

# Materials, Recycling, the Waste Hierarchy and Climate

David Allaway, Oregon Department of Environmental Quality Northeast Recycling Council – Tuesday October 7

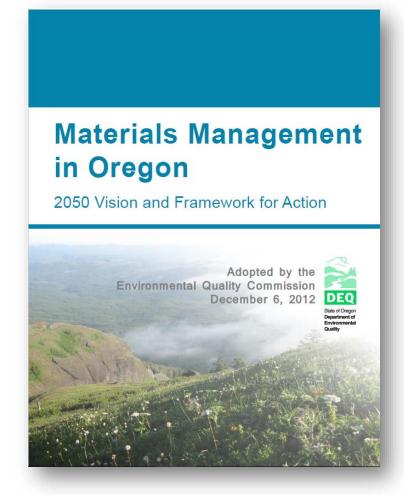


#### **Materials matter!**

Most impacts occur upstream of use and disposal

Recycling and composting can be helpful, but alone are *insufficient* 

#### Oregon's 2050 Vision and Framework for Action





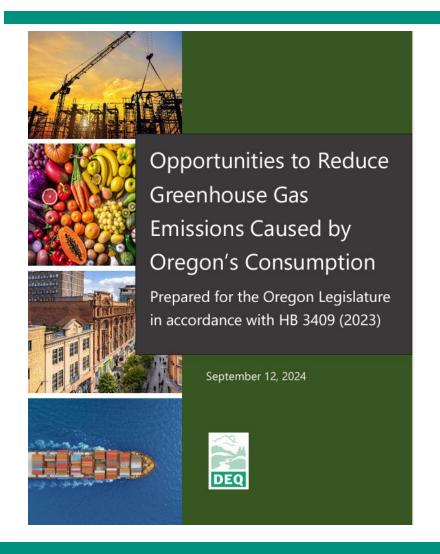
Recognizing that Earth's resources are finite, Oregonians live within the limits of our sustainable share of the world's natural resources. We make and use materials and products in a manner that maintains and restores a healthy environment and fertile soils. Materials and products minimize the use and release of toxins, the release of greenhouse gases and pollutants, the use of energy and water, and the extraction of nonrenewable materials.

We take into account the full impacts of materials throughout their life cycle. We minimize harmful disturbance of land and natural ecosystems, using resources in a responsible way only as necessary to meet human needs and maintain healthy, vibrant and prosperous communities. When materials and products are no longer useable or wanted, they are recovered for their next highest and best use.

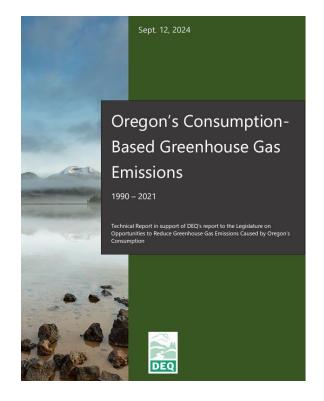
we use renewable resources at levels that can be sustained in perpetuity while maintaining the resiliency of natural systems. Wherever they are made, the materials and products we purchase in Oregon similarly are made in a manner that supports human health, well-being and healthy, resilient environments and communities.

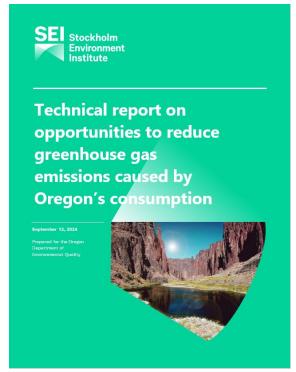
All Oregonians have access to the knowledge, capabilities, resources and services required to use materials responsibly. This Vision provides for a prosperous and clean economy that allows all people to live fulfilling lives, now and in the future.

