

# SPUR

**Ideas + Action for a Better City**

learn more at [SPUR.org](http://SPUR.org)

*tweet about this event:*

*@SPUR\_Urbanist*

*#ZeroWaste*



# San Francisco Zero Waste

Jack Macy, Zero Waste Senior Coordinator  
San Francisco Department of Environment



**SF Environment**

**Our home. Our city. Our planet.**

A Department of the City and County of San Francisco



# Zero Waste Goal







# Zero Waste Addresses Upstream Wasteberg Impact

Municipal waste  
tip of the  
“wasteberg”

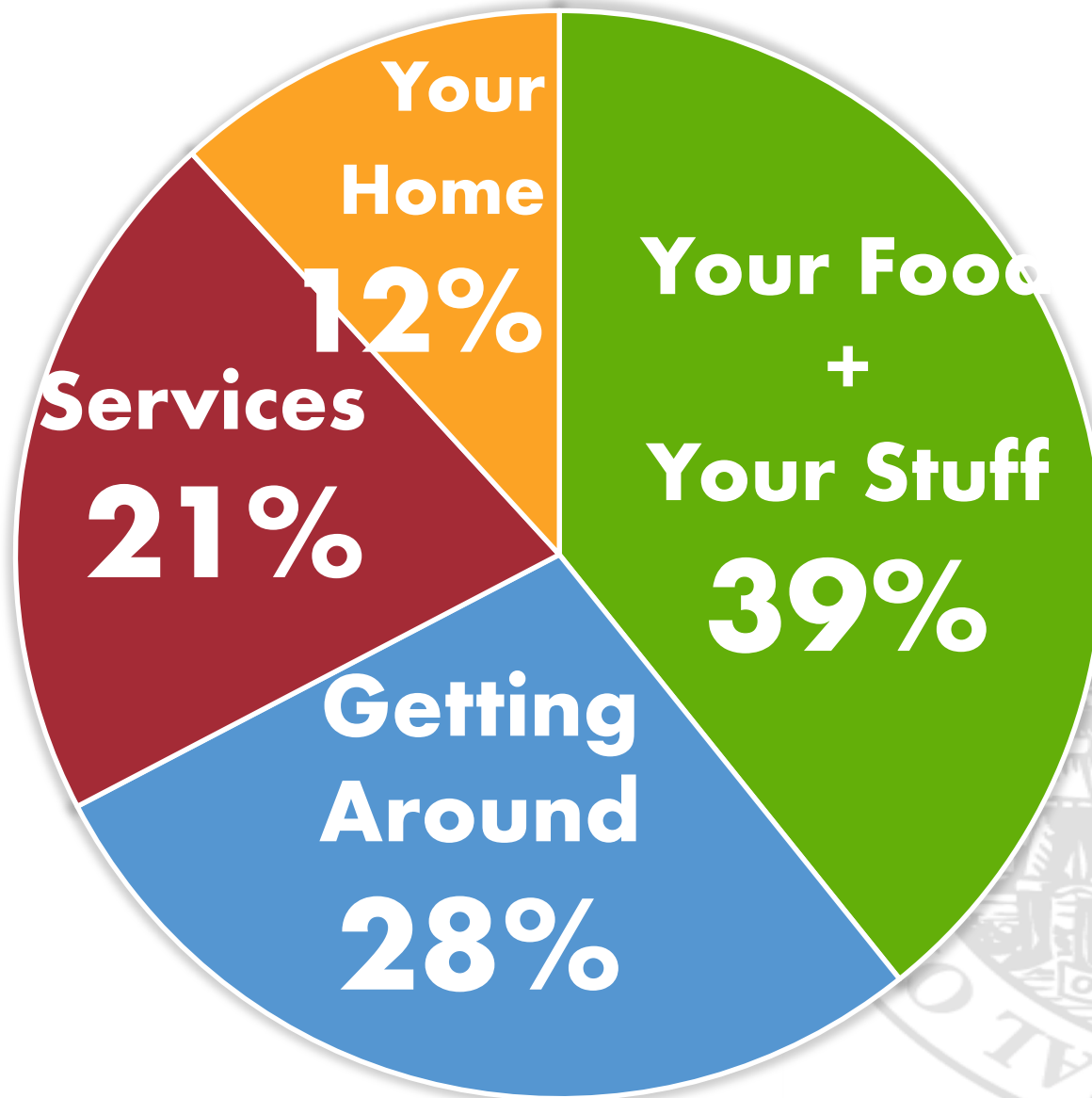
Upstream waste  
produced is 70 times  
greater than at  
municipal level





