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GLOBAL WATERS

VOLUME V ISSUE 3 NOVEMBER 2014

WATER

FOOD

TECH

WHAT'S NEXT?

USAID
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From crowd sourcing to outside-the-box partnerships, USAID is ramping up efforts to embrace innovation and promote new technologies to address a range of water problems.

Our cover story spotlights USAID's Securing Water for Food Grand Challenge for Development. The Grand Challenges call on the public to come up with fresh solutions to improve health, food security, and livelihoods. Our Securing Water For Food Challenge asked you, the global water community, for ways to boost the sustainability of agricultural water use. You did not disappoint. From drones that bring farmers real-time information about crops to sandbar pumpkin farming techniques, we believe the 17 first-round awardees will revolutionize the ways that food is produced.

While these technologies and approaches are cutting-edge, using partnerships is a tried and true approach to development. The Farmer-to-Farmer program, the subject of our Real Impact piece, has been pairing U.S. farmers with farmers from 110 countries for training and technical assistance for nearly 30 years. These pairings focus on everything from irrigation to marketing, help farmers gain new knowledge and skills, and often lead to long-lasting friendships.

Putting people together is particularly essential in urban areas, with their teeming, diverse populations with myriad needs, so this issue explores six of Africa's fastest-growing cities, where a USAID program improved WASH for the poor. The program cast a wide net by partnering with utilities, churches, landlords, and ordinary citizens to meet its goals. The approach has been a raging success: Half a million people in these cities now have improved WASH.

Going forward, these inclusive approaches will help us continue to address the world's most pressing problems, such as child undernutrition. USAID Nutrition Division Chief Anne Peniston introduces our new Multi-Sectoral Nutrition Strategy in a thought-provoking opinion piece about the connections between WASH and nutrition and the importance of taking a holistic approach to this critical issue. With the Strategy, we are creating more opportunities for collaboration to ensure that every child has the opportunity to grow, learn, and earn.

We hope you enjoy this issue and continue working with us to ensure every man, woman, and child has the chance to thrive.

The Water Office
waterteam@usaid.gov

NOURISHING EDUCATION: Women in Funyula village, Busia district, Kenya, break ground for a new farming area, as part of a pilot project for sustainable development.

Photo Credit: Felix Massi, Courtesy of Photoshare

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Global Waters Staff:
Celia Zeilberger
Editor-in-Chief
Caitlin Wixted
Design Director
Amy Gambrill
Executive Editor

Contributing Writers:
Sue Hoye
Katie Unger Baillie

This publication was produced for review by the United States Agency for International Development. It was prepared by ME&A.

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Back Cover Photo Credit: Practical Action

USAID Nutrition Strategy Takes Aim At Stunting

By Anne M. Peniston
USAID Nutrition Division Chief

When we began formulating USAID's strategic approach to nutrition and development two years ago, we knew it had to be multi-sectoral if we wanted to achieve the Agency's goals of reducing hunger and improving nutrition around the world. This collaboration between the nutrition and water, sanitation, and hygiene (WASH) sectors is an excellent example of the necessity of collaboration to bring about greater change.

The link between WASH and undernutrition is strong and clear. Diarrhea – from exposure to fecal material in the environment – reduces a child's appetite as well as the ability to absorb nutrients that he or she consumes. Repeated bouts or chronic diarrhea in children make it very difficult for them to "catch up" on the growth that was lost during the period of illness. Undernutrition, in turn, weakens a child's immune system, making him or her even more susceptible to illness, and increasing both the frequency and duration of a bout of diarrhea. Diarrhea is estimated to cause 760,000 deaths among children under 5 each year.

HELPING COMMUNITIES THRIVE: USAID works in Bundibugyo, Uganda to promote improved nutrition for communities.

Photo Credit: Emily Mahoney, USAID

COMBATING STUNTING: These mothers are among 112,000 women trained by USAID/Nepal's Suaahara project, which works to promote improved health, hygiene, and nutrition among mothers and children.

Photo Credit: Valerie Caldas, Suaahara

When children do not experience optimal growth, particularly during the first 1,000 days of life, it has long-term effects on the development of their brains and bodies. Stunting is the outcome of chronic nutritional deficiency, and stunting is associated not only with an increase in a child's risk of dying, but it is also associated with poorer cognitive and social development and reduced capacity for learning and earning later in life. Stunted children also have weaker immune systems and are significantly more likely to die if they develop diarrhea.

