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# GLOBAL WATERS

VOLUME V ISSUE 1 MARCH 2014



**WATER ENERGY  
FOOD**



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**H**appy World Water Day! This year's theme of water and energy reflects one of USAID's top priorities. In this issue of *Global Waters*, we explore some of the ways that the Agency is boosting food security, health, and livelihoods by improving management of water and energy.

In resource-scarce Jordan, USAID teaches children about the importance of saving water and energy through a lively interactive Children's Museum exhibit, while in Cambodia, USAID helps farmers boost their yields through conservation farming. All over the world, USAID is working with entrepreneurs, scientists, and other innovators to develop sustainable new water and energy technologies.

It can be awe-inspiring to see the ripple effect of this work. In this issue's In Focus story, we look at two USAID-supported dams in Pakistan that not only protect villagers from ruinous floods, but also provide hundreds of thousands with electricity, water for food, and water for health. We also take readers to post-civil war Liberia, where a USAID Food for Peace program

is not only improving WASH, nutrition, and agricultural productivity, but also fostering reconciliation and empowering Liberians to band together to lift up their communities.

In this month's Perspectives piece, Chris Kosnik, the acting director of the Water Office, proclaims that integrated approaches like these hold the key to a more secure, sustainable future, saying, "USAID is committed not only to creating healthy communities, but to sustaining them. We want people to not only survive, but to thrive. Integrated water programs are one means of achieving these goals."

We hope you enjoy this issue of *Global Waters* and that you take the opportunity this World Water Day to examine these issues and more with your colleagues.

*The Water Office*  
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**INNOVATIONS IN AGRICULTURE:** Members of the Hatte Cadette Valiant Farmers' Organization plant rice using the System of Rice Intensification (SRI) technique introduced by a Feed the Future project in Haiti.

Photo Credit: David Rochkind

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# WATER for FOOD

Integrating Land and Water Management

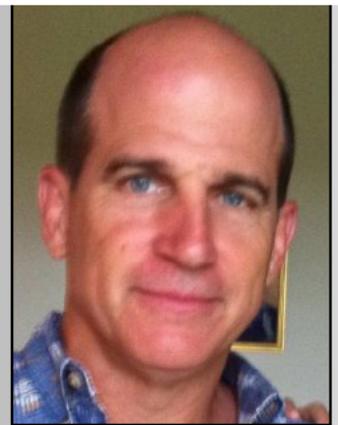
by Chris Kosnik, Acting Director of USAID's Water Office



**PROUD HARVEST:** A smallholder farmer in Kenya displays the harvest from one cassava plant.

*Photo Credit: Raymond Jumah, FIPS-Africa*

*Chris Kosnik has worked at USAID for over a decade. Prior to becoming Water Office director, he served as the director of the Office of Land Tenure & Resource Management.*





**THRIVING COMMUNITIES:** USAID uses an integrated approach in Nigeria, where it works to improve agriculture, health, education, and governance.

Photo Credit: A. Fleuret/USAID

**G**reetings everyone! I stepped in as the Acting Director of USAID’s Water Office this past October, and it’s been an exciting time to be here. Last spring, USAID launched its Water and Development Strategy to improve water, sanitation, and hygiene (WASH) and enhance food security. Over the past six months we’ve been working on implementation of the Strategy by developing guidance to our Missions and reaching out to our priority countries to socialize some of the changes that the Strategy brings to our Water programming.

Before joining the Water Office, I managed USAID’s Land Tenure and Resource Management Office. My training and experience brings together natural resource management, agriculture, and adaptation. I have been fortunate to spend many years working around the world from East, West, and Central Africa to Cambodia, Bolivia, and Thailand. I have seen firsthand the importance of integrating water and land management to achieve the strongest development outcomes.

Effective land management requires sound water management, and vice versa. They are two sides of the same coin, and their goals – and their impacts – are interdependent. Under the Strategy, we see this with increased integration of WASH and food security programs. Our water programs will be amplifying the goals of the Feed the Future Initiative by ensuring improved agricultural water management and WASH components are integrated into food security programs whenever possible and appropriate for the local context.