#### 2024 Reports on Materials and Climate



#### Companion Technical Reports





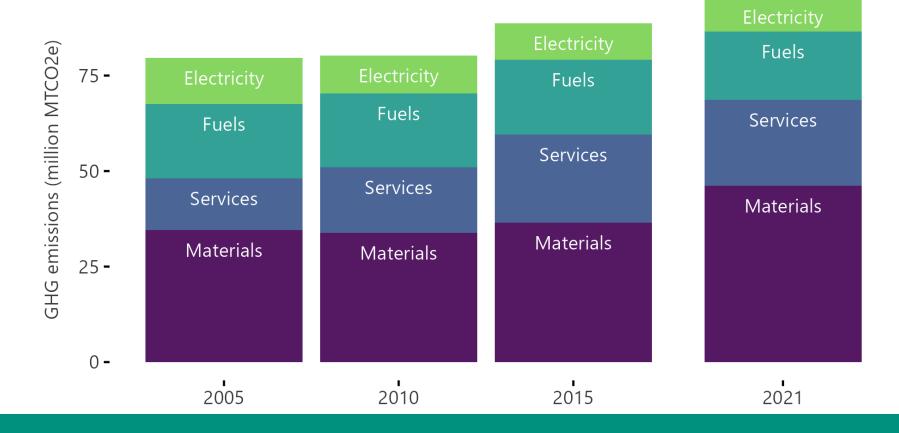
All available at:

www.oregon.gov/deq/mm/pages/consumption-based-ghg.aspx

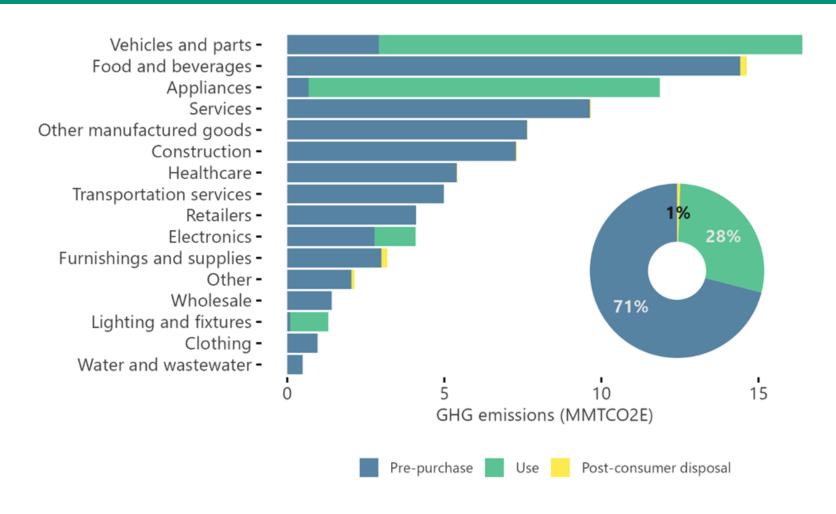
#### Materials are driving growth in emissions

#### Changes in Oregon's consumption-based impacts, 2005-2021

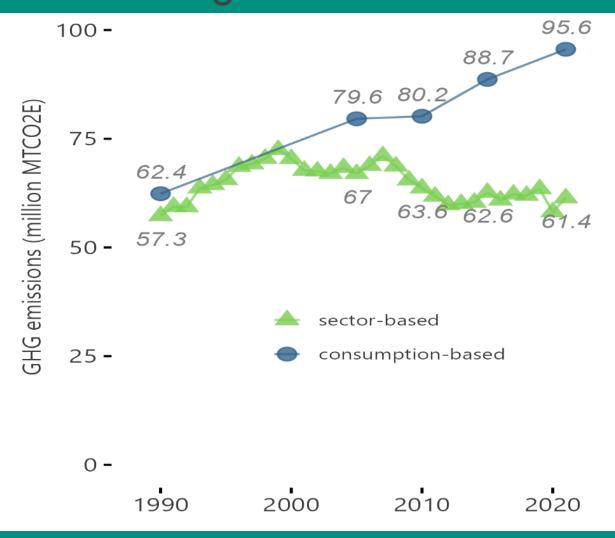
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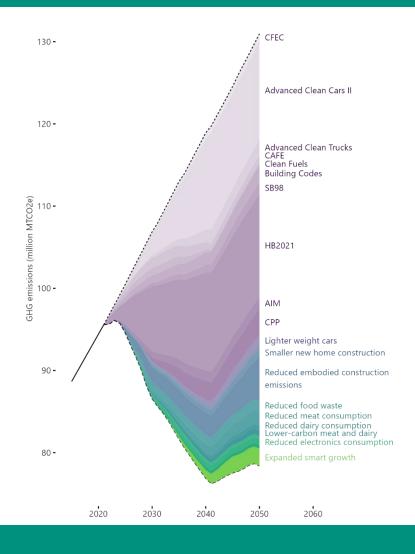
#### Most emissions occur pre-purchase

