

Current Topic Study Guide

Waste to Resources

Introduction:

Georgia is one of the most densely populated states in the United States, with just over 10.2 million people calling it home. Like many populous areas, Georgia is tasked with servicing its residents while also sustaining its natural resources across diverse geographic regions.

As a by-product of its robust population, the state is faced with the responsibility of managing different types of waste generated by individuals, households, communities, businesses, manufacturing, agriculture, and industry. Waste of all kinds has the potential to affect the environment and our natural resources. From the water we drink to the land we live on, our decisions about how to manage waste impact our communities and the world around us. How can we make responsible choices about our waste? How can we manage our growth in a way that is sustainable? How can we turn our waste into resources?

These challenges make Georgia well positioned to enact innovative and creative solutions for managing its wastes regeneratively, turning them into resources through restoration, repurposing, and recycling for the benefit of the natural environment and future generations.

Students will learn the concepts of different waste streams and the impacts of waste generation and disposal on natural resources and society. Students will also learn effective ways to manage waste regeneratively.

Recycling in Georgia: In today's disposable economy, it often seems easier to throw away old products and just buy brand new ones. Because everything we need can be produced so quickly and cheaply, we tend to ignore the repercussions of our waste stream.

The Recycling industry is big business in Georgia, yet every year, Georgians collectively pay more than \$100 million to bury raw materials worth nearly \$300 million to manufacturers based right here in our state. Those manufacturing feedstocks are also known as recyclable material, and about 40 percent of what Georgians set out as 'garbage' could have been recycled.

Recycling doesn't take a lot of extra time or effort. What it takes to recycle is a change in mindset toward the value of our natural resources, and easy access to information on how to conserve these resources. Here are a few tips on how to "rethink" the notion of recycling.

Rethink: Recycle Metal and Glass

Facts

In the U.S. we use 100 million tin and steel cans every day and throw out enough iron and steel to supply all the nation's automakers on a continuous basis.

Recycling aluminum saves 95 percent of the energy needed to produce new aluminum from raw materials and the energy saved from recycling one ton of aluminum is equal to the amount of electricity the average home uses over 10 years. That means you can make 20 cans out of recycled material with the same amount of energy it takes to make one can.

Recycling metal saves enough energy to run a computer for 3 hours or a TV for 2 hours. A glass bottle takes around 1 million years to break down at the landfill, but it is easily recycled in most states (EPA 2013). Recycled glass can be transformed into new glass containers using 30 percent less energy than using virgin materials.

Strategies

- Education is key. Communities may have recycling in place, but people need to know what they can recycle, where to recycle, and why it's important. Contact your local recycling center or waste management department for more information about recycling in your community.
- States with bottle deposit laws have 35-40 percent less litter by volume. Become active and promote bottle deposit laws.
- Local businesses may be more likely to use metal in their production processes if they know more about it. Be a proactive citizen and encourage business owners to establish recycling bins. They may be able to sell the material to end-users or reduce their waste collection costs.

Rethink: Recycle Plastics

Facts

If every American household recycled just one out of every ten High-Density Polyethylene (HDPE) bottles they used, 200 million pounds of HDPE would not go to landfills each year. Recycling plastic saves twice as much energy as burning it in an incinerator.

Check your local recycling laws to see what type of plastics can be recycled. It doesn't help to put the wrong type in your recycling bin since it costs the recycling program time and energy to remove non-recyclable items.

Strategies

- Become an active green consumer. Talk with your local recycling companies or local government to learn what they can and cannot recycle. It is often about the quantity of material they collect. For example, if not enough people recycle polypropylene (#5) plastics used for butter and yogurt, then there isn't a market for resale.

- Promote programs that recycle plastics. Check online at www.earth911.com to see where you can recycle. There are also local drop-offs as well as some mail-in programs, like Gimme 5 (www.preserveproducts.com or **1-888-354-7296**).
- Organize a community recycling day for materials that can't be recycled or are hard to recycle, such as expanded polystyrene (Styrofoam), tires, and electronics. Hold it when there is a community event, such as a public concert, race, parade, or festival.
- Participate in AmericaRecyclesDay which is usually in November.

Rethink: Recycle Electronics

Facts

The U.S. generates 3.4 million tons of e-waste each year. 17 percent of TVs, 40 percent of computers and 11 percent of mobile devices are recycled. The rest are trashed, potentially leaking harmful chemicals like lead, mercury or hexavalent chromium into the environment.

This is a growing problem as more households update to the latest consumer electronics. According to a U.S. Census report, in 2013 83.8 percent of U.S. households reported owning a computer. U.S. households continue to average more than two televisions per household. Consumer electronics contain valuable metals that can be recycled.

