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*Drone operators review infrared images of crops that show crop health, changes, damage, and unusual crop growth from Securing Water for Food (SWFF) innovator FutureWater's ThirdEye drone. Photo credit: SWFF*

## Securing Water for Food

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*In Focus, part of Global Water Stories, is an occasional series that takes a broader and more technical look at USAID water activities that have been in place for some time to share approaches, results, and lessons learned.*

### **Securing Water for Food (SWFF) Grand Challenge for Development Overview**

**Locations:** Worldwide

**Duration:** 2014–2019

**Partners:** USAID, the Netherlands Ministry of Foreign Affairs, the Swedish International Development Agency, the South Africa Department of Science and Technology

**Total Funding:** \$35M

### **Challenge**

By 2025, 1.8 billion people are projected to be living in areas with absolute water

*For more information, please visit [Globalwaters.org](http://Globalwaters.org).*

scarcity, and two-thirds of the world's population will be living in areas with water stress conditions. These projected shortages will have a strong impact on economic growth and development. By 2050, some countries could experience economic losses as high as 15 percent of their gross domestic product (GDP) as a result of water pollution, increasing water demand, and declining water supply. These shortages will impact food security, power production, and agricultural productivity, and could lead to political instability.

Agriculture plays a significant role in, and stands to be greatly affected by, these trends. Agriculture accounts for 70 percent of freshwater withdrawals worldwide, and the demand is increasing. Agricultural water withdrawals grew at nearly double the population growth rate during the 20th century, and food demand is expected to surge 50 percent by 2050. To ensure global food security, health, stability, and prosperity, it will be necessary to use water more efficiently in agriculture.

## **Approach**

Since 2013, USAID has partnered with the Swedish International Development Cooperation Agency (Sida), the South Africa Department of Science and Technology, and the Ministry of Foreign Affairs of the Kingdom of the Netherlands to develop science and technology solutions that allow farmers to produce more food with less water through the Securing Water for Food (SWFF) Grand Challenge for Development.

Through SWFF, USAID and its partners support innovators working to: help farmers grow more food using less water; enhance water storage; make more water available for food production, processing, and distribution; and improve the use of saline water and soil to produce food around the world. In addition, SWFF helps innovators forge partnerships and secure outside investment, so they can continue to grow and become financially sustainable and independent of donors.

USAID supports nine other Grand Challenges for Development. These partnerships identify, test, develop, and apply cutting-edge technological solutions to a range of global development problems. USAID launched the Grand Challenges initiative in 2011 to mobilize a range of partners worldwide from the private and public sectors to work together to harness science and technology for development. To date, Grand Challenges partners have committed more than \$500 million in grants and technical assistance to fund more than 450 innovations in 60 countries, which are addressing everything from clean energy to infant mortality to epidemics like Ebola and Zika.

The Grand Challenges approach is particularly well-suited to the issue of securing water for food. It is in line with the [U.S. Government Global Water Strategy](#), which emphasizes the necessity of partnering to leverage investments and results; building resilience; and harnessing science, technology, and innovation to sustainably address the world's water challenges.

While USAID takes the lead, collaborative management among the four main partners is central to SWFF's approach. All decisions are made collaboratively, and each of the partners draws on its unique strengths to contribute to SWFF's success. USAID leads on providing business consulting and technical assistance to small and

medium enterprises, Sida takes a leadership role on gender, the Dutch Ministry of Foreign Affairs provides strategic counsel on issues of resilience, and the Government of South Africa helps recruit leading scientists in developing countries. Each partner has a wide network of missions or offices in different countries around the world. They pool these networks to better identify and support entrepreneurs, facilitate additional partnerships, and leverage financing.

To select grantees, SWFF issues calls for proposals. The SWFF partners then review applications and select grantees on a consensus basis. To date, SWFF has held four calls for proposals, through which it selected 40 grantees from the private sector, nonprofits, and academia. While SWFF initially focused much of its outreach on potential grantees from more developed economies, it shifted focus to the developing world in recognition that innovators from these countries better understand the unique challenges facing their communities.

Funding for these innovators gradually increases whenever they achieve a set of milestones. Ten of these milestones — five technical and five financial — apply to all innovators. Innovators collaborate with SWFF staff to craft program-specific milestones at the onset of each grant. Financial milestones include amount of matching funds and external leverage, amount of total product sales, the profit margin, and the number of partnerships leveraged, while technical milestones include the number of customers and end users, the reduction in agricultural water consumption, the percentage increase in crop yields, and the hectares of farmland improved. SWFF works with the innovators to ensure their targets are ambitious but achievable, and supports innovators to not only improve water efficiency and food security, but also promote gender integration, resilience, and poverty alleviation.

In addition to financial and program-specific milestone-setting support, SWFF's multi-disciplinary team of experts provides innovators with technical assistance and business development input, financial investment facilitation, and product design support. Through market research, SWFF ensures that innovators focus on their customers' needs first and foremost because that is how they will grow their businesses. SWFF also helps connect and facilitate partnerships between innovators and NGOs, governments, and businesses. In addition, SWFF provides investment facilitation and technical support on investor presentations and helps innovators create financial models and forecasts to help them attract debt and equity investments so they can achieve financial independence and ensure continued growth even after the donor support ends.

