

**NINA GOODRICH**

EXECUTIVE DIRECTOR, GREENBLUE

# **Moving Towards a Circular Economy: What does a circular economy mean and how it relates to sustainable materials management?**

---

NERC / April 7, 2015 / Wilmington, DE



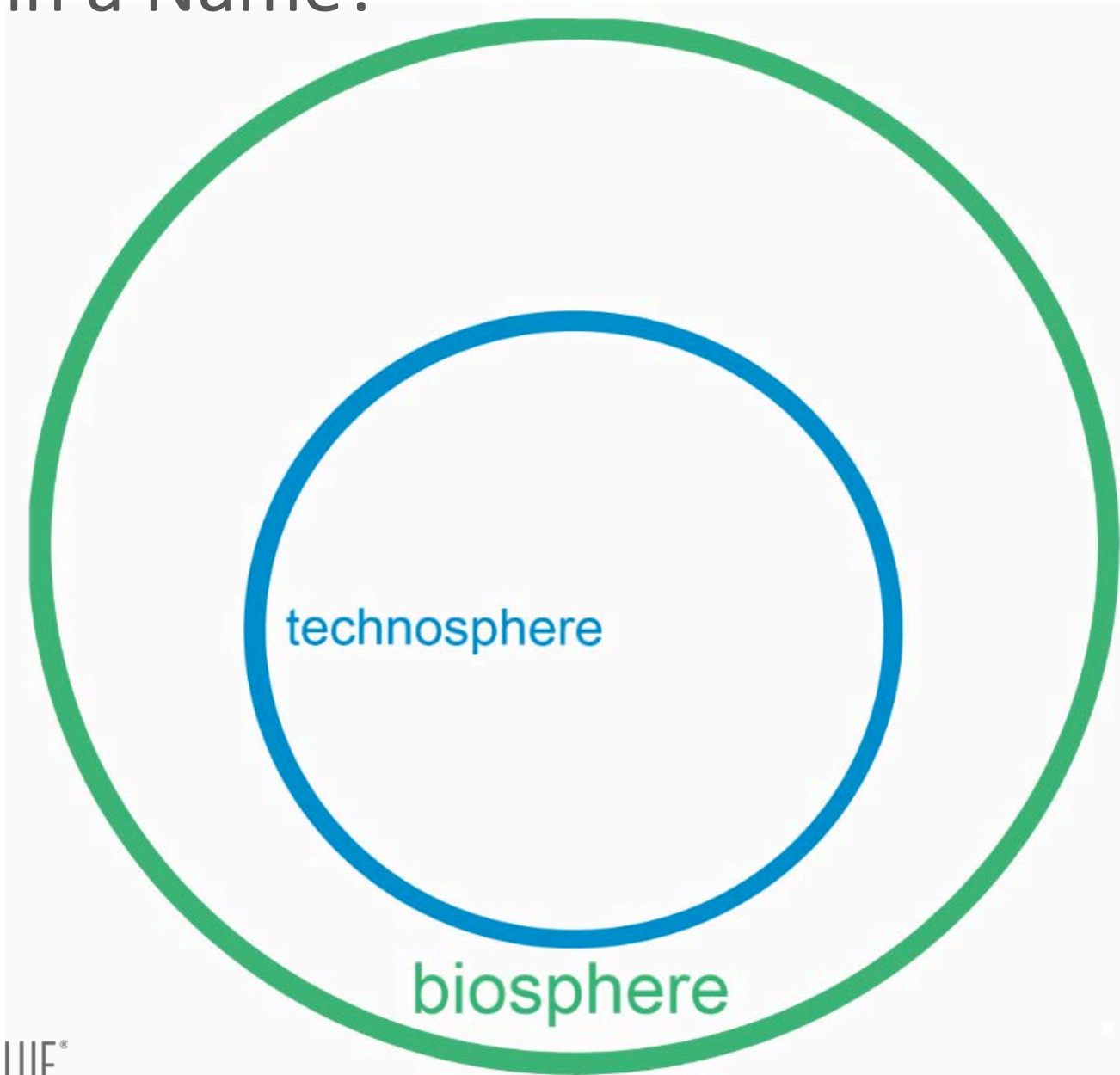
# Shaping the **Business** of Sustainability

GreenBlue is a nonprofit that provides the science and resources to make business more sustainable

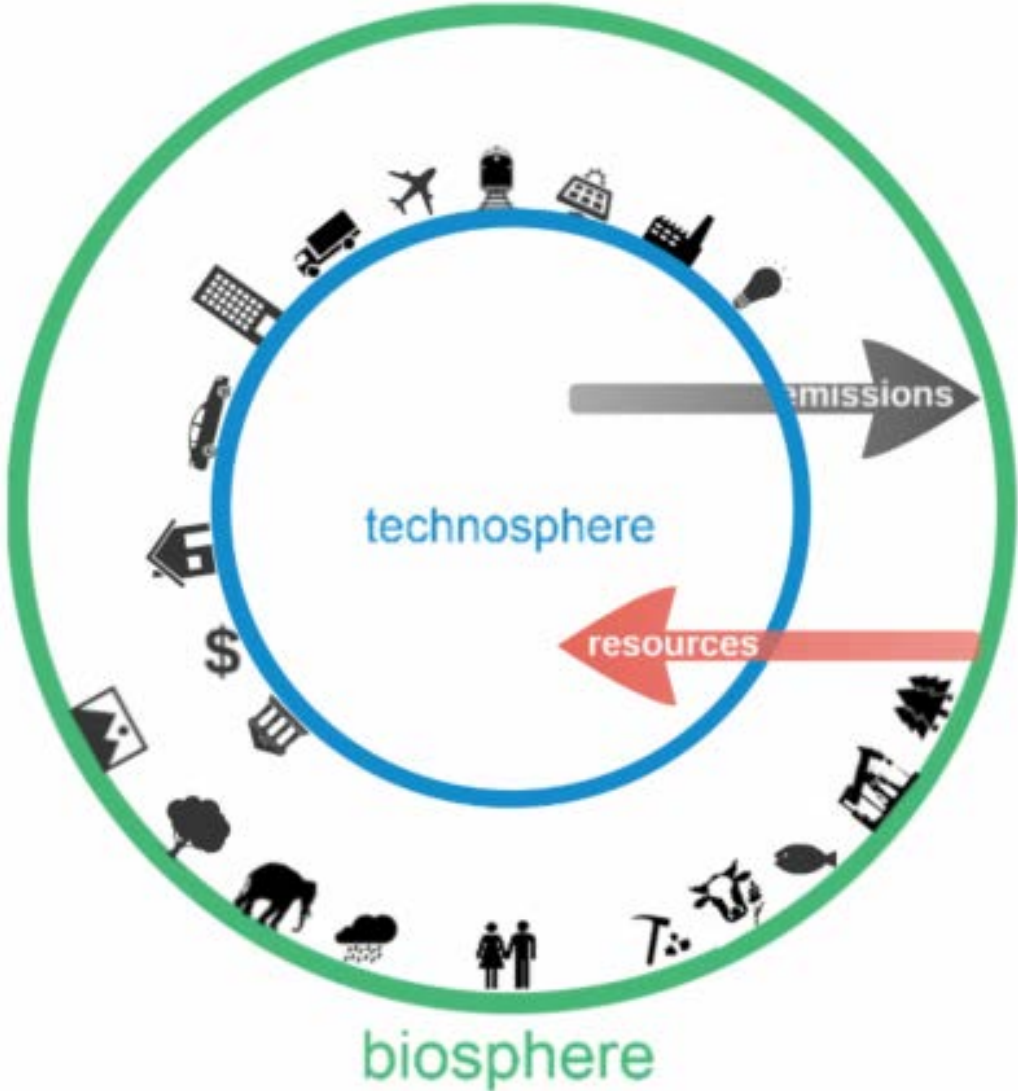
We believe industry is the key to transformative change

