

An Environmental Justice Framework for Informing California's Plastic Pollution Mitigation Fund Investments

The global plastic crisis – created by overreliance on plastic and the proliferation of plastic waste – exposes communities in California and globally to contaminants that harm their health and environment.

Plastic is an environmental justice issue: low-income communities and non-white residents experience higher rates of exposure risk across the plastic life cycle.

Recycling has proven ineffective as a strategy to address the plastic crisis, with only a small fraction of global plastic ever being recycled.

California's Senate Bill 54 (SB 54) is an ambitious step to address the plastic crisis, a key part of which is establishing the Plastic Pollution Mitigation Fund. Beginning in 2027, this fund will be used to mitigate and remediate plastic-related impacts and is an opportunity to address inequitable exposure risk from the plastic supply chain.

UCLA Luskin Center for Innovation researchers present *The Three-Part Framework for Identifying Plastic-Burdened Communities* in the report "[What Defines A Plastic-Burdened Community?](#)" Agencies should use the framework to better target investments to address exposure risks, which are inequitably distributed throughout California.

RECOMMENDED POLICY ACTIONS

As Californian agencies prepare to start investing money from the Plastic Pollution Mitigation Fund in 2027, taking the actions below will help maximize the efficacy and transparency of these efforts.

- Use *The Three-Part Plastic-Burdened Communities Framework* to help prioritize investments for the most impacted communities
- Align investments with specific, acute exposure risks facing communities, and publicly articulate these linkages

KEY FINDINGS

Plastic-related exposure risks are an environmental justice issue, with lower-income communities and communities of color disproportionately exposed.

There are three plastic-related exposures categories:

- 1) **Site-based** from working or living near facilities in the plastic supply chain
- 2) **Dietary** from inadvertent ingestion of food or water contaminated with microplastic or plastic-related chemicals
- 3) **Consumer goods** from everyday interactions with retail goods, services, and packaging, primarily via dermal, or skin contact

The Three-Part Framework for Identifying Plastic-Burdened Communities allows agencies to target specific exposure risks facing communities and maximize the impact of investments. Agencies can use the framework to inform investments in the short term, utilizing simple and rudimentary measures to gauge exposure risks. More research is needed to realize its full potential.

THE CRISIS

Plastics are a cornerstone of the modern economy, used in everything from expensive, durable products like vehicles to cheap, short-lived goods and single-use items and packaging. The massive volume of plastic produced and disposed of each year has created a global plastic crisis. Plastic pollution is found in every corner of the world, and communities are exposed to other impacts from the growing plastic supply chain. Greenhouse gas (GHG) emissions occur at every stage of the plastic life cycle and could be responsible for as much as 19% of total global GHG emissions by 2040.

