

How Improving Packaging Sustainability Improves Profits.

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“Sustainable Packaging”

- **What is not sustainable**

World-wide Coca-Cola Consumption

- **1,800,000,000 8 ounce servings each 24 hours. (100 million gallons; 380 million liters)**
- **Will grow to 3.6 billion in 10 years.**
- **Every serving in a container.**
- **This is probably not sustainable packaging**

Drivers of Sustainable Packaging

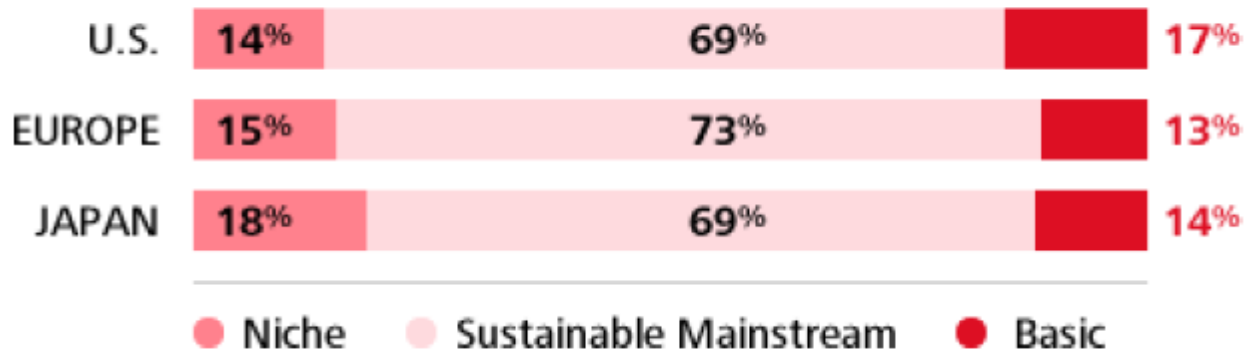
- **Brand owners (Consumer Packaged Goods companies)**
- **Retailers**
- **Governments**
- **NGO's**
- **Consumers**

“Wal-Mart is Taking the Lead on Sustainable Packaging”

“Packaging is at the nexus of every global supply chain and customer relationship... Small changes to packaging can have significant impacts on the use of materials, manufacturing, shipping containers, trucks, storage, refrigeration, waste and energy...we are making great strides to improve packaging and reduce our footprint on the environment.”

