

Pathways Towards Ending Plastic Pollution:

Source Reduction as a Critical Component of a Global Plastics Treaty

On March 2, 2022, heads of state, ministers of the environment, and other representatives from 175 countries endorsed a resolution at the United Nations (UN) Environment Assembly to end plastic pollution.

They agreed to advance a legally binding agreement by the end of 2024 that addresses the full lifecycle of plastic, including its production, design, and disposal. The resolution established an Intergovernmental Negotiating Committee (INC) which began its work in 2022 to draft the global legally binding agreement. With the ambitious charge to “end plastic pollution,” measures to meaningfully reduce plastic production and/or consumption must be prioritized.

Numerous studies¹ have modeled interventions necessary to achieve a significant reduction in ocean plastic pollution and the sector’s associated climate emissions. All reach the same conclusion:

We need a comprehensive approach that starts with making less plastics in addition to improving waste management systems and continuing targeted cleanups.²

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To date there have been limited policies addressing overall plastic reduction via source reduction, however, California, the world's fifth largest economy, shows source reduction is possible. The Plastic Pollution Prevention and Packaging Producer Responsibility Act (also referred to as Senate Bill 54 [SB 54]) was signed into law in California in 2022, the first law in the world to establish a source reduction mandate: 25% reduction in single-use plastics packaging and foodware relative to a 2023 baseline. It defined "source reduction" as follows:

"Source reduction" means the reduction in the amount of covered material created by a producer relative to a baseline.... Methods of source reduction include, but are not limited to, shifting covered material to reusable or refillable packaging or a reusable product or eliminating unnecessary packaging. "Source reduction" does not include either of the following:

- 1 Replacing a recyclable or compostable covered material with a nonrecyclable or noncompostable covered material or a covered material that is less likely to be recycled or composted.**
- 2 Switching from virgin covered material to postconsumer recycled content.³**

The most critical element of this definition is the establishment of reduction relative to a baseline. Mandatory data reporting by all producers is needed to calculate the baseline, from which progress is made towards mandates. Another important element to note is that switching from virgin resin to postconsumer recycled content (PCR) is not source reduction; while that switch would result in virgin plastic reduction, it is separate and distinct from true source reduction. Finally, the definition ensures that packaging or material cannot be replaced with a less recyclable packaging or material. This is important to ensure that reduction is not accomplished by transitioning to materials that would be detrimental to the recycling system.

What is Source Reduction?

Source reduction means using less plastic material overall, and can be considered demand-side reduction. It is distinct from virgin plastic reduction, which focuses on using less virgin resin. While both approaches to reduction can result in greenhouse gas emission reduction and improvements in the waste management system, only source reduction confers major pollution reduction benefits.

25%

Source Reduction Mandate established for single-use plastics packaging and foodware in CA.



Policy Approaches to Accomplish Source Reduction

There are a variety of policy approaches that can be used to accomplish meaningful reductions in the amount of plastics we make and use.

1 Reduction Targets

Time-bound mandates to achieve a set amount of reduction in plastics relative to a baseline.

A mandate, if supported by strong oversight and enforcement, can be the most effective way to ensure a reduction in the total amount of plastic used.

EXAMPLE:

California's SB 54 mandate: **25% reduction in weight and in number of single-use plastic items** by 2032 relative to a calendar year 2023 baseline.⁴

2 Reuse-Refill Targets

Time-bound mandates for an amount (typically a percentage) of plastic material to be transitioned to reuse and refill systems or a mandate for an entire category of material or service to be transitioned to reuse and refill systems.

Reuse and refill systems help transition away from the challenges of single-use and resource depletion broadly by building out systems that enable packaging and foodware to be reused over and over again for the same purpose.

Shared and harmonized reuse infrastructure is critical to scaling up reuse systems by helping ensure consistent consumer access to actually bringing materials back.

EXAMPLES:

California's SB 54 mandate: **4% of all single-use plastics must be transitioned to reuse and refill systems** by 2032.

City of Oakland's reusable foodware policy⁵: by 2025, **all food vendors in the city may only use reusable products** to support dine-in service.

Chile enacted a law in 2021 that will require at least **30% of soft drinks sold to be in reusable and refillable containers**, in addition to other reduction measures for single-use plastics.⁶

3 Procurement Targets

Time-bound targets or mandates to reduce the amount of plastic purchased by a government or company.

Procurement targets can be a powerful tool to drive innovation and move the market when implemented by large purchasers such as state and federal governments or large companies.

EXAMPLES:

Illinois prohibits state agencies from procuring disposable polystyrene foam food service containers and directs state agencies to **track their purchases of single-use plastic** disposable foodware and use that information to establish reduction goals.⁷ Another law prohibits procurement of single-use plastic disposable foodware for use in its State parks and natural areas.⁸

Massachusetts Executive Order No. 619 prohibits state agencies from purchasing single-use plastic bottles, with certain exceptions.⁹

4 Elimination via Product-Specific Bans

Ban certain products from use altogether to shift towards use of viable sustainable alternatives or to incentivize the development of alternatives.