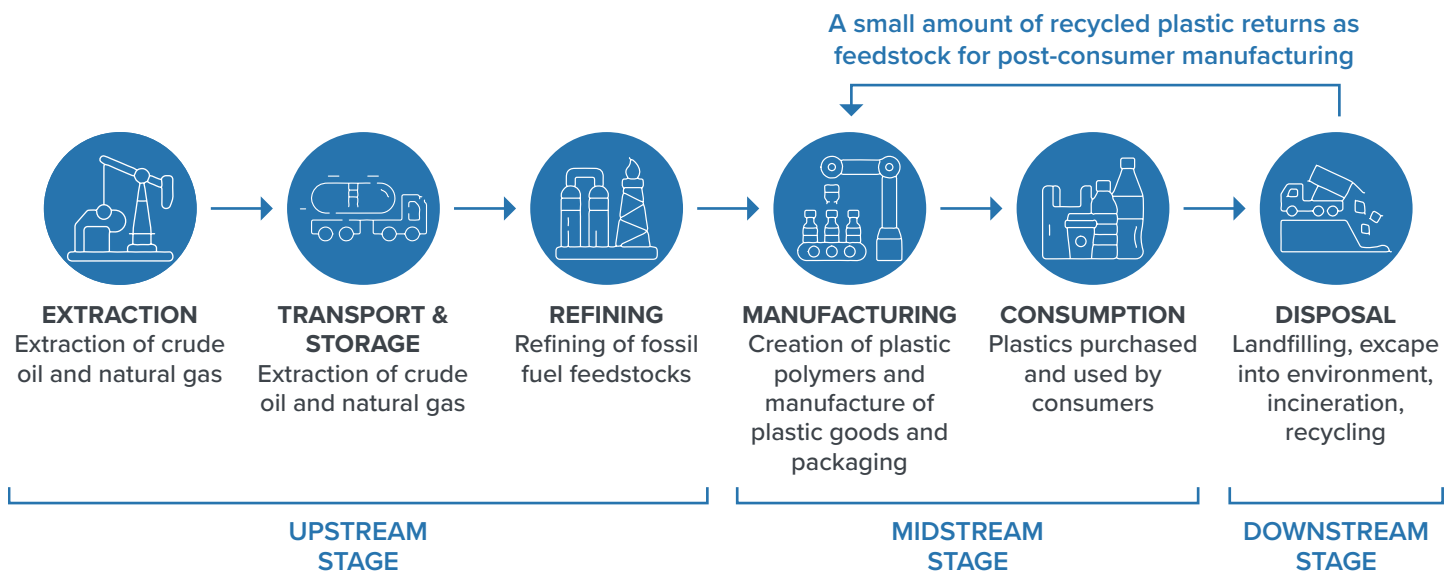
THE OPPORTUNITY

California’s SB 54 — the Plastic Pollution Prevention and Packaging Producer Responsibility Act — is the most ambitious effort in the nation to address this crisis. Among other features, the law establishes the Plastic Pollution Mitigation Fund (Fund), an annual investment fund of \$500 million that state agencies will use to remediate and mitigate harmful plastic impacts, starting in 2027.

The Fund is a critical opportunity to address the health and environmental impacts of plastic in California. The better informed agencies are in targeting investments, the more effectively they can address the underlying environmental justice issues of plastic-related exposure risks by aligning interventions with communities’ experiences and maximizing investment benefits to Californians.

FIGURE 1

Plastic life cycle; communities can face exposure risks at each stage



Communities can face exposure risks at all three stages of the plastic life cycle (Figure 1).

These run the gamut from emissions of toxic airborne pollutants, to food and water contaminated by microplastics and plastic-related chemicals, to noise and litter from waste processing sites.

THE THREE-PART PLASTIC-BURDENED COMMUNITY FRAMEWORK

The researchers developed the framework as a conceptual model for evaluating a community’s overall level of exposure risk from plastic. When making environmental justice investments, California has historically defined communities using census tracts: small areas of approximately equal population. By assessing relative exposure across the three categories, decision-makers can prioritize and target investments toward the highest-impacted areas, tailoring them to a given area’s needs. The highest priority should be given to areas that face high levels of all three exposures, or a *triple-burdened community*, while *double-burdened* and *single-burdened* communities should be a lower priority for investment.



Employees managing debris at a plastic factory. Photo: IMF / Flickr

FIGURE 2

Where and how plastic exposures occur



SITE-BASED EXPOSURES



DIETARY EXPOSURES



CONSUMER GOODS EXPOSURES

WHERE

Site-based exposures are related to sites and facilities in the plastic supply chain, such as fossil fuel refineries, plastic manufacturers, and landfills. These fall heaviest on nearby residents and workers.

Dietary exposures occur from consuming food and drinking water contaminated with microplastics, related toxins that can be carried by microplastic particles, or chemicals in plastic that can leach from the material. Contamination is especially prevalent in plastic bottled water and ultraprocessed, packaged foods.

Consumer goods exposures are experienced through contact with plastic-containing or contaminated goods and packaging, and the use of services that utilize such items. Products intended for skin application, such as beauty care products, are of particular concern.

HOW

Inhalation, ingestion, or dermal contact of/with pollutants from living and working near plastic supply chain facilities

Inadvertent ingestion of microplastics and plastic-related pollutants through food and drink, and dermal contact with food packaging

Exposure to microplastics and plastic-related contaminants through everyday use of retail products, services and packaging, primarily via dermal contact

PLASTIC IS AN ENVIRONMENTAL JUSTICE ISSUE

Plastic exposure risk falls along well-established patterns of environmental injustice, with the highest risk in lower-income communities and communities of color. To begin populating *The Three-Part Plastic-Burdened Community Framework* with the data and analysis necessary for it to be applied in a useful, comprehensive fashion, [UCLA Luskin Center for Innovation](#) researchers mapped how downstream, site-based exposures (from plastic waste processing and disposal) are distributed throughout California (Figure 3).