The right people armed with the right information can change an industry

# What's in a Name?

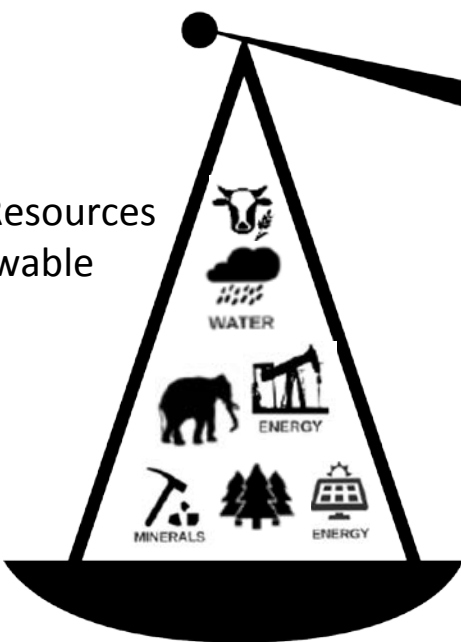


# Balance



# Carrying Capacity

Renewable Resources  
& Non-Renewable

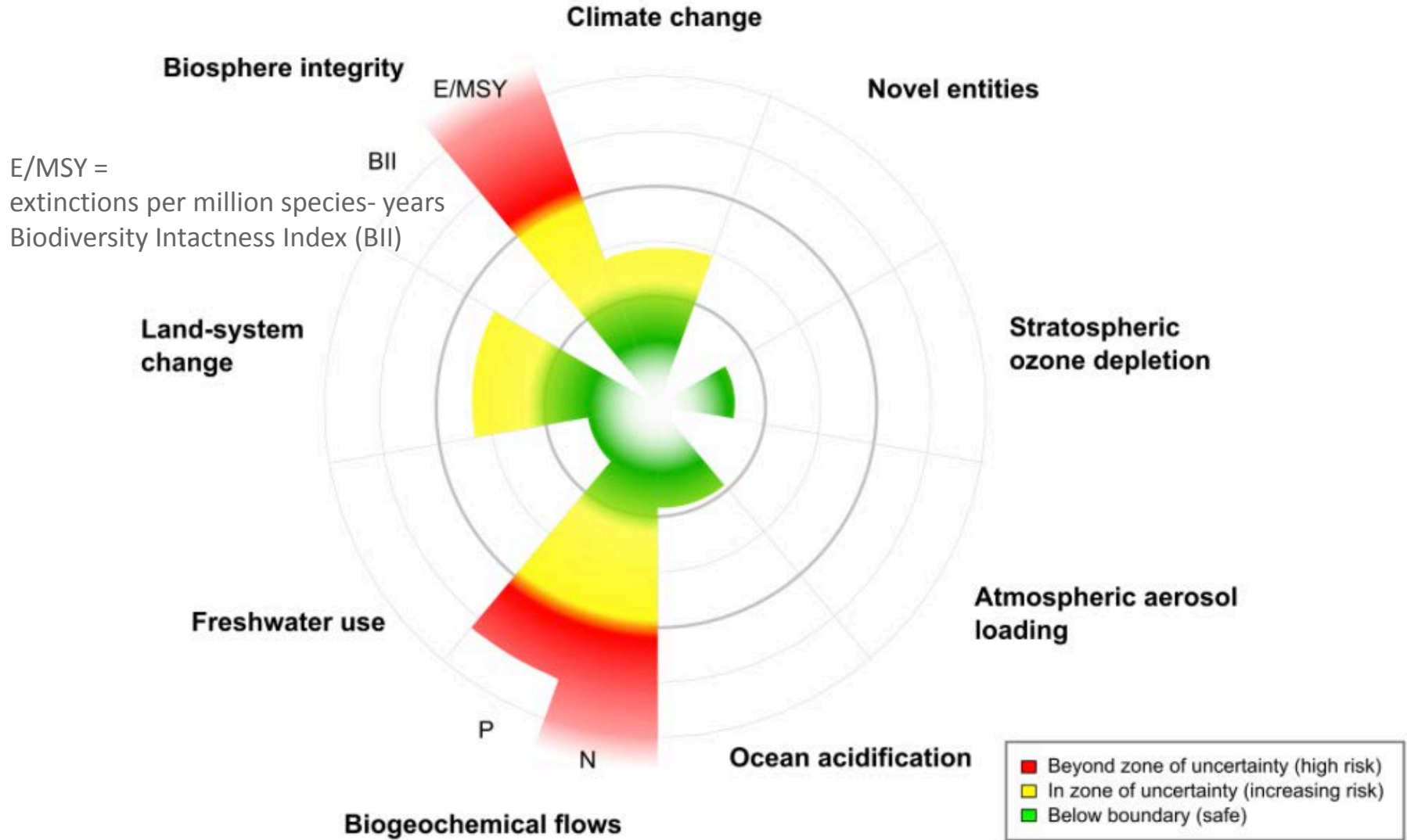


Biotic Dependency

Human systems

Material Economy

# Planetary Boundaries



# Resource Consumption & GDP

“For every 1% increase in GDP, resource use has risen 0.4%”

(“The Circular Advantage.” Accenture analysis based on data from SERI and Dittrich M. 2014. *Global Material Flow Database*. World Bank GDP data, [www.data.worldbank.org/](http://www.data.worldbank.org/))

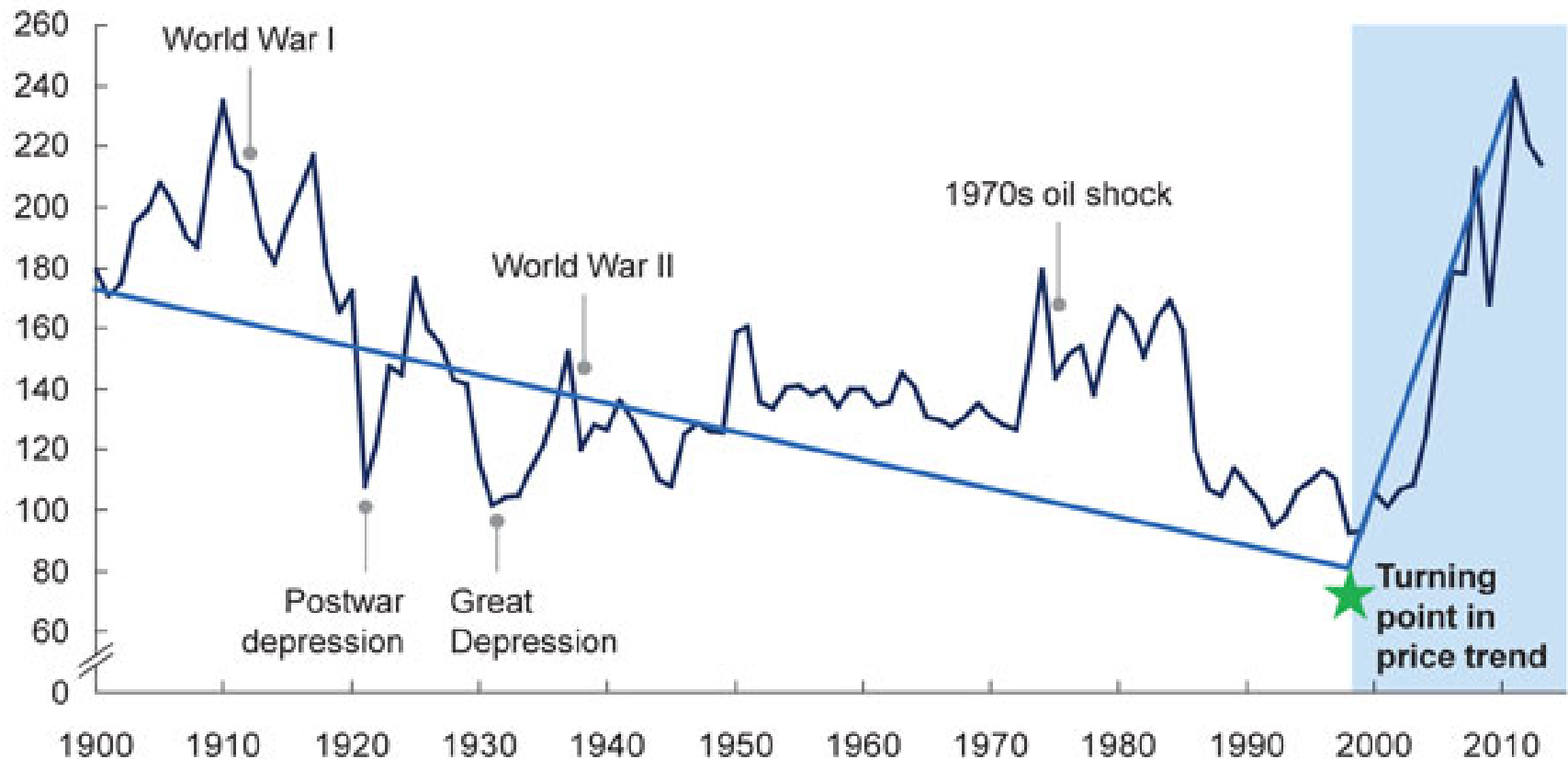
Commodity prices have historically been inversely related to growth, but this relationship changed in 2000.

