Mission Multiplier: The Cross-Cutting Case for Food Waste Reduction

August 2026

Public Health

Public health and the food system are inseparable—what the system grows, moves, and wastes shapes whether people can eat well, how disease spreads, and what nearby communities breathe. The inefficiency that leaves nearly a third of food uneaten generates public health harms, from diet-related illness and antimicrobial resistance to the air pollution concentrated around disposal sites. And those burdens fall hardest on the communities least resourced to absorb them, making food waste reduction an important public health intervention.

Report Authors: Brianna Bradley, ReFED & Sharyn Murray, ReFED

About the Series

Whether your mission is centered on economic resilience, public health, climate, biodiversity, or other areas, progress often depends on addressing challenges that cut across systems—especially those shaped by the global food system. As that system has grown more complex to feed a growing population, it has placed mounting pressure on natural resources and supply chains, with cascading effects on people, animals, the planet, and the economy.

One of the most overlooked ways to ease that pressure—and to accelerate progress across multiple goals at once—is addressing the roughly one-third of all food produced but never sold or eaten. Wasted food also means wasted land, water, labor, dollars, energy, and nutrients, with ripple effects across affordability, animal welfare, biodiversity, public health, regenerative agriculture, and super-pollutant mitigation. Yet food systems receive under 3% of public climate finance—and less than 6% of that targets loss and waste. For philanthropic funders and mission-driven investors, that gap is a powerful, underutilized opportunity to advance core priorities faster while relieving pressure on the broader food system.

Read all the reports here

Introduction

Food waste sits at the intersection of three distinct but interconnected public health challenges: food and nutrition security, antimicrobial resistance, and community air quality. In each case, the food system's failure to move food efficiently from production to consumption—and its reliance on overproduction to compensate for that inefficiency—generates harms that fall disproportionately on the most vulnerable communities.

Nutrition

Food and nutrition security extends beyond simply having enough to eat. It encompasses consistent access to food that is nutritious, affordable, safe, and culturally relevant—the foundation for preventing diet-related illness and supporting healthy, active lives. Yet 48 million Americans, about 1 in 7 people, experienced food insecurity in 2024, even as 70 million tons of food surplus went to waste across the same system. Globally, the Food and Agriculture Organization estimates over 673 million people are food insecure. The foods most likely to go uneaten are also among the most nutritionally valuable: fruits, vegetables, dairy, eggs, and other animal-source foods. These losses are largely preventable through stronger food rescue infrastructure and better supply chain management.

Antimicrobial resistance

Concentrated animal agriculture relies heavily on antibiotic use to sustain high-density production conditions, consuming an estimated 70% of antibiotics globally. This routine use is a key driver of antimicrobial-resistant bacteria, which the WHO has called one of the top global public health threats, and the World Bank estimates antimicrobial resistance could result in $1 trillion in additional healthcare costs by 2050.

Food waste compounds this risk at both ends of the supply chain. Upstream, overproduction of animal products contributes to the concentrated agricultural conditions in which antimicrobial-resistant bacteria develop. Downstream, when animal products and produce enter landfills, open dumps, or agricultural runoff systems, they create high-risk decomposition environments for drug-resistant bacteria to grow and spread. Reducing food waste addresses both ends at once: less overproduction pressure on animal agriculture upstream, and less organic material entering high-risk waste environments downstream.

Community air quality

The disposal of food waste, and the concentrated animal agriculture that overproduction sustains, also generate significant air quality burdens that fall disproportionately on the communities least resourced to respond. On the animal agriculture side, facilities producing harmful emissions—volatile organic compounds, ammonia, nitrogen, carbon dioxide, methane, particulate matter, and heavy metals—are disproportionately sited near low-income communities and communities of color in the U.S. This exposes residents to pollutants linked to higher rates of asthma, respiratory illness, headaches, and cardiovascular mortality, with growing evidence of neurological and mood impacts as well.

On the disposal side, food is the single largest component of municipal solid waste in the U.S., accounting for 24% of landfilled material and 22% of incinerated material. While diverting food to composting is a more circular and sustainable outcome than landfilling, large-scale composting, landfill sites, and incineration generate the same class of harmful pollutants as concentrated animal agriculture, with real health consequences (See Super Pollutants report for more information). Resulting effects range from mild irritation to cancer and mortality, compounding existing environmental health vulnerabilities in communities that are often the least resourced to respond, such as Kettleman City, CA, and the Westport neighborhood in south Baltimore, MD. As with antimicrobial resistance risk, reducing food waste addresses both sources: easing overproduction pressure on animal agriculture upstream, and reducing the volume of organic material entering disposal infrastructure downstream.

