

US EPA ARCHIVE DOCUMENT

# Waste and Recycling Perspectives on the Product to Service Transition

**THINK GREEN.®**

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# Personal Profile

## 1990-2001, Tellus Institute

- Senior Scientist, Business and Sustainability and Sustainable Community Groups
- Select clients: EPA, United Nations, various state agencies, businesses ,and municipalities

## 2001-2003, Tuck School of Business at Dartmouth

- Founded Tuck Business and Sustainability Initiative

## 2003-2008, WM-Upstream

- Senior Director, Directed Zero Waste Enterprise and Supply Chain Service Group
- Select customers: diversified manufacturers, food & beverage companies, cruise lines, pipelines, petrochemical, automotive

## 2009-Present, WM-Greenopolis

- Managing Director, Greenopolis
- Select customers: Pepsico, Nestle Waters, Elmers, Whole Foods



# WM Overview



\*As of September 2010



Products in the ever changing waste stream provide important perspectives and insight on the product to service transition...



# Film has become more compact and efficient



**1920's**

*Cellulose Acetate Film*

1,000 photos  
over 16 lbs.



**1990's**

*35 mm Film*

1,000 photos  
2 lbs.



**2009**

*Memory Card*

1,000 photos  
1 gram

# Print media can now be accessed online



## Newspapers

10 annual subscriptions  
Nearly 4 tons



## Books

3,500 books  
nearly 2 tons



## One Kindle DX

3,500 books  
1.2 lbs.

# Music storage devices have been reduced by up to 99.9%



**1920's**

467 records  
over 200 lbs.

**1970's**

350 cassettes  
over 70 lbs.

**1990's**

259 CD's  
over 9 lbs.

**2009**

1 iPod  
0.34 lbs.



# Perspectives - Waste or Resource?

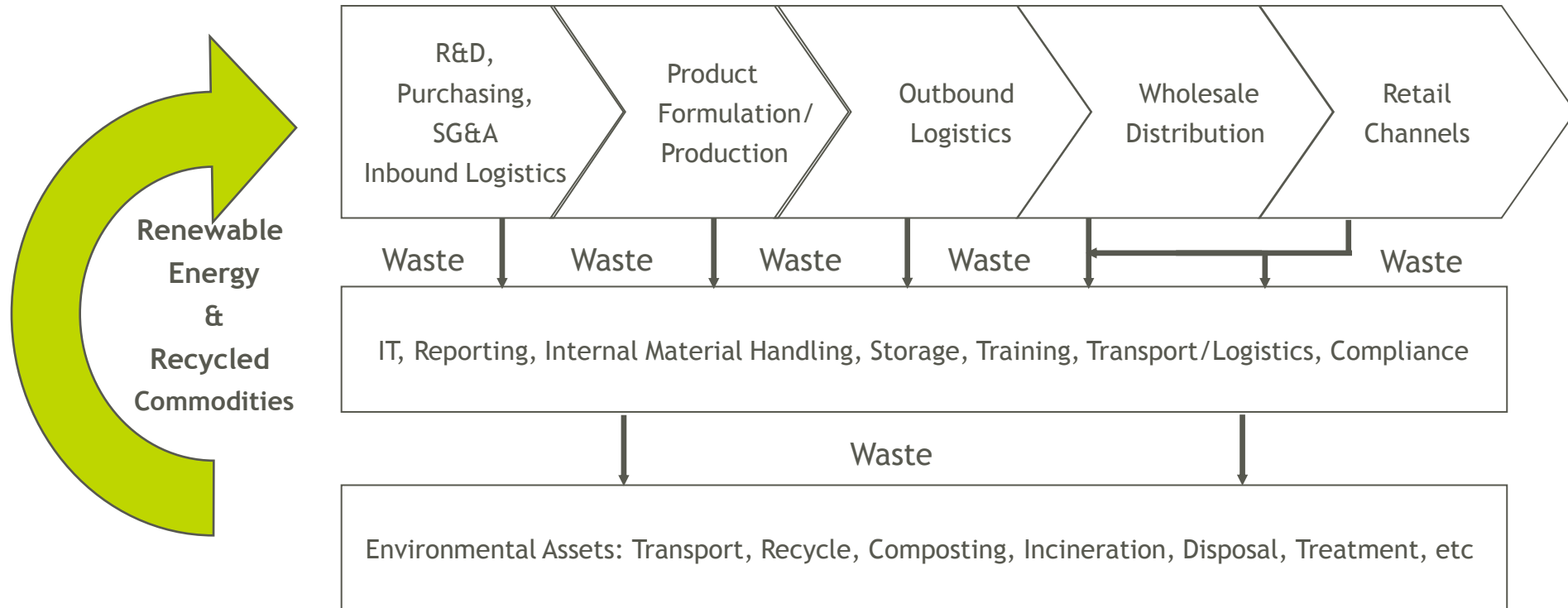
## Pessimist:

