

Rewriting the Book on Waste

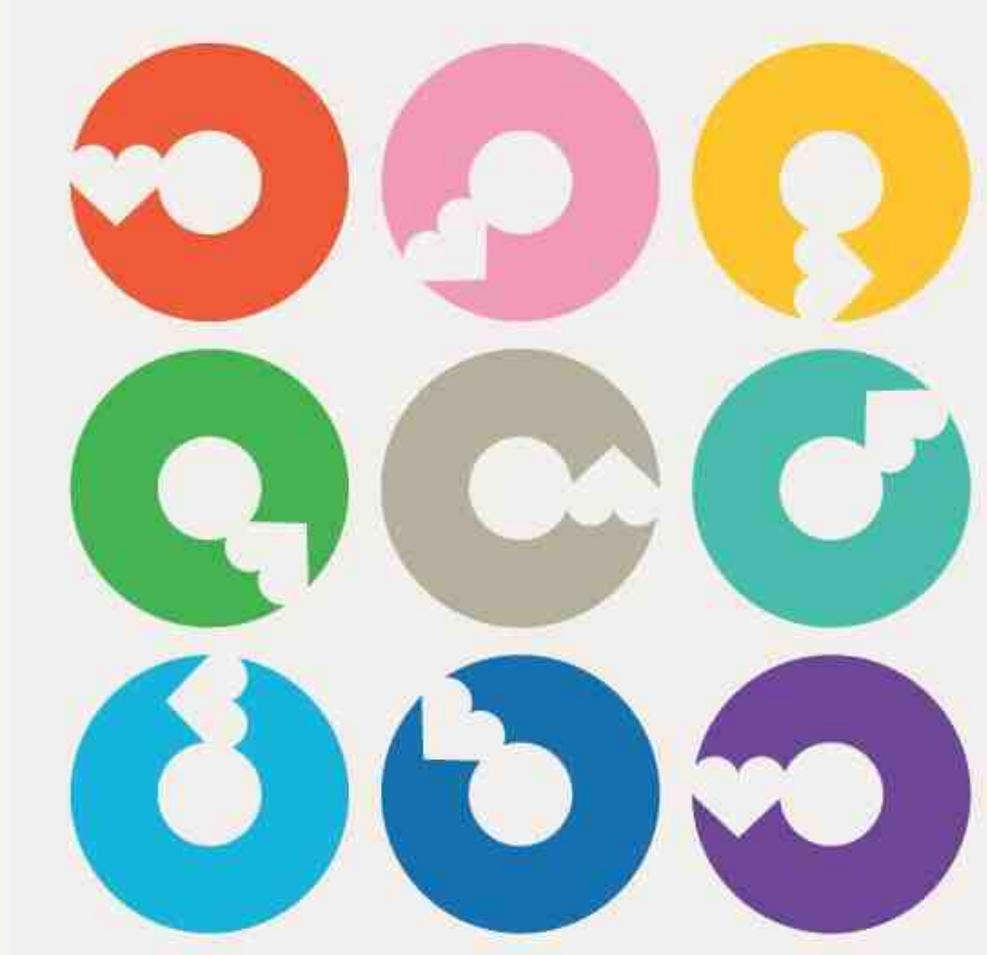
**Saskatchewan Waste
Reduction Council
Waste ReForum**

April 28, 2022

Miriam Gordon
www.upstreamsolutions.org



We heart reuse.





“We’re never going to be able to recycle or compost our way to a sustainable future. We have to work upstream to redesign the systems generating all the waste in the first place.”

– Upstream Founders, Helen Spiegelman & Bill Sheehan, Ph.D.

We make throw-away go away.

1. Business innovation

- Create models and support businesses transitioning from single-use to reuse
- Calculate impact and market the change widely
- Ideate and accelerate reuse services and infrastructure for take-out and delivery

2. Social impact

- Show what the world could look like without single-use waste and plastic pollution
- Serve the Reuse Movement and provide them with valuable content to catalyze action/dialogue.
- Ideate and launch campaigns with partners to make single-use uncool, and reusable new norm

3. Policy change

- "Seed and feed" reuse coalitions in target cities
- Ideate and design model reuse policies and engage allies to pass them
- Grow, educate, support the Reuse Movement (businesses, policy makers, community leaders, activists)

We heart reuse

A woman stands in the middle of a vast, sprawling field of discarded plastic waste. The waste is piled high in mounds and scattered across the ground, creating a sea of colors including red, blue, green, and white. The perspective is from a low angle, looking up at the woman, emphasizing the scale of the waste.

We can't create a good quality of life for 7.5B people and growing on a "one-way throw-away" model.

