EVERY ROTARIAN EVERY YEAR

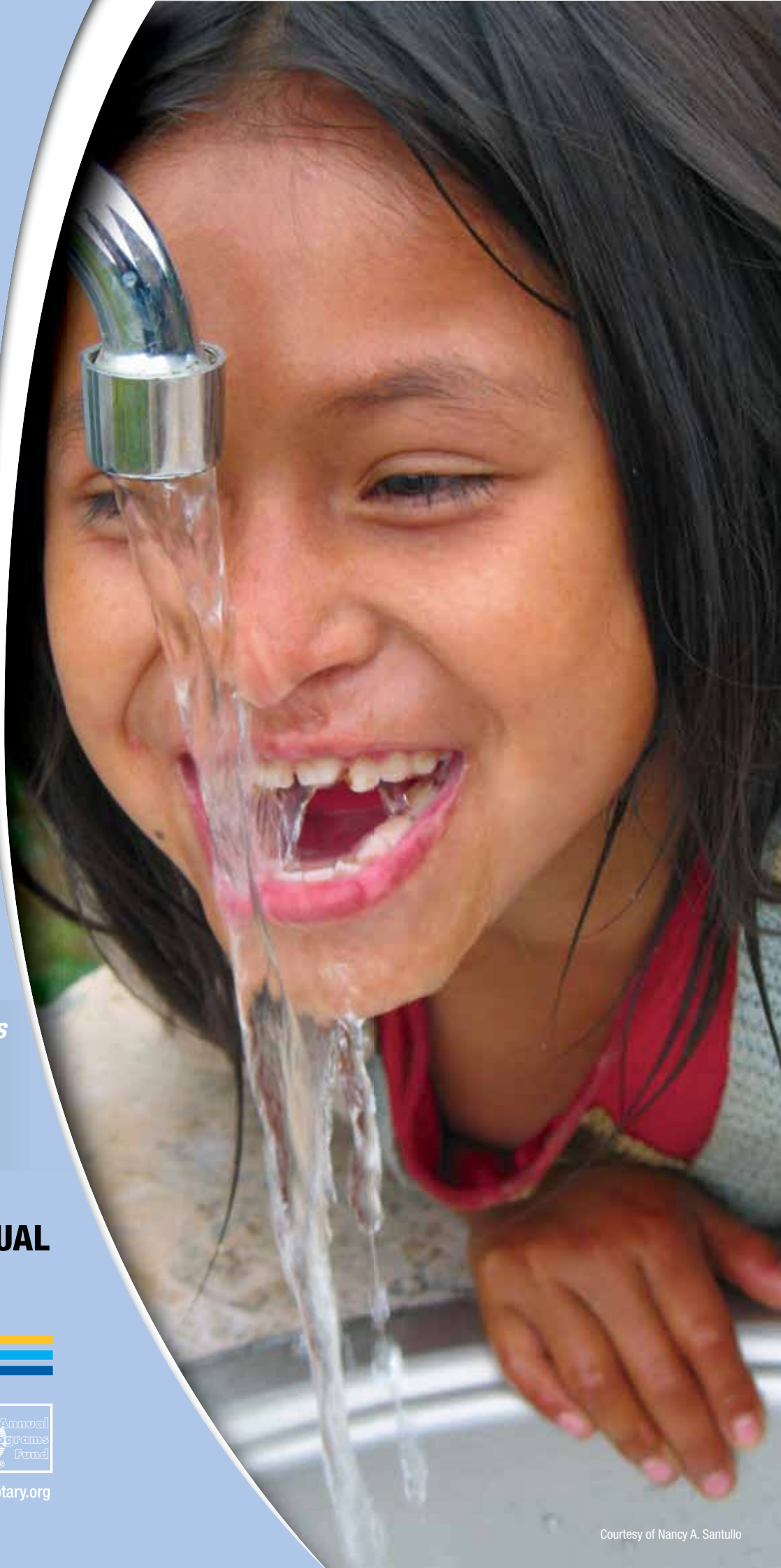
Clorinda Palomina, 8, enjoys a drink from a new outdoor sink in the village of Santa Rosa de Huacaria in southeastern Peru. The Rotary Club of Vernon, California, USA, used $2,500 in District Simplified Grant funds to provide construction materials for this sink and three others in the community so residents would have clean water.

Your contribution helps give children all over the world the gift of clean drinking water.

MAKE YOUR ANNUAL GIFT TODAY!

