

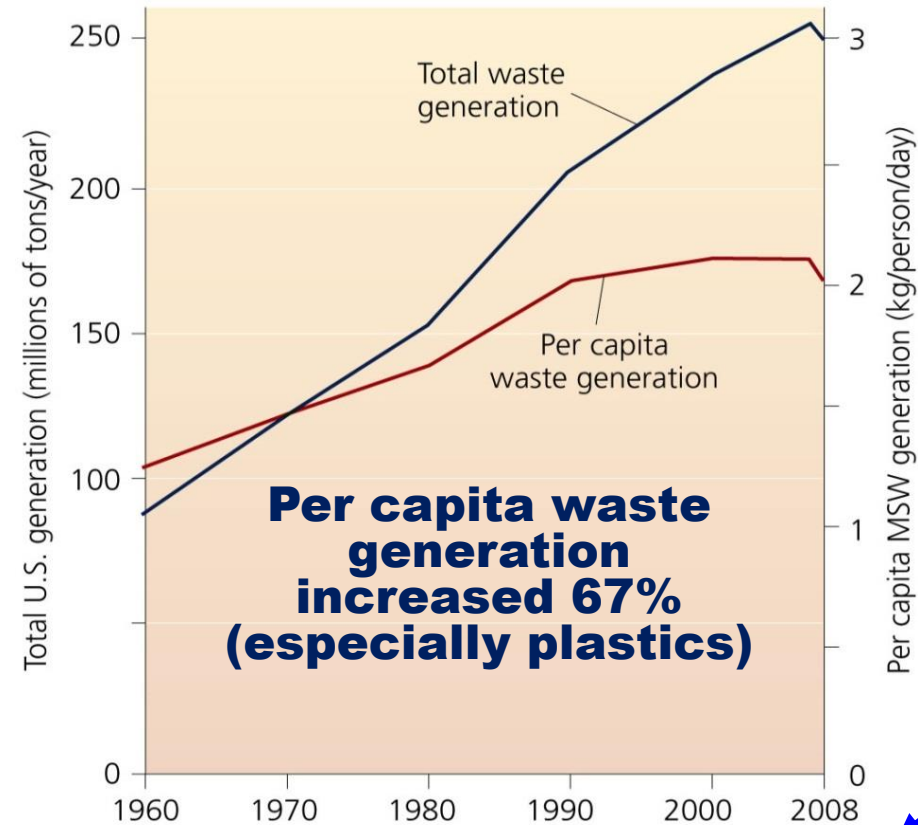
**Chapter 17:
Managing Our
Waste
&
Sustainability
Solutions
(all chapters)**

