

- Downcycling – requires more energy + materials, reduces quality of source material

- % of MSW recycled = recycling rate
- Differences in recycling rates tied to waste management policies + cultural diff

### **Economics of Recycling:**

- Different materials have different processes for recycling due to removal of foreign materials and sorting
- Materials like plastics use a variety of polymers or additives to provide specific characteristics like color and stability
- Extensive processing required for plastics recycling has kept cost of recycled plastic as much as 40% above cost of virgin plastic
- Collection systems, behavior of consumers, + product design play roles
- Feasibility of recycling also depends on market for recyclables
- Design for recovery guidelines establish standards for manufacture of materials and products to facilitate efficient recycling

### **Advantages & Limitations of Recycling:**

- Recycling reduces environmental effects of landfills and incineration and reduces effects of extraction and consumption of raw materials
- Processing recyclables saves energy and reduces contributions to GHG
- Important that recycled products are safe + do not contain hazardous materials
- Market for recyclables fluctuates, some recycled materials end up in landfills

### **Can We Recycle Human Waste?**

- Sewage treatment separates out biosolids from disinfected wastewater
- If biosolids are suitably treated to eliminate disease-causing microbes, they can be converted to fertilizer

### **Challenge of Handling Biodegradable Plastics:**

- Biodegradable plastics are typically made from polylactic acid (PLA) resin
- PLA plastics made from plant material like corn and can be assimilated back into environment but hard to compost because do not degrade as quickly
- PET plastics are petroleum-based + must be removed from food waste recycling
- Difficult to sort PLA from PET which is a problem for recycling systems

### **How does our culture affect consumption:**

- Consumption: ways we use and dispose of material things
  - Plays an important cultural role in our lives
  - Individual consumption patterns have functions beyond survival + comfort
- Conspicuous consumption happens when people purchase goods to project particular identities or images within society
- Businesses that sell material goods strive to raise profits by boosting consumption, since economists use sales as indicators of economic growth

### **Can We Reduce Our Waste?**

- Large-volume purchasers are influencing suppliers to reduce waste by redesigning packaging as a condition of sale