



Lessons from the Leading Edge: Improving the Climate Performance of Your Packaging

February 14th, 2023

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OUR DONORS!

THANK YOU TO OUR DONORS

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CLIMATE DAY AT EXPO WEST!

Morning Session: Intensive Deep Dives

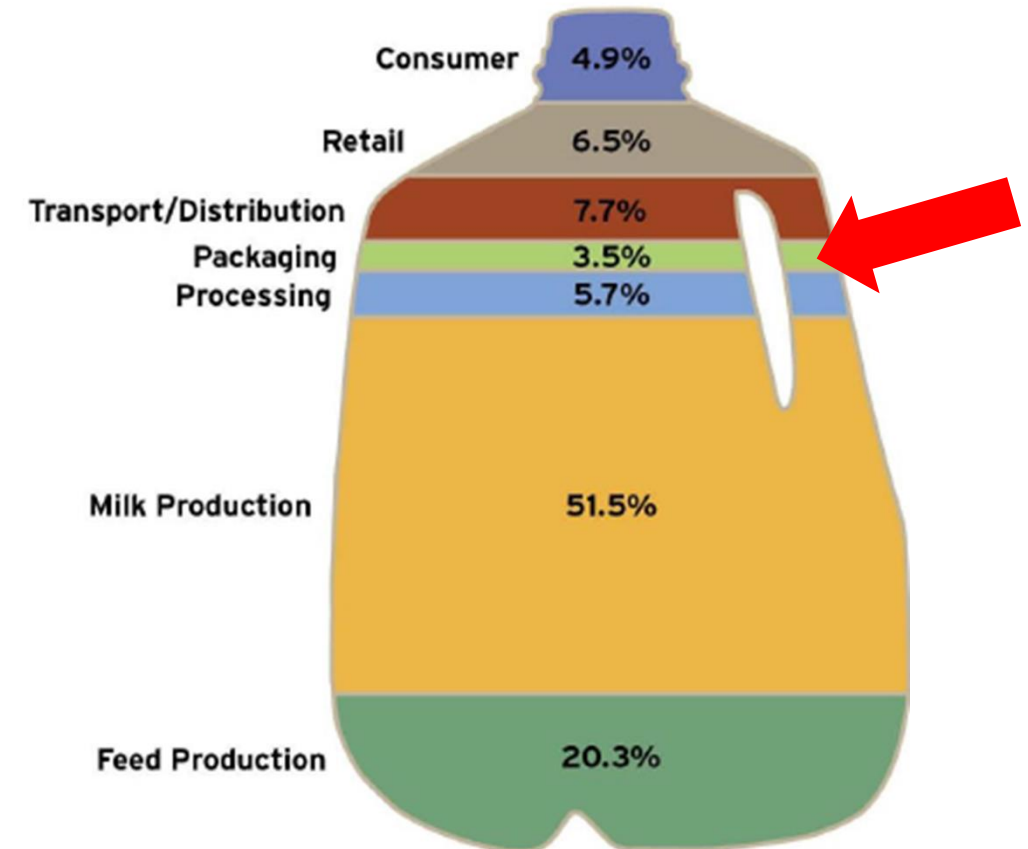
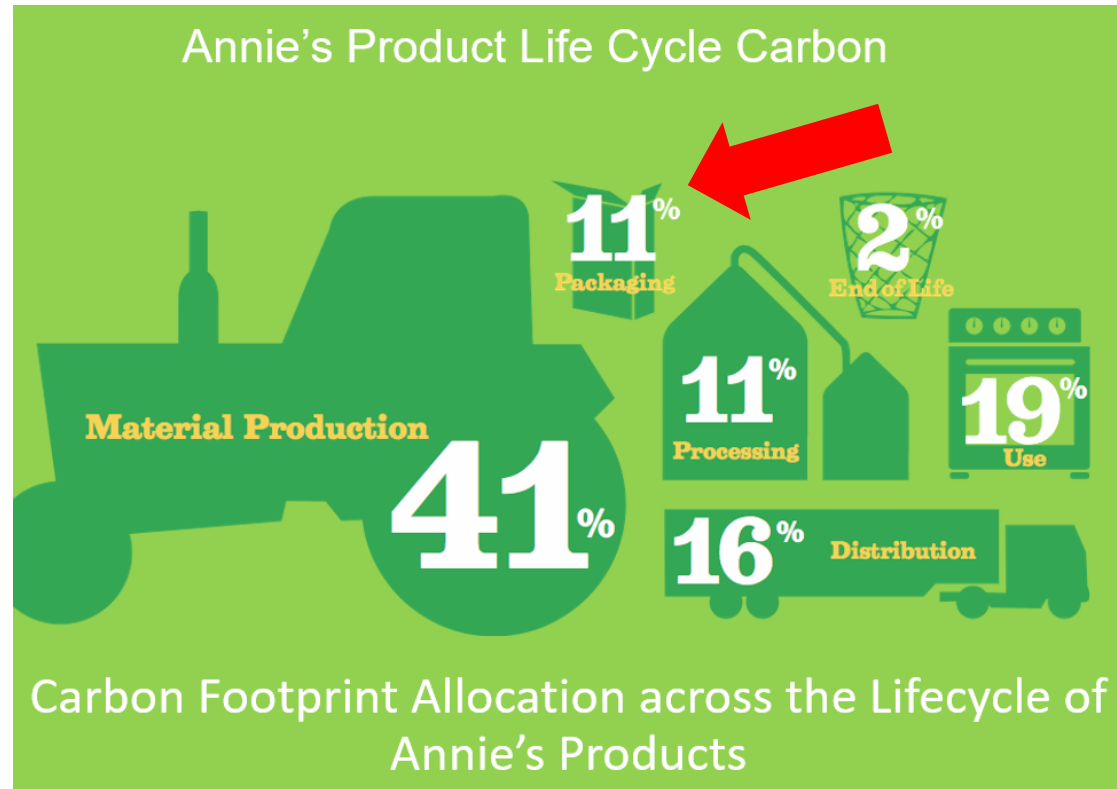


Afternoon Session: Inspirational Roundtables, Thought Leaders, & Keynote

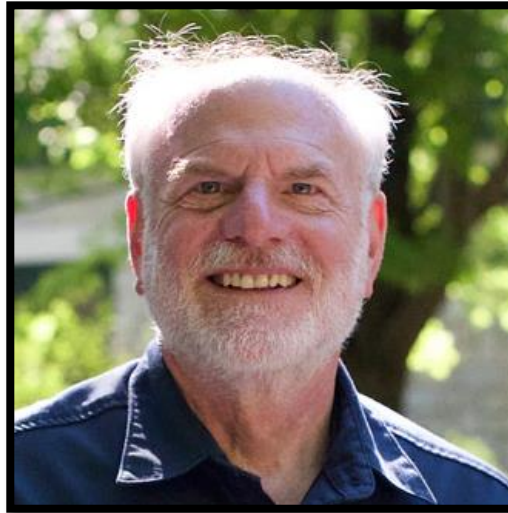


Includes Partner Resource Fair & Reception

PACKAGING IS A SIGNIFICANT IMPACT



SPEAKERS



Martin Wolf

Director of Sustainability & Authenticity,
Seventh Generation



Lessons from the Leading Edge: Improving the Climate Performance of Your Packaging

14 February 2023

Outline

- Introduction
- The Impacts of Packaging
- Cycles in Nature
- Circular Packaging
 - Reducing
 - Reusing
 - Recycling
- Questions & Discussion



Our Name

“In our every deliberation, we must consider the impact of our decisions on the next seven generations”

- Great Law of The Iroquois Confederacy



HAUDENOSAUNEE
MOHAWK - ONEIDA - ONONDAGA - CAYUGA - SENECA - TUSCARORA

Our Mission

to transform the world into
**A HEALTHY, SUSTAINABLE,
& EQUITABLE PLACE**
for the next seven generations