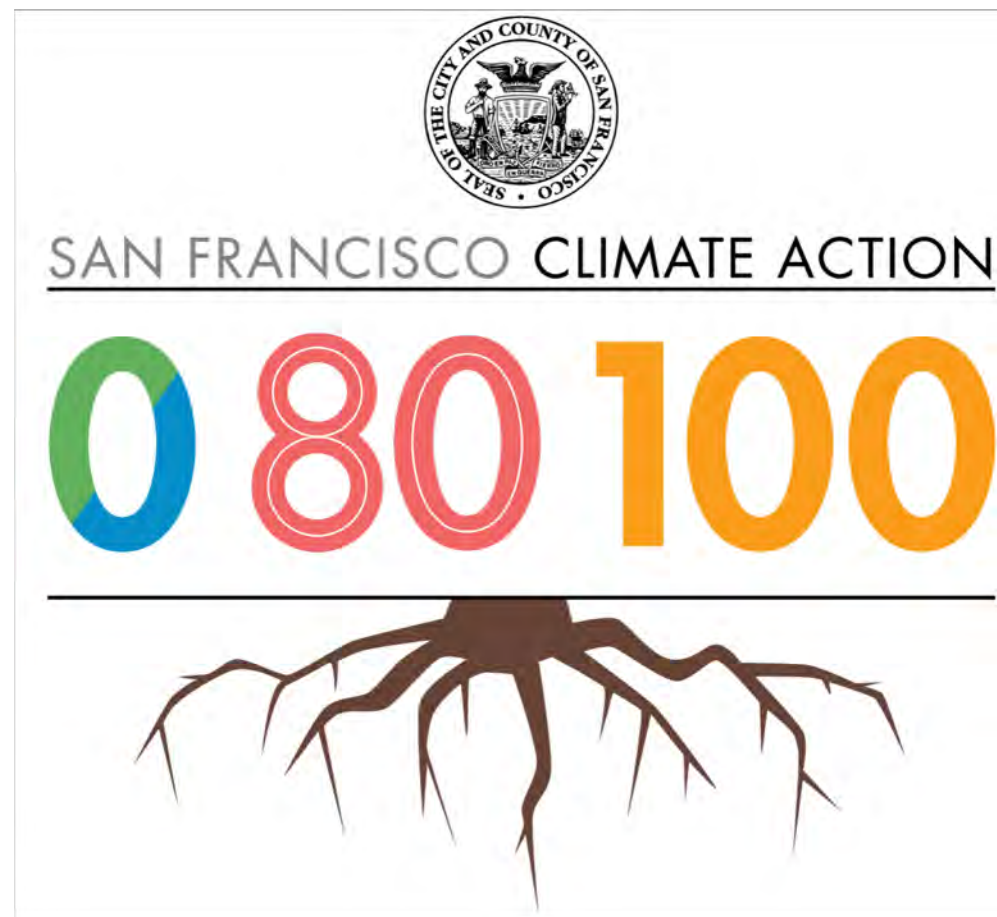


# Life Cycle Impact In Consumption Based GHG Inventory



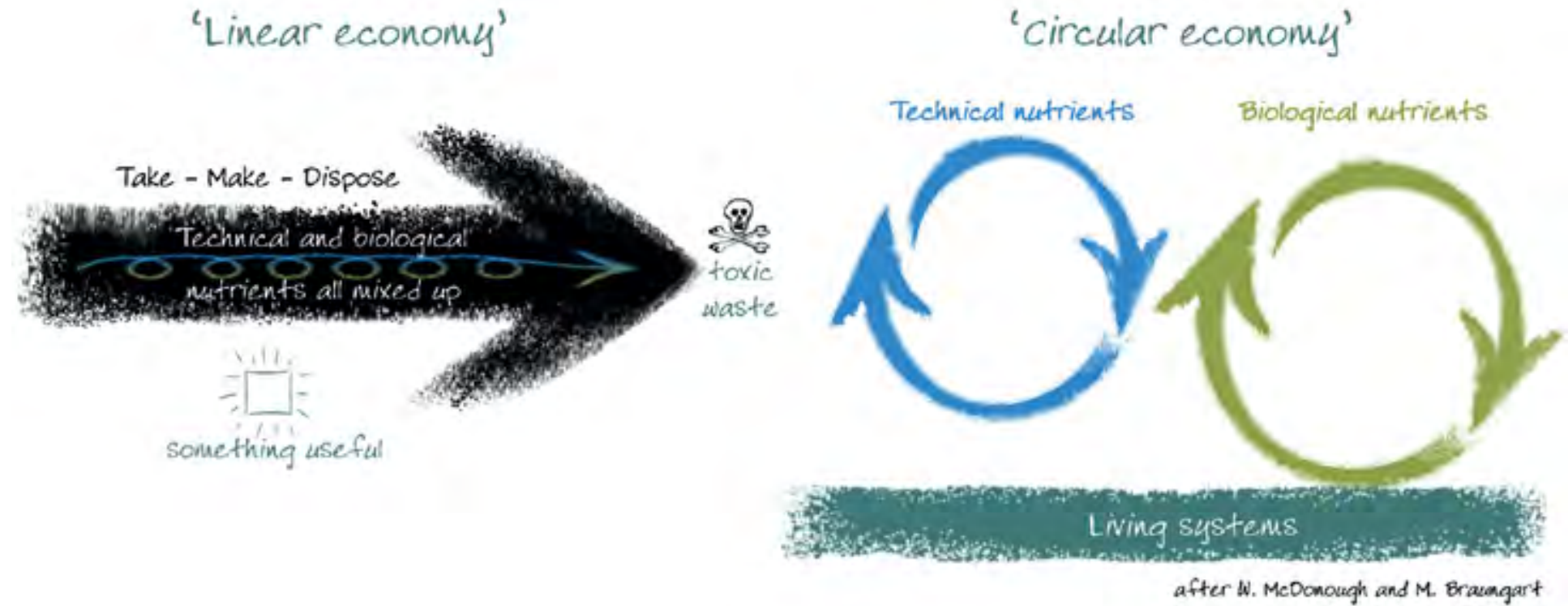


# San Francisco Climate Action Strategy





# Zero Waste is a Shift from Linear to Circular Economy







# Zero Waste Goal Has Driven Policies and Progress

BOS set ZW goal in 2002 and delegated to the Commission on the Environment to set ZW date



2003

2006

2009

2012

2016

2017

2018

Mandatory Recycling and Composting Ordinance requiring source separation, achieved service compliance for 99% of all properties



Extended Ban on expanded polystyrene foam foodware and packaging



Ban on plastic straws etc and fluorinated chemicals, foodware on request only



Mandatory recovery of Construction & Demolition debris



Ban on single-use plastic bags and bag charge extended to all stores and restaurants



Recycling program expansion with new materials roll out

# It's the Law

You must  
recycle all  
**Construction  
and  
Demolition**  
waste material



**SF Environment**

Our home. Our city. Our planet.

