Health from University of Singapore and MBCHB from Makerere University. He has been teaching in the University for more than 20 years and has done research and Published in several areas including Health Care Financing, Leadership and One Health. He was the among the key pillars of The HEALTH Alliance (Higher Education Alliance for Leadership Training for Health) which was formed in 2005 with funding from USAID that brought 7 schools of Public Health in Six Countries.

Arlene Benitez
Indiana University

Arlene Benitez serves as Director of the Center for International Education, Development, and Research (CIEDR) at Indiana University's School of Education and leads the USAID-funded Impact Evaluation of Psychosocial Support on Children's Well-being, Literacy, and Math Outcomes in the Integrated Essential Emergency Education Services Activity, through the LASER PULSE network. She has previously served as Program Director for the Masters in Education in Emergencies Program (MEP) at the University of Juba to prepare educational leaders in South Sudan and assisting South Sudanese universities and the education system to promote social cohesion, peace building, and conflict mitigation and the South Sudan Higher Education Initiative for Equity and Leadership Development (SSHIELD) program aimed at increasing gender equity and women's leadership in South Sudan. During her time at Indiana University, she has also managed international education projects in Afghanistan, Kosovo, Slovakia, Latvia, Lithuania, Macedonia, Estonia, Turkey, Armenia, Malawi, Ecuador, and India. Prior to her work at IU, Ms. Benitez started her career as social studies and English teacher in Los Angeles and later held the position of Assistant Director for Civitas International Programs at the Center for Civic Education, a U.S. based NGO, where she managed civic education partnerships in Latin America, Europe and Eurasia, and the Middle East.

Sherri Bucher, Ph.D.
Indiana University

Dr. Sherri Bucher, Associate Research Professor of Pediatrics, Indiana University School of Medicine, is a global health researcher, educator, technical expert, and implementation specialist with 15 years of expertise in maternal, child, and newborn health. She currently serves as the US-based co-PI (Kenya site) of the NICHD-funded Global Network for Women's and Children's Health Research, and as an International Mentor for Helping Babies Survive on behalf of the American Academy of Pediatrics. Dr. Bucher has extensive experience cultivating strategic partnerships and international collaborative coalitions by which to strengthen health systems in low/middle-income settings through the use of mHealth solutions; implementation and dissemination research; and development of best practices for evidence-based medical, nursing, and midwifery education and training.

Betty Bugusu, Ph.D.
Purdue University

Dr. Betty Bugusu is the Technical Director for LASER-PULSE (Long-term Assistance and Services for Research Partners for University–Led Solutions Engine). Prior to joining LASER PULSE, Betty served as the Managing Director of Purdue's International Food Technology Center housed in the Department of Food Science and the Director for the Feed the Future Innovation Lab for Food Processing and Post-Harvest Handling working in Kenya and Senegal. She also worked as a Research Scientist with the Institute of Food Technologists and as Program Associate for SUSTAIN (a non-profit organization), both based in Washington DC. Dr. Bugusu obtained her B.S. degree in Agriculture from Egerton University, Kenya and M.S. and Ph.D. in Food Science from Purdue. Her research focus was in cereal chemistry.

Wilella Daniels Burgess, Ph.D.
Purdue University

Wilella Daniels Burgess directs the Evaluation and Learning Research Center (ELRC) in Purdue University's College of Education. She has more than 25 years of experience in developing and evaluating formal and informal education programs and methodologies for a variety of audiences. Her current work focuses on innovations that improve learning, well-being, and personal or organizational development. Using a context centered approach to research and evaluation ELRC designs and implements research and evaluation studies that are rigorous, ethical, and inclusive of all stakeholders. ELRC strives to understand not only what works, but why it works, for whom, and under what conditions. Because ELRC work is grounded in theoretical frameworks, it can be generalized beyond the current project. Burgess is involved in over 30 active research and evaluation projects funded by NSF, NIH, USDA, DOE, HRSA, CDC, USAID, and a variety of foundations and is a frequent presenter at national meetings.

Andrea Burniske
Purdue University

Andrea Burniske has 25+ years of experience as an international development program manager and proposal writer, working with a wide variety of US and European donors. She has 16 years of experience developing and leading programs in Colombia, Peru, Tajikistan, Russia and other countries. She is skilled in sustainable development, humanitarian response, civil society and community development, and gender sectors, and has a wealth of MEAL skills with a demonstrated history of working in both the NGO and the higher education industry. Ms. Burniske has a Master's degree focused in communication for development from University of Oregon Graduate School, and an MBA+ Certificate from Portland State University and Mercy Corps.

Margaret Busse
Purdue University

Margaret Busse is a PhD student in Civil Engineering with a focus in Environmental Engineering and water treatment. She has a Bachelor's degree in Biological Engineering and a Master's degree in Civil Engineering, both from Purdue University. Her research is focused on water treatment technologies and their impact on public health. She has experience working on and leading interdisciplinary teams on water treatment system implementation and monitoring in both the Dominican Republic and Kenya. She works to conduct community-based evaluations of the systems and their implications to inform and improve adoption.