In May, USAID released the 2014-2025 Multi-Sectoral Nutrition Strategy, which maps out an integrated Agency approach to global nutrition and the fight against malnutrition. Key to this effort was bringing together the diaspora of experts in various Agency sectors – maternal and child health, family planning, HIV/AIDS, gender, agriculture, water, environment, and humanitarian assistance – to create a collective vision and opportunities for programming across sectors.

Our new strategy takes aim at childhood malnutrition and stunting, setting the goal to reduce the number of stunted children worldwide by a minimum of 2 million over five years.

It is clear that food alone isn't going to solve the problem. The nutritional benefits of increased access to food, better diets, or improved care practices can be easily hampered by poor WASH practices. A recent review of data from 116 countries suggests that up to 35 percent of the difference in stunting across these countries is explained by a combination of safe water access and improved sanitation. Safe drinking water, proper sanitation, and hygiene are imperative if we are going to prevent undernutrition and stunting in children.

Our Multi-Sectoral Nutrition Strategy and our Water and Development Strategy both stress the importance of preventing waterborne diseases that threaten nutrition, particularly in young children. Both of these Agency strategies focus on integrating hygiene actions such as handwashing with soap, safe disposal of feces, and food hygiene into nutrition programs.

Under the new Nutrition Strategy, WASH is defined as a high impact activity in light of its critical relationship to childhood nutrition. We encourage nutrition programs to work to increase access to and use of safe water supply, sanitation, and essential commodities to facilitate improved hygiene practices. We urge these programs to adopt an integrated approach that jointly promotes essential WASH and nutrition actions in community- and facility-based nutrition assessments, counseling, and education. In addition, we champion the development of multiple use water systems that provide water for both domestic uses such as water for drinking, cooking, and washing up and productive uses like growing crops and feeding livestock, in order to simultaneously boost health, generate income, and feed children. At the same time, as the evidence points to an association between WASH and improved nutrition, more investments must be made to continue research in this area, building the evidence base so that we can fully understand these relationships.

WASH and nutrition are closely intertwined, and both are critical to the survival and growth of children. The coordination of these Strategies and the opportunity they provide for holistic, integrated programming is promising. It is our hope that this multi-sectoral approach will surpass what individual programs alone can do and will improve the nutrition and health of children around the world.

Anne M. Peniston is Chief of the Nutrition Division at USAID. She has worked in U.S. and international public health for more than 30 years as a clinician, researcher, and program manager.

WATER FOOD TECH

WHAT'S NEXT?

Growing up in Nepal, Pratap Thapa and his family owned a farm on the slopes adjacent to the Lele River. But despite their proximity to the riverbed, they had difficulty providing water to nourish their rice, wheat, and potato crops. To move water from the river to their elevated field required expensive, polluting gasoline or diesel pumps.

"Nepal is a country of 6,000 rivers, but people have to struggle because of geography," Mr. Thapa said. "There are many places where rivers are flowing but people can't get water to their fields."

When Mr. Thapa left home to pursue a master's degree in the Netherlands, he founded the start-up company aQysta and brought together a team to research solutions to this problem. Their brainchild – a hydro-powered pump that channels the river's energy to lift water to agricultural fields – is now being piloted with support from Securing Water For Food (SWFF), one of USAID's Grand Challenges for Development (GCD).

A GRAND CHALLENGE

The GCDs are designed to foster innovation and take what might have remained brilliant but unrealized insights, and translate them into innovations that will reap tangible benefits for millions. "Through Grand Challenges, we pair the expertise and creativity of the world's brightest innovators with strategic thinking and partnerships to address critical development problems," said Ku McMahan, Team Leader for SWFF.

Each challenge invites companies, NGOs, organizations, universities, and other innovators around the world to submit ideas to tackle a range of development issues, and awards the most promising with funding and USAID support. Challenges tackle issues including the Ebola crisis, infant and maternal health, and illiteracy. SWFF is searching for and supporting innovations that will enable farmers to produce more food with less water or increase the availability of water for food production, processing, and distribution.

SWFF was launched at the 2013 World Water Week in Stockholm and is supported by USAID in partnership with the Swedish International Development Cooperation Agency and the Ministry of Foreign Affairs of the Kingdom of the Netherlands. More than 520 groups from more than 90 countries applied for the first round of funding, and in September, 17 award nominees were announced. Each will receive between $100,000 and $3 million in funding and support.

SWFF's objectives fit into those of USAID's Water and Development Strategy. The second of the Strategy's two strategic objectives is to manage water in agriculture sustainably and more productively to enhance food security. With 70 percent of global freshwater resources used for agriculture, often in inefficient, unsustainable irrigation systems, and food needs expected to grow 70 percent by 2050, this goal is more important than ever.