At the nexus of WASH and food security programs lies nutrition. USAID’s Nutrition Strategy is currently under development and will be available later this year. In addition to promoting sustainable food production systems, the draft Nutrition Strategy acknowledges that, “A household’s access to safe, healthy, and diverse foods, health services, and safe water and sanitation underlie adequate nutrition.”

Food insecurity is not just about lack of food. Even if food is plentiful, nutrition can be undermined by high

prevalence of diarrheal diseases from unsafe drinking water. Likewise, water can be safe, but communities can’t be healthy without accessible, nutritious food.

Our WASH partners have been very active in promoting our new Strategy. According to UNICEF, successful WASH programs have nearly cut in half – from 1.5 million to around 800,000 – the number of children under 5 who die each year from diarrheal disease. But much remains to be done, and I urge you to remember that our new Strategy is not just a WASH Strategy; it is a Water and Development Strategy.

With more than 70 percent of all freshwater use devoted to agriculture – often in inefficient irrigation systems and with withdrawals tripling over the past 50 years – Feed the Future goals cannot be met without a focus on managing water in agriculture sustainably and more productively.

Ethiopia uses integrated approaches that are leading to increased food security, health, and self-sufficiency. The country has faced significant food security and nutrition challenges for several decades. Widespread poverty coupled with shifts in weather, erratic and insufficient rainfall, and declining agricultural productivity combine to make obtaining adequate food a daily struggle for many Ethiopians. Although there is steady progress in reducing hunger, malnutrition, and child mortality, 44 percent of Ethiopian children are stunted. USAID’s Productive Safety Net Program pairs emergency assistance with irrigation, reforestation, and water supply projects in order to help the most vulnerable Ethiopians get back on their feet—for the long term. USAID’s more than 20 water related activities in the country support efforts to strengthen resiliency there. Learning from and building on past activities, these programs layer efforts and integrate water, food, health, and disaster relief and recovery.

USAID is committed not only to creating healthy communities, but to sustaining them. We want people to not only survive, but to thrive. Integrated water programs are one means of achieving these goals.



**FOOD:  
WHERE WATER  
AND ENERGY  
MEET**



**THEY ARE CHANGE:** Jordanian school children participating in the launch of a USAID-funded water and energy exhibit at the Children's Museum in Amman.

*Photo Credit: USAID/Public Action for Water, Energy and Environment Project Canal Photo Credit: Fintrac, Inc.*



**A**t the Children's Museum in Amman, Jordan, boys and girls are engaged in a high-stakes simulation. First, they act as farmers and haul water from the well to their fields and answer trivia questions about the water needs of different types of food. Next, they perform as to be city managers and battle the clock in order to distribute energy to the city grid.

These activities are part of "I am Change," a new USAID-funded water and energy conservation exhibit. While the exhibit aims to be fun, water and energy are serious business in resource-scarce Jordan.

With climate change escalating and water supplies dwindling worldwide, it has never been more critical to ensure that resources are used as effectively and sustainably as possible to produce enough food to nourish a swelling global population.

Many development practitioners are now realizing that food security programs are more effective when they prioritize efficient management of water and energy. The United Nations is exploring the link between water and energy and declaring that World Water Day 2014 on March 22nd be devoted to raising awareness about the relationship. USAID addressed the interconnection in its Water and Development Strategy 2013-2018, saying, "Effective comanagement of water and energy, including the integration of water, food, and energy programs, as well as support for and development of technology, can lead to significant returns on investment."

The logic is straightforward: Food production is water-intensive; irrigation systems to water crops are energy-intensive; and energy production can be water-intensive. USAID's Water and Development Strategy sums it up when it says, "Every drop of water that has to be pumped, moved, or treated to meet health and food needs requires energy."

USAID is at the forefront of this water-energy-food security "nexus" approach. The Agency is working with local populations to promote smarter water and energy use, developing cutting-edge fuel-efficient technologies to irrigate crops, and exploring resource-efficient agricultural production methods. This integration is crucial to USAID's work to usher in a sustainable future.

### **Awakening Public Responsibility**

Jordan is on the frontlines of the water-energy-food security nexus. The nation's Water Authority is the country's largest consumer of

electricity while agriculture consumes the majority of water supply. With groundwater reserves dwindling and increasing in salinity, the country is slated to face an absolute water shortage by 2025 if trends continue. Water and energy must be more effectively managed if the country is to avoid a debilitating food and health crisis.