Tony Castleman, Ph.D.
Catholic Relief Services

Tony Castleman is Director of Programming – Agriculture, Livelihoods, Water, Environment and Microfinance at Catholic Relief Services. From 2014 to 2018, Tony was the South Asia Representative for CRS, overseeing CRS programs in India, Nepal, Bangladesh and Sri Lanka. Before joining CRS, Tony was an Associate Research Professor and Associate Director of the Institute for International Economic Policy at George Washington University. His research focused on nutrition, food security, and the roles that respect, dehumanization and human recognition play in development. Prior to that, Tony served as Deputy Director – Field Support for the USAID-funded Food and Nutrition Technical Assistance (FANTA) project, where he managed teams providing technical assistance in food security and nutrition in 18 countries. He has also worked at the World Bank and as Director of an NGO in India. Tony has a Ph.D. in Economics from George Washington University and a B.A. in Public Policy from Stanford University.

Queen Dube, M.D.
University of Malawi

Pediatrician Queen Dube is identifying challenges in neonatal care, developing and implementing new technology solutions at Queen Elizabeth Central Hospital (QECH), the largest tertiary unit in Malawi, in collaboration with Rice University. As a Consultant Pediatrician, Queen teaches medical students and conducts research on pediatric HIV, neurodevelopment, and neonatal infections. She currently serves as the principal investigator on a neonatal sepsis study, co-principal investigator on a neonatal meningitis clinical trial, and co-investigator on a Group B vaccine trial. Queen was one of the physician partners at QECH who oversaw the clinical aspects of Rice 360°'s Pumani CPAP clinical study funded by a Saving Lives at Birth seed grant in July 2011.

Anthony Egeru, Ph.D.
Makerere University

Anthony Egeru has 10 years' experience in the field of Education, research and community development He is currently serving as the Acting Deputy Executive Secretary and Programme Manager for Training and Community Development Unit at the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) Secretariat, Kampala. Anthony previously served as Assistant Grants Manager at RUFORUM, Lecturer and Research Fellow at Makerere University. He brings a dynamic experience of program management and research and community development particularly in marginal areas-semi-arid areas of Africa. As a seasoned researcher Anthony has expertise in climate and disaster risk reduction, community development processes, curriculum development and systems ecology.

John Hembling
Catholic Relief Services

John Hembling is the Senior Technical Advisor for Health Evaluation and Research at Catholic Relief Services. He supports the agency's global health and social services team to implement rigorous program monitoring, evaluation, accountability and learning. Currently, John is responsible for multiple studies on CRS' vulnerable children programming, including early childhood development, microfinance and family strengthening. Previously, John served as a Monitoring and Evaluation Advisor at Tulane University School of Public Health and Tropical Medicine, where he worked primarily on USAID's MEASURE Evaluation Project. John served in the Peace Corps in Nicaragua.

Hellen Inyega , Ph.D.
University of Nairobi

Hellen Inyega is Associate Professor and Consultant in Language, Literacy, Numeracy, Early Childhood and Special Education in the Department of Education Communication and Technology, University of Nairobi. She holds a PhD in Reading Education from the University of Georgia, USA. Hellen actively and consistently evaluates and provides technical support to education projects across Africa. She advises on project design, development, implementation, monitoring and evaluation and writing of technical and narrative reports using qualitative and quantitative research approaches. She guides implementing organizations on relevance, efficiency, effectiveness, sustainability and impact measures of their projects and on communications advocacy strategies for sensitization and awareness creation. She designs and develops instructional materials (print and e-content) and assessments. Hellen remains a dedicated teacher educator, coach and mentor and prefers being on the education work-floor with teachers conducting action research aimed at catalyzing synergies to solve the often challenging, but not insurmountable, content and pedagogical challenges.

Aminata Jalloh
Catholic Relief Services

Aminata Jalloh is a Technical Adviser of the Health, Education and Social Service team in the Program Impact and Quality Assurance (PIQA) group at CRS. Specializing in early and childhood literacy development, teacher professional development and student assessment, Aminata has a strong commitment to facilitating learning across all populations, particularly among at-risk populations, such children with special needs. She provides global technical leadership to CRS's initiatives from early childhood development through upper primary education. Aminata posses a Master's in Economics and Educational Planning from University College London (UCL), an early childhood and elementary teacher certification from the Office of the State Superintendent of Education, and a Bachelor's in Elementary Education from the University of Maryland.

Wendy Jepson, Ph.D.
Texas A&M University

Wendy Jepson is Professor of Geography at Texas A&M University and a Visiting Professor at the Federal University of Ceará, Brazil. She leads several water security research projects, funded by the US National Science Foundation and the Texas A&M Presidential Excellence Fund, that address water governance and environmental justice for the benefit of advancing community and human wellbeing. Dr. Jepson's regional interests are global, including over 20 years' experience in Brazil. As a Fulbright Scholar (2016-2017, Fortaleza, Brazil), she assesses household water insecurity of formal and informal water provisioning systems, applying novel metrics and analytics. Dr. Jepson also leads an international community of practice on the challenges of household water security, the NSF-funded Household Water Insecurity Experiences – Research Coordination Network (HWISE-RCN). Dr. Jepson provides guidance, mentoring, and vision to the emerging community of practice that spans over 25 institutions and 40 researchers across the globe.