Higher levels of exposure risk are linked to:

- Lower incomes
- Higher CalEnviroScreen* scores
- More people living in poverty
- More people without a high school education
- Higher Hispanic and African American populations, and lower white populations
- Higher rates of asthma and low birth weights

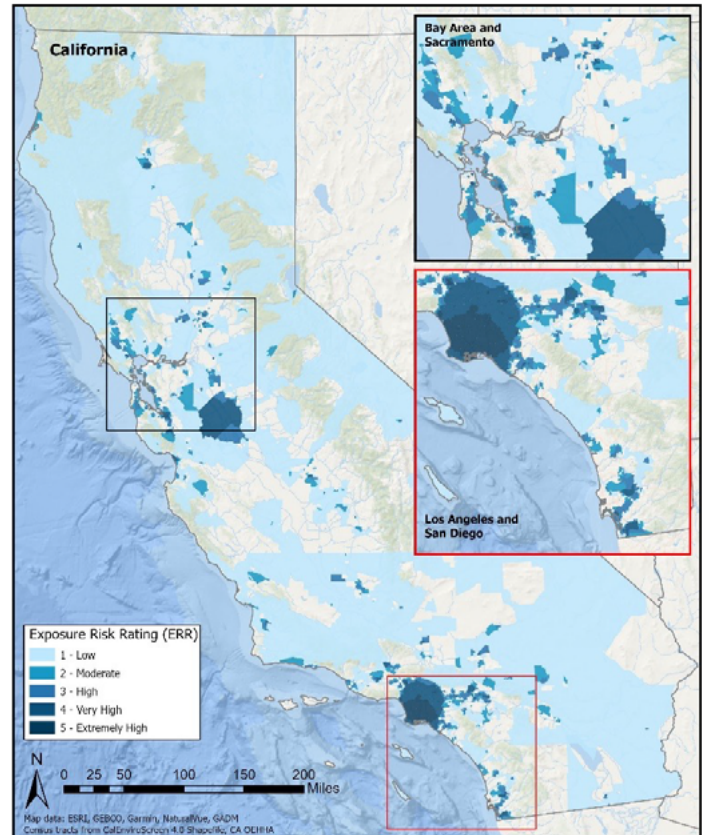
* The California Communities Environmental Health Screening Tool (CalEnviroScreen) is a database used by the State of California to measure environmental and socioeconomic burden at the community level. Higher scores mean a community faces higher levels of pollution burden, health hazards, and/or socioeconomic challenges.

RESEARCH NEEDS

Agencies can use the framework to inform investments in the short term, utilizing more simple and rudimentary measures to gauge exposure risks. However, more research is needed to realize its full potential, creating measures of exposure risk that effectively integrate diverse data sources to capture the complexity of plastic exposures, and to facilitate further analysis of plastic-related issues for the public benefit. The legislature and state agencies should engage in and/or fund research in the following critical areas.

FIGURE 3

Census tract-level site-based exposure risk from plastic-related waste sites



The interactive map is available at <https://innovation.luskin.ucla.edu/mapping-impacts-from-plastic-disposal-sites-in-california/>.

- Tracking **microplastic pollution** in drinking water and natural bodies of water
- Mapping **plastic-burdened communities** using proxy measures like food deserts; bottled water reliance; and prevalence of overpackaged, ultraprocessed foods
- Improved tracking of **plastic-related industrial operations** in the state and expanding **site-based exposure mapping** to the upstream and midstream stages of the plastic supply chain
- Studying **occupational exposure risks** for plastic supply chain workers

The Luskin Center for Innovation conducts actionable research that unites UCLA scholars with civic leaders to solve environmental challenges and improve lives. Our research priorities include the [human right to water](#), [community-driven climate action](#), [heat equity](#), [clean energy](#) and [zero-emission transportation](#). We envision a future where everyone has healthy, affordable, and resilient places to live, work, learn, and play.

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This policy brief is accompanied by a research [report](#) “What Defines a Plastic-Burdened Community?” and an [interactive map](#) of the impacts of plastic disposal sites in California.

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