USAID, the Government of Jordan, and other groups have made significant strides to upgrade water, energy, and irrigation infrastructure. But if these improvements are to be sustainable, individuals must change their behavior.

"What we want to do is create a sense of public responsibility so people will not only change their own behavior, but advocate for more responsible behavior by their neighbors and fellow citizens," said Robert Cardinalli, chief of party of USAID/Jordan's Public Action for Water, Energy, and Environment Project (PAP).

PAP is educating Jordan's popula-

tion about water and energy through person-to-person outreach, educational campaigns, and social media. The project is using these avenues to target influential groups with tailored messages. They are working with female religious leaders to educate 140,000 women, primarily from rural areas, about water and energy conservation. The religious leaders link these messages to religious teachings, ensuring that they resonate. These women can then teach their families and friends about the issues, leading to a ripple effect.

Children and young people are another key demographic. The Amman Children's Museum exhibit is part of a drive to reach youth. "We are proud to have been able to construct and put together an enormous exhibit that tackles a very important and global issue worldwide," said museum director Sawsan Dalaq. As part of this drive, the nation's teachers are trained to reinforce the exhibit's messages in the classroom to instill lifelong habits in the nation's future leaders.



**BOOSTING PRODUCTIVITY:** The Cambodia HARVEST program teaches farmers techniques to save water and energy.

Photo Credit: Fintrac, Inc.

## Farming Without Waste

Farmers benefit tremendously from effective water and energy management. Production methods that conserve water and energy can help farmers save money and boost yields while improving the environment.

USAID's Bureau for Food Security supports 23 Feed the Future Innovation Labs at American universities through the U.S. Government's Feed the Future Initiative. Research under the Innovation Labs includes exploring the most efficient small-scale irrigation methods, developing climate-resilient varieties of crucial cereals and legumes, and identifying ways to help livestock adapt to climate change. These innovations can reduce agricultural water and energy needs. "Research at the farm to watershed-level characterizes how sustainable intensification practices like conservation farming – no or low tillage, diverse cropping including leguminous perennials, and permanent soil cover – are able to maximize water capture from rainfall

**“What we want to do is create a sense of public responsibility so people will not only change their own behavior, but advocate for more responsible behavior by their neighbors and fellow citizens.”**

*Robert Cardinalli, chief of party of USAID's PAP program*

and retain it," said Moffatt Ngugi of USAID's Bureau for Food Security.

USAID is putting this research into practice to help farmers around the world boost yields and adapt to climate change. In Southeast Asia, USAID's Cambodia Helping Address Rural Vulnerabilities and Ecosystem Stability (Cambodia HARVEST) program is teaching farmers techniques that save water and energy such as contour planting and watershed management planning. The program also distributes flood-resistant, drought-tolerant, and short-duration

forms of rice seed so farmers can grow this staple crop using less water and fertilizer, which requires a lot of energy to produce. In addition, they are repairing, installing, and reinforcing the linings of culverts and spillways in irrigation canals. These upgrades will enable farmers to irrigate their crops without wasting water or fuel.

The program expects its interventions to boost the incomes of 70,000 households. Based on the results that they have seen, farmers plan to continue these sustainable methods





**AT THE NEXUS:** Farmer Kalildou Dia uses a diesel pump to channel drip irrigation in Senegal.

*Photo Credit: Kyu Lee, Earth Institute*



**COMMUNITY CONTRIBUTION:** A farmer tills land in a community plot in Senegal, which will be irrigated using solar power.

*Photo Credit: Kyu Lee, Earth Institute*



**HARVESTING HOPE:** The Cambodia HARVEST program teaches farmers to be productive, even in the face of natural disasters.

*Photo Credit: Aphivat Strey (AS), Cambodia HARVEST*

in the long-term. “I will continue with these techniques because I’m seeing yield increases,” explained rice farmer Choem Phal.

