REDUCING WASTE, FROM FARM TO PLATE

A multi-stakeholder recipe to reduce food loss and waste

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Harnessing Data

How ReFED is Working to Stop Food Waste by Advancing Data-driven Solutions

Picture: Graph with food waste in background © ReFED
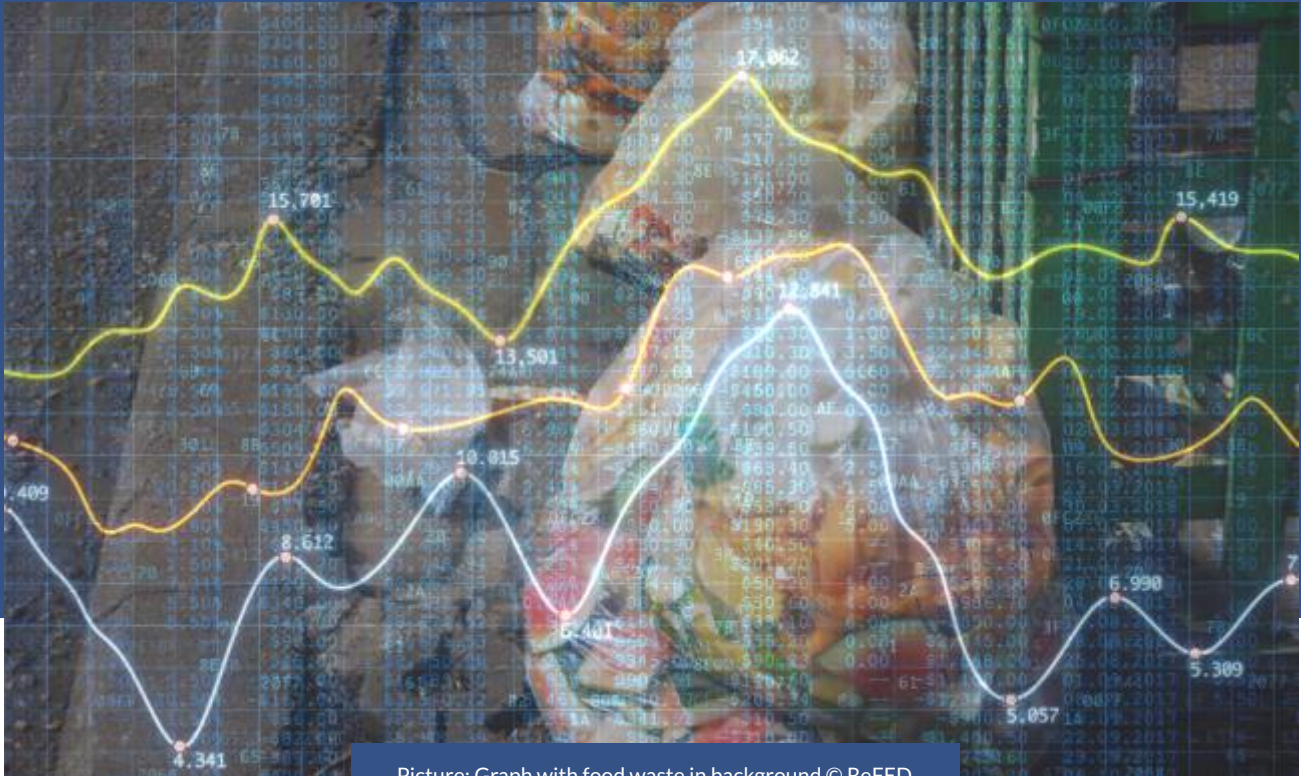
This case study explores ReFED's use of data to mitigate food waste and loss in the United States of America. ReFED is a US-based NGO working to stop food waste by advancing data-driven solutions. Alongside Cascadia Policy Solutions, WWF, and WRAP, ReFED also serves as a Resource Partner for the Pacific Coast Food Waste Commitment (PCFWC), a public-private partnership that works on the West Coast of the US and Canada with a climate imperative to reduce food waste.

Key messages

- In the US, a staggering 38% of all food goes unsold or uneaten – the equivalent of 149 billion meals annually

- One in ten Americans are food insecure, lacking reliable access to sufficient, affordable, nutritious, and culturally appropriate food

- In the US, most food waste happens at the household level, followed by consumer-facing businesses like restaurants and food service

- The average American throws out $690 worth of food at home annually; some of this is inedible eggshells, bones, etc., but more than 60% is edible

- The retail sector in the US generated the lowest amount of surplus food, but more than half of this was due to confusion over date labels

Reducing food waste in the United States

"In the US, 38% of food goes unsold or uneaten, and most of that goes to waste. That's the equivalent of almost 149 billion meals' worth of food that we are letting go unsold or uneaten each year. The impact of surplus food and food waste on our climate and environment are enormous, since food that is never eaten still requires resources to grow, harvest, transport, cool, cook or otherwise prepare," - Jackie Suggitt, ReFED.