(World Bank commodity price data)

# Resource prices have increased significantly since the turn of the century

McKinsey Commodity Price Index<sup>1</sup>

Real price index: 100 = years 1999–2001<sup>2</sup>



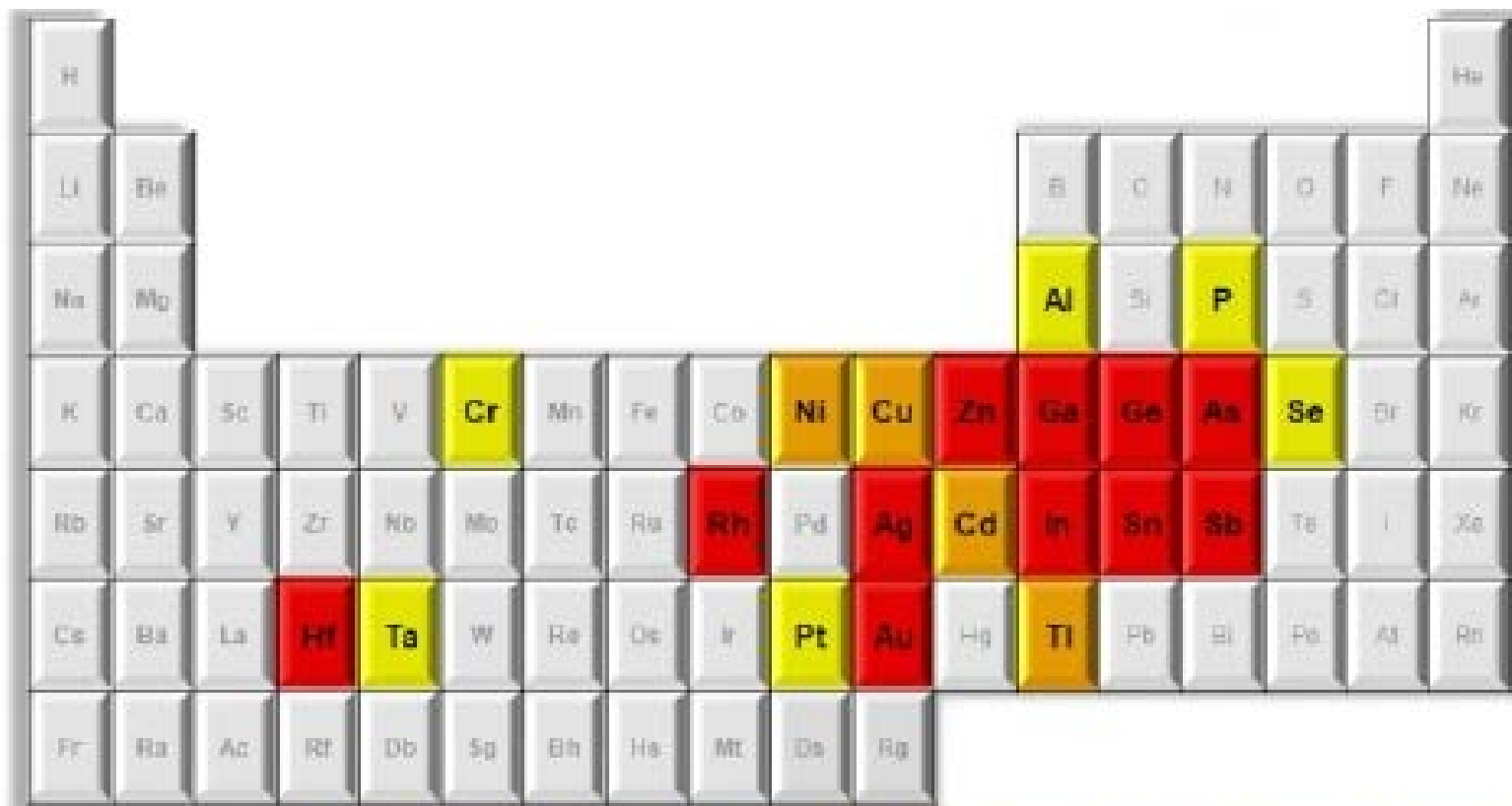
1 Based on arithmetic average of four commodity sub-indexes: food, non-food agricultural raw materials, metals, and energy.

2 Data for 2013 are calculated based on average of the first three months of 2013.

SOURCE: Grilli and Yang; Pfaffenzeller; World Bank; International Monetary Fund; Organisation for Economic Co-operation and Development statistics; Food and Agriculture Organization of the United Nations; UN Comtrade; McKinsey Global Institute analysis

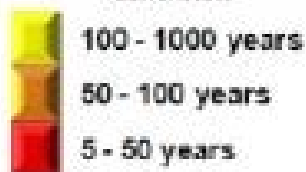


# Why Circular: Shortages



## NUMBER OF YEARS LEFT

If continued to be consumed at current rate



# Sustainability's Next Frontier

Walking the talk on the sustainability  
issues that matter most

By *MIT Sloan Management Review* and The Boston Consulting Group

Most companies agree that  
sustainability is necessary to be  
competitive (86%)

Disconnect between thought and action

Difficulty in making the business case

Tackling significant sustainability issues

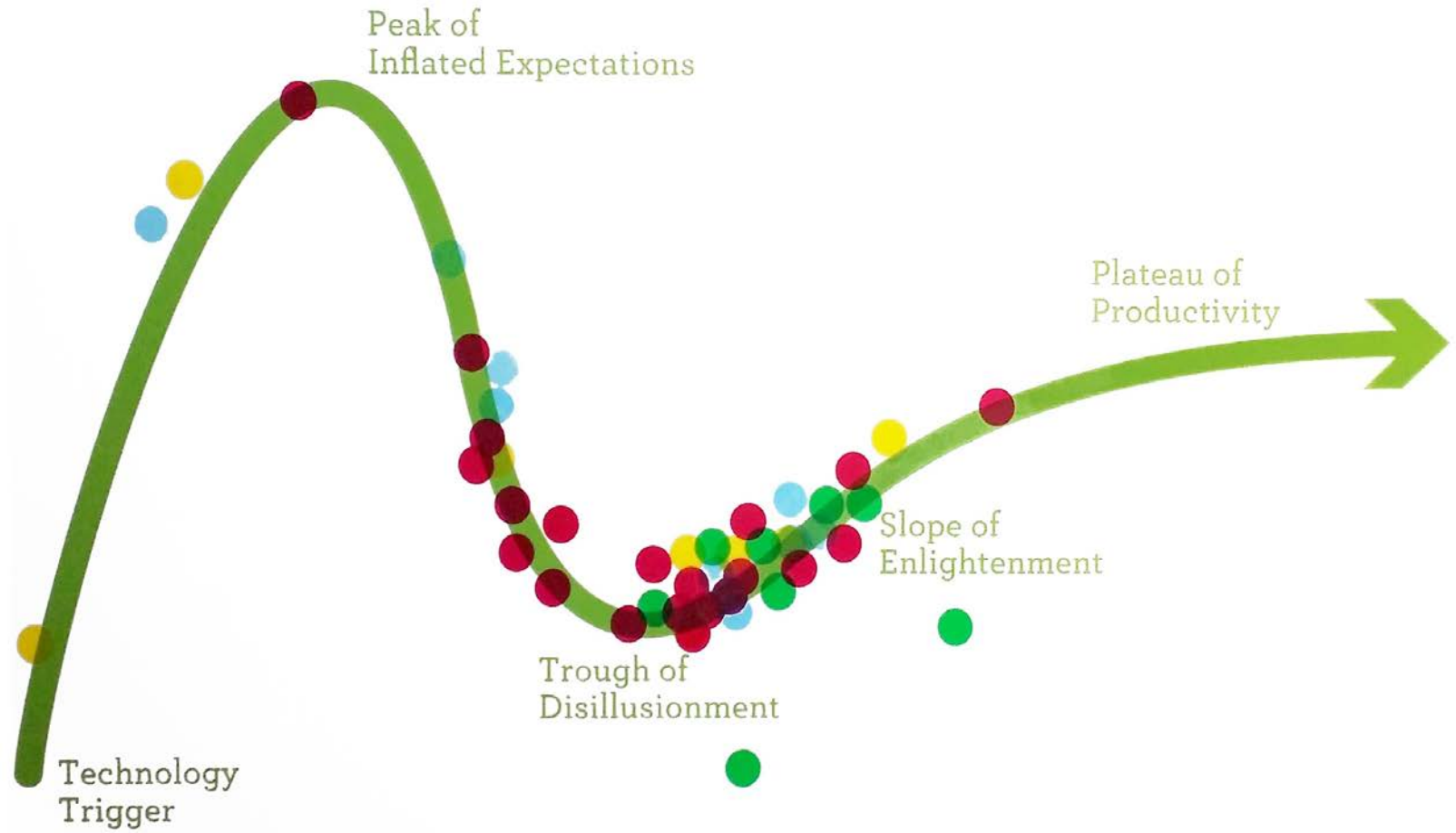
Many organizations are  
struggling to move forward

Developing a business case for  
sustainability

Early wins have stopped and the  
next step is difficult

# State of Sustainability

March 27, 2014



# State of Green Business 2015

“Companies collectively have been nibbling at the edges of challenges like climate change, food security, ecosystems preservation, resource efficiency and the like. Whether and how they take on the big problems will be another critical story to watch.”