The throw away economy

15% of wood



22% of aluminum

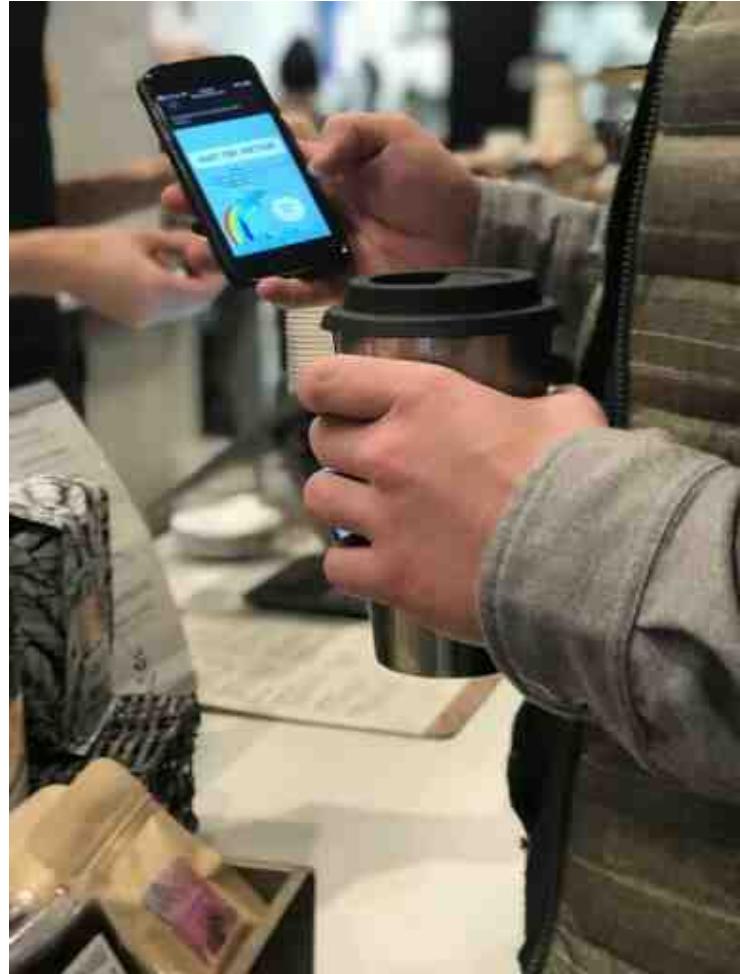


40% of plastic



50% of glass

The new reuse economy



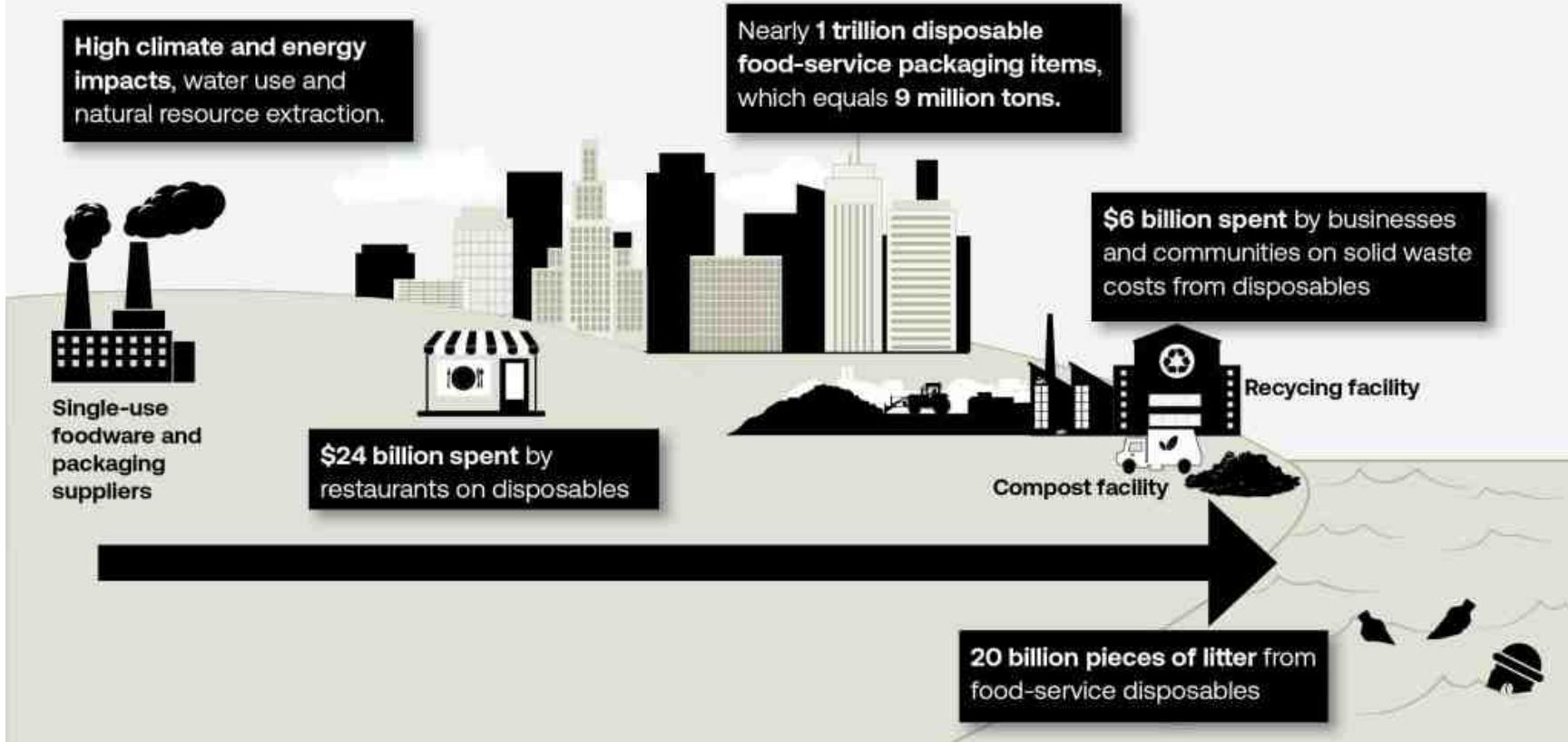
70%

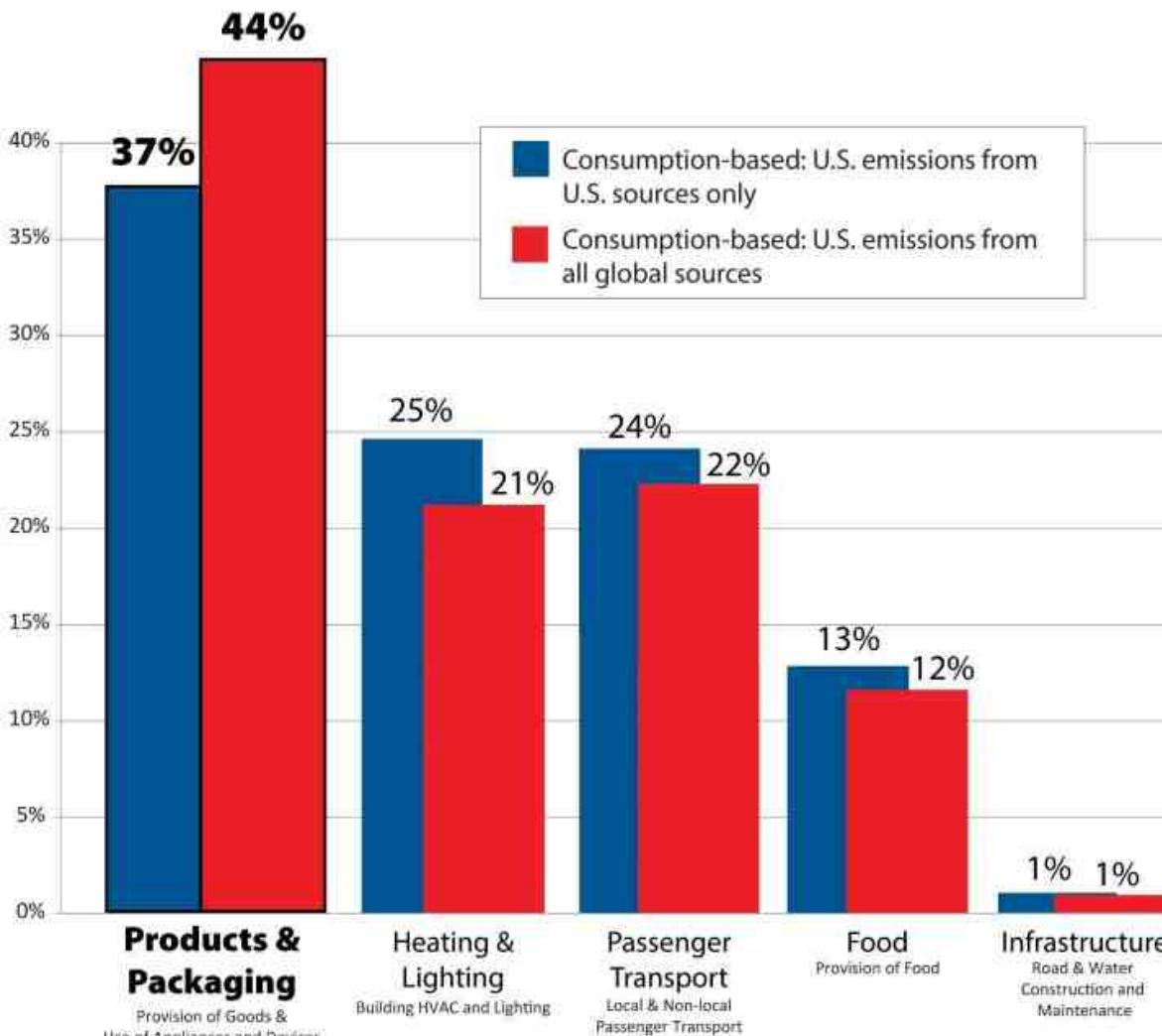
of street litter bound for local and coastal waterways is disposable food & beverage packaging

75% of top 10 littered items in Coastal Cleanup Day are food and beverage packaging



Today's "one-way throw-away" food service model





The single-use plastic problem

Plastic pollution is growing exponentially

- 11 MMT/year of plastic enter oceans
- 150 MMT of plastic there
- projected to nearly triple by 2040 to 29 MMT/year
- More plastic than fish in the ocean, by weight, by 2050



Will banning plastic solve the problem?