Ticora Jones, Ph.D.
USAID

Dr. Ticora V. Jones is the Director for the Center for Development Research and the Division Chief for the Higher Education Solutions Network (HESN) within the US Global Development Lab at USAID. The Center for Development Research facilitates programs focused on connecting researchers to practitioners for impact in global development through collaborative partnerships. HESN is a university engagement program established in 2012 to build bridges between development professionals and universities through a multidisciplinary lens on science, technology, innovation and entrepreneurship. Beginning in 2009 as a American Association for the Advancement of Science (AAAS) Diplomacy, Security, and Development Fellow with USAID, Dr. Jones helped manage the establishment of an Agency-wide agenda for science & technology through policy and programming designed to elevate USAID's presence in this area. Prior to joining USAID, Dr. Jones served as the 2008-2009 Materials Societies Congressional Fellow for Senator Russell D. Feingold (D-WI) where she worked on energy and environment issues. Before beginning her congressional fellowship, Dr. Jones conducted post-doctoral research focused on creating and characterizing nanoparticle/composite-based functional materials at Lawrence Livermore National Laboratory. Dr. Jones earned her BS degree in Materials Science and Engineering from MIT and her PhD in Polymer Science and Engineering from the University of Massachusetts at Amherst.

Maya Kalyanpur, Ph.D.
University of San Diego

Maya Kalyanpur, PhD, is Professor of Special Education at the University of San Diego. She began her career as a teacher of children with mild to moderate intellectual disabilities in India. She has conducted research and published books and numerous articles on international inclusive and special education policy and practice, and families of children with disabilities from culturally and linguistically diverse backgrounds in India, the US and Cambodia. Her most recent book, Disability studies in South Asia: Redefining boundaries and extending horizons, co-edited with Dr. Shridevi Rao, presents an alternative analysis to disability appropriate to South Asia. She was an international advisor in inclusive education to the Cambodian Ministry of Education under the World Bank-supported Global Partnership for Education program and received a Fulbright award to study services for students with learning disabilities in India.

Romika Kotian, Ph.D.
Purdue University

Romika Kotian is a PhD student with a focus in Innovation and Leadership Studies. She has a Bachelor's degree in Civil Engineering from India and a Master's degree in Structural Engineering, from Purdue University. She co-founded a startup that aimed at creating a market for local artists and artisans in India to sell their products. She also co-founded a community support group in Mysuru, India, that focused on reducing drop-out rates in government schools located in the city. Her research is now focused on structuring grand challenge problems and applying the methodologies to research for development and capacity building.

Roy William Mayega, M.D.
Makerere University

Dr. Roy William Mayega is the Deputy Chief of Party, ResilientAfrica Network (RAN) and a Lecturer in the Department of Epidemiology and Biostatistics at the School of Public Health, Makerere University (MakSPH). At ResilientAfrica Network, he oversees the day-to-day technical translation of agreed strategies into implementation activities across over 20 African Universities in this research and innovations network. At Makerere's School of Public Health, he teaches Epidemiology, Biostatistics and Research Methods to graduate and undergraduate students. He is also the Program Coordinator for the Strengthening Leadership in Disaster Resilience Program (SLDRP). He leads the efforts at integrating e-Learning into teaching at learning at MakSPH. He underwent basic training as a Medical Doctor. He holds a Master's Degree in Public Health from Makerere, and a PhD in Medical Science from Karolinska Institutet, Sweden. He has over 20 years of experience working in public health, including several years at primary care level.

Amanda Moll, Ph.D.
CARE USA

Amanda Moll is CARE USA's Senior Advisor for Adolescent Programing on the Education Team, focusing on research as well as program design of the organization's education and adolescent initiatives. Her current and past research focuses on issues of education and empowerment in developing contexts. Specifically, this includes a focus on both formal and non-formal education programming and the intersection with community engagement, using mixed-methods approaches and longitudinal research. Thematic areas of research include: adolescent economic empowerment and the overlap with education and environment, education and community engagement, and gendered educational studies. She has a Ph.D. in Educational Policy Studies, with a focus on Research, Measurement, and Statistics from Georgia State University.

Violet Kadenyeka Mugalavai, Ph.D.
University of Eldoret

Violet Kadenyeka Mugalavai is an Associate Professor in Food Science and Nutrition in the Department of Family and Consumer Sciences, University of Eldoret. She is a specialist and consultant in food, nutrition and livelihoods security, reducing postharvest losses, agro-processing and extension, food and consumer behavior, and food product development especially targeting women and the youth in agribusiness start- ups and scale-ups at the Food Processing Training and Incubation Centre which was set up by Food processing innovation lab through USAID- Purdue University funding at the University of Eldoret, Kenya. She is also passionate about greening the environment and sustainable agriculture in the urban and peri-urban food systems, especially pushing for food diversity for better household nutrition.

Dorothy Okello
Markerere University

Dr. Dorothy Okello is Director of Innovation at ResilientAfrica Network (RAN) hosted by Makerere University School of Public Health. Supported by USAID, RAN is a partnership of 18 Sub-Saharan African universities that seeks to identify, develop and scale innovative solutions that will strengthen the resilience of African communities afflicted by natural as well as man-made shocks and stresses by applying science, technology, innovation and partnerships, and using evidence-based approaches. Dorothy is a Senior Lecturer with the Department of Electrical and Computer Engineering at the College of Engineering, Design, Art and Technology (CEDAT) - Makerere University, Kampala, Uganda; and a Researcher with netLabs!UG, a research centre within the Department whose model is to strive for a balanced critical mass of basic research, applied research, innovation and commercialisation in the area of telecommunications and networking.

