

Solving the Plastic Problem, One Cup and Bottle at a Time

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How information, incentives and inspiration can make a difference

We've all been there: you're in a pinch and you're on the go, but you're hungry, thirsty, or both. What usually comes to your rescue? Plastic! Whether it's in the form of drink bottles or takeaway coffee cups, plastic houses our favorite drinks. Yet, we pay too little attention to it: how it's made before it reaches us or where it goes after we throw it away.

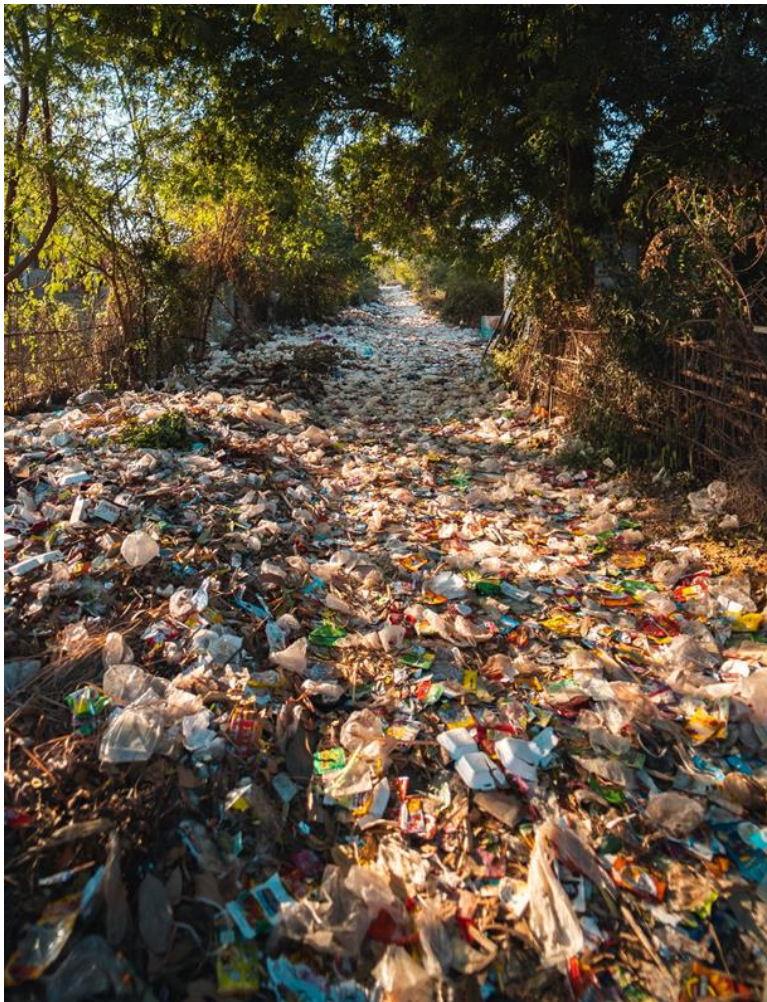
But when bottled and takeaway drinks becomes a frequent habit, the waste piles up. In our use and-throw culture, we throw 2.5 million plastic bottles away every hour^[1], each of which take an average of 450 years^[2] to decompose. Every 1-liter bottle takes 250 mL of oil to create.^[3] You'd think that, at least for the bottles, we can recycle the plastic, but we're still not very good at that...only 9% of plastics are recycled globally,^[4] despite many more being recyclable. Reduction remains the best option, especially when it's relatively easy and can keep sustainability "top of mind."

At [Harvard Business School](#) (HBS), we sell thousands of plastic bottles and to-go dishes every week (often even when we are indeed dining "to-stay" in the [Spangler Center](#)). HBS uses compostable materials for the majority of takeaway, which is certainly better for the environment than plastic, but worse than using reusables in its lifecycle environmental cost. As it's too easy to forget, even compostable cups require a large amount of material and energy to produce -- a disproportionate waste for the twenty minutes that they are used.

Plastic reduction thus intrinsically links to the global climate change crisis we face, and the role business leaders play in addressing it. After all, nearly a third of all U.S. greenhouse gas emissions stem from how we make, consume, and dispose of things. It also aligns with Harvard's own goals: the [Harvard Sustainability Plan](#) aims to reduce waste per capita 50% by 2020 from a 2006 baseline, with the aspirational goal of becoming a zero-waste campus.