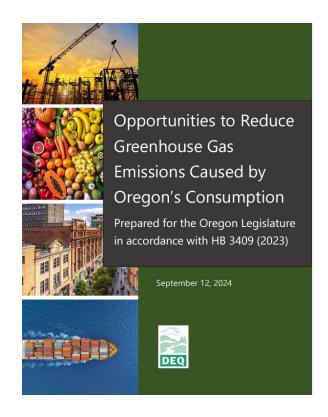


#### Sector-based emissions have flattened while consumptionbased emissions have grown



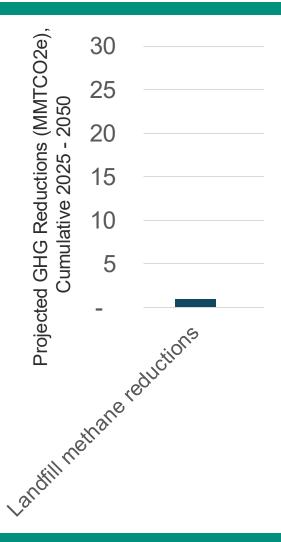
#### Emissions are out-of-state, but not out-of-reach

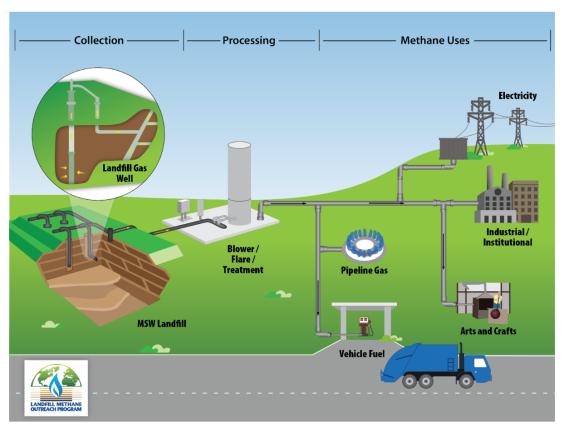




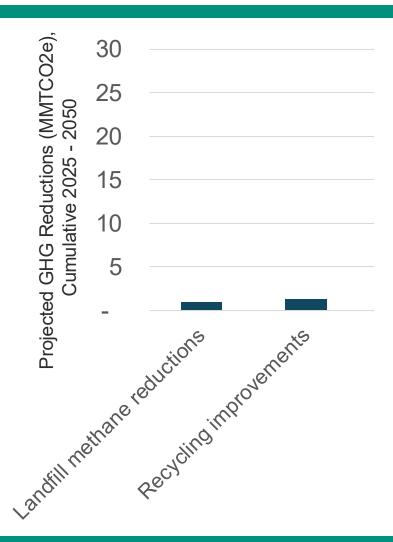


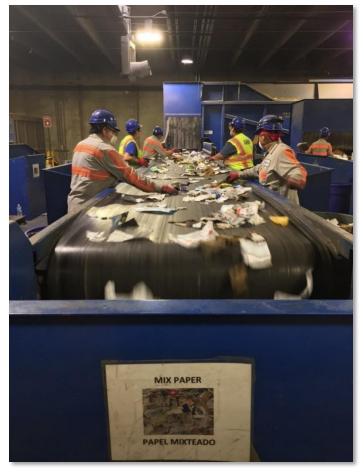
Preliminary Modeling (2025) of Emission Reduction Potential



