

# Implementing and Expanding ReFED's Influence to New and Existing Partners

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## Executive Summary

Food waste is an issue that has detrimental environmental impacts and is present throughout the entire food supply chain. Food is produced at increasingly high rates, meaning food production consumes a large amount of land, resources, and money while contributing to greenhouse gas (GHG) emissions. Still, there are many communities that are food insecure across the globe. To address these issues and the larger climate crisis, ReFED, a national nonprofit, is working to end food loss and waste across the food system through data-driven solutions. ReFED was established in 2015 by over 30 organizations consisting of businesses, nonprofits, foundations, and government leaders seeking to reduce food waste. They constructed the first national economic study and action plan surrounding the food waste dilemma called, “The Roadmap to Reduce Food Waste.” The action plan created transparency in waste flows, costs, and opportunities to form an efficient and sustainable food system by leveraging prevention, recovery, and recycling methods.

The University of Michigan project team was responsible for utilizing their knowledge to identify and work with a variety of initiatives to increase both the number and diversity of stakeholders engaging in food waste reduction strategies. The project was divided into multiple phases. First, the team researched high potential opportunities for organizations willing to integrate food waste reduction strategies. Second, they identified key criteria for prioritizing the various organizational, membership, certification, standards, measurement, and educational programming opportunities. Third, they reached out to target organizations that were considered to have the greatest potential for partnership alongside ReFED. 17 out of the original 100 opportunities were deemed worthy of pursuing by ReFED. Of these 17 opportunities, roughly half are either considering or are already implementing ReFED’s specific recommendations.

At a high level, a plethora of organizations that could improve their waste reduction strategies were considered. However, most organizations were not willing to collaborate even when the selection process for outreach was deliberate and thorough. Indeed, only nine out of the 100 original opportunities researched were interested in collaborating with ReFED. Consequently, ReFED has decided to create resource documents for organizations to learn from and to only pursue specific partnership collaborations if an organization reaches out to them directly.

## Introduction

Food loss and food waste are critical issues that heavily impact the economy, society and environment. Food loss is defined as edible food that is lost throughout any step of the supply chain. Food waste is defined as uneaten or unused food in the commercial and residential sector.<sup>1</sup> In 2019, 35% of all food was unsold or uneaten, which was valued at 408 billion dollars. Food waste is a huge driver of climate change; it generates 4% of the total GHG in the U.S. and equates to 18% of total methane emissions from landfills<sup>2,3</sup>.

In 2015, the U.S. Department of Agriculture (USDA) and The U.S. Environmental Protection Agency (EPA) set a target to reduce food waste by 50% by 2030.<sup>3</sup> At this time, the U.S. did not have a baseline estimate of food waste and food loss to reach their target. The EPA estimated that in 2010, the average person produces 218.9 pounds of food waste, which rounds to 68 billion pounds of food waste for the entire population. The USDA estimated that 133 billion pounds of food waste and food loss occurred at retail and consumer levels.<sup>4</sup> The EPA created a food recovery hierarchy to display best practices for food waste management and which solutions are preferred [**Figure 1**].

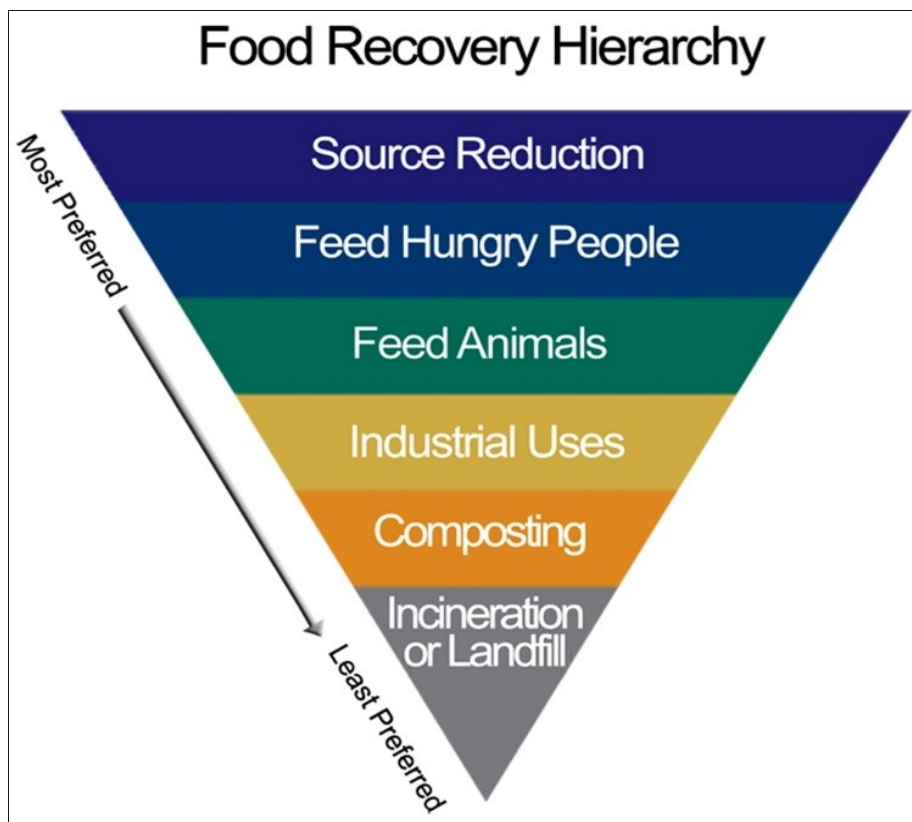
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<sup>1</sup> FoodPrint. (2022, March 15). *The problem of food waste*. FoodPrint Issue. Retrieved April 3, 2022, from <https://foodprint.org/issues/the-problem-of-food-waste/>

