Wakhan, Afghanistan. Photo credit: John Winnie Jr., WCS-Afghanistan

Photo Essay: Unlocking Nature's Potential to Create a Water-Secure World

March 12, 2018

"Water is the driving force of all nature," Leonardo da Vinci observed more than 500 years ago. His observation is just as relevant today — water's role in maintaining the health and balance of natural ecosystems remains as vital as ever. But on a planet that is growing warmer and more crowded, freshwater resources and the ecosystems that depend on them are being strained as never before.

This year, special attention is being focused on our relationship with nature. Specifically, how can we interact more sustainably with the natural environments around us

to become more effective stewards of water, the world's most vital resource? USAID recognizes that environmentally responsible water resources management serves a key role in improving everything from economic development prospects and human health outcomes to resilience in the face of intensified cycles of flood and drought.

To that end, USAID — along with more than 16 other U.S. Government agencies — declared in the recently released U.S. Government Global Water Strategy that preservation of the planet's natural environments is a key component to making sustainable improvements to water supply and human health.

But don't take our word for it — let us show you. In the photo essay below, travel with us from the Caribbean to Africa to the Middle East and Asia to see how USAID is helping champion natural solutions to protect and preserve ecosystems and the water resources that animate them — empowering communities with greater resilience and creating a more water-secure future.

Indonesia's Papua Province. Photo credit: USAID LESTARI

INDONESIA — Creating More Resilient Communities Through Forest Conservation

The forests of Indonesia cover nearly half of its land area, making it one of the world's most heavily forested countries. Yet the country finds itself struggling to balance the needs of its growing population with its increasingly strained forest ecosystems. The extensive forests serve multiple roles, acting as a natural sink for absorbing carbon from the atmosphere, improving groundwater recharge rates, and providing an anchor for soil that reduces the likelihood of flash flooding and landslides.

To help preserve these forests for future generations and conserve the natural environments from which Indonesia's fresh water supply originates, in 2017, USAID's

LESTARI program secured protection for more than 24,000 square kilometers of forest through improved natural resource management in Indonesia's Aceh, Central Kalimantan, and Papua provinces. LESTARI is also assisting the Government of Indonesia to conserve the country's extraordinarily high levels of biodiversity contained within its vast remaining tracts of forests and mangroves, which contribute to local livelihoods in the form of a burgeoning ecotourism industry.

In Jayapura, the capital of Papua province, LESTARI works with government and local communities to conserve Cyclops Nature Reserve, the main source of freshwater to the 3.2 million people in this rapidly growing metropolitan area. Also in Papua, shown above, fishermen in communities where LESTARI has been active have benefited from the program's conservation efforts, which have protected thousands of hectares of mangrove forests — preserving a natural buffer against coastal flooding and providing a reliable habitat for local fish species on which the fishermen's livelihoods depend.

Silula Spring in Kenya. Photo credit: USAID KIWASH

KENYA — Preserving the Environment Surrounding a Community's Water Supply to Guard against Contamination

Four out of every ten Kenyans — or more than 18 million people — obtain their daily water supply from "unimproved" sources, such as ponds, waterways, or wells close to the surface that are more vulnerable to pollution. Recognizing that a clean environment begets a clean water supply, the Kawaya Water Resource Users Association mobilizes its members to become proactive stewards of environmental health in their communities.

In the photo above, for example, members of the community that depend on the

Silula Spring for their water supply regularly clean up around the spring to keep pollution of this vital drinking water source in check. To expand these practices elsewhere in the country, the USAID-supported Kenya Integrated Water, Sanitation, and Hygiene (KIWASH) project is assisting water user associations in growing their membership and adopting managerial best practices.

By the end of 2020, KIWASH seeks to extend improved water, sanitation, and hygiene services to 1 million people in nine Kenyan counties, while promoting responsible environmental stewardship in areas surrounding Kenya's waterways, lakes, and springs to preserve the country's water resources for the next generation.