Consumer Interest in Sustainable Packaging

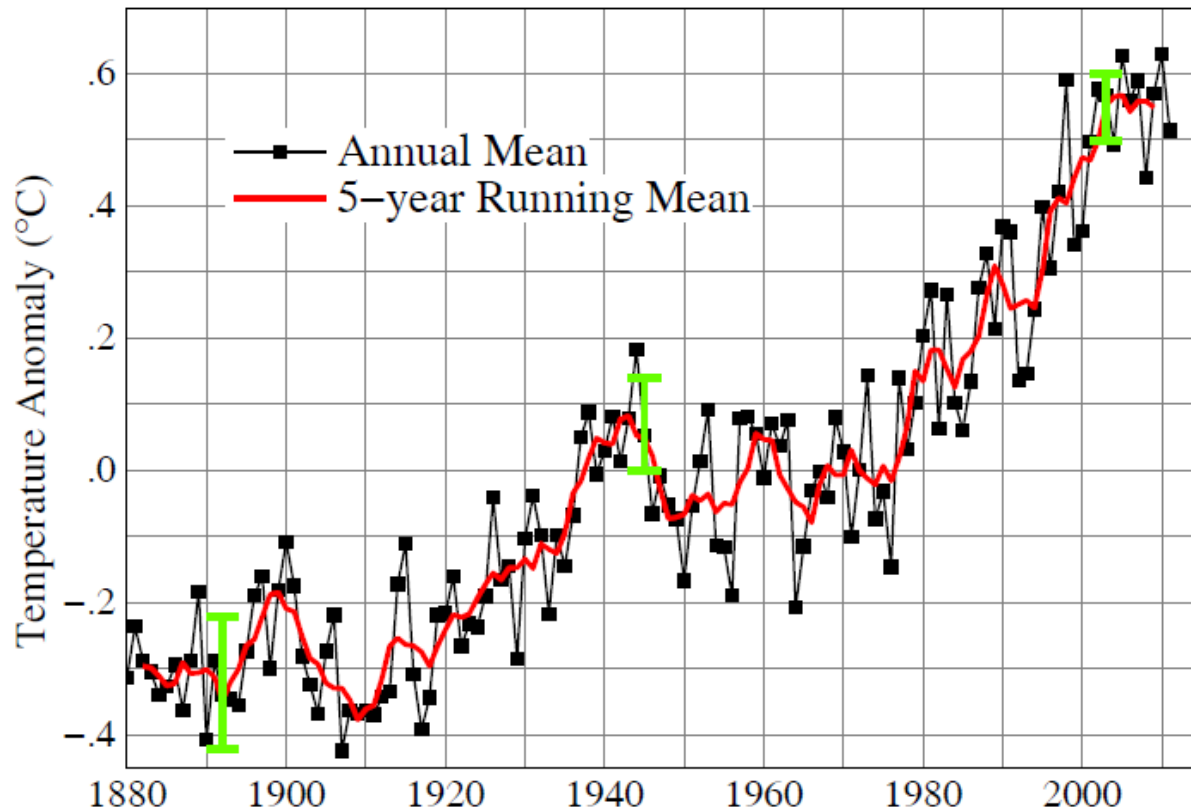
Consumer Types



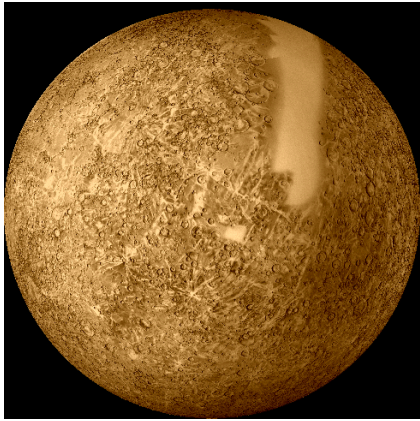
Encompassing 70% of consumers overall, this sustainable mainstream group wants product choices that have environmental improvements, but they will only change their purchasing decisions when they can get the performance they require and the value they need. They won't—and can't—sacrifice performance or price for environmental benefits, especially in tough economic times.

Is Climate Change the “Real Deal?”

Global Land–Ocean Temperature Index



National Aeronautics and Space Administration
Goddard Institute for Space Studies, 2012



MERCURY

Temp: +430 to -280°C (mid. 75)

Atmosphere: None



VENUS

Temp: +500 to -32°C (mid. 234)

Atmosphere: 95% CO₂, H₂SO₄, N₂



EARTH

Temp: +70 to -89°C (-10)

Atmosphere: ~0.03% CO₂

Business Needs Related to Packaging

- **Understanding consumer drivers**
- **Integrated end of life solutions**
- **Reliable lifecycle assessment methodology**
- **Sustainable packaging feedstocks such as bio-based and renewable**
- **Communication of benefits or risks of packaging**
- **Sustainable supply chain**