The problem isn't just PLASTIC- it's single-use itself

Bio-based plastic

- Corn, sugar, starch, or other crops
- Don't degrade quickly enough- not all designed to biodegrade
- Fossil fuels used to grow and process - agriculture impacts (water pollution)

Aluminum

- Average recycled content 73%
- Virgin aluminum = 5 x more carbon than recycled
- Bauxite mining releases perfluorocarbons 9,200 times more harmful than CO2

Paper

- Over 1/2 of paper produced = packaging (**3 billion trees/ year**)
- Toxic chemicals
- Greater GHG emissions compared to plastic

Wood / Bamboo

- Devastating impacts from monoculture like agriculture
- Biodiversity loss, heavy soil erosion, and sedimentation and eutrophication

We can't recycle and compost our way out

Recyclable- *myth*

- Most recovered materials down-cycled- doesn't turn off the tap
- Foodware too dirty to recycle
- Recyclable better for the environment only 56% of the time

Compostable- *myth*

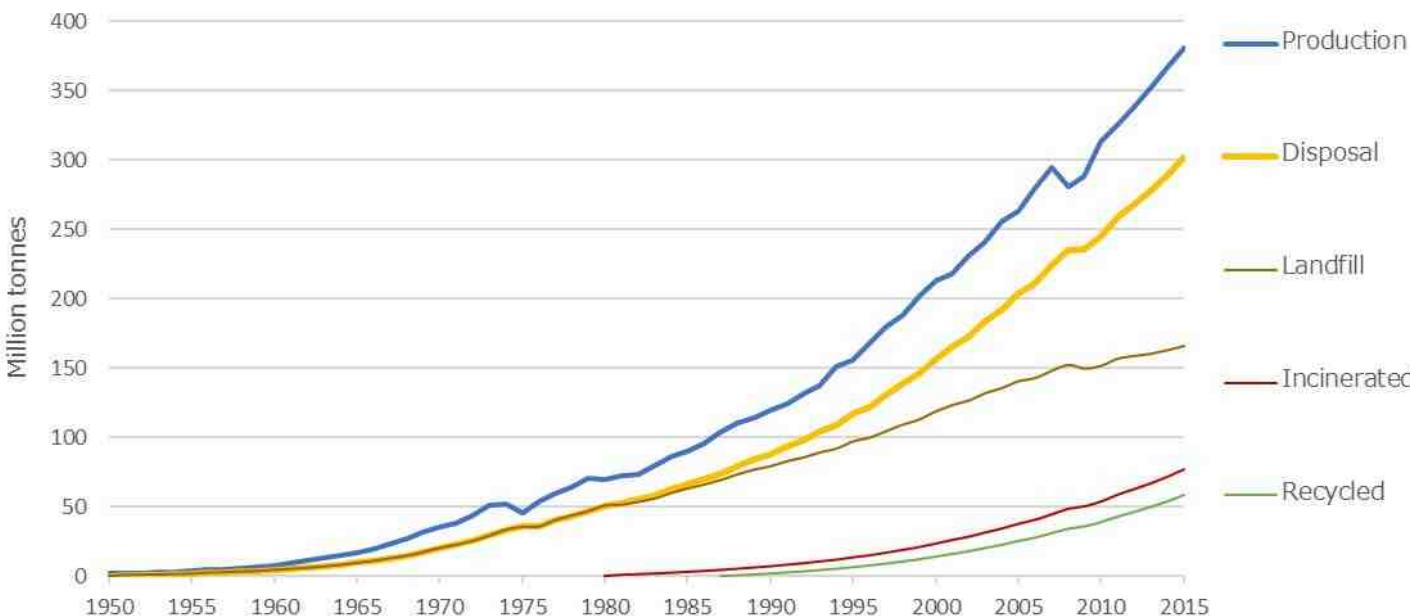
- Only 14 of 182 compost facilities in CA process compostable plastic- but it creates a contaminated product
- Food packaging lowers compost quality
- Compostables in landfill = 30X more GHG impact than when composted

Waste generation versus recycling (plastic)

Global production and fate of plastic

Global quantities of plastic produced and disposed of annually, showing the estimated amounts disposed of via landfill, recycling and incineration.

(Based on data by Geyer *et al.* (2007) DOI: 10.1126/sciadv.1700782)



Waste to energy challenges source reduction

IS INCINERATION REALLY WORTH IT?