<sup>2</sup> Environmental Protection Agency. (2016, April 22). *America's Food Waste Problem*. EPA. Retrieved April 4, 2022, from <https://www.epa.gov/sciencematters/americas-food-waste-problem#:~:text=Every%20year%20in%20the%20United,emissions%20that%20come%20from%20landfills>.

<sup>3</sup> *Food Waste Recycling Analysis, reduce food waste & Food Recovery*. ReFED). Retrieved April 4, 2022, from <https://refed.org/?sort=economic-value-per-ton>

<sup>4</sup> *Food Waste Faqs*. USDA. (n.d.). Retrieved April 4, 2022, from <https://www.usda.gov/foodwaste/faqs>



**Figure 1.** Food Recovery Hierarchy chart from the EPA. Source: epa.gov

The 2020 Project Drawdown Review identified reduced food waste as the number one global solution to climate change out of 76 possible solutions.<sup>5</sup> The production, processing, and transportation of food that is never eaten generates enormous amounts of GHG emissions. Approximately 35 million Americans faced food insecurity prior to the coronavirus pandemic. By 2020 that number was projected to climb to 54 million people. A long-standing solution to food waste has been redirecting surplus products to charitable and emergency food systems. Each year in the U.S., \$218 billion is spent on food that is never eaten. This represents a sizable opportunity to mitigate financial waste while also cultivating new economic opportunities for companies, cities and states, capital providers, and individuals. Beyond cost savings, this includes new revenue streams and investment opportunities, job creation, and innovation to bring new solutions and industries to scale. In addition to these ever-present co-benefits of reducing food waste, several factors converged in 2020 that have led to exponential interest and momentum in this space. COVID-19 put a spotlight on the issue of food waste and the importance of rescuing and delivering food to vulnerable communities. Another factor was the entrance into the “decisive decade” for the UN’s Sustainable Development Goals, which includes cutting food waste by 50% by 2030 (see Appendix Figure A1). This goal has since been adopted

<sup>5</sup> Wilkinson, K. (Ed.). (n.d.). *The Drawdown Review*. <https://drawdown.org/drawdown-review>. Retrieved April 5, 2022, from <https://drawdown.org/sites/default/files/pdfs/TheDrawdownReview%E2%80%932020%E2%80%93Download.pdf>

by the US Government, European Parliament, and business coalitions such as the Consumer Goods Forum.

ReFED is a nonprofit organization working to end food waste and food loss across the food system in the United States. ReFED's larger vision is to create a sustainable, resilient, and inclusive food system that optimizes environmental resources, reduces climate impacts, and utilizes the food grown in the best and most efficient way possible through data and insights, capital and innovation, and stakeholder engagement. Starting with the "2016 Roadmap to Reduce U.S. Food Waste by 20 Percent," ReFED has developed a trusted reputation for producing first-of-their-kind tools and resources that paint the full picture of food waste production throughout the U.S. food supply chain, cost-effective solutions to solve the problem, and methods to track food waste reduction (see Appendix reference A2).

According to ReFED's "Roadmap to 2030", surplus food is present across the entire supply chain. Producers, which consist of farms, generate nearly 17 million tons of total food surplus or 21% of the total food surplus in the supply chain, which equates to \$14 billion.<sup>6</sup> Manufacturers generate about 11 million tons of food surplus or 14% of total food surplus in the supply chain, which amounts to \$35 billion. Consumer-directed businesses, such as retailers and restaurants, produce 23 million tons of food surplus, which rounds to 28% of food surplus in the supply chain, for a loss of \$210 billion. Finally, the residential sector generates 30 million tons of food surplus or 37% of total food surplus in the supply chain, at a cost of \$158 billion.

