



Water Recycling

Re-using and recycling water has huge potential to alleviate our water needs, especially in urban areas. Water used in households and businesses is typically treated and disposed of (e.g., pumped out to sea) after just one use. By re-using water, we can use it for multiple purposes before it is discarded. Water recycling involves filtration and re-use, instead of just disposing it after one use. Recycled water is also called 'reclaimed' water.

Greywater is water that has been used in bathtubs, washing machines, showers, and bathroom sinks. Greywater can be re-claimed and used in gardens and to flush toilets. It's estimated that 60 to 65 percent of the water used in homes can be re-used!¹ Water re-use can be as simple as saving water used for washing dishes for plants in the garden.

Irrigating lawns and parks is a common use for reclaimed water. Reclaimed water can also be used on farms. In Delaware, reclaimed water has been used for irrigating crops since the 1970's. A 2007 study estimated that over 20 million hectares—about the size of Nebraska—of farmland are irrigated with reclaimed water, and this is expected to increase with greater demands for food.²

Water that has been used to flush toilets (referred to as black water) can be recycled by filtering and sanitizing the water on site, using a method called reverse osmosis. The average American uses 24 gallons of water a day just for flushing toilets. If water recycling systems were implemented for every toilet, this could save 5.8 billion gallons of water per day!³

In Orange County, California, wastewater is filtered and then put back into underground aquifers used for drinking water. Orange County is one of the few places where residents drink recycled wastewater.⁴

Unfortunately, many people may reject drinking water that has been recycled from toilets. Recycling black water would require potentially costly changes to indoor plumbing for filtration. But when compared to desalination, re-using and recycling water is typically cheaper and less energy intensive.⁵

To learn about other solutions to global water issues, read more at [Fresh Solutions](#).

¹ [Lamb, Robert "How Gray Water Reclamation Works" How Stuff Works](#), accessed October 12, 2015

² [Hamilton, Andrew J. et al \(2007\)](#)

³ [Cho, Renee \(April, 2011\)](#)

⁴ [Judd, J.W. \(April 2015\)](#)

⁵ [Monks, Kieron \(May 1, 2014\)](#)





Weighing the Benefits and Drawbacks of Recycling Waste Water

For a complex problem, we need to evaluate how a solution fares across multiple dimensions:

Benefits

Drawbacks

**Environmental
Factors**

**Social & Cultural
Factors**

**Economic
Factors**





Supplementary Materials

Weighing the Benefits and Drawbacks of Recycling Waste Water

For a complex problem, we need to evaluate how a solution fares across multiple dimensions:	Benefits	Drawbacks
<p>Environmental Factors</p>	<ul style="list-style-type: none"> • Water recycling uses less energy than desalination.⁴ • Alleviates pressure on rivers, lakes, and streams that are essential to other animals and ecosystems. • Could reduce withdrawals from aquifers. 	<ul style="list-style-type: none"> • Re-using and recycling water is more energy intensive than reducing overall water use.
<p>Social & Cultural Factors</p>	<ul style="list-style-type: none"> • Re-using household water could make people more aware of their total water use. 	<ul style="list-style-type: none"> • People may reject recycled water, especially recycled black water. This is called the “yuck factor.”
<p>Economic Factors</p>	<ul style="list-style-type: none"> • Cheaper alternative than desalination. • Could reduce the cost of withdrawing water from aquifers. 	<ul style="list-style-type: none"> • Upfront costs of changing a building’s plumbing infrastructure. • More costly than reducing overall water use.

Additional Resources

ENSIA: [Reuse: The next wave of water conservation?](#)

Pacific Standard: [A Rundown on Recycled Wastewater](#)

How Stuff Works: [How Gray Water Reclamation Works](#)

Pew Charitable Trusts: [States, Cities Get Creative About Recycling Water](#)