Paul Perrin, Ph.D.
University of Notre Dame

Dr. Paul Perrin is the Director of Evidence and Learning at the Notre Dame Initiative for Global Development and a Concurrent Associate Professor of the Practice in the Keough School of Global Affairs. Prior to joining Notre Dame, Dr. Perrin served as the Director for Monitoring, Evaluation, Accountability, and Learning (MEAL) at Catholic Relief Services (CRS) and was a member of the Senior Management Team for the Overseas Operations Division. Dr. Perrin has also worked as Senior Technical Advisor for Health Research and Evaluation at CRS, as an Associate in the Johns Hopkins Center for Humanitarian Health, and an Information Officer at USAID's Office of U.S. Foreign Disaster Assistance. Dr. Perrin completed his PhD in International Health at the Johns Hopkins University Bloomberg School of Public Health, with a certificate in Humanitarian Assistance. Paul also received a Masters in Public Health and a B.A. in Linguistics from Brigham Young University.

David Platter
Indiana University

David Plater is the Associate Director of Research for Indiana University's Center for Global Health. Over the last 7 years, David has served in various roles building IU's global health research partnerships and programs with a special emphasis on strengthening the IU-led Academic Model Providing Access to Healthcare's (AMPATH) research program at Moi University and Moi Teaching and Referral Hospital (MTRH) in Western Kenya. His efforts have contributed to strengthening IU's international partnerships, developing administrative systems, policies and procedures, training programs, human subjects protections programs, financial administration, laboratory and biobanking infrastructure, and other key research facilities to support international research collaborations focused on improving the health of people in resource limited settings. This research infrastructure has supported the development of a broad research network involving partners from more than 20 institutions in North America, Europe, and Africa with more than US$125 million in cumulative research and training awards from the NIH, CDC, Bill & Melinda Gates Foundation, and other major sponsors. These research programs have resulted in more than 600 publications in peer reviewed journals.

Tom Purakel
University of Notre Dame

Tom Purekal manages a cross section of programs within the Innovation and Practice Division. Purekal comes to NDIGD following a long career of working overseas with Catholic Relief Services (CRS) and other organizations. His places of work include posts such as India, South Sudan, and Myanmar to name a few. Purekal has an eclectic background, having worked as an advertising executive in New York City for three years, sub-director of an orphanage in Honduras, director of operations and business development for a small agriculture manufacturer's distributor in Florida, followed by nine years with CRS. His extensive programming and project design experience encompass sectors such as peacebuilding and governance, education, disaster risk reduction, and water, sanitation and hygiene (WASH).

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Dr. Yuehwern Yih is the Academic Director of LASER PULSE Consortium, Associate Director of Regenstrief Center for Healthcare Engineering, and Professor of Industrial Engineering at Purdue University. Her research area focuses on system engineering for developing strategies to optimize and manage complex systems/operation performance. Dr. Yih translates and implements her research work as system models, evaluation tools, designs and solutions in health systems, humanitarian relief operations, supply chains, and global development areas. Examples include an integrated nutrition support system for HIV patients in Kenya, jointly developed with AMPATH, an emergency response supply chain management system (E+TRA), jointly developed with Catholic Relief Services, an integrated demand sensing health supply chain (E+TRA Health) in Uganda, joint effort with Makerere University and Management Science in Health, and spatial redesign for Kangaroo Mother Care in Malawi, joint effort with Save the Children.
Dr. Yih is an IISE Fellow and ELATE Fellow.

Janice Zdankus
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Janice Zdankus is Vice President, Quality in Hewlett Packard Enterprise's Customer Experience and Quality team. In this role, Janice and her team are transforming the experiences customers have with HPE's product, solutions and support information with content delivery. Technology is transforming every industry and agriculture is no exception. Zdankus has been named to the World Economic Forum's Transformation Leader Network for the New Vision of Agriculture. As the HPE lead executive, she is partnering to enable world-leading agriculture research with an Internet of Things (IoT) architecture to accelerate emerging agriculture innovation opportunities. AgTech can address world issues to help the agriculture industry sustainably feed the growing world population. Zdankus' career experience spans multiple functional areas and includes leadership roles in software development, strategic planning, product management, marketing, customer support, quality and warranty operations. She has led the design and release of Converged Infrastructure solutions focused on cloud systems, remote support and the software services portfolio for the enterprise. Zdankus is an active supporter of increasing the interest and representation of youth in the Science, Technology, Engineering and Math (STEM) fields. She serves on the Board of Directors for the National Center for Women in Technology (NCWIT) and Accreditation Board for Engineering and Technology (ABET). Zdankus is also a founder of the Curated Pathways non-profit program focused on using AI and machine learning technology to broaden the representation of underrepresented minorities in computing and STEM, now led by the YWCA in partnership with Santa Clara University and Purdue University. Zdankus earned Bachelor of Science degrees in Computer Science and Industrial Management from Purdue University, where in 2010 she was named Outstanding Computer Science alumna. She also holds a Masters of Business Administration degree from Santa Clara University.

OTHER SPEAKERS

Jamiat Nanteza, Ph.D.
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POSTER ABSTRACTS

Integration of mHealth and Biomedical Engineering Innovation to Reduce Newborn Mortality and Morbidity

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There are intersecting opportunities for digital health and biomedical device innovation within the global maternal-newborn-child health landscape, due to an increased penetration of mobile devices, expanding cellular networks, and an uptick in affordable wearable/wireless sensor technologies. Our cross-institutional team has developed two prototypes: (1) an app, Mobile Helping Babies Survive powered by DHIS2 (mHBS/DHIS2), and (2) NeoWarm, a wearable biomedical device to prevent neonatal hypothermia.
Our international team of informatics, biomedical engineering, and global health collaborators used open-source, agile development processes to integrate mHBS with District Health Information System 2 (DHIS2), a health management information system used by Ministries of Health in 60+ LMICs Simultaneously, we are incorporating sensor technology into NeoWarm, and providing wireless connectivity to mHBS/DHIS2, to enable the automated, continuous capture of infant vital signs (temperature, heart rate, breathing, and oxygen saturation), and metrics for care of the premature/small baby. Information will be securely displayed on mobile devices, and linked with DHIS2, via the mHBS/DHIS2 app.