A Department of the City and County of San Francisco



[SFEnvironment.org](http://SFEnvironment.org)



Projects

Facilities

Transporters



# Three Stream Program with Public Private Partnership



**Recology®**

Sunset Scavenger

Golden Gate

**WASTE ZERO**







## 3 Stream Program Shrinking Trash & Increasing Recycling



Larry Strong, Courtesy of Recology





# Improving Recycling Processing for Market Needs







# Expanding Outreach and On-Site Assistance

When you're through with that apple, we'd love the core.

By putting food scraps in your green cart, you help San Francisco reach its goal of zero waste and fight global warming.

**SF Environment**  
Our home. Our city. Our planet.  
Department of the Environment and Planning

Where you toss food scraps makes a world of difference.

[SFEnvironment.org](http://SFEnvironment.org)





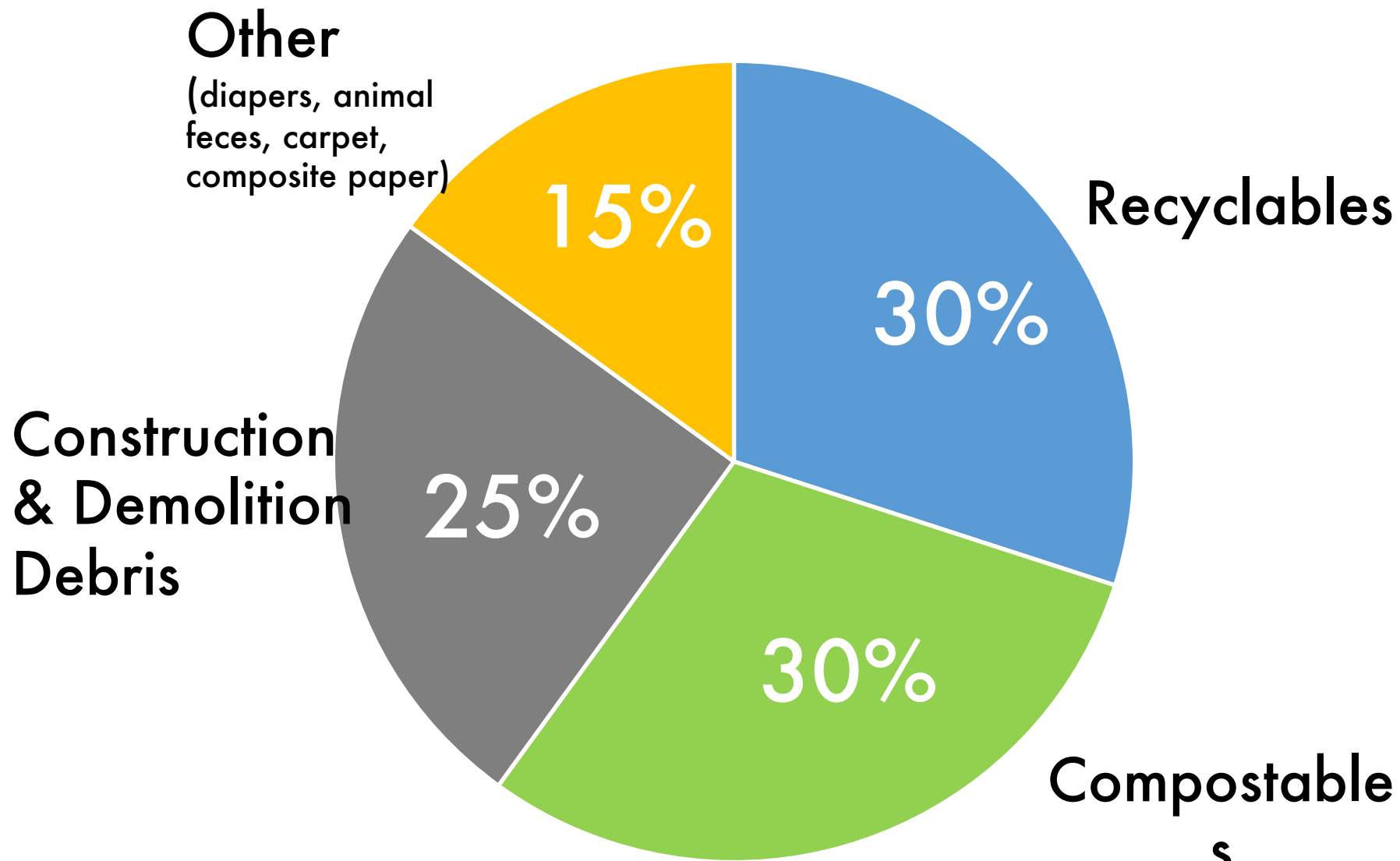


# Compost cycle = Healthier Soil, Food & Climate





# What's Being Landfilled





# Key Challenges Toward Zero Waste



**Food, Packaging and Changing Consumption**



**Increasing Separation & Large Generators**



**Construction & Demolition**







# GCAS Zero Waste Pledge #1

**Reduce municipal solid waste generation per capita by 15% by 2030**





## GCAS Zero Waste Pledge #2

**Reduce disposal to landfill and incineration  
50% by 2030**



Pacific Coast Collaborative Goal: Reduce 50% Food Waste Disposal by 2030





# Strategies to Reducing Discard Generation

---

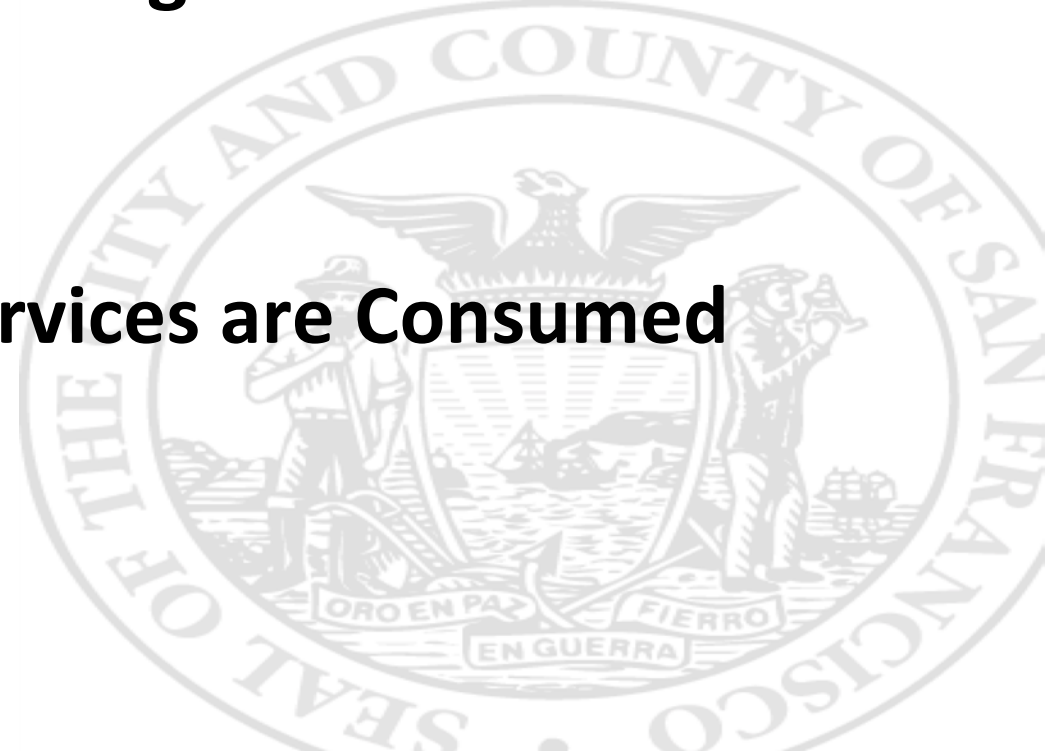
## ***Policies and Programs to:***



**Change How Products and Buildings Are Made**



**Change How Products and Services are Consumed**





# Strategies to Reducing Disposal

## Policies and Programs to:



**Reduce Generation**



**Maximize Material Recovery**







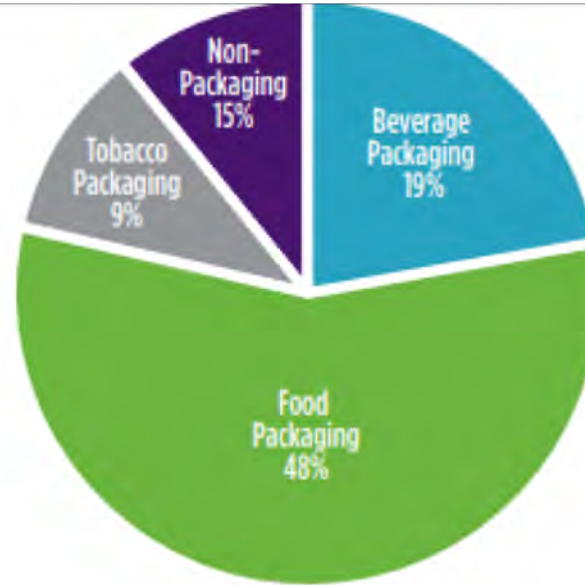
# Reducing Food Discards & Food Recovery Hierarchy



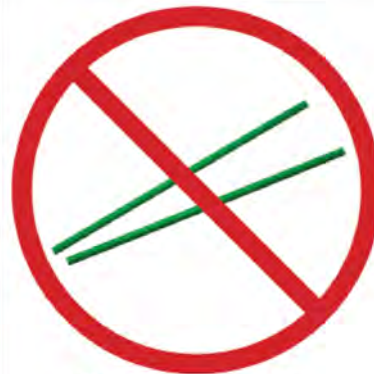




# Reducing Single-Use Foodware with Reusables



Litter Characterized by Product Use



Plastic straws, includes compostable plastic

**ReThink Disposable**  
STOP WASTE BEFORE IT STARTS

**PARTICIPATING BUSINESS**

REDUCING WASTE • SAVING MONEY • GOING GREEN  
[www.rethinkdisposable.org](http://www.rethinkdisposable.org)