Terraced hillsides in Haiti. Photo credit: Anthony Pecoraro

HAITI — Preparing for Future Storms Through Improved Watershed Management

Fifty percent of Haitians rely on farming as their primary livelihood. But after enduring a series of major natural disasters in recent years, Haiti's agricultural sector is still trying to recover.

Through Feed the Future, the U.S. Government is partnering with local communities to improve the sustainability of agricultural practices and mitigate the impact of future disasters by strengthening environmental protection of Haiti's watersheds. These efforts will help Haiti cope with recent disasters and become more resilient. Watersheds are an important part of many Haitians' livelihoods.

Channeling water to farms, households, and businesses via streams, rivers, and underground aquifers, these watersheds provide a stable water supply to villages and cities. However, these watersheds also vulnerable to flash flooding and landslides as a result of the powerful Atlantic hurricanes that routinely sweep across Hispaniola.

Today, more than 80 percent of Haiti's watersheds suffer from some level of degradation, heightening the likelihood that future storms will cause destructive erosion. Through Feed the Future, USAID is promoting agricultural practices that use soil resources more efficiently and sustainably, and is collaborating with local businesses and farmers' networks to stabilize steep, vulnerable hillsides to limit soil erosion. Feed the Future is also supporting environmental security, training more than 2,500 Haitians in biodiversity preservation or natural resource management.

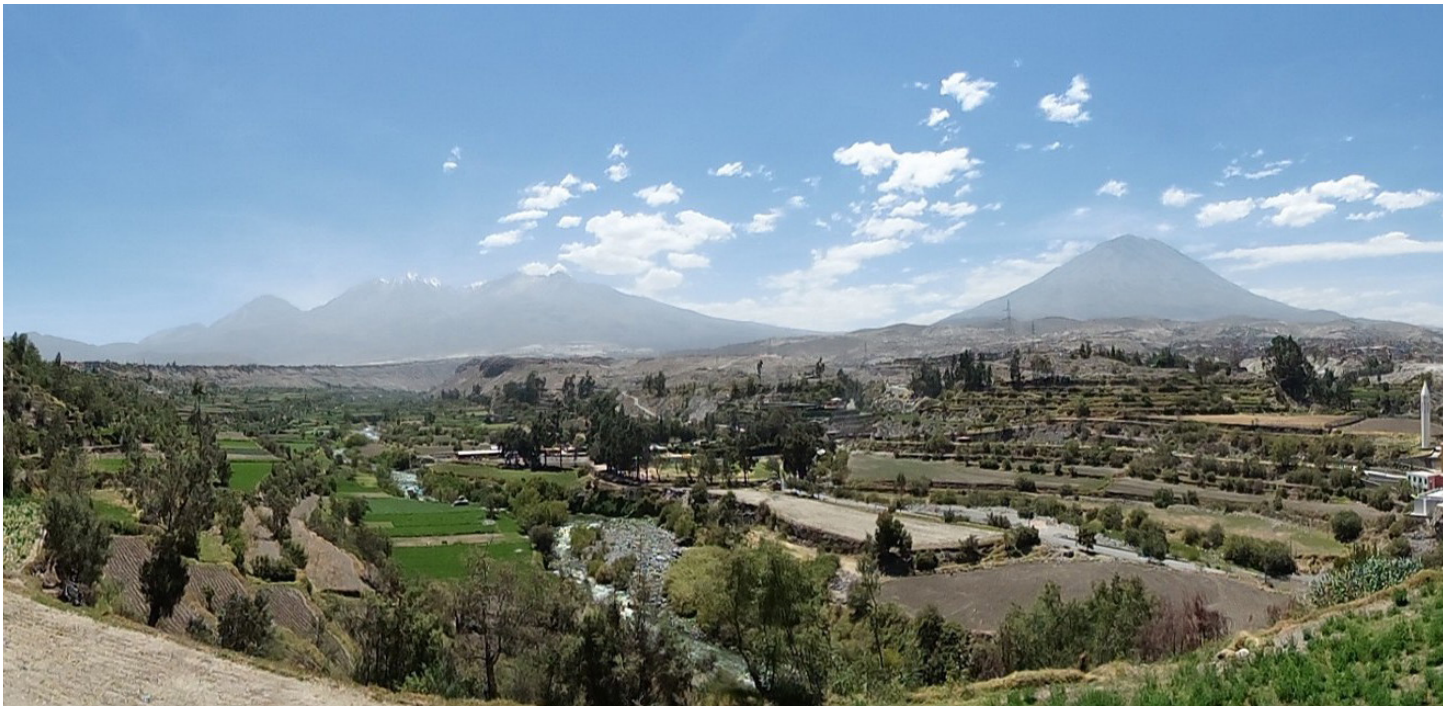
A fisherman on Guatemala's Lago Atitlan. Photo credit: IM Swedish Development Partner