The Strategy states that, "USAID's resources are most effective by leveraging resources at the country level, and by using emerging science and technology to promote innovation." The GCDs enable USAID to find and support the innovations with the most potential to improve the world for the long term.

"SWFF's goal is to find new innovations that improve food security and lessen water use while being simultaneously economically, socially, and environmentally sustainable," said Dr. McMahan. "Rather than have a program in which we try to come up with the solutions ourselves, we call on the public from around the world to identify solutions and innovations."

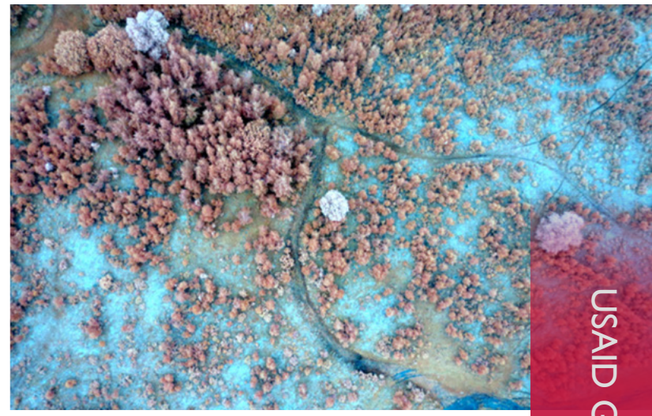
SANDBAR PUMPKIN PATCHES

The 17 SWFF award nominees are already transforming traditional farming practices around the world. One of them, Practical Action, is helping farmers in Bangladesh use untapped resources to grow pumpkins – a valuable cash crop – during the dry season.

Farmers in Bangladesh struggle to work around environmental conditions that shift with the seasons in increasingly extreme and unpredictable ways due to climate change. Many poor families live along riverbeds where their land is subject to flooding in the rainy season. During the dry season, these same families can lack water for their crops.

FLYING SENSORS: SWFF awardee FutureWater is deploying drones (*above*) that create maps (*below*) to show farmers how to best use resources.

Photo Credits: FutureWater



FOOD 2.0: SWFF awardee Practical Action is teaching farmers in Bangladesh to grow pumpkins in sandbars during the dry season.

Photo Credits: Practical Action

Practical Action is expanding on a decade's worth of efforts to utilize a transient resource to boost farmers' incomes and secure more comfortable livelihoods: sandy islands that emerge in rivers for just five months during the dry season.

They have helped farmers in the Jamuna and Padma river basins to plant pumpkins in these sandbars to reap extra income from land previously considered useless. The technique involves digging pits in the sand, adding fertilizer in the form of animal manure, building small, temporary reservoirs near the crops, and using pumps to deliver water to the fields.

Not only does the approach produce nutritious vegetables that have a long shelf life and high trade value, it also uses less groundwater than traditional agriculture in the area.

"This helps farmers sell their produce and cope during the flooding period," said Sabrina Shahab, a fundraising specialist at Practical Action. "It is especially relevant for Bangladesh, which is suffering from climate change and needs efficient water and land management to ensure food security."

Practical Action has already supported more than 16,000 pumpkin farmers in Bangladesh, cultivating nearly 2,000 hectares of sandbars to produce 52,000 tons of pumpkins worth $4 million. Nearly 50 percent of active participants are women. With the SWFF award, the organization plans to test two business models. They also see opportunities to expand elsewhere in Asia where riverbed farming is conducted, including in Nepal, India, and Vietnam.

Beneficiaries of the pilot tests are very satisfied. One of them, Abdul Rahmin, applied revenues from sandbar farming – more than $400 per crop cycle – to expand the scale of his pit farming operation and invest in irrigation. He was also able to purchase clothing, food, housing improvements, and a sheep and cow for his family.

"We never thought such farming could be done in sandy land where there was nothing except sand," said one farmer.

DRONES FOR AGRICULTURE

Other SWFF award nominees are employing technology to help farmers tackle age-old problems. One of these nominees, FutureWater, is harnessing a decidedly 21st century technology to do so: drones.

Their innovation, known as Flying Sensors or the Third Eye, uses unmanned aerial vehicles to fly over fields and collect spatial information using both visible and near-infrared light. The resulting maps provide real-time information that allows farmers to effectively identify their crops' needs, diagnose any issues before they become problematic, and optimize their use of key resources.

