



## The Challenge of Food Waste Recycling

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The food waste recycling sector is facing significant challenges, with approximately one-third of all food produced globally going to waste. Efforts to address this issue include ambitious goals, such as the U.S. commitment to reduce food waste by 50 percent by 2030. While food waste reduction is becoming a priority, logistical and systemic challenges are hindering advancements in the waste and recycling industries.

To properly depict the current environment of food waste recycling, it is important to acknowledge that food waste doesn't only exist at the consumer level, it is generated throughout the supply chain.

Christophe Girardier, chief executive officer of Glimpact, said the most effective strategies for reducing food waste require action being taken before food is in the hands of the consumer. As it stands, there are three major avenues to reduce food waste – prevent food loss, reuse viable organic food waste, and composting.

“Preventing food loss needs to happen as early as the farm stage in order to manage our growing food waste issue. First and foremost, overproduction of food looms large as a driving force behind food loss. The food and agriculture industry faces many tangible logistical challenges that have made overproduction the norm, however curtailing this practice is the most streamlined way to reduce the environmental footprint of this industry,” Girardier said.

Reusing organic food waste effectively across the food supply chain requires identifying material streams and establishing clear redirection pathways for food and scraps currently being discarded. For example, unharvested produce as well as food that does not meet aesthetic retail standards remain nutritious and edible.

“With the right infrastructure, this food can be redirected to feed the population, whether in schools, food banks, or otherwise; however, currently this edible food largely ends up as waste,” Girardier said.

The last strategy for reducing food waste is composting. As Girardier explained, for composting to function as intended, it needs to be accessible, and for consumers and businesses who compost, they must be educated on how to do so properly so that non-compostable items that can potentially ruin whole batches of compost are not mistakenly disposed of this way.

“Since neither infrastructure nor education exist at scale, there is very little composting actually happening in the U.S. In the year 2019, the EPA estimated that the U.S. produced 106.3 million tons of

food waste, of this, it was reported that less than 5 percent of this food waste was composted,” Girardier said.

Luann Meyer is an associate with Barton & Loguidice’s Rochester, New York office. She has over 20 years of experience in the solid waste industry with a key emphasis on solid waste planning projects. According to Meyer, food waste recycling is still emerging in most communities as the waste stream still contains up to 30 percent of food scraps that are discarded in either a landfill or a waste-to-energy facility.

“However, given many climate initiatives, food waste is becoming a target material to remove from the waste stream and finding a better alternative than disposal,” Meyer said. “In general, many practices for managing food waste are not new and innovative, as composting and food waste prevention have been around for decades, if not longer. If you think back a generation or two, your grandmother tried to utilize as much food as possible and let nothing go to waste. If there was food waste, then it was often thrown in the backyard composting pile or fed to the chickens, or maybe it was thrown into the Sunday stew. These practices can still be done to minimize food waste.”

As Meyer pointed out, municipalities are also trying to provide residents with options for diverting food waste, such as drop-off food scrap or curbside collection programs. Some municipalities run these programs while others promote the private sector doing these collection programs.

“These supplemental programs often cost more – the municipalities either foot the bill or charge residents an added fee,” Meyer said.

### **Tech Advancements in Food Waste**

Some newer technologies allow on-site dehydration of food scraps that can ultimately be used as a soil amendment once cured. These can be as small as a coffee maker on residents’ countertops or larger equipment may be placed at a transfer station where residents can drop off their food scraps.

“Some technologies can separate packaging materials from the food waste to be managed in an anaerobic digester or composting,” Meyer said. “Depackaging is usually used on commercial waste for products that are off-spec or expired and cannot be sold or donated.”

Meyer points to aerated static pile composting, as another technology that the waste and recycling industry is seeing more of, as it is more efficient than regular windrow composting, which involves creating long, narrow rows of organic material, which is then turned regularly for aeration and distribution of moisture and heat.

To reduce waste from spoiled foods, the USDA has begun to focus on advanced packaging methods such as modified atmosphere packaging in an effort to extend product shelf life as long as possible. “This has promise but is not implemented at a scale that has made any meaningful change in the environmental impact of the food and agricultural industry,” Girardier said.

Aidan Charron, associate director of Global Earth Day said that innovations in food waste technology are evolving but face barriers such as plastic packaging.

“Industrial composting and anaerobic digestion are among the most promising solutions, converting organic waste into bioenergy and fertilizers. However, challenges persist with materials like plastics, which contain over 16,000 chemicals and hinder recycling efficiency,” Charron said.