ReFED's "Roadmap to 2030" examines the entire food system and provides a framework to focus on waste reduction efforts. There are seven key action areas to focus solution efforts on over the next 10 years, and those actions are categorized into three groups: prevention, rescue, and recycling. Optimizing the harvest, enhancing product distribution, refining product management, maximizing product utilization, and reshaping consumer environments are included in the prevention category. Strengthening food rescue is categorized in the rescue group. Recycling anything remaining, such as composting, is categorized in the recycling category [**Figure 2**]. Supporting these key action areas through financing, policy, innovation, and engagement will aid in the acceleration of adopting food waste reduction solutions. The prevention category holds more weight and importance because this group holds the greatest financial and environmental impact compared to the other two categories.

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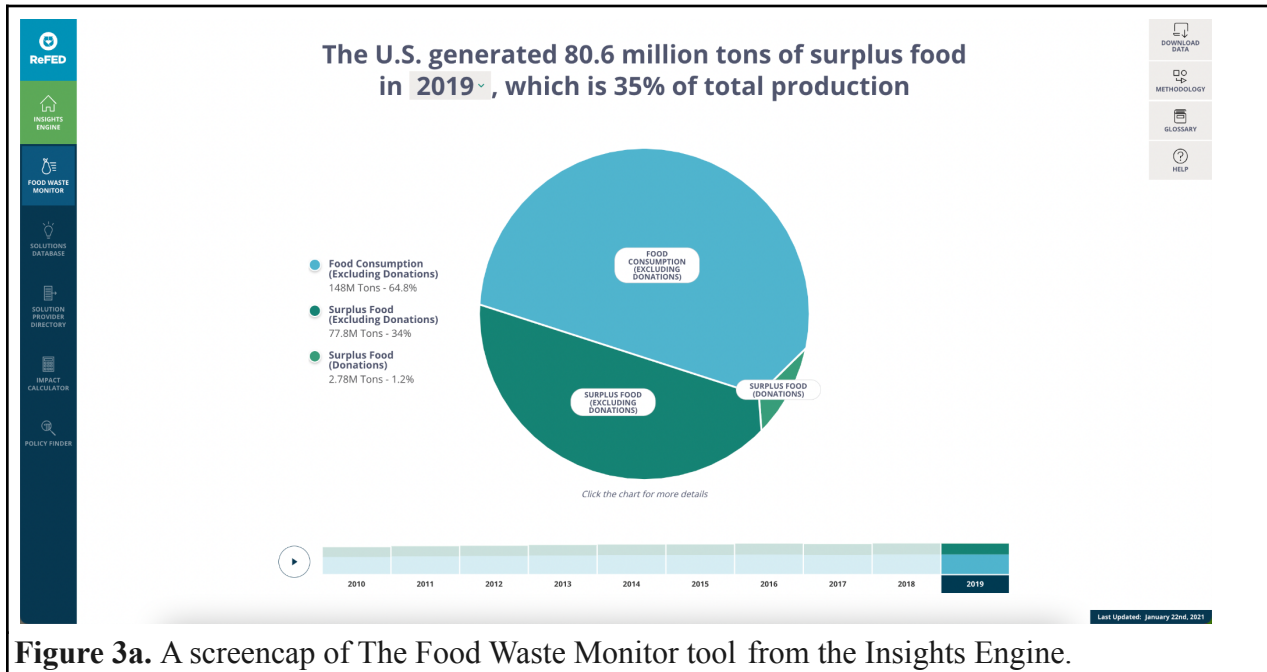
<sup>6</sup> ReFED. (2021). *ReFED Roadmap to 2030*. ReFED. Retrieved April 5, 2022, from [https://refed.org/uploads/refed\\_roadmap2030-FINAL.pdf](https://refed.org/uploads/refed_roadmap2030-FINAL.pdf)