"We all know smallholder farmers have limited resources, including seeds, fertilizer, and water," said Peter Droogers, FutureWater's scientific director. "They normally apply these resources based on a visual inspection of their crops. However, if they look at the crop and see some stress, it might already be too late to save the harvest."

The Third Eye project is unrolling in Mozambique, where fields of maize, cassava, and sorghum currently yield harvests much lower than the same crops grown elsewhere in the world. The data gleaned from the Flying Sensors will help increase yields by a projected 10 percent. Data from the near-infrared maps detect problems with crops up to two weeks before the naked eye, since sick plants reflect near-infrared light differently from healthy plants.

"The resulting maps will indicate where and when on their plots to irrigate or apply fertilizer or even the appropriate time for harvest," said Dr. Droogers.

FutureWater will be deploying networks of Flying Sensor operators, each of which can serve 400 farmers. With SWFF support, they aim to have 20 sensor operators reaching 8,000 smallholder farmers and two commercial farms within three years.

RIVER-POWERED PUMPS

In Nepal, Mr. Thapa's hydro-powered pumps are a new technology that will help farmers optimize scarce water resources. Through his research, Mr. Thapa found that his family is one of many facing the ironic circumstance of living next to water but struggling to water their crops. On visits to farms throughout Nepal and in Ecuador and Spain, he and his team at aQysta found that proximity to water does not mean ease of access for agriculture. The pumps are poised to help these farmers finally make use of this precious resource.

Unlike diesel pumps, which are costly to run and maintain and generate significant pollution, aQysta's Barsha Pumps have no operating costs, require little maintenance, and are emission-free.

The pumps, which Mr. Thapa and his co-founders designed in a university entrepreneurship class, harness the energy of flowing rivers to generate power to pump irrigation water to elevated fields. They demonstrated the product in Nepal in June, and with SWFF funding, they are building and testing six new pumps in different parts of the country. Eventually, they hope to scale up to mass production and offer the technology to small-to-mid-size farmers in four countries: Nepal, Ecuador, Indonesia, and Spain.

Farmers who participated in early tests were enthusiastic.

"When people first saw the pump, a lot of them were asking in disbelief, 'Does it work?'" said Mr. Thapa. "But once it was working, without fuel electricity, they were really excited."

K. Unger Baillie

WATER 2.0: SWFF awardee aQysta is introducing river-powered pumps in Nepal.

Photo Credit: aQysta

More Information

GCD Website

SWFF Website

SWFF on Twitter

ALTERNATIVE ENERGY: aQysta's pumps irrigate crops with energy from rivers.

Photo Credit: aQysta

ROUND ONE SWFF AWARD NOMINEES

*USAID announced **17 award nominees** who will receive funding and support from its Securing Water for Food Grand Challenge for Development. Here's a primer for who they are, where they're working, and what they will accomplish.*

Adaptive Symbiotic Technologies — *Global*

CHALLENGE *Climate-related stresses like drought, rising salinity, and poor water quality threaten agricultural productivity worldwide*

INNOVATION *BioEnsure, a natural microbial inoculate that helps plants adapt to water-related stress*

aQysta Holding BV — *Nepal*

CHALLENGE *Many farmers in Nepal use expensive, inefficient, and unsustainable irrigation methods*

INNOVATION *Barsha Pumps, low-cost, eco-friendly, hydro-powered irrigation pumps that do not require fuel*

ARCADIS — *Mexico*

CHALLENGE *Freshwater shortages and saltwater intrusion into aquifers in coastal Mexico hamper irrigation*

INNOVATION *Subsurface Water Technologies, a product that boosts subsoil freshwater storage capacity & prevents saltwater intrusion*

Aybar Engineering PLC — *Ethiopia, Kenya, South Sudan*

CHALLENGE *Millions of hectares of clay-rich soils in East Africa become waterlogged & thus remain uncultivated*

INNOVATION *The Aybar Broad Bed and Furrow Maker, a low-cost device which drains excess water away from crops*

Deutsche Welthungerhilfe e.V. — *Tajikistan*

CHALLENGE *Tajik farmers suffer due to long winters and short growing seasons.*

INNOVATION *Subsurface rainwater harvesting tanks collect rainwater for use in insulated greenhouses, enabling winter farming*

Driptech — *India*

CHALLENGE *Inefficient irrigation methods put pressure on scarce water resources for India's 100 million farmers*

INNOVATION *Low-cost drip irrigation systems for smallholders that reduce water use by 70% and increase yields by up to 90%*

FutureWater — *Mozambique*

CHALLENGE *Farmers lack crop staus information are afraid to risk wasting seeds, irrigation water, & fertilizer*