Strategies

- Recycle or donate your old cell phone. Most stores that sell cell phones will take them back, yet less than 20 percent of mobile devices are recycled. Also, numerous charities take cell phones. Recycling 1 million cell phones saves enough energy to power over 185 million households with electricity for one year.
- When you upgrade your television or computer, donate the old ones; If they are broken or very old, recycle. Find a recycling location near you at www.earth911.com.

- When buying new electronics, think green. The Consumer Electronics Association provides information on how to "green" your electronics purchases. Please visit www.digitaltips.org/green/default.asp or contact: Consumer Electronics Association; 1919 South Eads Street; Arlington, VA 22202.
- Buy only what you need.

Rethink: Recycle Paper

Facts

- Most of Georgia's 21 paper mills use recycled content; nine use 100 percent recycled materials.
- 11 percent of the total household garbage Georgians dispose of is cardboard.
- 28 percent of Georgia's household waste sent to landfills could have been recycled. That's nearly 2 million tons.

Strategies

- When you have to print, print double-sided and recycle any paper waste you have.
- Use reusable dish ware and flatware.
- Switch from paper towels and napkins to reusable cloth ones.
- Breakdown cardboard boxes for recycling.
- Remember, you can recycle junk mail.

Georgia Recycling Facts

- Georgia has the second largest market for recycled material of any state.
- Dalton is the carpet capitol of the world; and much of the carpet is made from recycled materials.
- Recycling is good for Georgia's economy. Georgia mills using recycled content employ 7,000 people.

Waste as a Raw Material – Recycling Instead of Disposing

Products have a second life: after their initial use, we must regard them as a valuable resource. Waste should be recycled, not dumped in landfills or otherwise disposed of in nature. In the long term, end-of-life products and unavoidable waste are likely to become the main alternative raw materials for the plastics industry.

Plastics have changed the world for the better. Today, their benefits are so widespread that they are often overseen. Two examples: Plastics make vehicles safer and considerably lighter, which means they consume less fuel. Plastics insulate buildings - one of the major sources of CO₂ - against heat and cold. As a result of their versatility, polymer materials have been produced in large quantities. Between 1950 and 2015 alone, the industry produced 8.3 billion tons of plastic worldwide, as a [scientific publication](#) by the university of Georgia shows.

But there's a dark side to the human use of this material: waste has become an environmental threat, due to a lack of proper disposal and recycling. Almost five billion tons of plastic waste ended up in landfills or in the environment between 1950 and 2015. According to [BBC research](#), another 1.3 billion tons could pollute our environment by 2040 if fundamental action is not taken.

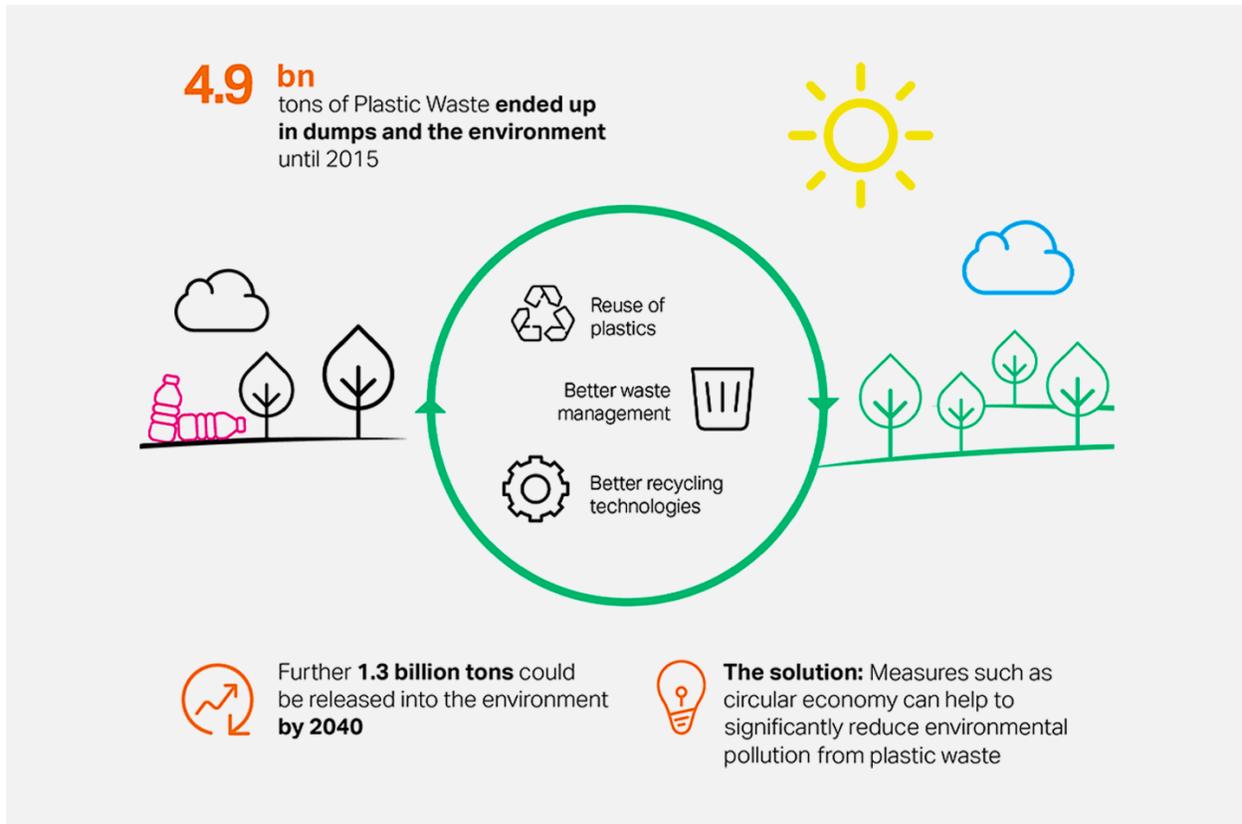
Although our waste problem is generated on land, it has an enormous impact on the oceans. Each year, on average, [eleven million tons of plastic waste](#) end up in our oceans. Here too, the trend is rising.