CLEAN WATER ACTION • CLEAN WATER FUND







# Reducing Building Materials Through Greener Practices



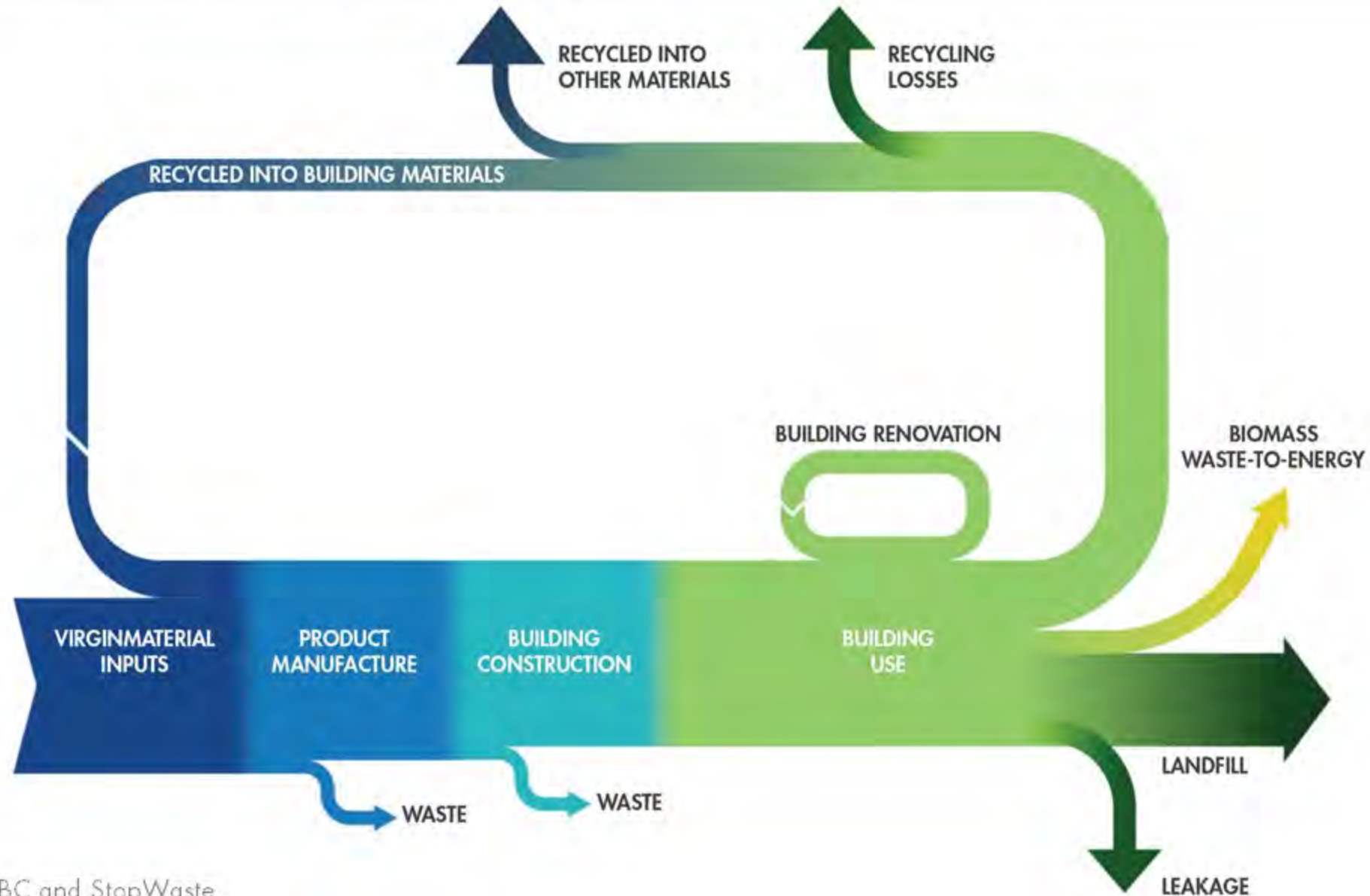


# Material Impacts from Construction & Demolition

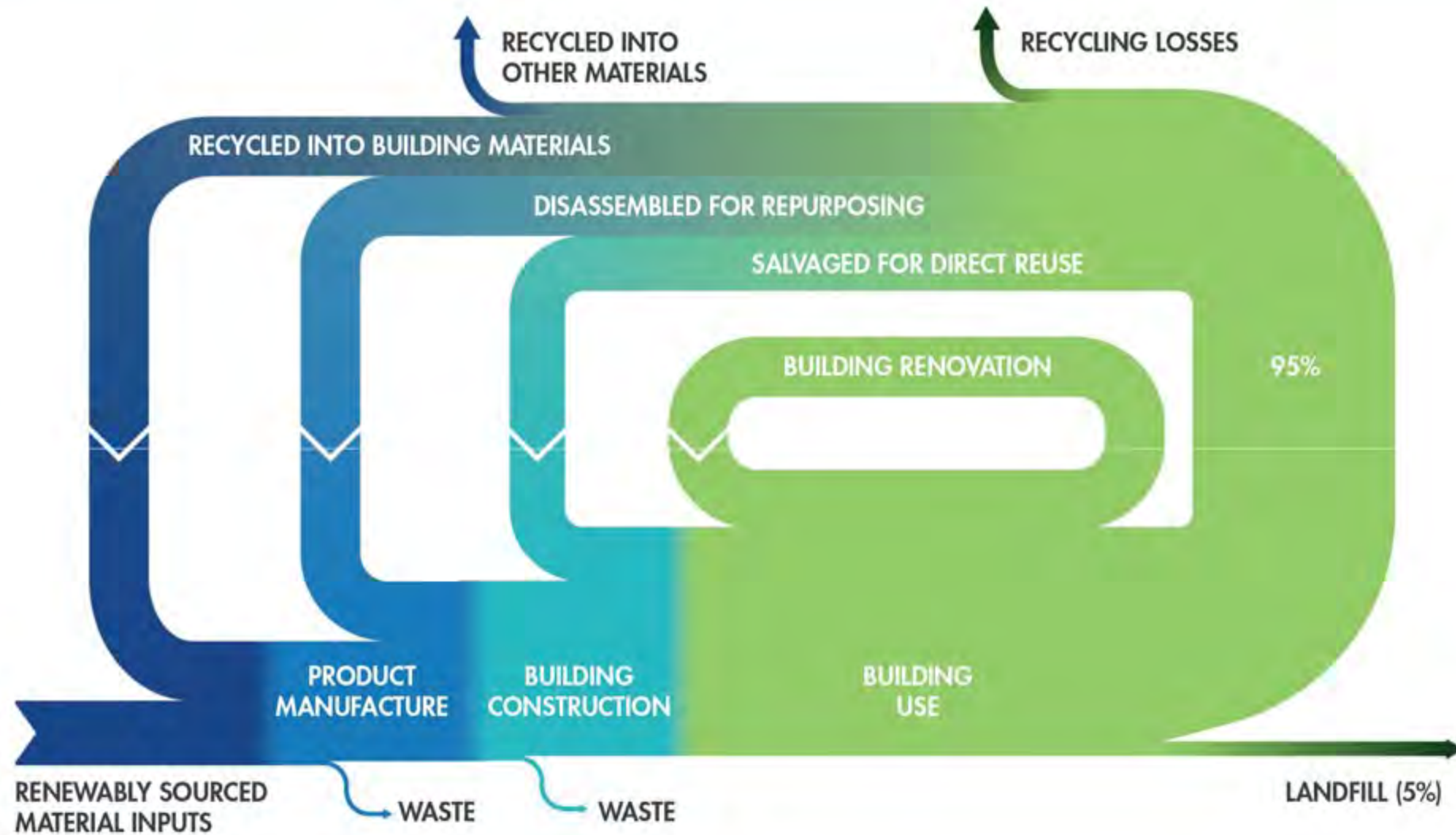




# Material Flows: Conventional



# Material Flows: Circular



# Current (Design,)C&D Practices Still Lead to Landfill



25%

(\*excludes "Alternative Daily Cover")