Annual Programs Fund

www.rotary.org



Courtesy of Nancy A. Santullo

A ROTARY WORLD MAGAZINE PRESS SUPPLEMENT

GLOBAL OUTLOOK

Focus on water, sanitation, and hygiene

The clean water challenge

An integrative approach can solve a three-pronged problem that affects billions

Around the world, hundreds of millions of us share a similar morning routine that's dominated by water. We wake up in our homes and walk to a nearby room containing a toilet, sink, and shower or bath. We use the toilet, wash our bodies, brush our teeth. We make our way to the kitchen, where we fill a kettle or pot with cool water to brew our wake-up cup of tea or coffee. In much of the world, however, this is not the routine. Daily life is marked by a lack of access to clean water, sanitation facilities, and hygiene resources. This three-pronged problem constitutes the core challenge in the lives of billions worldwide.

Instead of turning on a tap in their homes, 884 million people must fetch their water for drinking, cooking, and washing from crude, unprotected wells or straight from rivers, dams, lakes, canals, and ponds. The sanitation statistics are even grimmer: 2.5 billion people lack access to improved sanitation facilities, such as flush or composting toilets. Instead they use buckets, bags, or open pit latrines, or they simply practice open defecation in bushes, fields, and other unprotected public areas, both rural and urban.

The consequences are devastating for the health and welfare of millions (see sidebar on disease). Of the 1.8 million deaths each year from diarrhea, including more severe diseases such as cholera, typhoid, and dysentery, 88 percent are due to unsafe water or inadequate sanitation or hygiene, and 1.4 million are children ages five and younger, according to the World Health Organization. Malnutrition-related deaths of children five and under caused by unsafe water, inadequate sanitation, and insufficient hygiene total 860,000 a year. Contact with

Rotarians are bringing clean water to La Grúa, Dominican Republic, where residents use a nearby river for drinking and bathing. More than 200 Rotary clubs have helped install 19,000 bio-sand filters in the country.

feces-contaminated soil or food causes hookworm, ascariasis, and other intestinal infections that affect one-third of the world's population.

Water, sanitation, and hygiene issues influence socioeconomic conditions as well. Women and girls who spend hours fetching water can't attend school or earn money. A lack of private sanitation facilities discourages girls from attending school, especially as they reach puberty. Teachers can't teach and farmers can't work when they're infected with waterborne diseases that incapacitate adults. Untreated human waste affects fish, aquatic mammals, and vegetation.

Women and water

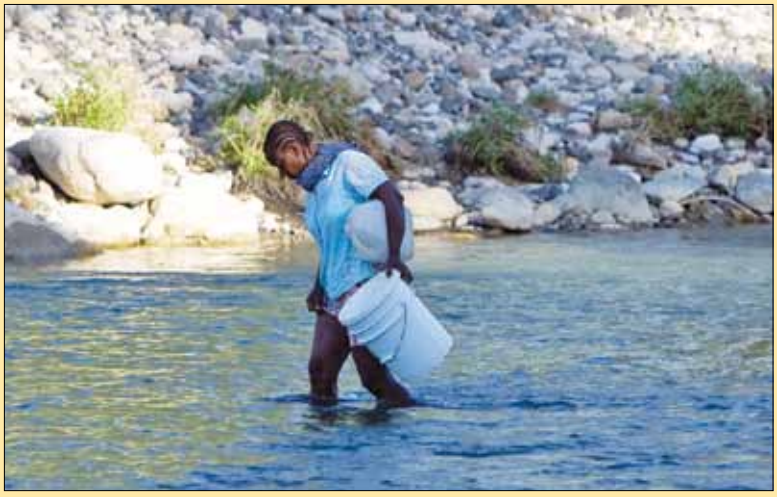
In the Dominican Republic, Rotarians have helped bring 19,000 bio-sand filters to about 300 communities, reaching 100,000 residents. The simple and inexpensive filters have been found to reduce diarrhea by up to 45 percent. But it's not only individuals' health that the filters are improving, says Sara Lucena, a member of the Rotary Club of Puerto Plata Isabel de Torres, Puerto Plata. It's the lives of entire families.

Lucena says that because children are not getting sick as often, she sees mothers having the time to work or go to school, which will help them lift themselves and their families out of poverty. "It's a circle. It's not just health," she says. "The filter is a tool for changing their lives. If I can control the health of my family, I can control the life of my family."