GUATEMALA — Monitoring the Pulse of a Volcanic Lake

Hailed as one of the most beautiful lakes in the world, Lago Atitlán has fallen on hard times. Pollution of the once-pristine volcanic lake has reduced its economic productivity, hurting the fishermen and their families who depend on the lake for sustenance and livelihoods.

To help jump-start the lake's rehabilitation process and ensure the safety of the water supply that lake communities depend upon, the former USAID-supported Unidos por el Lago Atitlán (United for Lake Atitlán) project regularly tests water quality in Lago Atitlan and monitors the environmental health of the surrounding watershed that feeds the lake.

Since the campaign to restore Lago Atitlan began, similar efforts have been replicated elsewhere across Guatemala to improve stewardship of natural ecosystems. USAID also supports watershed management in the Western Highlands that will bolster climate resilience in 2,500 communities seeking to cope with increasing climate variability and more erratic rainfall patterns.



A view of the Andes Mountains from the lower basin of the Quilca-Chili watershed in southern Peru. Photo credit: Cristina Portocarrero/PARA-Agua

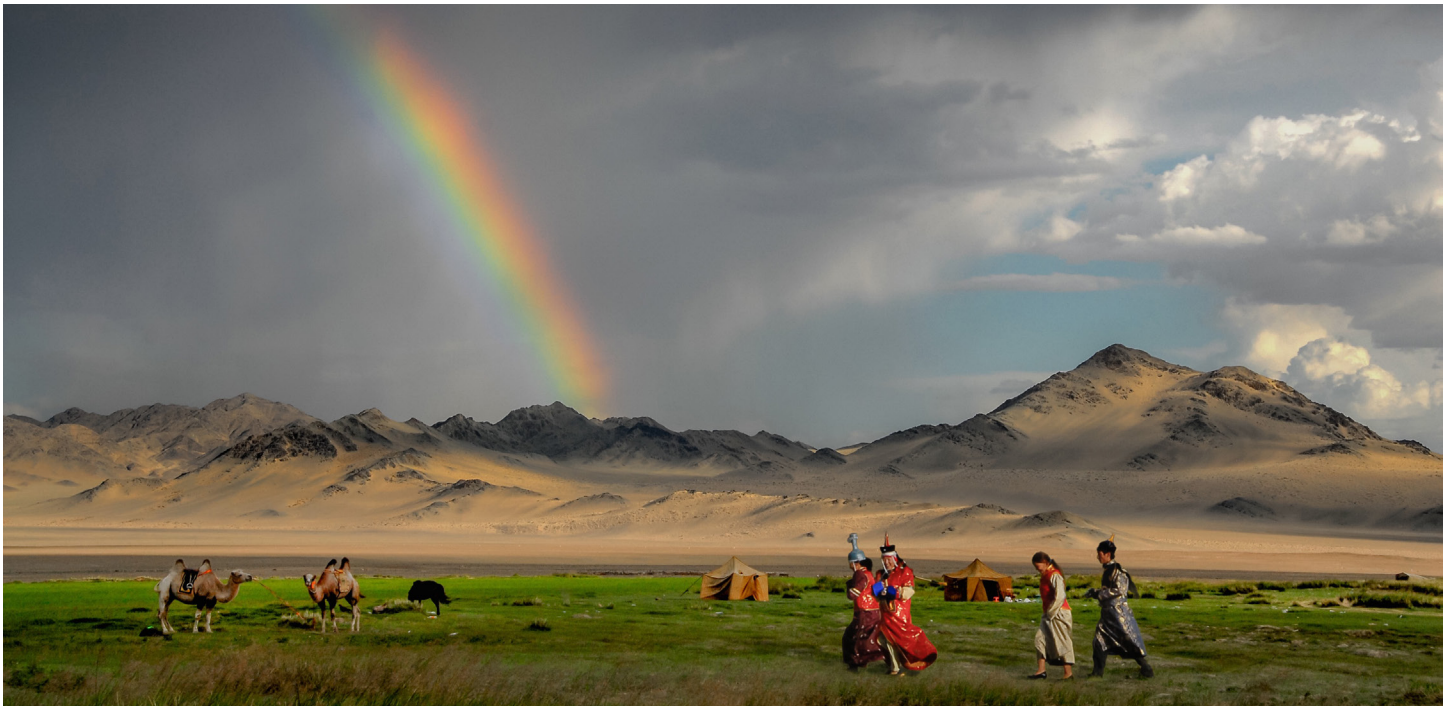
PERU — Partnering to Help Communities Cope with Shifts in Seasonal Water Availability