- Need to feed
- 1.7 x more GHG emission per unit of E than coal
- Cost 4 X higher than solar and wind, 2X natural gas, 25% more expensive than coal.
- Persistent organic pollutants emissions
- Microplastics emissions
- Toxic bottom ash
- Disproportionate impacts on marginalized communities

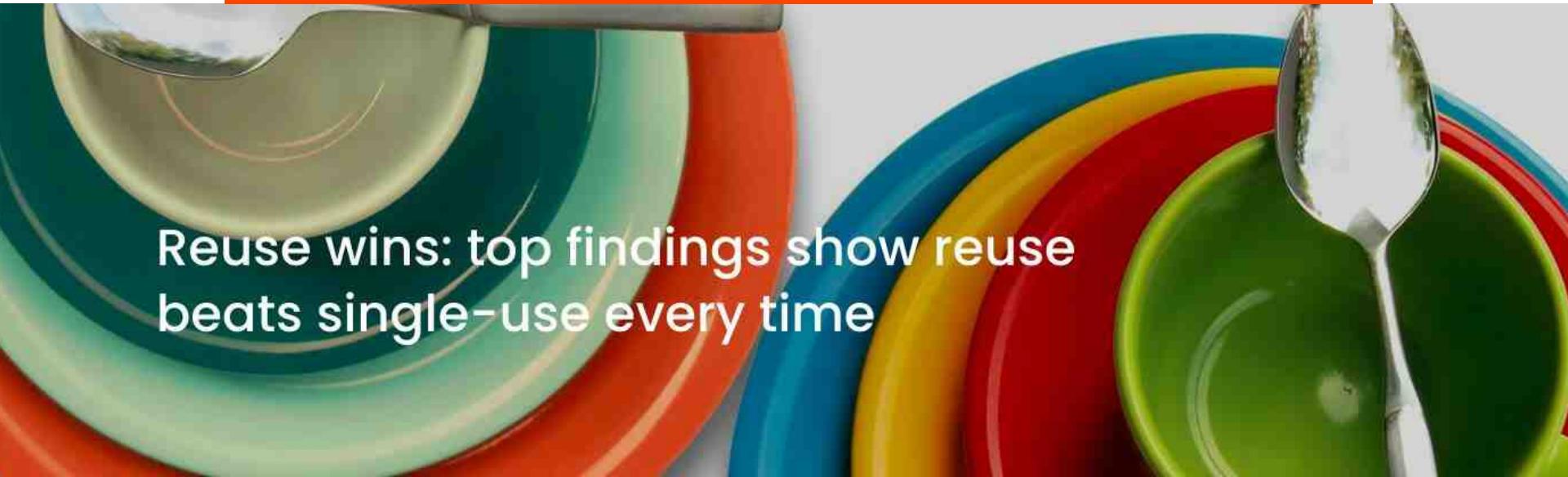
Shifting the paradigm: waste management to waste prevention

- Decades of focus on diversion from landfill
- Eliminating waste at the source- Waste prevention- means prioritizing **Reduce** and **Reuse**



reuse wins

The environmental, economic, and business case for transitioning from single-use to reuse in food service

A close-up photograph of a stack of colorful, reusable plates and a spoon. The plates are arranged in a circular pattern, showing vibrant colors like red, yellow, green, and blue. A silver spoon is resting on one of the plates. The lighting highlights the texture and color of the plates.

Reuse wins: top findings show reuse beats single-use every time

Finding #1

Reuse Beats Single-Use by almost Every Environmental Measure

LCA Studies Show Reuse Wins

Plate/Clamshell Studies	Reusable			Disposable				
	Compostable	PET	PP	Cardboard	Paper	EPS	PLA	Aluminum
Pro Ma	🏆				🔍	🔍	🔍	🔍
Brock	🏆						🔍	
Copeland		🏆				🔍		
Hamoto		🏆			🔍			
Gallego		🏆			🔍	🏆		🔍

Cup Studies	Reusable			Disposable				
	Compostable	PP	PP	PP	PET	EPS	PLA	
Pro Ma		🏆			🔍	🔍	🔍	🔍
Starbucks	🏆		🏆		🔍	🔍		
Bramburg	🏆				🔍			
CRAIG	🏆				🔍			
Gandhi		🏆					🔍	
Potting	🏆						🔍	
Plastim		🏆			🔍	🔍	🔍	🔍
Ungar	🔍				🏆		🏆	
Verpacktieren				🏆	🔍			🔍
Woods	🏆	🏆			🔍			🔍



= included in study



= included in study & found to have least environmental impact

Break even point

Cups

- Ceramic vs. paper & PS: **2-122 uses**
- Glass v. paper: **36 uses**
- Stainless steel vs. paper with PE lining and PP lid: **35 uses**

Clamshells:

- PP reusable vs. EPS: **3-39**
- Ceramic plate vs. PLA: **50 uses**

Utensils:

- Metal vs plastic- **2 uses**

Summary of break-even points for reusable and disposable foodware

Clamshells & Plates		Disposable								
Reusable	Ceramic, PP	PLA		EPS		Bagasse				
		Broca: plates (2008)		Copeland: clamshells (2013)		Gallego-Schmid: clamshells (2019)				
		15		3-39		14				
		50								
Cups		Disposable								
Reusable	Ceramic	1.	2.	3.	4.	5.	6.			
		Starucks GHG Emissions (2000)	Bramberg Energy Impacts (2011)	CIRAI G HGH Emissions (2014)	Woods & Backshi BATT (2013)	CupClub (2018)	Gerrido (2007)	CupClub (2018)	Foerster (2020)	Potting (2016)
		70	10	100	70	122		90-97		
		36							2	
Reusable	Glass			35						
				70						
				20		100	10	72	78	
						94	41 recycled 21 landfilled			

