### Who We Are

ReFED is a national nonprofit working to end food loss and waste across the food system by advancing data-driven solutions to the problem.

### Our Vision

A sustainable, resilient, and inclusive food system that optimizes environmental resources, minimizes climate impacts, and makes the best use of the food we grow.

<table>
<thead>
<tr>
<th>DATA &amp; INSIGHTS</th>
<th>CAPITAL &amp; INNOVATION</th>
<th>STAKEHOLDER ENGAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leveraging data and insights to highlight supply chain inefficiencies and economic opportunities</td>
<td>Catalyzing capital to spur innovation and scale high-impact initiatives</td>
<td>Mobilizing and connecting supporters to take targeted action</td>
</tr>
</tbody>
</table>
The Food Waste Challenge
35% of all food went unsold or uneaten in 2019...
That surplus food was valued at $408 billion – nearly 2% of U.S. GDP.
Impacts of Uneaten Food: Environmental

- 4% of U.S. GHG Emissions
- 14% of all Fresh Water Use
- 18% of all Cropland Use
- 24% of Landfill Inputs #1 material (EPA Estimate)
Farm-to-Kitchen Environmental Footprint of U.S. Food Loss and Waste
(excluding impacts of waste management, such as landfill methane emissions)

- GHG Emissions: GHG emissions of 42 coal-fired power plants
- Energy Use: Enough water and energy to supply more than 50 million homes
- Fertilizer: The amount of fertilizer used to grow all plant-based foods
- Land Use: An area of agricultural land equal to California and New York
Impacts of Uneaten Food: Hunger and Food Insecurity

1 in 8 Americans are food insecure

Source: Feeding America
Food Available to Americans

Food Consumed

Surplus Food

Enough for all food insecure Americans

Remaining Food Waste
Surplus food occurs across the supply chain.

- **Farms**: 17M Tons (21% | $14B)
- **Manufacturing**: 11M Tons (14% | $35B)
- **Consumer-facing Businesses**: 23M Tons (28% | $201B)
- **Homes**: 30M Tons (37% | $158B)

- More than half is edible.

- 70% in restaurants is plate waste.

- Households are the largest contributor.
Surplus food has leveled off since 2016...
And *per capita* surplus food has actually declined to 2014 levels.
National and international goal for the amount of food waste that must be reduced by the year 2030.
EPA Food Recovery Hierarchy

SOURCE REDUCTION
Reduce the volume of surplus food generated

FEED PEOPLE
Donate extra food to food banks, soup kitchens, and shelters

FEED ANIMALS
Use food scraps to feed livestock

INDUSTRIAL USES
Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy

COMPOSTING
Create nutrient-rich soil amendment

LANDFILL
Last resort disposal

MOST PREFERRED

LEAST PREFERRED
Reaching Our 2030 Goal
<table>
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<tr>
<th>WHAT'S NEEDED</th>
<th>IMPACT PER YEAR</th>
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<tbody>
<tr>
<td><strong>40+ SOLUTIONS</strong></td>
<td><strong>$73B</strong> NET FINANCIAL BENEFIT</td>
</tr>
<tr>
<td><strong>$14B INVESTMENT ANNUALLY</strong></td>
<td><strong>4T</strong> GALLONS IN WATER SAVINGS</td>
</tr>
<tr>
<td><strong>POLICY CHANGES</strong></td>
<td><strong>75M</strong> TONS GHG EMISSION REDUCTION POTENTIAL (MT CO2e)</td>
</tr>
<tr>
<td><strong>INNOVATION</strong></td>
<td><strong>4B</strong> MEALS FOR PEOPLE IN NEED</td>
</tr>
<tr>
<td><strong>ENGAGEMENT</strong></td>
<td><strong>51K</strong> JOBS CREATED THROUGH SOLUTION IMPLEMENTATION OVER 10 YEARS</td>
</tr>
<tr>
<td><strong>45M ANNUAL FOOD WASTE DIVERSION (TONS)</strong></td>
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</table>
A Five-to-One Annual Return

$14B → $73B
Mobilizing Capital is Essential

$14B in annual funding required for a 50%+ food waste reduction

- Project Finance (Gov’t.): $714M / 5%
- Tax Incentives (Gov’t.): $97M / 1%
- Grants (Gov’t.): $1,024M / 7%
- Grants (Non-Gov’t.): $1,217M / 9%
- Impact-First Investments: $909M / 6%
- Venture Capital: $1,421M / 10%
- Private Equity: $1,085M / 8%
- Corporate Finance & Spending: $7,124M / 50%
- Project Finance (Commercial): $617M / 4%

$3B Catalytic Capital
- De-risks new innovation
- Unlocks bottlenecks
- Overcomes agency problems
- Simulates marginal projects
A Blueprint for Action

The *Roadmap to 2030* looks at the entire food system and provides a framework to focus waste reduction efforts. Powered by the Insights Engine, the *Roadmap to 2030* is an indispensable resource for reaching our 2030 goal.

