



# victory briefs

Resolved: The United States federal government should ban  
single-use plastics.

February 2024 Public Forum Brief\*

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# 1 Topic Analysis by Lawrence Zhou

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## 1.1 Introduction

It is undeniable that single-use plastics are a problem. The [Great Pacific Garbage Patch](#) is sad to see (and so permanent that it now has its own ecosystem<sup>1</sup>). Recycling is a broken system,<sup>2</sup> especially after [China stopped accepting American recycling](#). And it's obvious that we definitely need to drastically curb our use of single-use plastics if we want to protect our oceans, land, and climate.<sup>3</sup>

You have probably thought about your own excessive plastic use. How many Walmart/Target/Kroger/Albertsons/ALDI/Publix/(insert your preferred grocery store here) bags do you have stuffed under your kitchen sink? Do you *really* need to get a new plastic cup every time you get Starbucks? Probably not!

Maybe you've become more environmentally conscious as a result of thinking about your relationship with single-use plastics. Perhaps you now carry a Hydro Flask/Klean

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<sup>1</sup>[The Great Pacific Garbage Patch is now so huge and permanent that a coastal ecosystem is thriving on it | CNN](#)

<sup>2</sup>[Recycling in the US is broken. How do we fix it? \(phys.org\)](#)

<sup>3</sup>[How Single Use Plastics Hurt Our Oceans and Warm Our Planet \(pbs.org\)](#)

Kanteen/Stanley water bottle with you to reduce your reliance on disposable cups, a reusable grocery bag to avoid collecting plastic bags, and a metal straw to signal that [you love turtles](#).

This topic now asks us if this urge to become more environmentally conscious should manifest itself as a blanket ban by the United States federal government on single-use plastics.

While perhaps a somewhat tired topic, it is one that requires debaters to think both about their own individual consumption habits (and how they would be affected by such a ban) as well as the effects of a far-reaching government policy.

Before reading on, I would strongly recommend watching the Last Week Tonight segment on plastics as it gives a great background to the issue in a way that I think reading essays often fails to.<sup>4</sup>

## 1.2 Background

There have generally been two proposed solutions to reducing single-use plastics: one at the front end, which is to try to limit, reduce, or eliminate the consumption of single-use plastics; the other at the back end, which is to try to reuse or recycle plastic. Call these the **reduce**, and **reuse** and **recycle** solutions.

Reuse and recycle has been long favored by businesses. The issue is that recycling single-use plastics has proven notoriously difficult. Plastic is expensive to collect and sort because of all the different kinds of plastics, degrades after one or two uses, and often fails to meet the threshold to be considered “recyclable” in the first place.<sup>5</sup> As a result, only about 5% of plastics are recycled each year, leading some to call plastic recycling a “failed concept.”<sup>6</sup>

When you throw in a lot of other issues, such as “wishcycling” (sometimes referred as aspirational recycling,<sup>7</sup> or attempting to recycle items that one believes might or should be recyclable, which makes it harder to recycle items that actually can be recycled<sup>8</sup>),

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<sup>4</sup>[Plastics: Last Week Tonight with John Oliver \(HBO\) \(youtube.com\)](#)

<sup>5</sup>[Greenpeace report finds most plastic goes to landfills as production ramps up : NPR](#)

<sup>6</sup>[Plastic recycling a “failed concept,” study says, with only 5% recycled in U.S. last year as production rises - CBS News](#)

<sup>7</sup>[Are You an Aspirational Recycler? Here’s 9 Things You Actually Can’t Recycle | Discover Magazine](#)

<sup>8</sup>[One Very Bad Habit Is Fueling the Global Recycling Meltdown – Mother Jones](#)

## 1 Topic Analysis by Lawrence Zhou

single-stream recycling raising the costs of sorting recycling,<sup>9</sup> and a lack of investment in recycling facilities,<sup>10</sup> it's not difficult to see why recycling often fails.

Simply put, plastic recycling, at least in its current state, is unlikely to be successful.<sup>11</sup> The costs to recycle plastic are simply much greater than producing new plastics. This is why dozens of cities in the US have ceased recycling efforts.<sup>12</sup>

Consequently, more attention has been given to front end strategies that attempt to reduce the production and consumption of single-use plastics.

There have been some attempts to ban or regulate single-use plastics in the US for quite a while, primarily in more liberal, blue states. For example, New York has banned distributing single-use plastic bags since 2020,<sup>13</sup> while California has banned plastic bags since 2016.<sup>14</sup> A total of eight states have banned single-use plastic bags. Other localities have banned other forms of single-use plastics, most notably banning plastic straws.<sup>15</sup>

The federal government has also taken some steps to curb plastic pollution. For example, issued on June 8, 2022, [Secretary's Order 3407](#) aims to reduce the use of single-use plastics. It defines single-use plastic products as "plastic items intended to be disposed of immediately after use, including plastic and polystyrene food and beverage containers, bottles, straws, cups, cutlery, and disposable plastic bags."

SO 3407 outlined some key steps that the Department of the Interior should undertake to reduce single-use plastics on Department-managed lands such as providing water bottle filling stations, investing in recycling at National Parks and government buildings, banning certain single-use plastics on Department-managed lands, cleaning up marine debris, and increasing public education campaigns.

In terms of global progress towards reducing plastics consumption, there has been a growing movement internationally to recognize the crisis of plastics pollution and to mitigate its harmful effects. More recently, in March 2022, the United Nations Environment Assembly approved a treaty on global plastic pollution.<sup>16</sup> The aim is to eventually complete a legally binding agreement by the end of this year.<sup>17</sup>

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<sup>9</sup>[With 'Single-Stream' Recycling, Convenience Comes At A Cost : NPR](#)

<sup>10</sup>[Three Reasons Recycling Is Failing \(forbes.com\)](#)

<sup>11</sup>[Climate change: I work in the environmental movement. I don't care if you recycle. - Vox](#)

<sup>12</sup>[As Costs Skyrocket, More U.S. Cities Stop Recycling - The New York Times \(nytimes.com\)](#)

<sup>13</sup>[Get Ready, New York: The Plastic Bag Ban Is Starting - The New York Times \(nytimes.com\)](#)

<sup>14</sup>[New York plastic bag ban? Here's what happened after California's ban - The San Diego Union-Tribune \(sandiegouniontribune.com\)](#)

<sup>15</sup>[Where Are Straws Banned? Cities, Restaurants, Hotels, and More \(greenmatters.com\)](#)

<sup>16</sup>[UN agrees to create world's first-ever plastics pollution treaty in a blow to big oil | CNN](#)

<sup>17</sup>[Nations sign up to end global scourge of plastic pollution | UN News](#)



Despite this, estimates find that the world is producing more single-use plastic waste than ever before, with recycling unable to keep pace and the economic incentives to produce more new plastic driving demand like never before.<sup>18</sup> This sets the stage for understanding the terrain of contemporary debates over banning single-use plastics.

Knowing about some of these previous efforts to reduce the harmful effects of single-use plastics will help inform you of what the effects of a federal ban might look like.

For example, many teams will likely reference California's plastic bag ban as either demonstrating the viability or futility of bans. There are some studies that suggest that California's plastic bag ban wasn't perfect, but ultimately succeeded in reducing plastic bag consumption by over 70%.<sup>19</sup> However, many critics believe that California's bag ban has largely failed due in part to massive loopholes such as letting farmers market stands off the hook,<sup>20</sup> although some argue that the failure of the ban is just a reason to argue for a more comprehensive ban on single-use plastic bags.<sup>21</sup>

There is a great resource that is a bit dated but does a solid job of summarizing a lot of the older literature related to plastic bans that I would also recommend reading through here: [The good and the bad of plastic bag bans: Research review \(journalistsresource.org\)](https://journalistsresource.org)

### 1.3 Pro Arguments

The Pro should have a pretty easy time winning the impact debate, evidenced by just how many globally favor a single-use plastics ban.<sup>22</sup> Single-use plastics are clearly not good for the environment and their overuse clearly has lots of harmful downstream effects, such as water pollution, human health, and even global warming.

The tougher part will be winning that such impacts warrant a complete and total ban. If I were the Con on this topic, I would want to argue for three things. First, that there are some single-use plastics that are good. Second, that the shift to other products would be arguably worse. And third, that bans are an inferior approach to other solutions.

As the Pro, I would want to design my constructive to beat these arguments. In particular, I would want to develop two sets of arguments. First, that single-use plastics are

<sup>18</sup>[The world is creating more single-use plastic waste than ever, report finds | CNN Business](#)

<sup>19</sup>[The Truth about Plastic Bag Bans - Conservation Law Foundation \(clf.org\)](#)

<sup>20</sup>[California's plastic bag ban is failing. Here's why - Los Angeles Times \(latimes.com\)](#)

<sup>21</sup>[Editorial: Does California need another plastic bag ban? It seems so - Los Angeles Times \(latimes.com\)](#)

<sup>22</sup>[75% of people want single-use plastics banned, global survey finds | Reuters](#)

really bad. Second, that a ban is key.

### 1.3.1 Impacts

The former shouldn't be all too difficult. There are tons of articles describing how microplastics harm human health<sup>23</sup> and contribute to health care costs,<sup>24</sup> how plastic production squanders limited natural resources,<sup>25</sup> how plastic incineration contributes to air pollution,<sup>26</sup> and how plastics contribute to climate change (probably about 3% of global emissions<sup>27</sup>).<sup>28,29</sup> Each of these impacts probably individually outweighs a lot of the arguments in favor of single-use plastics like convenience or durability, and it shouldn't be too difficult to win that the confluence of all these impacts together certainly trumps many of the impacts that the Con is likely to read.

One piece of advice is to develop at least one argument for why the *production* of new plastics is harmful. This is because alternatives that don't at least tackle the concerns related to the production of plastic, e.g., that it is an emissions intensive and polluting practice, will always fall short relative to the strength of a complete ban.

The reason you want to argue that the impacts of single-use plastics border on cataclysmic is because the larger the impact, the greater the importance of a relative deficit between any alternative and a complete ban becomes. If it turns out, for example, that the environmental impact of single-use plastics is overstated and there are plausible remedies to most of the concerns that single-use plastics, then the fact that a complete ban would be slightly preferable in terms of curbing the use of single-use plastics would be less salient. Consequently, it makes sense for the Pro to really develop a few robust internal links to a large and well-developed environment impact that can really make the case for a complete and total ban seem more reasonable in comparison.

That being said, winning a total ban is key is still the more difficult task. It both requires you to argue that the backend solutions like reusing and recycling fail, as well as argue that a total ban is superior to approaches that simply attempt to limit the amount of plastic produced.

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<sup>23</sup>[Impact of Microplastics and Nanoplastics on Human Health - PMC \(nih.gov\)](#)

<sup>24</sup>[Plastic chemicals linked to \\$249 billion in US health care costs in just one year, study finds | CNN](#)

<sup>25</sup>[Single-use plastics: Production, usage, disposal, and adverse impacts - ScienceDirect](#)

<sup>26</sup>[This is how plastic pollution causes climate change | World Economic Forum \(weforum.org\)](#)

<sup>27</sup>[How much of global greenhouse gas emissions come from plastics? - Our World in Data](#)

<sup>28</sup>[Why is plastic bad for the environment | CNN](#)

<sup>29</sup>[How Plastic Pollution Causes Climate Change \(bloomberg.com\)](#)

### 1.3.2 Recycling Fails

Arguing that backend solutions fail is easy if you're arguing against the status quo. If you use some of the sources mentioned in the background section of this essay, you'll find a plethora of articles that suggest recycling is doomed to fail for a number of cultural, structural, and economic reasons.<sup>30</sup> Even assuming an optimistic recycling rate, you want to argue that recycling simply isn't equipped to tackle our ever growing plastics problem.<sup>31</sup> As this paragraph from an article in *The Atlantic* notes:

For decades, the industry has created the illusion that its problems are well under control, all while intensifying production and promotion. More plastics have been made over the past two decades than during the second half of the 20th century. Today, recycling is a flailing, failing system—and yet it is still touted as plastics' panacea. No end-of-the-pipe fix can manage mass plastics' volume, complex toxicity, or legacy of pollution, and the industry's long-standing infractions against human health and rights.<sup>32</sup>

I'd go read that paragraph, because it contains hyperlinks to lots of great sources that could be useful to mine for specific evidence that critiques recycling as a plausible solution.

Arguments for why recycling fails should be built into the case. You won't really find many alternative approaches to dealing with the plastics problem that don't at least partially rely on recycling as part of the solution, so the more that the Pro can win that recycling fails from the outset, the more it magnifies the differential between the Pro and Con offense.

### 1.3.3 Bans Key

There are also other reasons for why a complete ban is key. One is that it helps solve the problem of loopholes emerging in more targeted solutions. It also directly targets production. And it introduces a culture shift amongst consumers that makes a ban a more durable solution than alternatives.<sup>33</sup> The production point is especially important given

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<sup>30</sup>[More Recycling Won't Solve Plastic Pollution - Scientific American Blog Network](#)

<sup>31</sup>[Why Recycling Isn't the Answer to the Plastic Pollution Problem | Scientific American](#)

<sup>32</sup>[How Bad Are Plastics for the Environment, Really? - The Atlantic](#)

<sup>33</sup>[Single-use plastic bans: research shows three ways to make them effective \(theconversation.com\)](#)

that just a few firms control the vast majority of plastics production.<sup>34</sup> Targeting production by banning single-use plastics is something that other solutions cannot capture quite as well.<sup>35</sup>

In other words, you want to argue that the Con cannot have their cake and eat it too. Trying to keep the so-called “good plastics” just means that there will inevitably be lots of bad plastics too.

Of course, you could go through and try to find responses to every single possible argument for how plastics could be good (e.g., maybe you want to argue that the use of plastics in the healthcare sector is actually bad<sup>36</sup>), but I think those responses may overstretch the Pro in terms of their preparation and are probably less strategically useful than winning that exceptions fail.

## 1.4 Con Arguments

Part of the appeal of the Con position is that there is a simple reason why plastic has become ubiquitous—it works. It is sanitary, effective at preserving food, great at protecting things, and lighter than other options.<sup>37</sup> Each of these could be jumping off points for developing a unique source offense, for example using plastic to solve food waste<sup>38</sup> (although that’s questionable<sup>39</sup>), or defending the value of plastic water bottles during disaster relief operations.<sup>40</sup>

It’s also cheap and there’s good reason to think that banning plastics would increase costs for consumers across the board, as this article from *The Hill* argues:

A ban on single-use plastics through the General Services Administration would undermine the immense progress that has been made in the field of plastics over the past decades. The divestment from plastic would prevent manufacturers from developing new products and increase prices for everyday consumer goods. Most of all, it would be counterproductive to the goals that the environmental activists claim they support. In fact, it’s another one

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<sup>34</sup>[Here Is Who’s Behind the Global Surge in Single-Use Plastic - The New York Times \(nytimes.com\)](#)

<sup>35</sup>[The global plastics treaty can fight climate change — if it reduces plastic production | Grist](#)

<sup>36</sup>[Sounding the alarm about disposable plastic in the health care industry | YaleNews](#)

<sup>37</sup>[Banning plastic packaging: why can’t we just do it? | Recycle Now](#)

<sup>38</sup>[Do single-use plastic bans work? - BBC Future](#)

<sup>39</sup>[Plastic packaging increases fresh food waste, study finds | Food waste | The Guardian](#)

<sup>40</sup>[Multiple uses for empty plastic bottles during disaster relief and beyond | ScienceDaily](#)

of those examples where supporters of single-use plastic can say to environmentalists: I'm on your side, but you're not.<sup>41</sup>

I would start my Con research with [this article](#) which lays out perhaps the most comprehensive case against a single-use plastics ban.<sup>42</sup> (Granted, it is a contentious article that has spawned many responses, such as this one,<sup>43</sup> which the Pro can find in the footnotes section of the article.) The article attempts to lay out responses against each of the major reasons offered by people in favor of a ban. I won't summarize the entire article here, but it's worth a read for sure. The main thing that the article stresses is that even most advocates of a single-use plastics ban admit it alone won't do much.<sup>44</sup> Starting with this idea in mind should help as the Con thinks about how to make their offense outweigh the Pro's offense.

### 1.4.1 Alternatives Fail

A great place for the Con to argue is that even if plastic is evil, that other alternatives are even more evil. For example, it's arguable that single-use plastic bag bans have resulted in consumers shifting to even less environmentally friendly packaging options. This article from *The Conversation* argues:

Evidence from previous plastic bag restrictions shows this does reduce their use, but sometimes leads to more environmental harm if customers switch to other materials with larger resource footprints.

Paper bags can require 400% more energy to make, not to mention the harvesting of trees and use of noxious chemicals in production. Growing cotton "requires land, huge quantities of water, chemical fertilisers and pesticides".

Plastic bags use fossil fuels, a nonrenewable resource, and are permanent, entering the waste stream forever. They may cause more pollution on land and in waterways, but have less effect on climate change and land use than other types of bags.

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<sup>41</sup>[Would a single-use plastic ban be counterproductive? | The Hill](#)

<sup>42</sup>[Five Misperceptions Surrounding the Environmental Impacts of Single-Use Plastic | Environmental Science & Technology \(acs.org\)](#)

<sup>43</sup>[Comment on "Five Misperceptions Surrounding the Environmental Impacts of Single-Use Plastic" | Environmental Science & Technology \(acs.org\)](#)

<sup>44</sup>[Banning Straws and Bags Won't Solve our Plastic Problem | World Resources Institute \(wri.org\)](#)

Biodegradable bags, perhaps surprisingly, could be “the worst option” in terms of their impact on climate, harm to soil, water pollution and toxic emissions.<sup>45</sup>

Another article from the *Competitive Enterprise Institute* makes this point in the context of other single-use plastics:

Plastics have important environmental benefits. In many ways, plastics are better for the environment than other alternatives because they are more efficient and use less energy during production and transport. Plastic consumer goods like straws, foam cups, and utensils are less energy intensive to produce than alternatives like paper or aluminum. Production of these items takes more resources, creates more waste, and results in more pollution than the production of disposable plastic items. Reusable items like foam cups, straws, and bags require more than 100 uses—and in more than 1,000 in the case of foam cups—justify the energy required to produce them.<sup>46</sup>

#### 1.4.2 Alternatives

As I’ve argued in previous essays,<sup>47</sup> the counterplan is a legitimate argument and its ban in Public Forum debate makes no sense. However, even without using the language of counterplan, the Con can easily argue that there are superior approaches to dealing with plastics beyond a categorical ban.