Seventh
GENERATION

Our Products





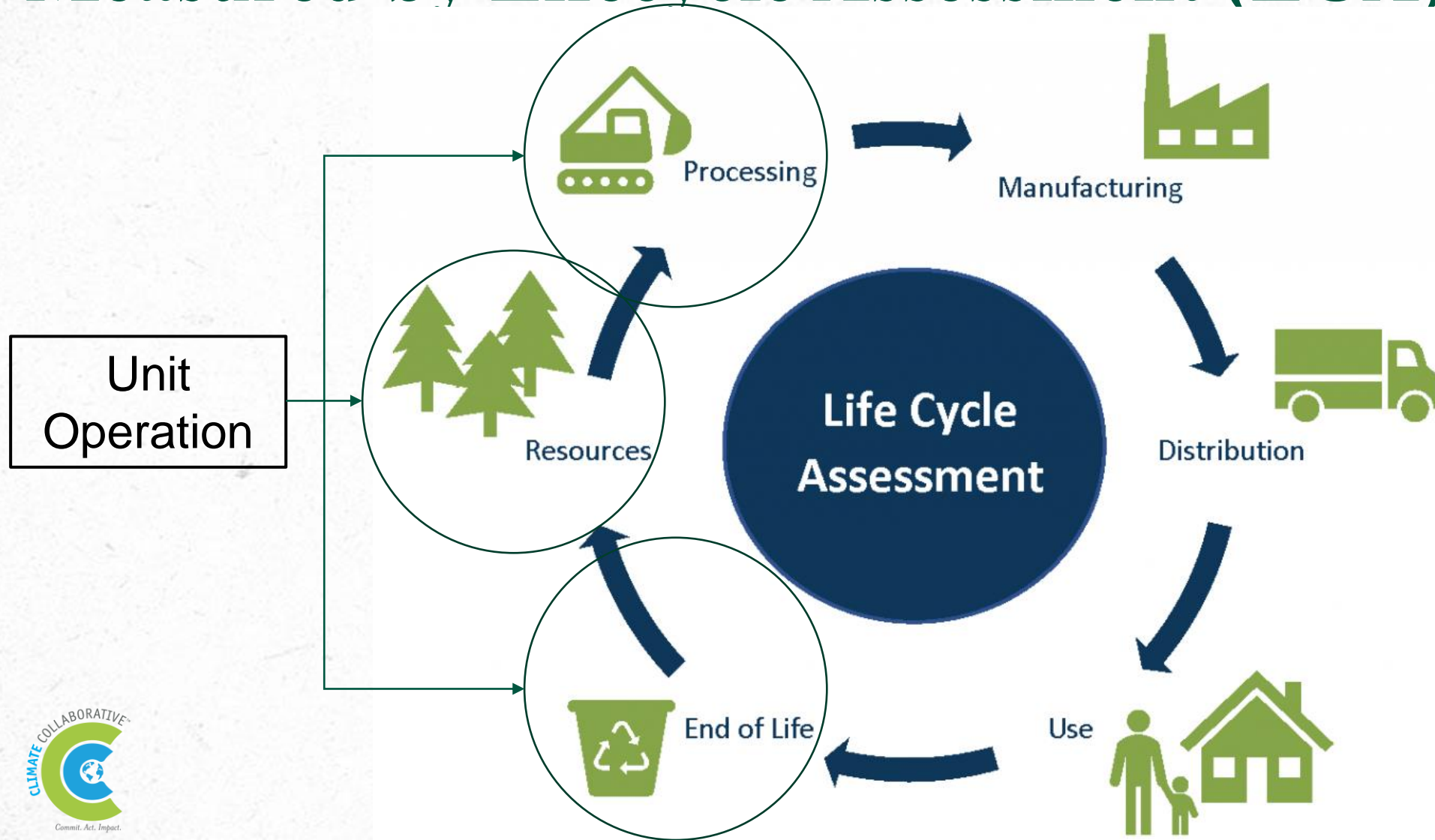
The Climate Impacts of Packaging

Environmental Impacts

- Abiotic Depletion
- Acidification
- Eutrophication
- Freshwater Ecotoxicity
- Global Warming Potential
- Human Toxicity
- Ozone Depletion
- Photochemical Oxidation
- Terrestrial Ecotoxicity

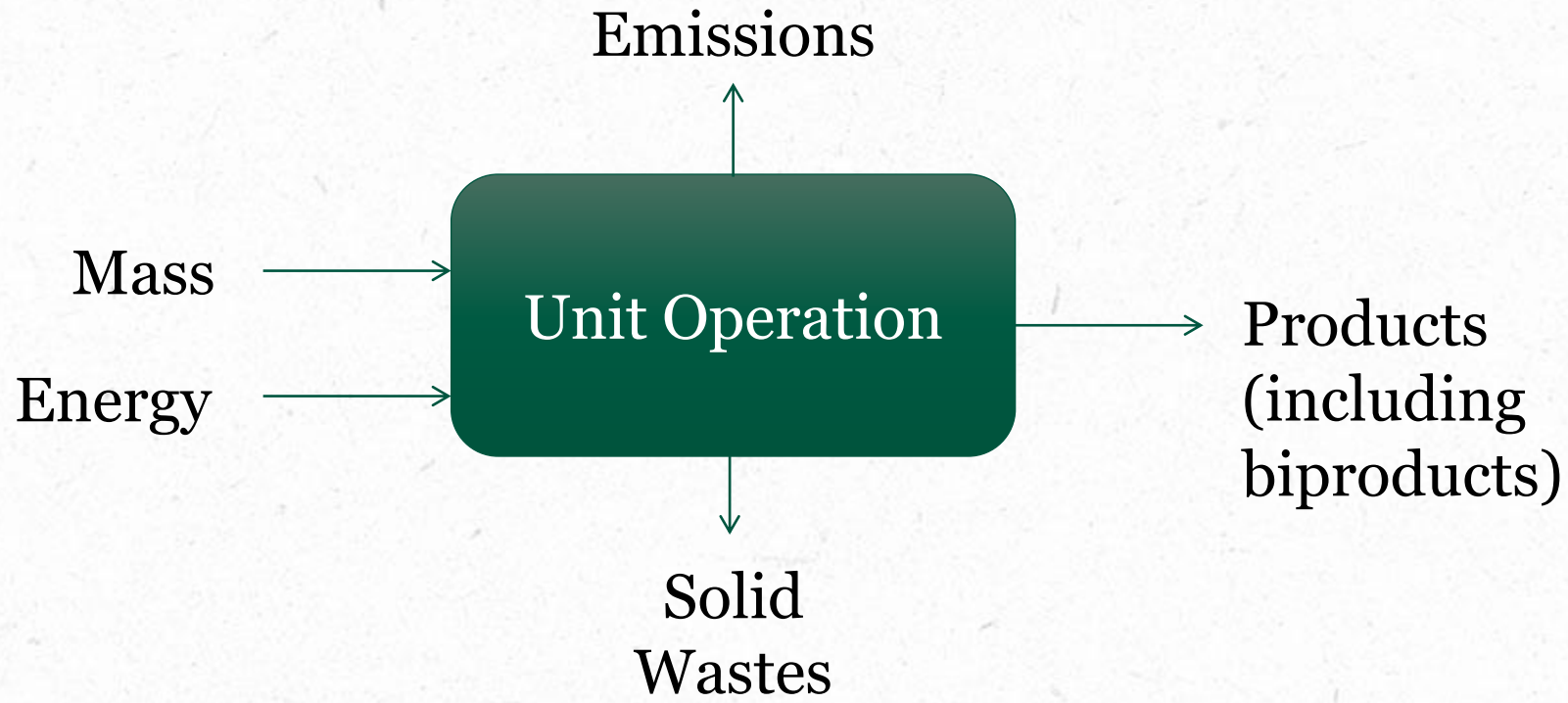


Measured by Lifecycle Assessment (LCA)