Results: Separate proof-of-concept testing and qualitative evaluations (focus group discussions; interviews) in Africa have demonstrated the feasibility and acceptability of each of these prototypes among health care providers (HCPs), parents and family members, and community opinion leaders.

Combined, NeoWarm + mHBS/DHIS2 may: (1) Provide HCPs with innovative training opportunities by which to improve their knowledge, skills, and competencies; (2) Improve the ability of HCPs to deliver, monitor, and evaluate evidence-based newborn care interventions (e.g., KMC); (3) Facilitate consistent data collection and reporting of core indicators and key outcomes

Integrated Moringa oleifera - Charcoal Filter for Purifying Water from Unprotected Sources of Kapseret Division, Uasin Gishu County, Kenya

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One of the most common problems afflicting people throughout the world and especially in Sub Saharan Africa is inadequate access to clean water for domestic purposes. The water sources used by humans and animals in Kapseret Division of Uasin Gishu County do not receive any form of treatment to reduce microbial and chemical pollutants exposing them to waterborne diseases. There is therefore need for sustainable, cost effective and reliable water treatment method that compatible to local customs and beliefs and can provide safe drinking water for use.

We trained two representatives from the women groups in the community on the importance of treating water for domestic use. Moringa oleifera is a commonly used vegetable tree and is grown area for mainly medicinal purposes. The wattle tree is mainly grown for charcoal. We then co-designed an integrated Moringa / Charcoal filter comprising of a 2-litre plastic bottle with the bottom cut and inverted then the mouth covered with a clean cloth was packed with boiled charcoal pieces from a wattle tree. The charcoal was again covered with a clean cloth and then topped with crushed Moringa olefera seeds. This technology was an effective method in reducing water quality parameters and was acceptable to the local communities since they were knowledgeable of the local materials and were involved at all stages of the filter development.

Tools for Localized Engineering in Displacement

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Displaced learners, uprooted because of conflict, poverty, or other traumas, are often shut out of formal opportunities for learning. Kenya in particular has an estimated 250,000 youth living on the streets with limited educational access. Our research on effective engineering/STEM learning tools catalyzed our collaboration with the Tumaini Innovation Center, our implementing partner in western Kenya. With local teachers and students, we co-designed a solution that comprises both products and practices. Our product is an engaging curriculum that includes digital learning materials like videos and assessments and challenges former street youth to learn engineering to solve local problems. Most recently, this supported their learning, design, and installation of a solar photovoltaic power system for their school.

Our translated solution also includes key practices: localization of engineered products produced by our students, and novel teacher training to build local capacity to scale the curriculum. Close partnership was vital between our group at Purdue, in the first-in-the-world School of Engineering Education, and Tumaini, an innovative alternative school for former street youth, including weekly calls and frequent bilateral visits. Another support for our pathway was collaboration with nearby Moi University to build course credit recognition and future learning pathways for our graduates. Our translated solution is currently being used and continues to foster additional catalysts for scale, including implementation beyond basic education (adult refugee learners in Kakuma, Kenya and Azraq, Jordan), expanded teacher training, and the development of a physical learning kit (the EngStarter) for low-barrier-to-entry electronics learning.

Reclamation of nutrients from source- separated urine: a way towards Food security

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Urine is rich in nutrients essential for plant growth. According to studies, tt is estimated that the yearly urine of an average person (547 litres) contains 2.5−4.0 kg of nitrogen and 0.22−0.37 g of phosphorus. This amount is enough to produce 145 kg of wheat/year. Source separation of urine plays an important role in reducing the nutrient load from WWTPs since nearly 80% N, 55% P and 65% K comes from ~1% of the wastewater – urine. Research is required to answer which strategy or combined strategies are efficient in providing us optimal recovery of nutrients with minimum risk of contaminants. The present study aims to explore the safe and acceptable way of urine-based fertilizer and its side benefits during application. The effect of urine storage in removing microorganisms and antibiotic resistance genes was investigated. Additionally, the bio-insecticidal properties of urine in selected pest was investigated. Storage was found to be the working method of sanitization of source-separated urine collected from the four sample points. Survival of potentially pathogenic microorganisms in urine decreased after five months of storage. Fecal contaminants could not survive in the urine after one month of storage. Based on a survey in farmers, aphids (Aphis spp.) was one of the most important pest destroying their vegetables and therefore a test was conducted to measure the behavior of this pest during application of urine as a fertilizer. The movement and oviposition of aphids (Aphis. spp) was found to be reduced in cabbage (Brassica spp) treated with fresh urine compared to stored urine and controls. Behavioral assay also showed that aphids were less attracted to both fresh and stored urine than the conventional synthetic fertilizer (DAP). The studies conducted under the different sub-thematic areas indicate the fertilizer and insect repellent properties of of source-separated urine. For safe application, storage of urine for five months or production of struvite by mg-based precipitation is recommended.

