Designing for Plastic Production Reduction

Madi Fishtrom | December 2022 | DES 700

Abstract

The initial research question approached through this project is as follows: Has there been a positive environmental impact since the implementation of California SB 270/Prop 67 that banned the use of single-use plastic carryout bags and implemented a minimum 10¢ fee for non-plastic single-use bags? Through research of the impact of this bill, it was discovered that there has been a decrease in plastic concumption, but the amount of plastics in our environment is still creating harm for our ecosystem. Due to this, a campaign was designed to urge lawmakers to regulate the production of single-use plastics further.

Problem Statement

There has been a reduction in plastic usage since the bag ban, however the amount of single use plastics still exceeds what is necessary and good for our environment. In the US the problem of plastic bags was identified in the late aughts, and legislation has been enacted to try to combat it over the past decade. The environmental gap is high as there are still many plastics that are discarded and/or not recycled and end up contributing to landfills; this includes billions of pounds of plastic. Also, there is a high cost associated with this as packaging is not free for retailers. It would be in their best interest to reduce the amount of packaging they use to reduce their overhead costs. In addition, microplastics end up in our oceans and are consumed by the fish we eat, causing harm to the biodiversity we have and our own health. Plastics are also not entirely recyclable and typically end up in our overburdened landfills, emitting harmful gases that cause further respiratory issues for the public and wildlife. It is in our best interest as a society to decrease the number of single-use plastics we produce for the sake of the environment and public health.

Table of Contents

Literature Review Summary

Plastic bag bans have been effective in reducing the amount of these products in our environment.

Bans on plastic bags are effective in reducing the amount of them that are consumed, but many are still being introduced to our environment in the form of plastic trash bags.

> "...the elimination of 40 million pounds of plastic carryout bags is offset by a 12 million pound increase in trash bag purchases—with small, medium, and tall trash bag sales increasing by 120%, 64%, and 6%, respectively" (Taylor 1).

Though the difference between 12 million and 40 million pounds of plastic is substantial, ideally this should be decreased further.

> "In recent years, the consumption of plastic bags has generally trended downward, except for 2007, when a rebound in consumption occurred. This suggests that the behavioural change efforts by governments, major retailers, consumers and environmental organisations, are reaching a saturation point, and any further reductions in plastic bag consumption will require new approaches" (O'Farrell 1).

The new approach right now requires the purchase of paper bags, which create more emmissions through production.

Paper bags are not the solution.

The production of paper bags emits more CO2 into the enviroment, and since paper bags are heavier than plastic ones, transporting them also contributes more harmful emmissions to our environment.

> "Plastic bag proponents have primarily relied on the California Environmental Quality Act (CEQA),10 arguing that plastic bag ordinances could potentially have significant negative environmental impacts by spurring the increased use of paper bags" (Foley 2).

> "Today, we are confronted with the reality that mass consumption of both plastic and paper creates environmental hazards" (Fromer 494).

Ideally, all consumers would remember reusable bags, but putting this burden on the general public instead of the corporations that created the problem does not seem justifiable.

Decrease in production of plastics in the first place is the first step to decreasing the amount of plastic in our environment.

By continuing to create plastic products, we are creating more landfill.

> "Every day, the people....waste millions of plastic...and this waste causes an enormous pollution problem" (Sang 39).

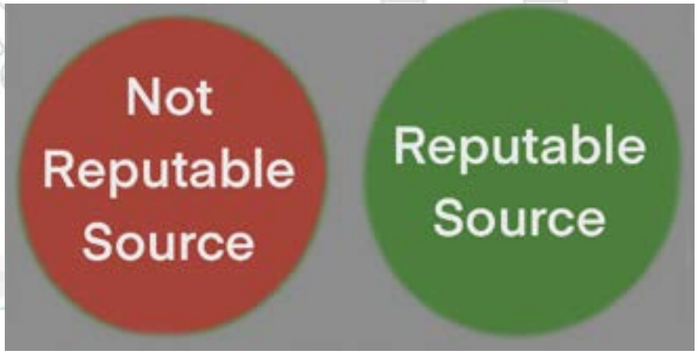
Even the plastics industry themselves acknowledges there is a problem. That is why they have stated that they would begin to produce more biodegrable bags if there were more incentives for them.