### **Convincing Consumers**

When people see the benefits of saving water and energy through methods like watershed management planning and using improved seeds, they, like Choem, become enthusiastic conservationists. However, convincing people to initially change their behavior can be challenging. People generally need concrete evidence that water and energy conservation is in their best interests before making major lifestyle changes.

In Jordan, USAID cultivates local partners and uses a social marketing, which employs traditional methods of commercial marketing to change behavior. When PAP set out to make eco-friendly dual flush toilets standard in new residential buildings, they realized that builders would be more likely to install these toilets if buyers were asking for them. PAP is convincing consumers of the toilets’ superiority through billboards, radio advertisements, posters, and social media, and they are gradually becoming standard features in new building projects.

This type of grassroots approach has proven effective around the world. In Jordan, community members are now spreading conservation messages on their own. “We’re getting reports back almost every week where our approach has been replicated by communities who hear what we did, sought out tools to implement it, and implemented it on their own,” said Mr. Cardinalli, “If you’re working in development, that’s your dream.”

### **A Partnering Approach**

USAID is now nurturing water and energy innovations through its Grand Challenges for Development (GCDs). The GCDs call on leading thinkers, including scientists, student, and entrepreneurs, to identify creative solutions to address a range of development problems. The most promising ideas are awarded USAID funding.



**POWERING AGRICULTURE:** In Senegal, USAID is supporting the introduction of solar-powered irrigation systems.

*Photo Credit: Kyu Lee, Earth Institute*

Two GCDs address the water-energy-food security nexus. One challenge, “Securing Water for Food,” is identifying the best ways to make more water available for food and reduce the amount of water used in food production, processing, and distribution. The second challenge, “Powering Agriculture,” is developing clean energy agricultural innovations.

A winner of the Powering Agriculture challenge is Columbia University’s Earth Institute, which has launched a program to install solar-powered irrigation systems in Potou, Senegal. In Potou, most farmers currently rely on gasoline or diesel-fueled pumps to run the irrigation systems that water their crops. The fuel is expensive to purchase and transport and a contributor to greenhouse gas emissions that exacerbate the effects of climate change and negatively impact farmers’ yields. Sunshine, however, is free and abundant in this coastal area of Senegal.

If the method works, it could revolutionize farming in the region. Irrigation would be more affordable and environmentally sustainable while farmers’ incomes and food security would increase. This could be transformative in Potou, where the majority of inhabitants work in agriculture-related occupations, soil fertility is declining, and one-fifth of children under 5 are malnourished.

Potou’s farmers are already excited. “I am encouraged by the idea of using solar power,” said 32-year-old onion farmer Kallidou Dia.

The researchers are optimistic too. “If we can show success with our new model of energy production and transfer, maybe it can catch on in the whole region. That could have a big impact on greenhouse gas emissions, as well as saving farmers money,” said Brett Gleitsmann, a water systems analyst at the Earth Institute.

Dave Ferguson, deputy director of USAID’s Office of Science and Tech-

nology, said that innovations like these hold a key to a food-secure, water-secure, energy-secure future from Cambodia to Senegal. “We believe that by sourcing and accelerating innovations, we can help address critical issues at the nexus of water, food, and energy and improve the speed, efficacy, cost, scale, and sustainability of our development efforts.”

*K. Unger Baillie*

### **More Information**

[World Water Day 2014 website](#)

[Powering Agriculture Grand Challenge on Twitter](#)

[Virtual Tour of USAID’s “I am Change” Exhibit](#)

# AFTER WAR, LAUNCHING LIBERIA'S FUTURE



**TAKING CONTROL:** In Liberia, USAID is teaching farmers water-saving, yield-boosting production techniques.

Photo Credit: ACDI/VOCA

**I**n the Liberian village of Sanoyea, mothers dance to music and sing their names during a get-to-know-you game, while their children play and snack on fruit and porridge. At this meeting, they learn from trained leaders about breastfeeding, hygiene, preparing nutritious food, and other ways to keep their children healthy.



**LAUNCHING HER FUTURE:** By working with farmers and mothers, USAID's LAUNCH program is ensuring that more children get the nutrients they need to grow.