The most obvious solution other than a ban is to recycle more plastic, as this article from the World Economic Forum argues:

Many environmental activists are calling for a ban on plastics. However, the very properties that make plastic so dangerous - its durability and long lifespan - also make it a great asset. A material that will not die or be destroyed for five hundred years is valuable. We can reuse it almost endlessly. The problem is not plastic itself. The problem is using it irresponsibly.<sup>48</sup>

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<sup>45</sup>[Three reasons why banning plastic bags is problematic \(theconversation.com\)](https://theconversation.com/three-reasons-why-banning-plastic-bags-is-problematic-2017-07)

<sup>46</sup>[Five Reasons Banning Plastics May Harm the Environment and Consumers - Competitive Enterprise Institute \(cei.org\)](https://www.cei.org/insights/five-reasons-banning-plastics-may-harm-the-environment-and-consumers)

<sup>47</sup>[Back to Basics: The Counterplan in Traditional LD by Lawrence Zhou — The Victory Briefs Institute \(vbidebate.com\)](https://www.vbidebate.com/back-to-basics-the-counterplan-in-traditional-ld-by-lawrence-zhou/)

<sup>48</sup>[We don’t need to ban plastic. We just need to start using it properly | World Economic Forum \(weforum.org\)](https://www.weforum.org/agenda/2017/07/we-dont-need-to-ban-plastic-we-just-need-to-start-using-it-properly/)

While the recycling debate favors the Pro in the status quo, there are some potential changes coming to the way that we do recycling that the Con could leverage in arguing that recycling could be effective in the future. For example, one thing discussed by some is pyrolysis which could be part of a solution that cleans up plastic waste and even helps mitigate the effects of global warming.<sup>49</sup>

Another option is to set a production cap. This would allow some number of plastics to be produced for the most important purposes, but it would drastically cut back the amount of plastic produced relative to the status quo.<sup>50</sup>

You could also tax plastic, similar to a carbon tax.<sup>51</sup> It would discourage production but also generate revenue and could incentivize the development of more environmentally friendly plastics.<sup>52</sup>

Finally, you could have targeted bans that focus on specific types of single-use plastics while retaining them for some specified purposes. There are some truly useful single-use plastics that are perhaps worth retaining and we could ban the rest. Dr. Harvey explains a few of the beneficial uses of single-use plastics:

Most of us will get along just fine without throwaway plastic in our daily lives. But there are nevertheless many legitimate applications for single-use plastics.

Take medicine, for example, where single-use plastics are a key part of infection control. Having a blood test requires gloves made from plastic, a plastic syringe, and a plastic vial, all of which are single-use to control contamination and infection. While glass is often suggested as an alternative, this introduces challenges in cleaning, transport and availability, particularly in emergency situations where resources may be limited.

Single-use plastics also play a role in scientific research. Many scientists cringe as they look at their waste bin at the end of a session in the lab. Typically, it will be filled with pipettes, gloves, vials, sample bags, and the list goes on.

These items are used for their strength and resilience, and because they prevent cross-contamination of sampling. As with medical applications, many

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<sup>49</sup>[How plastic waste can stop global warming | World Economic Forum \(weforum.org\)](https://www.weforum.org)

<sup>50</sup>[Scientists call for cap on production to end plastic pollution | ScienceDaily](https://www.sciencedaily.com)

<sup>51</sup>[Should Governments Slap a Tax on Plastic? | WIRED](https://www.wired.com)

<sup>52</sup>[National Plastic Tax Proposal Follows The Enactment Of New State Level Plastics Fees \(forbes.com\)](https://www.forbes.com)

substitute materials do not provide the protection or stability that single-use plastics do.

Single-use plastics are often used to package food and water. While this is unnecessary in most settings, certain situations do require single-use packaging to ensure food and water safety. Domestic food aid, emergency responses, and international aid efforts all require food and water that can be stored without refrigeration and distributed when and where it's needed. Often this means packaging it in lightweight, single-use plastics.

While the proposed bans on single-use plastics should be recognised and applauded as an important step forward in the global fight to prevent plastic pollution, we should ensure that we have thought through all the scenarios where single-use plastic may be a legitimate necessity.

Consider the case of someone with a disability who can only eat with the aid of a flexible plastic straw. Without appropriate exemptions, a federal legislative ban on single-use plastic straws could prevent people in need from accessing a basic medical aid.<sup>53</sup>

Each of these points could not only be its own contention, but paired with an argument about how we can ban most of the single-use plastics out there—thus capturing most of the environmental benefit of a categorical ban—it becomes even stronger.

## 1.5 Conclusion

While perhaps a somewhat tired topic, I do think that this topic has the potential to be more than a spar debate topic and a source for some interesting, evidence-based debates about the harmful effects of plastic and the solutions to dealing with said effects. At the very least, I hope that the topic prompts debaters and judges alike to reconsider their (albeit very minor) role in contributing to the plastics crisis.

As someone living in Taiwan, I can see when recycling works (we have one of the best recycling rates in the world!<sup>54</sup>) and the effects of legislation to reduce plastic waste (we just banned most single-use plastics at beverage shops in Taipei<sup>55</sup>). Writing this

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<sup>53</sup>[There are some single-use plastics we truly need. The rest we can live without \(theconversation.com\)](https://theconversation.com/there-are-some-single-use-plastics-we-truly-need-the-rest-we-can-live-without-12111)

<sup>54</sup>[How Taiwan Has Achieved One of the Highest Recycling Rates in the World | Innovation | Smithsonian Magazine](https://www.smithsonianmag.com/innovation/how-taiwan-has-achieved-one-of-the-highest-recycling-rates-in-the-world-180972782/)

<sup>55</sup>[Taipei Bans Single-Use Plastic Cups from Beverage Shops to Reduce Plastic Waste - Seneca ESG](https://www.seneca.edu/esg/taipei-bans-single-use-plastic-cups-from-beverage-shops-to-reduce-plastic-waste)



*1 Topic Analysis by Lawrence Zhou*

topic analysis essay helped me see the contrast between the American and Taiwanese approach to the environment and helped me reconsider my relationship with plastic. I hope this topic does the same for you.

## 2 Topic Analysis by Cale McCrary

### 2.1 Introduction

*Cale McCrary is the Director of Public Forum at VBI. Cale served as the Director of Speech and Debate at Westlake High School through 2023, and the Director at Corona del Sol High School through 2020. Cale's PF teams have accumulated over 50 bids to the Tournament of Champions, with finals appearances and championships at the New York City Invitational, Arizona State University Invitational, Barkley Forum at Emory, Grapevine Classic and Golden Desert UNLV Tournament.*

It's been a unique year for Public Forum- for the first time since the 2011-2012 NSDA season, we'll end February having debated only one foreign policy or international-centered topic. The country's voting decision is understandable: the alternative to this month's topic selection asked whether Brazil should prioritize economic growth or environmental protection. Historically, that point of comparison has made for messy, circular Public Forum debates (Won't focusing on nascent, green technology firms help the economy? Won't giving companies more resources increase their propensity to go green?). And so, we arrive at the 2024 February resolution: **Resolved: The United States federal government should ban single-use plastics.**

Before getting into the pro and con argument strategies, we'll break down the relevant context for your debate rounds.

- First, what are single use plastics? How often are they used, and by who? Are there any alternative options with meaningful backing?
- Second, what happens to single-use plastics after use in the United States?
- Third, can we expect U.S. plastics regulation to galvanize action overseas?

### 2.1.1 Single-use plastics and alternatives

Single-use plastics represent around 40 percent of our plastic consumption annually<sup>1</sup>, and range in application from food packaging to vaccine administration. For a crude and unscientific explanation from a humanities major of the plastic-making process: natural gas and oil are drilled and then pushed through a refinement process. From that, we get propane (and ethane), which is used in a whole bunch of stuff, but when put under enough pressure and heat, give us the pellets and foam we melt and make plastic with. The most important elements of this process to key in on for debate purposes: there is the extraction process (drilling for oil), refinement process (creates manufacturing demand), and then finally the commercial applications of single use plastic.

Single-use plastics aren't going anywhere, either. For corporations, these plastics offer cost-savings and efficiency- restaurants hire fewer dishwashers, pay smaller water bills, and can keep food fresh longer. Medical institutions can conduct experiments and administer vaccines without investing hours afterwards in cleaning. For consumers, there's a convenience factor, namely, when shopping for groceries or quickly grabbing a bite without needing to wash dishes. Ultimately, these incentives continue to accelerate the demand for single use plastic, leaving experts to conclude that by 2027, single-use plastic production will increase by another 17 million tonnes<sup>2</sup>.

Single-use plastic production and widespread use raises some obvious red flags: can a process reliant on potentially damaging oil drilling, that then contributes mass amounts of volume to landfills and recycling plants afterwards be any kind of positive? Before answering that question specifically, it's important to answer what alternatives could exist to plastic production. The availability of plastic replacements, and their efficacy in filling into the markets single use plastics currently dominate, will frame a majority of debates on the February resolution: an affirmative team may effectively persuade a judge that single-use plastics are wreaking havoc on the environment, but absent a preferable alternative, it may not matter.

A handful of single-use plastic alternatives dominate the conversation: glass, biodegradable plastics, and paper products (including cardboard). Glass emerges first as an ob-

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<sup>1</sup>Cohen, Dianna. "Single Use Plastics." Plastic Pollution Coalition, 6 Sept. 2022, [www.plasticpollutioncoalition.org/guides/singleuseplastics/healthimpacts](http://www.plasticpollutioncoalition.org/guides/singleuseplastics/healthimpacts). Accessed 7 Jan. 2024.

<sup>2</sup>Reuters. "Single-Use Plastic Production Rose between 2019 and 2021 despite Pledges." Reuters, 6 Feb. 2023, [www.reuters.com/business/environment/single-use-plastic-waste-rises-2019-2021-despite-pledges-2023-02-06/#:~:text=Around%20137%20million%20tonnes%20of,by%202027%2C%20the%20researchers%20said](https://www.reuters.com/business/environment/single-use-plastic-waste-rises-2019-2021-despite-pledges-2023-02-06/#:~:text=Around%20137%20million%20tonnes%20of,by%202027%2C%20the%20researchers%20said). Accessed 10 Jan. 2024.

## 2 Topic Analysis by Cale McCrary

vious candidate: it dominated before single use plastics, is made from sand, and is far easier to reuse. The reason companies moved towards plastics and away from glass in the first place, was cost. Glass's weight makes it far more expensive to transport long distances<sup>3</sup>, especially in the bulk quantities many companies need, and its fragility can make it difficult to use in higher traffic and stress consumer environments. These trade-offs are worth balancing if glass were to re-emerge as the wholesale replacement across industries.

More likely than a full-scale glass resurgence is a mixed approach, where depending on the industry, a different replacement is introduced. Where glass may make sense for coffee manufacturers, for example, many drinks companies that produce bottled waters or sodas may be more adamant about the need for a near-plastic substitute. Biodegradable, plant-based plastics have been heralded for their innovation: for example, some producers have engineered fully compostable versions<sup>4</sup>. Nevertheless, many criticize plant-based plastics for their energy intensive production process that, in some cases, even exceeds the inefficiency of standard plastic production, and may take even longer to break down in their less innovative forms<sup>5</sup>.

This only scratches the surface of potential single-use plastic replacements: beeswax has been used to create wraps to be used in lieu of plastic wrap for food, bamboo is increasingly used in the manufacturing of 'eco-friendly' toothbrushes, and who could forget metal straws<sup>6</sup>. Ultimately, affirmative teams will be investigating the potential to bring these alternatives to scale, and attempting to insulate these alternatives from concerns about their environmental impact. Negative teams will be raising concerns about the feasibility of sourcing enough raw material to bring any of these alternatives to scale, and the inevitability of at least *some* environmental degradation. Resolving this debate decisively will ultimately win you most rounds on the topic.

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<sup>3</sup>Chiu, Allyson. "Why Glass, Paper and Other Options Aren't the Simple Alternative to Plastic That They Seem to Be." *Washington Post, The Washington Post*, 7 June 2023, [www.washingtonpost.com/climate-solutions/2023/06/07/plastic-alternatives-glass-aluminum-paper/](http://www.washingtonpost.com/climate-solutions/2023/06/07/plastic-alternatives-glass-aluminum-paper/). Accessed 9 Jan. 2024.

<sup>4</sup>Sanders, Robert. "New Process Makes "Biodegradable" Plastics Truly Compostable." *Berkeley*, 2022, [news.berkeley.edu/2021/04/21/new-process-makes-biodegradable-plastics-truly-compostable](http://news.berkeley.edu/2021/04/21/new-process-makes-biodegradable-plastics-truly-compostable). Accessed 8 Jan. 2024.

<sup>5</sup>Cho, Renee. "The Truth about Bioplastics." *State of the Planet*, 13 Dec. 2017, [news.climate.columbia.edu/2017/12/13/the-truth-about-bioplastics/](http://news.climate.columbia.edu/2017/12/13/the-truth-about-bioplastics/). Accessed 10 Jan. 2024.

<sup>6</sup>Nadalin, Tianna. "20 Sustainable Alternatives to Single-Use Plastics | RACV." *@RACV*, 2022, [www.racv.com.au/royalauto/sustainability/sustainable-living/reduce-plastic-waste.html](http://www.racv.com.au/royalauto/sustainability/sustainable-living/reduce-plastic-waste.html). Accessed 10 Jan. 2024.

### 2.1.2 Waste management

“91% of plastics are not recycled<sup>7</sup>” is a statistic that will be pervasive in February, particularly early-on. Plenty of evidence points out this disturbing trend, but a closer look makes it all the more puzzling: 75% of the world’s plastics are ‘thermoset’, meaning, essentially, that they are soft, and thus easy to melt and reuse for new purposes<sup>8</sup>. In fact, single-use plastics are almost *exclusively* thermoset: the majority of the 25% of plastics that are not are heavier plastics used to do things like insulate electrical wiring. How is it possible, then, that so little single-use plastic is recycled?

The first concern is on the consumer end- the typical applications of single use plastics, by nature, make them difficult to recycle. When a plastic has been covered in food waste, held potentially toxic laboratory solutions, or been used to administer a drug, it becomes difficult to effectively sterilize the plastic to a degree the business bureau would find acceptable. Companies and the U.S. government could, of course, commit more resources to plastic ‘washing,’ but the development of new plastics is so efficient and cheap, that the decision is most often made to throw any plastic that is not *easily and readily able to be recycled* into the landfill.

Even in cases where single use plastics are cleaned, or uncontaminated, they are often not recycled. The Environmental Protection Agency has developed a plethora of programs that attempt to increase the amount of plastic recycling. The WasteWise Program, for example, allows the EPA to promote ways nonprofits and businesses effectively reuse and recycle materials to other companies, in an attempt to spread the most cost-efficient practices. The Department of Energy holds an ongoing Plastics Innovation Challenge that, since 2018, has incentivized companies to innovate plastics and plastic alternatives that reduce energy inputs in production and waste afterwards. Even the U.S. Department of Agriculture has done its part to subsidize scientists who look for more efficient ways to develop bioplastics, and bring them to scale<sup>9</sup>.

Unfortunately, all of these lofty government programs overlook the largest contributor

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<sup>7</sup>“A Whopping 91 Percent of Plastic Isn’t Recycled.” Nationalgeographic.org, 2015, education.nationalgeographic.org/resource/whopping-91-percent-plastic-isnt-recycled/. Accessed 10 Jan. 2024.

<sup>8</sup>Hilton, Simon. “Thermoset Plastics Made More Recyclable.” AG CHEMI GROUP Blog, AG CHEMI GROUP Blog, 25 Jan. 2021, blog.agchemigroup.eu/thermoset-plastics-made-more-recyclable/. Accessed 11 Jan. 2024.

<sup>9</sup>“U.S. Actions to Address Plastic Pollution - United States Department of State.” United States Department of State, 28 Feb. 2022, www.state.gov/u-s-actions-to-address-plastic-pollution/. Accessed 14 Jan. 2024.

to U.S. recycling failures: a lack of infrastructure. Across the United States, recycling facilities that have the necessary equipment to sort, break down, and process plastics are not only rare, but unevenly distributed throughout the United States<sup>10</sup>. Depending on where you live, you could carefully clean and file all your single use plastics away into your blue bin, but the nearest recycling plant may be prohibitively far, or not have the right machinery. Absent infrastructure, it appears unlikely that single-use plastics, or any of its potential alternatives, will be recycled at a high-rate. Teams may be advised, when searching for viable alternatives, to consider the ease with which they can be recycled when dirty, and when processed with sub-standard equipment.

### 2.1.3 International response

Most evidence that discussed single-use plastics speaks to their global uptake and effect: American consumption of single-use plastics is inseparable in its environment and economic impact from the rest of the planet. As such, it would benefit both pro and con teams to answer the question: could there be any spillover effect of a U.S. single-use plastic ban? As of 2016, the United States had the most plastic waste generation per capita of any country in the world,<sup>11</sup> and continues to boast one of the highest rates of consumption of single-use plastic. There is certain to be a certain modeling effect: if the United States, as such a massive plastic consumer, can weather the potential downsides to ban plastic, then other countries may follow the American lead, generating momentum for an international movement.

Less fuzzy than vague international modeling arguments are the direct effects an American ban would have on international supply chains. There is an important, empirical comparison here: in January 2018, the Chinese government permanently banned the import of many common recyclables, including plastic. This had a massive effect on the export of US plastic waste, which had previously been exported in mass to China, as total US plastic waste exports plummeted from 1.4 million tons to .6 million tons post-ban<sup>12</sup>. Were the United States to ban domestic consumption of single use plastics, the

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<sup>10</sup>Patoski, Andrej. "Why Is Most Plastic Not Recycled?" RePurpose Global, rePurpose Global, 22 June 2019, [repurpose.global/blog/post/why-is-most-plastic-not-recycled#:~:text=About%2091%25%20of%20plastic%20isn,not%20all%20can%20be%20recycled](https://repurpose.global/blog/post/why-is-most-plastic-not-recycled#:~:text=About%2091%25%20of%20plastic%20isn,not%20all%20can%20be%20recycled). Accessed 7 Jan. 2024.

<sup>11</sup>"Plastic Waste Generation per Capita by Country | Statista." Statista, Statista, 2023, [www.statista.com/statistics/1228043/plastic-waste-generation-per-capita-in-select-countries/](https://www.statista.com/statistics/1228043/plastic-waste-generation-per-capita-in-select-countries/). Accessed 11 Jan. 2024.

<sup>12</sup>Huang, Qiao, et al. "Modelling the Global Impact of China's Ban on Plastic Waste Imports." *Resources, Conservation and Recycling*, vol. 154, 1 Mar. 2020, pp. 104607–104607,

United States is unlikely to export any significant amount of plastic waste, reducing pollution overseas. On the supply side, the United States demand for natural gas and oil is likely to semi-significantly decline absent single-use plastics, potentially lessening reliance on petroleum exporting countries like Saudi Arabia. There is room to investigate how this decline in plastic-based economic activity could affect American international relationships.

## 2.2 Pro Argument Strategy

As mentioned previously, the primary goal of the affirmative on this resolution is to effectively argue that there are reasonable substitute materials for single-use plastics with significant comparative benefits. Isolating a niche, utopian material is not enough: pro teams must demonstrate that their material of choice is the *most likely* option companies will choose when replacing plastic in their supply chains. The affirmative's most helpful tool in this element of the debate is the investment response to a ban: while, at the moment, the use of niche substitute materials like plant-based plastics or bamboo is not up to scale, and significantly more expensive to manufacture, investors are likely to view a single-use plastics ban as an opportunity to capture a significant new market, and will work rapidly to bring these nascent options up to scale. Pro teams are advised, thus, to argue for new, innovative solutions that have modern research conducted on their biodegradability, recyclability, and manufacturing potential, and supplement this research with evidence that investors, even pre-single use plastics ban, are interested. Opting to argue in favor of materials like glass or aluminum is plausible, but the number of responses teams will have the burden of answering about cost-tradeoffs, and static recycling issues, will be high.