**The 5 R's
Refuse
Reduce
Reuse
Recycle
Rot**

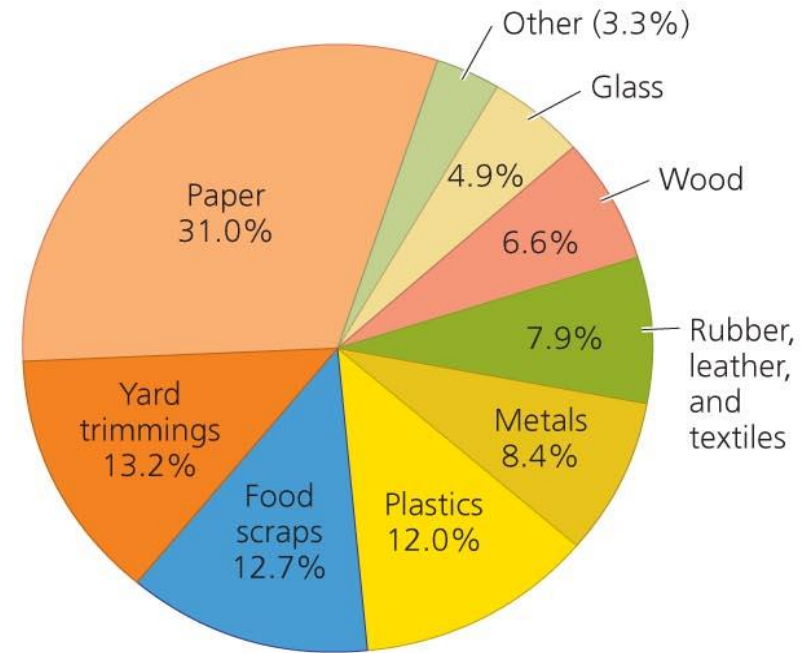


Each American Produces 1 Billion Pounds of trash/year

- Since 1960, waste generation increased by **2.8 times**



Since 1951, we've produced 6.3 billion tons of plastic
91% has NOT been recycled



(a) Before recycling and composting

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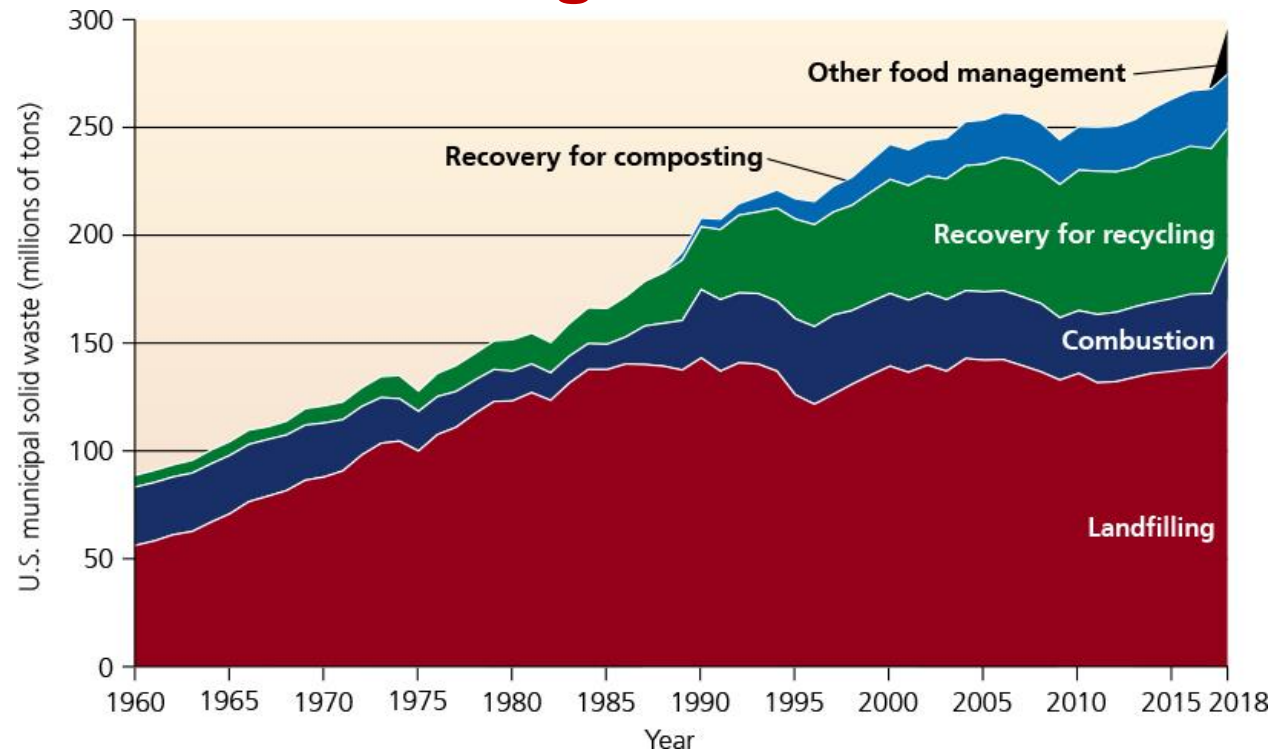
But, isn't recycling working to reduce this waste from going to landfills?

Consumption Leads to Waste

- **Waste generation has more than tripled in USA since 1960, due to increased consumption & excess packaging in products**
 - **Avg. American generates 2.2 kg (4.9 lb) of trash per day, significantly more than people in most other countries**
 - **As of 2018, 50% of USA waste goes to landfills**

– **The other 50% is incinerated, recycled, or composted**

As recycling & composting grew in USA, the proportion of waste going to landfills declined



An aerial photograph of a large landfill site. In the foreground, several trucks are dumping waste into a large pile. The ground is covered in dirt and scattered trash. In the background, there are green hills and a residential area with houses. The sky is overcast.