*Photo Credit: ACDI/VOCA*

The Liberian Agricultural Upgrading, Nutrition, and Child Health (LAUNCH) program, which forms mothers groups like this one, has been working since 2010 to mend a society broken by years of civil war. Between 1989 and 2003, successive civil wars left half the Liberian population food insecure and lacking access to safe water, sanitation, and health services.

LAUNCH is working to empower tens of thousands of Liberia's most vulnerable to lift themselves out of poverty. A USAID Food for Peace program, LAUNCH, which is implemented by ACDI/VOCA, Project Concern International (PCI), John Snow Inc. (JSI), and Making Cents International (MCI), supports the U.S. Government's Feed the Future Initiative. The program repairs infrastructure; improves water, sanitation, and hygiene (WASH); teaches farmers more efficient agricultural methods; and counsels mothers on boosting child and maternal nutrition. Most importantly, it brings community

members together to address some of their most dire development problems while fostering strength through deep-seated bonds.

## IN THEIR HANDS

More than seven percent of children die before their 5th birthdays in Liberia. In an effort to boost maternal and child nutrition, LAUNCH brings mothers together to educate them on important health issues. Mothers have found the sessions valuable and are eager to share their knowledge with their peers. "I teach other mothers to pound and boil plantains like I do to feed my boys," said Patience, one of the 14,000 members of the care groups.

The program also trains health facility workers on child health and provides more than 89,000 of Liberia's most vulnerable women and children with healthy food such as corn-soy blend packets, bulgur wheat, and yellow peas.

"LAUNCH is aggressively seeking to reduce malnutrition and illness in women and children, and build

strong community resilience," said Joe-Hoover Gbadyu, a food security specialist at USAID/Liberia.

This means addressing the underlying causes of poor nutrition, and chief among them is poor WASH. Inadequate WASH causes diarrheal disease, which leads to malnutrition because of reduced intake of nutrients. LAUNCH is building or repairing 120 wells and building or repairing institutional latrines in clinics and schools.

But infrastructure is just the start. LAUNCH is helping form groups of determined Liberians who are improving WASH at the grassroots level. Community Water Committees educate communities about latrine use, handwashing, and other hygiene issues and maintain water points. Parent-teacher associations focus on upgrading WASH in schools. "Community groups have taken ownership of the LAUNCH program and will do all that they can to make sure WASH improvements are sustainable," said Jolene Mullins, PCI's country representative.



## FROM SURVIVING TO THRIVING

Liberian farmers are also gathering to support each other as they learn the skills to combat food insecurity in their communities.

LAUNCH has helped form over 250 farmer groups, in which members are taught to better manage natural resources and sustainably boost yields. “Water conservation is emphasized during the training program, mostly for management of soil moisture during the dry season and for control of runoff during the rainy season. Mulching, mounds, and ridging are some of the water-saving techniques the program promotes,” said Mr. Gbadyu. The program has created 260 demonstration plots so farmers can practice and perfect the new techniques together, before adopting them on their individual farms.

“We are trying to foster self-sustaining livelihoods,” said Emmanuel Mugabi, ACIDI/VOCA’s chief of party for LAUNCH.

However, the program has had to combat a sense of futility. After years of violence, some people do not see the value of learning new skills and investing in their own futures. “Many farmers still expect the LAUNCH program to provide free inputs,” said Mr. Gbadyu.

To counter this mindset, LAUNCH employs community extension workers who counsel farmers on the value of learning new production methods. It is a slow process, but one that pays off as farmers gain not only food and money, but also skills and confidence. “We promote community commitment and contribution as the basis for sustainability,” Mr. Gbadyu said.

Now LAUNCH is looking to foster hope and opportunity in the next generation. It is bringing its successful small-group approach to schools and teaching teenagers and young adults about markets, financial literacy, and how to set up lucrative agriculture businesses.

**SEEDS OF HOPE:** LAUNCH has created more than 250 farmer groups and established more than 260 demonstration plots, where farmers can work together to practice and perfect improved agricultural production methods.

Photo Credit: ACIDI/VOCA

Empowerment is contagious in the formerly war-torn country. Kpannah Fireman, a women's care group leader asserted, "Women can stand on our own two feet." Across Liberia, more people like Kpannah are banding together to solve their own problems, embodying the African proverb that says, "Sticks in a bundle are unbreakable."