With this in mind, we sought to understand how we could reduce our waste footprint without sacrificing the convenient options we enjoy. We split this into two parts – Bottles and To-Go Ware.

Bottle behavior



We began by aligning our project with [Restaurant Associates'](#) (RA), the lovely staff who run on-campus food operations. After hearing their thoughts, we decided the first step was to understand how students felt about plastic beverages and benchmark best practices with other Harvard schools and organizations.

We put together a survey, which was filled out by 270 [Required Curriculum](#) (RC) students and revealed several insights. We were pleased to find that students were overwhelmingly supportive about stopping or reducing bottled beverage offerings: 80% of respondents felt neutral to very positive about the prospect, and over 90% already used reusable water bottles. We then wondered why, despite such interest, many students were not using existing sustainable

options like the Grille's Freestyle machines, which allowed you to dispense drinks into reusable/polycarbonate cups. We found that there was low awareness about these machines, and that students sought a variety of options in their drink of choice that were not offered through fountain dispensers. Looking ahead, we recommend that HBS increase awareness of these machines and diversify the drinks that are available through them: our survey revealed a particular enthusiasm for sparkling water, which could be offered as a way to increase popularity and early adoption! We also recommend reducing the "real estate" currently devoted to plastic options and swapping free water bottles at events for pitchers/cans, nudging those who might be choosing bottles simply on a whim.

"We use way too much plastic already, but now we have the opportunity to be a leader in sustainability," "It would be better for the environment if we stopped offering plastic bottles," and "This is a good idea that will just take some adjusting."

We also recognize that a minority of students remain skeptical about reducing plastic bottles, but hope that many of their concerns could be addressed through the use of more sustainable materials. We also continue to work out operational, sanitation and price concerns regarding queues, post-pandemic hygiene and affordability. Despite these challenges, we believe we can make a concrete difference to how students view and use plastic bottles on campus, leading them to more sustainable dispensers and conscious consumption. We also hope that the sales and waste data we collect can inform the creation of a “how-to” primer for other plastic-free organizations.

The cup habit



Our second objective was to reduce the number of to-go cups used on campus. HBS students love coffee and tea, so this had the potential for huge environmental impact – without sacrificing the much needed caffeine intake that fuels our day. Although HBS already offered a “large coffee for the price of small” promotion when bringing one’s mug, we felt the traction this has gained was below potential. We considered several options – a discount for bringing your own mug, a surcharge for to-go ware, a loyalty card – that could more effectively incentivize behavioral change. Based on our survey, research and conversations with RA, we found great support for discounting the price of hot drinks bought in reusable mugs. To calculate how high such a discount could be, we ran a unit economics analysis (armed with learnings from first-year strategy and operations courses) to

estimate how expensive it was to produce, buy and compost the cup – externalities to the environment included. We found these costs to be \$0.50-0.75 per cup, a discount HBS could offer for those who brought their own mugs without sacrificing revenues (and even increasing them as usage grew!).

We then studied various barriers that prevented students from carrying their own mug. The biggest one, our survey revealed, was lack of awareness. Many students wanted to change their behavior, but were simply not aware that discounts existed or how big the scale of the plastics problem was.

We therefore made advertisement and awareness a central pillar of our proposal, offering ideas for using infographics, barista-training and on-campus “influencers” (looking at you, [Dean Nohria!](#)) to spread the message. We also found non-monetary blockers to behavioral change -- such as the mess of washing the mug or not owning a leak-proof one at all. To address these, we suggested “quick tips” on reusable cup use and recommended replicating the success of company- and section-branded cups by offering all incoming RCs mugs that doubled as college stash.

With these multi-pronged approaches and the support of HBS staff and faculty, we hope we can create stickiness to the habit and crucially, make people think twice before they consume plastic bottles and takeaway cups. To amplify the impact, we aim to monitor and share usage and revenue data following our nudge programs and share them with other schools to inform change. One plastic bottle and coffee cup at a time, we hope these lifestyle changes both create impact and push future business leaders to be concerned about the environment.

[\[1\] Recycle Across America](#)

[\[2\] World Wildlife Fund; World Economic Forum](#)

[\[3\] The Pacific Institute](#)

[\[4\] National Geographic](#)