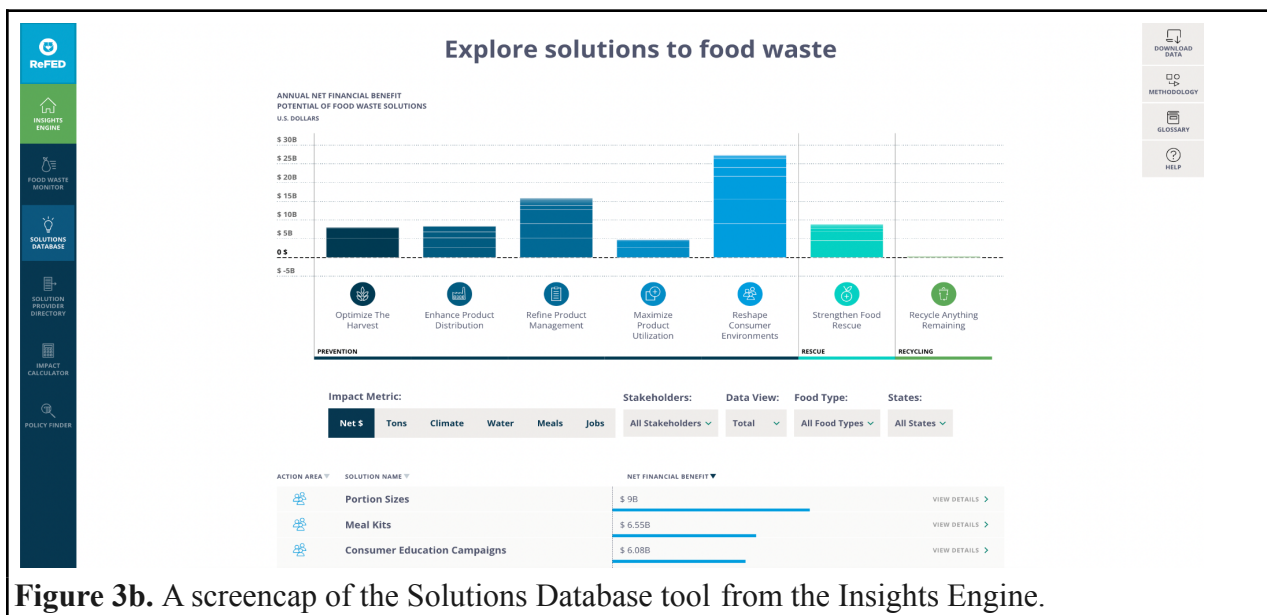
**Figure 2.** A screencap of The Roadmap to 2030 with seven key action areas for food waste reduction and what type of solutions to recommend to stakeholders. (see Appendix Reference A3 for the full report and Figure A4)

ReFED developed the Insights Engine, a food waste data and solutions hub available for free on their website, to provide food waste reduction information to anyone interested in addressing the problem [Figure 3a-e]. The Insights Engine is divided into five sections that provide tools to break down the solution process into smaller steps. The first is the Food Waste Monitor, an interactive chart that demonstrates how much food is wasted in the U.S. and its final destination. The second is the Solutions Database, which displays the waste reduction solutions that are the most relevant and impactful within the food supply change. Additionally, it shows where there is room for opportunity and improvement. Next, the Solution Provider Directory houses a database of over 800 organizations that offer food waste reduction products and services. Then, food

waste is quantified with the Impact Calculator, which quantifies the climate, natural resource, and food security impacts of wasted food. The final section is the Policy Finder where users can research current food waste policies at the state and federal levels to discover best practices. Data and sources used for the Insights Engine are available to view along with the methodology and a glossary of commonly used terms (see Appendix Reference A5 and Figure A6). The Insights Engine is reviewed by the ReFED Expert Network to provide an accurate perception of the food waste issue and corresponding viable solutions to ensure the largest impact.