*C. Zeilberger*



**GROWING PROSPECTS:** LAUNCH is boosting child nutrition by educating mothers and health workers, distributing nutritious food, and improving WASH in schools and communities.

*Photo Credit: USAID/Liberia*

## More Information

[USAID/Liberia Website](#)

[USAID/Liberia on Twitter](#)

[LAUNCH Website](#)



**BUILDING COMMUNITY:** LAUNCH works with communities in Liberia to help them boost food security, health, and nutrition.

*Photo Credit: Morgana Wingard, ONE*

# 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](mailto:waterteam@usaid.gov) if you would like your project to be considered for *Global Waters*.

## BEAR VALLEY VENTURES AND DIV PILOT TIGER TOILET IN INDIA, UGANDA, AND MYANMAR

Approximately 2.5 billion people lack access to improved sanitation. Traditional sewer systems are out of reach for many people living in the developing world, so USAID and its partners are investigating sanitation solutions that are affordable and do not require piping waste off-site.

USAID's Development Innovation Ventures (DIV) has awarded Bear Valley Ventures \$170,000 to conduct a six-month trial of the Tiger Toilet latrine system in India, Uganda, and Myanmar. The project seeks to change sanitation's stripes by providing a simple, low-cost, eco-friendly sanitation system.

The Tiger Toilet works by capitalizing on the composting abilities of tiger worms, a species of earthworm, to help break down solids in a compact manner. It consists of a compact tank containing a bed of tiger worms, which dispose of the waste in a sustainable way. The sanitation system is poised to become an effective, affordable alternative to pit latrines and septic tanks.

The Tiger Toilet will be tested in actual households and piloted in three different contexts: rural communities, peri-urban areas, and a displaced persons camp. USAID and partners will install 10 Tiger Toilets in each country. The system's effectiveness will be monitored during the six-month trial to determine its performance and user acceptance.

To learn more, visit the DIV website and USAID's website.



Photo Credit: Mhobl

## POWERING AFRICA

Over two-thirds of people in sub-Saharan Africa lack access to electricity. Increasing access to electricity there would boost food security and incomes by enabling Africans to use electric pumps to irrigate crops, boost health by enabling drinking water pumps, and improve education by enabling students to study after dark. But according to the International Energy Agency, it will cost over \$30 billion to achieve universal electricity access in sub-Saharan Africa by 2030.

On June 30, 2013, in Cape Town, South Africa, President Barack Obama announced that the U.S. Government would be launching Power Africa, an initiative that aims to double the amount of people in sub-Saharan Africa with access to electricity by exploring the potential of regional wind, solar, hydropower, natural gas, and geothermal resources to generate energy. "This is America's vision: A partnership with Africa that unleashes growth, and the potential of every citizen," said President Obama.

For the first five-year phase of the Initiative, the U.S. Government has committed more than \$7 billion in funds and has leveraged over \$14 billion from the private sector. Private sector partners include General Electric, Heirs Holdings, and Symbion Power. Power Africa is also partnering with the World Bank and the African Development Bank. Currently, it is working to add 10,000 megawatts of clean, efficient electricity to the grid in focus countries Kenya, Nigeria, Liberia, Tanzania, Ghana, and Ethiopia.

To learn more, visit the Power Africa website.

## ECO CONSULT BRINGS HYDROPONIC GREEN FARMING TO JORDAN

Jordan has one of the lowest levels of water availability per capita in the world. But despite its water scarcity, the country still uses 65 percent of its water for farming, as many farmers there grow crops using inefficient methods.

Hydroponic farming, a practice that involves growing crops in nutrient-rich water without soil, can help farmers boost productivity by reducing water loss, providing a controlled environment to manage pests, and enabling farmers to shift to higher value crops. However, hydroponic systems require more energy for lighting, temperature control, and water pumping and circulation. In the past, high energy costs have limited its spread.



Photo Credit: Heather Arney, water.org

But now, ECO Consult, a leading Jordanian development firm, is introducing a solar-powered hydroponic system through the Jordan Hydroponic Green Farming Initiative. This project was a winner of the inaugural round of USAID's Powering Agriculture Grand Challenge, which sought innovative ideas to harness clean energy in agriculture. The project will receive funding and support from USAID to test and scale the solution.