Bans can play a role in reducing plastic pollution, especially when they target unnecessary and/or nonrecyclable items such as single-use plastics, and also in eliminating demand for certain plastic products.

EXAMPLES:

The European Union's Directive on single-use plastics: **bans certain single-use plastics for which alternatives are available** including, but not limited to, stirrers, straws, cutlery, and expanded polystyrene foodware.¹⁰

Rwanda's bag and bottle ban: Rwanda became one of the first nation's to **ban single-use plastic bags and bottles**.¹¹

Eleven U.S. states and the District of Columbia have enacted laws to **ban the use of expanded polystyrene** foodware.¹²





Examples of Source Reduction

Upstream product and packaging redesign is required to eliminate or reduce single-use plastics. This can include but is not limited to shifting from single-use plastics to reusable or refillable materials, eliminating unnecessary plastics, or reducing the amount of plastic used through right-sizing, concentrating, or switching to large or bulk formats.

1 Elimination

The removal of a plastic product or component (without replacing it with another material).

EXAMPLES:

Barilla removed plastic windows in pasta packaging (except US/Canada): **Estimated reduction of 126 metric tons annually.**¹³

Walmart in Canada eliminated plastic wrap around bananas and peppers: **Estimated reduction of 94 metric tons annually.**¹⁴

Tesco in the UK eliminated film around multi-packs of cans: **Estimated removal of 67 million pieces of plastic film, or 350 metric tons annually.**¹⁵

2 Reuse and Refill

Creating systems and infrastructure by which packaging is designed to be either recirculated multiple times for the same purpose and returned to producers or a third party after each use or refilled by consumers multiple times for the same purpose in its original format.

3 Optimization

Reducing or limiting the amount of material used in packaging, including by: right-sizing, concentrating, bulk or large format packaging. It is critical that optimization does NOT include replacing a recyclable material with a nonrecyclable material or a material that is less likely to be recycled.¹⁶

4 Switching Materials

Shifting a single-use plastic product to reusable or refillable packaging or a nonplastic recyclable material.¹⁸

EXAMPLES:

Algramo provides services that allow consumers to refill various dry food and personal care products at dispensing stations resulting in an estimated **reduction of over 30 metric tons of plastic** in 2021 alone.

EXAMPLES:

Amazon right-sizing secondary packaging: Estimated **reduction of 2 million tons** of material since 2015.¹⁷

Shifting to large-format packaging can support at-home reuse and refill.

Shifting to more concentrated products decreases packaging.

EXAMPLES:

Nestlé transitioned to recyclable paper packaging for Smarties, **removing ~250 million plastic wrappers** annually.

Switching to paper-based recyclable shippers instead of plastic.



Conclusion

The plastics treaty currently being negotiated represents a once-in-a-lifetime opportunity to achieve collective global action to address the plastic pollution crisis. An impactful treaty would also significantly advance global efforts to slow the pace of climate change and biodiversity loss, as well as to mitigate the environmental injustice and emerging public health risks that plastics present across their lifecycle. **However, absent a formal reduction measure within the treaty and a concerted effort to make and use less plastic, these collective gains won't be realized.**

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SOURCES:

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²Lau, Winnie WY, et al. (2020); Borrelle, Stephanie B., et al. (2020); Systemiq (2023); Energy Transitions Commission. "Making Mission Possible: Delivering a Net-Zero Economy." (2020); CGC & Systemiq. "Planet Positive Chemicals." (2022).

³Cal. Pub. Res. Code § 42041(aj).

⁴Cal. Pub. Res. Code § 42057(a)(1).

⁵City of Oakland Ordinance No. 13773 (2024).

⁶Law. No. 21.368 Limiting the Generation of Disposable Products and Regulating Plastics (2021).

⁷Illinois Public Act 103-0470 (2023).

⁸30 Ill. Comp. Stat. 500/45-23.

⁹Massachusetts Executive Order No. 619 (2023).

¹⁰European Commission. "Single-use Plastics."

¹¹Chen, Sulan & Redkar-Palepu. "Umuganda: Rwanda's audacity of hope to end plastic pollution." Nov. 15, 2023.

¹²Ocean Conservancy. "What the Foam?!" (2023).

¹³Barilla. "Barilla Classics Packaging: Our New More Sustainable Box."

¹⁴Recycling Product News. "Walmart Canada prevents 1.1 million pounds of plastic from entering its supply chain." Oct. 25, 2019.

¹⁵Ellen MacArthur Foundation. "Eliminating unnecessary plastic packaging: Tesco." Dec. 17, 2021.

¹⁶Cal. Pub. Res. Code § 42041(aj).

¹⁷Amazon. "How Amazon continues to improve its packaging." Dec. 22, 2023.

¹⁸Cal. Pub. Res. Code § 42041(aj).