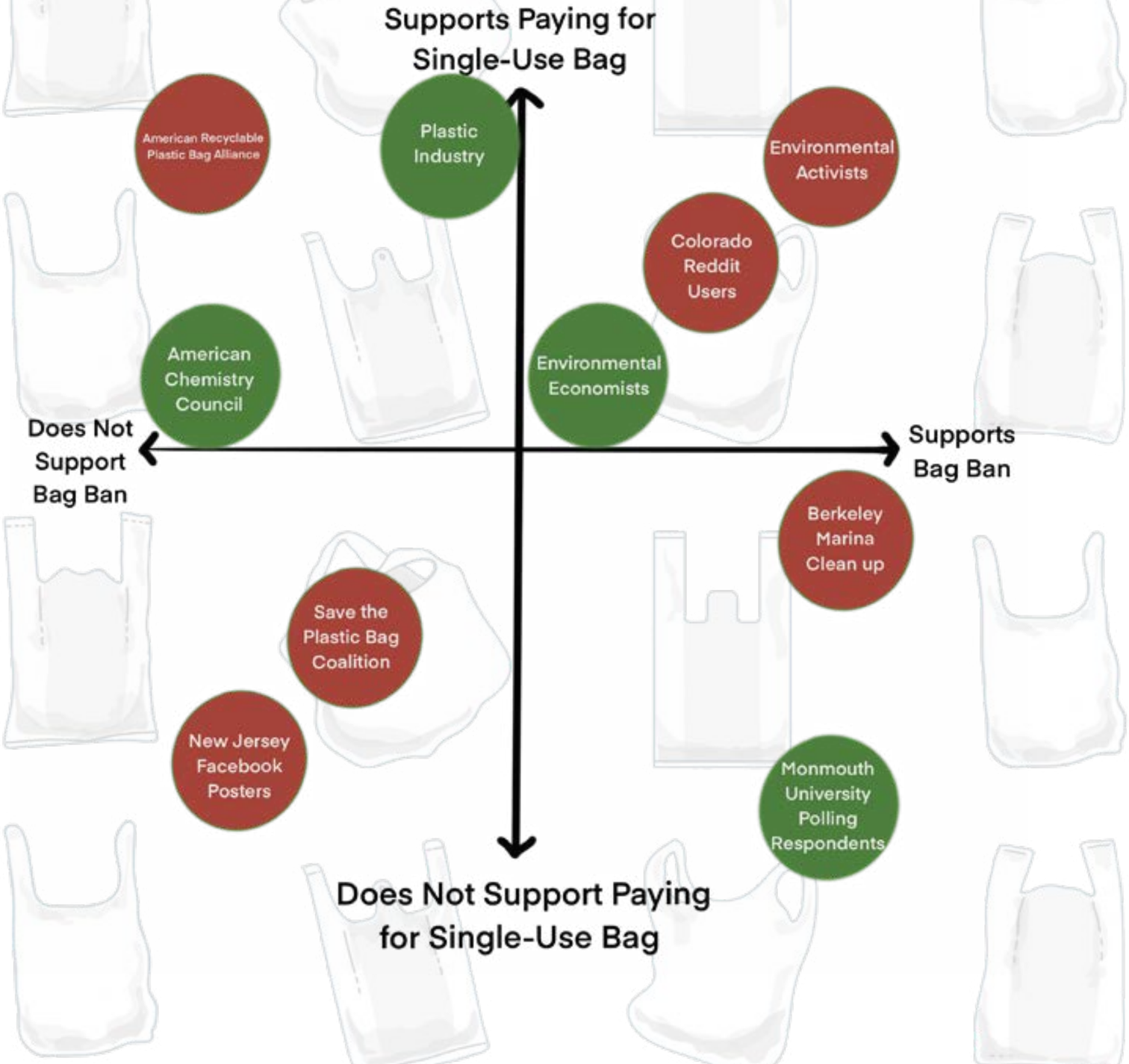
> "The plastics industry favors a move to biodegradable bags. Since plastic bags persist in landfills for up to 1000 years, that would be an improvement" (Senior 119).