Should Embeddedness Matter for Smallholder Farmers' Resilience, : A case of a Processor Led Business Model in Malawi

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Mitigating productivity risks for farmers needs to be complemented with building farmer resilience to market and environmental shocks within a dynamic agri-food system. Despite this need research has concentrated on understanding the meaning of resilience, leaving out evidence of how actor relationships, embeddedness, enhances farmers' ability to adapt to risks, resilience. To fill this knowledge gap, this study aims to explore the extent of dairy smallholder farmer resilience using embeddedness, within a processor led business model, as an indicator. A qualitative inquiry that works with visualisation of role of actors embedded in a complex system was used, informed by the Complex Adaptive Systems (CAS) theory. Key informants, and focus group discussions with farmers provided the information to map the value network. A causal loop diagram was used to visualize the said connections. The findings indicated that despite the structural connections between farmers and stakeholders, the smallholder dairy farmer is still relatively 'disconnected'. Farmers were unable to sustainably supply the needed quality and quantity of milk by the ultimate buyer. Less than 50% of milk produced was sold through the processors, with the rest shared between own consumption and side selling. Limited financial and human capital, limited knowledge about the needs of the market, milk handling skills, contributed to the disconnection. Despite a price premium incentive offered by processor, few farmers enjoyed this benefit. Dairy farmers are not resilient despite available knowledge and skills that actors in the system avail to them. To improve dairy farmers resilience, and hence revenues future research should focus on understanding how best to develop connections focused on delivering value to the final consumer.

E+TRA Health: Demand Sensing and Digital Tracking for Maternal and Child Health (MCH) in Uganda

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Ninety-nine percent of all maternal deaths today occur in the developing world. Uganda is one of the developing countries with the poor reproductive status. One of the barriers is associated with ineffective use of service and poor access to healthcare supplies. Maternal health product supply chains in Uganda are fraught with many challenges, in particular, the ability to sense true demands and deliver essential medical supplies at the right time at the right place. Lack of financial support, human capacities, limited infrastructure, and weak health information systems undermine system's ability to forecast, procure and deliver the supplies to the last mile point of care.

The main core of this study is to improve health outcomes for the pregnant mothers and their newborns through developing better mechanism (E+TRA Health) to use first-mile data to improve the last-mile care delivery. System engineering principles and cloud-based smart sync technology are deployed to implement data driven demand sensing and inventory management solution to triangulate patient data in registries, diagnostic data in laboratories and consumption data captured in stocks. With ambidextrous approaches to address maternal and child health (MCH) supply chain management issues, E+TRA Health will improve resource allocation and equip health units with adequate supplies to enhance MCH care quality in Uganda.

Drinking Water Treatment and Monitoring System for Rural Communities in Developing Countries

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Delivering drinking water inexpensively to rural areas is a "last mile" problem. Delivering drinking water by pipe to remote areas from a central treatment facility requires large investments in infrastructure; however, delivering drinking water by less expensive point of use technologies often results in improper operation and maintenance, and lack of sufficient documentation on water quality and usage. The goal of this research is to design an affordable decentralized water treatment system that can be used in rural communities worldwide. The treatment system consists of slow sand filtration, automated pumping and disinfection, and cellphone-based water quality monitoring. Chlorination is used to disinfect the water because it is inexpensive and simple. The cellphone-based water quality monitoring kit is essentially a portable Chlorine-Turbidity (CT) meter, two chemical reagents and standards, and a smart-phone running an APP we developed for operating the CT-Meter.

The CT meter's cell phone connection enables display and transmission of daily test results to a central hub. The data collected at the central hub are used for assessing system performance (i.e. initiating maintenance or repairs), for assessing compliance with local drinking water standards, and for assessing the overall impact, as documented by (i) the measured improvements in water quality, (ii) the number of people served, and (iii) the volume of water provided. We have installed slow sand filters in several rural schools in Kenya, serving 200 to 300 students each, and have developed the CT-meter. Within the next year, we will initiate CT-Meter data collection at these schools. For each school, the initial capital cost is estimated to be less than $1,500 USD.

Spatial Redesign for Kangaroo Mother Care Center in Malawi

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The Kangaroo Mother Care (KMC) Acceleration Partnership (KAP), initiated by the Bill and Melinda Gates Foundation and led by Save the Children, is an evidence-based, life-saving intervention for preterm infants that requires family-centered care in low resource settings. The team picked a representative facility: the Ntcheu district hospital, to renovate its current NICU unit layout. The general goal is to design a ward that would cover all KMC-related needs, including space for enough mothers to sleep and spend days in skin-to-skin contact, receive visitors during the day, and nurses to provide care for small babies.

The task in Purdue is an important support branch for grand KMC project. We designed different layout plans and conduct patient-flow simulation and visibility simulation on each scenario. The performance of different layouts was measured basing on strong statistical/numerical data elicited from the simulation. We compared different outputs and evaluations for all the alternative designs and select the optimal one after careful and comprehensive assessment.
The KMC intervention will be adopted by other facilities, so the team can expand the KMC program in Malawi to benefit more premature babies.