In their traditional roles in many parts of the world, women use water for preparing food, bathing, and washing. It's up to them to find and collect the water they use daily, even when it's scarce. Women in northern Ghana walk more than 3 miles round trip to rivers or other sources, then carry 45-65 pounds of water on their heads back to their homes, according to Lamisi Mbillah, who spoke at a water conference in March hosted by District 6290 (Ontario, Canada; Michigan, USA). Collectively, women in sub-Saharan Africa spend 40 billion hours a year collecting water – equivalent to a year's worth of work for all of France, according to a United Nations report.

"If women are half of the world's population, we have to step up and do something about it," says Mbillah, who was Miss Ghana in 2005 and was honored with Miss World's Beauty with a Purpose award for her activism. "It is a basic human right."

– Diana Schoberg



The responsibility for collecting drinking water in La Grúa often falls on women.

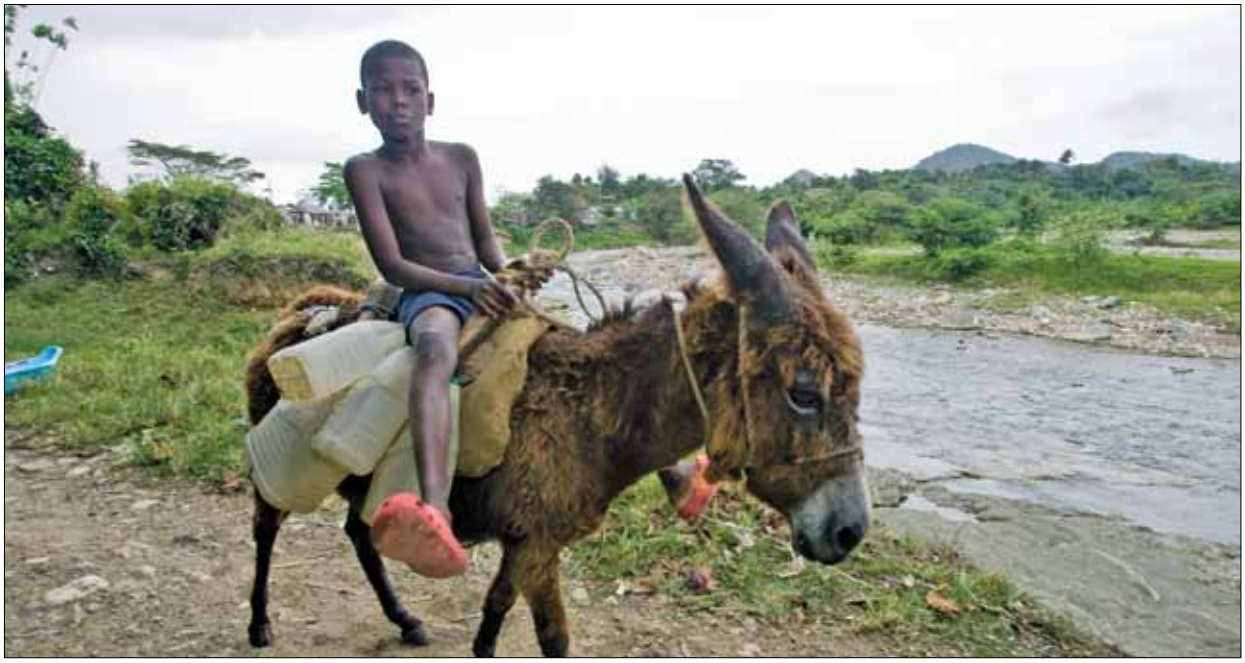
What can be done

But there is hope. Though the issue seems overwhelming in scope – like polio was decades ago – much can be done, according to experts such as John Oldfield, executive vice president of the U.S.-based nonprofit Water Advocates. Along with many public and private organizations worldwide, Water Advocates is dedicated to solving the global drinking water and sanitation crisis.

"Eighty-three percent of the planet has access to safe water, and more than 60 percent has access to toilets," Oldfield points out. "We've solved it in the United States, in Western Europe, in Japan and Australia. Many places have universal coverage of water and toilets. We know what the cure is. We need the political and popular will, and once that's there, then the money flows."

Advocates of the cause are particularly focused on the UN Millennium Development Goals. Goal 7, to ensure environmental sustainability, calls for reducing by half the proportion of people without access to safe drinking water and improved sanitation by 2015. The world is on track to meet the water goal, but not sanitation. Though the practice of open defecation is declining, at the current rate of progress, the number of people without access to improved sanitation will only decrease by about 100 million, to 2.4 billion, by the target date.