Prognostications: Profitability and Packaging

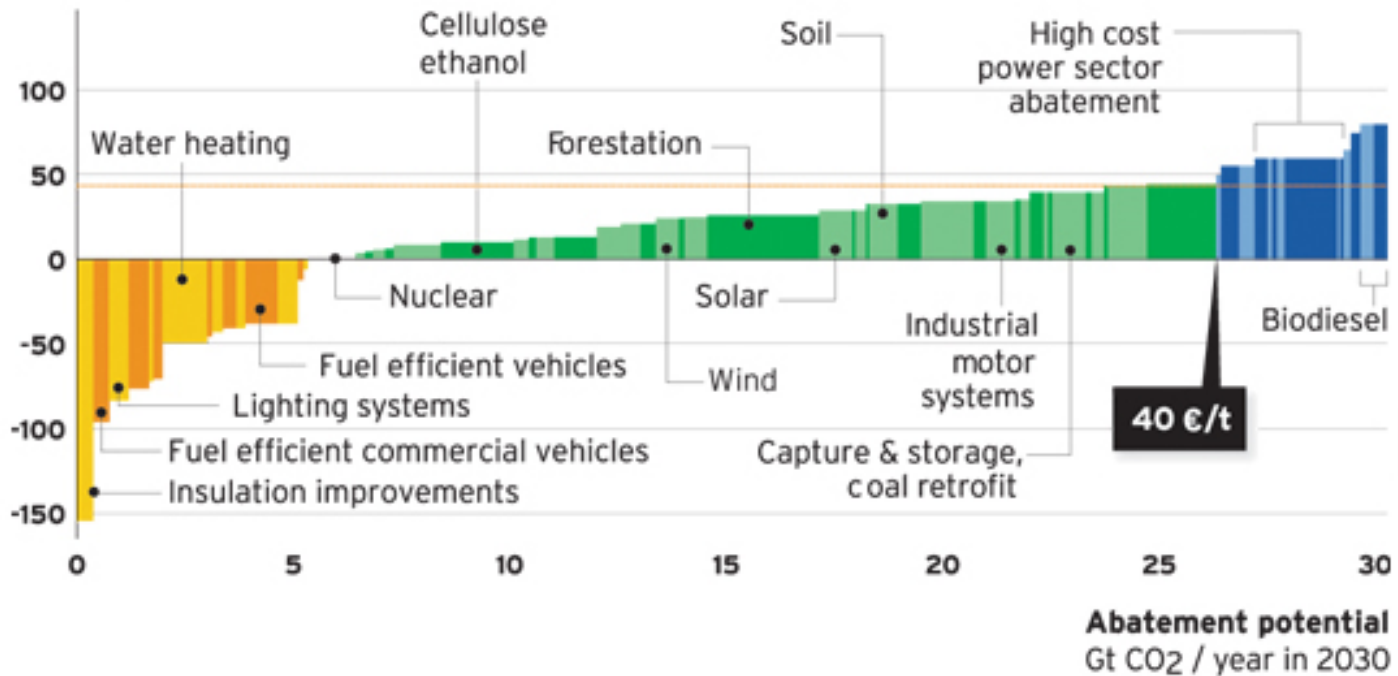
“predict or foretell future events”