Disposable cups key

1. Paper
2. Paper + PE + PP Lid
3. EPS
4. EPS with PS lid
5. PP
6. Paper lined with PE and PLA + PS/PLA lid + corrugated sleeve
7. Paper lined with PLA + PLA lid + corrugated sleeve
8. Paper lined with PLA + lid + corrugated sleeve- 80% composting
9. Paper lined with PE / recycled vs landfilled
10. PS

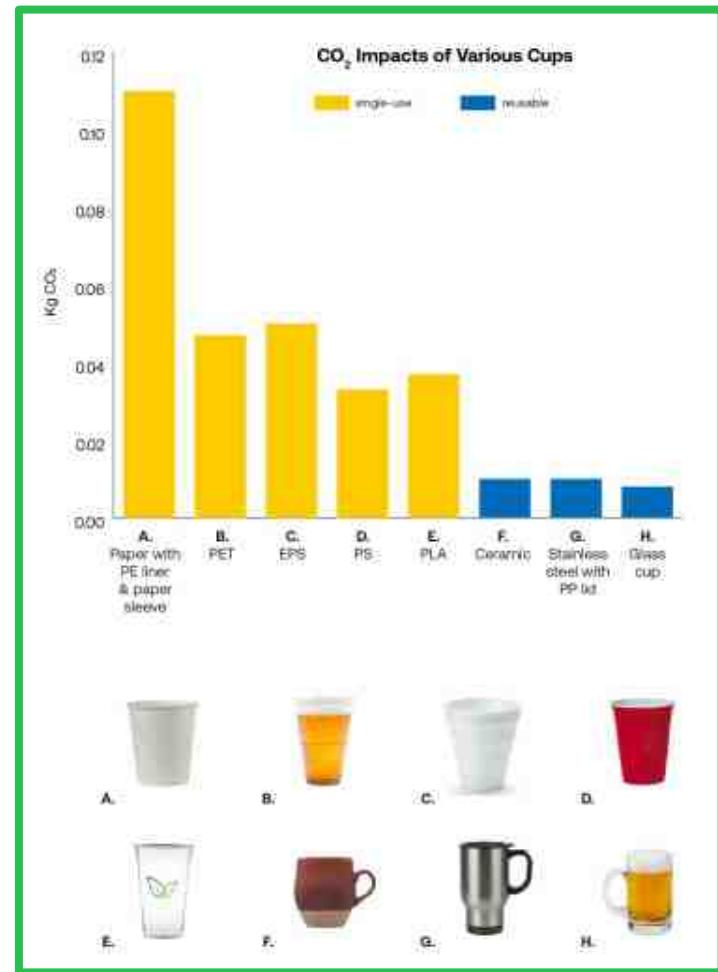
Better for Climate

Cups CO2 Impacts

Disposable paper, plastic, and bioplastic

3-10 x higher than

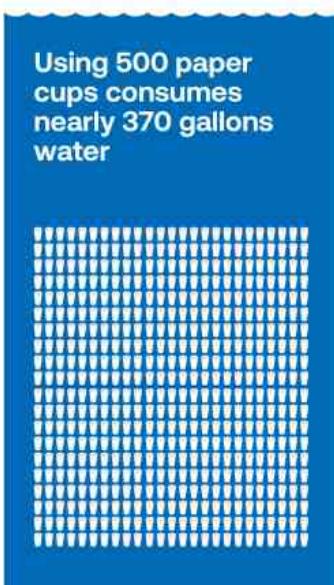
Reusable ceramic, stainless steel and glass