- Waste is a problem to be managed...
  - Design flaw
  - Indication of inefficiency
  - Entropy

## Optimist:

- There are no waste streams, only wasted resources...
  - Materials
  - Energy
  - Food

# Industrial Supply Chains are Complicated but Contained - Making the Product to Service Transition Easier to Activate



Service providers: internal staff; brokers; consultants; logistics; maintenance and janitorial contractors; industrial cleaning, waste & recycling companies

Fragmented offering - many players, duplicative processes and procedures, high transaction costs

# Resource Management (RM) and the Product to Service Transition in the Waste Industry

RM is an alternative to waste management that focuses on resource efficiency through:

- Design/process improvements
- Technological innovations
- Behavior and consumption patterns
- Holistic “systems” management
- Aligned incentives in contracts/agreements between waste generators and service providers

Resource Management can be activated at every stage of the supply chain - industrial, retail, consumer products, and consumer



# Features of Traditional Waste vs. RM Services

## Traditional Services

Multiple contracts for hauling, recycle, disposal, etc

Minimal client interaction

Large capital requirements

Volume based compensation



## RM Services

**Contract management, innovation, reporting**

**Active strategic partnership**

**Large knowledge & information requirements**

**Gain sharing based on volume/cost reduction**

# RM Service Enhancement Illustration

Service Before RM:  
9 Contracts

- Hauling (2 contracts)
- Disposal (4 contracts)
- Consulting Studies (1 contract)
- Waste Pad Assistance (1 contract)
- Sludge Clean Out (1 contract)