In 2015, a research collaboration of more than 30 industry, nonprofit, foundation, and government leaders committed to reducing food waste in the United States morphed into an American non-profit, now called ReFED, a name originally developed from "Rethinking Food Waste Through Economics and Data."

The collaboration created the "Roadmap to Reduce US. Food Waste by 20%," the first-ever national economic analysis and action plan to tackle the issue at scale.

The first roadmap was designed to fill the gap between awareness and action by creating transparency in the waste flows, costs, and opportunities of a more efficient food system.

Using data to understand food supply chain

ReFED's founding insight was that food waste is a systemic problem, resulting from the various stages of the food supply chain. The research revealed the need to inform food waste mitigation with sustained and systemic data and the economic opportunity offered by implementing food waste solutions.

While food waste was already a conscientious problem touching off organisational and individual action, efforts were uncoordinated and inefficient. Reducing food waste would require system-wide data to identify the right mix of players, identify and analyse solutions, guide investment and track solutions adoption.

To serve as a guide for food system stakeholders addressing the food waste challenge, ReFED developed and produced a suite of tools and resources that provided a full-supply-chain picture of US food waste, a cost-benefit analysis of solutions to the problem, an impact analysis, an overview of capital invested in the space, a review of various governmental policies, and a directory of solution providers – all grounded in credible data and accessible methods to track progress.
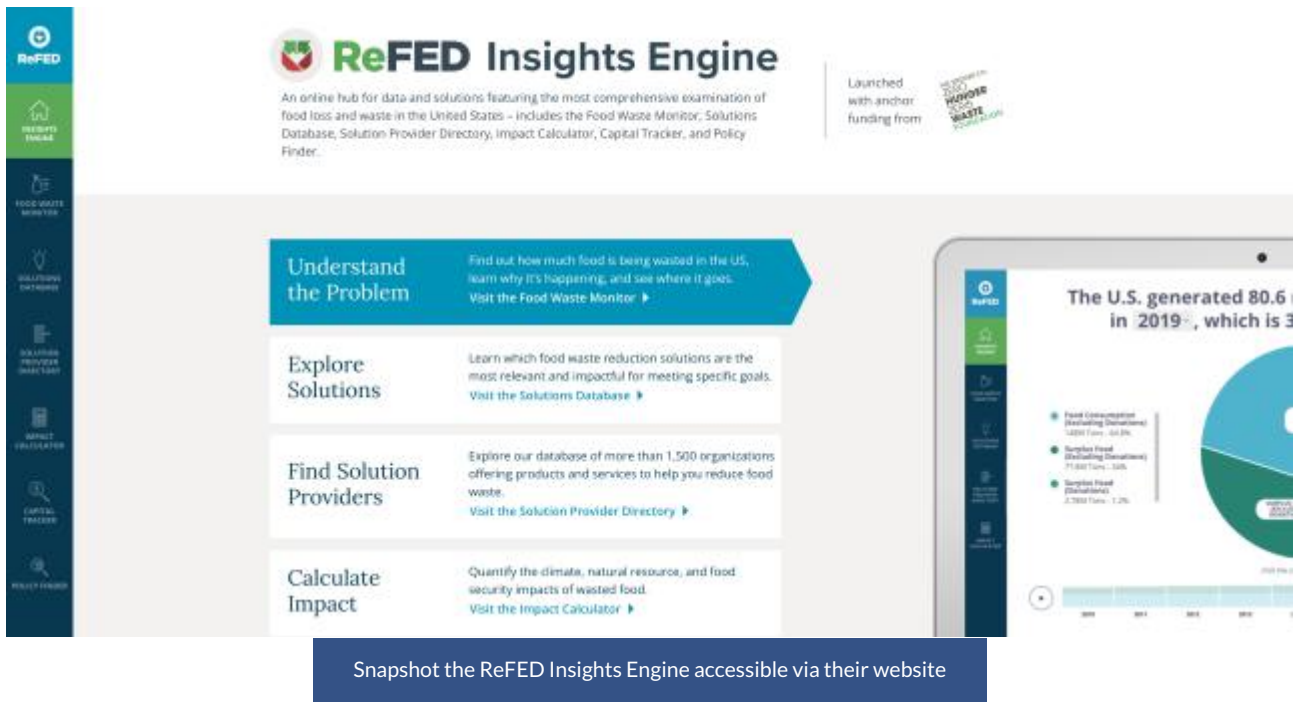
Launched in 2021, ReFED's six-tool Insights Engine was introduced as a groundbreaking resource that could help the food system shift from awareness about the food waste problem to action. This interactive platform combines dozens of public and proprietary datasets, research studies, and interviews with subject matter experts to create a trusted source of data and solutions that provides those connected to the food system – both directly and indirectly – with the necessary information to take action against food waste.