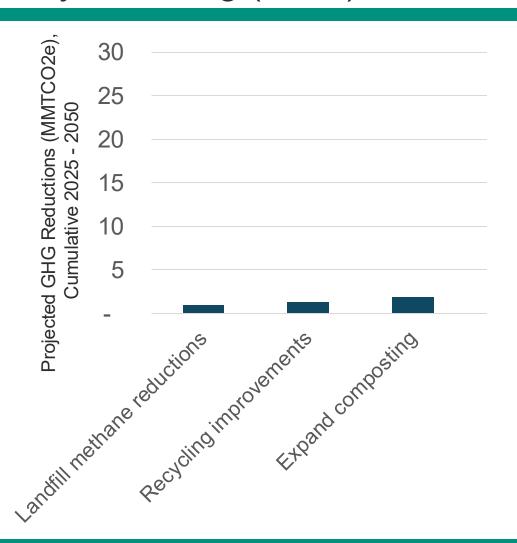


U.S. EPA

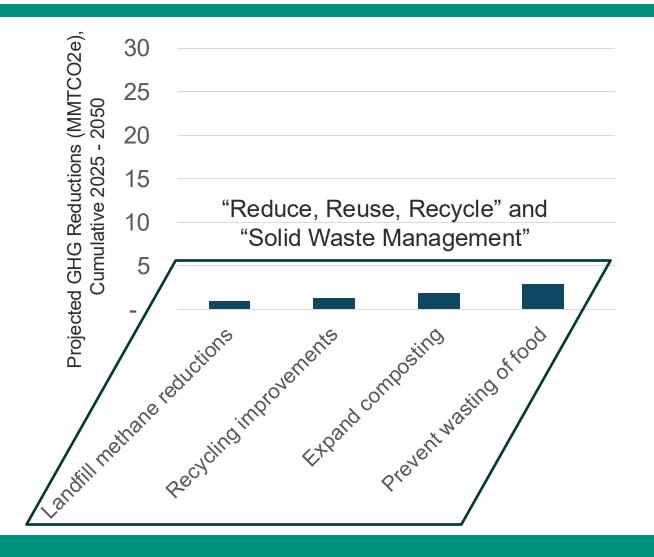




**Justin Gast** 

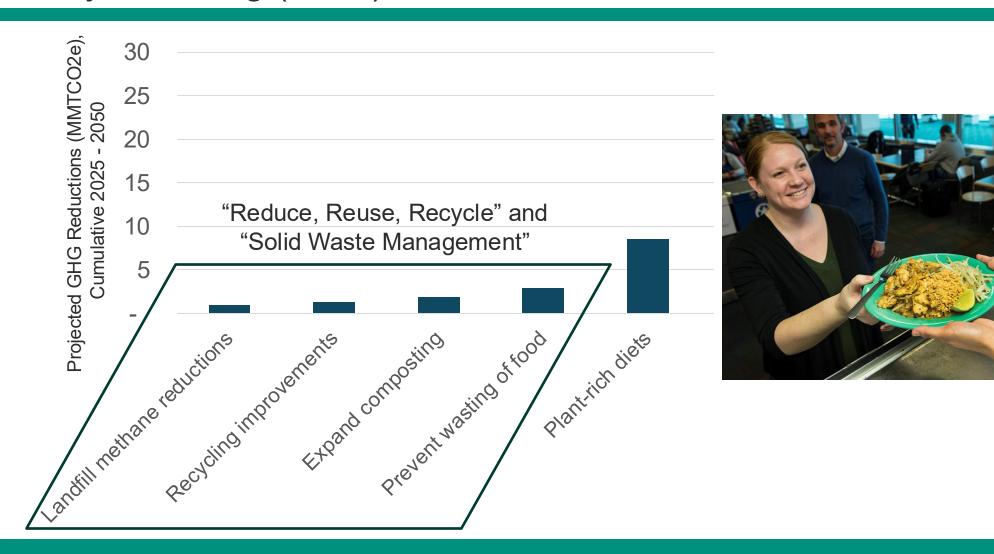


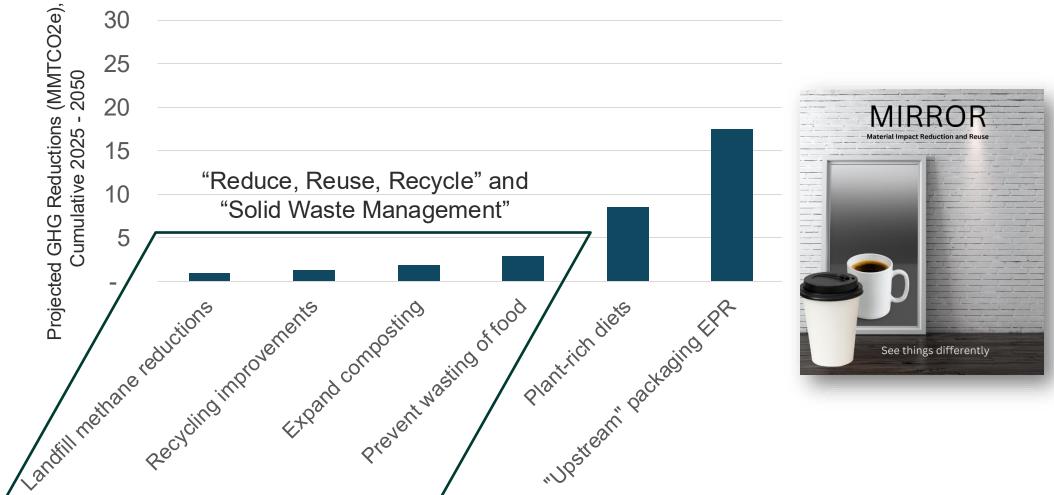