“Recent improvements in resource efficiency, although welcome, are not enough to break the link between economic growth and environmental decay. As a result, the business risks of unsustainable natural capital consumption are increasing.”



# Why Circular?



take

make

waste

Can we improve upon our linear model?

Is linear consumption is reaching its limits?

🔄 Volatility

🔄 Shortages

🔄 Risk

🔄 Incremental efficiency gains

# Why Circular?



Business model that has the potential to break our current Take-Make-Waste economy

Huge economic opportunity in resource preservation

3 Billion people will join the middle class by 2025.

FIGURE 1 A potential consumption time bomb<sup>1</sup>  
2010-2025

1.1bn more people



Dramatic shift to packaged products



1.8bn more middle-class consumers



Much greater waste at end of life



Food: Caloric consumption

**+24%**

Food spending

**+57%**

Packaging

**+47%**

End-of-life materials

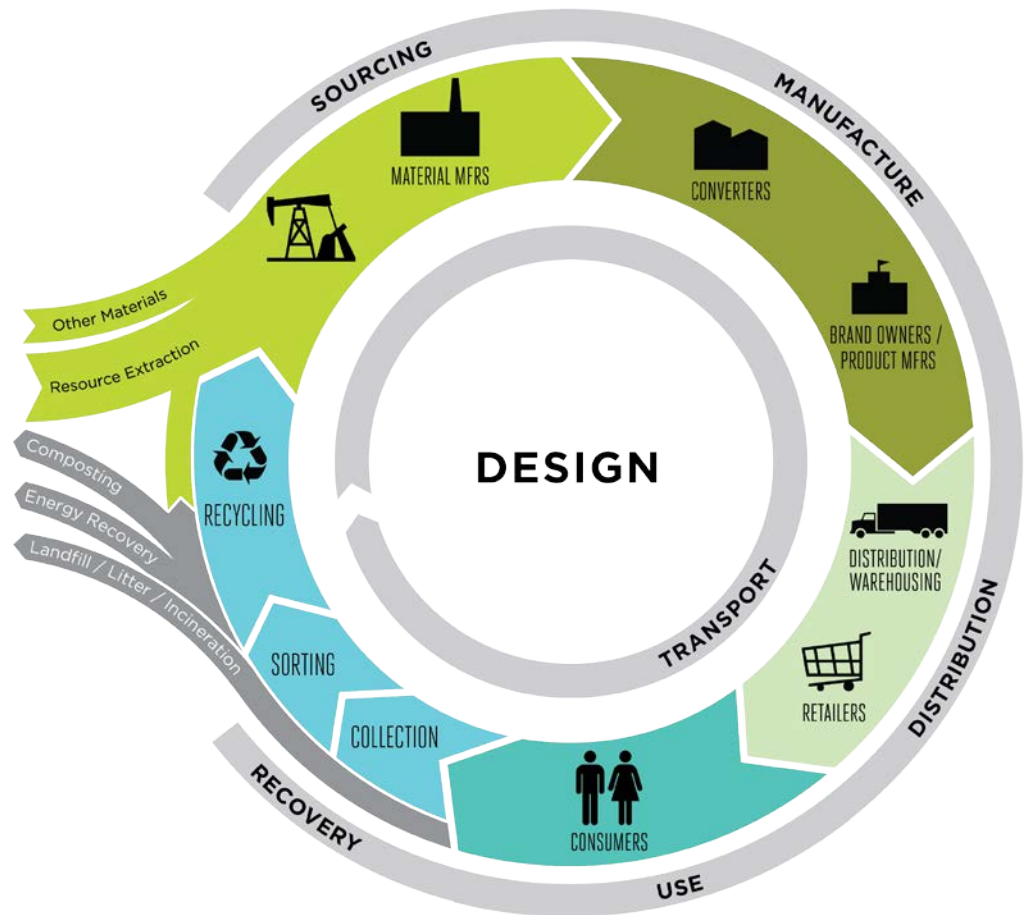
**+41%**

<sup>1</sup> Estimate based on the comparison of low-income countries or population segment (e.g., India) and middle/high income countries and segments (e.g., US)  
SOURCE: World Bank, Ellen MacArthur Foundation circular economy team

# What is a Circular Economy?

A circular economy is an industrial system that is restorative or regenerative by intention and design.

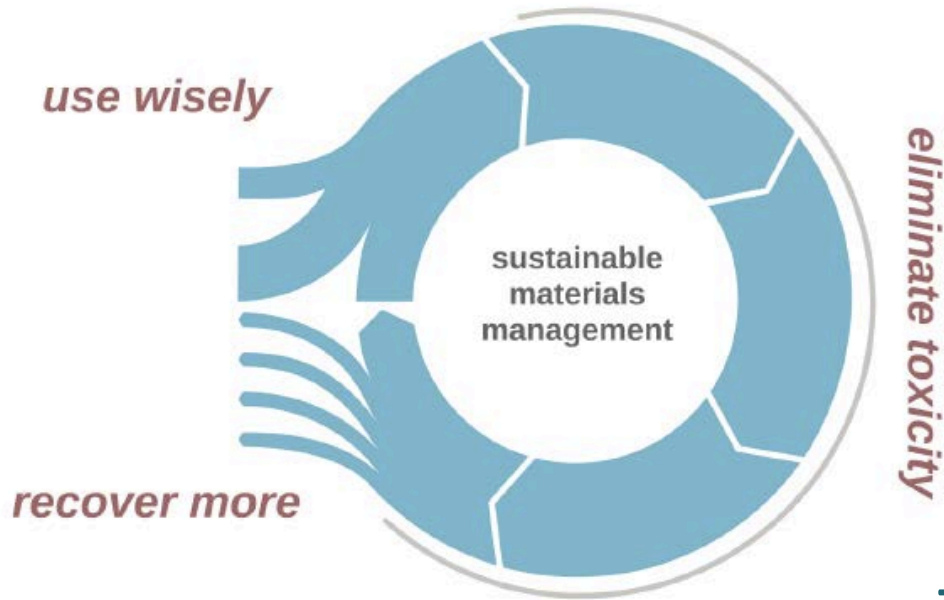
McKinsey and Accenture have estimated this to be a trillion-dollar opportunity





