



ALTERNATIVE POWER SOURCES ([HTTP://NEWS.DISCOVERY.COM/TECH/ALTERNATIVE-POWER-SOURCES](http://news.discovery.com/tech/alternative-power-sources))

## Future Cities: Going Off the (Water) Grid

JUL 8, 2015 08:50 AM ET // BY ERIC NILER ([HTTP://NEWS.DISCOVERY.COM/ERIC-NILER.HTM](http://news.discovery.com/eric-niler.htm))

### RELATEDlinks

**Steam Machine Turns Sludge Into Drinking Water**  
[Http://news.discovery.com/tech/alternative-power-sources/steam-machine-turns-sludge-into-drinking-water-150114.htm](http://news.discovery.com/tech/alternative-power-sources/steam-machine-turns-sludge-into-drinking-water-150114.htm)

**California Opens Up The Floodgates For Desalination**  
[\[Http://news.discovery.com/earth/oceans/california-opens-up-the-floodgates-for-desalination-150508.htm\]](http://news.discovery.com/earth/oceans/california-opens-up-the-floodgates-for-desalination-150508.htm)

**Why Wait For Rain? Balloon Harvests Water From Clouds**  
[\[Http://news.discovery.com/tech/alternative-power-sources/why-wait-for-rain-balloon-harvests-water-from-clouds-140911.htm\]](http://news.discovery.com/tech/alternative-power-sources/why-wait-for-rain-balloon-harvests-water-from-clouds-140911.htm)



<http://news.discovery.com/videos/how-drinking-water-works-150401.htm>

**How Drugs Pollute Our Drinking Water**  
[\[Http://news.discovery.com/videos/how-drugs-pollute-our-drinking-water.htm\]](http://news.discovery.com/videos/how-drugs-pollute-our-drinking-water.htm)

We expect our drinking water to be germ free, but what about drug free? You probably haven't given it much thought ... but new research is showing our water is teeming with all kinds of drugs!

DNEWS VIDEO

Erwin Nolde sees a future where urban neighborhoods go off the grid, the sewer grid that is, and figure out how to recycle their own water, just like they recycle newspapers, bottles and cans.

The German wastewater engineer has already figured out how to reuse kitchen and laundry water -- so-called "greywater" -- for 250 people through an on-site treatment plant at a Berlin apartment block. The next step, he says, is decentralized sewer treatment.

**10 Ways to Create Water as the World Faces Drought**  
[\[http://news.discovery.com/tech/biotechnology/10-ways-to-create-water-as-world-fights-drought-150501.htm\]](http://news.discovery.com/tech/biotechnology/10-ways-to-create-water-as-world-fights-drought-150501.htm)

In the future, there is no need for a sewer," said Nolde, a former professor at the Technical University of Berlin who now runs his own engineering firm. "We can deal with water in a more decentralized way. We can save money. We can make high quality drinking water from rainwater, the rest of the water we can recycle several times."

The proof is in the courtyard of "Block 6," a seven-story public housing complex in Berlin's Kreuzberg neighborhood. Instead of a playground or cement walkways in the plaza, the open space has been converted into an "urban garden" with two functions: recycling rainwater from roofs into a greenhouse, and treating non-toxic greywater from apartments.

While household greywater treatment systems aren't new (nearly two million Californians use them to water their lawns), apartment-sized ones are rare.

Officials from the Germany Federal Ministry of Education and Research funded the Berlin-Kreuzberg pilot project in 2013. Inside the greenhouse, stormwater runoff circulates through two fish tanks and a hydroponic garden growing salad greens and strawberries for local residents. Everything gets used, including fish poop for fertilizer.

**'Hyperloop Warning' And Other Signs From The Future**  
[\[http://news.discovery.com/tech/gear-and-gadgets/hyperloop-warning-and-other-signs-from-the-future-140605.htm\]](http://news.discovery.com/tech/gear-and-gadgets/hyperloop-warning-and-other-signs-from-the-future-140605.htm)

"Buildings are not only fixed structures, but liquid structures," said Grit Burgow, project coordinator of the Berlin Roof Water-Farm and professor of urban design at TU Berlin.

