

Seeking scarce water in Peru's desert capital

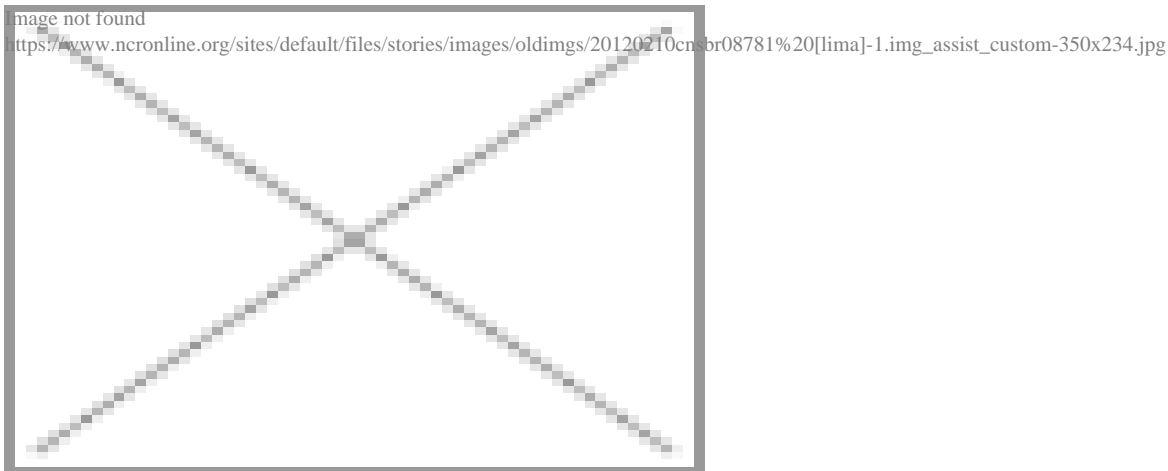
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Of all the parts of her tiny, wooden house on a parched hillside at the city's edge, Emilia Lazo Campos is proudest of the bathroom. The tiles gleam despite the dust. There's even a shower -- in case Lazo and her family ever get water service.

But the most important part, to her, is the dry latrine -- an "ecological bathroom," as she calls it -- which requires no water for flushing, has no odor, attracts no flies like her old latrine did, and will eventually produce compost that she can use for a small garden.

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Her neighbor, Paulino Huaman, agrees.



"I doubted at first," he says of his unusual bathroom. "But there's a big difference from a latrine. It's more hygienic."

Hygiene is complicated in Flor de Amancaes, the shantytown where Lazo and Huaman live, on the dry flank of the Andes Mountains at the very edge of Lima, Peru's sprawling capital. Beyond the reach of the public water system, they and their neighbors rely on tank trucks that rumble up the hill to fill trash-barrel-size containers with water.

Scooping the water into large buckets and trudging up the hill or a steep staircase is usually a task for women and children.

In poor neighborhoods in Lima, the second-largest desert city in the world, after Cairo, life revolves around water. Every drop for cooking, bathing, drinking and washing clothes must be hauled home.

But the water delivered by the tank trucks is expensive. In a month, Lazo and her neighbors may pay between

five and 10 times as much for water as residents of upper-class districts on the public water system. And there is no guarantee that the water delivered by tank trucks is safe to drink.

Now environmental experts from a Jesuit social services center are working with the residents of Flor de Amancaes and nearby neighborhoods to save and recycle water, to help reduce costs and make the best use of a scarce resource.

"Our goal is for people to have a better quality of life by developing their leadership skills," says Ofelia Montes, director of the center, which is formally called the Basic Labor Education Program, but is better known by its Spanish acronym, PEBAL.

On a sweltering Sunday afternoon, on the steep hill above Flor de Amancaes, a group of men from the neighborhood wrestle a huge piece of green nylon mesh onto a wire frame. The mesh is one of four that will eventually be installed. Although their purpose is not evident in the dry Lima summer, the scrubby, dead stalks of plants on the hillside -- and the scattered orange flowers clinging to life in the barren terrain -- hint at the change that will come with winter.

Beginning in July, fog will roll up the valley from the Pacific Ocean, barely visible in the distance, and blanket this hillside. The plants will sprout leaves, and the flower for which the neighborhood is named will bloom briefly. Mist condensing on the mesh nets will trickle into a pipe that will channel the water to a reservoir.

A small fog catcher measuring about eight square yards, installed as a test in late 2010, produced between one and two quarts of water per square yard per day during the foggy winter and spring.

Each of the new fog catchers is about five times the size of the small one and has a double mesh. Luis Huaman Tinco of PEBAL, who is overseeing the project, estimates that they will produce a combined average of 40 gallons of water a day between April and December. Two large reservoirs downhill will store excess water for the dry season.

Considering that the average family uses more than 25 gallons of water a day, the amount may seem small, but on this parched hillside every drop counts. Huaman says the water can be shared among the families, to reduce their costs, or used to irrigate a community garden.

Over the next hill, residents are experimenting with a community garden irrigated with recycled water from cooking or washing. Ten houses have outdoor sinks that drain into a gravel-filled pit where bacteria and reeds help filter out soap and other contaminants. The water collects in a large plastic tank connected to perforated hoses that irrigate squash plants and herbs.

If the project is successful on a small scale, it could be expanded in other neighborhoods, perhaps to grow vegetables or fruit trees, says Angela Dalguerra, a young environmental engineer from PEBAL who is working with the neighbors.

"The water is clean enough to irrigate green spaces in the community," she says.

PEBAL and local businesses have provided the materials for the composting latrines, fog catchers and filtering system, while the residents provide labor and agree to maintain them. Community commitment is crucial, says Huaman Tinco, who has seen similar projects fail because of lack of follow-through and upkeep.

Providing clean water is especially important in neighborhoods such as Flor de Amancaes, where many children and elderly people suffer from diarrheal illnesses.

So far, the composting toilets -- about 15 in all -- and the fog catchers and filtration system are small steps, but in a country where about one-fifth of city dwellers still lack in-house water hookups, every drop counts.

Behind the community building in Flor de Amancaes, where his neighbors are checking a fog-catcher net before hauling it uphill for installation, Luis Camarena Quintana, secretary of the neighborhood association, shows off the outdoor tap they have installed for the fog-catcher system.

"This is important," he says. "We're doing it for the children."

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