Hardest hit on the clean water side is 42 percent of sub-Saharan Africa's population, which gets water from unimproved sources. The problem is also prevalent in Asia, as well as in parts of Latin America. Lack of adequate sani-



A boy from La Grúa goes to Río Bajabonico to collect water. Water collection robs children of precious time in school.

tation facilities is most problematic in southern Asia, where 48 percent of the population practices open defecation.

The response from Rotary International has been huge (see "By the Numbers"). Two groups in particular, RI's Water Resource Group and the Water and Sanitation Rotarian Action Group, offer guidance, support, and leadership to clubs interested in implementing water, sanitation, and hygiene-related projects.

Past District Governor Ron Denham, the action group's founding chair, regularly networks with advocates from UNICEF, CARE, and other organizations to determine how best to approach the water, sanitation, and hygiene crisis. In turn, he says, "we help Rotarians identify appropriate solutions, help arrange funding, match them with partner clubs, and match them with local NGOs [nongovernmental organizations]. We're brokers of information and relationships and technology."

Education a major factor

The approach toward solving the crisis has become holistic, says Ed Cain, vice president of grant programs for the Conrad N. Hilton Foundation, which concentrates its safe-water efforts in sub-Saharan Africa. "It's not just about having a clean cup of water, as beneficial as that is," he says. "It doesn't improve the health of the community unless we teach them how to manage and handle the water in a way to avoid illness and disease." If you have open defecation in a community, he says, "you won't achieve the result of healthy communities, where kids stay in school and lead healthy and productive lives."

Where water is a luxury, populations need education on the importance of hand-washing and the consequences of fecal contamination by humans and animals on the community's health and welfare. "In many cases, we'll bring safe water to a household, but the users will put their [unwashed] hands in a clean receptacle because we haven't gotten them to change their behaviors," Denham says.

In addition, the solutions must be sustainable. Communities must take responsibility for and maintain water systems into the future, using affordable parts that are easy to obtain. "We need to lay down roles and responsibili-

By the numbers

967 Number of open Rotary Foundation grants for water and sanitation projects

216 Number of open grant projects that include drilling wells or boreholes for clean water

142 Number of open grant projects that include building latrines for improved sanitation

161 Number of open grants for water and sanitation projects in India, the country with the largest number of open grants

561 Number of grants the Foundation awarded in 2007-08 for water and sanitation projects

US$8.6 million Total amount the Foundation awarded in 2007-08 for water and sanitation projects

4,560 Number of grants the Foundation awarded from 1989 to May 2009 for water and sanitation projects

US$59.2 million Total amount the Foundation awarded during that period for water and sanitation projects

As of May 2009

ties for stakeholders," says Peter Lochery, director of CARE USA's water team. "Good policy needs to be developed and implemented."

"We have to make sure the systems are seen as part of the community infrastructure, not just something from well-meaning donors," says Clarissa Brocklehurst, chief of water, sanitation, and hygiene for UNICEF.

Rotary's response

Rotarians worldwide are tackling the issue. In Ghana, according to Past District Governor K.O. "Willie" Keteku, less than 60 percent of people have access to clean water, and just 30 percent have access to good sanitation and hygiene resources. The situation is worse in rural areas, which is where 70 percent of the population lives, and where the nation's 21 Rotary clubs concentrate their efforts.

"Last year my club drilled boreholes with hand pumps and storage tanks to provide water for eight communities in rural areas, and this year we're adding another eight," he says. "These days, we don't do water projects without sanitation. Many clubs work on the provision of water and sanitary facilities to schools and clinics, providing latrines and facilities to wash hands, with boys and girls getting separate facilities in a long block. We call those institutional latrines. It's a particular design approved by the Ministry of Health."

Keteku is particularly excited about the new RI-USAID collaboration (see sidebar), which intends to provide funds to build an esti-mated 200 new sanitation and water facilities throughout Ghana. The money will also fund hygiene education and community organization. Residents – mainly women – will be taught to collect a small fee from users to support facilities far into the future. The levies are so low that nearly every household can pay; whenever they can't, exemptions are given. This business involvement from the community members will instill a sense of ownership, fostering greater long-term integration of the project.