Intensifying cycles of flood and drought are becoming common in Peru, a country containing a diverse set of ecosystems ranging from tropical forests to mountainous highlands and coastal deserts.

Shortly after a period of drought in 2016, for example, the country grappled with its worst flooding in decades just months later, placing already weary communities on edge.

To help Peru and neighboring Colombia navigate these emerging water-related challenges, the USAID-supported Partnering for Adaptation and Resilience-Agua (PARA-Agua) project has promoted a water resources management plan that considers the needs of various water stakeholder groups affiliated with key watersheds, while also empowering communities, farmers, businesses, and government officials with reliable information needed to better respond to shifts in precipitation patterns and glacial melt rates.

In particular, PARA-Agua has collaborated with the U.S. National Center for Atmospheric Research and meteorological agencies in Peru and Colombia to improve watershed modeling to help flood- and drought-prone communities avoid future losses of crops and livestock, and build resilience in the face of the region's increasingly unpredictable seasonal water availability.



Buergenkhe, Khovd, Mongolia. Photo credit: Bernd Thaller

MONGOLIA — Combatting Overgrazing in the World's Most Sparsely Populated Country

In a largely rural country where grazing livestock is a key means of economic support in its nomadic and sedentary communities, local ecosystems are under threat. Since the mid-1980s, the number of grazing animals is estimated to have tripled, causing gradual but noticeable degradation of grasslands across Mongolia. Damage to these vulnerable ecosystems has contributed to creeping desertification, while warming temperatures and declining precipitation rates are placing the country's already-limited water supply under mounting stress.

As part of a series of case studies and evidence syntheses to promote best practices for ecosystem-based adaptation, USAID's Biodiversity Results and Integrated Development Gains Enhanced (BRIDGE) initiative published a case study in 2017 documenting the progress of the five-year Ecosystem-Based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia project, which rehabilitated 18 wells to help restore 160 square kilometers of previously abandoned pastureland — an area roughly the size of Washington, DC.

The project also strengthened the capacity of local communities to exercise sustainable natural resource management to reduce the environmental dangers posed by overgrazing; as of last year, some 720 square kilometers of pastureland were being managed using sustainable land-management techniques.