INNOVATION *Drones that provide farmers with real-time information about crops & how to best use water, seeds, fertilizer, & labor*

International Center for Biosaline Agriculture — *Egypt, Yemen*

CHALLENGE *25% of river-based irrigated agricultural lands in the region are affected by salinity and water logging*

INNOVATION *Identifying and scaling existing, non-genetically modified, salt-tolerant and resistant seeds for a variety of crops*

MetaMeta and SaltFarmTexel — *Pakistan*

CHALLENGE *Salt-affected land sullies irrigation water and reduces crop yields and quality*

INNOVATION *A salt-tolerant potato that does not require freshwater irrigation*

My Rain LLC — *India*

CHALLENGE *Millions of Indian farmers use inefficient irrigation techniques*

INNOVATION *Rainmaker, a mobile app that trains micro-irrigation system distributors to better sell, distribute, & install new systems*

Practical Action — *Bangladesh*

CHALLENGE *Climate change and a five-month dry season lead to food insecurity*

INNOVATION *A special dry season farming technique that enables farmers to grow pumpkins in barren sand*

Puralytics — *Mexico*

CHALLENGE *Some water used for irrigation contains harmful contaminants, chemicals, pesticides, & herbicides*

INNOVATION *LilyPad, a water treatment product that breaks down contaminants and chemicals in streams, ponds, & other waterways*

Reel Gardening — *South Africa*

CHALLENGE *High resource costs make starting a home garden out of reach for many in low-income communities*

INNOVATION *A pre-fertilized, biodegradable, organic paper seed tape that anchors seeds to reduce water use & improve germination*

Trans African Hydro-Meteorological Observatory — *Burundi, Kenya, Rwanda, Tanzania, Uganda*

CHALLENGE *Lack of weather-monitoring stations in Africa makes farmers unable to plan resource use*

INNOVATION *The TAHMO network, a solar-powered sensor system that sends farmers real-time info about local weather via SMS*

Wageningen University & Research Centre — *Chile, China, Vietnam*

CHALLENGE *In agricultural lands with high salinity, smallholder farmers suffer from reduced yields and incomes*

INNOVATION *A non-genetically modified, salt-tolerant quinoa that thrives in saline soils*

Waterpads BV — *Turkey*

CHALLENGE *An influx of refugees are putting increased pressure on scarce resources*

INNOVATION *Waterpads, biodegradable buffers for crops that repeatedly absorb, store, & release water directly to roots, reducing water use by up to 30%*

World Hope International — *Mozambique, Sierra Leone*

CHALLENGE *Many African farmers are poor and plagued by water scarcity*

INNOVATION *Inexpensive, easily assembled, expandable greenhouses that allow smallholder farmers to grow crops year-round while conserving water*

CURRENTS

Water and sanitation professionals work tirelessly to improve health, promote food security, and boost livelihoods. To further USAID's knowledge sharing goals, the Water Office holds learning events that present solutions and challenges common to water programs. In Currents, we share the solutions discussed at the events and other venues. Email us at waterteam@usaid.gov if you would like your project to be considered for *Global Waters*.

LET GIRLS LEARN INITIATIVE AIMS TO IMPROVE WASH AND EDUCATION

Around the world, 62 million girls are not in school, and millions more are fighting to stay in school. This negatively impacts global health and livelihoods. When girls are educated, their families are healthier, they have fewer children, they wed later, and they have more opportunities to generate income. Let Girls Learn is a USAID-led initiative that strives to help all girls to get a quality education.

More than two-dozen celebrities, including Susan Sarandon, Anne Hathaway, and Alicia Keys, joined forces with USAID for the launch of Let Girls Learn. Through its website, the public can make donations and choose whether they go toward school uniforms, a Dream Bike to help girls get to school, school meals, access to clean water at schools, books and other learning materials, or fees that come with running and maintaining a school.

In support of this effort, USAID announced more than $230 million for new education programs in Nigeria, Afghanistan, South Sudan, Jordan, and Guatemala. These programs will provide girls with better-trained teachers, scholarships, and transportation to and from school. They will improve WASH in schools and increase access to and quality of education for thousands of girls, including indigenous children and refugees.

To learn more, visit www.usaid.gov/letgirlslearn, and share ways to help educate girls on Facebook, Instagram, and Twitter using the hashtag #LetGirlsLearn.