In Kenya, says Rotarian Edward Kairu, a member of the Water and Sanitation Rotarian Action Group and a professor of climatology, clubs are focusing on providing sanitation blocks to residents of Nairobi's crowded slums, where toilets and running water are rarities. The blocks have separate water kiosks, showers, and toilets for men and women. In Kibera, an urban slum that's home to an estimated 800,000 people, 10 sanitation blocks have been installed, serving 2,000 people a day. Community development

Waterborne disease

The World Health Organization estimates that about 10 percent of disease worldwide could be prevented with improvements to water supply, sanitation, hygiene, and water resource management. Some of the major preventable conditions are:

Diarrhea
- Spread through contaminated food or drinking water, or from unclean hands
- Kills 1.8 million people a year, mostly children

Intestinal worms
- Caused by contact with soil contaminated with feces, or ingestion of worm eggs
- Often leads to anemia or malnutrition
- Affects two billion people worldwide

Schistosomiasis
- Parasitic disease that can damage organs and cause anemia and malnutrition in children
- Caused by contact with contaminated water
- Affects 200 million people worldwide

Trachoma
- Contagious eye disease that can lead to blindness
- Spread from person to person
- Has an incidence of 11 million cases per year

Malnutrition
- Condition arising from lack of food, the wrong kind of food, or the inability to absorb nutrients due to disease
- Commonly caused by diarrhea or worms
- Directly or indirectly causes 860,000 deaths per year in children under five

– Susie O. Ma

Wastewater and garbage run through a barrio of Puerto Plata, where Dominican Rotarians are working to provide clean water.

organizations maintain them and collect levies from users.

"We have cholera outbreaks, a lot of illnesses, worms. Children play outside and come across waste, especially when it rains and there's flooding. One of the interventions we do is improving drainage to remove waste from slums, because it becomes completely unimaginable with the runoff," Kairu says.

Natural disasters can also cut access to clean water. When an earthquake destroyed a small town's pumping facility outside Istanbul, residents weren't able to pay for a replacement. "So mainly women and children would walk for miles to a nearby village to get water," explains David Keller, past president of the Rotary Club of Campbell, California, USA, which partnered with the Rotary Club of Istanbul-Topkapi to provide water access.

Since July 2007, clean water from 13 mountain springs has flowed through a pipeline to a 500-ton facility that serves 1,285 villagers. The village has set water fees and will use them to maintain the new system, says Keller. "We worked with the village elders, via the local Rotary club, to do this," he says. "The outpouring of thanks was astonishing. People had tears in their eyes."

Though the challenge to ensure clean water, better sanitation, and proper hygiene is daunting, the answers are there and the goals achievable. "To throw up our hands and say 'This is an undoable goal' is not correct," says the Hilton Foundation's Ed Cain. "We have to look at the Millennium Development Goals, particularly to reduce by half the proportion of those without access to sustainable, safe drinking water. To reduce by half would be a huge jump, given population growth. The world is on track to achieving that goal."

– Anne E. Stein

Water technology

Technologies used in Rotary club and district projects to improve water quality and sanitation include:

Water quality

Chlorine disinfection: Sodium hypochlorite is added to water to kill viruses and bacteria. (Most cost-effective method, according to the World Health Organization.)*

Dominican Rotarians Sara Lucena and Bob Hildreth test a bio-sand water filter in a Puerto Plata home.

Solar disinfection: Ultra-violet rays from the sun are used to inactivate and destroy pathogens in water. Water needs to be exposed to the sun in clear plastic bottles for six hours or more. (Only slightly less cost-effective than chlorine disinfection.)

Bio-sand filter: A concrete or plastic box containing layers of sand is used to trap and eliminate sediments, pathogens, and other impurities in the water. A layer of microorganisms on top of the sand captures disease-causing bacteria as the water is poured over it. Larger particles are removed as the water passes through the sand layers. (Higher initial costs than disinfection.)

Ceramic filter: A ceramic pot with a colloidal silver coating rests inside a plastic container. Water is poured into the pot, and impurities are trapped by the small pore size of the ceramic while the silver coating kills germs. (Higher costs than disinfection and all wells, but yields largest health benefit.)

Borehole: A deep, small-diameter well drilled by engine-driven augers and rock drills. Water can be drawn by hand or electric pumps. (Roughly twice the cost of chlorine and solar disinfection treatments.)

Sanitation

Pit latrine: The simplest type of latrine, it consists of a hole in the ground covered by a hygienic slab with a hole.