COVID-19 insights

Labour, retail and food service disruptions across the food system at the peak of the COVID-19 pandemic contributed to a 1.3% decline in food waste in 2020 in the US. Cooking at home increased due to restaurant closures, while retailers sometimes struggled to keep products on shelves from increased demand.

During the lockdown, the food service surplus declined by 36%, while the retail surplus decreased by 2.6%. On the other hand, residential surplus food increased during this time by 12% as home purchasing increased, accompanied by hoarding and panic buying.[1]

The Pacific partnership approach

ReFED is a resource partner in the Pacific Coast Food Waste Commitment (PCFWC). This public-private partnership works along the West Coast of the US, including the states of Washington, Oregon and California, and the cities of Seattle, Portland, San Francisco, Oakland and Los Angeles,[2] along with the Canadian province of British Columbia. The PCFWC boasts 17 signatories from the private sector, but the group originated from local government bodies working together as the Pacific Coast Collaborative (PCC) to reduce greenhouse emissions by 80% before 2050.

With an economy of 55 million people and a combined GDP of $3 trillion, the Pacific Coast Collaborative initially worked on transport, ocean acidification, refrigeration and other climate-focused areas.[3] In 2018, they focused on food waste in partnership with the private

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[1] A., Hardwood, S., Mao, M., Ringland, and J., Zurita, 'ReFED's new estimates on food waste in the United States: 2020-2021, trends, and covid-19 impact', ReFED, May 2023
[2] PCC, 'Reducing Wasted Food,' Pacific Coast Collaborative, 2023.
[3] PCC, 'Reducing Wasted Food,' Pacific Coast Collaborative, 2023.

sector. They brought in ReFED, World Wildlife Fund, and WRAP (Waste & Resources Action Programme) as resource partners to launch the Pacific Coast Food Waste Commitment (PCFWC).

ReFED's primary focus in the PCFWC is collecting and analysing data from food business signatories. This is a critical step in any waste reduction initiative, as it identifies where resources should be focused to have the most significant impact. Once anonymised, aggregated data is shared publicly to serve as a point of comparison for other food businesses to benchmark their own efforts. In addition, WRAP brings its expertise to managing similar collaborations worldwide, and WWF oversees business recruitment and ongoing engagement, including running pilots and convening working groups.[4]

Surplus food had returned mainly to pre-pandemic levels by 2021, highlighting the importance of multi-stakeholder collaboration and investment in food waste solutions.

PCFWC: Directing food where it's most needed

Artificial intelligence, e-commerce, upcycling, and employee engagement were among the standout initiatives out of nine projects piloted by the PCFWC to help businesses cut waste within their operations. An initial data assessment provided a focus for PCFWC to identify food waste hotspots, better profile food waste and test nine high-potential solutions.

AI ordering estimates

In one project, two PCFW-affiliated supermarket chains worked with two AI providers, Shelf Engine and Afresh, to better predict demand. Each store reduced waste by 14.8% on average.[5] Scaled to a national level, AI-informed ordering could lead to more than $2 billion in savings and help avoid nearly 13.3 million metric tonnes of CO_2 emissions.[6]

Commenting on the solution, Jackie Suggitt said, "It brings in consumer purchasing behaviour, historical data, weather data, and it really tries to refine what you're ordering to eliminate food waste in the retail sector value chain."

The PCFWC also partnered with Cascadia Consulting Group for a report on e-commerce solutions to food waste. The analysis resulted in four key strategies for leveraging e-commerce to reduce waste. For example, web-based sales accompanied by consumer education about what is safe to consume while also highlighting the environmental benefits of using food up could drive less waste. Additionally, subscription services helped retailers forecast demand more accurately.[7]

The report also included a series of case studies. Imperfect Foods sold cosmetically imperfect foods via their website, and their active customer base grew 40% from 2020 to 2021, while average order value rose nearly 70% over the year.[8]

Fresh Direct marketed unique products via its website, including smaller eggs laid during the hen's first six weeks of laying. The Flashfood app allowed customers to select and purchase fresh food nearing its "best before" date at reduced prices. Approximately 11,000 shoppers took advantage of the deals, resulting in tens of thousands of pounds of food rescued from potential waste.

