

Tackling Water Use on the Harvard Business School Campus

The efforts to understand and reduce water usage on the Harvard Business School campus range from encouraging shorter showers in Shad Fitness Center to low-flow infrastructure planning in new buildings. All activities stem from HBS's commitment to sustainability, which is part of the University-wide Sustainability Plan championed by President Faust.

The Sustainability Plan

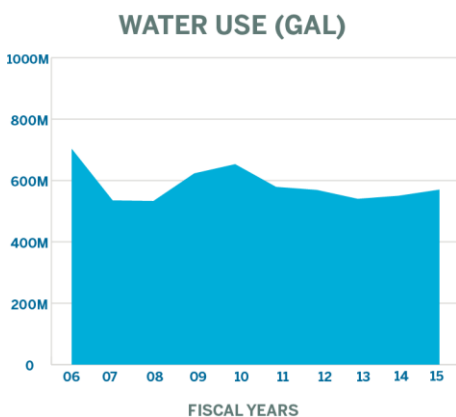
The [Harvard Sustainability Plan](#) is a University-wide effort to focus attention and resources on creating and maintaining a healthy, sustainable campus community. It covers Emissions and Energy, Campus Operations, Nature and Ecosystems, Health and Well-Being, and Culture and Learning.

Sustainable Campus Operations goals are focused on conserving resources, reducing pollution, and increasing personal well-being. Within Campus Operations, Building Operations has two specific goals: 50% waste reduction and 30% [water](#) usage reduction by capita by 2020, both compared to their 2006 baseline numbers. The usage types include potable, irrigation, and process water.

HBS water use

The Business School has committed to meeting all targets set out in the Sustainability Plan, and has dedicated staff and student time to finding and implementing means to achieve the target reductions. HBS has already exceeded the 50% waste reduction goal with a reduction of 57% as of FY15, and has an aspirational zero-waste goal by 2020.

Water has been more of a challenge, with the current reduction at 4% (FY15). On a University-wide level, shown in the chart below, water use is down 19% or 133,000,000 gallons—enough to fill an Olympic sized pool 178 times.



The 4% reduction on HBS' campus has been achieved through installation of low flow faucets, toilets, and urinals. While these appliances are an important part of sustainable operations on campus, their reduction benefits are limited to a few percent of total usage. The majority of water volume is used in irrigation and heating and cooling processes.

- Installing low-flow faucet aerators and super water efficient toilets, urinals and shower heads saved 3 million gallons/year (2015).
- Significant campus water conservation measures implemented pre-2006, including an irrigation system, led to an estimated 15% savings (2003).

Irrigation improvements and water recycling ideas

Irrigation system improvements and the transition to a water recycling infrastructure represent two key opportunities to reduce campus water consumption.

Irrigation

A large percentage of HBS' water footprint goes toward watering the campus lawns and greenery. Plans are in place to make improvements to the existing irrigation system on campus this summer to help shrink this footprint. This will include relocating the system's weather station and rain sensors. We would also recommend setting irrigation water targets based on grass type and the existing system's weather station data.

Water recycling

A more sophisticated option for campus water reduction is also under development. Through the use of proven water treatment technologies it is possible to transform the wastewater generated on campus annually into a useful resource. Recycled (a.k.a. reclaimed) water is wastewater (i.e., water used in the bathroom and showers) that has gone through a series of treatment processes to remove harmful contaminants and render it safe for use in non-potable applications, such as irrigation and providing makeup water for our campus's district heating and cooling facility.

Eyeing this opportunity on campus, one particular vendor under consideration would install a water reclamation system that relies on the process of wastewater percolating through plant roots and soil to produce water good enough to water plants and keep us cool in the classroom during the hotter months. These techniques are already being employed in universities across the U.S. including

Emory University and Georgia Tech, in addition to hundreds of communities in states like California, Arizona, and Florida and other countries like Singapore, Australia, France and Spain. Purple signs like the one pictured here may be a common sight on the HBS campus in the not too distant future.



Water education at HBS

In the 2015-2016 academic year, the [Student Sustainability Associate Program](#) worked to educate MBA students about water through a water taste test campaign and a panel of experts discussing how water will affect MBA careers.

Taste Test overview and statistics

On World Water Day, March 22, HBS MBA students were challenged with correctly identifying SmartWater, Dasani, and tap water in a blind taste test. Nearly 200 students took the challenge, with the winning section receiving points for the SSA Green Cup. Students received one point for showing up and one point for each correct response. The educational goal was to increase awareness of the variances of taste, or lack thereof of products with very different price points.

HOST YOUR OWN WATER TASTE TEST CHALLENGE



<https://green.harvard.edu/tools-resources/how/host-water-taste-test-challenge>

In an effort to raise awareness about bottled water consumption and water scarcity issues, try hosting a blind taste test of various waters to demonstrate how typical perceptions of bottled water v. tap might not always hold true.

