



Combating Climate Change by Composting

with New Jersey Composting Council

When it comes to climate change, emissions from energy and transportation are considered the prime culprits. However, wasted food and organics are often overlooked as significant contributors and present an important opportunity to reduce greenhouse gases and mitigate climate change impacts. Here's a brief explanation of the cause-effect of food waste on climate change and how reducing the amount of food wasted and increasing composting can help.

1. How does food waste contribute to these greenhouse gases?

The third-largest source of human-related methane emissions in the US is municipal solid waste (MSW) landfills, where wasted food and other organics decomposing in a low-oxygen environment produce methane gas (CH₄), which is 30 times more powerful than CO₂ at returning heat to the earth. Wasted food also contributes greenhouse gases (GHG) all along the production and distribution chain, from resources it took to grow, transport, cool, and cook food. [Project Drawdown](#) notes that reducing wasted food could eliminate more than 70 billion tons of GHG.

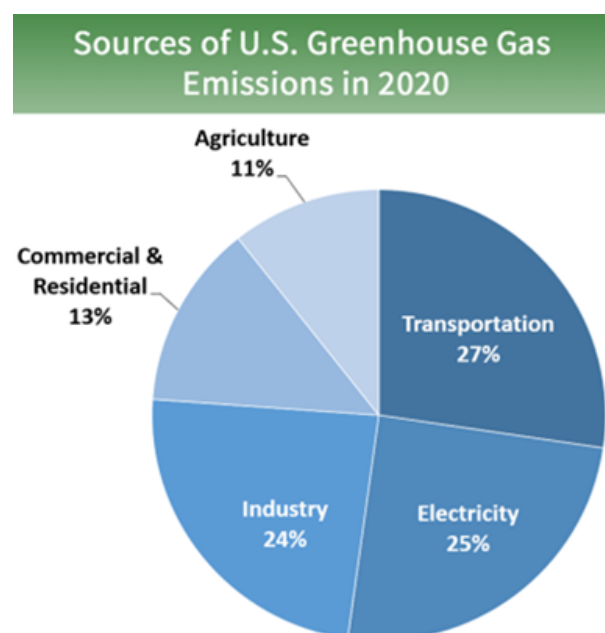


Photo 1: EPA Sources of [Greenhouse Gas Emissions](#)

2. How does diverting food waste from disposal help reduce greenhouse gases?

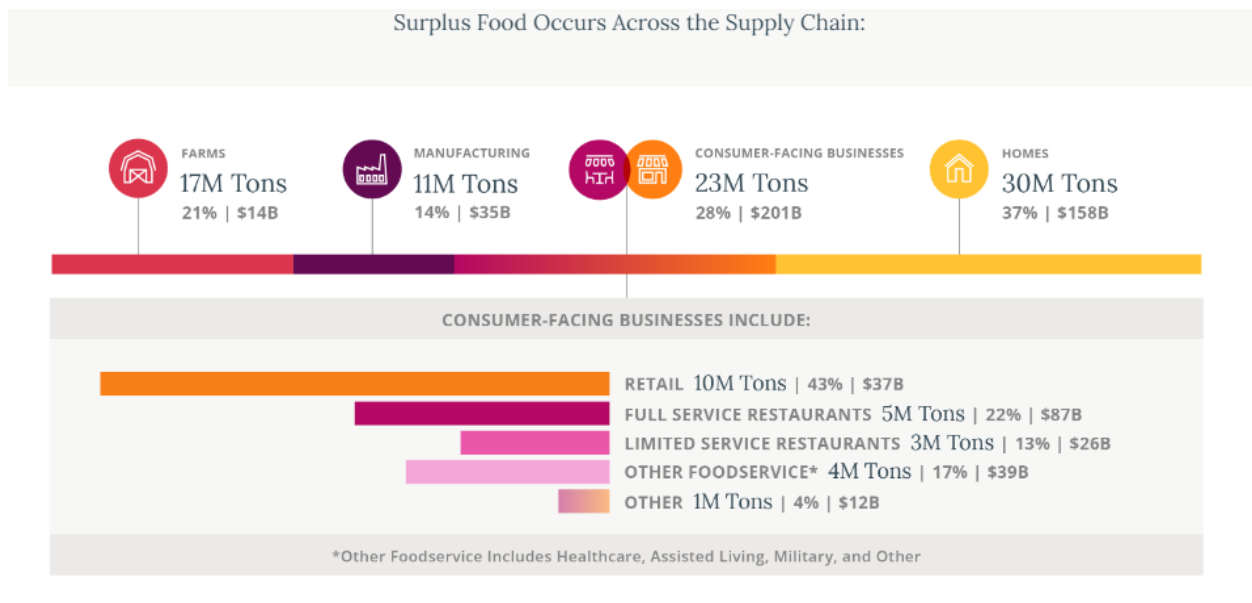
As noted by the U.S. Environmental Protection Agency (EPA), over 30% of the waste disposed of across the United States is organic matter such as food scraps and yard waste ([EPA](#)). In the landfill, organic matter releases methane as it decomposes. Although aerobic or oxygen-rich composting releases small amounts of biogenic carbon dioxide (CO₂), it does not create methane. Therefore, we can reduce methane emissions by taking organic matter, especially food waste, out of the solid waste disposal stream.