The first, clear place to look for pro argumentation is the ocean. 89% of plastics in the ocean are single-use<sup>13</sup>, and the ramifications have the greatest link strength of any argument on this topic. Single-use plastics are dangerous for the ocean's animals: many aquatic animals and seabirds get tangled and hurt in plastic waste, and many more ingest single-use plastics when feeding. Those plastics break down into 'microplastics,'

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[www.sciencedirect.com/science/article/abs/pii/S0921344919305130#:~:text=A%20statistically%20significant%20decrease%20in,the%20highest%20per%20capita%20exports.,https://doi.org/10.1016/j.resconrec.2019.104607](https://www.sciencedirect.com/science/article/abs/pii/S0921344919305130#:~:text=A%20statistically%20significant%20decrease%20in,the%20highest%20per%20capita%20exports.,https://doi.org/10.1016/j.resconrec.2019.104607). Accessed 11 Jan. 2024.

<sup>13</sup>Webber, Jemima. "Single-Use Items Make up 89% of Plastic Waste in the Ocean." LIVEKINDLY, 13 May 2018, [www.livekindly.com/single-use-items-make-up-89-of-plastic-waste-in-the-ocean/](http://www.livekindly.com/single-use-items-make-up-89-of-plastic-waste-in-the-ocean/). Accessed 11 Jan. 2024.

that then invade and harm animals' bodies. Beyond being made of materials that are toxic, these microplastics can block intestinal tracks, and cause further structural damage to crucial organs<sup>14</sup>. Ultimately, these microplastics kill thousands of marine animals, posing a serious risk to the existence of hundreds of marine species. There are a host of consequences. For one, many coastal societies rely on seafood: microplastics both put that food source at risk, and directly contaminate that food source, putting humans who consume seafood containing microplastics at risk of serious harm. On a more severe level, the mass wiping out of marine species poses a clear threat to biodiversity. If a team can effectively argue that American single-use plastics compose a large enough portion of ocean pollution, or that their action is likely to have some sort of international spillover, it could be argued that a ban is the difference between the mass extinction of a cascading number of animal species, and preserving life on Earth.

Beyond ocean-born consequences for nature, single-use plastics are often chlorinated and bleached, and pose a serious risk to soil. As they degrade, single-use plastics significantly contribute to and can unilaterally cause chemical runoff in landfills. This runoff can seep into the ground, contaminating groundwater and other sources of clean drinking water, putting thousands of land based animals and humans at risk of serious illness and death<sup>15</sup>. Furthermore, in landfills, single-use plastics break down into microplastics, as previously discussed. Microplastics are so small that they easily travel via groundwater and air and seep into the soil all over the country. These microplastics can permanently damage soil by blocking roots from growing, blocking nutrient uptake, and otherwise displace fertilizers from doing the work they need to on plants. Ultimately, microplastics can significantly damage crop yields, and, similar to seafood, contaminate the food we do grow, harming human health after consumption.

Beyond the clear environmental consequences, the banning of single-use plastics has the potential to significantly affect American demand for fossil fuel. Fossil fuel experts suspect plastic will drive at least half of global demand for oil by 2050<sup>16</sup>, and in the

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<sup>14</sup>Zolotova, Natalia. "Harmful Effects of the Microplastic Pollution on Animal Health: A Literature Review." *PeerJ*, vol. 10, 14 June 2022, pp. e13503–e13503, [www.ncbi.nlm.nih.gov/pmc/articles/PMC9205308/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC9205308/), <https://doi.org/10.7717/peerj.13503>. Accessed 6 Jan. 2024.

<sup>15</sup>"Plastic Planet: How Tiny Plastic Particles Are Polluting Our Soil." UNEP, 2018, [www.unep.org/news-and-stories/story/plastic-planet-how-tiny-plastic-particles-are-polluting-our-soil#:~:text=Toxic%20effects&text=Chlorinated%20plastic%20can%20release%20harmful,species%20that%20drink%20the%20water](http://www.unep.org/news-and-stories/story/plastic-planet-how-tiny-plastic-particles-are-polluting-our-soil#:~:text=Toxic%20effects&text=Chlorinated%20plastic%20can%20release%20harmful,species%20that%20drink%20the%20water). Accessed 11 Jan. 2024.

<sup>16</sup>Brigham, Katie. "How the Fossil Fuel Industry Is Pushing Plastics on the World." CNBC, CNBC, 29 Jan. 2022, [www.cnbc.com/2022/01/29/how-the-fossil-fuel-industry-is-pushing-plastics-on-the-world-.html](http://www.cnbc.com/2022/01/29/how-the-fossil-fuel-industry-is-pushing-plastics-on-the-world-.html). Accessed 14 Jan. 2024.



United States, that number could be even larger given the surging demand for single-use plastics. Were a single-use plastics ban to significantly suppress general American demand for plastic, American demand for oil imports could be shrunk sizably, in turn. There are two primary arguments this opens up for affirmative teams. First, pro teams may argue that this suppression of demand for oil could significantly curtail domestic U.S. drilling and fracking efforts. Arguments that fracking and oil drilling significantly disrupt American ecology, put thousands of species at risk, and contribute massively to pollution write themselves, and will be easy to find plenty of evidentiary support for. Second, pro teams may argue that a significant decline in demand for oil would, at a minimum, make the U.S. import of fossil fuels less crucial, reducing the importance of the American relationship with states like Saudi Arabia. If the affirmative can demonstrate the single-use plastic ban will have a *very* strong suppressive effect on oil demand, the United States may decide to cease supporting Saudi warfighting in conflicts like the Yemeni civil war. If severed from American arms, debaters could harken back to the Saudi arms sales topic many February's ago, and argue that the Saudi capacity to commit acts of violence would be significantly reduced.

### **2.3 Con Argument Strategy**

If it is crucial that affirmative teams demonstrate that there are reasonable alternatives to single-use plastics, it is essential the negative come to round well prepared to address the feasibility of even niche replacement options. The neg, particularly in front of laypersons, is fighting an uphill battle perceptually: single-use plastics are extraordinarily unpopular. However, if the negative is effective in arguing that common alternative materials, like glass and paper, come with comparable, if not worse, environmental pricetags, while more niche, innovative solutions are prohibitively expensive, and companies would sooner collapse than implement them, then they always have a way to win the debate. These considerations should center all negative strategies.

For specific arguments, first, the con may argue that single-use plastics are too deeply integrated into the supply chain of most large American industries to be easily replaced. If, overnight, the use of plastic in packaging was illegal, companies do not have infrastructure to obtain a replacement anytime soon, and crucially, single-use plastics are used almost universally in *packaging*. For everything. Developing an effective replacement

packaging solution and bringing it to scale to facilitate the flow of almost all goods cross-country, could take years even with the maximum amount of investment. Beyond the immediate impact on food and water storage, countless corporations may experience losses numbering in the millions from the impact on shipping, causing a mass of closures. It is certainly possible that a ban on single-use plastics could usher in an unprecedented recession overnight, a crash that one could argue is so pervasive in the number of industries it affects, that recovery could be more delayed than even the 2008 crash, leaving hundreds of millions around the globe trapped in poverty indefinitely.

Single-use plastics have also been a boon for the medical industry in particular. Sterilization, cleanliness, and ease of use are all crucial to the effective administration of vaccines, for example. Plastic syringes and needles have been integral to the mass proliferation and availability of flu shots, COVID vaccines, and more. While in food storage single-use plastic alternatives are more routinely discussed, it is more difficult to develop a plausible alternative for their medical applications. Single-use plastics are extraordinarily easy to sterilize, and require comparatively little care to handle. While this might appear to be at the margins, in the context of a pandemic or health emergency, the ability to quickly and safely administer shots may be the difference between containment and mass-infection. Ultimately, if a negative team can effectively cast enough doubt on the United States' unique contribution to broad, macro-level environmental abuse, the application of single-use plastics in medicine provides an easy-to-isolate impact.

Finally, the negative can argue that single-use plastics are key to disaster relief efforts. Single-use plastic contributions aside, climate change continues to worsen, increasing the likelihood that the United States and its neighbors experience natural disasters. In relief efforts, administering food and water in a timely manner can often be the difference between life and death. Even small decreases in the quality or safety of packaging can lead food to spoil or let packaging break and become contaminated in the extreme environment. Plastic has become the lifeblood of relief efforts: plastic water bottles were able to provide mass water access during the crisis in Flint, Michigan. Plastic containers are able to keep food fresh for long periods, crucial when food is being shipped overseas and distributed by American non-governmental organizations in relief efforts. Here, most plausible alternatives also fail- materials like glass are too fragile and paper replacements too flimsy. Flexibility and durability are the name of the game in disaster relief, and plastics have a unique advantage in that arena, giving negative teams a very clear, direct impact to life.

## 3 Topic Analysis by Justin Zhang

*Justin Zhang debated as PF captain at Seven Lakes High School, where he qualified for the TOC and NSDA national tournaments thrice while amassing 17 total bids. During this time, he reached the finals of the 2022 NSDA national tournament, round 12 at the 2021 NSDA national tournament, and finals at the Kandi King round robin twice while championing the Presentation Round Robin, Plano West Tournament, and Grapevine National Tournament as well. In addition, he was the top speaker at the Stephen Stewart Tournament, 2nd at Stanford, 3rd at Plano West, 4th at Apple Valley, 5th at TFA State (x2), 7th at Glenbrooks and Nano Nagle, and 9th at Blue Key. As Captain at Seven Lakes, the team qualified more teams to the TOC and State tournaments than ever in team history.*

### 3.1 Introduction

Welcome to one of the February public forum topic: **Resolved: The United States should ban single-use plastics.** In my opinion, I think that this topic makes for much more interesting and intellectually rewarding debates than the other topic, which was Resolved: The Federative Republic of Brazil should prioritize its environmental protection over its economic development. I think that this Brazil topic is really similar to a January topic I debated several years ago about whether the US should prioritize economic growth or debt reduction. One of the main issues with that topic was that weighing debates became super complicated, and basically every argument was circular. I think there are a million reasons why environmental protection and economic development are critical, and it's pretty unrealistic for any nation to choose one over the other per se. I also think that the single-use plastics topic is a much more prevalent issue that's gaining prominence in mainstream media and society now, which is always nice to learn more about.

So what exactly is a "single-use plastic?" Its definition is pretty intuitive in the name, but they're basically any plastic that is used for a short amount of time or a single time

before getting thrown away. These look like things such as straws, plastic utensils, plastic bags, etc. Single-use plastics comprise the largest amount in the growing plastic economy and definitely have an immense impact on our economy and environment. Thus, I think it's fair for teams to read some general plastic impacts on this topic, even if it isn't specific to single-use plastics. Currently, many states, such as New York, Connecticut, Delaware, Maine, Oregon, Vermont, and New Jersey, have started banning plastic bags. The current trend is turning towards promoting ESG (environmental, social, and governance), which has sparked new momentum for legislation to spill over to the plastic industry. However, single-use plastics outside of bags have been largely untouched, besides straws, which has heated the debate on whether or not we ought to ban all single-use plastics. Most countries don't have any federal plastic bans in place, but some African nations do have plastic bans in place. Rwanda is an example of a country that has been strict and effective in enforcing its plastic ban on a national level. I'd encourage teams to look at the data and case scenarios in those areas to see how the ban has impacted the environment and economy there, but more specifically, look to see how those areas adapted without plastic and what alternatives they turned towards. This topic won't have too much breadth of argumentation, so it's all about finding the best possible evidence and empirics in order to win rounds. Since this is a relatively popular topic in mainstream media, I encourage teams to constantly look for evidence throughout the topic for any notable legislation or updates surrounding single-use plastics.

### **3.1.1 Initial Thoughts on Strategy**

At first glance, this topic is going to be weighing heavy on all aspects of the link chain. This means that teams are going to want to actively think about not only the impact level weighing that can be done but also the link and internal link level. The main aff arguments are going to revolve around the negative environmental impacts that single-use plastics cause and the negative arguments will contest the economic damage banning these plastics will cause. I think that most aff teams will find it easy to win their link toward environmental damage in most rounds, seeing as it's pretty hard to contest that plastic straws choke turtles. However, I think that there will be a lot of contestation on what the world looks like after banning single-use plastics. What alternatives will we use for these plastics? How will certain small businesses adapt and survive without cheap plastic available? What will consumer reactions be? These are all questions that teams should get to the bottom of in their research and try to form their cases around. I

also think that every team should have pre-written and carded weighing for economic growth over environmental damage and vice versa. I personally think that teams should try to come up with link-ins that deviate from the common ones people have read in the past and also try to think of responses to common link-ins teams may make. The neg should also try to incorporate impact mitigation and internal link defense against the aff as much as possible, as it may be hard for the aff to quantify certain links they're reading without taking into account the world after single-use plastics. For example, some alternatives to fill in the gap left by these plastics could be more long-term items still made from plastics, but just not single-use. This would still exacerbate the issues from the aff and not lead to a productive change in society. Another example could be swapping to a resource that is more energy-intensive than plastic, which could make pollution even worse than it was with plastics. The reality is that single-use plastics are a massive part of our society and daily life, and a complete federal ban would completely alter how we go about life. This is a topic that has real implications for everyone's life (debaters and judges alike), so keep that in mind for lay rounds, too, and how your potential contention will alter your judges' lives, too.

## **3.2 Aff Arguments**

### **3.2.1 Environmental Impact**

There are a plethora of reasons why single-use plastics are terrible for the environment, which has caused a surge in environmentalists calling for legislation to regulate or ban their use completely. I think that the environment argument should be in every single aff team's case in some form at least, and it really is the core of the single-use plastics debate. One way single-use plastics hurt the environment is through increasing the amount of greenhouse gasses in the atmosphere. Plastic is incredibly energy-intensive at each stage of its life cycle and relies on fossil fuels to produce most of it. Thus, the massive amount of plastic demand generated by the USA results in a massive increase in emissions as well as hurting the environment. Another way plastics hurt the environment is towards the end of their life cycle when they are tossed aside, thrown away, or recycled. A small amount of plastic is recycled (9%), and the plastic that reaches landfills often becomes buried or emits toxic chemicals into groundwater. Plastic is also non-biodegradable, meaning that it lasts for thousands of years without being broken down, and can accumulate in landfills and rivers, polluting for centuries. Moreover, plastic

also flows into our oceans, which becomes incredibly harmful to marine life and biodiversity, often strangling animals and being mistaken for food, causing serious damage to marine animal health. We also commonly get rid of plastic waste by burning it, which causes air pollution and increases the risk of cancers, birth defects, and immune system suppression in humans and animals. Finally, there's a good argument to be made that banning single-use plastics could create a sort of signaling effect that increases the promotion of renewable energies. If the government enacts a nationwide ban on single-use plastics, more investment may flock towards renewable energy since individuals may perceive that as the direction the government is rapidly heading towards. Overall, there are a plethora of warrants that are pretty hard to dispute for why single-use plastics hurt the environment, and there's good literature quantifying its total impact as well. With that being said, I think that neg teams should incorporate an economic aspect into their environmental arguments in the case. I think that this is strategic because almost all neg teams will have some sort of economic argument for why single-use plastics are beneficial, so having an econ impact in case will allow for aff teams to preemptively link into the neg impacts and get ahead of the weighing debate early.

<https://www.law.georgetown.edu/environmental-law-review/blog/a-polymer-problem-how-plastic-production-and-consumption-is-polluting-our-oceans>

<https://www.aa.com.tr/en/environment/single-use-plastics-pose-huge-risks-to-public-health-environment/2619933>

### **3.2.2 Economic Benefits**

Another argument the aff could read is the long-term economic benefit banning single-use plastics could provide to the United States. One reason is that it may push investment into sustainable industries that will be developing alternatives to replace single-use plastics. Increasing investment in these sustainable industries would also increase jobs and expand the green sector in the US, which could multiply the economic benefits to the country. Another reason could be the long-term cost savings from reducing spending on clean-up efforts, damage to ecosystems, and health damages. Tourism is also greater in countries that have perceived cleaner cities, which could be another potential route for improving the economy. I think that teams that read this argument should make it pretty short since the link chain doesn't need a lot of evidence to function, but the argument could be pretty effective against some of the econ arguments the neg may read. There's also literature about a bubble brewing in the plastic industry, so

aff teams should look into what the potential impact on the bubble would be if investment continues to be poured into the industry as it is now. I feel as though aff teams could argue that pulling out investment now would keep the negative repercussions of the bubble minimized, mitigating a potentially devastating economic shock.

<https://www.ncelenviro.org/articles/first-in-science-the-economic-impacts-of-plastic-pollution/>

[https://www.clientearth.org/media/f1cphq2t/fairfin\\_-the-unbearable-cost-of-single-use-plastics.pdf//](https://www.clientearth.org/media/f1cphq2t/fairfin_-the-unbearable-cost-of-single-use-plastics.pdf//)

### 3.3 Neg Arguments

#### 3.3.1 Economic Impact

One major negative argument is definitely the adverse economic impact of banning single-use plastics. Teams can read this argument in a couple of different ways. One of these is through the actual elimination of the single-use plastic industry, which accounts for a large portion of the overall plastic industry. This would result in significant job losses and economic value the industry adds to our economy. Moreover, it would also significantly impact small businesses that rely on the cheap nature of these plastics to survive. Alternatives to single-use plastic are often expensive, and many small businesses don't have the capital necessary to support this transition immediately. The cost to consumers is also cheaper for single-use plastic compared to other alternatives, which can increase accessibility to food. All of these warrants are pretty decent reasons for why we might want to keep the single-use plastic industry around, especially if teams read some sort of spillover argument about investment getting taken out of the plastic industry overall. I think that it's pretty fair to say that many investors might get scared of the ban and begin divesting from the general plastic industry, which could result in an even larger detriment to the economy. Moreover, neg teams can also concede a link to fossil fuels and argue that single-use plastics would decline oil production, causing massive economic harm. Plastics account for around 10% of global oil production, and a ban on single-use plastics would definitely make a dent in that percentage. In Canada, a new plastics ban will cost the economy over a billion dollars in the next decade, which is a huge amount. Many neg teams may choose to concede certain links into the climate and read turns like these instead, which I think is a fine strategy when paired with adequate weighing over the aff climate argument. When reading an economic argument, neg

teams should also consider reading a link to climate change preemptively in their case as well, considering that the core of the aff revolves around the environment. I think that something simple, such as a link to increasing investment into renewables when the economy increases, is a good warrant to add in a case that has a lot of literature and good quantification behind it as well.

<https://www.ellenmacarthurfoundation.org/plastics-and-the-circular-economy-deep-dive#:~:text=Globally%2C%20replacing%20just%2020%25%20of,in%20circulation%20in%20the%20economy.>

<https://thehill.com/opinion/energy-environment/3620887-would-a-single-use-plastic-ban-be-counterproductive//>

<https://www.sciencedirect.com/science/article/abs/pii/S2214629619303172>

### 3.3.2 Supply Chain Problems

One interesting argument is the prevalence of single-use plastic in the global supply chain. Since single-use plastics are used in all sorts of transportation and packaging, a large portion of US trade also uses single-use plastics for shipping goods. Banning single-use plastics could create a massive gap that can't easily be filled by alternatives to the same extent, which could result in a massive decline in trade and even cause trade disputes and conflicts between nations. This could spill over past economic detriments and result in more tensions between nations if there are prolonged supply chain problems. Moreover, this could also stifle the production side of goods too, resulting in a slowdown of the entire supply chain process. This has several impacts beyond economic damage. For instance, critical infrastructure may be built much slower with a slowdown of transportation, a slowdown of healthcare delivery will occur (which I'll delve into later), and much more. I think there are serious supply chain considerations for why we should keep single-use plastics in the US now, much of which is realized by many key legislators and one of the main reasons no ban has occurred.