Since we know legislation works, convincing our lawmakers to implement plastic production limitations is a huge step forward in creating less plastic waste for our environment. This is the primary goal of the outlined campaign.

Perception and Cognitive Mapping

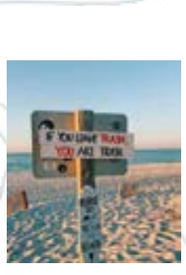
Key





Ideation and Iteration

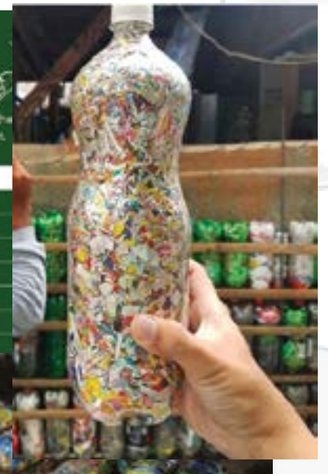
Infographics on Sidewalk/
Spraypaint Stencils from Recycled Plastic



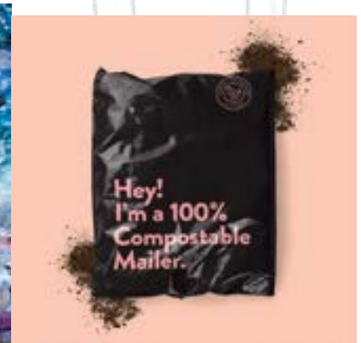

No-Buy Plastic Day

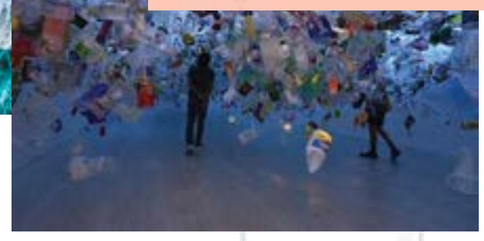
Protest at CA State Capitol

Build Back Better Ecobricks




Mail Garbage to State Capitol



Plastic Factory Worker Walkout


Plastic Craftivism



Back to the Future Campaign

Refinement

Goal: Have Legislators Regulate the Production of Plastic

Step 1

Beach Cleanup

Host a beach cleanup. Emphasize collecting plastic bottles and wrappers.

Step 2

Build Back Better Ecobricks

Host an ecobrick building party with the garbage collected at the beach cleanup.

- Add writing to bottles: All of this was found on
- XX at XX

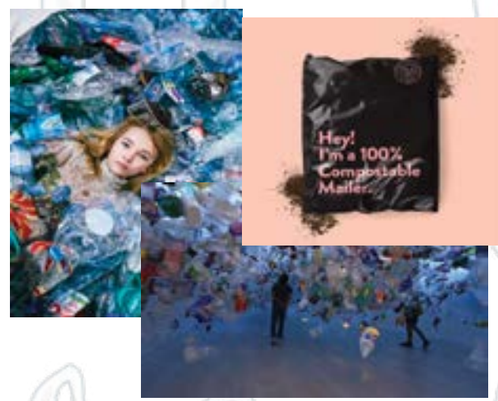
- How many of XX item is collected
  - Take Data to back up

Step 3

Protest at CA State Capitol

Option 1: Host a protest on Earth Day to throw the assembled ecobricks on the steps of the CA state capitol. Also encourage participants to create signs from recycled material to encourage legislators to decrease plastic production.

Mail Garbage to State Capitol



Option 2: Have ecobricks mailed to the state capitol with messages about how plastic production needs to be decreased.