## Results

SWFF has improved water efficiency and increased food security throughout Latin America, Asia, the Middle East, and Africa. To date, SWFF has awarded \$20 million (and an additional \$10 million in technical assistance and support) to 40 innovators working in 35 countries in these regions, seven of which (Uganda, Ethiopia, Jordan, Kenya, Indonesia, Liberia, and Nigeria) are USAID high-priority countries for water programming. These innovations comprise a wide range of tools and techniques to conserve water and increase agricultural productivity. They include high-tech tools like MimosTek's [drones](#) that provide smallholder farmers with insights on how to best allocate resources and an [internet of things platform](#) for precise irrigation, as

well a simple, effective innovations such as aQysta's low-cost energy efficient [pumps](#), MetaMeta and SaltFarmTexel's more resilient [crops](#), and Practical Action's more productive [agricultural methods](#).

SWFF-supported innovators have reached a combined 6.25 million smallholder farmers, along with their families and other customers — which is more than double SWFF's initial target of 3 million. SWFF's work with these farmers has led to the production of nearly 5 million tons of food on more than 6.2 million hectares of land, which are under improved practices due in part to SWFF innovations. These innovations have decreased agricultural water consumption by 17.5 billion liters compared to traditional practices — equal to the amount of water consumed through drinking, washing, agriculture, and industry by more than 100,000 people in a year and four times SWFF's initial target of 3.6 billion liters. These results are particularly notable because of how cost-effective they are. For every \$1,000 SWFF spent, SWFF innovators affected 243 customers and end users, produced 313 tons of crops, reduced water consumption by more than 1 million liters, improved water management on 228 hectares of agricultural land, and generated \$252 in sales.

However, SWFF innovators have faced challenges, most notably poor enabling environments and a lack of local capacity in the countries where they work. Navigating these challenges has required flexibility and ingenuity on the part of SWFF staff and grantees.

SWFF was able to mitigate many challenges by pivoting or revising its approach as necessary. For example, innovators initially found it difficult to integrate gender into their work due to a lack of concrete gender-related goals or targets. To address this, SWFF researched the issue and provided targeted technical assistance to help innovators better reach women. As a result, recent grantees have made significant strides to include more women both in their own organizations and in their customer bases. Currently, more than half of customers and end users of SWFF-supported innovations are women.

Another challenge was reaching the poorest customers in each market. While more than 60 percent of customers of SWFF innovations are at or near the poverty line, reaching the extremely poor has been difficult because these customers often lack the resources to invest in even low-cost innovations. As a result, many of the innovators focus on the low-income poor who have assets that can be used as loan collateral. Some also focus on middle- or upper-income customers, as these customers can help subsidize the cost of serving the poor. (Middle-income farmers comprise 27 percent of all customers while upper-income farmers comprise 11 percent of customers.)

Another challenge was the lack of knowledge among early grantees of their work environments, which led to delays and compromised results. SWFF's emphasis on providing more grants to local innovators in developing countries has been a successful pivot. SWFF found that these local innovators see, on average, greater returns per dollar than those from outside the countries where they work.

SWFF is still ongoing, but nearly half of its innovators — 17 of 40 — have graduated and are operating independently of SWFF support. The innovators that have seen the

most success are those that took advantage of the significant amounts of data on the market and potential customers that SWFF provided and adapted their products and services to accommodate preferences and needs. SWFF is compiling lessons learned from these innovators' successes, and applying them to help other innovators also graduate.

## Lessons Learned

- Milestone-based funding, coupled with technical assistance and support, delivers greater program and individual innovator impact than development dollars alone.
- In order to scale, all innovators must be able to define their customer segments and relationships and validate their assumptions on the value they deliver to their customer, their distribution channels, and their cost structure and revenue streams.
- Sequenced and incremental support can spur innovators that experience meaningful short-term results to build momentum for success and can help innovators meet milestones at an accelerated pace.
- Concrete, actionable gender recommendations can facilitate gender-inclusive programming and set the foundation for strategies that promote the participation of more women.
- Successful scale requires all of the following: establishing a local presence over the long term, understanding the local enabling environment, and receiving technical assistance that takes the local context into account. Innovators based in the countries where they are operating have a significant advantage, and foreign innovators should receive training and technical assistance to help them understand the local environment.
- Connecting innovators to private and other capital and promoting an enabling environment for private sector entrepreneurship and innovation in the countries and regions of implementation are key to reaching scale and ensuring longer term sustainable impact and systemic change.
- Innovator success requires multi-stakeholder collaboration, as well as the flexibility to pivot and recalibrate based on lessons learned from measurement and monitoring data.
- It is difficult to build financially sustainable enterprises while meeting the needs of extremely-poor and low-income households. By focusing on middle- and upper-income farmers in addition to low-income farmers, innovators can increase their financial viability in the short and long term as well as subsidize the costs of serving poor people.

By Celia Zeilberger



## To Learn More About SWFF, visit:

- [Securing Water for Food](#)
- [Securing Water for Food \(YouTube\)](#)

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