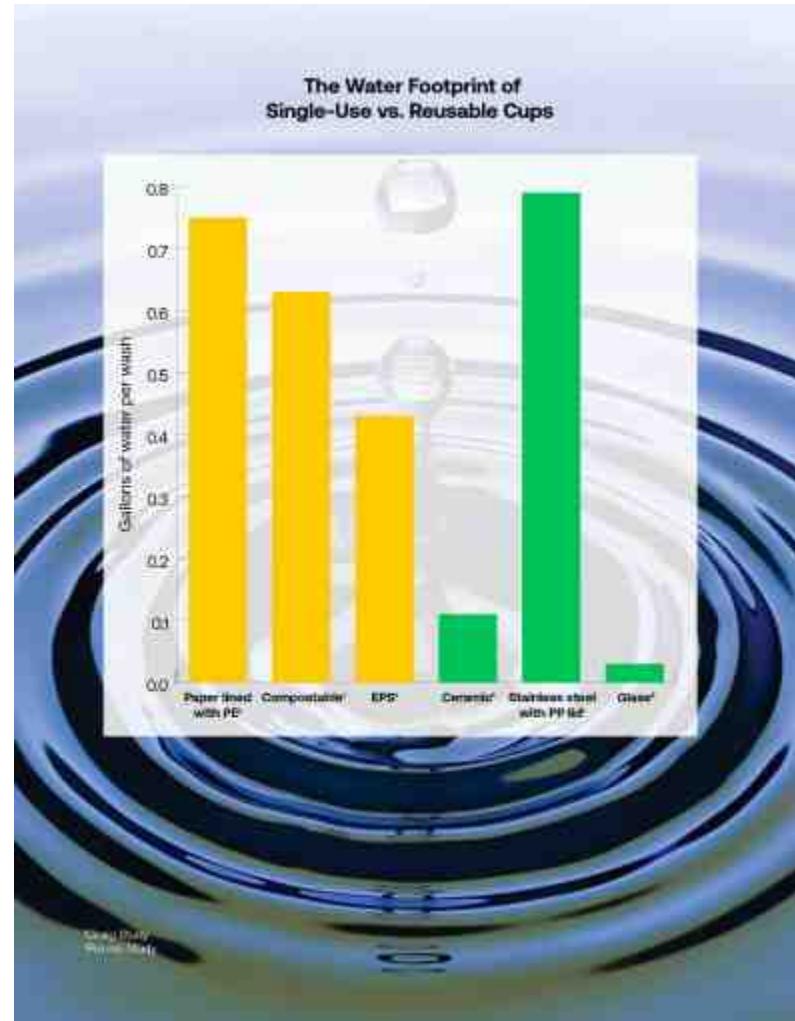
Water Savings of Reuse

Over their lifecycle

- Reusable cups save water- glass and ceramic are the best choices.
- Most impact is in use phase
- Disposable impacts in extraction



Using and washing one ceramic cup 500 times consumes only 53 gallons of water.



Reuse Saves Water, Waste, and Money

Reuse saves businesses
money for on-site dining
100% of the time.

Average savings for a small business:



\$3000 - \$22,000
cost savings



1,300-2,200 lbs. of
waste eliminated



110,000 to 225,000
packaging items
eliminated

**ReThink
Disposable**
STOP WASTE BEFORE IT STARTS

Reusables Analysis: Universal Coffee Shop
The Starbucks Company/Alliance for Environmental Innovation Joint Task Force

Assumptions:

\$0.10 Cost of disposable purchased cups (16 oz. and 24 oz. sizes mixed)

\$0.25 Cost of 16 oz. reusable ceramic cup (16 oz. size)

1000 cups: 1,000/16 = 62.5 reusable cups per hour

10 hours: Optimum time of the coffee shop per day

Results

No. of reusable cups used per hour	Daily cost savings*	Annual cost savings†
2	\$3.67	\$4285
4	\$7.34	\$2,570
10	\$17.85	\$6,426

No. of reusable cups used per hour	Annual water savings (gal.)‡	Annual GHG reduction (lbs.)‡	Annual solid waste reduction (lbs.)‡
2	1,631	229	252
4	3,262	452	504
10	8,155	1,130	1,260

Critical success factors

Excess Washing Capacity: The Starbucks reusable research indicated that the system had unused dishwashing capacity. The company needs to have storage space for a small supply of cups near the service area and additional storage for dirty dishes (either static or mobile).

* Cost of reusable cups used per hour (16 oz. and 24 oz. sizes mixed) of reusable ceramic cups (16 oz. size) vs. disposable cups (16 oz. and 24 oz. sizes mixed).

† Based on the use of 1000 cups per day.

‡ Measured by 2010 data.

Dishwashing- not as challenging as you'd think

Seattle Restaurants

- 76% have commercial dishwashers
- Reusables quite popular:
 - plates (86%)
 - cups (86%)
 - glasses (83%)
 - utensils (75%)
 - bowls (68%)

Dishwashing and labor

Unpackaging Alameda

City of Alameda + **ReThink Disposable** worked with 80 restaurants to transition to reuse for onsite.

Most used existing dishwashing infrastructure and staff.

Only 3 needed to expand dishwashing capacity.

NET SAVINGS: Using reusable products saved Alameda restaurants over \$130,000 per year and reduced annual waste by 64,000 lbs.



Imagine living in a community where...

- All restaurants serve with real plates, cutlery and cups.
- To-go coffee is provided in returnable reusable cups.
- At public venues, water is provided in reusable bottles.
- At the ballpark or music festival, everyone is drinking beer and soda out of real cups.
- You can get meals, groceries, cleaning, and personal care products delivered to your home in reusable containers- or in reusable containers at the store.

And in this community...

- People are employed in delivery, pick-up, cleaning, stocking logistics.
- Litter and solid waste costs are down
- Community pride is up.
- None of these innovations required you to bring your own anything.
- Community leaders and policymakers worked to create the conditions for this thriving reuse economy.



Green TO GO Wash services
We pick up, wash, and sanitize your stuff!

Perfect for local makers, food producers, small businesses, and schools!

Green ToGo is proud to be permitted by Durham County Health Dept. since 2017

The advertisement features a green diamond logo with "Green TO GO" and a photograph of a stainless steel washing machine with green plastic tubs inside. Below the photo is a testimonial about being permitted by the Durham County Health Department since 2017.



Job announcement
GreenToGo Operations Coordinator

DON'T WASTE DURHAM is growing its awesome team!

Do you want to make meaningful, positive environmental impact? If yes, then being a GreenToGo Operations Coordinator might be for you!

Visit: dontwastedurham.org for more info

The job announcement includes the Durham County Health Department logo, the Green To Go logo, and a call to action to visit the website for more information.



It's already happening...