Final Campaign

Host a Beach Cleanup

Two weeks prior to Earth Day 2023, various beach cleanups will take place along Northern California's coastline. In each area, and organizer will be keeping track of how many bottles and wrappers are collected.

Host an Ecobrick Building Party

One week prior to Earth Day 2023, the beach cleanup groups will reconviene to create ecobricks by packing the plastic bottles with plastic wrappers. The organizer should keep track of how many bottles are created. On the bottles, volunteers will write in Sharpie, "This was all collected on April *DD*, 2023 from *Location*."

Protest at California State Capitol

On Earth Day 2023, the beach cleanup groups will carpool to the CA State Capitol Building to deliver their ecobricks to the stairs of the main chamber. With other recycled materials, signs will be made explaining that the organization is advocating for the regulation of single-use plastic production.

Citations

California, State of. "Ban on Single-Use Carryout Bags (SB 270 / Proposition 67) Frequently Asked Questions (Revised April 2017)." CalRecycle Home Page, Ca.gov, 2017, https://calrecycle.ca.gov/plastics/carryoutbags/faq/.

Diaz, Jessica. "'Save the Plastic Bag Coalition v. City of Manhattan Beach': California Supreme Court Answers More Than 'Paper or Plastic?' In Major Decision on Corporate Standing under CEQA." Ecology Law Quarterly, vol. 39, no. 2, 2012, pp. 627–34. JSTOR, http://www.jstor.org/stable/44321188. Accessed 14 Oct. 2022.

Foley, Shanna, and Jennie R Romer. "A Wolf in Sheep's Clothing: The Plastics Industry's 'Public Interest' Role in Legislation and Litigation of Plastic Bag Laws in California." GGU Digital Commons, Golden Gate University, May 2012, https://digitalcommons.law.ggu.edu/cgi/viewcontent.cgi?article=1082&context=gguelj.

Fromer, Rebecca. "Concessions of a Shopaholic: An Analysis of the Movement to Minimize Single-Use Shopping Bags from the Waste Stream and a Proposal for State Implementation in Louisiana." Tulane Environmental Law Journal, vol. 23, no. 2, 2010, pp. 493–515. JSTOR, http://www.jstor.org/stable/43294092. Accessed 15 Oct. 2022.

Murray, Patrick. "Mixed Views on Plastic Bag Ban." Monmouth University Polling Institute, Monmouth University, 12 Nov. 2019, https://www.monmouth.edu/polling-institute/reports/monmouthpoll_nj_093019/.

O'Farrell, Kyle. "Zero Waste South Australia - LCA of Shopping Bag Alternatives." Plastics Paradox, Hyder Consulting, 2021, https://plasticsparadox.com/wp-content/uploads/2021/01/Zero-Waste-South-Australia-LCA-of-shopping-bag-alternatives-Hyder-Final-Report.pdf.

Romer, Jennie R., and Leslie Mintz Tamminen. "Plastic Bag Reduction Ordinances: New York City's Proposed Charge on All Carryout Bags as a Model for U.S. Cities." Tulane Environmental Law Journal, vol. 27, no. 2, 2014, pp. 237–75. JSTOR, http://www.jstor.org/stable/43294165. Accessed 14 Oct. 2022.

Sang, Anita Ng Heung. "Plastic Bags and Environmental Pollution." Art Education, vol. 63, no. 6, 2010, pp. 39–43. JSTOR, http://www.jstor.org/stable/20799853. Accessed 13 Oct. 2022.

Senior, Kathryn. "End in Sight for Plastic Bags?" Frontiers in Ecology and the Environment, vol. 6, no. 3, 2008, pp. 119–119. JSTOR, http://www.jstor.org/stable/20440831. Accessed 13 Oct. 2022.

Taylor, Rebecca L.C. "Bag Leakage: The Effect of Disposable Carryout Bag Regulations on Unregulated Bags." Journal of Environmental Economics and Management, Elsevier, 4 Jan. 2019, https://www.sciencedirect.com/science/article/abs/pii/S0095069618305291.