Bio-latrine: This type of pit latrine feeds into a bio-digester, a large underground dome where bacteria from human waste break the waste down to produce methane. The methane, an odorless gas, is used for cooking or heating.

**Any cost comparison of water technology should account for capital and maintenance costs, overall effectiveness, and the number of people who benefit. Costs can vary widely by region.*

– Susie O. Ma

Experts bridge troubled waters


Brocklehurst


Cain


Denham


Lochery

Our panelists Clarissa Brocklehurst, chief of water, sanitation, and hygiene for UNICEF; Ed Cain, vice president of grant programs for the Conrad N. Hilton Foundation; Ron Denham, past district governor and founding chair of the Water and Sanitation Rotarian Action Group; and Peter Lochery, water team director for CARE USA, look to a clean water future.

Can everyone in the world have access to safe drinking water?

Clarissa Brocklehurst: Yes, it's a possibility. If we look at the data, there's been significant progress reaching the [target for UN] Millennium Development Goal 7 [to ensure environmental sustainability] for water supply, and in 2008, the number [of people without access to safe water] dropped below one billion. We see that a lot of progress in rural areas is still off track, and in urban areas, there are slums not being well served. It certainly doesn't mean the job is done, but at least we can say that we're making progress.

Ed Cain: I think so. The world's population is growing, and there's scarcity in certain regions, but the current thinking is that with proper management, we can meet the needs of people to have access to safe water and sanitation.

Ron Denham: We have a vision, but we're always going to find someone who doesn't have access, and there are remote villages in the world where it will be very, very difficult. In some places, we can provide water that's relatively safe, but it wouldn't meet WHO [World Health Organization] standards. But it would have a huge impact in reducing sickness.

Peter Lochery: Yes, I think it's possible for everyone to have access. They may not have the quantity they want, because in some parts of the world water is scarce. But I think it's possible for the whole world to enjoy a minimum quantity of 40 liters [10.5 gallons] of water per person, per day, the typical level we're trying to reach.

What are the greatest obstacles to access?

Brocklehurst: Sustainability. We have to create the community capacity to allow people to keep the systems going, to manage them, have access to spare parts, and the ability to collect user fees to finance ongoing operations. Climate change is another obstacle. We may have more variability of rainfall, and in other areas we'll have drought.

Cain: Population growth. Global warming is another challenge. In the developed world, there remains a general lack of awareness that a third of the population doesn't have access to safe water and approaching half doesn't have access to proper sanitation. I'm one of those who believe if there's greater awareness, and we can show there's greater progress, resources will increase.

Denham: Money's an issue in the large cities, but we in Rotary are [also] dealing with small communities and villages, and the biggest obstacles are giving people the ability to manage things for themselves. Too often Rotarians have done things for people that haven't been sustainable because it was a "foreign project."

Lochery: The obvious one is the necessary investment. But there are big issues around how water is managed. It's not just a question of putting in place the physical infrastructure, it's a question of how it's used and who pays for the maintenance and repair. You need strong governance systems where users have a voice to be able to put into place the necessary tariffs.

What would you advise Rotarians and other service organizations to do to help solve the problem?

Brocklehurst: We've got to recognize that water, sanitation, and hygiene are all very interconnected. If you pay for a borehole to be drilled, you need to align that effort with government policy and other efforts in the water supply and sanitation sector.