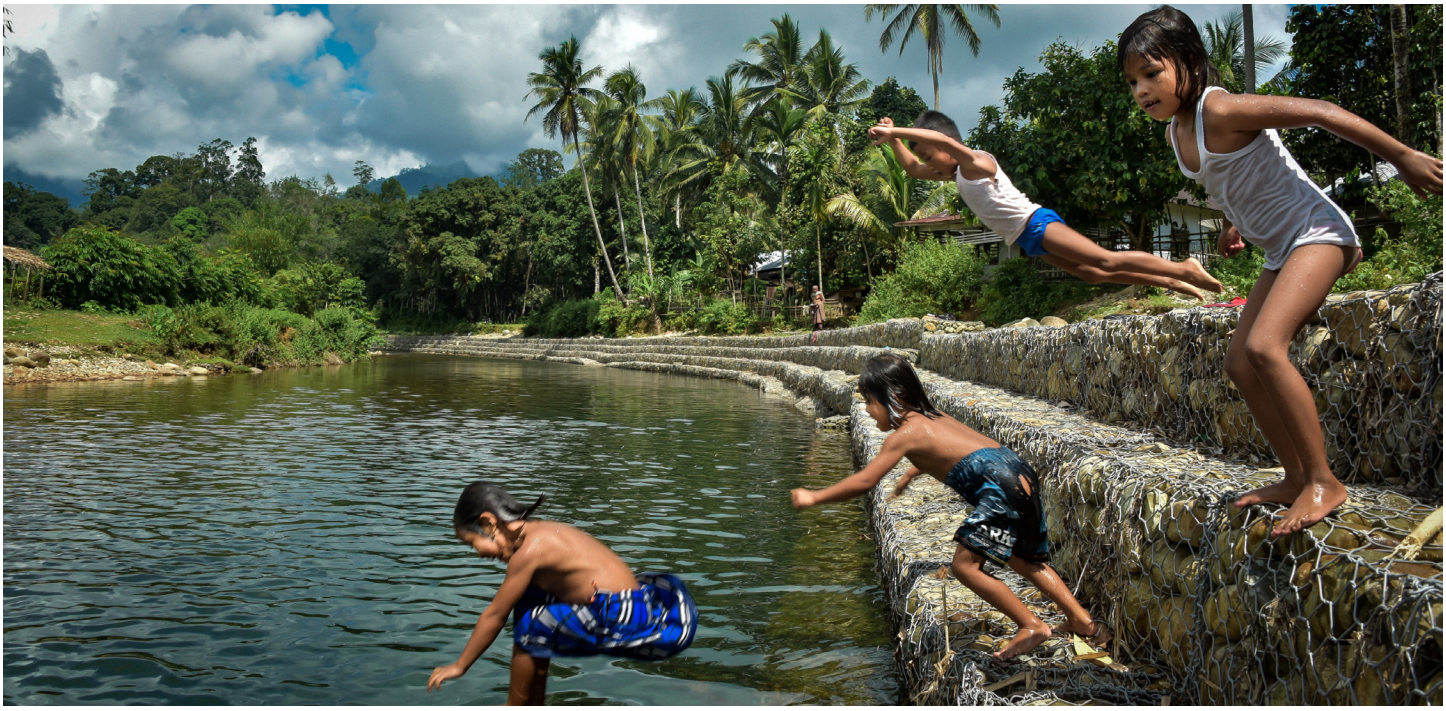


Photo credit: Icaro Cooke Vieira/CIFOR

By Russell Sticklor

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Additional Resources:

- U.S. Government Global Water Strategy
- Ecosystem-based Adaptation and Water Security (Evidence Summary)
- USAID Water Office
- U.S. Department of State Bureau of Oceans and International Environmental and Scientific Affairs

This article appears in Global Waters, Vol. 9, Issue 2; for past issues of the magazine, visit Global Waters' homepage on Globalwaters.org.