While the pilot project is still on the ground, Burgow and her colleagues have identified several spots on Berlin to build an actual "roof" garden with at a 50 square-meter surface (about 540 square feet).

"We envision different types of greenhouses on tops of apartments and commercial buildings," she said.

### THEMUSTreads



<http://news.discovery.com>

### THEMINDblowers



<http://news.discovery.com>



Erwin Nolde shows greywater before and after treatment. His next project is treating sewage.  
DAAD/MARIUS SCHWARTZ

## RELATEDlinks

Burgow says there's a financial payoff, not just a feel-good environmental one.

**Steam Machine Turns Sludge Into Drinking Water**  
(<http://news.discovery.com/tech/alternative-power-sources/steam-machine-turns-sludge-into-drinking-water-150114.htm>)

The team has calculated that each building that uses such a system would cut 16 percent of the total domestic drinking water consumption and 23 percent less domestic wastewater to be treated in municipal wastewater treatment plants.

**10 Ways to Create Water as the World Faces Drought**  
(<http://news.discovery.com/tech/biotechnology/10-ways-to-create-water-as-world-fights-drought-150501.htm>)

**California Opens Up The Floodgates For Desalination**  
(<http://news.discovery.com/earth/oceans/california-opens-up-the-floodgates-for-desalination-150508.html>)

With the price of treated water, and the energy needed to pump it in, cities are looking to any way they can cut the amount of wasted water.

Along Berlin's gentrifying Spree River waterfront, for example, one company has built a series of fiberglass treatment tanks to store and settle stormwater runoff before its dumped into the river. That prevents sewage outflows during big storms.

**Why Wait For Rain? Balloon Harvests Water From Clouds**  
(<http://news.discovery.com/tech/alternative-power-sources/why-wait-for-rain-balloon-harvests-water-from-clouds-140911.html>)

Engineers here say treating dirty water in small systems -- like rooftops and riverbanks -- rather than big centralized water treatment facilities makes more sense as cities to continue to grow and energy prices remain uncertain.

While the vision of Berlin's roofs covered with green may be a few years away, Nolde doesn't seem to be waiting. He's spent the past decade trying to get the engineering and water flow just right on this project. Now, he says, things are finally falling into place.



(<http://news.discovery.com/videos/how-to-use-epo-1000-our-drinking-water.htm>)

**How Drugs Pollute Our Drinking Water**  
(<http://news.discovery.com/videos/how-drugs-pollute-our-drinking-water.htm>)

We expect our drinking water to be germ free, but what about drug free? You probably haven't given it much thought ... but new research is showing our water is teeming with all kinds of drugs!

DNEWS VIDEO

Inside a cramped wooden building next to the greenhouse, Nolde turns a spigot and fills a glass with cloudy "greywater" from the kitchens and laundries of 85 families. The water sloshes through eight big treatment tanks that use small black plastic beads to break down the bacteria before being discharged.

**'Hyperloop Warning' And Other Signs From The Future**  
(<http://news.discovery.com/tech/gear-and-gadgets/hyperloop-warning-and-other-signs-from-the-future-140605.htm>)

At the end of the line, he draws a second glass. It's clear. Not good enough to drink, but good enough to swim in, at least according to European health standards.

Nolde, whose intense nature and shock of white hair reminds you of Christopher Lloyd's "Doc" Brown character from "Back to the Future," isn't satisfied with just recycling greywater.

His next experiment is turning sewage into safe liquid fertilizer. Sure, there are tons of regulations that prevent it Germany and most other developed nations, but he doesn't seem fazed.

"We have good regulations for saving energy, but we have nearly nothing for saving water," Nolde said. "In the future, the next generation will only get food from the farmer if they bring them their urine."

(<http://news.discovery.com/human/videos/back-to-school-should-kids-still-be-packing-pbj-video-150904.htm>)

**DNews: Back To School: Should Kids Still Be Packing PB&J?**  
(<http://news.discovery.com/human/videos/back-to-school-should-kids-still-be-packing-pbj-video-150904.htm>)

## THEMUSTreads



## THEMINDblowers



(<http://news.discovery.com>)