Valuable resource

More than 40 percent of plastics are produced, used once and thrown away. However, used plastic is a valuable [source of raw materials](#). It is therefore extremely important to systematically and effectively reuse and recycle waste. But this still happens too rarely. The [OECD](#) estimates that only 14 to 18 percent of global waste in 2014 was recycled.

Circular Economy for a cleaner environment

The solution of the future is the circular economy, which relies on state-of-the-art recycling technologies, better waste management and alternative packaging solutions. By embracing circular economy as a guiding principle, we could significantly reduce the amount of plastic waste that is released into the environment each year.



Study Materials

Study the following information provided on the Georgia Recycling Coalition’s website: <https://www.georgiarecycles.org/>

- Be familiar with all information under the “About Recycling” tab including the information found under “General Information” by clicking the “Recycle to Make a Difference Georgia Fact Card”.
- Watch the following videos:
<https://www.georgiarecycles.org/programs/made-in-georgia/>

[Recycling Glass - Georgia Jobs And Businesses Depend On It - YouTube](#)

<https://www.georgiarecycles.org/tools-resources/myecovideos/single-stream-recycling/>

Read and be familiar with the information in the following article:

<https://www.atlantamagazine.com/news-culture-articles/recyclables-surprise-you/>

Students should have general knowledge of what a CHaRM facility is, the types of materials they accept, and the various ways in which recycled items are reused.

The **C**enter for **H**ard to **R**ecycle **M**aterials (CHaRM) facility is a permanent drop-off facility that aims to improve our environmental health by encouraging reuse and diverting thousands of pounds of household hazardous waste, bulky trash and other hard-to-recycle items from Georgia landfills and water systems. CHaRM also accepts sorted single-stream items for those who do not have access. All operations expenses for CHaRM are paid from grants, donations and recycling fees. Visit: <https://livethrive.org/charm/what-happens-to-your-waste/> to learn how recycled items become new products.

What is E-Scrap or E-Waste and how is it recycled?

Electronics waste, commonly known as **e**-scrap or **e**-waste, is the trash we generate from surplus, broken, and obsolete electronic devices. **E**-waste or electronics **recycling** is the process of recovering material from old devices to use in new products.

Most **electronic waste** goes through a **recycling** system called a WEEE (**Waste** Electrical and **Electronic** Equipment), which not only recycles 95-98%, by weight, of all **ewaste** passed through it, but ensures that any data left on hard drives and memories are thoroughly destroyed too.

What are the types of electronic waste?

Types of e - Waste

- Large household appliances (refrigerators/freezers, washing machines, dishwashers)
- Small household appliances (toasters, coffee makers, irons, hairdryers)
- Information technology (IT) and telecommunications equipment (personal computers, telephones, mobile phones, laptops, printers, scanners, photocopiers)
- [How e-Waste Is Recycled | GreenShortz - Bing video](#)