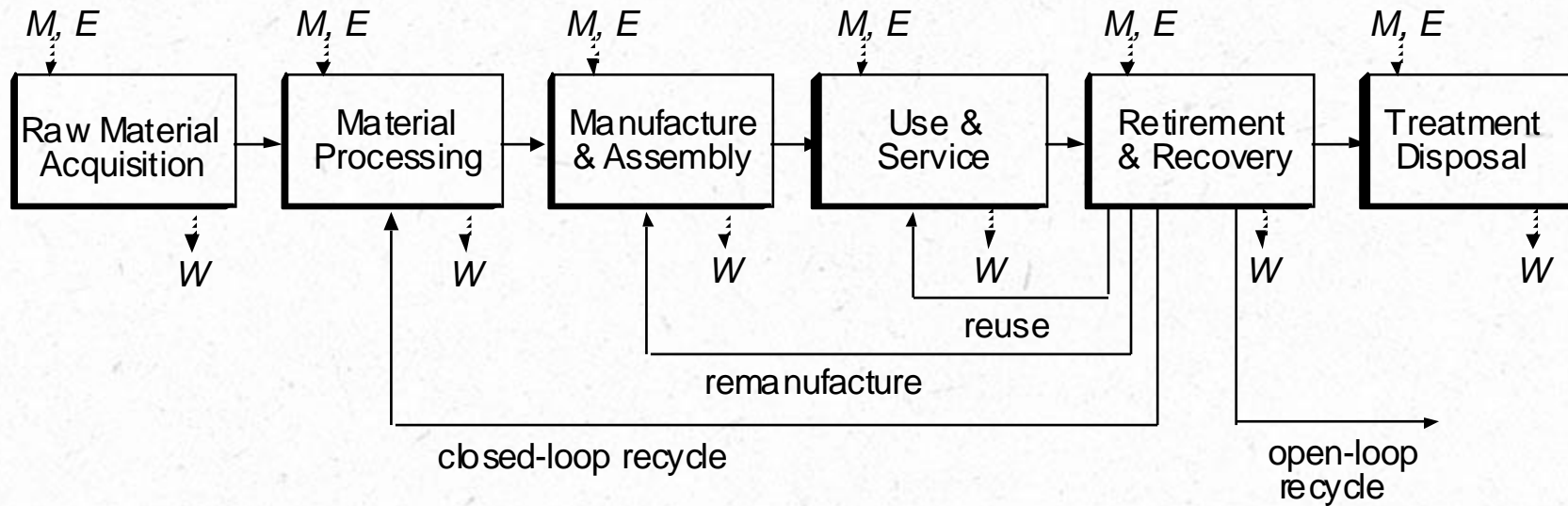


The Unit Operation

- **Unit Operation:** transforms inputs to products and wastes



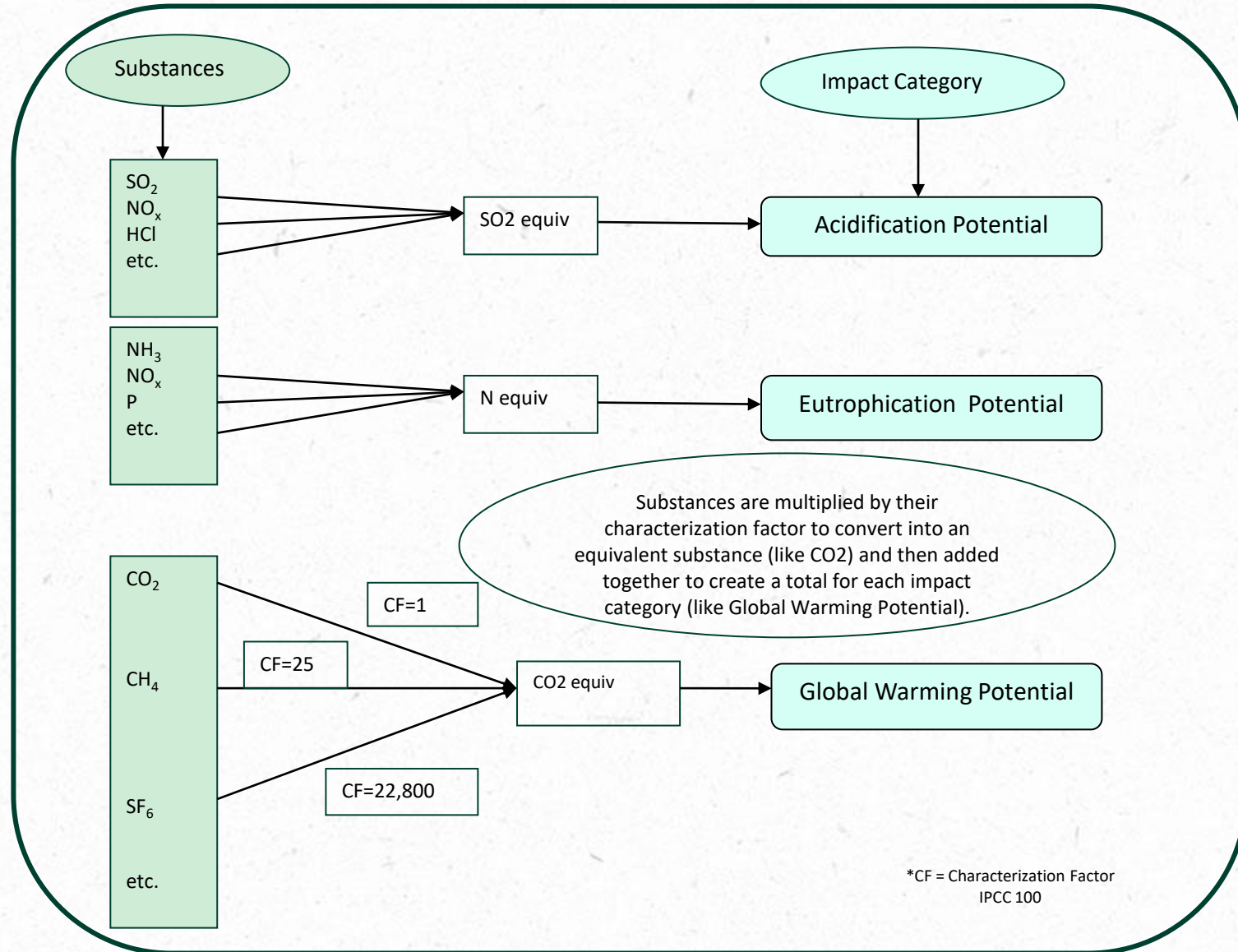
The Product System Inventory



M, E = Material and Energy inputs to process and distribution

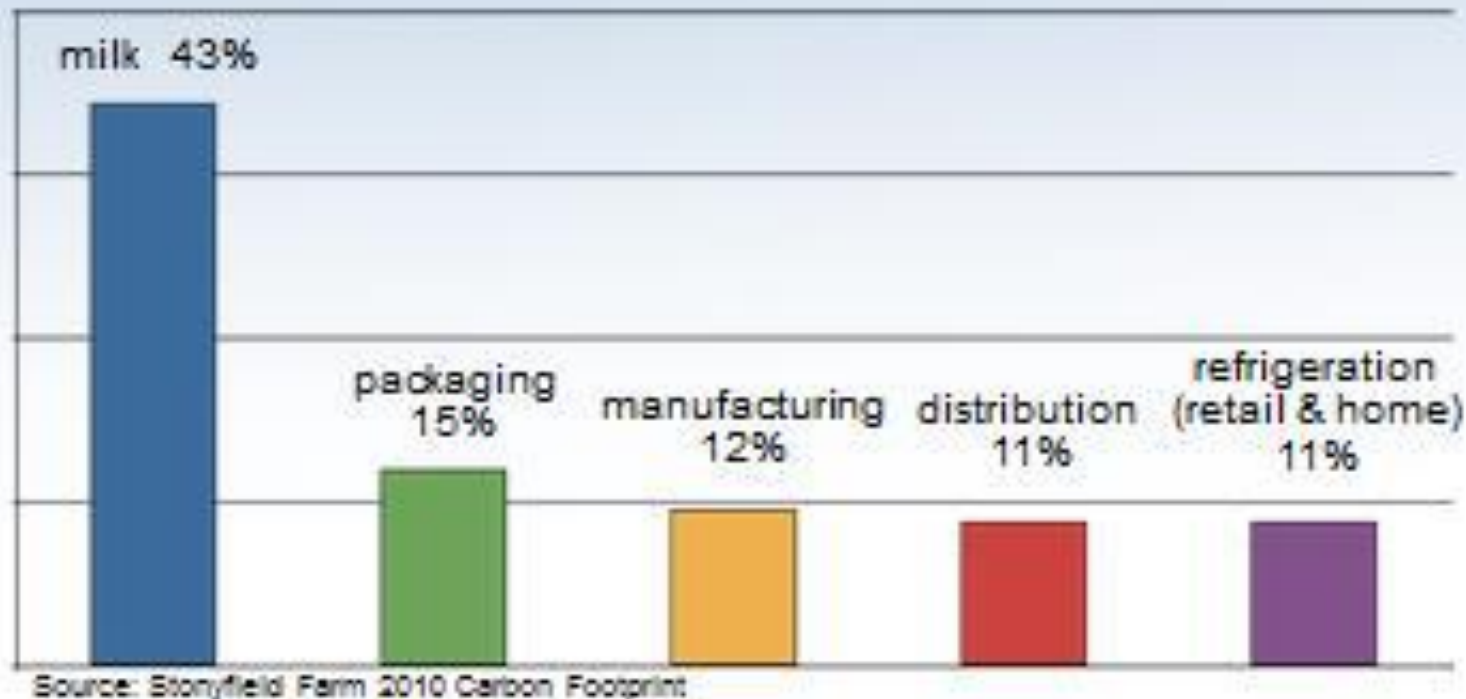
W = Waste (gas, liquid, or solid) output from product, process, or distribution