### 3.3.3 Medical Benefits

One argument I like a lot is that single-use plastic is necessary for a lot of medical instruments in the healthcare industry. For instance, single-use plastic is used to package sterile instruments to prevent contamination and reduce infection. Moreover, plastics keep medical devices clean and are used in single-use fever strips for patients. A good



impact scenario off of this could be pandemic mitigation since single-use plastics are critical to transporting and storing syringes and vaccines. I think that this argument is pretty smart because it avoids a lot of the common econ arguments the aff is probably expecting the neg to read, and it gives the neg another avenue to weigh against the environmental impacts the aff is reading. I also think that a ban on single-use plastics could create serious supply chain issues for many healthcare practices that then have to scramble to find alternatives and develop new innovations to store and transport different devices. Another benefit is that single-use plastics are used in toiletries and hygiene projects that the homeless population depends on for adequate sanitation. There are empirics in areas like San Diego where diseases increased rapidly amongst the homeless population when a lack of sanitation and hygiene facilities occurred as well.

<https://thisisplastics.com/safety/why-are-medical-plastic-packages-so-essential/>

### **3.3.4 Alternatives worse**

I think the best case strategy on the neg revolves around portraying what the world without single-use plastics looks like and why that world is worse than our current one. I think that reading a sole contention about alternatives being worse allows neg teams to stay versatile in argumentation while keeping a cohesive narrative throughout the case. This type of case also allows neg teams to preempt all the arguments from the aff, giving the neg a headstart in the weighing debate, too. For example, neg teams can make reasons why single-use plastic is the least energy-intensive material compared to alternatives such as glass, meaning that it utilizes fossil fuels the least. Moreover, other alternatives may not be used by the public because of cost and accessibility, resulting in food waste. Alternatives may also not be as versatile as plastic, meaning that it'd be harder to find something specific to a certain need, resulting in excess costs. Another reason why I think this argument is strategic is that it allows the neg to read a more specific defense to the aff. Many neg teams will read other arguments and list of alternatives being worse for every aff argument that is read, but I think neg teams can save time by just reading alt worse as a contention in case and read more specific offense and defense against the aff arguments.

<https://www.bpf.co.uk/packaging/why-do-we-need-plastic-packaging.aspx>.

<https://thehill.com/opinion/energy-environment/579233-plastic-bans-will-not-deliver-sustainability/>

### **3.4 Conclusion**

Overall, I think that this topic on face seems to be pretty simple and one-dimensional, but it gets pretty complicated when you delve into the literature. The neg definitely has more versatility in terms of argumentation compared to the aff, but the aff has a core environment argument rooted in tons of literature supporting it. I'm interested to see how debates will play out and see how neg teams will choose to respond to the environment aff core. There are definitely a lot of fun arguments the neg can read in flow rounds on this topic and potential for massive link and impact turns as well. Neg teams may choose to just impact turn the aff environment core or read tons of link-ins and weighing stemming from the economy neg core. Nevertheless, there's definitely enough ground on both sides to make this topic pretty equal, though some teams may have heavy side preferences given the nature of the argumentation on both sides.

## 4 Definitions

### 4.1 SUP Definitions

#### 4.1.1 General

**Single-use plastics are meant to be disposed of after use**

#### **Lindwall 20**

Courtney Lindwall (writer for Consumer Reports). “Single-Use Plastics 101.” Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Put simply, single-use plastics are goods that are made primarily from fossil fuel-based chemicals (petrochemicals) and are meant to be disposed of right after use—often, in mere minutes. Single-use plastics are most commonly used for packaging and service-ware, such as bottles, wrappers, straws, and bags.

#### *4 Definitions*

##### **Single-use plastic is designed to or likely to be used once**

###### **Edie 22**

Edie (media organization focusing on sustainability in business). "Single-use plastics." 2022. JDN. <https://www.edie.net/definition/single-use-plastics/>

'Single-use' was named as Collins Dictionary's word of the year in November 2018, but there is still discrepancy between industries, nations and businesses as to its specific definition.

Broadly speaking, single-use is a term which can refer to any plastic items which are either designed to be used for one time by the consumer before they are thrown away or recycled, or likely to be used in this way. Such items include disposable cutlery, plastic straws, thin plastic carrier bags, drink stirrers and crisp packets.

### 4.1.2 Includes Short Periods

**Single-use plastics are used once or for a short period**

#### **European Commission 22**

European Commission (independent executive arm of the European Union. "Single-use plastics." 2022. JDN. [https://environment.ec.europa.eu/topics/plastics/single-use-plastics\\_en](https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en)

Single-use plastic products (SUPs) are used once, or for a short period of time, before being thrown away. The impacts of this plastic waste on the environment and our health are global and can be drastic. Single-use plastic products are more likely to end up in our seas than reusable options. The 10 most commonly found single-use plastic items on European beaches, alongside fishing gear, represent 70% of all marine litter in the EU.

**Single-use plastics are plastic products with a short use phase consumed away from home for which alternatives exist**

##### **European Commission 22**

European Commission (independent executive arm of the European Union). “Reducing Marine Litter: action on single use plastics and fishing gear.” Impact Assessment of Single-Use Plastics. 11 August 2022. JDN. <https://circabc.europa.eu/ui/group/6e9b7f79-da96-4a53-956f-e8f62c9d7fed/library/5fbaf7c8-41a5-4c2a-bd45-b69c700978b5/details>

Two stakeholder workshops on SUPs took place on 16 June and 14 September 2017, each attended by 12-13 stakeholders representing producers, industry associations, NGOs, local authorities and Member States. The workshops focussed on gathering stakeholder views on the problems and root causes of single-use plastics and identifying measures to address ‘single-use’ plastic items. In an attempt to define SUPs, workshop participants generally agreed that items classifying as SUPs, should fulfil the following criteria: Prevalence in marine environment; Short use phase; Consumed predominantly away from home and; Reusable or non-plastic alternatives exist, though some exceptions to the above will exist.

### 4.1.3 Non-returnable

#### Single-use plastics are non-returnable

##### European Commission 22

European Commission (independent executive arm of the European Union). “Reducing Marine Litter: action on single use plastics and fishing gear.” Impact Assessment of Single-Use Plastics. 11 August 2022. JDN. <https://circabc.europa.eu/ui/group/6e9b7f79-da96-4a53-956f-e8f62c9d7fed/library/5fbaf7c8-41a5-4c2a-bd45-b69c700978b5/details>

#### 3.1.2 Definition of single-use plastics

Currently a legal definition nor official statistics exist for single-use plastic production. Given that plastic packaging is almost exclusively single-use, especially in business-to-consumer applications, such items could be defined in the Packaging and Packaging Waste Directive (PPWD). In the latter, a distinction is made between packaging, i.e. all products made of any material of any nature to be used for the containment, protection, handling, delivery and presentation of goods, from raw materials to processed goods, from the producer to the user or the consumer, and “non-returnable items” used for the same purposes. One could consider therefore that “non-returnable items” are equivalent to single-use items.

Acknowledging that single-use items are currently not defined from a legal perspective, the Commission worked with stakeholders establishing criteria for what should be targeted as relevant single-use items:

- Prone to littering and prevalently ending in the marine environment;
- Short use phase;
- Consumed predominantly away from home;
- Reusable or non-plastic alternatives exist.

## 5 Affirmative Evidence

### 5.1 Plastics Bad

#### 5.1.1 Climate Change

##### Plastic production contributes to climate change

###### Lindwall 20

Courtney Lindwall (writer for Consumer Reports). “Single-Use Plastics 101.” Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Our addiction to plastic also has negative impacts on the climate. A 2019 report by the Center for International Environmental Law (CIEL) showed that plastic production contributes to planet-warming greenhouse gas emissions at every point in its life cycle. The process of drilling for plastic’s source materials, oil and gas, leads to methane leaking and flaring and is often combined with clearing forests and wetlands that otherwise would have sequestered carbon. Refineries where crude oil is turned into plastic make up one of the most greenhouse gas-intensive industries in the manufacturing sector. And “cracker plants” — which break, or “crack,” ethane molecules, a component of natural gas, into the chemical building blocks of plastic products — are energy intensive and highly polluting. According to the CIEL report, in 2015 a mere 24 of these ethane cracker facilities in the United States had the combined carbon output of 3.8 million passenger vehicles. And the recent fracking boom, resulting in a surplus of oil, is fueling a subsequent rise in cracker plants, too. That’s bad news for our carbon reduction goals: If plastic production continues unabated, its greenhouse gas emissions could reach 1.34 gigatons per year by 2030 — equal to adding nearly 300 new coal-fired power plants — even as the need to curb global climate change becomes more urgent.



### 5.1.2 Marine Wildlife

#### Plastic threatens marine wildlife

##### Lindwall 20

Courtney Lindwall (writer for Consumer Reports). "Single-Use Plastics 101." Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Marine animals bear the burden of this influx of garbage into their habitats. Beached whales have been found with stomachs full of plastic trash. And recent studies found plastic in the guts of 90 percent of the seabirds tested and 100 percent of the turtles. Alarming, scientists estimate that there will be more plastic than fish in the ocean by weight in 2050. Not only is plastic estimated to kill millions of marine animals and seabirds each year, but it's also contaminating seafood that humans have relied on for millennia, particularly with microplastics in animals' guts.

### 5.1.3 Equity

#### **Marginalized communities disproportionately bear the impacts of plastic pollution**

##### **Lindwall 20**

Courtney Lindwall (writer for Consumer Reports). “Single-Use Plastics 101.” Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Plastic pollution—whether in our oceans, piling up on our coastlines, or contributing to our climate crisis—impacts vulnerable communities first. Even if plastic doesn’t end up in the ocean, recycled plastic is often exported from high-income countries to developing countries to process. But the sheer amount of plastic waste inundates communities until they are drowning under thousands of tons of plastic trash. This is the case particularly in Southeast Asia, which has begun to import much of the plastic that used to go to China for recycling. Not only does the waste destroy the land itself, but when plastic is incinerated (as is the case for unrecyclable plastic at some illegal facilities) its toxic fumes quickly become a health hazard for residents, leading to everything from skin rashes to cancer. Such is the case with many environmental crises: the worst effects are pushed onto overburdened communities with the fewest resources to fight back.

#### 5.1.4 Throwaway Culture

##### **Single-use plastics reflect modern throwaway culture which jeopardizes the environment**

###### **Lindwall 20**

Courtney Lindwall (writer for Consumer Reports). "Single-Use Plastics 101." Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Single-use plastics are a glaring example of the problems with throwaway culture. Instead of investing in quality goods that will last, we often prioritize convenience over durability and consideration of long-term impacts. Our reliance on these plastics means we are accumulating waste at a staggering rate. According to the United Nations Environment Programme, we produce 300 million tons of plastic each year worldwide, half of which is for single-use items. That's nearly equivalent to the weight of the entire human population. Reducing plastic use is the most effective means of avoiding this waste (and the impacts linked to plastic production and use). Carrying reusable bags and bottles is one great way to avoid single-use plastics in our day-to-day lives; more on preventing plastic waste can be found below.

### 5.1.5 AT: Recycling

#### Recycling fails for single-use plastics

##### Edie 22

Edie (media organization focusing on sustainability in business). “Single-use plastics.” 2022. JDN. <https://www.edie.net/definition/single-use-plastics/>

Because many of these items are sold or distributed at “on-the-go” venues or events, encouraging consumers to recycle them – and ensuring they are not littered – has been a challenge for businesses historically. Moreover, many of these items contain either flexible plastic film or black plastic, which are both considered “hard-to-recycle” by many local authorities.

### 5.1.6 AT: Economical

#### **Single-use plastics are an economically inefficient use of resources**

##### **European Commission 22**

European Commission (independent executive arm of the European Union). "Reducing Marine Litter: action on single use plastics and fishing gear." Impact Assessment of Single-Use Plastics. 11 August 2022. JDN. <https://circabc.europa.eu/ui/group/6e9b7f79-da96-4a53-956f-e8f62c9d7fed/library/5fbaf7c8-41a5-4c2a-bd45-b69c700978b5/details>

A single-use plastic item reaches its end-of-life in a very short time, which shows that resources are not efficiently used. Indeed, if this item were designed for reuse and effectively reused, this would save the resources and energy that were used in their production. Moreover, such items once disposed of, becomes waste that needs to be collected and sorted thereby implying costs for public authorities. Although such items could be recycled, most of the time they are not. Causes are multiple and often interlinked: insufficient public waste management infrastructure, food and organic material contamination once put in the right bin, etc. Therefore, this leads to consider that not only resources are wasted in their production phase but the value of materials is not kept in the loop which is the contrary of a circular economy concept and can also be seen as contrary to the waste hierarchy enshrined in the Waste Framework Directive which states that policy should also aim at reducing the use of resources, and favour the practical application of the waste hierarchy in accordance to which prevention should be considered in priority to other waste management options such as recycling for instance.

## **Plastic bans can have positive economic effects**

### **Desalegn and Tangl 22**

Goshu Desalegn (Doctoral School of Economics and Regional Sciences, Hungarian University of Agriculture and Life Sciences) and Anita Tangl (Institute of Rural Development and Sustainable Economy, Szent István Campus, Hungarian University of Agriculture and Life Sciences). "Banning Vs Taxing, Reviewing the Potential Opportunities and Challenges of Plastic Products." *Sustainability* 2022, 14(12). JDN. <https://www.mdpi.com/2071-1050/14/12/7189>

At the same time, the study discussed the opportunities for banning plastic products. Scholars argue that banning plastic products has an indirect contribution to economic growth. One pioneering study that supports the banning of plastic products is the study conducted by the authors of [30], which suggests that unmanaged plastic waste management can reduce the overall economic activities of a country by reducing its level of tourism. This suggestion is further extended and supported by the study in [44]. The plastic ban creates a cleaner environment, since there is no more plastic thrown onto the street. This is indirectly helpful in attracting tourism. Furthermore, the study conducted by the authors of [45] highlights that banning plastic products creates a new way of making environmentally friendly shopping bags. It argued that the plastic ban is expected to improve marine life and drainage infrastructure, while reducing the dependence of non-human activities on petroleum [46]. Hence, banning plastic products from the market could contribute to solving environmental issues, such as global warming and ocean acidification, as well as to the improvement the agricultural sector because these plastic products are serious problems for these previously mentioned activities.

### 5.1.7 AT: Essential

#### **Only a small fraction of single-use plastics serve important functions**

##### **Lindwall 20**

Courtney Lindwall (writer for Consumer Reports). "Single-Use Plastics 101." Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

There are many uses for plastic that are not only reasonable but important, such as surgical gloves, or straws for people with disabilities. But these cases make up a small fraction of single-use plastic. According to the 2017 study, more than half of non-fiber plastic, which excludes synthetic fabrics like polyester and nylon, comes from plastic packaging alone, much of which is for single-use items.

## 5.2 Microplastics Bad

### 5.2.1 MP in Food

#### **Studies show microplastic contamination throughout protein sources**

##### **Ocean conservancy 24**

Ocean Conservancy (nonprofit environmental advocacy group). “It’s Not Just Seafood: New Study Finds Microplastics in Nearly 90% of Proteins Sampled, Including Plant-Based Meat Alternatives.” 8 January 2024. JDN. <https://oceanconservancy.org/news/its-not-just-seafood-new-study-finds-microplastics-in-nearly-90-of-proteins-sampled-including-plant-based-meat-alternatives/>

Portland, Ore. – A new study led by researchers at Ocean Conservancy and the University of Toronto and published today in the journal *Environmental Pollution* found microplastic particles in 88% of protein food samples tested. The samples were drawn from 16 different protein types\* destined for U.S. consumers, including seafood, pork, beef, chicken, tofu, and three different plant-based meat alternatives.

While scientists have long documented the presence of microplastics in the digestive tracts of commercial fish and shellfish like salmon, halibut and oysters, there has been little research into whether these microplastics are entering the filets of the fish – the parts that are actually eaten by people; and little research into terrestrial protein sources like beef and chicken that make up a large part of the American diet. In this study, microplastics were found in all 16 protein types tested, suggesting that humans are likely eating microplastics no matter the source of protein they choose. Furthermore, there were no statistical differences in microplastic concentrations between land- and ocean-sourced proteins.

“This is a startling reminder of just how prolific plastic pollution has become – humans live on land and yet seafood samples are just as likely to be contaminated with plastics as are terrestrial derived proteins,” said study co-author Dr. Britta Baechler, a marine biologist and Associate Director of Plastics Science at Ocean Conservancy. “And there’s no escaping them no matter what you eat, it seems. The plastic pollution crisis is impacting all of us, and we need to take action to address its many forms.”



**Data shows the average American diet includes high amounts of microplastics**

**Ocean conservancy 24**

Ocean Conservancy (nonprofit environmental advocacy group). "It's Not Just Seafood: New Study Finds Microplastics in Nearly 90% of Proteins Sampled, Including Plant-Based Meat Alternatives." 8 January 2024. JDN. <https://oceanconservancy.org/news/its-not-just-seafood-new-study-finds-microplastics-in-nearly-90-of-proteins-sampled-including-plant-based-meat-alternatives/>

Using survey data from a separate study by Ocean Conservancy and the University of Toronto (to be published in *Frontiers in Marine Science*) the authors estimate an American adult will consume, on average, 11,500 microplastics per year. Annual exposure could be as high as 3.8 million microplastics per year if calculated using the highest levels of microplastics found in each individual protein type and the average reported protein consumption rates.

"As ocean scientists, my co-authors and I are deeply concerned about the growing plastics crisis in the world's ocean," said Dr. George Leonard, Ocean Conservancy's Chief Scientist and a co-author of the study. "But our study shows that plastics in our food goes well beyond fish and shellfish to a wide variety of other protein sources, as well. Our work is a call to action to reduce plastic pollution in its many forms to ensure a safe and healthy food supply for all consumers."

## 5.2.2 Nanoplastics

### **The newest studies show nanoplastics are orders of magnitude more prevalent than estimated**

#### **AFP 24**

Agence France-Presse (international news agency headquartered in Paris, France). “Bottled water contains hundreds of thousands of plastic bits: study.” France24. 8 January 2024. JDN. <https://www.france24.com/en/live-news/20240108-bottled-water-contains-hundreds-of-thousands-of-plastic-bits-study>

Using a recently invented technique, scientists counted on average 240,000 detectable fragments of plastic per liter of water in popular brands – between 10-100 times higher than prior estimates – raising potential health concerns that require further study.

“If people are concerned about nanoplastics in bottled water, it’s reasonable to consider alternatives like tap water,” Beizhan Yan, an associate research professor of geochemistry at Columbia University and a co-author of the paper told AFP.

But he added: “We do not advise against drinking bottled water when necessary, as the risk of dehydration can outweigh the potential impacts of nanoplastics exposure.”