“Never make predictions, especially about the future.” Casey Stengel

1. Packaging which reduces carbon input/output has an economic advantage (carbon costs money).

Global cost curve

Marginal cost of abatement - examples
€/t CO₂



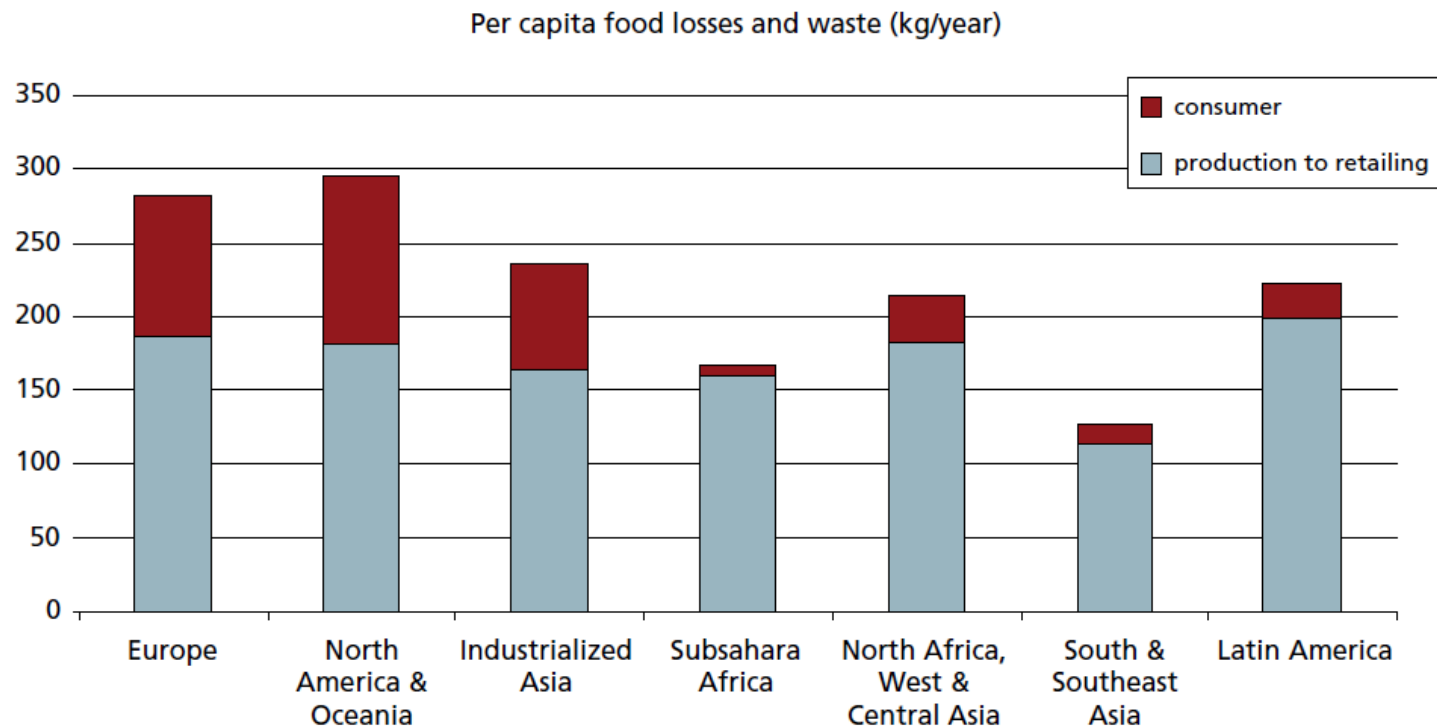
Yellow Negative abatement marginal cost

Green Abatement marginal cost below 40 €/t

Blue Abatement marginal cost above 40 €/t

2. Protection and function will increase in importance for reducing waste and loss.

Figure 2. Per capita food losses and waste, at consumption and pre-consumptions stages, in different regions