The Product System Impacts

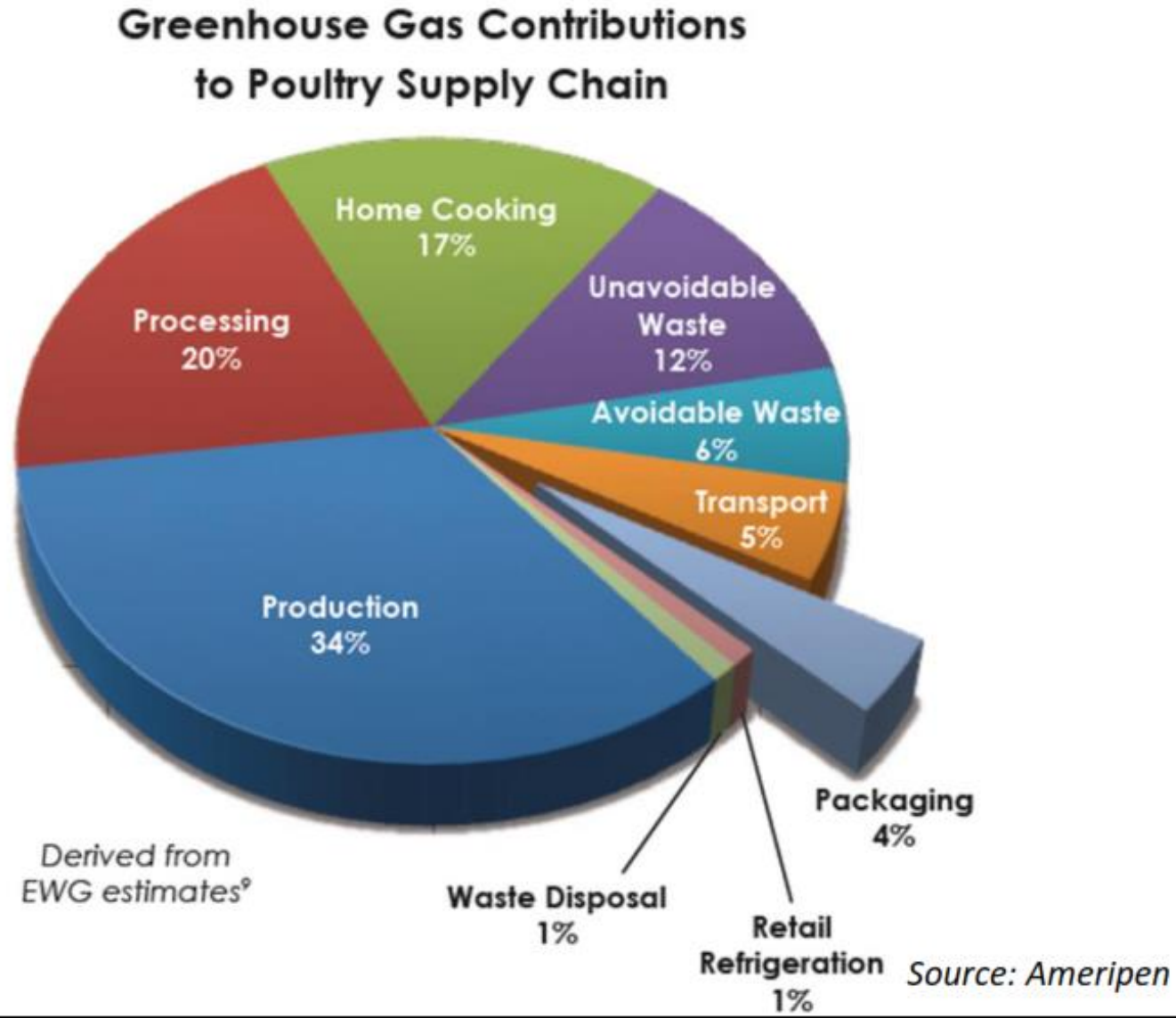


Contribution of Packaging to Climate Impact: Yogurt

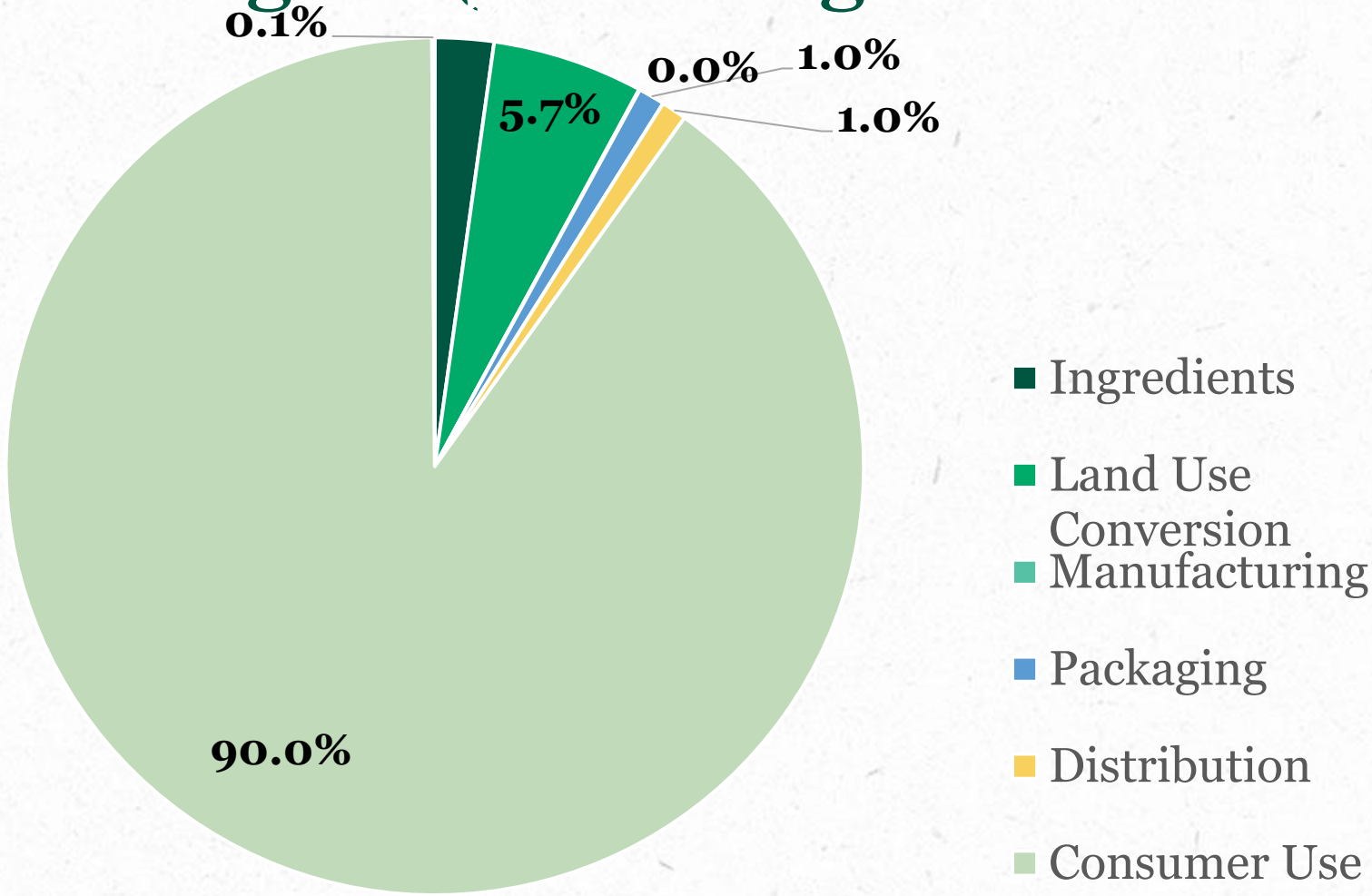
Carbon Footprint by Source



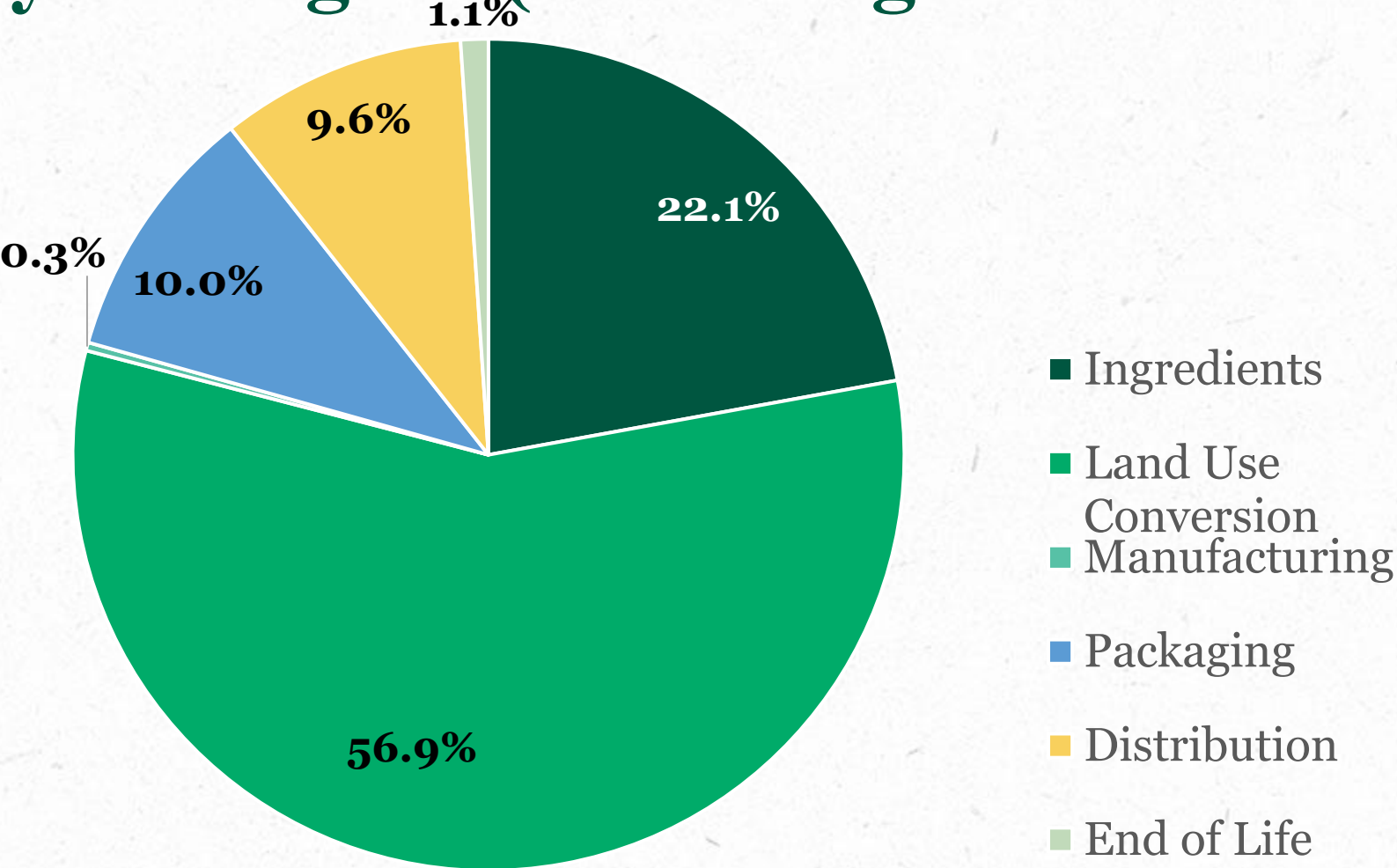
Contribution of Packaging to Climate Impact: Poultry



Contribution of Packaging to Climate Impact: Laundry Detergent (including consumer use)



Contribution of Packaging to Climate Impact: Laundry Detergent (excluding consumer use)



Factors That Affect Environmental Impacts

- Packaging design
 - Light weighting
 - Shape
- Packaging materials
- Manufacturing location
- Packaging end of use
 - Refill/Reuse
 - Recycle
 - Discard