ReFED outlined seven key action areas for the food system to focus its efforts over the next ten years to *prevent*, *rescue*, and *recycle* food at risk of going to waste.
These businesses and organizations – grouped across the seven key action areas in ReFED’s Roadmap to 2030 – are working to reduce food waste in the U.S. For more information, contact info@refed.com.

ReFED is a national nonprofit working to end food loss and waste by advancing data-driven solutions. Learn about our work at refed.com.
Growing Awareness and Investment in Food Waste Solutions

Katy Perry and Oprah Winfrey just invested in this startup to eliminate food waste, one avocado at a time.

Afzel Sciences combats greenhouse gas emissions via its ingenious coating to preserve the shelf life of fruits and vegetables—and it's the ideal investment for a sustainability-minded celebrity.

Food-Waste Startups Attract Funding as Grocers, Others Go Green

Venture-capital firms are investing in startups offering tech-savvy ways to make sure more food is eaten, not thrown away.

A third of all food in the U.S. gets wasted. Fixing that could help fight climate change.

Wonderful Co. Sets Up $1 Million Waste Challenge

By Melissa Hassert

Monday, October 5, 2020
ReFED Insights Engine

An interactive knowledge hub for food loss and waste launched in 2021, the Insights Engine lets users:

1. Understand the Problem
2. Explore the Solutions
3. Find Solution Providers
4. Calculate Impact

Launch the Insights Engine
Top Ten Solutions | **NET FINANCIAL BENEFIT**

- **$9B** Portion Sizes
- **$6.5B** Meal Kits
- **$6.1B** Consumer Education Campaigns
- **$5.2B** Enhanced Demand Planning
- **$5.1B** Imperfect & Surplus Produce Channels
- **$4.5B** Donation Education
- **$3.8B** Waste Tracking (Foodservice)
- **$3.8B** Markdown Alert Applications
- **$2.7B** Buyer Specification Expansion
- **$2.7B** Manufacturing Byproduct Utilization (Upcycling)
Top Ten Solutions | **GHG EMISSIONS AVOIDED IN MTCO2e**

<table>
<thead>
<tr>
<th>Solution</th>
<th>MTCO2e</th>
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<tbody>
<tr>
<td>PORTION SIZES</td>
<td>11.5M</td>
</tr>
<tr>
<td>MEAL KITS</td>
<td>7.5M</td>
</tr>
<tr>
<td>CONSUMER EDUCATION CAMPAIGNS</td>
<td>7.4M</td>
</tr>
<tr>
<td>CENTRALIZED COMPOSTING</td>
<td>4.9M</td>
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<tr>
<td>MANUFACTURING BYPRODUCT UTILIZATION (UPCYCLING)</td>
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<tr>
<td>PACKAGE DESIGN</td>
<td>3.6M</td>
</tr>
<tr>
<td>MARKDOWN ALERT APPLICATIONS</td>
<td>2.9M</td>
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<td>ENHANCED DEMAND PLANNING</td>
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<tr>
<td>STANDARDIZED DATE LABELS</td>
<td>2.7M</td>
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Top Ten Solutions | **TONS WASTE DIVERTED**

- **13.8M** CENTRALIZED COMPOSTING
- **3.8M** CENTRALIZED ANAEROBIC DIGESTION
- **3M** CO-DIGESTION AT WASTEWATER TREATMENT PLANTS
- **2.9M** IMPERFECT & SURPLUS PRODUCE CHANNELS
- **2.4M** PORTION SIZES
- **1.9M** MANUFACTURING BYPRODUCT UTILIZATION (UPCYCLING)
- **1.7M** MEAL KITS
- **1.4M** CONSUMER EDUCATION CAMPAIGNS
- **1.2M** ENHANCED DEMAND PLANNING
- **1.1M** DONATION EDUCATION

0 3M 6M 9M 12M 15M TONS
Removal of Animal Feed Restrictions
Tax Incentives
Liability Protections
Farm surplus purchasing
Grant programs/Infrastructure

Date Labeling
Measurement/Reporting Incentives
Technical Assistance/PPPs
Public education
Reduction in schools

Support of state/local programs
Infrastructure grants
Compost use directives

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insights.refed.org

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