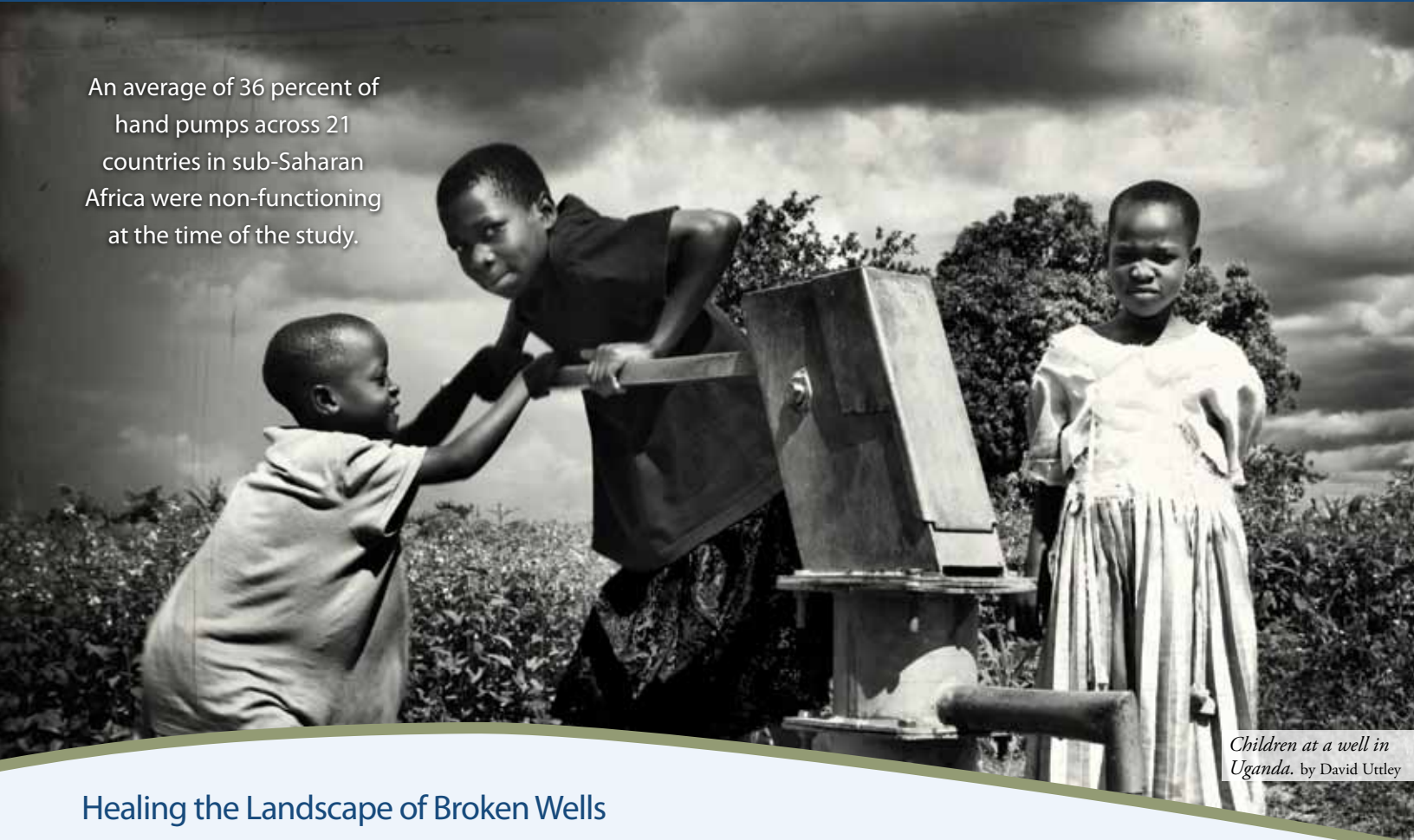


An average of 36 percent of hand pumps across 21 countries in sub-Saharan Africa were non-functioning at the time of the study.



Children at a well in Uganda. by David Uttley

Healing the Landscape of Broken Wells

by Fred Proby, Water Programs Specialist

During my first trip with Lifewater in 1992, I was standing with a village chief looking at an unused hand pump on a village well in Malawi, Africa. Through a translator, we had a conversation that went something like this:

- Me: *Why are people not using this pump?*
Chief: *It's broken.*
Me: *How long has it been broken?*
Chief: *About two years.*
Me: *What is wrong with it?*
Chief: *It's broken!*
Me: *I mean, has anyone opened it up to see if it can be fixed?*
Chief: *Oh, no—that well belongs to the Japanese.*

The well had been installed by an aid agency using a professional drill crew who told the village, “Here’s your well,” and then moved on to the next location. The aid agency had done nothing to enable the village to maintain the well. Because they never felt a sense of ownership, the community did not feel they had the right to attempt a repair, even if they could have fixed it. So for two more years they went back to getting water from a nearby swamp. *(continued on inside, left panel)*

Sobering Figures

36 percent of hand pumps across twenty-one countries in sub-Saharan Africa were not functioning in 2007. *(International Water and Sanitation Centre)*

In 2004, there were approximately 250,000 handpumps in Africa, **less than half of which were operational.** *(Rural Water and Sanitation Supply Network)*

This is why Lifewater strives to work sustainably through empowering partnerships and training. Lifewater also emphasizes hand pump repair. Visit lifewater.org/hand-pump-repair to learn more.