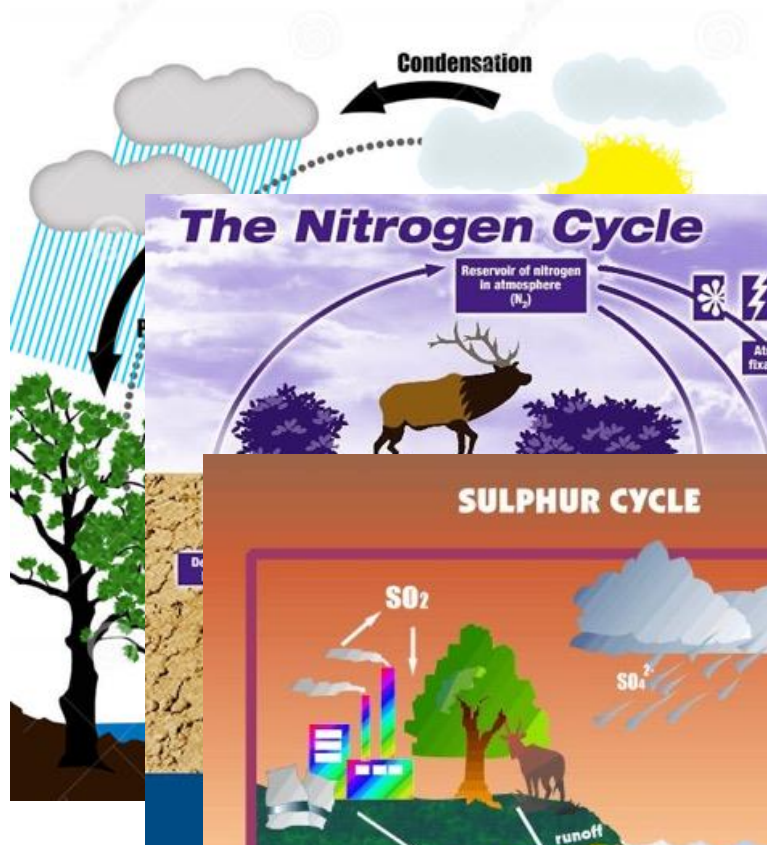


Cycles in Nature

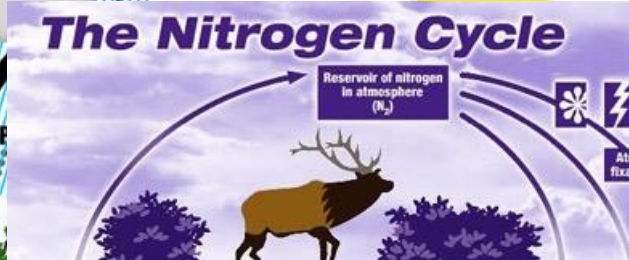


Cycles of Nature

THE WATER CYCLE



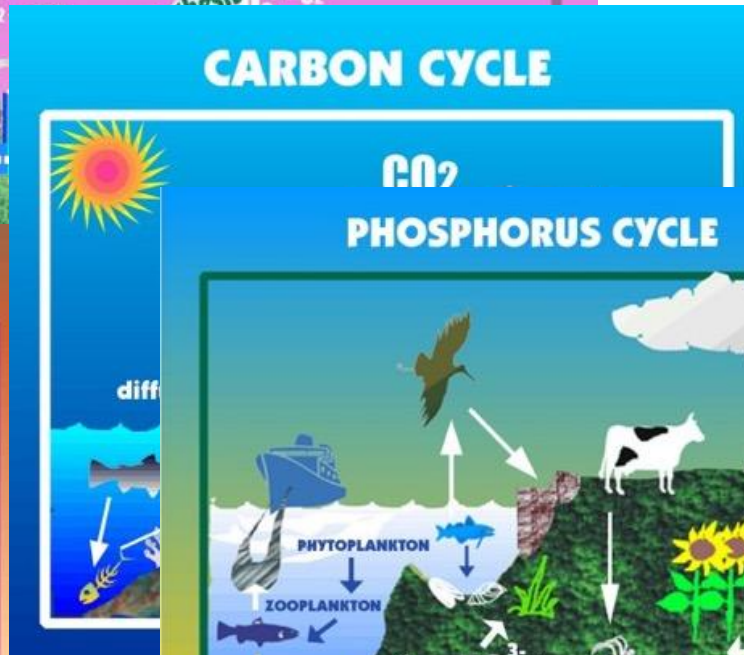
The Nitrogen Cycle



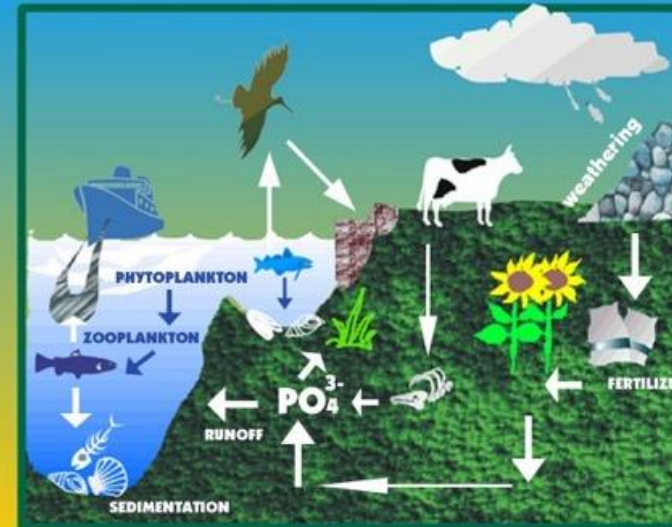
OXYGEN CYCLE



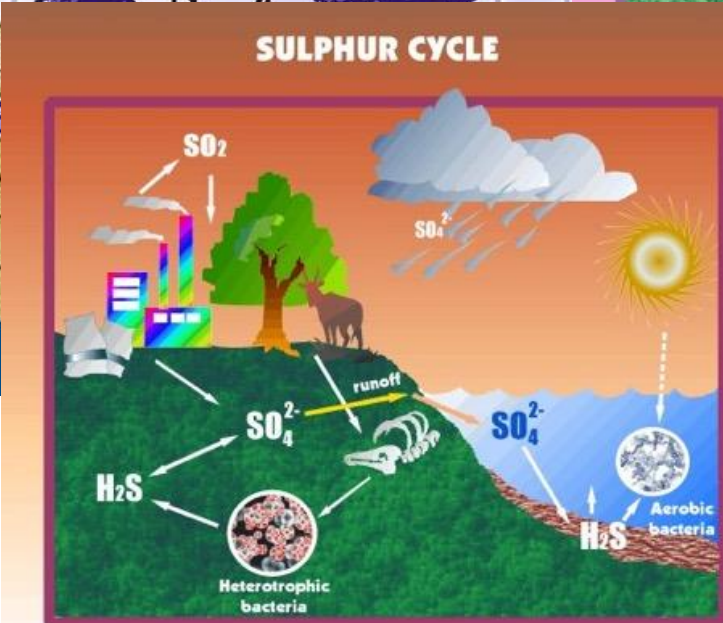
CARBON CYCLE



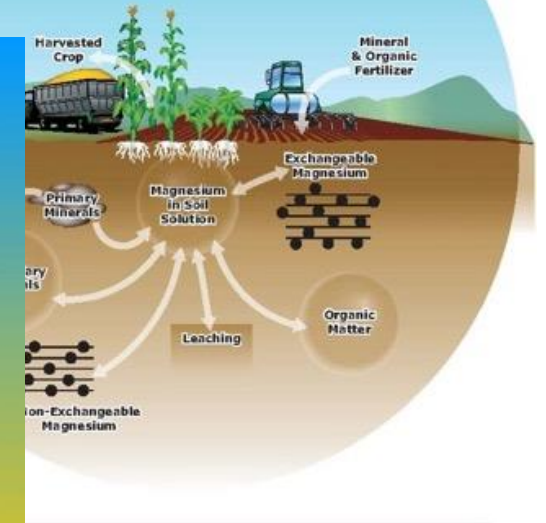
PHOSPHORUS CYCLE



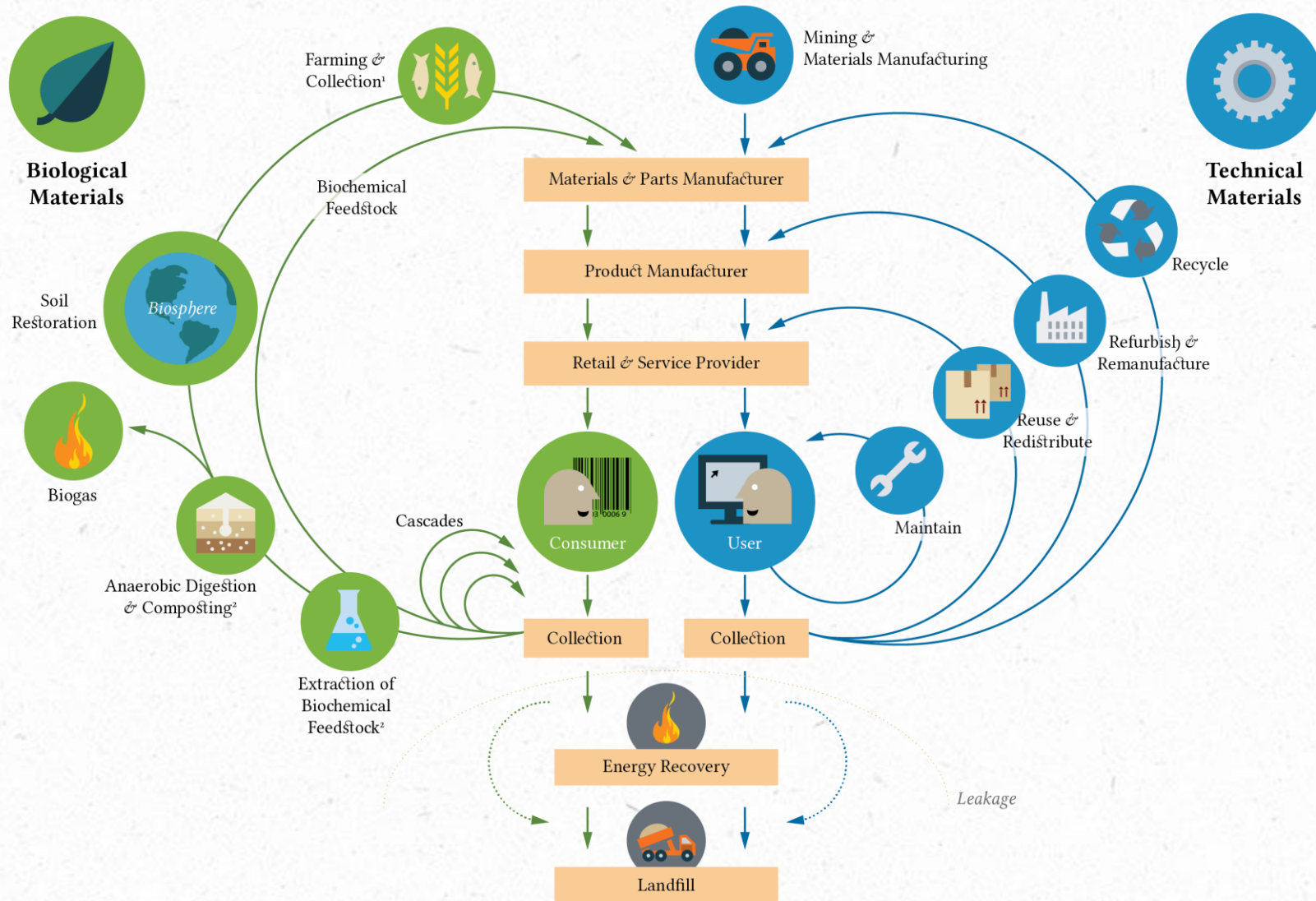
SULPHUR CYCLE



The Magnesium Cycle



Ellen MacArthur Foundation: Circular Economy

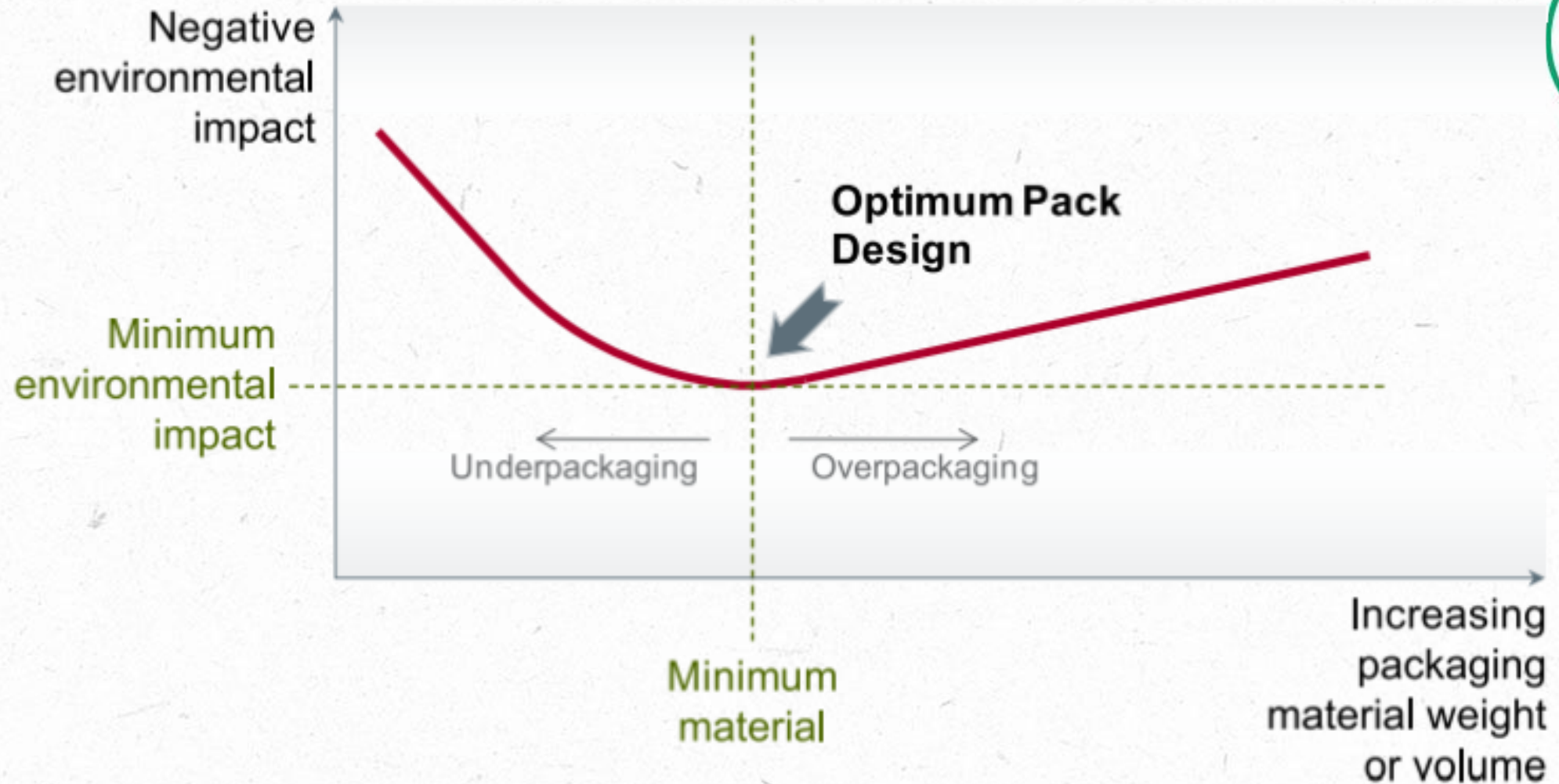




Circular Packaging

Step 1a: Reduce Package Weight