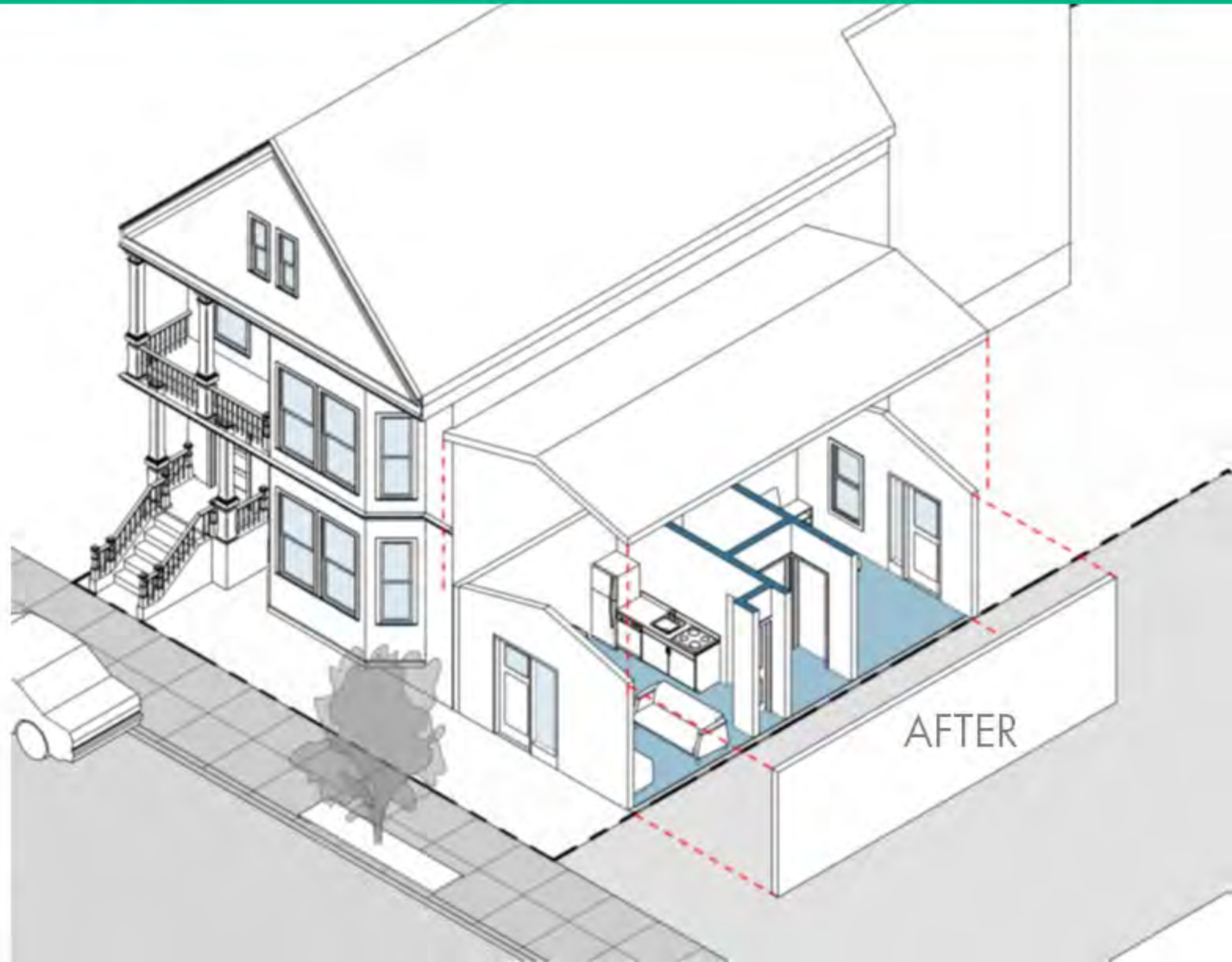
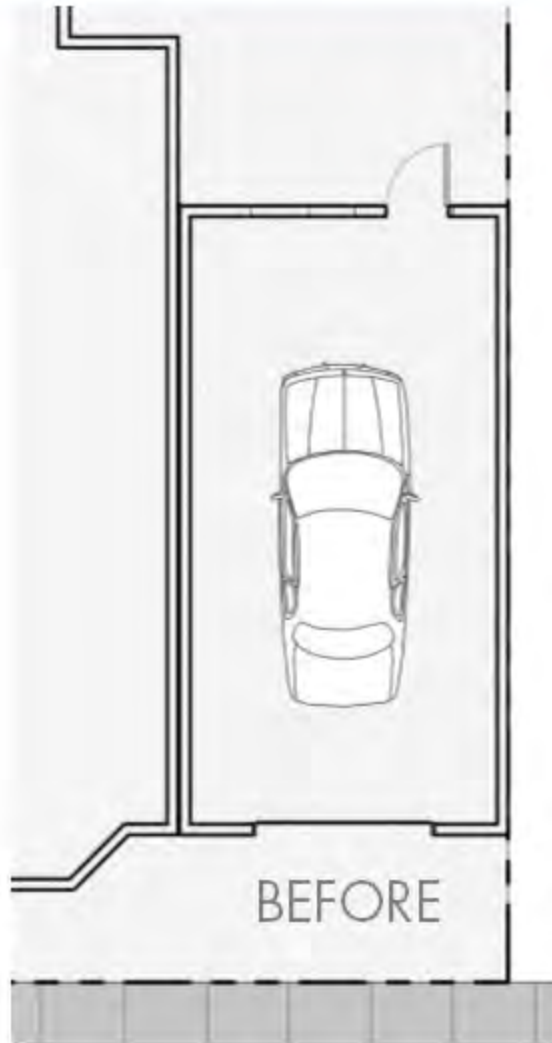