Photo Credit: USAID

SAFEGUARDING THE WORLD'S WATER REPORT RELEASED

USAID recently released its annual Safeguarding the World's Water report, which highlights water programming for Fiscal Year (FY) 2013. USAID's water programs protect and strengthen water resources for the well-being of both people and the environment throughout the developing world, and support the goals of the Paul Simon Water for the Poor Act. Last year, more than 3.5 million people gained improved access to drinking water supply, and nearly 1.3 million people gained improved access to sanitation facilities, as a result of these programs.

With one in nine people worldwide without access to improved water sources, the impact that safe water and improved sanitation can deliver is transformational. Safeguarding the World's Water examines how this programming, which totaled $523,783,000 in FY 2013, is reaching vulnerable populations, using innovation, partnering with public and private stakeholders, and helping build resilience in the developing world.

Because the Agency's new Water and Development Strategy was released in FY 2013, programming around its Strategic Objectives of water for health and water for food did not begin until FY 2014. However, to show progression towards those objectives, the report is organized with them in mind and explores the integration of health and food security.

You can learn more or read the report on USAID's website.

H2INFO PORTAL LAUNCHED

On October 6, 2014, the U.S. Department of State launched H2infO, an online portal that gives the global public access to a growing library of United States water data and knowledge. The portal was created by the U.S. Water Partnership, a membership organization that brings together government agencies, the private sector, NGOs, and academic research institutions from the U.S. to promote water cooperation and share their expertise with the global community.

The portal includes reports, raw data, technical guidance, blog posts, innovative learning materials, and other documents of use to the global water community. The learning materials are organized into four subject areas: water, sanitation, and hygiene (WASH); water productivity and efficiency; governance; and integrated water resource management (IWRM).

At the launch, Catherine A. Novelli, Under Secretary of State for Economic Growth, Energy, and the Environment, said that sharing lessons learned, as H2infO does, will lead to meaningful progress on water issues around the world, and urged the water community to contribute to the portal. "Everyone on the planet is a clean water stakeholder," she said. "We're in this together – and it's only by working together and sharing knowledge and resources that we will continue to survive and thrive."

To access the portal, visit h2infO.us.

Photo Credit: Cecilia Österberg

WORLD WATER WEEK 2014 FOCUSES ON WATER AND ENERGY

World Water Week 2014 took place from August 31 to September 5 in Stockholm, Sweden. The annual event brought together the world's leading water, environment, and resilience scientists and experts to discuss issues related to its theme of water and energy.

This year's event broke previous attendance records with more than 3,000 participants from more than 140 countries. USAID representatives presented on many topics at more than 100 sessions, including the Agency's Sustainability Index Tool, links between WASH and nutrition, and water and energy governance in Nigeria. USAID Global Water Coordinator Chris Holmes announced 17 nominees in its Securing Water For Food Grand Challenge For Development *(see pages 10-11)*. These nominees will receive funding to pilot innovations that improve agricultural water use.

Throughout the week, experts called for increased coordination between the water and energy sectors. At the opening session, Torgny Holmgren, Executive Director of World Water Week organizer Stockholm International Water Institute, said, "With the global demand for water projected to grow by 55 percent between 2000 and 2050 and electricity demand expected to increase by 50 percent in the next two decades, there is an urgent need for a closer relationship between the energy and water communities if we are to provide solutions for all peoples to prosper."

To learn more, download the Overarching Conclusions for 2014 World Water Week pamphlet.

The smallholder palm oil farmers of Foya, Liberia are survivors. They endured a 14-year civil war, which ended in 2003, and resulted in the loss of hundreds of thousands of lives, homes, and infrastructure. This demolished the morale and productivity of the farmers and left them using inefficient methods that wasted water. But one decade later, these farmers were ready to learn new skills and restore their livelihoods so they could better feed their families.

KNOWLEDGE TRANSFER: An American farmer helps a Central Asian farmer maximize his yields.
Photo Credit: USAID Central Asia Republics

David Speidel of Missouri is also a survivor. A proud grandfather who comes from a long line of farmers, he is a veteran of the U.S. Army. After losing a friend on the battlefield in Iraq in 2007, he was driven to use his skills as an agricultural advisor specializing in irrigation to improve the world.

Mr. Speidel and these Liberian farmers were brought together in 2013 through USAID's Farmer-to-Farmer program. The 29-year-old program has sent more than 16,000 American volunteers like Mr. Speidel to more than 110 countries to teach farmers key skills to help them boost productivity and better feed their families.

CULTIVATING TRUST

"The Farmer-to-Farmer program reflects a range of our broader policy objectives," said Gary Alex, Farmer-to-Farmer Program Manager at USAID's Bureau for Food Security. These objectives include expanding trade opportunities, mobilizing science and technology, fostering innovation, building the capacity of farmers, and sustainably reducing global hunger and poverty. The program is part of Feed the Future, the U.S. Government's global hunger and food security initiative, which is led by USAID.