[4] ReFED. 'Insights Engine,' ReFED, 2023.
[5] PCFWC. 'Using Artificial Intelligence to Reduce Food Waste in Grocery Retail,' Pacific Coast Food Waste Commitment, Fall 2022, pp. 1-13.
[6] ReFED. 'The Food Waste Problem,' ReFED, 2023.
[7] PCFCW. 'How E-Commerce Strategies Can Help Reduce Wasted Produce,' Pacific Coast Food Waste Commitment, Spring 2023, pp. 1-7.
[8] PCFCW. 'How E-Commerce Strategies Can Help Reduce Wasted Produce,' Pacific Coast Food Waste Commitment, Spring 2023, pp. 1-7.

In a separate case study, Bob's Red Mill, a food manufacturer, ran an employee engagement campaign featuring a contest for ideas to reduce food waste in its operations with high-tech and low-tech approaches. From 176 creative, innovative food waste reduction ideas crowdsourced from its manufacturing line employees, the winning idea was responsible for reducing waste by 70% on a single production line.[9]

In another case study, New Seasons Market recycled food surplus into new products and meals. Over 20,000 pounds of rotisserie chicken were upcycled into a new pulled chicken product. The initiative decreased the percentage of rotisserie chicken waste from 7.5% in 2021 to 6.7%

New Seasons Market recycled food

in 2022, avoided more than 23.4 metric tonnes of Co_2 emissions, saved 9.4 million gallons of water and produced a new high-sales volume product for customers.[10]
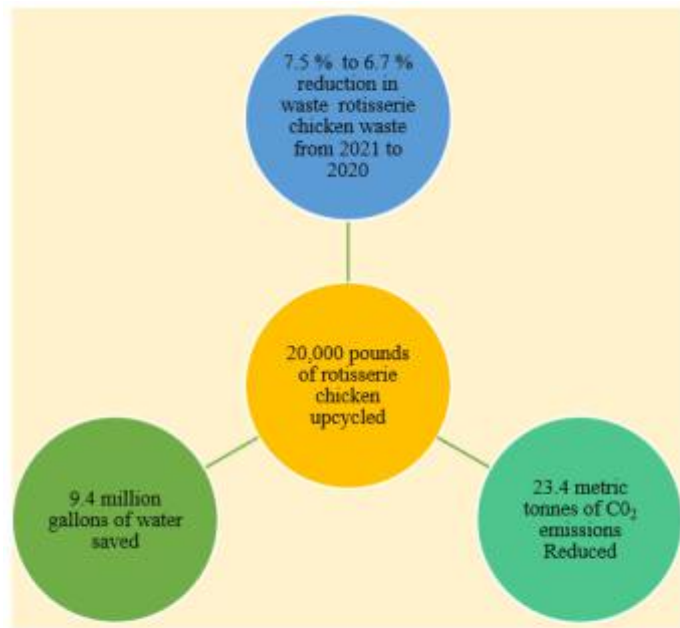
Food waste is a solvable problem

While solutions to reduce food waste exist, there are a range of reasons why they can be challenging to implement. For example, Implementing food waste reduction solutions requires collaboration between different departments within participating businesses, including buyers, merchants, store managers, chefs, waste managers, and financial analysts, which can be difficult to coordinate.

Additionally, health regulations in the US vary by city and state, arising from "home rule" authority in some localities and differing interpretations of the FDA Food Code, which only loosely defines basic requirements for food safety.[11] This hampers national and global companies from developing uniform food donation policies across their organisations.

Building high-value partnerships

Since 2016, ReFED has evolved into one of the nation's leading food waste organisations due to building high-value partnerships, identifying unique groups' strengths to make progress together, and incentivising new players into the food waste space.

And while the overall amount of surplus food in the US seems to have leveled off, the amount of surplus food per capita appears to have declined slightly. Reducing food waste is one of the top individual behaviours people can take to reverse climate change, Suggitt noted.

> ReFED's frameworks and methodologies have been adopted or used by over 20 organisations, including the Organization for Economic Cooperation and Development, Asia-Pacific Economic Cooperation, Walmart, Deloitte, and Johns Hopkins University.