Optimize Package Weight

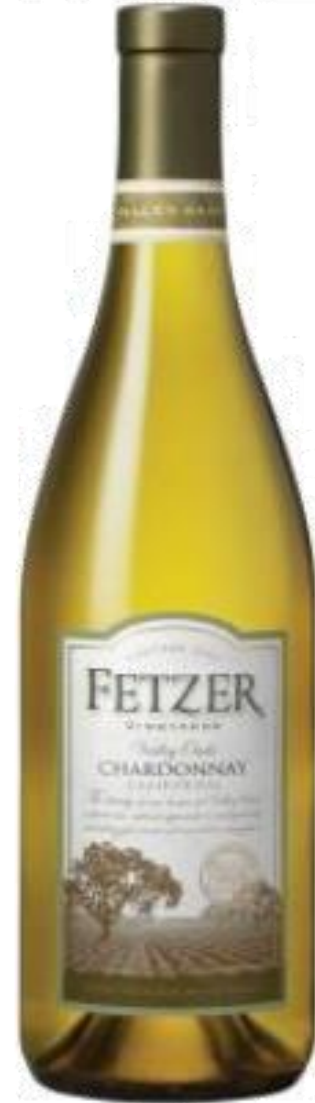


Source: Innventia



Lightweighting Wine Bottles

- ❖ Reduced glass by 17%
- ❖ - 2,000 tons of glass/yr
- ❖ - 14% CO2e
- ❖ Significant cost savings
- ❖ Lighter for workers





4% package|96%
product

2% package|98%
product

Design for Recovery: Monolayer Stand-up Pouch

- Previous design was PET/LLDPE multilaminate (non-recyclable)
- New design is HDPE/LLDPE
- Fully recyclable – collect with plastic grocery bags at most grocery and department stores



If it's not circular, it's just unsustainable for a longer time...



