



Mirtha Saleta (left), a project coordinator in Santiago from sub-awardee CDES (under Fundación REDDOM), stands with team members from Cristo Rey, Dominican Republic, as they develop the initial surveys for defining households' baseline sanitation conditions and willingness to receive the proposed constructed wetland solution for improved wastewater treatment. Photo credit: Ron Savage, USAID

Backyard Cooperation Leads to Wastewater Treatment

November 7, 2018

Carola Piña was ashamed to have visitors. The single mom and her two teenage sons shared a one-bedroom house with a collapsed sewage septic system that left them exposed to wastewater. “We just could not endure the stench,” she says. “Not us, not our neighbors.”

Thousands of families in the Dominican Republic face problems like this. Only 25 percent of households are connected to regulated wastewater and sewage services. Some households use septic systems in various states of repair, like Piña, and many others discharge their wastewater directly into streams, rivers, or bays. This is a large enough problem most of the year, but even more so during large storms. “We have kids playing in the river, we have people using the water downstream,” explains Erick Conde, project management specialist with USAID/Dominican Republic’s Agriculture and Environment Office. “So when we have increased flow rates and when we have

flooding events, all of that wastewater is actually mixed up with the rainwater, and communities and houses get flooded with dirty or untreated water.”

This sort of pollution not only affects residents, but also visitors to the Dominican Republic. Since tourism is one of the country’s largest industries, public health or environmental threats are viewed as a real concern. “That contamination that is coming from the river and going to the beach is affecting [tourism],” says Luis Tolentino, an environmental specialist in the Dominican Republic. And as shifts in climate patterns create stronger and more frequent storms, those effects become magnified.

The challenge is to improve wastewater collection, treatment, and disposal for as many households as possible as efficiently as possible. The team behind USAID’s three-year, \$1.8 million Climate Risk Reduction Project quickly realized that large-scale treatment facilities would not work. The Dominican Republic has few tracts of land large enough for such facilities, and those that are available are very expensive. “We had to figure out a solution so we could treat the wastewater in small spaces,” says Jeffrey Perez, the project’s monitoring and evaluation specialist. The solution USAID devised: small-scale constructed wetlands.

Each of these wetlands is designed to serve three to five households. Pipes from each kitchen sink flow into a grease trap to remove system-clogging food wastes, and from there, into an underground anaerobic tank, which also collects the wastewater from bathrooms and toilets. Solids settle to the bottom of the tank while bacteria start to break down pollutants. Liquids then flow into the wetland, which could be as small as 4 square meters, where specialized plants further break down pollutants and layers of sand and gravel act as a mechanical filter. The final treated water is then allowed to enter the water table through a last series of sand, gravel, and rock layers. By that time, 75 to 80 percent of contaminants have been removed.

“This is very basic. This is not rocket technology,” says Pilar Ramírez, the project’s community engagement director. “The sustainability of those systems is very simple because the only thing they have to do is once every two or three years, they have to open [the tank] to clean it.”

The cost of a five-household system is around \$2,500, or \$500 per household, which is affordable for many families in the Dominican Republic. Sharing of both the costs and the physical infrastructure makes installation feasible, particularly in crowded urban settings with very small plots of land. “Maybe we will install the septic tank in your backyard,” explains Perez. “And then maybe the wetland will go in the backyard of another neighbor.” Cooperation and agreement is essential.

The project has now started its third year, and is moving beyond the pilot phase. So far, 21 household groups and a primary school have had wetland systems installed. The team selected each location after an extensive consultation process with city and local authorities in the target cities of Santiago and Las Terrenas. City officials recommended particular vulnerable neighborhoods, and then local leaders in those neighborhoods guided the team to specific locations that met the project’s requirements. If all the affected households in a given location agreed, installation could begin.

Most often recipients of the wetlands provide the labor to help install the treatment system. “The communities are willing to work,” says Conde. “It’s something they help build, and it’s something that is there, and they feel the difference right away.” Instilling this sense of value for a project, while a lot of effort, is one of the ultimate goals. “Being able to work with the community, especially with the neighborhood associations, so they can take ownership, it’s one of the best lessons learned that we could have,” says Jesús de los Santos, the project director.

Sanitation is a high priority in USAID’s new Global Water Strategy, particularly in dense urban areas. Globally, the Agency is investing in onsite, non-sewered sanitation resilient solutions such as this one in the Dominican Republic.

But for people like Carola Piña, who now has a compact wetland adjacent to her home, the most important thing is that she now has a healthier environment for herself and her two sons. “Now we can breathe!” she exclaims.

By Christine Chumbler



Additional Resources:

- [USAID/Dominican Republic](#)
- [U.S. Government Global Water Strategy](#)

This article appears in Global Waters, Vol. 9, Issue 6; for past issues of the magazine, visit Global Waters’ homepage on Globalwaters.org.