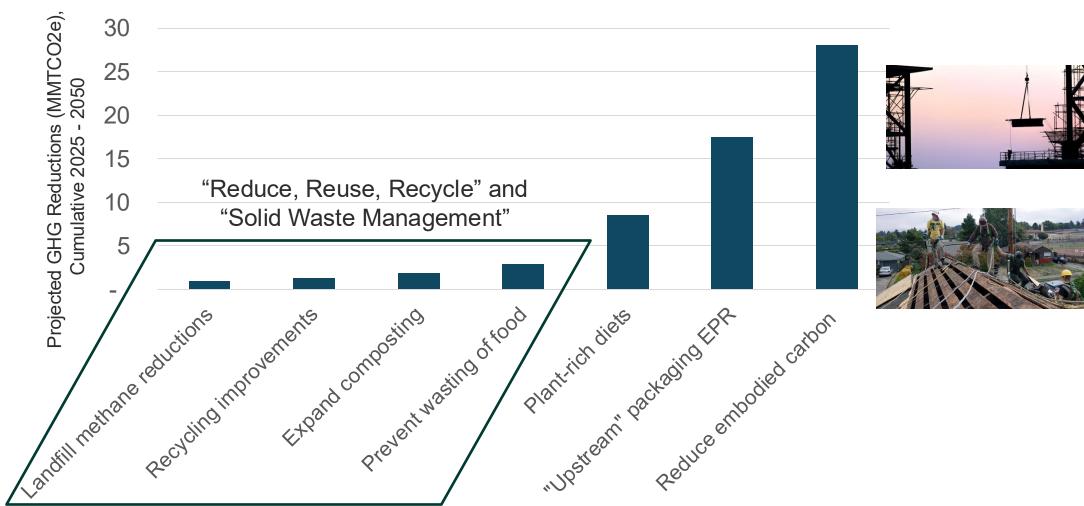


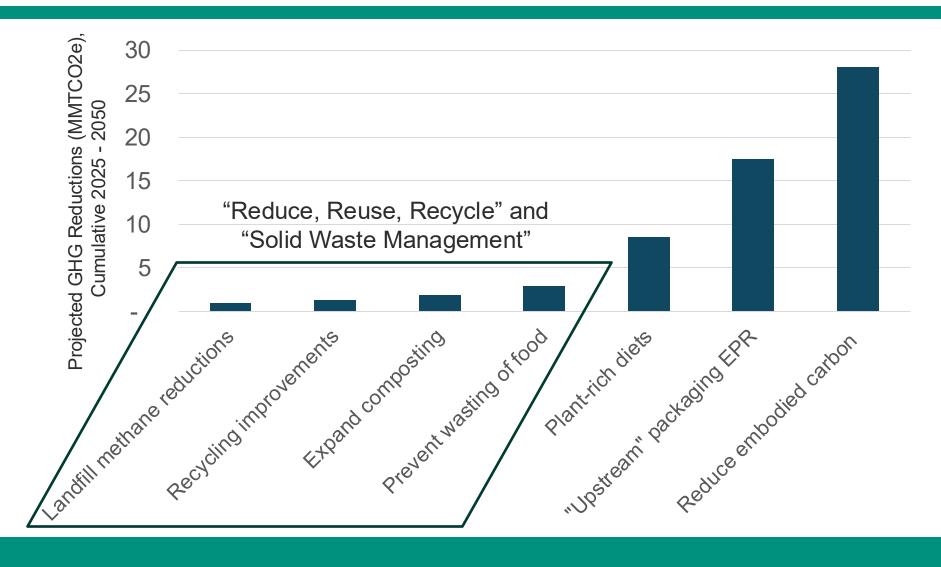


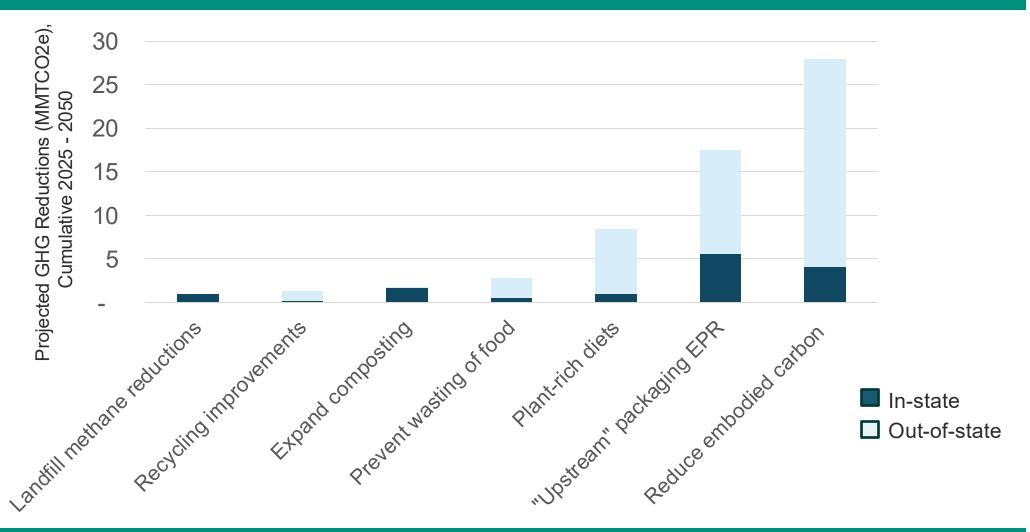












# Recycling

- Not all materials are equally beneficial to recycle
- Not all recycling pathways are equally beneficial
- Maximizing recycling is not the same as optimizing recycling (for climate or other environmental benefits)