3. What is the scale of the Wasted Food Problem in the US?



According to an estimate from the [Food and Agriculture Organization \(FAO\) of the United Nations](#), if wasted food was a country, it would be the third highest emitter of GHG after the US and China. One-third of greenhouse emissions globally come from agriculture, and 30% of the food we produce is wasted – about 1.8 billion metric tons a year. If we stopped wasting food globally, we would eliminate 8% of our total GHG emissions. The [United Nations Environment Programme](#) estimates that globally there are 931 million metric tons of food waste generated each year.

[EPA](#) estimates that each year, nationwide food waste contributes 170 million metric tons of carbon dioxide equivalent. That's comparable to the annual CO2 emissions of 42 coal-fired power plants. In the U.S., 54 million tons of wasted food are generated every year ([ReFED](#)). We can all make a difference in reducing wasted food. As shown below, surplus food occurs across the supply chain ([ReFED](#)). Surplus food (or wasted food) occurs on farms, manufacturing facilities, consumer-facing businesses, and in homes. Approximately 37% of surplus food across the US occurs in our own homes.



Source: ReFED

Photo 2: ReFED of Breakdown of [Surplus across the Supply Chain](#)

4. What is NJ's impact on wasted food?

New Jersey acknowledges the importance of [climate change mitigation](#). According to the New Jersey Department of Environmental Protection (NJ DEP), "[Global Warming Response Act 80 x 50 Report](#)," waste management is the largest source of non-energy GHG emissions in the state, at 5.3 million metric tons of CO2 equivalent. This includes GHG emissions from MSW processed and landfilled in New Jersey, and the emissions from MSW landfilled out-of-state. Some NJ cities send their trash as far away as Ohio, causing more GHG emissions during transit.



NJ DEP estimates that 1.3 million tons of food waste were disposed of in 2017 in New Jersey and roughly 325 lbs. of food waste were generated per person that year ([NJ DEP](#)). Preventing wasted food, redistributing edible surplus to nearby food banks and food rescue organizations, and diverting wasted food to local processing facilities would mitigate the GHG emissions from the state's landfills.

Preliminary statistics, compiled under a NJ DEP grant to Rutgers, The State University of New Jersey, and Stockton University, show that New Jersey encompasses approximately 18,000 restaurants, 6,000 supermarkets, 3,000 institutions, and 2,000 food and beverage manufacturers. This preliminary data highlights the opportunity to address wasted food by implementing or expanding prevention, food recovery, composting, or anaerobic digestion programs at almost 30,000 consumer-facing businesses.

5. How do we reduce wasted food?

Fortunately, there are many ways to reduce, recover, and recycle wasted food. The [Institute for Local Self Reliance's Food Waste Hierarchy](#) outlines these opportunities, from preventing food waste, feeding our communities with the edible surplus, feeding livestock, and composting inedible scraps to create beneficial, nutrient-rich soil amendments.

Prevention solutions — which yield the most potent economic value per ton and net environmental benefit — are generally low-cost and focus on changing behaviors in homes and businesses. Homes represent a significant part of the food waste challenge, contributing to about 37% of the US surplus ([ReFED](#)). Fortunately, consumers have many options to combat wasted food. One example is understanding food expiration labels; these dates often have little to do with food safety. Proper storage of food can extend its lifetime and reduce spoilage. Planning meals, buying what you need, and making a shopping list can all make a big difference, helping to reduce waste and save money.