# How Do We Get There?

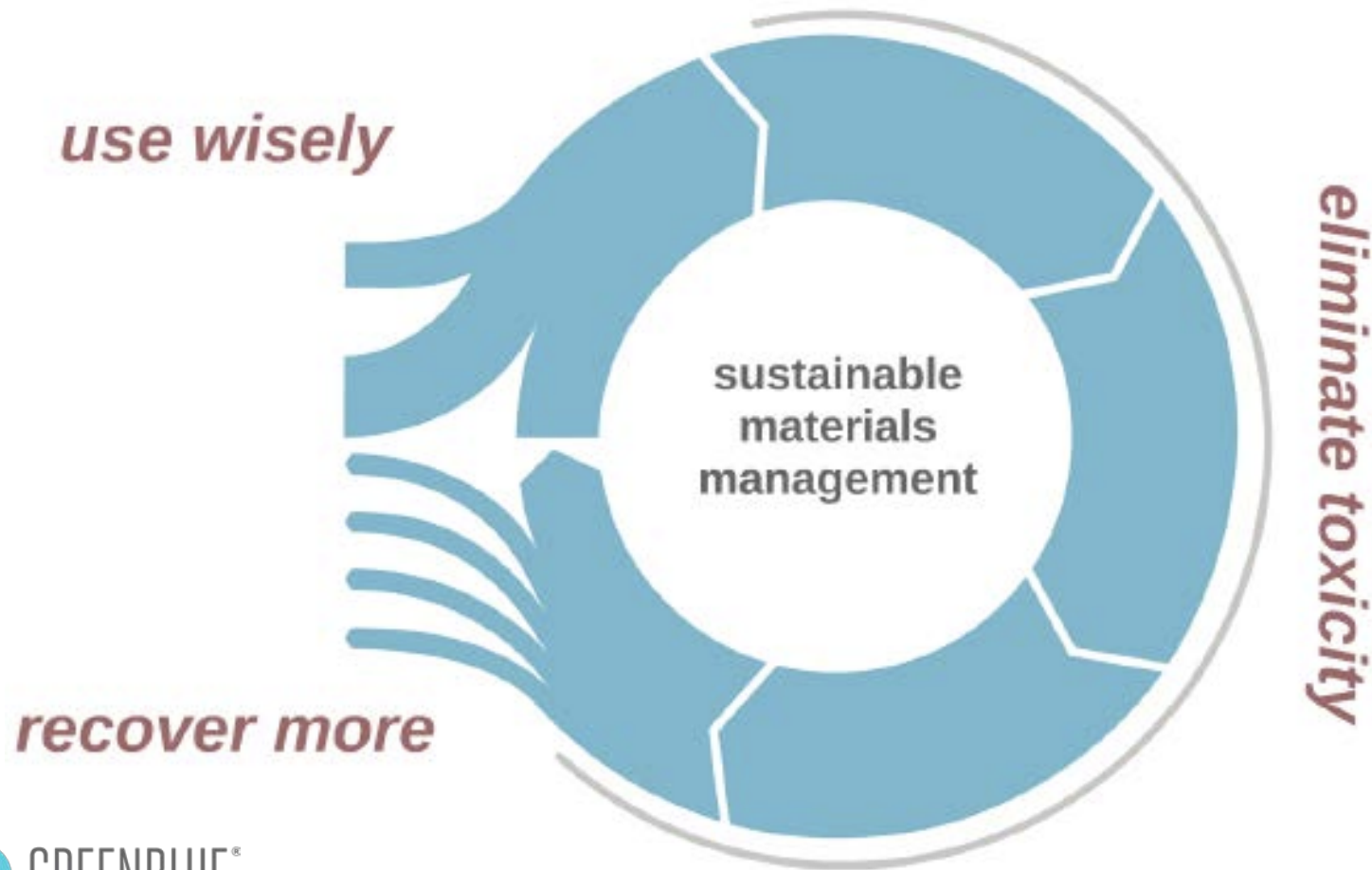
## Sustainable Materials Management



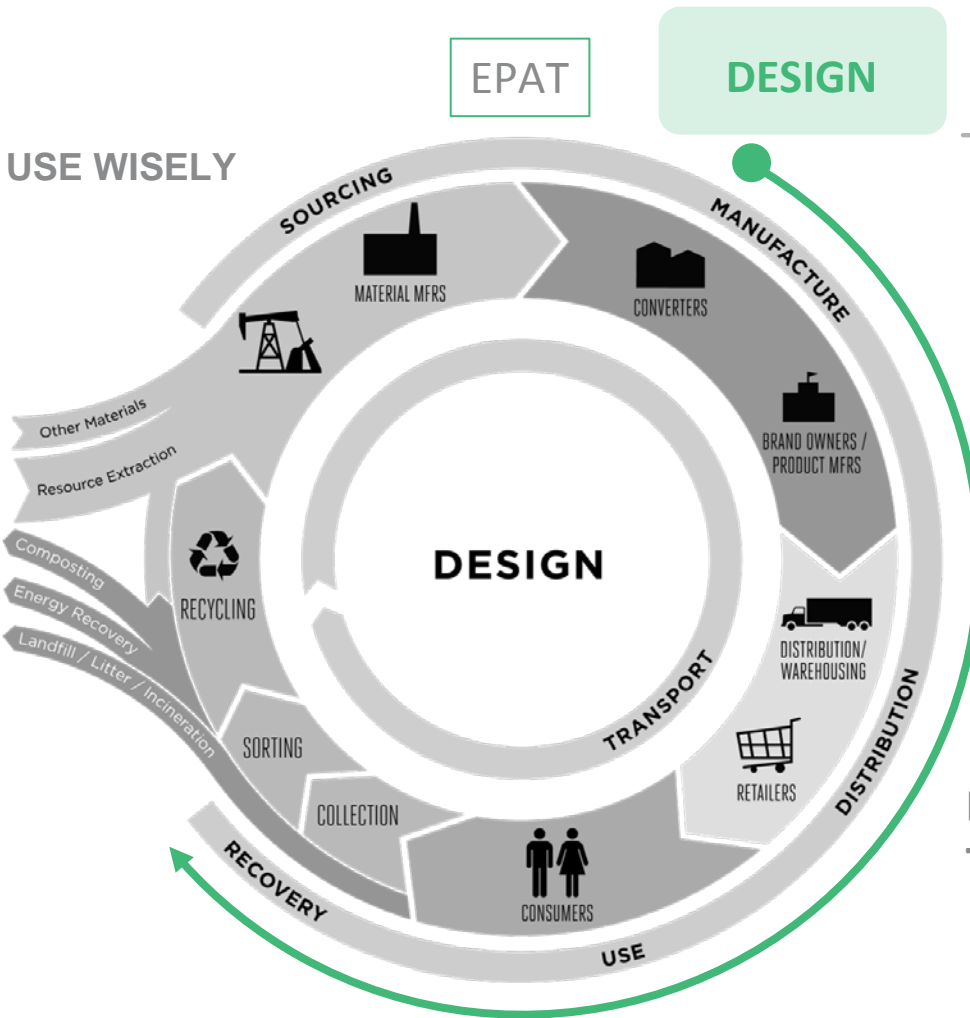
- +Technology Enablers
- +New Business Models
- +Policy Frameworks
- +Financial Incentives