Photos courtesy of panelists except top left by Rotary Images/Alyce Henson

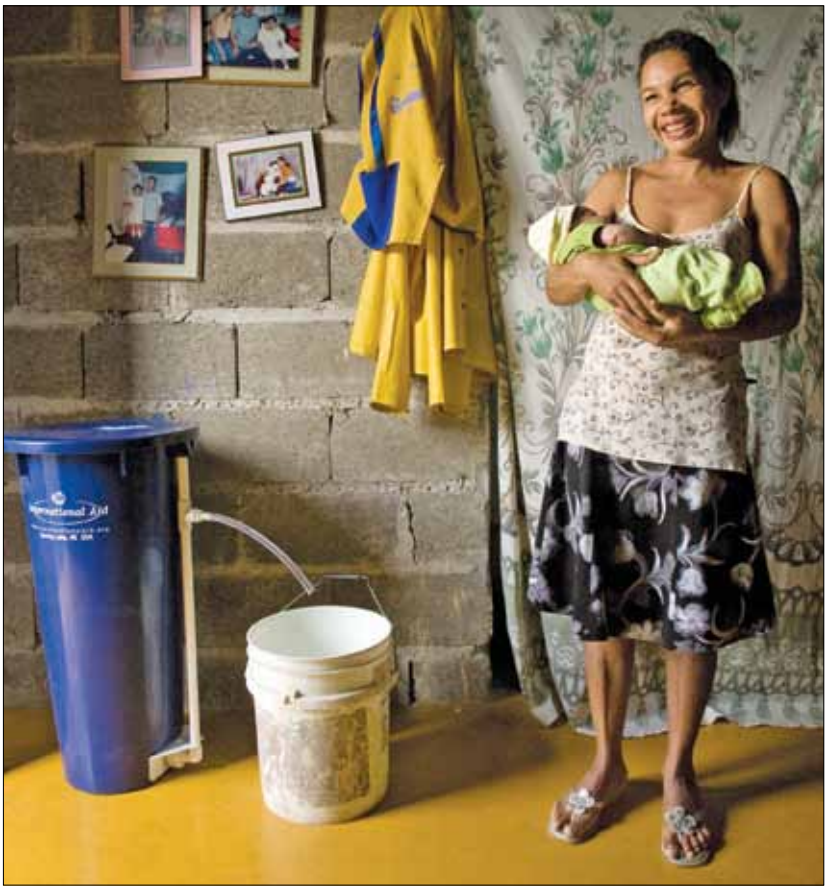
Everyone focuses on building, but there's so much more, such as education on hand-washing with soap or the importance of using toilets. If we could get Rotarians and others advocating for building every school with toilets and running water, that would be huge.

Cain: Don't try to reinvent the wheel. Inform and educate yourself about existing plans and mechanisms in the country, and see to what extent you can become a part of that. That's not to say that if things aren't working effectively, you should become part of a dysfunctional process. But there's been so much progress made, you might find that what you're doing is redundant.

Denham: Listen to the people in the host community. Help them develop what they want and have the resources to maintain and operate. Don't go over with preconceptions. They might need water, or they might need to purify contaminated water. Then you need to find the most appropriate solution – a combination of the right technology for that particular culture and what people can afford in the long run. Understand and adapt to local culture. Involve the local authorities. Focus on not just supplying water, but on people's livelihood. If girls aren't going to school, you might need to address sanitation in schools. Make maximum use of local labor.

Lochery: We find that we can achieve the most success, in terms of reaching populations with sustainable and replicable approaches, if we're using a long-term, programmatic approach running 5 to 10 years. That's how we can be most efficient. Rotarians need to think big.

– Anne E. Stein



Before Rotarians gave her the bio-sand filter, Leonida Burges had to buy bottled water of questionable quality. Now, she will be able to raise her infant son on clean water and protect his health.

International H_2O Collaboration

An innovative collaboration between Rotary International and USAID will initiate long-term water, sanitation, and hygiene projects throughout the developing world and offer Rotarians the chance to become more involved in these vital issues. Launched in March, the International H_2O Collaboration will initially focus its efforts in the Dominican Republic, Ghana, and the Philippines. An investment of US$2 million per country will be made, with half provided by Rotary and the other half by USAID. "We intend these projects to be models for future projects with strategic partners and in this way to enhance our contribution to world understanding, goodwill, and peace," said Past RI President William B. Boyd, chair of the International H_2O Collaboration Steering Committee. Learn more at **www.rotary.org/go**.

More online

A Matching Grant project led by Finnish Rotarians is providing clean water to 12,000 Zambians. A Mexican Rotary club applies lessons learned from a local project to help 5,000 in Malawi. Read more at **www.rotary.org/go**.

Contributors to this issue

Anne E. Stein is a contributor to *The Rotarian* and a freelance writer based in Chicago.

Susie O. Ma is a Chicago-based freelance writer and past contributor to Global Outlook.

Diana Schoberg is associate editor of *The Rotarian*.

Global Outlook: A Rotary World Magazine Press Supplement is published quarterly by Rotary International. **Managing editor** Joseph Derr **Features editor** Barbara Nellis **Designer** Avery Mamon **Production coordinator** Candy Isaac **Photos** Rotary Images/Alyce Henson unless otherwise noted **Editorial advisory panel** Bob Aitken (*Rotary Down Under*), T.K. Balakrishnan (*Rotary News/Rotary Samachar*), Carlos Henrique de Carvalho Fróes (*Brasil Rotário*), Andrea Pernice (*Rotary*), and Matthias Schütt (*Rotary Magazin*)