

## [Innovation of the Week: Using Dirt to Make Water Clean](#)

By Molly Theobald

Suggested photos are from the LWDGC website:

<http://www.lwdgc-africa.org/7.html>

<http://www.lwdgc-africa.org/resources/Web+HPIM0314.jpg>

In 2004 Peter Njodzeka founded the [Life and Water Development Group Cameroon \(LWDGC\)](#) with a rather simple goal. “I wanted to see the people in my area have clean water,” he said. “And we kept expanding. That’s how it started.”

While Peter was growing up in Nkuv, the small village in Cameroon where he was born, no one had clean water. The water available for drinking was also used by livestock and wildlife, as well as for the whole village’s washing. Every year at least one child would die from illness caused by the dirty water and most households reported having at least one sick family member in the past six months at any given time. “When I was growing up that’s how everyone lived,” said Peter. “But when I left the village and came to Yaoundé, the capital city of Cameroon, I saw that things were so different from my village and I wanted to change things to make them better.”

Six years later, LWDGC, with help from [Engineers Without Borders USA](#) Hope College Chapter taught the technicians of LWDGC how to construct and install bio sand filters in the village of Nkuv. In 2008, [Thirst Relief International USA](#) partnered with LWDGC and has been bringing access to clean water to over 6 villages in addition to Nkuv, as well as providing wells and latrines for 23 schools, and providing education about hygiene and sanitation practices. And they are providing access to the clean water with a very unlikely technique—they are using dirt and bacteria to make the dirty water clean.

LWDGC and Thirst Relief International are building bio sand filters and teaching households how to use and maintain them, greatly improving the cleanliness of drinking water and all but eliminating diseases caused by contaminated water. Bio sand filters are built with the help of an iron mold. Concrete forms the base of the filter and its center is filled with layers of differently-sized, crushed rock. Two layers of gravel and then fine-grained sand create three levels through which water is poured over the course of three weeks. Slowly on the very top forms what is called a biolayer. Once that final layer has formed, the filter removes 99 percent of the bacteria in water that passes through it and is ready to use.

The drinking water slowly filters through the layers of naturally formed bacteria and sand at a rate of about 1 liter per minute and comes out clean and ready for consumption from a pipe at that’s connected through the concrete from the bottom to the side top outlet of the filter. If properly maintained a biosand filter can be used for up to 12 months without the need for much maintenance.

When LWDGC partners with a community to provide the filters, the first thing the organization does is hold a series workshops, teaching basic hygiene and sanitation such as hand washing and

other measures to prevent the spread of disease. “The workshops are important,” says Peter, “because not everyone realizes that there is a problem.” And then there is the task of convincing the community that dirt and bacteria are enough to actually clean their water. “No one believes us when we say that everything that will filter the water is already in the water,” continues Peter.

But once that lesson is learned, lives are changed forever. The bio sand filters “really help the community” said Peter. “When we finish working with a community they always tell us that they don’t have the sickness like before. It’s helping and saving the lives of people.”

*To read more about innovations that help to bring clean water to communities, improving health and livelihoods, see: [Funding a Blue Revolution](#), [Getting Water to Crops](#), [Water Harvesting](#), [Slow and Steady Irrigation Wins the Race](#), and [Weathering the Famine](#).*