# Shaping the **Business** of Sustainability

## Sustainable Materials Management



USE WISELY



EPAT

DESIGN

Cleangredients

-inform design

Material IQ

-fill data gaps & inform design

COMPASS

-inform design & post design analysis

How2Recycle

-inform design & communicate

DESIGN

ELIMINATE TOXICITY

Cleangredients

Material IQ

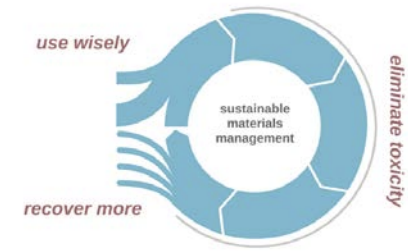
COMPASS

RECOVER MORE

- domestic use
- export
- import

How2Recycle

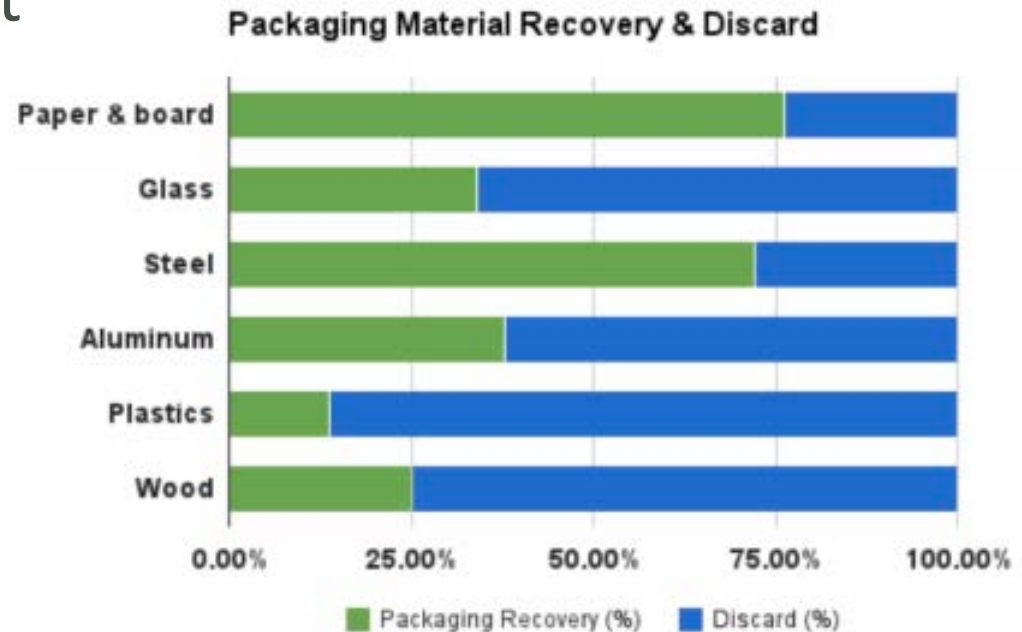
# Circular Economy



## Design out Waste

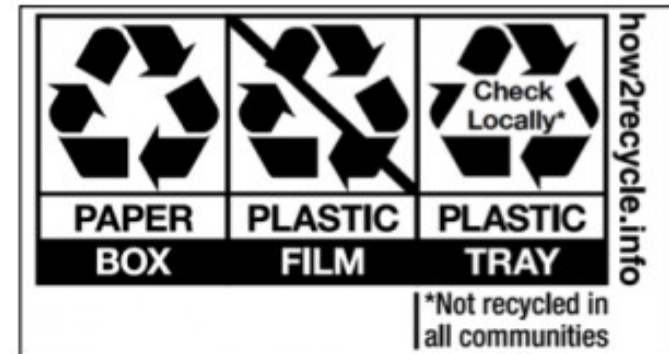
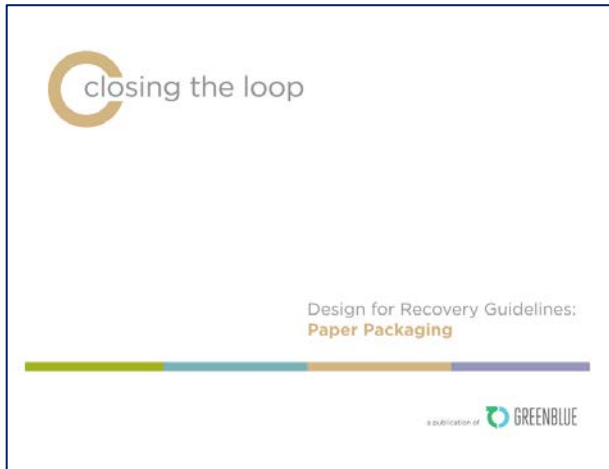
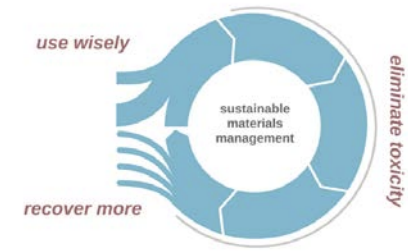
- 🔄 Design for recovery
- 🔄 Design for disassembly
- 🔄 Design for environment
- 🔄 Design for circular use

2012 MSW packaging data (EPA)



# Design out Waste

- ♻️ Design for recovery
- ♻️ Design for disassembly
- ♻️ Design for environment



# Quality

Purity

♻️ Uncontaminated  
Material Streams

♻️ Single Materials

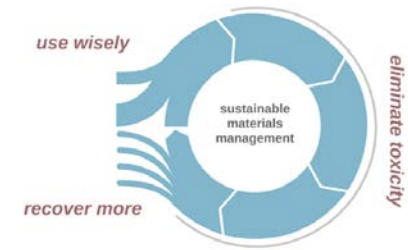
Ease of Re-Use

♻️ Diversified options for re-  
use

♻️ Durability of the material  
Lifecycle length

# Quantity

Amount of Material  
Available  
Ease of Collection



# Quality and Quantity

## High Potential Materials

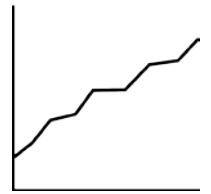


Production Rate  
Purity  
Ease of Re-Use  
Lifecycle Length

	PET	Paper	Metal	PP	PE	Bio Polymers
Production Rate	✓	✓	✓			
Purity	✓	✓	✓			
Ease of Re-Use	✓	✓	✓			
Lifecycle Length	✓		✓			

# Circular Economy

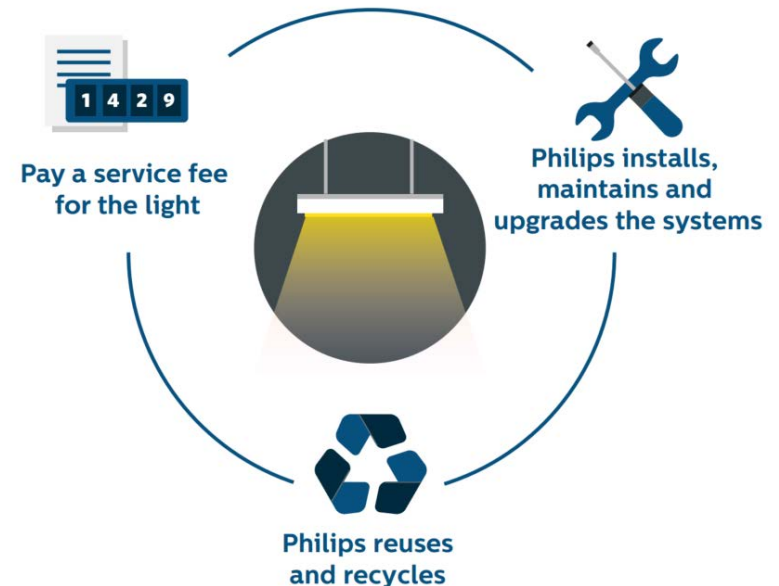
## New Business Models



Access over Ownership-Become a Service Industry  
(Leasing)

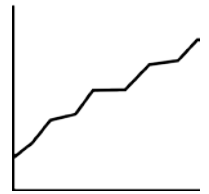
- 🔄 Carpet Leasing (Desso)
- 🔄 Lighting Leasing (Philips)
- 🔄 Electric Car Battery Leasing (Renault)

Selling light as a service instead of bulbs





# Circular Economy New Business Models



Designed for Circular Use

- 🔄 WellThread (Levi Straus, Dockers)
- 🔄 Puma InCycle



DOCKERS®

# WELLTHREAD

--- OUR STORY ---

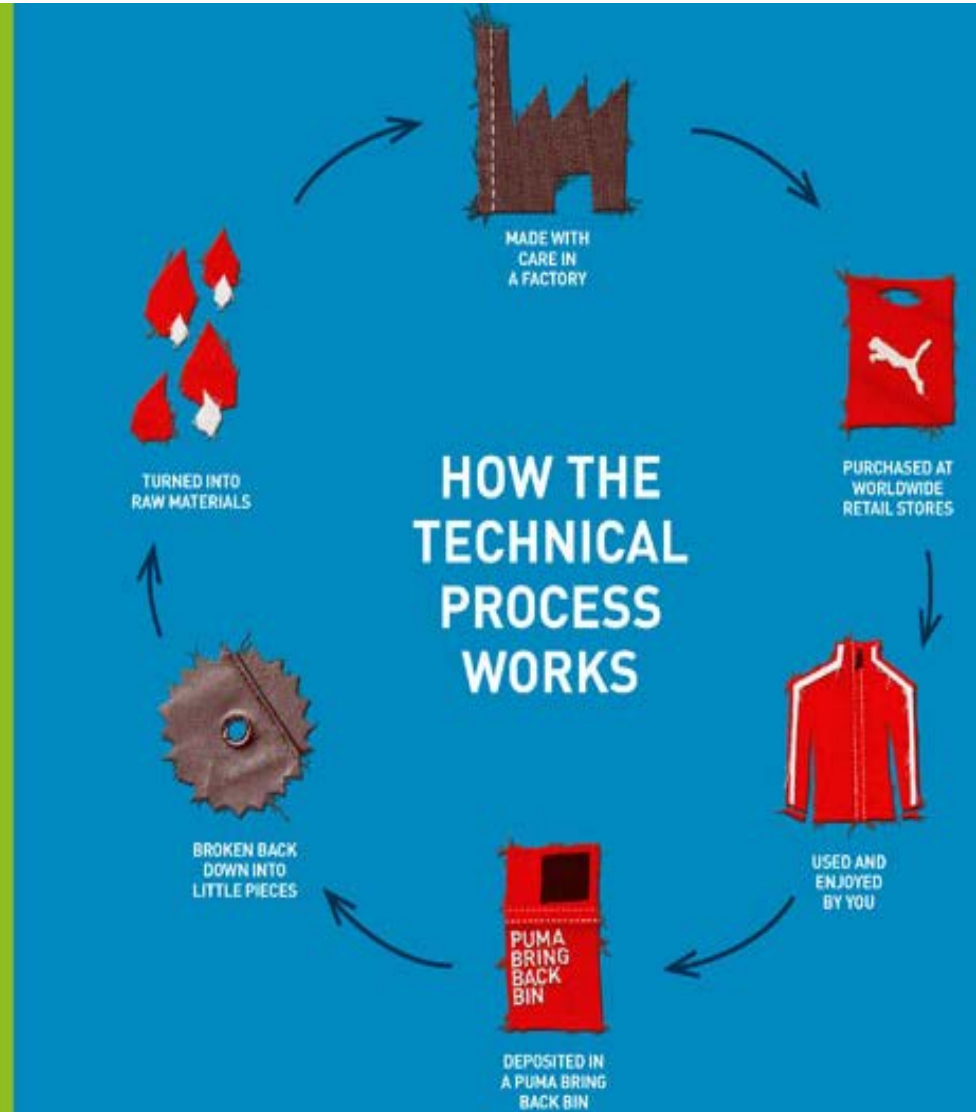
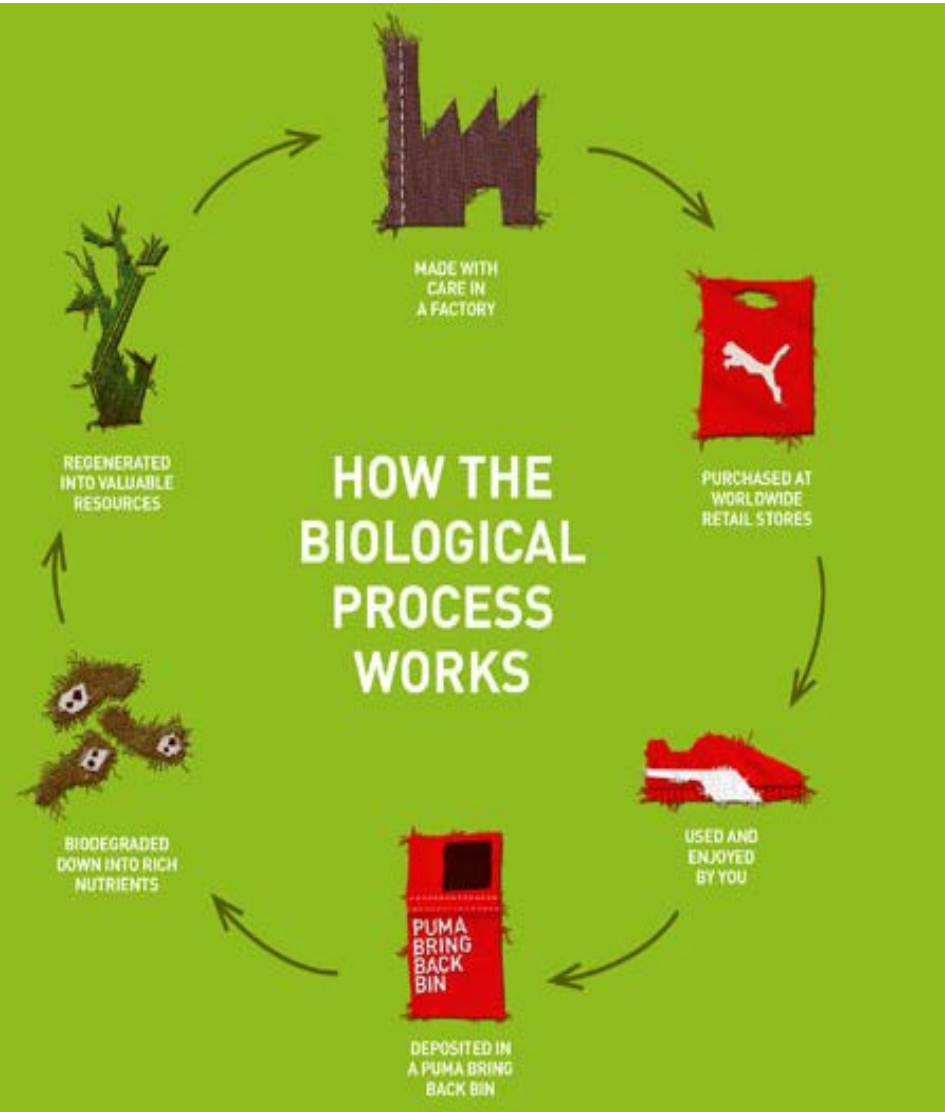
A NEW WAY OF MAKING.  
WELL-INTENTIONED AND WELL-PLANNED.  
EVERY STEP OF THE PROCESS.  
CLOTHING CRAFTED FOR DURABILITY WHILE  
THINKING OF SUSTAINABILITY AND  
WORKERS' WELL-BEING.  
WE CREATE A TRUTH WE'RE PROUD TO TELL.