Charron added that the industry grapples with structural disconnections between food production and consumption. A major issue is the prevalence of single-use plastic packaging, which is often non-recyclable and complicates food waste management.

“Additionally, global supply chains and consumer habits exacerbate waste,” Charron said. “Many parts of the world lack accessible systems for separating food waste from other trash, further impeding recycling efforts.”

### **Challenges Aplenty**

Meyer pointed to two significant challenges facing the food waste recycling industry: Getting the public to separate their food scraps from the rest of the waste and contamination. As Meyer explained, many residents find separating their food scraps from their regular trash and recycling inconvenient.

“Plain and simple, it is gross and adds another step to people’s already hectic lives. We are still struggling to get people to recycle their bottles, jugs, jars, and tubs, and now we are asking them to separate their food waste, too,” Meyer said. “Not everyone is willing to take on this task in their homes. But when they do, we run into the second challenge of contamination.”

Specifically, food waste often comes with packaging or other materials that cannot be composted or recycled. It depends on the technology through which food waste is processed, which can make or break the cycle.

“For instance, if bones are placed in food waste that is being composted, there is a good chance they will not break down; however, bones can often be broken down in a scenario where the food waste goes to an anaerobic digester,” Meyer said. “Packaging, especially plastic packaging, usually is a contaminant that does not break down in the recycling process and stays in the final product, which no one ever wants in their garden compost.”

Of course, one massive challenge facing the food waste industry is food overproduction. According to Girardier, roughly 30 percent of the food produced worldwide becomes food waste. “If we ever want to seriously reduce the food waste we generate, it is clear that the normalized practice of food overproduction needs to be curtailed,” Girardier said.

For solutions in food waste reduction that exist at present, such as redirection of edible food that is currently wasted, redirection of viable food scraps and composting, another key challenge is economic.

“These practices are not always financially viable, and to achieve the food waste reduction potential that we have today, there needs to be investment and leadership from government,” Girardier said. “With government investing in these existing technologies and practices and laying out the guidelines, it would enable consumers and businesses alike to participate in meaningful reduction of their food waste.”

### **Legislative Initiatives**

Several states are enacting food waste diversion laws, while on the federal level, they are encouraging food donation and food waste prevention in their literature. The EPA recently issued an updated food waste hierarchy (Wasted Food Scale | US EPA) that was developed based on the findings of its 2023 report *From Field to Bin: The Environmental Impacts of U.S. Food Waste Management Pathways* (From Field to Bin: The Environmental Impacts of U.S. Food Waste Management Pathways | US EPA).

New York State also passed the Food Donation and Food Scraps Recycling Law, which took effect on January 1, 2022. This law requires businesses and institutions that generate an average of two tons of wasted food per week to either donate or send the waste for recycling.

“New York State is looking to increase the amount diverted further through an amendment to this law that would ratchet the generation amount down to one ton of wasted food per week,” Meyer said. “This law passed the Senate and Assembly this past year but has yet to be signed by the Governor. Other states like California and Massachusetts have similar laws.”

At the state level, measures like Maryland’s Solid Waste Management bill mandate the separation and composting of food waste to enhance agricultural soil health.

“Federally, the current administration has set ambitious targets, but the effectiveness of these initiatives depends on implementation and funding,” Charron said. “Organic waste bans in some states are pushing large producers, such as supermarkets and restaurants, toward composting and anaerobic digestion as alternatives to landfilling.”

### **Outlook on the Food Waste Space**

Looking ahead, Meyer anticipates seeing more communities offering drop-off collection points or curbside collection for food scraps. Even though this costs more, some communities are willing to pay the price to remove food scraps from the disposal stream.

“Education will continue to be a key component of reducing food waste and increasing food waste recycling,” Meyer said. “I would like to see more emphasis on preventing food waste before it becomes a waste versus managing the food as a waste material.”

Charron added that future efforts will likely focus on reducing food waste at its source, supported by both education and technological innovation. Schools and community programs will emphasize the origins and destinations of food waste.

“Investment in industrial and personal composting systems will grow, alongside funding mechanisms to support circular economy practices. Greater adoption of seasonal and localized crop systems may further reduce waste,” Charron said. “Additionally, advances in food waste recycling will emphasize circularity, such as replenishing soil nutrients through composting and waste-to-energy technologies.”