Low-cost Cold Storage Technologies to Preserve Postharvest Quality of Fruits and Vegetables

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Proper cold chain management (CCM) is critical to preserve quality of perishable commodities such as fresh fruits and vegetables (FFV). Poor CCM contributes significantly to high postharvest losses (40-50%) in FFV. Mechanical refrigeration that entails use of conventional cold rooms is beyond reach for smallholder farmers in developing countries, due to the high installation and maintenance costs. This challenge has necessitated research in low-cost cold storage alternatives such as the Coolbot™ technology and the zero energy brick cooler (ZEBC). The objective of this research was adaptation and evaluation of the effectiveness of the two technologies to preserve postharvest quality of FFV. The two technologies were fabricated from locally available materials in Kenya and their effectiveness to attain and main cool temperatures evaluated in mango fruit and African leafy vegetables

.The results showed effectiveness of the Coolbot cold room to attain and maintain set cold storage temperatures (10 ±2 0 C) for mango. At this temperature, quality of the fruits was preserved for 23 days more than those stored at ambient room conditions. Similarly the ZEBC attained cooler than ambient room temperatures (2 – 12 0 C difference) and high relative humidity which led to better quality of stored leafy vegetables. The results of this research have provided evidence that demonstrates effectiveness of the two low-cost technologies. This evidence is critical in efforts to promote adoption of the technologies by smallholder farmers and traders. In Kenya, adoption of the technologies by farmers organized in groups has enabled them to aggregate FFV and negotiate for better prices from traders.
Key Words: Cold Chain, Coolbot, ZEBC, ZECC, Postharvest

Adapting A Reality Management Approach to prevent perinatal depression in rural Kenya, Tanzania and Ghana

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The Mothers and Babies Course (MBC) is an intervention aimed to prevent perinatal depression among urban, low-income pregnant women. Since 2016, Catholic Relief Services (CRS) and a researcher at George Washington University have been adapting this curriculum to Sub-Saharan Africa. This NGO-academic partnership contextualized and piloted the MBC among illiterate rural pregnant and lactating women in Kenya and Tanzania. The process included intensive formative research, conducted jointly by CRS and the researcher, training, coaching and direct observation of local facilitators, and continuous adaptation and improvement of the curriculum and tools. The pilots included a quasi-experimental evaluation that demonstrated increased maternal self-efficacy and reduced depression among women receiving the MBC intervention versus women in the comparison areas. Based on learning from the pilot, the team further refined the MBC curriculum and integrated early childhood development (iMBC/ECD). In 2018, the iMBC/ECD implementation has been further expanded into new communities in Western Kenya and Upper East Ghana.

Each partner brought unique strengths that has led to the success of the collaboration. The researcher brought her passion for and fidelity to the core intervention model, based on the literature and the original research, and academic rigor. The practitioners brought a key knowledge of the context, access to the target populations and platforms for implementation and scale up. This fruitful NGO-academic partnership allowed for knowledge generated in the Latin America, the United States, and Spain to expand its influence and impact to rural Sub-Saharan Africa.

Translational Impact of a Long-term Research Partnership in Benin, West Africa

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A long-term partnership between faculty in Benin and the US that was initially focused on rural water supply has led to multiple translational impacts beyond the initial vision. Examples include support of a Benin graduate program, international student collaborations, and village-led change in WASH practices. The example discussed here was made possible due both to the long term commitment of partnership to build internal trust and vision, and the willingness to openly share the research strategies, field efforts, and results with a government water agency. Building a close relationship between a lead member of that agency and the university team allowed the partnership to move forward with confidence on a government suggestion to change the project vision to allow study of groundwater supply serving a coastal urban area.

This ongoing translational effort has provided the government with insights into the recharge waters and contamination threats influencing future sustainability of this sole-source aquifer system. These insights are helping to influence both policy (well drilling) and practice (pump management).

Translation, in this case, derived from a partnership built on trust, openness to critique, and willingness to consider new ideas that had the potential to influence policies and practices. Challenges to continuing this effort includes convincing the government to move from temporary policy and practice to a permanent policy to protect the groundwater resource. This challenge derives both from new leadership in the government water agency and to competing responsibilities of the university faculty as job profiles change

Translation from rope and bucket to solar pump by smallholder for irrigation development in the humid Ethiopian highlands: its potential and challenges

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More than 70% of the population of in sub-Saharan Africa are living in rural areas that depend on the rainfed agriculture for their livelihood on the rainfed agriculture. With the rapidly increasing population, competition for land and water is growing is intensifying. This, together with future landscape and climate change, the rainfed agriculture is unlikely to meet the future food demands. Many donors see irrigation a rational way to solve the future food crises.

Depending on the technology, an estimated 110-370 million smallholder farmers in sub-Saharan Africa could benefit from small scale irrigation technologies. Under the Feed the Future funded Innovation Laboratory for Small Scale Irrigation (ILSSI) project in collaboration with government offices at district level since 2014, water lifting technologies have been implemented in Ethiopia to extract shallow groundwater for irrigation purposes. Farmers in Dangila area of Ethiopia have been using their wells only for domestic water supply using rope and bucket.

.Through the collaborative research, the farmers have transformed to use water lifting technologies such as pulley at the beginning and later upgraded to Maji solar pump for irrigation using their hand dug wells. Currently, the solar technology is used in additional two communities through the support of Appropriate Scale Mechanization Consortium.

These interventions have inspired NGO's such as AgroBiG, government agricultural extension offices and privates for access of such technologies. In future it is promising that the availability of such technology to be available in the market. The concern is however the ground water availability and the role of the technology on the sustainability of groundwater. In sloping watersheds of Ethiopia, the groundwater runs out under gravity to the stream channel in 3-4 months after the rainfall stops. The only wells that remain productive are those associated with fractures in the bedrock. For the less sloping watersheds ground water remains available over longer periods. Therefore the translation of such technologies into use should be done with care.