There has been rising global attention in recent years on microplastics, which break off from bigger sources of plastic and are now found everywhere from the polar ice caps to mountain peaks, rippling through ecosystems and finding their way into drinking water and food.

While microplastics are anything under 5 millimeters, nanoplastics are defined as particles below 1 micrometer, or a billionth of a meter – so small they can pass through the digestive system and lungs, entering the bloodstream directly and from there to organs, including the brain and heart. They can also cross the placenta into the bodies of unborn babies.

There is limited research on their impacts on ecosystems and human health, though some early lab studies have linked them to toxic effects, including reproductive abnormalities and gastric issues.

To study nanoparticles in bottled water, the team used a technique called Stimulated Raman Scattering (SRS) microscopy, which was recently invented by one of the paper’s co-authors, and works by probing samples with two lasers tuned to make specific molecules resonate, revealing what they are to a computer algorithm.

## *5 Affirmative Evidence*

They tested three leading brands but chose not to name them, “because we believe all bottled water contain nanoplastics, so singling out three popular brands could be considered unfair,” said Yan.

The results showed between 110,000 to 370,000 particles per liter, 90 percent of which were nanoplastics while the rest were microplastics.

### 5.2.3 MP Bad (General)

#### **Microplastics pose both health and environmental hazards**

##### **Lindwall 20**

Courtney Lindwall (writer for Consumer Reports). “Single-Use Plastics 101.” Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Left alone, plastics don’t really break down; they just break up. Over time, sun and heat slowly turn plastics into smaller and smaller pieces until they eventually become what are known as microplastics. These microscopic plastic fragments, no more than 5 millimeters long, are hard to detect—and are just about everywhere. Some microplastics are even small by design, like the microbeads used in facial scrubs or the microfibers in polyester clothing. They end up in the water, eaten by wildlife, and inside our bodies. They’ve even made their way up to the secluded Pyrenees mountain range and down to the bottom of the Mariana Trench. For wildlife, microplastics can be particularly dangerous; when eaten they can easily accumulate inside an animal’s body and cause health issues, like punctured organs or fatal intestinal blockages.

Exposure to microplastics, as well as the chemicals that are added to plastics during processing, harm our health. Many of the chemicals in plastics are known endocrine disruptors, and research has suggested that human exposure could cause health impacts including hormonal imbalances, reproductive problems like infertility, and even cancer. The phthalate DEHP, as just one example from dozens, is often added to plastic goods like shower curtains and garden hoses to make them more flexible—but was also found to be a probable human carcinogen by the U.S. Environmental Protection Agency.

## 5.2.4 MP Unhealthy

### Scientists agree microplastics pose a human health concern

#### Gore-Langton 22

Louis Gore-Langton (Senior Journalist, Packaging Insights). "Microplastics in human blood: Researchers say discovery is 'certainly reason for concern'." Packaging Insights. 25 March 2022. JDN. <https://www.packaginginsights.com/news/microplastics-in-human-blood-researchers-say-discovery-is-certainly-reason-for-concern.html>

Microplastics have been detected in human blood cells for the first time, sparking fears that continued packaging pollution could result in rising disease rates. A team of scientists in the Netherlands sought to quantify levels and types of plastic in 22 human subjects' blood and discovered particles in 80% of them. The researchers say the findings are a "breakthrough" discovery and "certainly a reason to be concerned." The study adds to a body of evidence that microplastics are contaminating human and environmental health, with particles found on Mount Everest, in deep ocean waters and human fetuses.

**Studies show negative health effects from plastics in animals**

**Parker 23**

Laura Parker (Award-winning editor and writer at National Geographic). “Microplastics are in our bodies. How much do they harm us?” National Geographic. 8 May 2023. JDN. <https://www.nationalgeographic.com/environment/article/microplastics-are-in-our-bodies-how-much-do-they-harm-us>

In the decade since, the numbers and risks to animals have worsened. More than 700 species are affected by plastics. It is probable that hundreds of millions of wild birds have consumed plastic, scientists say, and by mid-century, all seabird species on the planet are predicted to be eating it. Certain bird populations are already thought to be threatened by widespread exposure to endocrine-disrupting chemicals contained in plastics. Laboratory studies of fish have found plastics can cause harm to reproductive systems and stress the liver.

### **Microplastics pose numerous health risks**

#### **Lee et al. 23**

Yongjin Lee (Institute for Environmental Research, Yonsei University College of Medicine), Jaelim Cho (Department of Preventive Medicine, Yonsei University College of Medicine), Jungwoo Sohn (Department of Preventive Medicine, Jeonbuk National University Medical School), and Changsoo Kim (Department of Preventive Medicine, Yonsei University College of Medicine). “Health Effects of Microplastic Exposures: Current Issues and Perspectives in South Korea.” *Yonsei Med J.* 2023 May; 64(5): 301–308. JDN. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10151227/>

Considering the ubiquitous nature and long persistence of microplastics, it is necessary to make efforts to mitigate their exposure given their effects on entire generations and multiple generations.

Plastic, which has become inseparable from human life, has given various benefits to mankind, but is naturally or artificially divided into various sizes and affecting the natural ecosystem. When the size of the plastic becomes smaller and microplastics are formed, they can be absorbed, ingested, or inhaled into the human body through the skin, gastrointestinal system, or lungs. These microplastics can physically block the digestive system, stimulate the mucous membrane, and injure it. Also, when the size of microplastics becomes smaller than 1 micrometer to form nanoplastics, which are ultrafine plastics, they can pass through the primary tissue barrier in the body and penetrate the capillary blood vessel through the blood stream, which can be dispersed throughout the body. In addition, ultrafine plastics have hydrophobic properties that do not dissolve in water and can be dispersed, resulting in various properties.

### 5.2.5 Generational Effects

#### **Studies of animals show microplastics can be passed down to future generations**

**Lee et al. 23**

Yongjin Lee (Institute for Environmental Research, Yonsei University College of Medicine), Jaelim Cho (Department of Preventive Medicine, Yonsei University College of Medicine), Jungwoo Sohn (Department of Preventive Medicine, Jeonbuk National University Medical School), and Changsoo Kim (Department of Preventive Medicine, Yonsei University College of Medicine). “Health Effects of Microplastic Exposures: Current Issues and Perspectives in South Korea.” *Yonsei Med J.* 2023 May; 64(5): 301–308. JDN. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10151227/>

A recent report showed that microplastics exposure in newborns and infants could increase due to the use of feeding bottles and medical devices, and biomonitoring data provide indirect evidence of microplastics exposure in infants and children. The results of animal studies have shown that maternal exposure to microplastics affects offspring and subsequent generations and that the toxicity levels and effects in humans can vary depending on the size, shape, chemical composition, surface charge, and hydrophobicity of microplastic particles.



## 5.2.6 Risk Increasing

### **The threat of microplastics compounds over time**

#### **Parker 23**

Laura Parker (Award-winning editor and writer at National Geographic). “Microplastics are in our bodies. How much do they harm us?” National Geographic. 8 May 2023. JDN. <https://www.nationalgeographic.com/environment/article/microplastics-are-in-our-bodies-how-much-do-they-harm-us>

As plastic waste proliferates around the world, an essential question remains unanswered: What harm, if any, does it cause to human health?

A few years ago, as microplastics began turning up in the guts of fish and shellfish, the concern was focused on the safety of seafood. Shellfish were a particular worry, because in their case, unlike fish, we eat the entire animal—stomach, microplastics and all. In 2017, Belgian scientists announced that seafood lovers could consume up to 11,000 plastic particles a year by eating mussels, a favorite dish in that country.

By then, however, scientists already understood that plastics continuously fragment in the environment, shredding over time into fibers even smaller than a strand of human hair—particles so small they easily become airborne. A team at the U.K.’s University of Plymouth decided to compare the threat from eating contaminated wild mussels in Scotland to that of breathing air in a typical home. Their conclusion: People will take in more plastic by inhaling or ingesting tiny, invisible plastic fibers floating in the air around them—fibers shed by their own clothes, carpets, and upholstery—than they will by eating the mussels.

## 5.2.7 Cell Damage

### Lab tests show microplastics can cause cell damage

#### Parker 23

Laura Parker (Award-winning editor and writer at National Geographic). “Microplastics are in our bodies. How much do they harm us?” National Geographic. 8 May 2023. JDN. <https://www.nationalgeographic.com/environment/article/microplastics-are-in-our-bodies-how-much-do-they-harm-us>

Measuring possible adverse effects of plastics on humans is far more difficult than on animals—unlike quail and fish, human subjects can’t intentionally be fed a diet of plastics. In laboratory tests, microplastics have been shown to cause damage to human cells, including both allergic reactions and cell death. But so far there have been no epidemiologic studies documenting, in a large group of people, a connection between exposure to microplastics and impacts on health.

Instead, research has involved small groups of people—a factor that limits conclusions that can be drawn beyond identifying the presence of microplastics in different parts of the body. A 2018 study found microplastics in the feces of eight people. Another study documented the presence of microplastics in the placentas of unborn babies.

## 5.3 Bans Good

### 5.3.1 Bans Work

#### **Banning single-use plastics both directly and indirectly reduces plastic pollution**

##### **Lindwall 20**

Courtney Lindwall (writer for Consumer Reports). “Single-Use Plastics 101.” Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

Plastic is putting a strain on waste management systems, our oceans, and vulnerable communities the world over. A wave of single-use plastic bans is sweeping the country and the globe—most often on plastic bags, straws, stirrers, and takeout clamshells. (Some places are going so far as to ban single-use plastics entirely; most notably, India intends to go this route by 2022.) Among the U.S. cities to outlaw plastic straws are Malibu, Berkeley, Seattle, and Miami Beach. Plastic bag bans—ideally accompanied by a fee on paper bags—are also catching on. New York State and Hawaii just passed theirs, set to go into effect in 2020, and California’s bag ban, which was passed in 2014, has been shown to have reduced plastic bag usage by 85 percent (with some customers opting to pay a 10 cent fee for thicker plastic bags) and has reduced coastal pollution.

What do the bans accomplish? They prevent millions of tons of plastic from entering the waste stream each year. And when it comes to waste that lasts forever, every ton counts. In New York, 23 billion plastic bags are used by residents each year. Not only does banning single-use plastic reduce pollution, but it also reduces demand for plastic production that’s contributing to global climate change. But beyond these impacts, the bans have cultural effects. Companies are forced to innovate, rethinking their designs and sourcing sustainable materials. And they help shift consumer mind-sets, as people begin to recognize that exorbitant and avoidable waste is not sustainable.

### 5.3.2 US Key

#### US demand induces plastic production in other countries

##### Lindwall 20

Courtney Lindwall (writer for Consumer Reports). “Single-Use Plastics 101.” Natural Resources Defense Council. 9 January 2020. JDN. <https://www.nrdc.org/stories/single-use-plastics-101#what>

In 2015 researchers from the University of Georgia estimated that between 4.8 million and 12.7 million metric tons of plastic per year make their way into the oceans via people living within 30 miles of a coast. The majority of this pollution—dominated by single-use plastic waste—comes from countries lacking infrastructure to properly manage waste, particularly in Asia. India, for example, generates 25,940 tons of plastic waste every day but collects only 60 percent of it. (It’s also important to remember that waste management is just one part of the global materials cycle. For instance, a lot of the plastic produced in Asian countries is for products that serve U.S. demand—and the United States often sends plastic waste back to these countries for recycling.)

### 5.3.3 Alternatives Key

#### **Making alternatives available increases compliance**

##### **March et al. 23**

Antaya March (Senior Research Associate, Global Plastics Policy Centre), Steve Fletcher (Professor of Ocean Policy and Economy, University of Portsmouth), and Tegan Evans (PhD Candidate in Ocean Governance, University of Portsmouth). “Single-use plastic bans: research shows three ways to make them effective.” *The Conversation*. 13 January 2023. JDN. <https://theconversation.com/single-use-plastic-bans-research-shows-three-ways-to-make-them-effective-197449>

The Global Plastics Policy Centre of the University of Portsmouth reviewed 100 policies aimed at tackling plastic pollution worldwide in 2022 to understand what makes them successful. Here are three key lessons which can make the new English ban more effective.

1. Make it easy to use alternatives

Consumers and businesses are less likely to comply with a ban if they are expected to go entirely without plastic overnight. Ensuring businesses can source affordable alternatives is critical. Antigua and Barbuda did this by investing in the research of more sustainable materials and listing approved alternatives to plastic, such as bagasse, a byproduct of sugar-cane processing.

To maintain public support, it helps if there are measures which prevent cost hikes being passed directly on to consumers.

Alternative materials or products must have a lower environmental impact than the banned product, but this isn't always guaranteed. Substituting plastic bags for paper, for example, may not be the best idea when the entire life cycle of a product is accounted for.

### 5.3.4 Phased Bans Good

#### **Bans can be phased in to reduce transition costs**

##### **March et al. 23**

Antaya March (Senior Research Associate, Global Plastics Policy Centre), Steve Fletcher (Professor of Ocean Policy and Economy, University of Portsmouth), and Tegan Evans (PhD Candidate in Ocean Governance, University of Portsmouth). “Single-use plastic bans: research shows three ways to make them effective.” *The Conversation*. 13 January 2023. JDN. <https://theconversation.com/single-use-plastic-bans-research-shows-three-ways-to-make-them-effective-197449>

#### 2. Phase in a ban

A phased approach to a ban improves how well it works but requires consistent and clear messaging about what products are banned and when. In Antigua and Barbuda, phased plastic bag bans in 2016 and 2017 generated support for banning other plastic products between 2017 and 2018.

In both cases, importing these products was restricted first, followed by a ban on distributing them, which gave suppliers time to find alternatives and use up existing stock.

This approach was used to good effect in an English ban on plastic straws, cotton buds and stirrers in 2020, allowing retailers to use up their supplies during the six months following the ban’s introduction.

### 5.3.5 Info Campaigns

**When coupled with information campaigns, bans are more likely to spur wider social changes**

**March et al. 23**

Antaya March (Senior Research Associate, Global Plastics Policy Centre), Steve Fletcher (Professor of Ocean Policy and Economy, University of Portsmouth), and Tegan Evans (PhD Candidate in Ocean Governance, University of Portsmouth). “Single-use plastic bans: research shows three ways to make them effective.” *The Conversation*. 13 January 2023. JDN. <https://theconversation.com/single-use-plastic-bans-research-shows-three-ways-to-make-them-effective-197449>

#### 3. Involve the public

Information campaigns which explain why a ban is needed, what it means for the public and businesses and what alternatives are available serve to support a ban. This was evident from Vanuatu, where the inclusion of diapers in a ban was postponed due to public concerns around the availability of sustainable alternatives.

Working closely with the public like this can also encourage innovation. For example, in Vanuatu in 2018, weavers and crafting communities filled the gap left by banned plastic bags and polystyrene takeaway containers with natural alternatives made locally, including bags and food containers woven from palm leaves.

Single-use plastic bans can inspire wider changes to social systems and the relationship each person has with plastic. But without planned access to alternatives, a phased introduction, efforts to nurture public support and broader consideration of the entire life cycle of plastic, product bans have a limited effect on plastic pollution, and can even give the false impression of progress.

### 5.3.6 Bans Key

#### **Microplastics can only be effectively fought at the source**

**Lee et al. 23**

Yongjin Lee (Institute for Environmental Research, Yonsei University College of Medicine), Jaelim Cho (Department of Preventive Medicine, Yonsei University College of Medicine), Jungwoo Sohn (Department of Preventive Medicine, Jeonbuk National University Medical School), and Changsoo Kim (Department of Preventive Medicine, Yonsei University College of Medicine). “Health Effects of Microplastic Exposures: Current Issues and Perspectives in South Korea.” *Yonsei Med J.* 2023 May; 64(5): 301–308. JDN. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10151227/>

Microplastics are so small that they are almost impossible to recover once they are released into the ecosystem. As a result, countries around the world are strengthening related laws on primary microplastics. For example, the EU is taking various measures to recycle plastics, develop biodegradable plastics, distinguish harmful substances in plastics, and prevent marine waste generation.



## 6 Negative Evidence

### 6.1 Plastics Good

#### 6.1.1 Plastic Good (General)

**Plastic has a wide range of benefits**

**Edie 22**

Edie (media organization focusing on sustainability in business). “Single-use plastics.” 2022. JDN. <https://www.edie.net/definition/single-use-plastics/>

However, sustainability experts including Committee on Climate Change chair Lord Deben have warned that we are now entering an era where shoppers will demand plastic-free items without considering why the material has been used, with common benefits of its use including protection from damage in transit and prevention of food waste through product life extension.

For example, a wrapped cucumber will last an average of three days longer than an unwrapped one, retaining 2% more of its weight in the process due to reduced evaporation. Elsewhere, health companies continue to cite difficulty removing single-use plastic packaging used to keep surgical equipment sterile and medicine in good condition, while several disabled consumers have claimed they rely on single-use plastic straws and wet wipes in their day-to-day lives.

Plastic has also historically been a safer and cheaper alternative to paper, glass or cardboard for many companies, with online sportswear retailer Surfdome having seen its packaging costs increase by 110% since pledging to go plastic-free.

### 6.1.2 Economic Impact

#### **Banning single-use plastics would increase the cost of consumer goods**

##### **Wirtz 22**

Bill Wirtz ( senior policy analyst at the Consumer Choice Center, writer for Lëtzebuerger Journal in Luxembourg; former columnist for the Luxembourg Times). "Would a single-use plastic ban be counterproductive?" The Hill. 30 August 2022. JDN. <<https://thehill.com/opinion/energy-environment/3620887-would-a-single-use-plastic-ban-be-counter-productive/>>

A ban on single-use plastics through the General Services Administration would undermine the immense progress that has been made in the field of plastics over the past decades. The divestment from plastic would prevent manufacturers from developing new products and increase prices for everyday consumer goods. Most of all, it would be counterproductive to the goals that the environmental activists claim they support. In fact, it's another one of those examples where supporters of single-use plastic can say to environmentalists: I'm on your side, but you're not.

## **Plastics keep consumer goods affordable**

### **Logomasini 18**

Angela Logomasini (Senior Fellow at the Competitive Enterprise Institute, specializing in environmental risk; former environmental editor for the Research Institute of America). “Five Reasons Banning Plastics May Harm the Environment and Consumers.” Competitive Enterprise Institute. 13 July 2018. JDN. <https://cei.org/blog/five-reasons-banning-plastics-may-harm-the-environment-and-consumers/>

Plastics are economical. In addition to being more efficient and sanitary, plastic consumer products are also less expensive to produce than paper or aluminum alternatives. Because these items are cheaper to make, they are also less expensive for consumers both in the United States and around the globe. Bans of such economical items simply increase costs for businesses and ultimately consumers.

**Studies show that plastic bans harms the local economy**

**ACC 13**

American Chemistry Council (non-profit trade association). "New Study Details Economic And Environmental Costs Of NYC Polystyrene Ban." PR Newswire. 20 March 2013. JDN. <https://www.prnewswire.com/news-releases/new-study-details-economic-and-environmental-costs-of-nyc-polystyrene-ban-199167951.html>

A new study released today finds that the ban on polystyrene foam proposed by the Bloomberg Administration will cost city businesses, consumers and tax payers nearly \$100 million per year by nearly doubling food service product costs, and do little to reduce waste.