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[9] PCFWC. 'Institutionalizing a Waste Reduction Culture in Food Manufacturing,' Pacific Coast Food Waste Commitment, Fall 2022, pp. 1-16.
[10] PCFCW. 'PCC Community Markets' Upcycling Initiatives & Food Waste Reduction Commitment,' *Pacific Coast Food Waste Commitment, Summer* 2023, pp. 1-9.
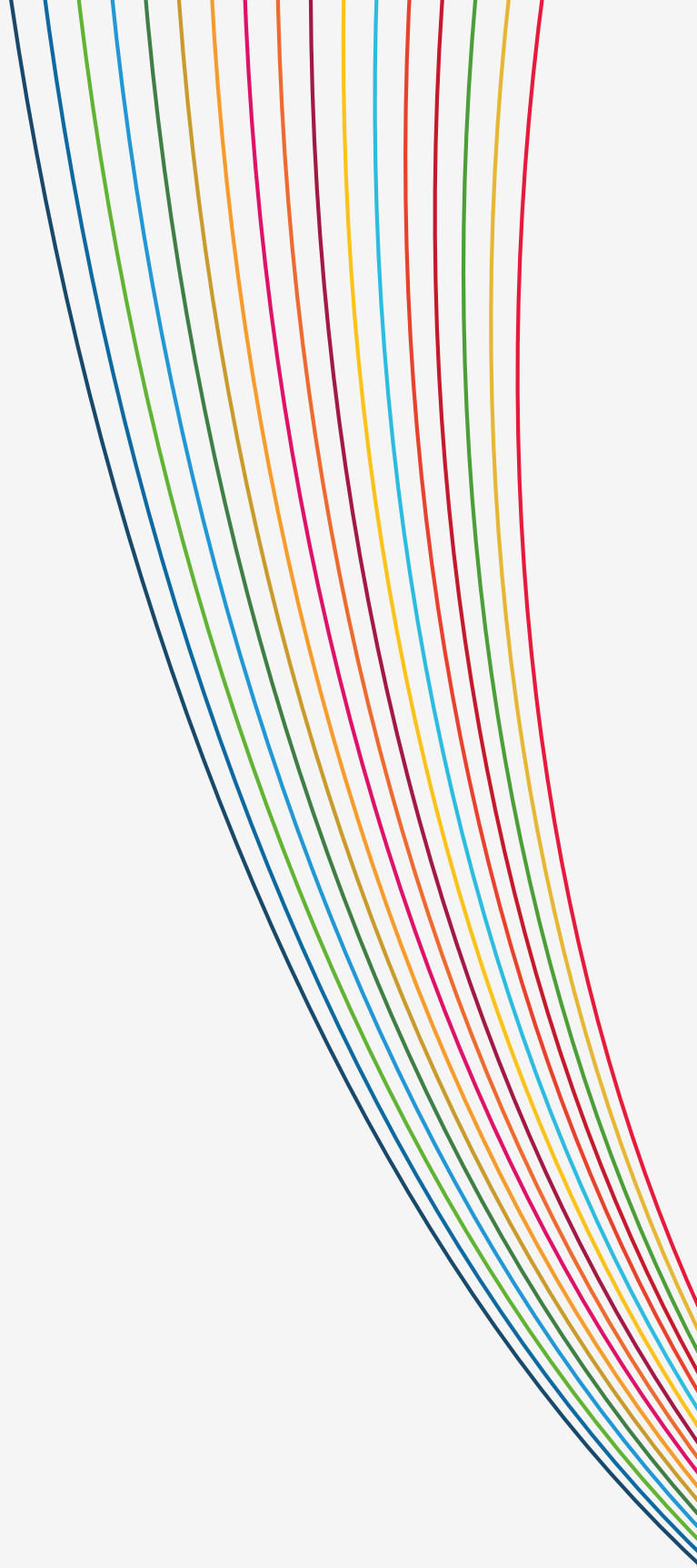[11] ReFED. The Food Waste Problem,' ReFED, 2023.

Collaboration on shared goals can make a positive difference

Mitigating food loss and waste will require consumer, producer, and government engagement and financial investment.

> *ReFED estimates that $18 billion in investment is needed annually to significantly reduce food waste.*
>
> *"The current amount of funding in the space does not align with the scale and impacts of the issue, even while the size of the food waste opportunity is becoming increasingly evident." Alex Coari, ReFED's Vice President of Capital, Innovation & Engagement.*

Effective deployment of capital and policy, with stakeholders from across the value chain collaborating on shared goals, can make a notable difference in driving economic, social, and environmental benefits for communities and investors, addressing climate change, and building a more resilient, waste-free food system.