INVESTING IN REFILLABLE UNIVERSAL BOTTLES

Replacing **200M** regular bottles per year | **50+** countries | Representing **25%+** of sales

Refillable packaging is a critical part of our sustainable packaging strategy.

In Brazil, all 2-liter bottles across Trademark Coca-Cola, Fanta and Sprite brands are sold in refillable "universal bottles" that are the same shape, size and color, which increases the efficiency of collection, cleaning and filling.

Many other markets, including Germany, Chile, Colombia, Peru, Pakistan, Kenya, the Philippines and Tanzania have universal bottle options.



LOVE coffee, HATE the waste?

It just got easier
to skip the single-use habit. ❤️

- 1 - Download app to become a member
- 2 - Borrow - two taps to borrow a cup at the cafe
- 3 - Return - bring cup back to any cafe in network

\$10 one-time membership
then just a quarter each borrow



okapi-reusables.com



<https://upstreamsolutions.org/reuse-services-and-business-directory>

Packaging as a service not a product.



The new reuse economy

How reuse services work

Refilling and/or restocking. The wash hub can ship containers that don't contain product (like to-go containers and cups) directly out for restocking. Packaging that needs to be refilled can either be refilled on-site or shipped out for refilling and restocking.



Washing and sanitizing. The wash hub receives reusable packaging from logistics or recycling providers to be cleaned, sanitized and dried.



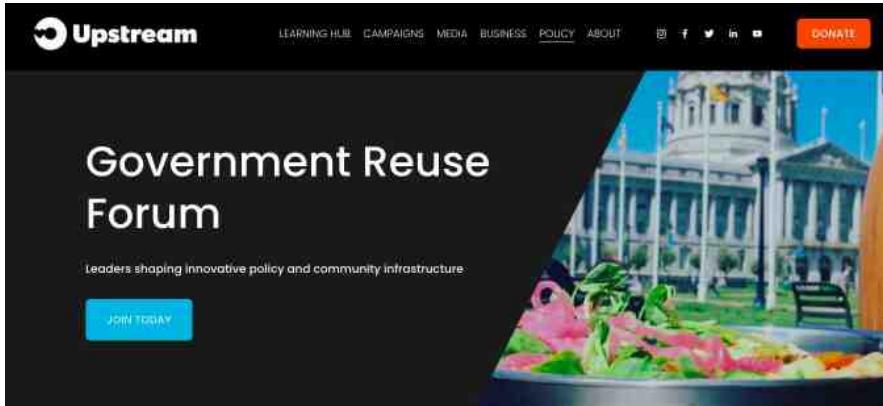
Purchase and use. Customers purchase consumable products (food, beverages, personal care, cleaning products, etc.) in reusable packaging.



Collection & reverse logistics. Trucks pick up reusable packaging from bins or kiosks at home, at stores or on-the-go. Curbside recycling or deposit-return materials recovery facilities (MRFs) can also be retrofitted to sort out reusable packaging.

What can local government do?

1. Join Upstream's Government Reuse Forum!



2. Fund reuse businesses
3. Educate and assist
4. Enact reuse policies

The Upstream Policy Playbook



The reuse policy playbook: National version

Your roadmap to reuse for jurisdictions across the country.

Two policy approaches

1. **REDUCE** - *eliminate the unnecessary stuff*
2. **REUSE** - *make reuse and refill the norm*



Strategy #1 – Reduce as Much as Possible

1. Ban single-use products where it leads to a reuse option:

- Plastic bags → reusable bags
- Hotel toiletries in bulk dispensers
- Beverage bottles → refill stations



2. Enact accessories on request laws

56 policies to date including 2 states (CA and WA)
(11% US population)



upstreamsolutions.org/skip-the-stuff



#SkipTheStuff
DenverGov.org/SkipTheStuff

Strategy #2: Transition the Rest to Reusable/Refillable

- 1. Sector-wide targets for reusable packaging- built into bottle bills & EPR**
- 2. Only reusable foodware for on-site dining-
CITIES: 11 U.S. Cities COUNTRIES: Chile, France, Taiwan**
- 3. Consumer charges for throw-away cups and containers: 7 U.S. jurisdictions and Vancouver**
- 4. Reuse at government events (San Francisco) and workplaces (Scotland) and in procurement**

McDonald's conversion to reuse in Berkeley



Two states & 33 cities have enacted versions of Upstream's model ordinances, impacting a total population of:

**61,951,000
(19% US)**



<https://upstreamsolutions.org/policytracker>



Start a local reuse coalition

<https://upstreamsolutions.org/community-coalitions>

Join the National Reuse Network

<https://upstreamsolutions.org/national-reuse-network>

Join the Government Reuse Forum

<https://upstreamsolutions.org/government-reuse-forum>

SIGN UP FOR OUR WEEKLY EMAIL @:
upstreamsolutions.org/stay-updated

FOLLOW US ON SOCIAL

TUNE IN: to the [Indisposable Podcast](#)

UBSCRIBE to our [YouTube Channel](#)



Thank you, any questions?

Miriam Gordon
Policy Director, Upstream
miriam@upstreamsolutions.org