An abandoned hand pump in Tanzania. Wells are abandoned when hand pumps break and local communities are not empowered with the knowledge, skills, and resources they need to repair them. by Sam Moore



In addition to receiving a new hand pump, this community in northern Uganda received hygiene education and formed a water committee that will be responsible for collecting user fees and maintaining the new resource. by David Uttley

(cont. from front page)

The Problem: Broken Wells

Hand pump sustainability has become an issue of grave concern in the water development industry. Hand pump failure is usually a result of mechanical breakdown. **Why these breakdowns are allowed to occur and why they are not quickly repaired when they do happen is influenced by a suite of factors** that include the availability of trained technicians, access to tools and parts, cost, governmental policies, and a community's worldview.

Solution (Part 1):

Community Ownership

Community ownership ensures that a well can continuously supply safe water. Lifewater encourages ownership by working only where invited, establishing and training village water committees, and making a ceremony of handing over the well to the community. Village water committees are tasked with collecting modest user fees to pay for well maintenance and repair. Where appropriate, Lifewater and its partners also give the community a deed to the well that spells out the community's rights and responsibilities.



Village water committee in Atera, Uganda.

But even when local communities understand their responsibility to repair their water systems when they break, many lack the skills and resources they need to repair them. Some types of hand pumps commonly installed by aid agencies throughout the world require special skills and tools to repair.

Solution (Part 2):

Local Ability

The second requirement that keeps pumps working is local ability: ensuring that communities possess the skills, tools, and parts needed to keep their well working.

Lifewater's pump repair program addresses these issues. (Our Hand Pump Repair manual is available at www.Lulu.com - search "Lifewater.") We also equip

our partners with the tools needed to safely work on the pumps found in their area. We have even invented new tools that make repairs easier. (Visit lifewater.org/hand-pump-repair-tools to learn more.)

Solution (Part 3):

Available, Affordable Repair Parts

The vast majority of hand pumps for wells are manufactured in India. This is a serious barrier for a rural African community. If the pump on their well has been imported by an aid agency, as is often the case, there may be no local dealers from whom parts can be purchased. Or, if parts are available in that country, they may be too expensive or far away. Replacement parts must be easy to obtain.

There are several ways to make pump parts more available and economical.



Lifewater field trainer Doug Headrick works on an India Mark II pump with technicians in Uganda.



A local community in northern Uganda gathers to celebrate their new water source, dedicate it to good use and maintenance before God, and commission the new water committee. by David Uttley



A girl in Uganda enjoys water from a repaired hand pump. Lifewater's goal is that every community receiving a new well or repaired hand pump is able to care for their water source, repair it when it breaks, and enjoy safe water for generations. by David Uttley

One solution is to open more stores that sell pump replacement parts. Lifewater is pursuing this option with one of our partners in Uganda. However, since parts will need to be imported from India, cost may still be a barrier for a typical village.



A bush pump, easily manufactured and repaired in Africa, still requires an imported part.

Another approach is to build hand pumps locally. While Africa lacks the strong industrial base it would need to compete with India in making high-end hand pumps, it could feasibly manufacture the bush pump, which can be built and maintained with materials and skills available to most African communities. Unfortunately, bush pumps use a pump cylinder (the below-ground component that brings water to the surface) imported from India. When it breaks, the community still has an expensive piece to purchase. **The challenge is to develop**

a pump cylinder that can be made and repaired locally, so pump downtime can be significantly reduced. It is a tragedy for a well to remain broken for long!



Visit the website

lifewater.org/

[hand-pump-repair-tools](http://lifewater.org/hand-pump-repair-tools)



In the early '90s, Lifewater founder Bill Ashe and a number of Lifewater volunteers began experimenting with pump cylinder designs that could be made from parts available in most African hardware stores. They learned that making a pump cylinder that can withstand constant use is very difficult.

Last year, Lifewater became aware of a pump cylinder design that appears to have solved one of the principle durability problems. However, the cylinder's designer, Steve Lorch of Hydromissions International, did not have a way to test it and had not received feedback on the cylinder's performance. So Lifewater engaged three mechanical engineering students from California Polytechnic State University—Brian Calbeck, Eric

Bates, and Kyle Schierenbeck—to build a pump cylinder test platform to test the Hydromissions cylinder under conditions that approximate village use. Their project resulted in a very effective machine that runs unattended and records details about each pump cylinder experiment.