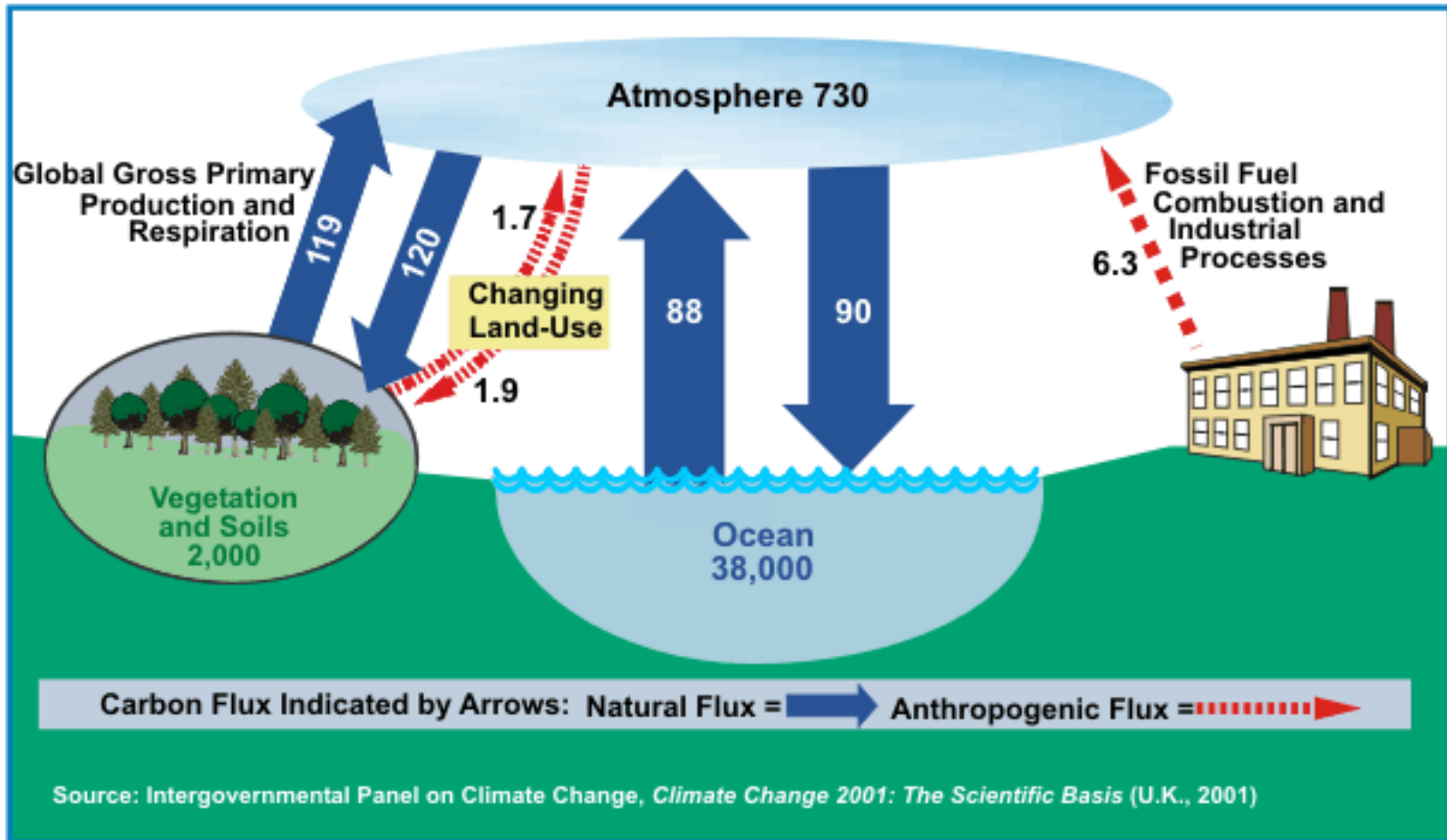
One fourth of the food produced in sub-Saharan Africa goes to waist and in the US 31 million tons are disposed of each year.



3. Adding post-consumer value will become a part of packaging design & selection changing how we think.



4. Fossil-derived carbon will increase in cost faster than bio-based carbon resulting in increased use of bio-based carbon.



Standard Bottle Made with Plant Carbon



up to 30% plant-based plastic
(PET)



up to 100% plant-based plastic
(HDPE)



Performance Needs to be Maintained

- **Safety**
- **Physical Protection**
- **Barrier**
- **Consumer convenience**
- **Communication**
- **Recyclability and reusability in some form**
- **Cost**

Take Home Messages

- **Short-term (5 years) shift to standard materials made from bio-based feed stocks**
- **Longer-term (10 years) unseen bio-based polymers introduced into market**
- **Increased recovery and use of waste materials**
- **Change in the current packaging business model.**

Long-term implications

- **Consumer products companies moving up the value chain all the way to basic feedstocks**
- **Change in materials and uses**
- **Sustainable Packaging can add to the “bottom line.”**



The End; Thank You
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