The project will begin by introducing an integrated hydroponic and photo-voltaic system in both large on-farm multi-span greenhouses and smaller rural household greenhouses. ECO Consult hopes that the technology spreads as farmers begin to see improvements in their incomes. The technology will be particularly transformative for rural women and youths, as it will provide a socially acceptable and profitable means of earning a livelihood.

To learn more, visit the Powering Agriculture website.



Photo Credit: Adrian Bischoff

# WATER ENERGIZES NORTHWESTERN

# PAKISTAN

**BEACON OF THE FUTURE:** The Gomal Zam Dam is providing electricity, irrigation water, and drinking water to thousands of families in Pakistan.

*Photo Credit: USAID/Pakistan*

**I**n Pakistan's mountainous northwestern region, two towering dams serve as beacons of a secure, sustainable future.

The Government of Pakistan began constructing the Gomal Zam Dam in Pakistan's Federally Administered Tribal Areas and the Satpara Dam in Gilgit-Baltistan more than a decade ago, but progress was slow due to security concerns and floods that submerged nearly one-fifth of the country in water. USAID began supporting the Government to

complete the dams in 2011, in the wake of these floods, and they were finished in 2013.

“One of the main objectives of the dams is to protect downstream communities from flooding,” said Muhammad Nawaz, a development specialist at USAID/Pakistan. “Since they started operating, the dams have prevented millions of dollars of

flood damage.”

The dams thwart flood damage by storing large amounts of water; water that can be used to boost health, livelihoods, and food security.

“USAID applied an integrated approach – never tried before – to store flood waters through the dams for generating electricity, irrigating thirsty lands, and providing drinking water for humans and livestock,” said Mr. Nawaz.

The dams are helping to mitigate Pakistan's energy crisis, which causes rolling blackouts that last up to 16

hours in cities and up to 22 hours in rural areas. These blackouts are especially detrimental to irrigated agriculture, which accounts for 80 percent of farming in Pakistan. For the majority of farmers who rely on electric pumps to irrigate their crops, these blackouts can be the difference between food security and starvation.

When combined, the dams provide over 35 megawatts of electricity to the grid, and are supplying clean and inexpensive electricity to close to 80,000 families. Pakistan Minister for Water and Power Khawaja Asif said this will “pave the way for progress and prosperity.”

But for families to thrive, they also need water for irrigation and for their families to drink. “The people living near the dams are among the poorest of the poor,” said Mr. Nawaz. “People and livestock drink from the same pond of dirty water in these areas.” To address this, the dams will provide water to irrigate over 200,000 acres of land. And the Satpara dam will provide more than 3 million gallons per day of water for household use.