Service After RM:  
1 Contract, 30% Savings

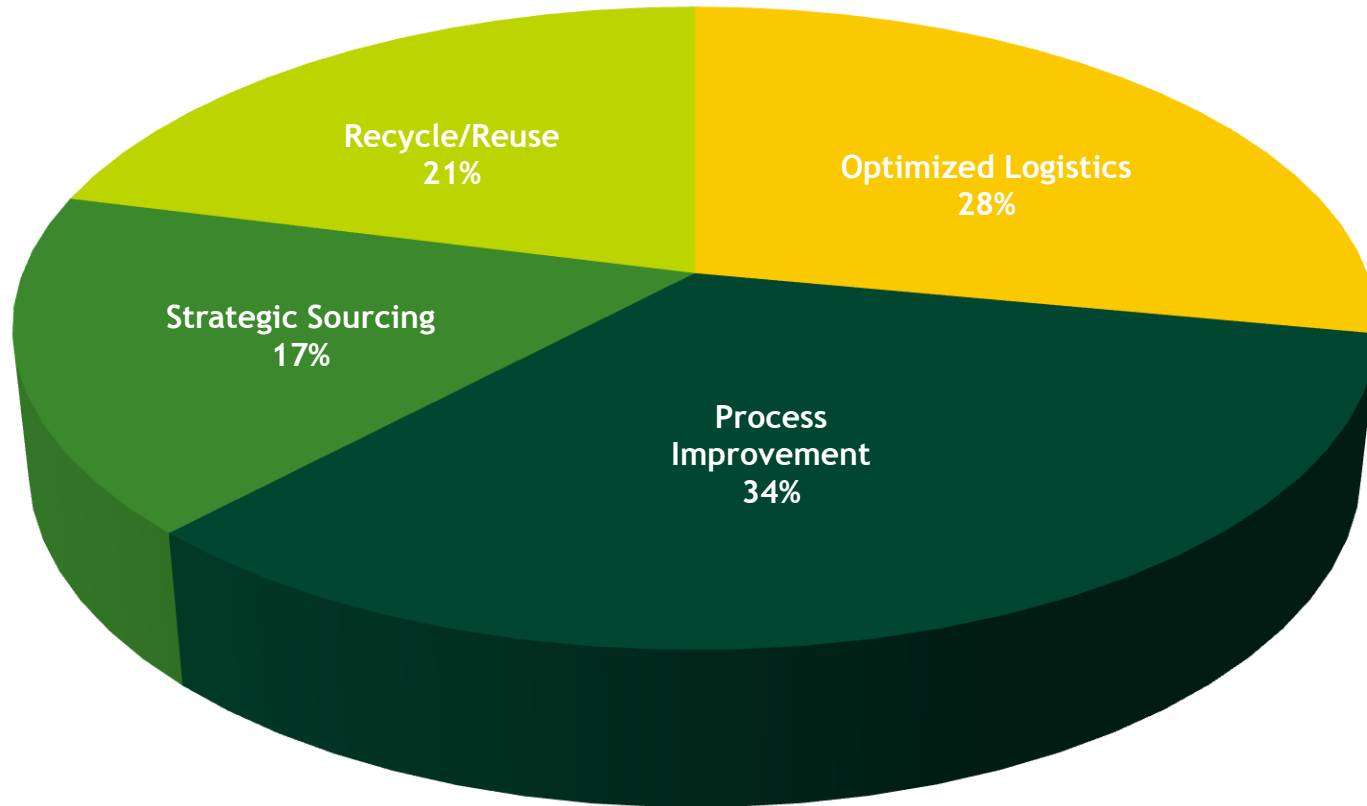
- Hauling
- Disposal
- Waste Pad Management
- Comprehensive Studies
- Two On Site RM Managers \*
- Off Site Support \*
- Comprehensive Recycling \*
- Environmental Reports\*
- Waste Tracking Systems\*
- Staff Training \*

\* = *new service*



# Sources of Value in the Product to Service Transition

## Based on WM Sustainability Services - 2010



Note: Represents \$15MM at over 100 locations serviced by WM Sustainability Services.



# Industrial RM Demand Limitations

- RM demand is most developed in large industries
  - Organizations with supply chain orientation that demand more strategic value adding activities from vendors
- Demand for RM is limited
  - Disposal costs are cheap relative to other expenses
  - Purchasing managers (gatekeepers) influence buy decision
  - RM marketing effort must focus on higher levels in the buying chain

# Industrial RM Market Drivers

- Provides means for diversifying service
  - Point of entry for marketing other services
- Results in longer term relationships/partnerships
  - Customer perception shifts from vendor cost focus, to value-added strategic service orientation
- Substantial untapped opportunities
  - RM increases the value of service contracts by at least 25%