# Upstream: Adaptive Reuse





# Upstream: Optimize Density



# Upstream: Design for Disassembly





# Upstream: Embodied Carbon





# Upstream/Downstream: Material Reuse



photos courtesy of Nicole Tai, Greenlynx



# Downstream: Construction Surplus



photos courtesy of Nicole Tai, Greenlynx

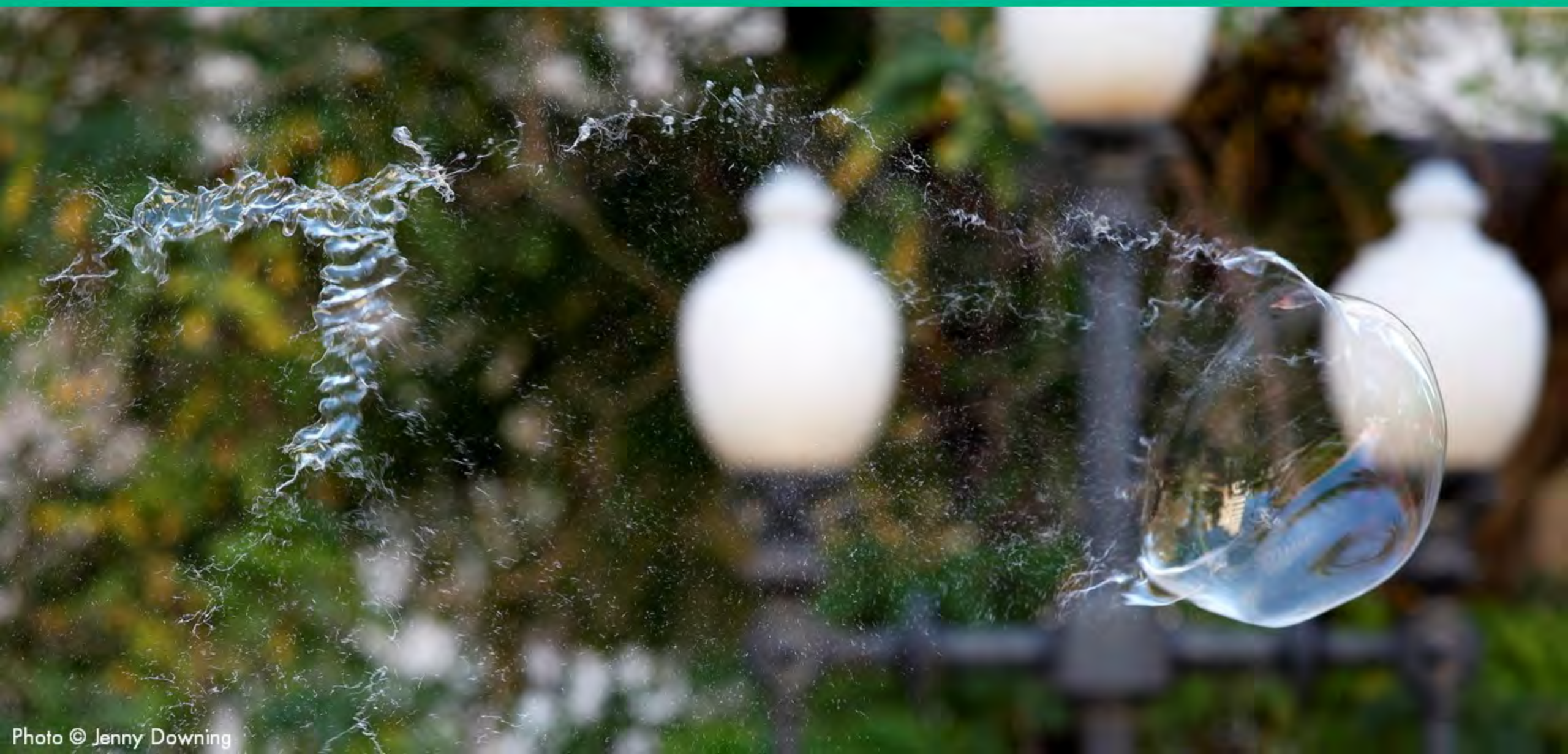


# Downstream: Deconstruction and Source Separation





# Bursting the Bubble...Trade-offs of Recycled Content





# What Are You Comparing?



Recycled  
Aluminum  
Engine Block

Virgin  
Aluminum  
Chair

Recycled  
Aluminum  
Chair

Salvaged  
Wood  
Chair

Recycled  
Plastic  
Chair





# Zero Waste in Design & Construction

Patricia Fonseca

RETHINK!