- 1. Set up a table in an area with heavy foot traffic. Have three pre-assembled and numbered water jugs, 1.) local tap water 2.) grocery store brand bottled water and 3.) high end “designer” bottled water, on your table along with facts and local water information. Be sure to serve all of the water at the same temperature.*
- 2. Strike up a conversation. Introduce yourself. “Do you drink bottled water? Do you have a favorite brand? Do you think you can tell the difference between tap and bottled water?”*
- 3. Provide a Dixie cup and have participants test all three waters. On a sheet with numbers that correspond with the jugs, have participants fill in their guesses. Check their answers. If they get it right, switch the numbers and have them try it again to see if they were just lucky or could actually taste the difference.*
- 4. Track your participants’ responses. This activity is great to pair with a raffle—taking the challenge is an entry into the raffle—or with a movie screening of Tapped or Flow. Have participants take the challenge, screen the film and check answers, at the end reveal the waters and award reusable water bottles to participants.*
- 5. Share your results—post the number of right and wrong guesses along with some water facts such as source information to continue to encourage change beyond event.*

Who to contact, partner with, etc.:

If possible, partner and/or co-host with your local city water department. They can provide your participants with useful information about their tap water.

Links for more information or other resources:

[CAMBRIDGE WATER DEPARTMENT](#)

[WATER.ORG](#)

The Results

So how did the MBAs do? The average was 1.16 correct answers out of 3, only slightly better than putting down answers randomly, which would have scored an average of 1 out of 3. There was lots of agreement that the three waters do have different tastes, but there was lots of difficulty deciding which taste was which product. Safe to say many will think harder next time they are faced with paying for bottled water when free tap water is also an option.

Panel takeaways (Impacts of water on MBA Careers)

In addition to the Water Taste Test Challenge students and interested members of the HBS, Harvard Kennedy School, and MIT communities were invited to engage in an open dialogue about the challenges and opportunities of a probable future wherein water is a scarce resource. The panel was composed of three thought leaders. The discussion addressed diverse water related issues on topics like global macroeconomic and policy trends to for-profit social entrepreneurship in Africa to private equity investments in distributed water infrastructure in developed economies. Read the [HBS Harbus article](#), covering the panel.

Water in everyday life

Among the more revealing statistics surrounding water is that an estimated 1.2 billion people currently live in regions with physical water scarcity, meaning that water is simply not abundant enough to meet the demands of people, industry, and environment. Climate change and additional population and urbanization pressures are anticipated to push this number to approximately 2.5 billion people by 2025.

Careers affected by water

There is certainly a lot of money in water. The global water market is estimated at \$700 billion and is growing at a compound annual growth rate (CAGR) between 6% and 7%. Currently, the required global investment in water infrastructure is estimated at \$11.3 trillion dollars with \$1 trillion

HOW WILL WATER IMPACT YOUR CAREER?

WORLD WATER DAY PANEL

March 22 **Aldrich 110** **3:30-5pm**

KATE CLOPEK
Executive Director of Saha Global, an NGO that provides access to clean water and electricity to rural communities in West Africa.

REESE TISDALE
President of Bluefield Research, an insight firm focused on strategic analysis of water markets.

EARL JONES
Partner at Liberation Capital, with an investment strategy focused on clean water, and Chairman of NEWIN, a non-profit committed to helping solve global water resource challenges.

JOHN MACOMBER
(Moderator)
HBS Senior Lecturer in the Finance unit, engaged in the Business and Environment Initiative.

Co-sponsors:
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attributable to the U.S. alone. As we have learned in the course Business, Government, and the International Economy, public and private sector investments in infrastructure are critical for providing the means to produce and transport physical goods, which in turn allow economies to grow.

Think your life spent working in the service sector is immune? The shoes you wear, the food you consume, and the energy you use to light your office and home will all be produced with a generous portion of water.

Interested in learning more?

[DOWNLOAD THE EDUCATIONAL PRESENTATION USED IN EACH MBA FIRST-YEAR SECTION](#)

Careers in Water

Technology and the internet of things is revolutionizing the water industry. The emerging smart water value chain is allowing hardware, communications and controls, and software and analytics to drive performance and efficiency improvements at an incredible pace. Yet, water is often overlooked as a key area for technology development and innovation. Those who understand the needs of the industry can serve up major industry disruptions.

Project finance and private equity are also finding new fertile grounds as private utility investment in the United States and United Kingdom and public private partnership models in majority of the BRINCS economies (excepting Brazil and Russia) become the dominant methods of financing water related infrastructure investments ([source](#)).

Lastly, it is estimated that two billion people currently live without access to clean drinking water and one child dies every 90 seconds due to poor sanitation ([source](#)). There is plenty of room for social impact and for-profit entrepreneurship models to serve communities throughout the globe. HBS trains its students to make a difference in the world. There is plenty of difference to be made in water.