We have created a global crisis of stuff

**If we don't recycle, biodigest, or compost it,
it ends up here in the landfill**

**Prima Deshecha
Canyon Landfill in San Juan
Capistrano (699 acres of landfill disposal, receives
up to 4,000 tons of waste per day)**

World Plastic Recycling is in Chaos

- Recycling of metals & glass are working fairly well, but not **PLASTICS**
- For decades, China recycled 50% of world waste, 70% of U.S. plastic & 95% from Europe
- January 2018, China banned 99% of plastic & 66% of mixed paper imports for recycling
 - Only 9% of plastic is recycled & 12% is burned, the rest is buried in landfills or dumped
- Many cities have closed recycling facilities & recyclables now are landfilled, burned, or sent to other nations that cannot recycle the waste
 - **BUT, many cities are now developing local, recycling processing centers & infrastructure**



Manila, Philippines



187 nations
ratified, USA
is not one of
them

**Without China,
nations exported
plastic waste to
developing nations,
often illegally**

**In May 2019, UN's
Basel Convention
made it illegal for
Countries to export
plastic waste
without permission**

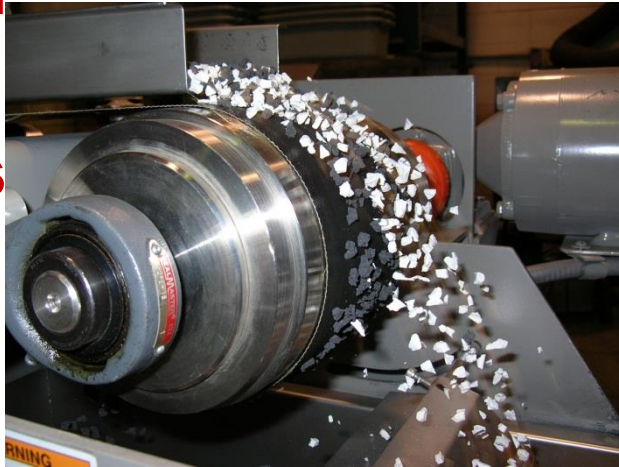


Thailand



Recycling works if citizens participate

- **Step 1: collection (curbside or designated locations) & processing of recyclable materials**
 - **Recovery facilities: workers & machines sort, clean, shred, & prepare items**
- **Step 2: using recyclables to produce new goods**
- **Step 3: consumers buy goods made from recycled materials**
 - **Must occur if recycling is to function**
 - **As markets expand, prices will fall**



1
Collection and processing
of recyclable materials
by municipalities
and businesses



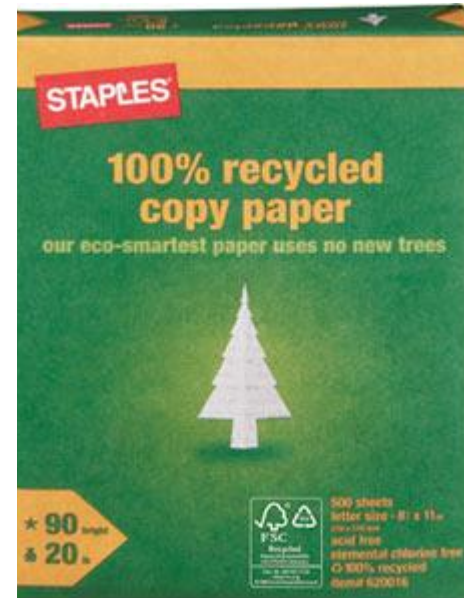
3
Consumer
purchase of products
made from recycled
materials

2
Use of recyclables
by industry to
manufacture
new products

Technology makes sorting easier

**Metals separated using magnets,
spectrometers separate plastic by
polymer type (#1-7)**

Buying recycled products makes it work



Recycled clothing & bottles



Recycled yoga mats



Reduce: Prevent waste in the first place

- **Avoids costs of disposal & recycling**
- **Helps conserve resources, minimizes pollution, saves consumers & businesses \$\$**
- **Most waste consists of materials used to package goods**

–Buy products with minimal packaging, made with recycled or recyclable materials

–Bring your own bags

–Reduce size or weight of goods & materials (remove water from laundry soap)



Your metallized chip bag is not recyclable



What Can You Do?