E+TRA: Emergency Response Supply Chain Management System


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The efficiency of humanitarian aid supply chains is critical to effective emergency response. In addition, a sustainable supply chain network facilitates the rapid recovery of devastated areas and provides relief for the affected populations. Thus, an efficient, reliable and sustainable emergency supply chain management system plays a critical role in the humanitarian relief operations. Currently, a typical ERP (enterprise resource planning) system does not address the specific needs of emergency humanitarian relief functions. Without an emergency supply chain management system, the lack of coordination and potential human errors will cause unnecessary delays, which jeopardizes the safety, and sometimes survival, of affected people. In addition, tracking relief materials from donor resources all the way to distribution to target beneficiaries is important for accountability and transparency.

In this project, Purdue University and Catholic Relief Services (CRS) are co-designing a web-based, multi-platform, centralized, offline-compatible electrical emergency response system. This system is capable of connecting all global warehouses across different country programs, requesting and approving relief materials, checking inventory levels, tracking relief materials from donors to beneficiaries, and automatically generating accounting and beneficiary reports. This application will help execute efficient, reliable and sustainable distribution plans for emergency operations to help people in need.

The Household Water InSecurity Experiences (HWISE) Scale: development and validation of a household water insecurity measure for low- and middle-income countries


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Progress towards equitable and sufficient water has primarily been measured by population-level data on water availability. However, higher-resolution measures of water availability, accessibility, sufficiency, and reliability (i.e. water insecurity) are needed to understand how problems with water impact health and well-being. Therefore, we developed the Household Water InSecurity Experiences (HWISE) Scale to measure household water insecurity in an equivalent way across disparate cultural and environmental settings.

Cross-sectional surveys were implemented in 8,127 households across 28 sites in 23 low- and middle-income countries. Data collected included 32 items on water insecurity in the prior month; socio-demographics; water acquisition, use, and storage; household food insecurity; and perceived stress. We retained water insecurity items that were salient and applicable across all sites. We used classical test and item response theories to assess dimensionality, reliability, equivalence, and validity. Twelve items about experiences of water insecurity were retained. Items showed uni-dimensionality in factor analyses and were reliable (Cronbach's alpha 0.84 to 0.93). The average non-invariance rate was 0.03% (threshold < 25%), indicating equivalence of measurement and meaning across sites. Predictive, convergent, and discriminant validity were also established. The HWISE Scale measures universal experiences of household water insecurity across low- and middle-income countries. Its development ushers in the ability to quantify the prevalence, causes, and consequences of household water insecurity, and can contribute an evidence base for clinical, public health, and policy recommendations regarding water.

Integration of mHealth and biomedical engineering innovation to reduce newborn mortality and morbidity

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Background: There are intersecting opportunities for digital health and biomedical device innovation within the global maternal-newborn-child health landscape, due to an increased penetration of mobile devices, expanding cellular networks, and an uptick in affordable wearable/wireless sensor technologies. Our cross-institutional team has developed two prototypes: (1) an app, Mobile Helping Babies Survive powered by DHIS2 (mHBS/DHIS2), and (2) NeoWarm, a wearable biomedical device to prevent neonatalhypothermia.
Methods: Our international team of informatics, biomedical engineering, and global health collaborators used open-source, agile development processes to integrate mHBS with District Health Information System 2 (DHIS2), a health management information system used by Ministries of Health in 60+ LMICs. Simultaneously, we are incorporating sensor technology into NeoWarm, and providing wireless connectivity to mHBS/DHIS2, to enable the automated, continuous capture of infant vital signs (temperature, heart rate, breathing, and oxygen saturation), and metrics for care of the premature/small baby. Information will be securely displayed on mobile devices, and linked with DHIS2, via the mHBS/DHIS2 app. Results: Separate proof-of-concept testing and qualitative evaluations (focus group discussions; interviews) in Africa have demonstrated the feasibility and acceptability of each of these prototypes among health care providers (HCPs), parents and family members, and community opinion leaders. Conclusions: Combined, NeoWarm + mHBS/DHIS2 may: (1) Provide HCPs with innovative training opportunities by which to improve their knowledge, skills, and competencies; (2) Improve the ability of HCPs to deliver, monitor, and evaluate evidence-based newborn care interventions (e.g., KMC); (3) Facilitate consistent data collection and reporting of core indicators and key outcomes

Levels, Trends and Inequalities in Indicators For Reproductive, Maternal, Newborn and Child Health in Uganda

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Health inequalities continue to persist around the world in general, and particularly in low- and middle income countries. These inequalities manifest in variations in health outcomes and in the tendency for health systems to better meet the needs of populations in certain geographical areas. Identifying and monitoring how inequalities change over time is essential to creating an equity-oriented health sector and provides a basis for incorporating equity into evidence-based health planning. The objective is to assess health equity in reproductive, maternal, newborn and child health interventions by analyzing survey data for levels, trends and disparities. Uganda Demographic Health surveys data was analyzed looking at two indicators (U5 mortality and immunization coverage –measured by Composite coverage index-CCI) and three equity stratifiers: wealth, residence and sub-region. Evidence shows persistent health inequalities by sub-region in Uganda. Six sub-regions of Karamoja, Busoga, Bunyoro, North central, West Nile, and Tooro have highest mortality rates compared to the other nine. The richest 20% of the population have higher coverage for maternal and child health interventions than the poorest. For every three women among the rich that completes four ante-natal care visits, only one poor woman does the same. There was a reduction in U5MR for the 5-year period preceding the survey among the urban and rural in the two most recent surveys. Inequalities in Uganda have generally reduced over time. However, despite progress, important inequalities persist and need to be addressed to achieve the Sustainable Development Goal of "Leaving no one behind".

NOTES

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