--- ---

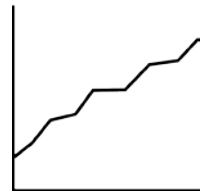
PEOPLE	MATERIALS	PROCESS	ENVIRONMENT
FAIR LABOR PRACTICES & COMMUNITY DEVELOPMENT	ENGINEERED & BUILT TO LAST	PRODUCTS MADE USING LESS ENERGY & WATER	DESIGNED FOR RESPONSIBLE USE & REUSE

Learn more about our story at [dockers.com/wellthread](https://dockers.com/wellthread)  
©2019 LEVI STRAUSS & CO | DOCKERS.COM | 300 DOCKERS | WA-P-0214-2020-P

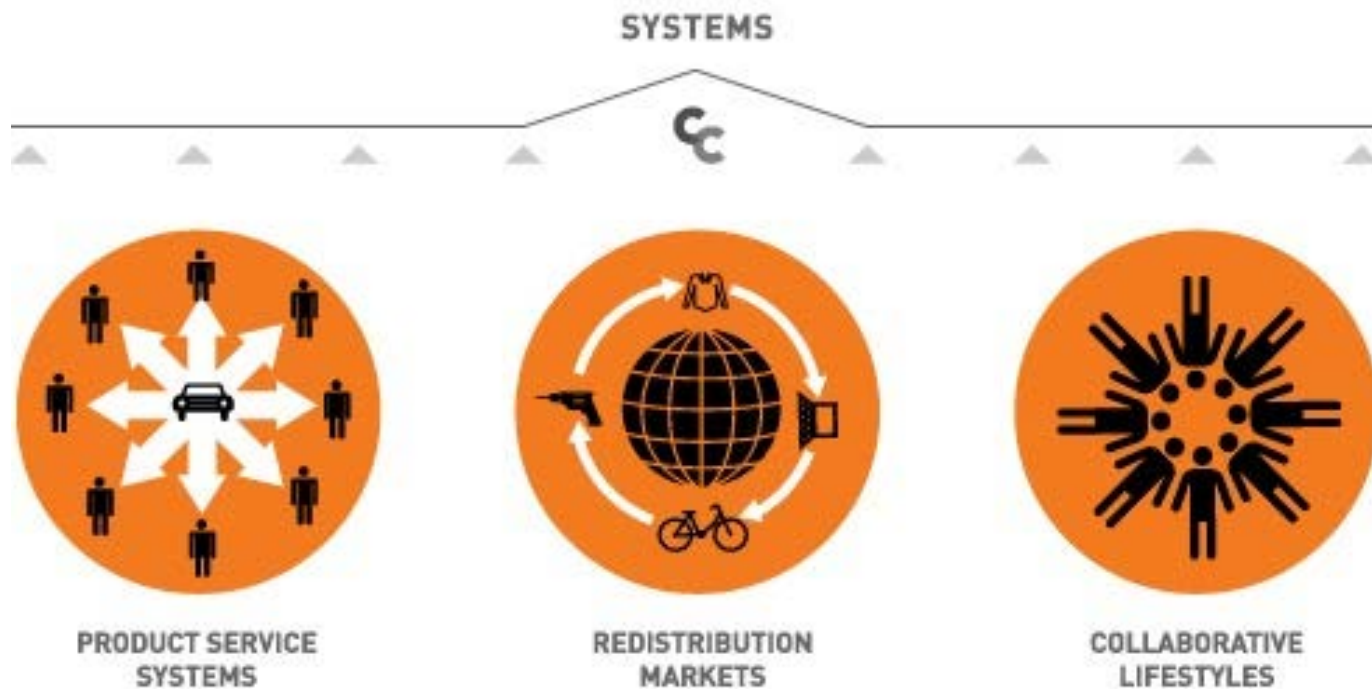
# Puma's InCycle



# Circular Economy New Business Models






## Collaborative Consumption



# Collaborative Consumption

Ownership → Access

	THE PROBLEM	THE SOLUTION
<b>PRODUCT SERVICE SYSTEMS</b>	Half of U.S. households own power drills, but most of them are used for only 6 to 13 minutes during their lifetime.	 Zilok.com offers peer-to-peer daily rental of tools, camcorders, and other goods.
<b>REDISTRIBUTION MARKETS</b>	Americans discard 7 million tons of cardboard annually.	 UsedCardboardBoxes.com “rescues” and resells boxes to movers.
<b>COLLABORATIVE LIFESTYLES</b>	Millions of houses and spare rooms around the world are sitting empty and have “idling capacity.”	 Airbnb.com, the “Match.com for travel,” allows anyone from private residents to commercial property owners to rent out their extra space.