1. **RECYCLE!** California recycling is one of the best in the world, but we ALL must reduce plastic use:
2. **Carry reusable bottle, bag, fork/spoon**
3. **Refuse plastic straws, lids, utensils**
4. **Choose products in glass or metal & recycle them**
5. **Eat in restaurants instead of taking to go**
6. **Buy products with less packaging (no bagged apples, tea in plastic packets)**
7. **Use razors with replaceable blades**
8. **Use toothbrush with replaceable head or bamboo ones**
9. **Buy concentrated cleaners (smaller package)**
10. **Don't buy bottled water. Filter your own**
11. **Buy fewer, higher quality clothes that last longer or shop second hand**



We are in Charge

If we love our planet, we need to protect it!

Don't expect someone else to do the hard work

Vote, speak truth to power, & never be afraid to share your knowledge. It truly is powerful!



Carry your Hydroflask



Volunteer for habitat restoration



Use Reusable bags

**Now, Get
Out There &
See It!**



Living Sustainably

- **1. Reduce energy use:**

- **Use mass transit, carpool, don't idle car, inflate tires, make your next car fuel efficient!**
- **Unplug, turn down thermostat, use cold water**
- **Support use of renewable energy**

- **2. Save water:**

- **Don't run water & take shorter showers, install faucet aerators, low-flow shower heads & toilets; switch to drip irrigation & xeric landscaping**

- **3. Reduce, re-use, & recycle:**

- **Bring your own bags & skip take-out, eat leftovers, donate unwanted items, use recycling bins, buy recycled products, buy products with less packaging**
- **Recycle e-waste responsibly**

Living Sustainably

4. Eat smart: Buy locally grown & organic foods

- Eat lower on the food chain (less beef); purchase ethically raised meat, dairy, & eggs; buy sustainably harvested & farmed seafood; avoid products containing hormones & antibiotics**

5. Reduce chemical use: Use natural fertilizers & avoid pesticides in home gardens

- Avoid bottled water & filter water at home, buy BPA-free containers & canned food**
- Use products made of natural materials & fragrances, make your own cleaning supplies (vinegar, lemon juice, baking soda, dish soap is all you need)**
- Reduce use of plastics – use glass, metal, etc.**

6. Educate yourself & others: knowledge is power

Recycling Resources

• Textile recycling (clothes, towels...)

- Goodwill Industries (if they can't be sold in their shops, textiles are sold to salvage brokers abroad)



• Shoe recycling

- Nike Grind (worn athletic shoes made into sports courts & fields, drop off at Nike stores)



- <http://www.nikereuseashoe.com/>

- Soles 4 Souls (worn, but usable shoes donated to people in need)

SOLES 4 SOULS
WEARING OUT POVERTY™

- <https://soles4souls.org/>

- Shopping guide for home tissue (t.p., paper towels, etc.): Recycled content, toxicity:

- <http://www.nrdc.org/land/forests/gtissue.asp>

E-Waste Recycling

- **Most of our home garbage & recycling companies offer free, curbside e-waste pick-up**

- **Goodwill Industries (accepts electronics at all donation centers)**

- <http://www.ocgoodwill.org/>

- **Best Buy (recycles electronics – look under “support & services” tab):**

- <https://www.bestbuy.com/site/services/recycling/pcmcat149900050025.c?id=pcmcat149900050025>

- **e-stewards (certifies globally responsible recyclers):**

- <http://e-stewards.org/>

- **e-recycling of California (local**

- <http://www.erecyclingofcalifornia.com>



**Act as if what
you do makes a
difference.**

It does.

~William James



**Unless someone like you
cares a whole awful lot,
nothing is going to
get better.**

It's not

~Dr. Suess