Now that Lifewater has an automated test platform, the next step is to see how long the Hydromissions cylinder can last before needing repair. Lifewater will enlist others to experiment with ways to build and repair the cylinder with tools and materials available to most African communities.

If this project interests you, we invite your participation, either financially or with pump cylinder innovations that we can test. Please send your inquiry to info@lifewater.org, with "Attn: Fred Proby" in the subject line.



Engineering students display their pump cylinder test platform, which will test new cylinder designs

I'm an African Toilet Princess

by Julie Smith, Project Coordinator



I had known for weeks that I would be expected to give a speech at the school latrine and water tank dedication, and I was dreading it. I knew that thousands of students would be crammed together and distracted by my accent, my paleness, and everything else that distracts kids. I hated the thought of pretending I even remotely understand what they've gone through in life. I hated the thought of acting like I had something relevant and important to say.

If I'd known ahead of time that, while giving this speech about toilets, I would be wrapped in a red plaid Massai princess blanket and wearing a beaded leather crown and necklace, I might have just run off and hid in the bush. But the teachers caught me by surprise. They called me to the center of the crowd and, singing and dancing, they overwhelmed me with these gifts to wear for the festivities.

So that's how I ended up an African Toilet Princess—crowned, gowned, and making a speech in front of the new latrines at the Muslim Primary School in Kenya's Great Rift Valley.

I might have mistaken it all for a dream had it not been for the look on the school principal's face, which was more profoundly joyful than a dream could have conjured. Principal Grace's eyes revealed deep happiness. When I looked at her, I knew that I wasn't just giving an irrelevant speech dressed up in front of insignificant toilets. Rather, I was helping to make her noble dream a reality.

For years, Grace dreamed that her school—located at the crossroads of three slums—would become a place where children could discover their dignity and potential. Grace, who grew up in a slum herself, says she would not trade her childhood hardships for a more comfortable background, because they taught her what it is like to be without parents and sufficient food. Many of Grace's students are orphans. Every evening she has to force children off the school grounds. "They would sleep here if they could," she says. "They have nowhere else to go."

Day after day Grace exhorts her students, telling them, "Your lives are bigger than the slums. You are capable of so much more." Yet for years, Grace's noble message was contradicted by the poor condition of the school. The latrines, for example, were sinking and crumbling, offering not health and dignity but only shame and the likelihood of disease.



Kenyan girl at Muslim Primary School, where Julie Smith attended the latrine and water tank dedication. Principle Grace is introducing her and her classmates to the road to health and hope. by David Uttley

Now, as we gathered to celebrate sixteen new latrines, a ten-thousand gallon water tank, and five handwashing stations, Grace's eyes were full of hope and pride. Finally, her constant encouragement to the students that they could overcome their circumstances would be supported by dignified school facilities.

My speech as an African toilet princess was probably insignificant. Students were definitely distracted by my accent, my paleness, and all that distracts kids. But I realized that I was there not to give a great speech but to affirm the one Grace repeats to them day after day:

The world is bigger than the slum.

Dreams are bigger than disease.

Hope is bigger than shame.

Life is more than death.

Dare to dream.

Insist on hope.

Claim life in its fullness as your own.



Julie Smith is showered with gifts at the Muslim Primary School latrine dedication in Nakuru, Kenya.



A young woman in Haiti washes her little sister's face by the rubble of their old home. by David Uttley

Significant Sacrifice

A N E A S T E R J O U R N E Y

Attention Churches and Small Groups:

YOUR EASTER JOURNEY BEGINS SUNDAY, MARCH 6

- Beginning the first week of March, reflect on the significance of Easter with Lifewater's Significant Sacrifice **devotional guide**, available in print, pdf, or by weekly email.
- **Give up an item or activity** until Easter. Keep track of the monetary value of your sacrifice.
- After Easter, **donate the money you save** through your sacrifice to help share the joy of Christ's resurrection. Lifewater International will use your gifts to help give safe water to those who thirst.
- Visit lifewater.org/significantsacrificevideos to watch a compelling video (1:21 minutes) about this Easter activity.

significantsacrifice.org



ADDRESS SERVICE REQUESTED

Kid Power Launched! Illinois Church Raises \$17,700 for Safe Water

Heartland Community Church in Rockford, Illinois, raised nearly \$18,000 for safe water in Uganda through *Mission: Safe Water*, a Christmas fundraising effort by their children's program, Launch. Launch director Sharon Sherbondy said, "We set the goal of \$5,500 . . . Little did we know just how much this would capture the hearts of our kids, families, and random strangers."

As part of *Mission: Safe Water*, Launch created an eye-catching collection "well" (see photos below) and sent giving packets—an adaptation of Lifewater's Significant Sacrifice kids activity—home with the children. They also gave each family a collection bank made of cups donated by Pepsico and covered with a *Mission: Safe Water* logo and map of Uganda.

If you are interested in launching your own version of *Mission: Safe Water* and would like ideas for your group, we encourage you to contact us at campaigns@lifewater.org.