# Circular Economy Enabling Technologies



## Digital

- 🔄 Mobile

- 🔄 Cloud

- 🔄 Track and Trace

- 🔄 Big Data

## Bio-Based (Carbohydrate Economy)

- 🔄 Renewable

- 🔄 Carbon Capture

## Life and Material Science

- 🔄 Recovery Technologies

# Circular Economy Policy Frameworks



## EU Smart Regulation

- 🔄 Incentives: Waste Reduction, Separation and Collection
- 🔄 Modernizing Waste Policy
- 🔄 Chemicals Policy

## Increase Recycling Rates/Targets

- 🔄 Harmonizing Categories of Materials and Metrics
- 🔄 Understanding and Measuring Access
- 🔄 Landfill Bans

## Finance and Risk Management Tools

- 🔄 Strong Policy Creates a Predictable Environment for Investment

# Circular Economy Financial Frameworks



- 🔄 Finance and Risk Management tools
- 🔄 Green Bonds
- 🔄 Impact Investors (Returns and Impact)
- 🔄 Public-Private Partnerships
- 🔄 Eliminate Environmentally Harmful Subsidies
- 🔄 Feed-in-Tariffs
- 🔄 Creating Markets for Secondary Raw Materials

# Project MainStream

“Project MainStream is: expected to gather commitment from key stakeholders, establish proof of concept of the economic and environmental benefits of a circular economy through targeted programs, and reach tipping points that will accelerate the transition, thereby establishing the circular economy as the new norm.”

Launched by The Ellen MacArthur Foundation, in collaboration with the World Economic Forum and McKinsey & Company.

3 new projects announced January 23<sup>rd</sup> 2015 in Davos



# Project MainStream

## 1. Global Plastic Packaging Roadmap

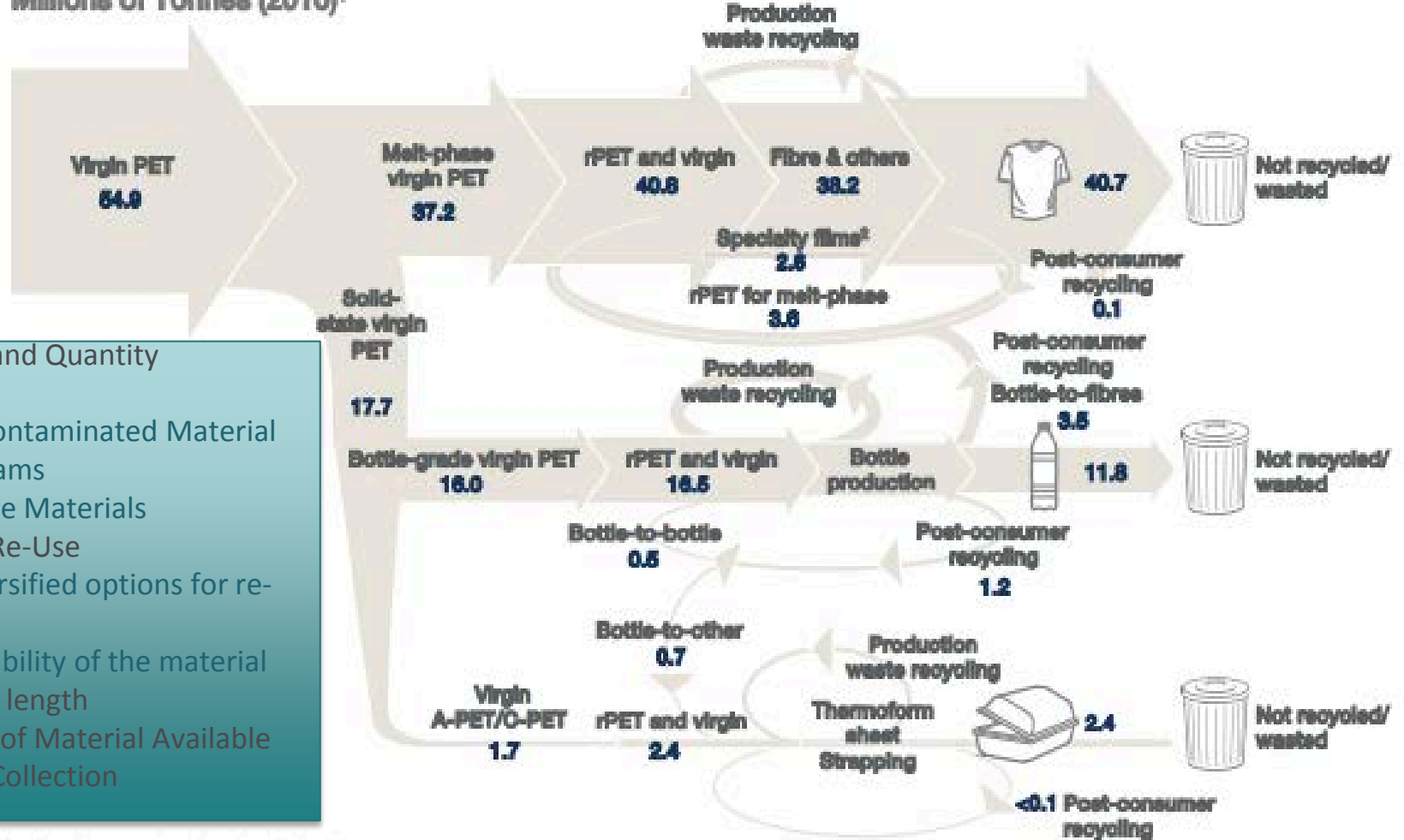
This will aim to close the gap between the design of packaging and the design of municipal systems. The goal is to create an authoritative global plastic packaging roadmap to transition to effective packaging solutions based on re-use and recycling of plastics

## 2. Eco-Design (starting with paper)

The eco-design project aims to start with paper, one of the most well-recycled products in the world, to achieve proof of concept on establishing eco-design rules with approaches that can be replicated in other industries.

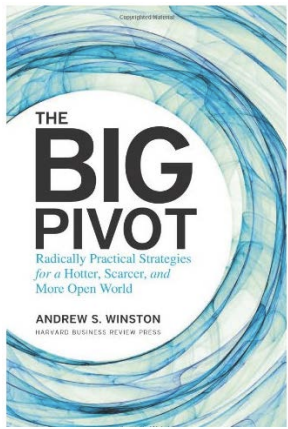
Figure 20: Global PET flow—a large amount of PET collected from bottles is used in other applications

Millions of Tonnes (2010)<sup>1</sup>

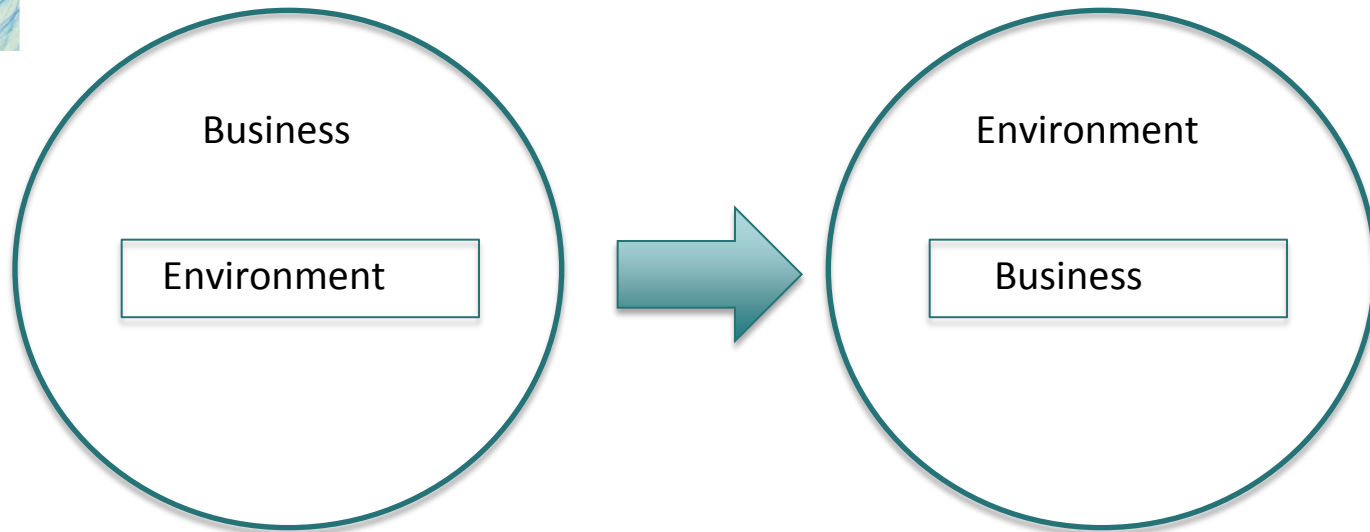


- Quality and Quantity
- Purity
- ↳ Uncontaminated Material Streams
- ↳ Single Materials
- Ease of Re-Use
- ↳ Diversified options for re-use
- ↳ Durability of the material
- Lifecycle length
- Amount of Material Available
- Ease of Collection

<sup>1</sup> PET is grouped into 3 main categories based on IV grade  
<sup>2</sup> Some specialty films (X-ray films) have a dedicated reverse supply chain



# The Big Pivot



Andrew Winston's interpretation of Ray Anderson's comments