# EPA's coffee packaging analysis

Coffee Packaging (11.5 oz product)	Recyclable postconsumer?	Energy Consumption (MJ/11.5 oz.)	CO2 eq Emissions (lbs/11.5 oz)	MSW Waste Generated (lbs./ 100,000 oz. of product)
CLAND THE STATE OF	Steel can – yes Plastic lid – no	4.21	0.33	1,305
Consumer particular in the constraint of the con	Plastic container – yes Plastic lid - no	5.18	0.17	847
RICH FURL TASTE PALS	Flexible pouch - no	1.14	0.04	176

# Life cycle impacts vs. material attributes

[impacts]

cumulative energy demand

freshwater consumption

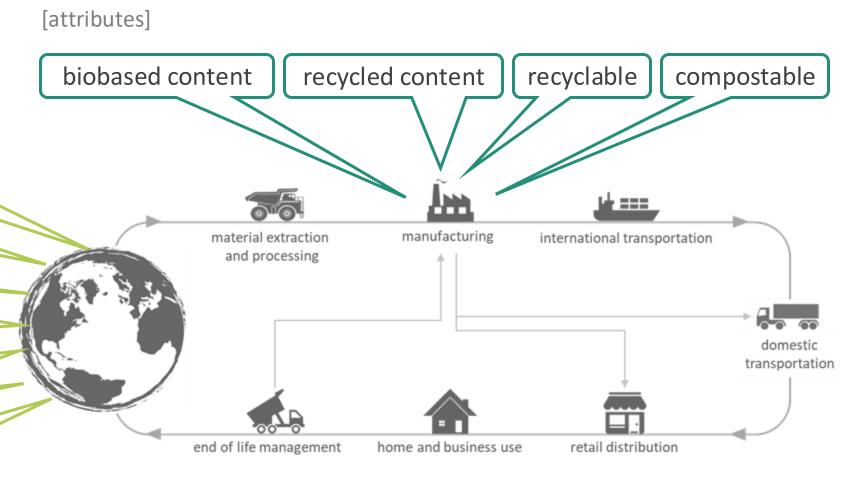
global warming potential

ozone depletion

human health

aquatic toxicity

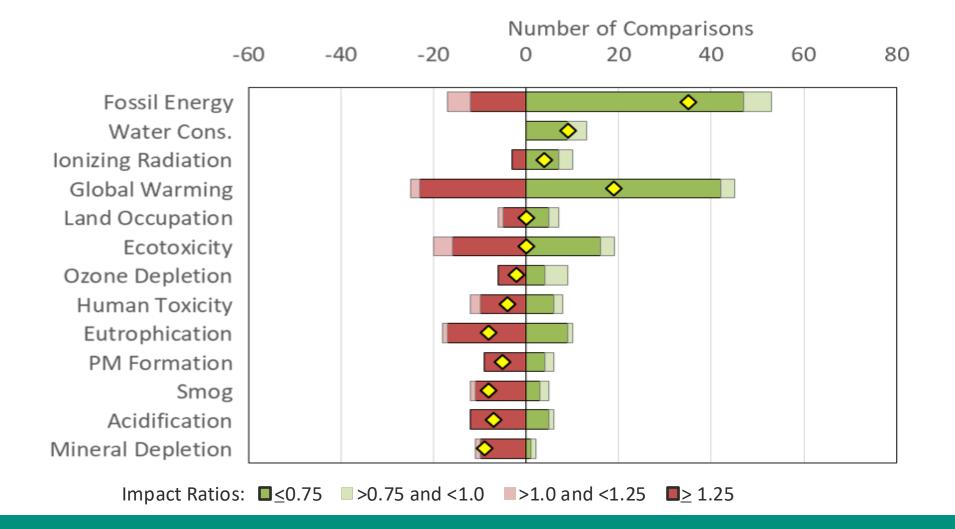
eutrophication...



# Oregon's research question (2016)

How well (and when) do popular material attributes correlate with reduced environmental impacts?

# Comparing different packages based on recyclability



To recap . . .

#### **Materials matter!**

Most impacts occur upstream of use and disposal

Recycling and composting can be helpful, but alone are *insufficient* 

# Thank you



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