Taken together, this demonstrates that addressing food waste is not only an environmental or efficiency challenge, but also a public health and environmental justice imperative, with direct implications for nutrition security, antimicrobial resistance, and the air quality of communities already carrying more than their share of the food system's environmental and health costs.

How Food Waste Reduction Enables Impact

Food waste reduction creates three enabling conditions critical to improving public health outcomes and reducing harm across food and nutrition security, antimicrobial resistance, and community air quality.

Recovering nutritious food to close the gap between surplus and need

The foods most likely to be wasted—fruits, vegetables, dairy, and eggs—are also among the most nutritionally valuable. Strengthening food rescue infrastructure and improving supply chain management upstream of retail are the most direct levers for recovering this surplus before it's lost. Redirecting preventable food loss through food rescue organizations transforms systemic inefficiency into nutritional impact, particularly for the tens of millions of Americans and hundreds of millions of people globally for whom diet-related illness risk is highest. "Food as medicine" initiatives, which use medically tailored meals and produce prescriptions to address diet-related chronic disease, represent an emerging and high-leverage application of recovered food, connecting food waste reduction directly to clinical health outcomes.

Community-level food literacy is an equally important lever. Helping lower-income households, in particular, store, use, and cook perishables before they're lost reduces household food waste while directly supporting nutrition security. With federal nutrition education programs like SNAP-Ed being eliminated, this represents both a growing gap and a timely opportunity for philanthropic investment.

Reducing the conditions that accelerate antimicrobial resistance

Wasting fewer animal products reduces the justification for the scale of concentrated industrial animal agriculture and the routine antibiotic use it depends on. This is a longer-term pathway that operates alongside a more immediate one: diverting food waste from landfills, open dumps, and agricultural runoff systems, thereby reducing organic material in the high-risk decomposition environments where drug-resistant bacteria develop and spread. Organic waste diversion policies, local composting infrastructure, and anaerobic digestion all contribute to this outcome, keeping food out of the conditions that accelerate antimicrobial resistance while also recovering value from unavoidable waste.

Upcycling food waste into non-animal proteins—through plant-based processing, fermentation, or cultivated meat—offers an additional pathway, simultaneously reducing food loss and relieving pressure on the intensive animal agriculture that drives antimicrobial resistance.

Protecting community exposure to air pollutants

Food waste prevention is a high-leverage intervention for communities already bearing a disproportionate share of the burden of food disposal. Every ton of food kept out of the waste stream is a ton that never enters the landfills, incinerators, or composting facilities that generate air quality harms. Where prevention isn't possible, diverting organic waste to well-managed composting or anaerobic digestion—paired with biofilter and emissions capture technologies—can reduce pollutant concentration at disposal sites.

Funding Food Waste Reduction to Support Public Health

For funders focused on public health, food waste reduction offers capital deployment pathways across several distinct areas, ranging from primarily philanthropic to primarily impact investment.

Preventing waste of nutritious, fresh foods

Shelf-life extension and preservation technologies keep the most nutritionally valuable foods viable longer, increasing the share that reaches consumers and food rescue channels before spoilage. Impact investment in active packaging and bioprotective coatings, such as Hazel Technologies and Ryp Labs, or in crop protection technologies that also reduce loss downstream, such as ClearLeaf, are well-positioned to reduce waste through commercially viable products.

In low- and middle-income country (LMIC) contexts, high-leverage interventions tend to be lower-tech, such as hermetic storage bags and solar drying, which have demonstrated strong cross-country evidence for preserving staple crops at the smallholder level at low cost. CARE operates programs with farmers to reduce food loss and waste, strengthen livelihoods, and improve food security.

Recovering and redirecting nutritious food

Strengthening food rescue infrastructure, including cold storage, transportation, coordination technology, and gleaning networks, is the most direct lever for closing the gap between surplus and need. The Farmlink Project, a student-led national network, connects farmers with surplus or short-shelf-life produce directly to food banks and hunger relief organizations. Alongside more common nonprofit models, select companies are demonstrating the commercial viability of for-profit food rescue. Goodr, for example, is a for-profit food rescue platform that connects surplus food from restaurants, hotels, stadiums, and airports to nonprofit distribution partners, while providing businesses with real-time impact tracking and tax deduction documentation.