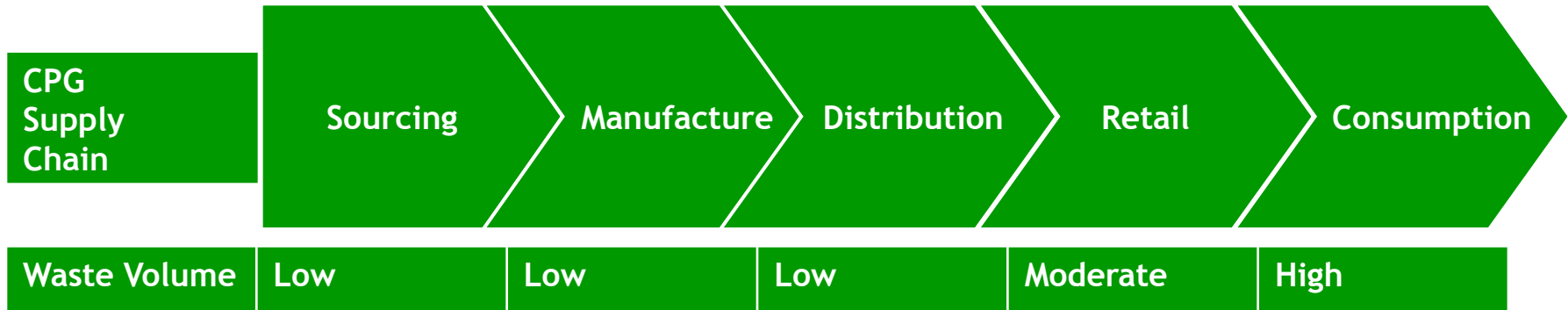




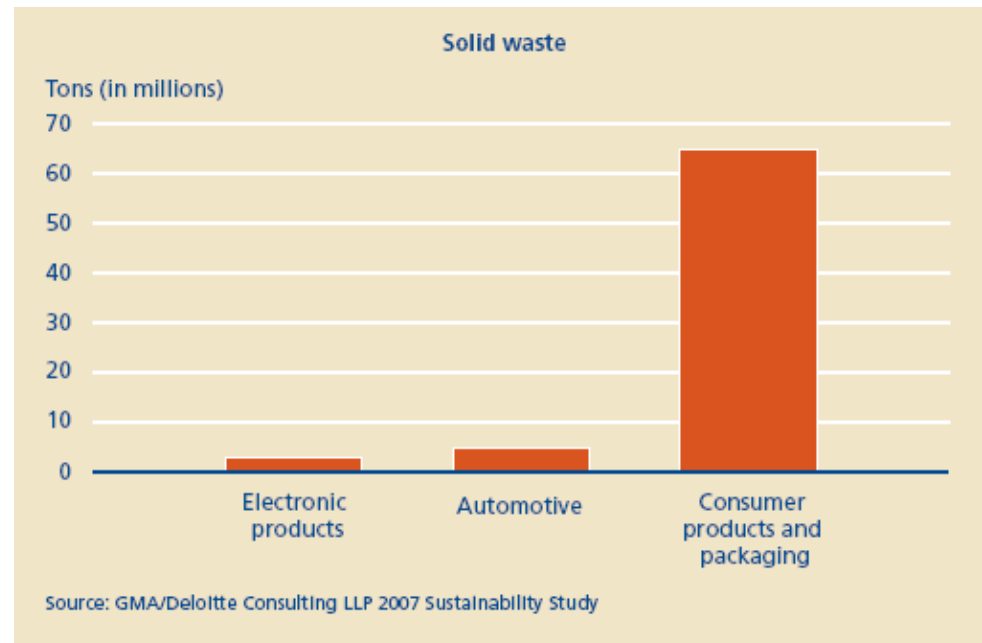
# Cracking the Consumer Code on the product to service transition...



# The Product to Service transition in consumer supply chains is complex...based on interactions between industry, distributors, retailers, and consumers



- Beyond demand, consumers have limited ability to affect product to service transitions
- Consumer product waste is generally passed on to consumers in the form of packages and/or obsolete products
- Recycling provides a basis for understanding the complexity of product to service transitions in consumer supply chains