Circular Packaging

Step 1b: Increase Product Concentration

Product Concentration



EasyDose Ultra Concentrated Laundry Detergent





Circular Packaging

Step 2: Choose the Right Material

GHG emissions to produce various materials

Material	Virgin GHG Emission Factor (MTCO ₂ e/ton)	100% PCR GHG Emission Factor (MTCO ₂ e/ton)	Differential Between Virgin and 100% PCR (MTCO ₂ e)
Aluminum Cans	10.99	1.86	-9.13
Steel Cans	3.64	1.77	-1.87
Glass	0.60	0.29	-0.31
HDPE	1.52	0.52	-1.00
PET	2.21	0.92	-1.29
Corrugated Cardboard	0.83	-2.38	-3.21
Newspaper	1.90	-1.00	-2.90
Office Paper	0.97	-3.38	-4.35
Mixed Paper (general)	1.18	-2.46	-3.63



Circular Packaging

Step 3: Reuse/Refill

Loop eCommerce Refill

- global reuse platform
 - collecting used packaging from consumers and retailers
 - enabling deposit return,
 - sorting and storing
 - returning hygienically cleaned packaging to manufacturers for refill
- available in the United States, United Kingdom, Japan and France



Henkel Refill Stations



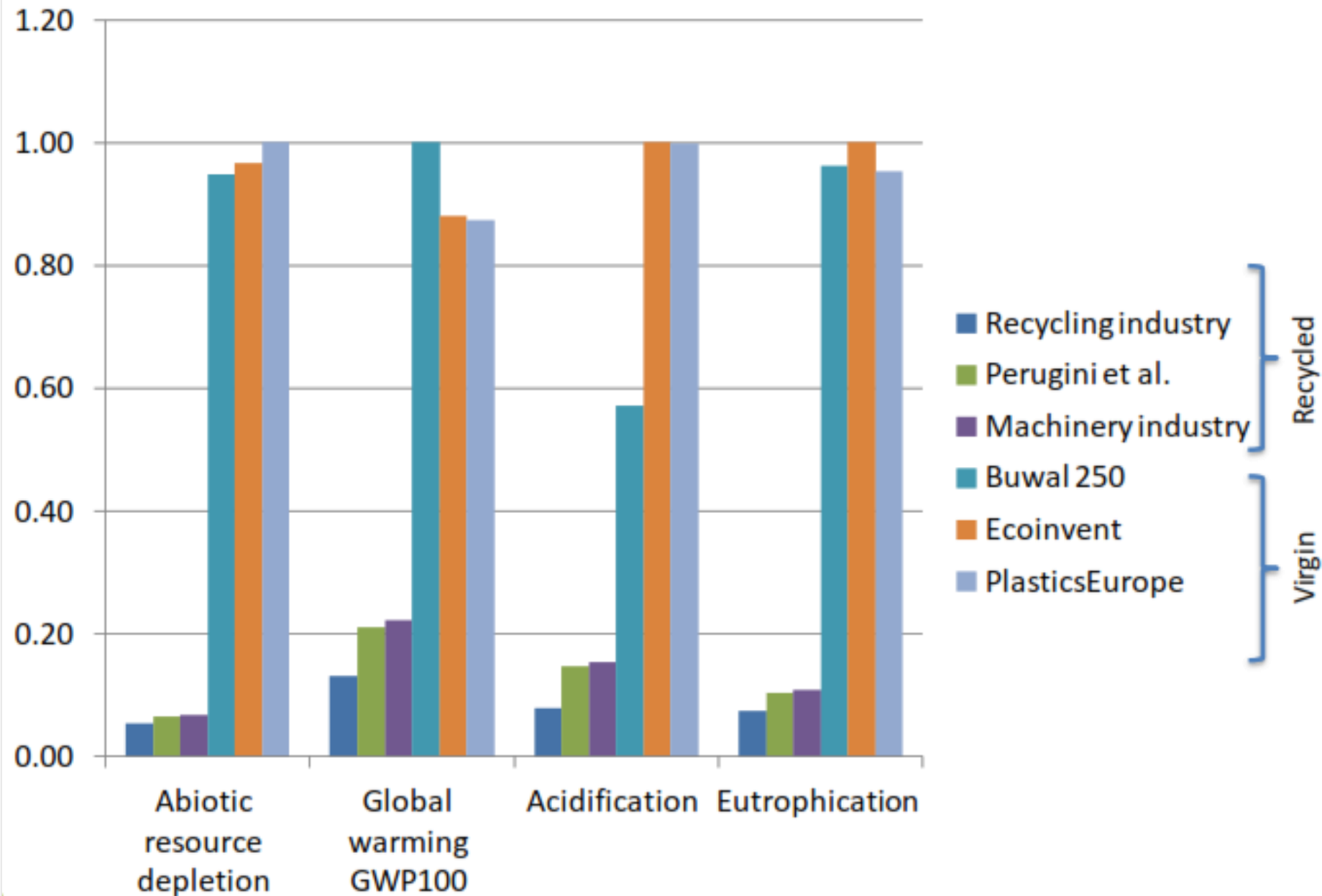
- Available in groceries and drug stores in central Europe



Circular Packaging

Step 4a: Recycle (technical)

HDPE Recycled vs Virgin





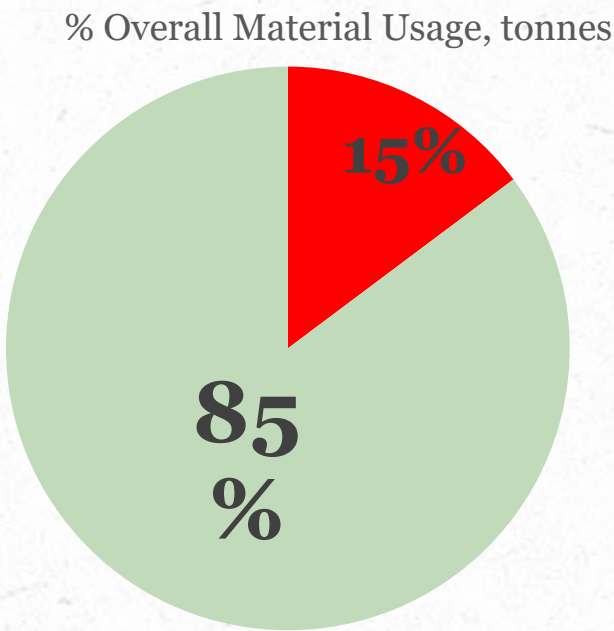
Create recyclable packaging from recycled, not virgin materials



Recycled packaging is used to create new materials

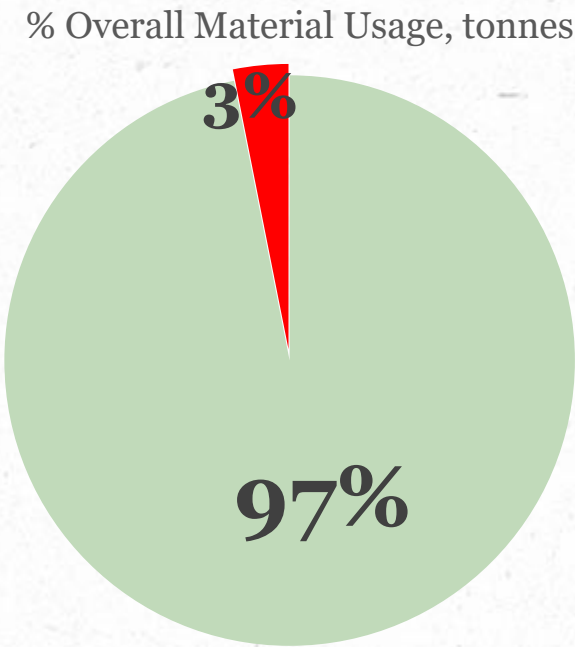
Not just Recyclable...

Goal 1: Eliminate the use of virgin petroleum plastic & virgin fiber in packaging components



■ Virgin Material Usage
■ PCR Material Usage

Goal 2: Eliminate use of non-recyclable or non-compostable packaging



■ Recyclable ■ Landfill

Dr. Bronner's recycled packaging content



- Liquid soap bottles are 100% post-consumer recycled plastic.
- More than 95% of Dr. Bronner's cardboard cartons are sourced from 100% post-consumer recycled content.



Circular Packaging

Step 4b: Recycle (biological)

Biobased Compostable Packaging



Importantly, composting infrastructure must be expanded to make biobased & compostable packaging circular!

Biobased Compostable Packaging





Tools for Packaging Design



Walmart Sustainability Hub



Sustainable
Packaging
Resources

www.walmartsustainabilityhub.com/



Questions & Discussion

martin.wolf@seventhgeneration.com