According to the study, produced by research firm MB Public Affairs on behalf of the American Chemistry Council, "Total costs to replace plastic foam foodservice and drink containers and trays with the lowest-cost alternative are estimated at \$91.3 million [per year.] This level translates into an effective minimum average cost increase of 94%. In other words, for every \$1.00 now spent on plastic foam foodservice and drink containers, NYC consumers and businesses will have to spend at least \$1.94 on the alternative replacements, effectively doubling the cost to businesses."

### 6.1.3 Restaurants

#### **The restaurant industry is especially at risk from plastics bans**

##### **ACC 13**

American Chemistry Council (non-profit trade association). "New Study Details Economic And Environmental Costs Of NYC Polystyrene Ban." PR Newswire. 20 March 2013. JDN. <https://www.prnewswire.com/news-releases/new-study-details-economic-and-environmental-costs-of-nyc-polystyrene-ban-199167951.html>

Restaurants in the five boroughs will see a \$57 million increase in costs. Restaurants, especially small businesses, are already stretched – and this increase has the potential to seriously impact the bottom line of businesses that employ over 137,000 New Yorkers.

"This study shows that for a restaurant – especially a small, neighborhood business – mandating a switch to a higher-priced alternative for basic supplies can have a serious effect," said Andrew Moesel, spokesman for the New York State Restaurant Association. "These are businesses that are absorbing higher food and energy costs, and are under pressure from a struggling economy that leaves less money in people's paychecks. It's one more thing to add to the headwinds they are facing. As the process moves forward, we hope that the City Council takes into consideration the substantial economic burden that this or any new piece of regulation would have."

In addition, the ban would have significant impact on polystyrene manufacturing jobs in New York State. Over 1,200 jobs would be in serious jeopardy, with a total estimated impact of nearly \$400 million for the state.

#### 6.1.4 Sanitation

##### **Alternatives to plastic are less sanitary**

##### **Logomasini 18**

Angela Logomasini (Senior Fellow at the Competitive Enterprise Institute, specializing in environmental risk; former environmental editor for the Research Institute of America). “Five Reasons Banning Plastics May Harm the Environment and Consumers.” Competitive Enterprise Institute. 13 July 2018. JDN. <https://cei.org/blog/five-reasons-banning-plastics-may-harm-the-environment-and-consumers/>

Plastic is more sanitary and safer to use than other alternatives. Plastic items are more sanitary than other alternatives. For example, reusable bags often harbor bacteria and could pose a health risk for consumers. Plastic packaging reduces food waste and makes possible transporting and serving food in a way that reduces disease transmission. Recent claims to the contrary do not hold water.

## **Single-use plastics are vital for sanitation**

### **ACC 19**

American Chemical Council (non-profit trade association). "Sanitation and Hygiene." 2019. JDN. <https://www.plasticfoodservicefacts.com/foodservice-safety/sanitation-and-hygiene/>

Single-use plastic foodservice packaging provides a sanitary way to serve fresh food at schools, restaurants, hospitals, nursing homes, cafeterias ...even at home.

Sanitary foodservice packaging is a key part of helping prevent disease. Public health officials encourage the use of sanitary, single-use foodservice packaging in appropriate settings – single-use foodservice packaging can help reduce food borne illness.

Reusable dishes, drinking cups and utensils depend on washing after use, and that washing has to be consistent and thorough. Studies conducted at foodservice operations demonstrate that this is not always the case.

A 2012 study in Sacramento County, CA, found that nearly 30 percent of the reusable items tested had higher than acceptable bacterial counts.

A 2007 study in Wisconsin found that unprotected tables and trays had seven to 23 times higher bacterial counts than those with single-use place mats and tray covers.

A 2002 study in Las Vegas found 18 percent of the reusable items tested had higher than acceptable bacterial counts.

In addition, reusable cups, dishes, plates, utensils, place mats, table coverings and other products require copious amounts of water and energy to clean, time and time again. Plastic foodservice packaging conserves these important resources and allows our schools and hospitals to save the water, energy, detergents – and money and labor – required to sanitize reusables. And when dishwashers are down or malfunctioning, many jurisdictions actually require foodservice operators to use sanitary, single-use foodservice packaging to protect health and safety.

Simply put, good hygiene is a very good thing (especially during flu season!). From the foam cup for our grand latte to the clear clamshell that protects our sushi, clean is key. When sanitary conditions are important, all of us – parents, teachers, students, hospital patients, customers – can have peace of mind with plastic foodservice packaging.

### 6.1.5 Foodborne Illness

#### Reusable bags risk cross-contamination and spread of E.coli

**Williams et al. 11**

David L. Williams (Dept. of Soil, Water, and Environmental Science, University of Arizona), Charles P. Gerba (Dept. of Soil, Water, and Environmental Science, University of Arizona), Sherri Maxwell (Dept. of Soil, Water, and Environmental Science, University of Arizona), and Ryan G. Sinclair (Loma Linda University School of Public Health, Dept. of Environmental Health). "Assessment of the Potential for Cross-contamination of Food Products by Reusable Shopping Bags." *Food Protection Trends*, Vol. 31, No. 8, Pages. 508–513. August 2011. JDN. <https://llu.org/sites/llu.org/files/docs/LIVE-IT-Sinclair-Article-Cross-Contamination-Reusable-Shopping-Bags.pdf?rsource=medical-center.lomalindahealth.org/sites/medical-center.lomalindahealth.org/files/docs/LIVE-IT-Sinclair-Article-Cross-Contamination-Reusable-Shopping-Bags.pdf>

The purpose of this study was to assess the potential for cross-contamination of food products by reusable bags used to carry groceries. Reusable bags were collected at random from consumers as they entered grocery stores in California and Arizona. In interviews, it was found that reusable bags are seldom if ever washed and often used for multiple purposes. Large numbers of bacteria were found in almost all bags and coliform bacteria in half. *Escherichia coli* were identified in 8% of the bags, as well as a wide range of enteric bacteria, including several opportunistic pathogens. When meat juices were added to bags and stored in the trunks of cars for two hours, the number of bacteria increased 10-fold, indicating the potential for bacterial growth in the bags. Hand or machine washing was found to reduce the bacteria in bags by > 99.9%. These results indicate that reusable bags, if not properly washed on a regular basis, can play a role in the cross-contamination of foods. It is recommended that the public be educated about the proper care of reusable bags by means of printed instructions on the bags or through public service announcements.



**Cross-contamination is a major driver of foodborne illness**

**Williams et al. 11**

David L. Williams (Dept. of Soil, Water, and Environmental Science, University of Arizona), Charles P. Gerba (Dept. of Soil, Water, and Environmental Science, University of Arizona), Sherri Maxwell (Dept. of Soil, Water, and Environmental Science, University of Arizona), and Ryan G. Sinclair (Loma Linda University School of Public Health, Dept. of Environmental Health). "Assessment of the Potential for Cross-contamination of Food Products by Reusable Shopping Bags." *Food Protection Trends*, Vol. 31, No. 8, Pages. 508–513. August 2011. JDN. <https://lluh.org/sites/lluh.org/files/docs/LIVE-IT-Sinclair-Article-Cross-Contamination-Reusable-Shopping-Bags.pdf?rsource=medical-center.lomalindahealth.org/sites/medical-center.lomalindahealth.org/files/docs/LIVE-IT-Sinclair-Article-Cross-Contamination-Reusable-Shopping-Bags.pdf>

Most foodborne illnesses are believed to originate in food prepared or consumed in the home (1, 2, 10). Crosscontamination of foods during handling is one of the factors leading to this assumption. Cross-contamination occurs when disease-causing microorganisms are transferred from one food to another. For example, raw meat products are often contaminated with foodborne bacteria such as Salmonella and Campylobacter (3), and, although cooking foods usually destroy these bacteria, the organisms may be transferred to other foods that are sometimes consumed uncooked, or may contaminate the hands of consumers and be directly transferred to the mouth, resulting in infection. Transfer may occur by surfaces such as cutting boards and kitchen counter tops as well as by the hands (1, 9). Reusable bags for transport of groceries from the store to the consumer's home have become popular in recent years. Since these bags are often reused, and potentially are used for multiple purposes, the possibility for contamination of food products as well as the consumer's hands exists (6). The goal of this project was to assess the potential for reusable bags to cross contaminate foods carried in reusable bags.

## **Foodborne illness harms tens of millions in the US alone**

### **Williams et al. 11**

David L. Williams (Dept. of Soil, Water, and Environmental Science, University of Arizona), Charles P. Gerba (Dept. of Soil, Water, and Environmental Science, University of Arizona), Sherri Maxwell (Dept. of Soil, Water, and Environmental Science, University of Arizona), and Ryan G. Sinclair (Loma Linda University School of Public Health, Dept. of Environmental Health). "Assessment of the Potential for Cross-contamination of Food Products by Reusable Shopping Bags." *Food Protection Trends*, Vol. 31, No. 8, Pages. 508–513. August 2011. JDN. <https://lluh.org/sites/lluh.org/files/docs/LIVE-IT-Sinclair-Article-Cross-Contamination-Reusable-Shopping-Bags.pdf?rsource=medical-center.lomalindahealth.org/sites/medical-center.lomalindahealth.org/files/docs/LIVE-IT-Sinclair-Article-Cross-Contamination-Reusable-Shopping-Bags.pdf>

An estimated 76,000,000 cases of foodborne illness occur in the United States every year (2). Most of these illnesses are believed to originate in the home as the result of improper cooking or handling of foods (2, 10). Reusable bags, if not properly washed between uses, create the potential for cross-contamination of foods, especially when raw meat products and foods traditionally eaten uncooked (fruits and vegetables) are carried in the same bags, either together or in different uses. This risk can be increased by the growth of bacteria in the bags. The results of this study indicate that large numbers of bacteria can be present in reusable bags and are capable of increasing 10-fold in a trunk within a two-hour period. Slightly more than half of the bags contained coliform bacteria, indicating contamination by raw meats or other uncooked food products. *E. coli*, used to indicate fecal contamination, was detected in 8% of the bags. The presence of these bacteria demonstrates that reusable bags do get contaminated by enteric organisms and a risk from foodborne pathogens does exist. Attempts to isolate *Salmonella* and *Listeria* bacteria from the bags were not successful in this study, but this may represent only the limited number of samples collected.

## 6.2 Environment

### 6.2.1 Environment (General)

#### Life-cycle assessment shows plastic is comparatively sustainable

##### Wirtz 22

Bill Wirtz ( senior policy analyst at the Consumer Choice Center, writer for Lëtzebuerger Journal in Luxembourg; former columnist for the Luxembourg Times). “Would a single-use plastic ban be counterproductive?” The Hill. 30 August 2022. JDN. <<https://thehill.com/opinion/energy-environment/3620887-would-a-single-use-plastic-ban-be-counter-productive/>>

However, contrary to the idealism of the campaigners, banning the federal government from using single-use plastic goods would not benefit the environment. In fact, life-cycle assessments on items such as single-use plastic bags have shown that there is a discrepancy between actual re-use rates of alternative bags and the re-use rate to break even on environmental grounds. Paper bags need to be re-used four times, LDPE bags five times, non-woven PP bags 14 times and cotton bags 173 times. Their actual re-use rates are about half that, making them less sustainable than single-use plastic bags, which may also be used by consumers as bin liners. A 2020 study by University of Michigan Professor Shelie Miller displayed how alternatives to single-use plastic items are dependent on high re-use rates. Those rates are often not achieved.

The same effects appear when we compare glass bottles to plastic bottles. As glass bottles are much heavier, their carbon footprint for transport is also higher. Whoever substitutes a plastic straw with a bamboo straw should also probably be aware of their significant carbon footprint.

## 6.2.2 Energy Intensiveness

### **Plastics are far less energy intensive than alternatives**

#### **Logomasini 18**

Angela Logomasini (Senior Fellow at the Competitive Enterprise Institute, specializing in environmental risk; former environmental editor for the Research Institute of America). “Five Reasons Banning Plastics May Harm the Environment and Consumers.” Competitive Enterprise Institute. 13 July 2018. JDN. <https://cei.org/blog/five-reasons-banning-plastics-may-harm-the-environment-and-consumers/>

Plastics have important environmental benefits. In many ways, plastics are better for the environment than other alternatives because they are more efficient and use less energy during production and transport. Plastic consumer goods like straws, foam cups, and utensils are less energy intensive to produce than alternatives like paper or aluminum. Production of these items takes more resources, creates more waste, and results in more pollution than the production of disposable plastic items. Reusable items like foam cups, straws, and bags require more than 100 uses—and in more than 1,000 in the case of foam cups—justify the energy required to produce them.

## **Alternatives to plastic are even more resource intensive**

### **Stanislaus 18**

Mathy Stanislaus (Interim Director, Global Battery Alliance; formerly Obama Administration Official at USEPA). “Banning Straws and Bags Won’t Solve our Plastic Problem.” World Resources Institute. 16 August 2018. JDN. <https://www.wri.org/insights/banning-straws-and-bags-wont-solve-our-plastic-problem>

#### Where Plastic Bans Fall Short

It’s encouraging that local governments are focusing on passing laws to fight plastic litter. Unfortunately, while these laws may reduce the most visible form of plastic pollution, it could be at the expense of other environmental impacts. That’s because, somewhat ironically, disposable plastic bags require fewer resources (land, water, CO2 emissions, etc.) to produce than paper, cotton or reusable plastic bags—by a wide margin.

For example, Denmark’s Ministry of Environment and Food found that you would need to reuse a paper bag at least 43 times for its per-use environmental impacts to be equal to or less than that of a typical disposable plastic bag used one time. An organic cotton bag must be reused 20,000 times to produce less of an environmental impact than a single-use plastic bag. That would be like using a cotton bag every day for nearly 55 years. (Note that these figures aggregate the bags’ impact on water use, CO2 emissions, land use and more, but they do not include their impact on plastic pollution.)

### 6.2.3 Styrofoam Good

#### **Styrofoam is more recyclable than alternatives**

##### **ACC 13**

American Chemistry Council (non-profit trade association). "New Study Details Economic And Environmental Costs Of NYC Polystyrene Ban." PR Newswire. 20 March 2013. JDN. <https://www.prnewswire.com/news-releases/new-study-details-economic-and-environmental-costs-of-nyc-polystyrene-ban-199167951.html>

Despite claims to the contrary, polystyrene foam is being recycled in about 65 U.S. cities. However, many common alternatives to foam are not recycled at all, and have other significant drawbacks. Alternatives are often heavier and larger in volume, use more energy for production and transport, and take up more room in landfills.

Paper products – the most common alternative to foam – cannot be recycled according to the City of New York Department of Sanitation's own website, which specifically mentions paper coffee cups and other paper food service items. These products also do not insulate as well, leading to double cupping or the use of a sleeve, which actually increases solid waste and would further increase costs beyond the \$91 million per year estimated in this study.

"Legislative bans that do not consider the full life cycle impacts of a product and its alternatives have the potential to create unforeseen impacts on the ability to pursue other environmental goals in other areas," according to the study.

### 6.2.4 Plastic Bags Good

#### **Plastic is the most eco-friendly material for grocery bags**

##### **DeArmitt 22**

Dr. Chris DeArmitt FIMMM, FRSC, CChem. "Plastics persecution: It may be fun, but is it fair?" Packaging Insights. 9 March 2022. JDN. <https://www.packaginginsights.com/insider-views/plastics-persecution-it-may-be-fun-but-is-it-fair.html>

One high-profile example is grocery bags. We've been told that plastic bags are bad but when you check the science, there are 26 lifecycle studies on bags worldwide and every one of them concludes that the polyethylene (PE) bag causes least harm. That makes you wonder why they are banning and taxing the proven greenest option. It makes no logical sense but that's what happens when you don't check the evidence first.

### 6.2.5 Food Waste

#### **Plastics reduce food waste, a significant cause of climate change**

##### **WRAP no date**

Waste and Resources Action Programme (registered UK Charity). “Banning plastic packaging: why can’t we just do it?” RecycleNow. No Date. <https://www.recyclenow.com/how-to-recycle/ban-plastic-packaging>

In particular, plastic is great at protecting things, keeping them airtight, watertight and hygienic. That’s essential for meeting health and safety standards for some products, such as medicines or bleach, but it’s also important for keeping certain types of food fresh (such as raw fish and meat, or cucumbers, which last an amazing 15 days longer when shrink-wrapped). Keeping food fresh reduces food waste, which is another major contributor to climate change.

And the benefits of plastic don’t end there. Plastic is lighter than other packaging options, so it’s easier to transport – which also reduces carbon emissions. It can be made into any shape, it’s not fragile like glass or paper, and it’s easy to print usage and warning labels on. The unfortunate reality, therefore, is that plastic can do things that other materials can’t – for the moment, at least.



## **Plastics reduce carbon footprint from agriculture**

### **Marshall 21**

Jean Marshall (Professor and Head of the Department of Microbiology & Immunology at Dalhousie University in Halifax). "Top 10 Reasons To Reject Anti-Plastic Hysteria." Listverse. 11 September 2021. JDN. <https://listverse.com/2021/09/11/top-10-reasons-to-reject-anti-plastic-hysteria/>

We need agriculture to feed the human race, but intensive agricultural practices can be an ecological disaster. Clearing wildlife from large land areas to raise cattle is one harmful practice. Using large amounts of fertilisers is another. However you look at it, making land produce more and more food is damaging our environment. Shockingly, the UN's environment programme estimates that up to 17% of the food we produce is wasted rather than eaten, and 8-10% of global greenhouse gas emissions come from producing wasted food. How can plastic materials help? Wrapping fresh foods in plastic may not seem environmentally friendly, but it does help to extend the lifetime of the food. This makes it easier for us to use up the food before it goes off. There is a balancing act here between reducing food waste and not over-producing plastic that will end up in landfill.

### 6.2.6 Light Weight

#### Plastics' light weight lowers energy usage

##### Marshall 21

Jean Marshall (Professor and Head of the Department of Microbiology & Immunology at Dalhousie University in Halifax). "Top 10 Reasons To Reject Anti-Plastic Hysteria." Listverse. 11 September 2021. JDN. <https://listverse.com/2021/09/11/top-10-reasons-to-reject-anti-plastic-hysteria/>

Plastic waste is bad for the environment, but plastic products can be helpful, if used properly. Imagine a lorry transporting plastic bottles of milk from the dairy to the supermarket. The lorry would burn more fuel if the milk bottles were made of glass. This is because glass bottles are usually heavier than plastic ones. The density of glass depends on its type but can be 2-10 times the density of typical plastics used for containers. Over the course of several years, we can use less fuel by transporting plastic rather than glass bottles. Using less fuel for transport also leads to lower CO<sub>2</sub> emissions. Also, while a glass bottle is a relatively small component, we're increasingly using plastic components in cars and aeroplanes, to make them lighter. We can save a considerable amount of fuel by doing this and decrease the amount of CO<sub>2</sub> emitted. So, unless we all agree to stop travelling and only buy products manufactured locally, plastics are a good way to decrease CO<sub>2</sub> production in transport.