# Recycling trends that illuminate the product to service transition in the consumer segment

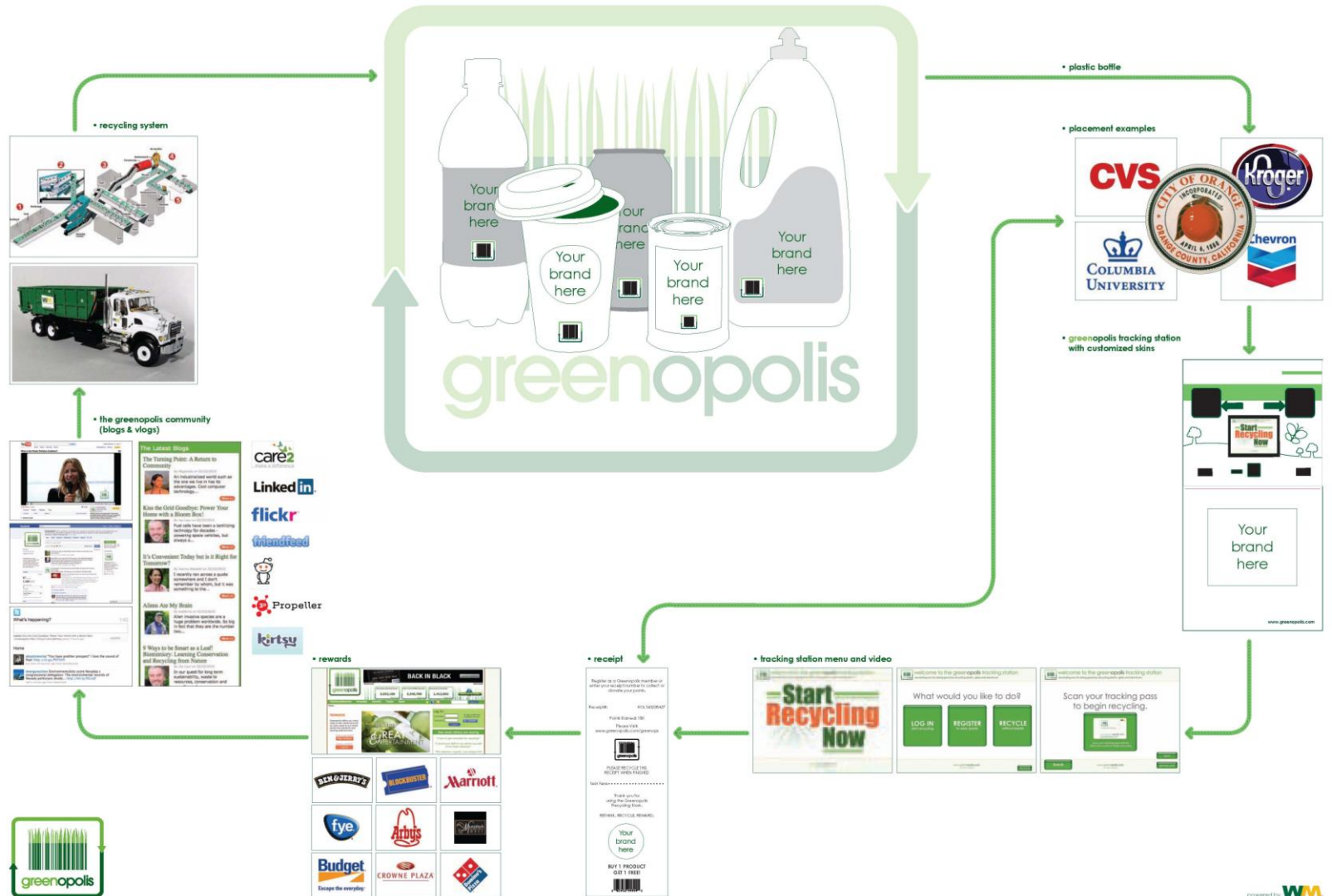
- Recycling is widely embraced and understood by people around the world...over 70% of consumers have a positive association with recycling...
- Recycling processing technology is generally well developed, yet capture and collection remains challenging...
  - Participation is generally low;
  - Capture infrastructure is limited - e.g., 12% of out of home locations have ready access to recycling
- Recycling is generally positioned as a commodity oriented activity in which “stuff” goes away with the trash...
- While, there is growing interest in extended product/producer responsibility, neither companies nor agencies have any idea what happens to products after consumption...

# Questions

- What if products and packages could be tracked into “best and highest use” at point of disposal?
- If recycling were a brand and consumer oriented activity instead of commodity oriented activity, would it be more valuable?

# Product to Service Transitions in Consumer Segments Require Creating Connective Infrastructure that Brings Value to Multiple Stakeholders

## The greenopolis Cycle



## Closing Thoughts . . .

Waste and recycling systems provide important perspective on product to service transitions.

Resource Management (RM) represents another way to activate the product to service transition.

- Large industries have made significant progress...
- Commercial and retail is in process...
- Consumer driven RM has the potential to fundamentally change the game...but requires substantial investment and a “rethink” of existing consumer supply chains

Process improvements, innovation, behavioral change, systems thinking, and aligned incentives are key to success in all segments...

There are no waste streams, only wasted resources...





rethink.  
recycle.  
reward.  
closing  
the loop  
together.