One of the best ways to achieve these goals is through on-the-ground one-on-one assistance. Unfortunately this model can be limiting and difficult to scale, both in cost and human resources. In addition, farmers are often reluctant to change their practices because the risks and the stakes – their lives and livelihoods – are high.

Farmer-to-Farmer addresses this by bringing highly skilled, motivated volunteers to hosts who have already expressed a desire to receive training. "Hosts typically are potential leaders in their field with interest and motivation to make changes and adopt innovation," said Mr. Alex.

This mutual commitment makes the program uniquely effective. "Some hosts have said that they put more trust in volunteers than paid consultants, as volunteers are sharing experience freely and are not motivated by financial benefits," said Mr. Alex. In addition, because the hosts are motivated community leaders, they are poised to effectively share their knowledge with others throughout the community, long after the volunteers leave.

DEMONSTRATING CHANGE

While projects have run the gamut from facilitating Guatemala's first-ever artificial goat insemination to helping a Ghanaian livestock feed manufacturer develop a customer-oriented marketing strategy, water has been a common thread among many of them.

In Liberia, Mr. Speidel introduced low-cost micro-irrigation to farmers in palm oil nurseries. He conducted demonstrations of treadle pumps and a motor pump. These pumps can supply enough water to expand seedling production to at least 5,000 seedlings without increasing labor costs, and substantially lower production costs.

Exchanges like these have a ripple effect. When neighbors see improvements in the productivity of influential community members, they too want to learn new skills.

In Mali, a volunteer worked with a farmers' cooperative to demonstrate how to conserve water while boosting production by using drip irrigation and compost and by planting crops on raised beds. These

"Without a doubt, my time in Liberia was incredibly fulfilling.

David Speidel, Farmer-to-Farmer volunteer

FORGING CONNECTIONS: American irrigation specialist David Speidel helped farmers in Foya, Liberia boost their yields and improve their food security in 2013.

Photo Credit (all): David Speidel , Farmer-to-Farmer

NEW SKILLS, NEW START: Liberian farmers now employ efficiency-boosting irrigation techniques that they learned through Farmer-to-Farmer.

Photo Credit: David Speidel, Farmer-to-Farmer

farmers reported a 25 percent decrease in fertilizer use and a 35 percent increase in yields. With the support of the local mayor, the volunteer then created a demonstration plot to teach even more farmers the techniques. Fifteen hundred farmers have now visited the plot, and more continue to learn from it every day.

BRINGING THE WORLD HOME

The program is not just focused on improving lives abroad. "A secondary goal is to increase public understanding of international development issues and programs," said Mr. Alex.

Volunteers are the key to this endeavor. Upon returning stateside, they write blog posts, share photos online, and regale their friends and neighbors with stories of overcoming challenges and teaching and learning from farmers in the field.

"Many continue to stay in touch with their hosts and sometimes raise funds or provide their own resources to assist hosts. Many also serve as repeat volunteers to the same or different countries," said Mr. Alex.

As one of those repeat volunteers, Mr. Spiedel recalls facing numerous hardships in Liberia – unreliable electricity, bathing himself with a bucket at the well, and the occasional skipped meal due to lack of food. He said in-country project staff helped him navigate these challenges, and he has since volunteered in other countries around the world.

"Where else would you find yourself white-knuckled while careening along a narrow, hilly, curvy, pedestrian and moped packed road, flowing through one village market after another, with rubber and chocolate plantation groves lining the road, while listening to African Christian Gospel?" he recounted. "Without a doubt, my time in Liberia was incredibly fulfilling."

C. Zeilberger

More Information

Farmer-to-Farmer Blog

Farmer-to-Farmer on Facebook

USAID Bureau for Food Security Website

Feed the Future Website

FACING URBAN AFRICA HEAD ON

Every second, two people are added to cities around the world.

This population surge is particularly rapid in sub-Saharan Africa. The region has the largest urban growth rate in the world, with populations increasing 5 percent annually. In some cities, the annual growth rate exceeds 10 percent. These populations are projected to double within the next decade.

The majority of sub-Saharan Africa's 400 million city-dwellers live in slums with high population density and poor municipal services. They often lack access to clean water and safe sanitation. Under these conditions, water-borne diseases spread rapidly. In the Kibera settlement of Nairobi, Africa's largest slum, more than 18 percent of children die before their 5th birthday.