### 6.2.7 **Misdirected Focus**

#### **Banning plastics distracts from systematic solutions to pollution**

##### **Stanislaus 18**

Mathy Stanislaus (Interim Director, Global Battery Alliance; formerly Obama Administration Official at USEPA). “Banning Straws and Bags Won’t Solve our Plastic Problem.” World Resources Institute. 16 August 2018. JDN. <https://www.wri.org/insights/banning-straws-and-bags-wont-solve-our-plastic-problem>

Banning plastic straws is also increasingly popular. Starbucks recently announced that it would phase out use of plastic straws by the year 2020. Straws don’t provide as much utility as bags, so for many this is an easy adjustment. But these bans leave the impression that they solve the plastics pollution problem without much discussion of systematic solutions. As a society, we should think holistically about the products we use and their impacts. We can’t just ban bad products—we must invest in alternatives.

### 6.2.8 Recycling Solves

#### **The rate of plastic recycling is high and increasing**

##### **Wirtz 22**

Bill Wirtz (senior policy analyst at the Consumer Choice Center, writer for *Lëtzebuerger Journal* in Luxembourg; former columnist for the *Luxembourg Times*). “Would a single-use plastic ban be counterproductive?” *The Hill*. 30 August 2022. JDN. <<https://thehill.com/opinion/energy-environment/3620887-would-a-single-use-plastic-ban-be-counter-productive/>>

A lot of the animosity toward plastic is derived from the idea that all single-use plastics are just used once and then burned in a pit or thrown in the ocean. This outdated perception drives a lot of the imagery we see used by campaigners.

In fact, the concept of “single-use” becomes redundant after we consider how far we’ve come with recycling. Over 90 percent of Americans living in cities with a population of over 125,000 people, already have access to recycling of single-use plastic bags. According to the Environmental Protection Agency (EPA), the U.S recycling rate for what’s known as PET plastics (polyethylene terephthalate) increased from 2 percent in the 1980s to more than 24 percent in 2018. Over time, an increasing amount of plastics will end up being endlessly recycled.

## **New plastics are more recyclable**

### **Lingle 23**

Rick Lingle (Senior Technical Editor, Packaging Digest). "Recyclable Mono-Material Snickers Bar Packaging Debuts." *Plastics Today*. 27 December 2023. JDN. <https://www.plasticstoday.com/packaging/recyclable-mono-material-snickers-bar-packaging-debuts>

Improving the sustainability of flexible packaging films, pouches, and other formats in the packaged food category starts with a first step away from nonrecyclable multilayer barrier films.

That improvement often means a switch to a recyclable mono-material film, which Mars China has taken in announcing this month the launch of a dark chocolate cereal Snickers bar.

It is claimed to be a significant step towards sustainable packaging using a mono-material polypropylene (PP) that follows "Designed For Recycling" guidance and "can be easily recycled in designated channels".

Available in select outlets, the new healthier-for-the-environment packaging matches the healthier-for-you, low-sugar, low-glycemic index snack.

The release points out that flexible packaging for food products typically consists of multiple layers of different materials to meet food safety and shelf-life requirements while being lightweight and flexible. However, the complex structure and materials make it challenging, if not unrealistic, to recycle.

In contrast, mono-material flexible packaging using single-polymer PP or polyethylene (PE) packaging is easier to recycle.

To address the challenges of flexible plastic packaging collection and recycling, Mars China partnered with the Green Recycled Plastic Supply Chain Joint Working Group (GRPG), China Plastic Recycling Association of China National Resources Recycling Association (CRPA), P&G, PepsiCo, and Dow to initiate the "Flexible Plastics Reborn" project.

This joint effort in China explores a sustainable flexible plastic packaging collection and closed-loop recycling system by addressing design, collection, and recycling challenges. The mono-material flexible packaging of the new Snicker's dark chocolate cereal bar is

## 6 *Negative Evidence*

specifically designed for the recycling requirements of the “Flexible Plastics Reborn” project.

## **Better legislation could improve plastics recycling**

### **Marshall 21**

Jean Marshall (Professor and Head of the Department of Microbiology & Immunology at Dalhousie University in Halifax). "Top 10 Reasons To Reject Anti-Plastic Hysteria." Listverse. 11 September 2021. JDN. <https://listverse.com/2021/09/11/top-10-reasons-to-reject-anti-plastic-hysteria/>

"Hang on a minute!" you may cry. "I thought half the problem with plastic is that we AREN'T recycling it properly?" Of course. But that's the fault of our lifestyle and processes, not the fault of the material itself. You CAN recycle many plastics quite well. However, to make a valuable recycled product, you first need to separate the different types of plastic. Then you need to tailor your recycling process for each type of plastic. If you try to mix lots of different types of plastic all together and recycle it, you just end up with an inferior material. In practice, this kind of separation is often uneconomic, so a lot of plastic just gets thrown away after one use. As a consumer, it is difficult to have much impact on this, but if manufacturers and legislators could agree to standardise a lot of packaging (by using similar sorts of materials, say, and not coating them with toxic paints) then recycling the material would become much more viable.

## 6.2.9 Recycling Improving

### **The government is already working on legislation to improve plastic recycling**

#### **Lilienfield 23**

Robert Lilienfield (consultant and strategic planner in the sustainable packaging industry with 25 years of experience). "5 Plastics Sustainability Trends to Track in 2024." *Plastics Today*. 5 December 2023. JDN. <https://www.plasticstoday.com/industry-trends/5-plastics-sustainability-trends-to-track-in-2024>

In my role as Executive Director of the Sustainable Packaging Research, Information and Networking Group (SPRING), I see many sustainability factors forming over the plastic packaging horizon. *PlasticsToday* editors asked me to name what I consider to be the top five as we move into 2024.

1. Federal interest and motivation to first create, and then successfully apply, national recycling mandates.

In April 2023, the Senate's Environment & Public Works (EPW) committee introduced bipartisan legislation designed to improve US recycling and composting systems.

Two bills were introduced: The Recycling and Composting Accountability Act, which would improve the U.S. Environmental Protection Agency's (EPA) ability to gather data on our nation's recycling systems and explore opportunities for implementing a national composting strategy, and the Recycling Infrastructure and Accessibility Act of 2023, which would allow EPA to create a pilot program to improve recycling services in underserved areas.

The American Chemistry Council, AMERIPEN, APR and other relevant industry and non-profit organizations all support this legislation. It could go a long way towards increasing the availability and decreasing the cost of high-quality, PET recyclable/recycled material. National legislation might also eliminate the perceived need for cumbersome state by state EPR programs.



## **Governments have recently stepped up plastic recycling**

### **Stanislaus 18**

Mathy Stanislaus (Interim Director, Global Battery Alliance; formerly Obama Administration Official at USEPA). "Banning Straws and Bags Won't Solve our Plastic Problem." World Resources Institute. 16 August 2018. JDN. <https://www.wri.org/insights/banning-straws-and-bags-wont-solve-our-plastic-problem>

As of January 1, China refused to import most recyclable materials from the United States and other developed countries, claiming the materials exceeded acceptable contamination levels. This has backed up the flow of disposed paper and plastic, causing serious problems for local waste management companies. However, there may be an ironic upside to China's decision. For too long, the easy option of shipping excess recyclables to China has resulted in underinvestment in optimizing plastics, maximizing their recovery and reducing waste.

Governments at the state and federal levels need to team up with private industry to address more systemic issues. We need to invest in redesigning plastics so that they can be readily broken down into their molecular units and remanufactured into new plastics of the same quality, the essence of a closed loop system. We need better recycling technology that can address the major obstacle of recycling plastics: about 25 percent of plastics collected are contaminated and therefore unusable. We need to reinvest government budgets in the infrastructure and associated policies needed for these systemic solutions. Once these technologies are deployed at a large scale, we can start recapturing the economic value of plastics, incentivizing their recovery and recycling, while minimizing plastic pollution and overconsumption of natural resources.

We need a wider array of smart public policies, a recycling infrastructure that's right-sized for the problem, better recycling technology and new business models. Banning single-use plastic bags and straws without significant further action is putting a finger on a spigot at a time when we need to suppress the tidal wave.

### 6.2.10 Plastics Not Key

#### Consumers confuse reducing plastic with reducing packaging

##### Lilienfield 23

Robert Lilienfield (consultant and strategic planner in the sustainable packaging industry with 25 years of experience). "5 Plastics Sustainability Trends to Track in 2024." *Plastics Today*. 5 December 2023. JDN. <https://www.plasticstoday.com/industry-trends/5-plastics-sustainability-trends-to-track-in-2024>

3. Ironically, source reduction is now being defined as a strategy to promote reduced plastic usage rather than simply reduced material usage.

Replace a lightweight plastic package with a heavier paper one? As my packaging efficiency research has demonstrated many times over the last 30 years, this is generally not a scientifically valid approach to reductions in solid waste or greenhouse gas generation. The irony here is that plastic packaging was able to penetrate packaging markets because it was the most source reduced material. Today, the tables are turning such that consumers are being led to believe that eliminating plastic is the best way to source reduce packaging.

As I've written many times, the most sustainable package is the one that provides maximum product value with minimum economic, environmental, and social waste. We cannot afford to remove key materials from our sustainability toolboxes simply to satisfy the non-scientific posturing of certain political groups and NGOs.

### 6.2.11 Biodegradable Plastic

#### **New research has potential to lead to biodegradable plastics**

##### **Marshall 21**

Jean Marshall (Professor and Head of the Department of Microbiology & Immunology at Dalhousie University in Halifax). "Top 10 Reasons To Reject Anti-Plastic Hysteria." Listverse. 11 September 2021. JDN. <https://listverse.com/2021/09/11/top-10-reasons-to-reject-anti-plastic-hysteria/>

As mentioned above, one of the problems with plastic is that it does not degrade particularly well in the environment. Chemically, most plastics contain long carbon chains that are very stable and don't react well with air or water. The search is on to find chain molecules that will behave like plastics but degrade well once we are finished using them. Some materials (such as polylactic acid) do behave in this way, but at the moment they are still a long way from a perfect solution. Although technically 'biodegradable', some of these materials require very specific conditions in order to actually degrade, such as the presence of particular microbes or high heat. However, really biodegradable plastics could be such useful materials that a lot of researchers and companies are trying to make them. Encouragingly, some researchers have demonstrated plastic materials that could degrade in household compost or water. This is a research area that could have a large impact in the future.

### 6.2.12 Media Bias

#### **Media outlets have misrepresented science to drive anti-plastic hysteria**

##### **DeArmitt 22**

Dr. Chris DeArmitt FIMMM, FRSC, CChem. “Plastics persecution: It may be fun, but is it fair?” Packaging Insights. 9 March 2022. JDN. <https://www.packaginginsights.com/insider-views/plastics-persecution-it-may-be-fun-but-is-it-fair.html>

When we have an important decision to make, we need to go further than reading the headlines because the cost of making a mistake can be high. Some time ago, I became concerned that we are being told a lot about plastics but with little or no evidence presented. Often the information is from a credible looking source, so we assume it is solid and has been checked.

It was recently revealed that many of our trusted sources are not worthy of that trust. In fact, the majority of the public distrust mainstream media and social media even more so. A nine year old called Milo Cress said that we use 500 million plastic straws per day. That was repeated by the New York Times, Washington Post, National Geographic, CNN, Fox News, the Wall Street Journal, environmental groups and many more. Not one of them checked it. They were so keen to use that nugget that apparently no-one cared whether it was true – and it wasn't true.

What else isn't true? I spent over 1000 hours unpaid to read over 2000 peer-reviewed articles to compare what scientists say to what we have been told online. I didn't wear glasses when I started that adventure but now I need reading glasses. In short, I found a huge discrepancy between the online narrative and the scientific evidence. Here are a few examples that stand out.

### 6.2.13 AT: Wildlife

#### Studies show birds that eat plastic turn out fine

##### Roman et al. 19

Lauren Roman (Institute for Marine and Antarctic Studies, University of Tasmania), Linda Lowenstine (Department of Pathology, Microbiology and Immunology, School of Veterinary Medicine, University of California, Davis), Laura Maeve Parsley (School of Natural Sciences, University of Tasmania), Chris Wilcox (CSIRO Oceans and Atmosphere, Hobart), Britta Denise Hardesty (CSIRO Oceans and Atmosphere, Hobart), Kirsten Gilardi (Karen C. Drayer Wildlife Health Center, School of Veterinary Medicine, University of California, Davis), and Mark Hindell (Institute for Marine and Antarctic Studies, University of Tasmania). "Is plastic ingestion in birds as toxic as we think? Insights from a plastic feeding experiment." *Sci Total Environ.* 2019 May. JDN. <https://pubmed.ncbi.nlm.nih.gov/30776638/>

Plastic pollution is a modern tragedy of the commons, with hundreds of species affected by society's waste. Birds in particular mistake plastic for prey, and millions of wild birds carry small plastic loads in their stomach and are exposed to potential toxicological effects. It is currently unknown how severely the toxicological and endocrine disrupting chemicals in plastic affect avian development, reproduction and endocrine function. To address this question, we conducted multi-generational plastic feeding experiments to test the toxicological consequences of plastic ingestion at environmentally relevant loads in Japanese quail, *Coturnix japonica*, investigating parental and two filial generations. Contrary to expectations, we found no evidence of lasting toxicological effects on mortality, adult body weight, organ histology, hormone levels, fertility, hatch rates and eggshell strength in birds experimentally fed plastic. However, we found plastic ingestion causes higher frequencies of male reproductive cysts and minor delays in chick growth and sexual maturity, though without affecting ultimate survival or reproductive output. We report that although plastic ingestion causes detectable endocrine effects in our model species, our lack of finding mortality, morbidity and adverse reproductive outcomes may challenge the common hypothesis of severe toxicological harm and population-level effects when environmentally relevant loads of plastic are ingested.

#### 6.2.14 AT: Ocean Pollution

##### **Most ocean pollution isn't from single-use plastics**

##### **Logomasini 18**

Angela Logomasini (Senior Fellow at the Competitive Enterprise Institute, specializing in environmental risk; former environmental editor for the Research Institute of America). "Five Reasons Banning Plastics May Harm the Environment and Consumers." Competitive Enterprise Institute. 13 July 2018. JDN. <https://cei.org/blog/five-reasons-banning-plastics-may-harm-the-environment-and-consumers/>

Most of the waste is not from consumers. The primary culprit of ocean pollution is not straws, cups, and plastic bags. According to the nonprofit The Ocean Cleanup, 46 percent of the Pacific patch is made up of fish nets. When combined with ropes and lines, it accounts for 52 percent of the trash. The rest ranges from large plastic crates and bottle caps to small fragments called microplastics. Obviously, this is not simply a consumer waste issue, and the solutions need to address that.

## **Burning plastic prevents ocean pollution**

### **Marshall 21**

Jean Marshall (Professor and Head of the Department of Microbiology & Immunology at Dalhousie University in Halifax). "Top 10 Reasons To Reject Anti-Plastic Hysteria." Listverse. 11 September 2021. JDN. <https://listverse.com/2021/09/11/top-10-reasons-to-reject-anti-plastic-hysteria/>

Separating different plastics out into different waste streams is difficult. Unless they are well-separated, they are difficult to recycle. So, with current recycling processes there is always some plastic waste that cannot be recycled. One obvious way to get rid of the waste is simply to burn it; this would produce a lot of heat that could be used constructively, for example to generate electricity. Burning plastics sounds like an environmental disaster due to CO<sub>2</sub> emissions; however, burning plastic is no worse than burning oil and coal and at least this would reduce the amount of plastic being dumped into the world's oceans. Burning plastic could be a good solution until other approaches are found.

### 6.2.15 AT: Waste

#### **Plastics are a tiny fraction of overall waste**

##### **DeArmitt 22**

Dr. Chris DeArmitt FIMMM, FRSC, CChem. "Plastics persecution: It may be fun, but is it fair?" Packaging Insights. 9 March 2022. JDN. <https://www.packaginginsights.com/insider-views/plastics-persecution-it-may-be-fun-but-is-it-fair.html>

We're told that we're drowning in plastic. However, the fact is that plastics make up less than 0.5% of the materials we use and the waste we create. Furthermore, plastics are proven to dramatically reduce waste production. It takes 3-4 lb of other material to replace 1 lb of plastic. If someone were rightly concerned that humanity creates too much waste, then they would presumably focus on the major materials but that is not what we see. Instead, we see almost 100% of our attention and money focused on plastics while ignoring 99.5% of the problem completely. That is an approach that is not only unjustified but doomed to fail. I call it The Great Plastics Distraction. No sane person can expect to solve a problem while ignoring 99.5% of it.



### 6.2.16 AT: Microplastics

#### **Microplastics are a small fraction of microscopic particulates**

##### **Parker 23**

Laura Parker (Award-winning editor and writer at National Geographic). “Microplastics are in our bodies. How much do they harm us?” National Geographic. 8 May 2023. JDN. <https://www.nationalgeographic.com/environment/article/microplastics-are-in-our-bodies-how-much-do-they-harm-us>

The American Chemical Council (ACC), an industry trade group, maintains a lengthy collection of statements on its website explaining chemical composition of various plastics and rebuttals to research claims that certain plastics are toxic.

“No, microplastics are not the ‘New Acid Rain.’ Not even close,” the council said in response to media coverage of Brahney’s 2020 paper, published in *Science*, which estimated that 11 billion metric tons of plastic will accumulate in the environment by 2025. (Brahney calculated that just in the western U.S., more than 1,000 metric tons of tiny particles are carried by the wind and fall out of the air every year.)

The ACC also criticized that finding, saying, “The amount of microplastics in the environment represents only 4 percent of particles collected on average... The other 96 percent is comprised of natural materials like minerals, dirt and sand, insect parts, pollen and more.”

**Sensationalist media misrepresents the dangers of microplastics and manufactures scientific consensus**

**DeArmitt 22**

Dr. Chris DeArmitt FIMMM, FRSC, CChem. "Plastics persecution: It may be fun, but is it fair?" Packaging Insights. 9 March 2022. JDN. <https://www.packaginginsights.com/insider-views/plastics-persecution-it-may-be-fun-but-is-it-fair.html>

We see a lot of concern online about microplastics. Is that justified? A recent scientific study set out to investigate whether the media are correctly representing what scientists are telling us about the possible threat of microplastics. Here is what they said: "The results show that most scientific studies (67%) frame microplastics risks as hypothetical or uncertain, while 24% present them as established. In contrast, most media articles reporting on microplastic impacts (93%) imply that risks of microplastics exist and harmful consequences are highly probable."

So, we see that the media are more interested in selling the sensational than in telling us the truth. That should come as no surprise to many but it is usual to see it proven so conclusively. I did note that about 25% of studies said that microplastics cause harm, so I read those studies and found that they are not valid. That's a strong statement, so let me explain. The studies showing harmful effects were done using a type of microplastic only found in the lab – it does not exist anywhere in nature, so the studies are misleading and meaningless.