Businesses (farms, manufacturing, consumer-facing businesses, and institutions) are also significant contributors. These businesses contribute to 63% of the US surplus wasted. Consumer-facing businesses include retail grocers, restaurants, healthcare, etc. Businesses can prevent wasted food by offering smaller portion sizes to customers, upcycling (e.g., making soup stock or pesto), redistributing safe, edible surplus to local food rescue organizations, and connecting with solutions providers such as animal feed operations, composting sites, and anaerobic digestion facilities to put inedible waste to higher and more beneficial uses. Food processing can lead to waste due to the byproducts such as the peels, stems, and bones that are not utilized in the main product.

6. Can incineration serve a role in food waste disposal?

Although incineration can be a management option for some solid waste, food waste is high in moisture which decreases incinerator efficiency and increases emissions, making it an undesirable option. Additionally, we lose the opportunity to recover a resource and utilize compost as a soil amendment, which has been shown to have many benefits, including sequestering carbon.



7. How does using finished compost help fight climate change?

Using compost helps to restore soil health by feeding soil microorganisms that store carbon. This provides many environmental advantages including cooling the atmosphere, retaining water, improving plant production, reducing soil erosion, and reducing the need for chemical fertilizers and pesticides.

Compost can be used to grow food and enhance lawns and landscapes, as a compost tea, as part of the natural infrastructure (such as rain gardens, and in traditional infrastructure projects, such as building roads), and in nature-based engineering projects. Utilizing compost along our shorelines can also encourage native vegetation and improve ecosystems, reducing erosion and helping wildlife.

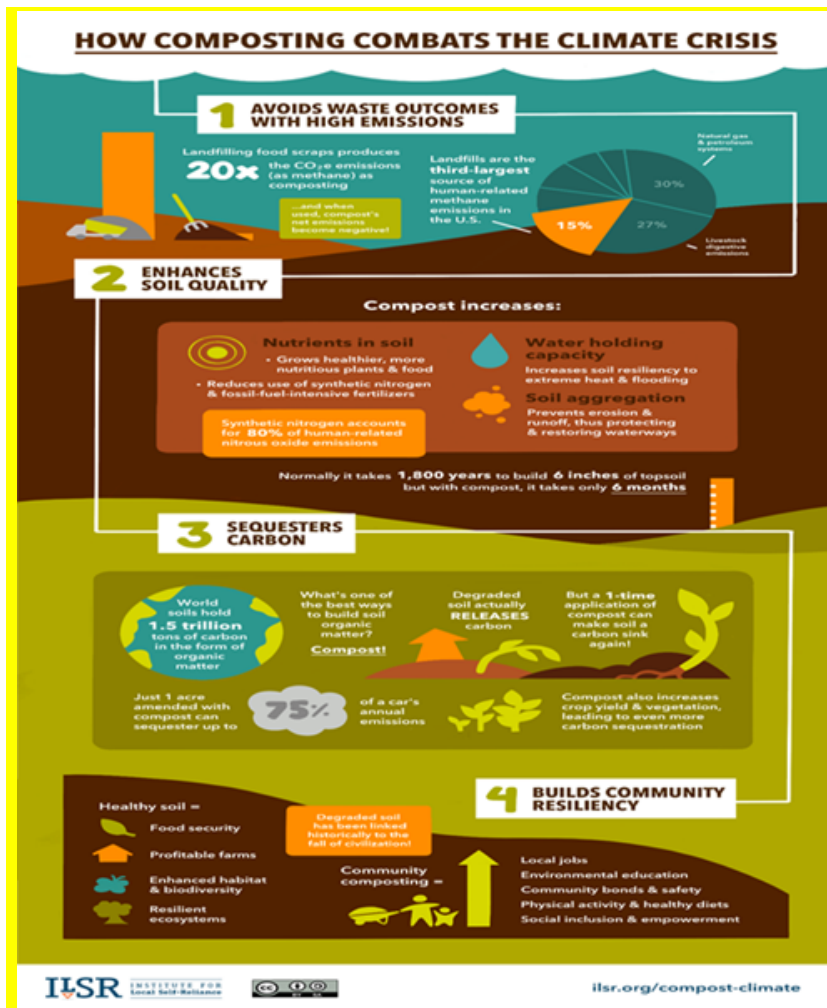


Photo 2: Institute for Local Self-Reliance Infographic: [How Composting Combats the Climate Crisis](https://ilsr.org/compost-climate)