USAID launched the African Cities for the Future (ACF) program in Kumasi, Ghana; Bamako, Mali; Antananarivo, Madagascar; Maputo, Mozambique; and Nairobi and Naivasha, Kenya to help cities meet this urgent and ever-growing need for improved water, sanitation, and hygiene (WASH).

COMBINING FORCES

Because improving urban WASH necessitates navigating complex webs of stakeholders, USAID chose Water & Sanitation for the Urban Poor (WSUP) to implement ACF. WSUP is a non-profit multi-sector partnership that brings together the private sector, NGOs, and academia to focus on bringing WASH to low-income urban residents.

"Partnerships were really core to this program and a key to its success," said Andy Narracott, ACF Chief of Party.

WSUP forged connections in each city with diverse groups – from utilities and landlords to houses of worship and schools. This was not easy, as these stakeholders are often underfunded and overextended. To incentivize participation, the program carefully defined roles and ensured there was accountability on both sides of each partnership.

The program built the capacity of service providers and utilities to reach slums, map water points, reduce non-revenue water, and generally expand and improve services. They worked with landlords and schools to upgrade sanitation facilities. In cooperation with local governments, ACF introduced water kiosks, low-cost sewerage systems for slums, and sanitation blocks. The program also trained community-based organizations in fecal sludge management so they could provide this much-needed service in cities.

Some of the partnerships were unconventional. In order to promote hygiene in low-income schools in Kenya, ACF collaborated with Unilever to promote hygiene. They conducted traditional market research and launched a WASH advertising campaign based on their findings. The campaign consisted of jingles, posters, and other advertising materials that portrayed handwashing with soap and other hygiene behaviors as clean, modern, and even aspirational.

COMMUNITY OWNERSHIP

In order to make a real difference in the long-term though, the program needed community buy-in.

ACF trained community members to maintain WASH infrastructure and taught local artisans to construct latrines. In Kumasi, ACF helped form a Community Management Committee, comprised of members nominated by traditional rulers, women's groups, the youth group, and other influential locals. The Committee worked with the utility to operate the decentralized water supply system and brought together their neighbors for a community cleanup campaign.

"We work with communities to be accountable," said Mr. Narracott. "Community ownership is key to sustainability."

To this end, ACF consulted community members when planning infrastructure. In Naivasha, it held toilet design clinics, which are structured like focus groups but include engineers and project planners, to enable members of underserved groups to articulate their sanitation needs. The goal of the clinics was to learn how to build better latrines that communities would actually use.

"THE POOR ARE NOT NEEDY, HELPLESS PEOPLE. THEY ARE CUSTOMERS."
ANDY NARRACOTT, ACF CHIEF OF PARTY

At the clinics, it became clear that community members did indeed want the toilets. "My wish has been to have and use a toilet that is permanent before I die," said one clinic participant, Milka, a community elder from Naivasha, Kenya.

But many said there were barriers to using them. Children said they avoid toilets due to fear of falling into them. People with disabilities and the elderly said that it was difficult to squat on them due to physical constraints. Women said the threat of sexual assault prevented them from using mixed-sex facilities, and all groups stated the need for cleaner facilities with shorter lines.

Project staff documented the community input and came up with replicable solutions to ensure the toilets would actually be used, such as making smaller, more child-friendly toilets connected to bathhouses with separate sections for men and women.

"The poor are not needy, helpless people. They are customers," said Mr. Narracott.

REPLICATING SUCCESSES

WSUP has produced a series of publicly available documents based on these and other lessons learned from ACF. These include a guide on how to implement effective urban pro-poor WASH programs, a practice note on the gender-inclusive approach to communal sanitation, and a discussion paper on financing WASH improvements for the extreme poor.

From 2009 to 2014, ACF improved WASH for more than half a million people in Africa. While the program ended in September, utilities throughout the region are now working to replicate and scale up initiatives, such as low-cost sewerage, on their own.

According to Mr. Narracott, this is the true mark of ACF's success. "We want people to see this program and say, 'I want to try this somewhere else.'"

C. Zeilberger

More Information

ACF Blog

WSUP Website

WSUP Resource Library

SKILLS FOR SURVIVAL: ACF trained the KARA CBO to offer quality fecal sludge removal services to 40,000 of Nairobi's poor.

Photo Credit: WSUP Background Photo Credit: Leigh Rowan

U.S. Agency for International Development
1300 Pennsylvania Avenue, NW
Washington, D.C. 20523
Tel: (202) 712-0000
Fax: (202) 216-3524
www.usaid.gov