**REFUSE**

**REDUCE**

**REUSE**

**RECYCLE**

**ROT**







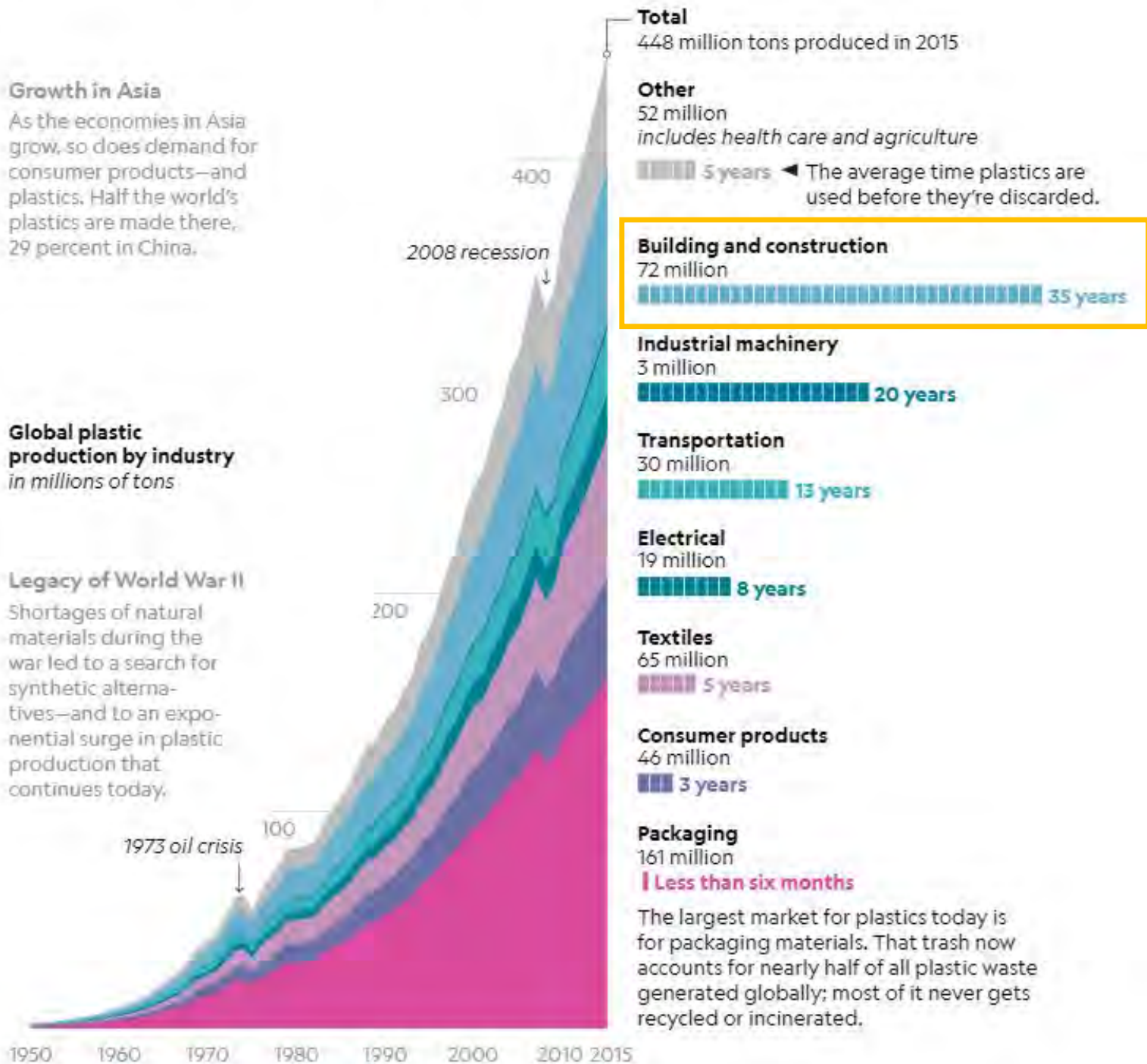
### Growth in Asia

As the economies in Asia grow, so does demand for consumer products—and plastics. Half the world's plastics are made there, 29 percent in China.

### Global plastic production by industry in millions of tons

### Legacy of World War II

Shortages of natural materials during the war led to a search for synthetic alternatives—and to an exponential surge in plastic production that continues today.



## A LIFETIME OF PLASTIC

SOURCE: NATIONAL GEOGRAPHIC





**Crane  
Cove Park**

**AECOM**

Third St

Illinois St

19th St

Bldg 49

B 30

Cr14

Cr30

Slipway 4

B 110 B 50

Bldg 109

Slipway 3

Slipway 2

Slipway 1

Shipyard

0 20 50 100ft























**Oakland Bay  
Bridge Public  
Access Piers**

**AECOM**







saw cut openings









**Treasure  
Island  
Clipper Cove  
Promenade**

**AECOM**













# Zero Waste

## Design Guidelines

Design Strategies and Case Studies for a Zero Waste City



**AIA**  
New York

**CENTER FOR  
ARCHITECTURE**

Kiss + Cathcart, Architects



**CLOSEDLOOPS**

With support from





**38 Harriet St**

**Panoramic  
Interests**

**Modular Construction**





**Street  
Furnishings**

**The New Raw  
/ Zero Waste  
Lab**

Recycled Plastic  
3D Printing







Volvo/  
Sydney  
Institute of  
Marine  
Science/ Reef  
Design Lab

# LIVING SEAWALL

AN OCEAN CONSERVATION PROJECT





Organic & Mycelum Tower



Hy-Fi  
The Living  
Studio





**Oakwood  
Tower**

**PLP  
Architecture /  
Cambridge  
University**

**Timber Frame High Rise**



Thank You, Questions?

**Jack Macy**

[Jack.macy@sfgov.org](mailto:Jack.macy@sfgov.org)

415-355-3751

Twitter: @jack\_macy

**Eden Brukman**

[eden.brukman@sfgov.org](mailto:eden.brukman@sfgov.org)

**Patricia Fonseca**

[Patricia.Fonseca@aecom.com](mailto:Patricia.Fonseca@aecom.com)



***SF Environment***

**Our home. Our city. Our planet.**

A Department of the City and County of San Francisco

[SFEnvironment.org](http://SFEnvironment.org)