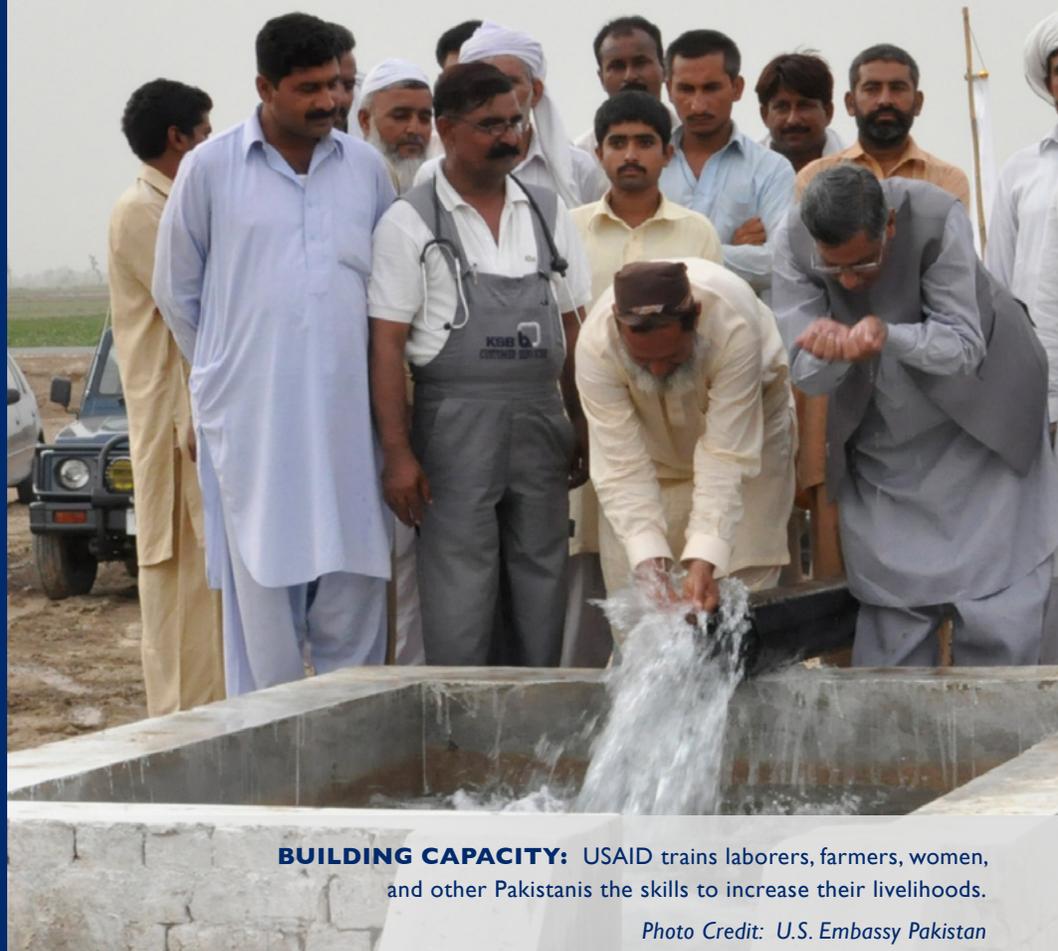
“This water will now be the source of life for communities, their health and wealth – a blue and green revolution,” said Mr. Nawaz.

## HARVESTING BENEFITS

Building the dams was an arduous process, hampered at times by extreme climate events and the region’s uncertain security. But after the dams were completed, USAID staff faced a new, equally important endeavor: Building the capacity of local populations.

“The biggest challenge for us was to install effective water governance systems, from the government level down to the farmers themselves. In one major area, there was no irrigation department. And most farmers were used to inefficient traditional farming methods,” said Mr. Nawaz. “Behavior change is the hardest thing.”

To address this, USAID is working to build the skills and knowledge of local populations, from the



**BUILDING CAPACITY:** USAID trains laborers, farmers, women, and other Pakistanis the skills to increase their livelihoods.

*Photo Credit: U.S. Embassy Pakistan*

people maintaining the dams to the governing bodies and farmers.

Junaid Khan, a senior mechanical engineer on the Gomal Zam Dam, said his colleagues have doubled their incomes as a result of working on the dam. “Those who were hired as unskilled labor are either learning skills or have already done so,” he said.

The efforts have been particularly transformative for farmers. USAID constructed new watercourses and relined existing watercourses to prevent leakages and to ensure the newly available irrigation water is used as efficiently as possible. Moreover, the Agency trained farmers on ways to boost production and water efficiency like tunnel farming, laser land leveling, sprinkler irrigation, and improved post harvest management. Other efforts helped to establish over 200 water user associations where farmers could work together to allocate water use and govern water resources.

To further economic stability, USAID is teaching local women how to process fruit into products like jams and juices and helping

them to market these products.

“The women are very enthusiastic, eager learners,” said Ayaz Muhammad, project management specialist at USAID/Pakistan. “They are earning profits and sending their children to school.”

The combination of large scale multipurpose infrastructure and capacity building is already paying dividends and locals are excitedly planning for a future in which floods, blackouts, and lack of water do not derail their efforts to feed their families. “I am feeling like I got the real price of my hard work this year,” said Zaiban, a mother of-ten and fruit processor. “And I will do even better in the years to come.”

*C. Zeilberger*

## More Information

[USAID/Pakistan Website](#)

[USAID/Pakistan on Facebook](#)

[USAID/Pakistan on Youtube](#)



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