Certain organizations sit at a particularly interesting intersection between food as medicine and food rescue, connecting food waste reduction directly to clinical health outcomes. La Soupe, a food rescue organization, runs a program that converts rescued food into medically tailored meals.

Philanthropic investment in community-level food literacy—helping lower-income households store, use, and cook perishables before they're lost—addresses household food waste and nutrition security at the same time. Brighter Bites, for instance, offers a school-based program combining donated produce distribution with nutrition and use education for lower-income families.

Upcycling food waste, especially into non-animal protein

Upcycling food loss and surplus into non-animal protein simultaneously reduces food waste and relieves pressure on the intensive animal agriculture that drives both antimicrobial resistance development and community air quality burdens. Jack & Annie's turns jackfruit that would otherwise go to waste into a wide range of plant-based meat and seafood products, supporting over 1,700 farming families in India. Adamo Foods is researching how to convert agricultural and food industry waste materials into inputs for whole-cut mycelium steak. Infinite Root grows mycelium using agricultural by-products as feedstock, including wasted dairy whey, to produce a versatile, nutrient-dense protein adaptable to a wide range of food products and local cuisines. Yeastup converts wasted brewer's yeast into proteins and functional ingredients for a range of applications, including a protein that can replace eggs and a collagen peptide used to boost the protein content of bars and sports nutrition products.

Diverting organics from landfill

Reducing the volume of organic material entering landfills, incinerators, and unmanaged disposal sites directly lowers the air quality and antimicrobial resistance risks associated with food waste disposal. This bucket spans both policy advocacy and infrastructure investment. Philanthropic capital can support organizations such as the Zero Food Waste Coalition and its state and local partners, which work to advance organic waste bans or composting requirements at the municipal and state levels.

Impact investment, meanwhile, can support local community composting and anaerobic digestion infrastructure, where tipping fee revenue, compost sales, and energy recovery can create viable commercial models. NewTerra Compost, for example, is proactively building infrastructure in "composting deserts" like Tennessee, Georgia, and Alabama, while Rust Belt Riders, a worker-owned cooperative in Northeast Ohio, provides sustainable organic waste management in partnership with food manufacturers, hospitals, schools, restaurants, municipalities, and residents.

Case Study

Dual Impact in Action

Food Systems for the Future Institute (FSFI) was founded to catalyze, enable, and scale market-driven agtech and foodtech to improve nutrition outcomes for low-income and underserved communities around the world. As part of this work, they raised and invested the initial seed funding grants and provided financial support for technical assistance to MyiaGrow Co., which is developing food-waste-based insect animal feed and frass-based biofertilizer in Rwanda. Their goal with this cash contribution is to demonstrate how investment in food-waste upcycling can support local food production, agricultural resilience, and nutrition, while diverting food from landfills.

Through MyiaGrow, FSFI is supporting the development of a circular insect protein and biofertilizer project that uses black soldier fly larvae to convert household and industrial organic waste into insect meal and lipids for animal feed, alongside frass-based biofertilizer for crop production. The model is designed to reduce the amount of organic waste entering the waste stream while creating locally produced alternatives to imported feed ingredients and fertilizer. Trial work has effectively demonstrated that kitchen-waste inclusion can achieve bioconversion rates above 20 percent, approaching international industrial benchmarks, with the use of climate control technology. Early Nile tilapia feeding trials have shown encouraging growth results, while frass trials in beans have demonstrated promising plant growth. Additional work is focused on improving feed formulations, expanding crop trials, and strengthening waste separation and collection in Kigali.

The connection to nutrition is practical. More reliable and affordable animal feed can support the local production of fish, poultry, eggs, and livestock, while locally produced biofertilizer can strengthen soil health and crop productivity. MyiaGrow illustrates how organic waste can be converted into productive agricultural inputs that support farmers, reduce reliance on imports, and contribute to a more resilient food system.

If you'd like to learn more about how your funding can support multiple missions, please reach out to our Capital & Innovation team.

capitalinitiatives@refed.org

refed.org