### 6.2.17 AT: Ocean Microplastics

#### **Oceanic microplastics have been overestimated**

##### **DeArmitt 22**

Dr. Chris DeArmitt FIMMM, FRSC, CChem. “Plastics persecution: It may be fun, but is it fair?” Packaging Insights. 9 March 2022. JDN. <https://www.packaginginsights.com/insider-views/plastics-persecution-it-may-be-fun-but-is-it-fair.html>

We have been told that there will be more plastic than fish in the sea by 2050. Is that true? No – the more plastic than fish story was debunked meaning that there is no evidence upon which to make such a claim. We were told that millions of tons of microplastics enter the oceans from rivers every year. However, there was a mystery because scientists could not find the predicted amount when they went looking for it. This “missing plastic” was recently accounted for. The scientists realized that they had made a huge error in their calculations and now the best estimate for microplastic entering the oceans is 6000 tons per year, not millions. You would imagine that this uplifting news would be heralded by the media, Greenpeace, WWF and the Ellen MacArthur Foundation but I have yet to see a single sentence from any of them. If they were truly acting in the best interests of the environment, I would have expected them to celebrate. The fact that they ignore those findings may indicate their true motives lie elsewhere.

## **Oceanic microplastics protect fish from toxins**

### **DeArmitt 22**

Dr. Chris DeArmitt FIMMM, FRSC, CChem. "Plastics persecution: It may be fun, but is it fair?" Packaging Insights. 9 March 2022. JDN. <https://www.packaginginsights.com/insider-views/plastics-persecution-it-may-be-fun-but-is-it-fair.html>

Studies show that microplastics tend to be mainly PE, polypropylene (PP) and PET which we know to be safe. However, I have seen several articles saying that microplastics can absorb toxic chemicals. That is indeed true but where did the toxic chemicals come from? They come from the ocean water the fish swim in. Scientists proved that what actually happens is that the microplastics absorb the chemicals, thereby cleaning the water and protecting the fish.

## 6.3 Bans Bad

### 6.3.1 Transition Costs

#### **A ban would impose high transition costs and impede vital government functions**

##### **Wirtz 22**

Bill Wirtz (senior policy analyst at the Consumer Choice Center, writer for *Lëtzebuerger Journal* in Luxembourg; former columnist for the *Luxembourg Times*). “Would a single-use plastic ban be counterproductive?” *The Hill*. 30 August 2022. JDN. <<https://thehill.com/opinion/energy-environment/3620887-would-a-single-use-plastic-ban-be-counter-productive/>>

Further than that, the federal government doesn’t only purchase plastic straws or plastic-bottled water. In fact, a ban on plastic would impact a plethora of products the government acquires for vital services, ranging from national parks and wildlife to construction and shipping logistics. If the GSA were to consider a ban, the least it should do is conduct an impact assessment on the effect it would have on sustaining those services. However, as a general measure, a ban is no strategy for transition: It prevents government departments from using plastic where necessary and does not guarantee a path forward for substitution. For instance, the GSA is transitioning to electrify its fleet of vehicles, yet without banning gasoline-powered vehicles.

### 6.3.2 US Not Key

**US is a minor contributor to plastic pollution and has comparatively high standards already**

#### **Logomasini 18**

Angela Logomasini (Senior Fellow at the Competitive Enterprise Institute, specializing in environmental risk; former environmental editor for the Research Institute of America). “Five Reasons Banning Plastics May Harm the Environment and Consumers.” Competitive Enterprise Institute. 13 July 2018. JDN. <https://cei.org/blog/five-reasons-banning-plastics-may-harm-the-environment-and-consumers/>

Studies show the vast majority of plastic waste is due to poor disposal practices outside of the United States. Data in a 2015 *Science* magazine report reveals that China and 11 other Asian nations are responsible for 77 to 83 percent of plastic waste entering the oceans because of poor disposal practices. These practices include littering, disposed waste that isn’t managed, and uncontrolled or poorly supervised landfills. This is in contrast to U.S. waste management practices, like controlled landfills and recycling programs, that decreases water and ocean pollution. A 2017 Environmental Sciences and Technology study reported that up to 95 percent of plastic waste enters oceans from one of 10 rivers—eight in Asia and two in Africa.

### 6.3.3 Mixed Strategies

#### The EU is pursuing a mixed strategy for limiting single-use plastics

##### European Commission 22

European Commission (independent executive arm of the European Union). "Single-use plastics." 2022. JDN. [https://environment.ec.europa.eu/topics/plastics/single-use-plastics\\_en](https://environment.ec.europa.eu/topics/plastics/single-use-plastics_en)

Where sustainable alternatives are easily available and affordable, single-use plastic products cannot be placed on the markets of EU Member States. This applies to cotton bud sticks, cutlery, plates, straws, stirrers, and sticks for balloons. It will also apply to cups, food and beverage containers made of expanded polystyrene, and on all products made of oxo-degradable plastic.

For other single-use plastic products, the EU is focusing on limiting their use through

- reducing consumption through awareness-raising measures
- introducing design requirements, such as a requirements to connect caps to bottles
- introducing labelling requirements, to inform consumers about the plastic content of products, disposal options that are to be avoided, and harm done to nature if the products are littered in the environment
- introducing waste management and clean-up obligations for producers, including Extended Producer Responsibility (EPR) schemes

Specific targets include

- a 77% separate collection target for plastic bottles by 2025 – increasing to 90% by 2029
- incorporating 25% of recycled plastic in PET beverage bottles from 2025, and 30% in all plastic beverage bottles from 2030

### 6.3.4 Circumvention

#### **Bans are inherently too narrow to cover all close substitutes**

##### **Homonoff et al. 20**

Tatiana Homonoff (Robert F. Wagner School of Public Service, New York University and NBER), Lee-Sien Kao (Senior Associate at ideas42), Javiera Selman (Robert F. Wagner School of Public Service, New York University), and Christina Seybolt (University of Chicago Energy & Environment Lab). “Skipping the Bag: The Relative Effectiveness of Bans versus Taxes.” 29 January 2020. JDN. <https://wagner.nyu.edu/files/faculty/publications/Homonoff%2C%20Kao%2C%20Selman%2C%20and%20Seybolt%20%282020%29.pdf>

But do these policies achieve their intended goal? One concern with narrowly-defined bans is that they may leave close substitutes unregulated. In the case of assault weapon bans, gun manufacturers have devised several adaptations to comply with the ban while still providing consumers with a nearly identical product.<sup>1</sup> Along with the plastic straw ban, Starbucks introduced a new strawless cold-cup lid which required more plastic than the original lid and straw combined (Britschgi, 2018).<sup>2</sup> One potential source of these unintended consequences is the relatively narrow scope of the regulation. In many cases, it is likely politically infeasible to ban a broader class of products, such as a ban on all soda. However, many state and local governments have successfully levied taxes on soda (of all sizes and sold in all establishments), leaving fewer substitutes unregulated.



**Bans merely cause shift to unregulated equivalents; only taxes alter consumer behavior for the better**

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We find that disposable bag use in Chicago remained high during the plastic bag ban: 82 percent of customers in Chicago used an unregulated disposable bag - either a paper bag or a plastic bag thicker than 2.25 mils - which remained free during the ban. Additionally, the repeal of the ban had no effect on the likelihood of using a disposable bag. In contrast, we find that the implementation of the tax in the subsequent months led to a large decrease in disposable bag use.<sup>4</sup> When comparing the relative effectiveness of the two policies, we find that the proportion of customers using a disposable bag decreased by 33 percentage points during the tax relative to during the ban leading to a decrease of just over one disposable bag per trip. This effect appears largely persistent: the reduction in the share of customers using a disposable bag remained large and statistically significant throughout the first year of tax’s implementation, though we do observe a rebound effect equivalent to roughly one quarter of the initial effect of the tax by the end of the sample period.

The results on overall disposable bag use suggest that the tax was significantly more effective than the ban at changing customer behavior. Moreover, these results mask an important unintended consequence of the plastic bag ban. When we consider the effects of the two policies on the type of disposable bag used, we find that the ban successfully eliminated thin plastic bag use (as designed). However, it led retailers to provide free thick single-use plastic bags with a thickness roughly just over the 2.25 mils defined in the ban, five times the amount of plastic in a standard plastic grocery bag. During the ban, over 40 percent of customers shopping in Chicago used a free thick plastic bag with the remaining disposable bag users taking a paper bag. These thick plastic bags were then phased out once the ban was repealed. As a result, we find that during the tax policy, customers used significantly less plastic than during the ban - a decrease

## 6 *Negative Evidence*

equivalent to the amount of plastic in almost four thin plastic bags per trip. Analyses that take into account the environmental impact of the composition of bags used (rather than just the number of disposable bags used) substantially increase our estimate of the relative effectiveness of the tax compared to the ban.

**Past laws in other sectors show that targeted bans are consistently circumvented by consumers**

**Homonoff et al. 20**

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Our paper also contributes to a broader literature on the unintended consequences of bans on goods associated with negative externalities. This literature largely focuses on behavioral responses taken on the part of the consumer that undermine the effectiveness of the policy. For example, school bans on soda lead to increases in soda purchased for the home (Lichtman-Sadot, 2016), state bans on payday loans decrease payday loan use, but increase the use of pawn shops (Bhutta, Goldin and Homonoff, 2016), and a Mexican policy that banned drivers from using their car one day per week led to the unintended consequence of increasing the number of cars in circulation (Davis, 2008). In the context of disposable bag regulations, partial regulation may generate environmental leakage.<sup>6</sup> For example, Taylor (2019) finds that plastic bag bans coupled with paper bag fees lead to increases in sales of plastic trash bags, partially offsetting the environmental benefits of the policy. Most closely related to our paper, Adda and Cornaglia (2010) compare the relative effectiveness of taxes and bans on tobacco use at reducing second-hand smoking and find that excise taxes on cigarettes decrease exposure to second-hand smoke, while restaurant and workplace smoking bans increase second-hand smoking by increasing smoking in the home. Our findings complement these various results on regulation-avoidant behavior on the part of the consumer, by demonstrating similar behavior on the side of the producer: the introduction of free thick plastic bags.

## 6.4 Taxes Good

### 6.4.1 Consumer Behavior

#### Studies in Chicago show taxes change consumer behavior better than bans

##### Zeitlin 19

Matthew Zeitlin (writer for Vox). "Do plastic bag taxes or bans curb waste? 400 cities and states tried it out." Vox. 27 August 2019. JDN. <https://www.vox.com/the-highlight/2019/8/20/20806651/plastic-bag-ban-straw-ban-tax>

While a straightforward ban may seem like the most effective way to stop people from using plastic, researchers and consultants suggest another strategy is working better: a tax on all non-reusable bags, which may or may not be combined with an outright ban on some plastic.

That's because straightforward bans can lead to skyrocketing use of paper bags or thicker plastic that's allowed because it's considered reusable. While paper bags do not have the unique environmental downsides of single-use plastic (they can be recycled more easily and they don't blow around as much), the processing of paper can be environmentally nasty. California's ban, which also places a 10-cent tax on paper or reusable bags, is one of the most extensive in the nation, while all of Hawaii's counties have passed laws that ban single-use bags, with some also tacking on a tax as high as 15 cents on other bags.

This has led to some backlash, including lawsuits from the plastics industries and efforts to roll back the laws. More than a dozen states, typically more conservative ones like Oklahoma or Mississippi, have passed laws that preempt local bag policies and put the question of taxes or bans solely in the hands of the state legislature.

Chicago banned thin plastic bags in 2015, but it allowed stores to use thicker plastic bags that could ostensibly be reused. "When that ban went into effect, the retailers' response was that 'Our customers want plastic, we can't offer thin, let's just start offering thick plastic bags,'" said Tatiana Homonoff, an assistant professor of economics and public policy at New York University who has studied the plastic bag laws. The resilience of stores giving their customers some kind of plastic bag, she says, was "an unintended consequence of leaving close substitutes unregulated." Chicago soon scrapped that policy and by February 2017 had implemented a new law: a 7-cent tax on all checkout bags.

## 6 Negative Evidence

“That’s where we see big changes in disposable bag use,” Homonoff said.

A study of the law by Homonoff and researchers at the University of Chicago and consulting firm ideas42 found that after the new policy went into effect, “Customers were much less likely to use a disposable bag, and switched to reusable bags or no bags at all.” Before the tax, about 80 percent of Chicago consumers used disposable bags and fewer than 10 percent used no bags at all. In the year after it went into effect, “the tax led to a large decrease in the proportion of consumers using a disposable bag, with roughly half of consumers switching to reusable bags while the rest opted for no bags at all.”

According to Homonoff’s research in both Chicago and Montgomery County, Maryland, “very small financial incentives can lead to big behavioral change,” she said. The fact that small fees, 5 or 7 cents, can lead to a big reduction in disposable bag use suggests that a sizable portion of the population is perfectly happy to use a reusable bag or not use a bag at all, and need just the smallest push to get there. Homonoff said that in her surveys, people would tell her, “I have a reusable bag in my car. Now I bring it into the store and actually use it.”

“As long as there is a fee component in place, that really drives people to not want to get that bag,” Romer said. “You see people walking out with something pressed under the arm.”

## 6.4.2 Cultural Effects

### Taxes are more effective at shaping the broader culture around plastic use

#### Zeitlin 19

Matthew Zeitlin (writer for Vox). “Do plastic bag taxes or bans curb waste? 400 cities and states tried it out.” Vox. 27 August 2019. JDN. <https://www.vox.com/the-highlight/2019/8/20/20806651/plastic-bag-ban-straw-ban-tax>

In Montgomery County, which implemented a 5-cent bag fee, the portion of customers observed by researchers at eight stores in the county who used disposable bags went from 82 percent to 40 percent, while the number of bags per trip also fell, according to Homonoff’s research. Beyond any environmental effects, these policies also seem to be changing the culture around single-use plastic, which many people know is environmentally damaging but still need a slight nudge to change their behavior. Alongside the bans, there’s been a surge of public awareness of the persistence of plastic waste and the folly of recycling it.

And these policies have real effects downstream — literally. San Jose, California, implemented its Bring Your Own Bag Ordinance in 2012, which included a ban on single-use plastic and a 10-cent fee for paper, and found dramatic decreases in “bag litter” in the city’s creeks and waterways. “The litter surveys demonstrated a reduction in bag litter of approximately 89 percent in the storm drain system,” a city environment and transportation committee report read, “60 percent in the creeks and rivers, and 59 percent in city streets and neighborhoods, when compared to data collected from 2010 and/or 2011 (pre-ordinance) to data from 2012 (post-ordinance).”

What drove the decrease in litter wasn’t just more people using more reusable bags — although that happened — but also a rise in using no bags. Reusable bag use jumped from about 4 percent of bags, the city said, to 62 percent, while the portion of people who used no bag doubled, and the average number of bags used per customer fell from three to fewer than one.

The Ferguson Foundation, a Washington, DC-area nonprofit group that organizes cleanup efforts in and around the Potomac River, found that after DC implemented a 5-cent fee in 2010 on single-use bags, the number of plastic bags removed by volunteers dropped by almost three-quarters.

### 6.4.3 Avoids Circumvention

#### **Bans are more likely to be circumvented than taxes**

##### **Homonoff et al. 20**

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Bans on goods associated with negative externalities decrease consumption of the banned product, but may be ineffective at reducing the externality itself if close substitutes are left unregulated. We find that plastic bag bans lead retailers to circumvent the regulation by providing free thicker plastic bags which are not covered by the ban. A regulation change that replaced the ban with a tax on all disposable bags generated large decreases in disposable bag use. Our results suggest that plastic bag bans - stricter, but more narrowly-defined regulations - are less effective than market-based incentives on a more comprehensive set of products.

#### 6.4.4 Empirics

##### **Taxes are empirically effective at reducing plastic consumption**

###### **Desalegn and Tangl 22**

Goshu Desalegn (Doctoral School of Economics and Regional Sciences, Hungarian University of Agriculture and Life Sciences) and Anita Tangl (Institute of Rural Development and Sustainable Economy, Szent István Campus, Hungarian University of Agriculture and Life Sciences). “Banning Vs Taxing, Reviewing the Potential Opportunities and Challenges of Plastic Products.” *Sustainability* 2022, 14(12). JDN. <https://www.mdpi.com/2071-1050/14/12/7189>

Global experience implies that there could be a greater economic benefit from taxing plastic products. The study conducted in [38] implies that several countries, including England, Ireland, the Netherlands, China, the Philippines, and Australia, have demonstrated that a plastic bag fee is effective in reducing the use of plastic bags [39]. More specifically, according to the authors of [40], China introduced a plastic product tax, with a bag fee of CNY 0.20–0.50 in 2008. After the tax implementation, it was observed that the total plastic product consumption declined by 64%. Furthermore, the study conducted by [41] argues that, in England, after the introduction of a plastic bag fee of GBP 5 on major businesses in 2015, there was a 36% decrease in plastic product consumption.

According to the research presented in [35], Portugal introduced a plastic bag tax of EUR 0.10 on plastic bags in 2015, and following the introduction, there was a 74% reduction in plastic bag usage observed, and reusable plastic products increased by 64% after the introduction of the plastic tax. Furthermore, Wales introduced a single-use plastic bag fee of GBP 5 (USD 0.07) in 2011 [42]. Following the introduction of the plastic tax, a 70% reduction in consumption was observed. Hence, it can be observed that the global experience shows that the plastic product tax has shown a significant reduction in plastic bag consumption [38]. Plastic is also used in making vehicles lighter, and therefore more fuel-efficient. Plastic food wrapping prolongs food shelf-life and reduces excess food waste [43].



### 6.4.5 Innovation

#### Taxes incentivize innovation to improve efficiency

##### Desalegn and Tangl 22

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Introducing a plastic tax is helpful for influencing both the manufacturer and the consumer. Taxed plastic products increase the price of plastic per user, and people are motivated to consume less plastic. People are generally found to be loss-averse and do not want to pay for something that was previously "free," or "cheap." For that reason, they often perceive a tax in a negative light, and tend to avoid it [32]. Furthermore, decreasing customer demand leads the manufacturing companies to look for other options and indirectly decreases the output level of plastic products [33]. To this end, a tax on plastic could further push manufacturers, scientists, and academic researchers to focus on more research and development regarding innovations to improve the efficiency of plastics [34,35].

### 6.4.6 Funding Recycling

**Even where taxes don't fully eliminate plastics, the revenue raised can fund recycling**

**Desalegn and Tangl 22**

Goshu Desalegn (Doctoral School of Economics and Regional Sciences, Hungarian University of Agriculture and Life Sciences) and Anita Tangl (Institute of Rural Development and Sustainable Economy, Szent István Campus, Hungarian University of Agriculture and Life Sciences). "Banning Vs Taxing, Reviewing the Potential Opportunities and Challenges of Plastic Products." *Sustainability* 2022, 14(12). JDN. <https://www.mdpi.com/2071-1050/14/12/7189>

On the other hand, it argued that the tax on plastic products would allow the continued production of single-use plastics, generating revenue to subsidize the recycling industry [31]. This revenue would be used to fund recycling and composting infrastructure, which would help to boost overall economic growth. In theory, it was thought that instituting tax policies on plastic products would render recycled materials more competitive, making it economically viable for a product manufacturer to use recycled products [35].

A plastic tax is conceptually similar to a carbon tax, in which a tax is imposed to punish utilities that produce the most emissions. Ideally, this has two advantages. First, it incentivizes polluters to reduce carbon emissions by switching to renewable energy sources. Second, the tax revenue is used to fund green energy projects, or is returned to residents as a dividend. These taxes target an externality, as economists call it: catastrophic climate change, in the case of a carbon tax, and runaway pollution, in the case of a plastic tax. The impact of a plastic tax on consumers could raise the price of plastic products, thereby discouraging their use.