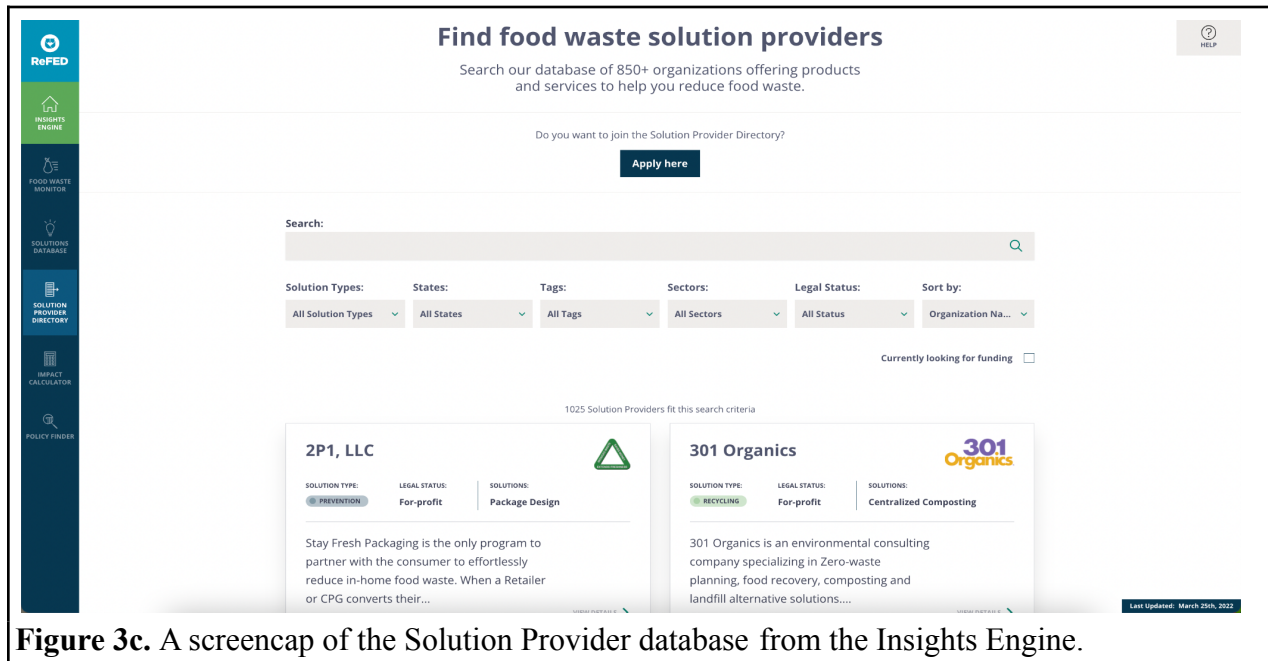


**Figure 3a.** A screencap of The Food Waste Monitor tool from the Insights Engine.

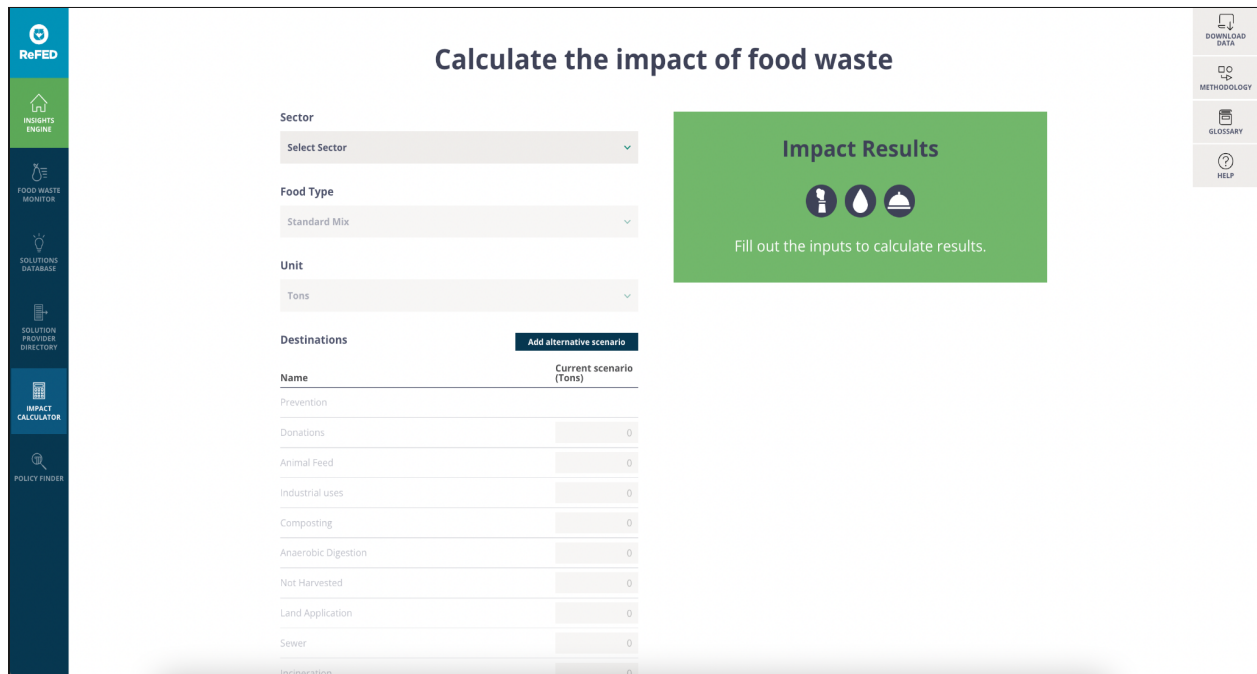


**Figure 3b.** A screencap of the Solutions Database tool from the Insights Engine.

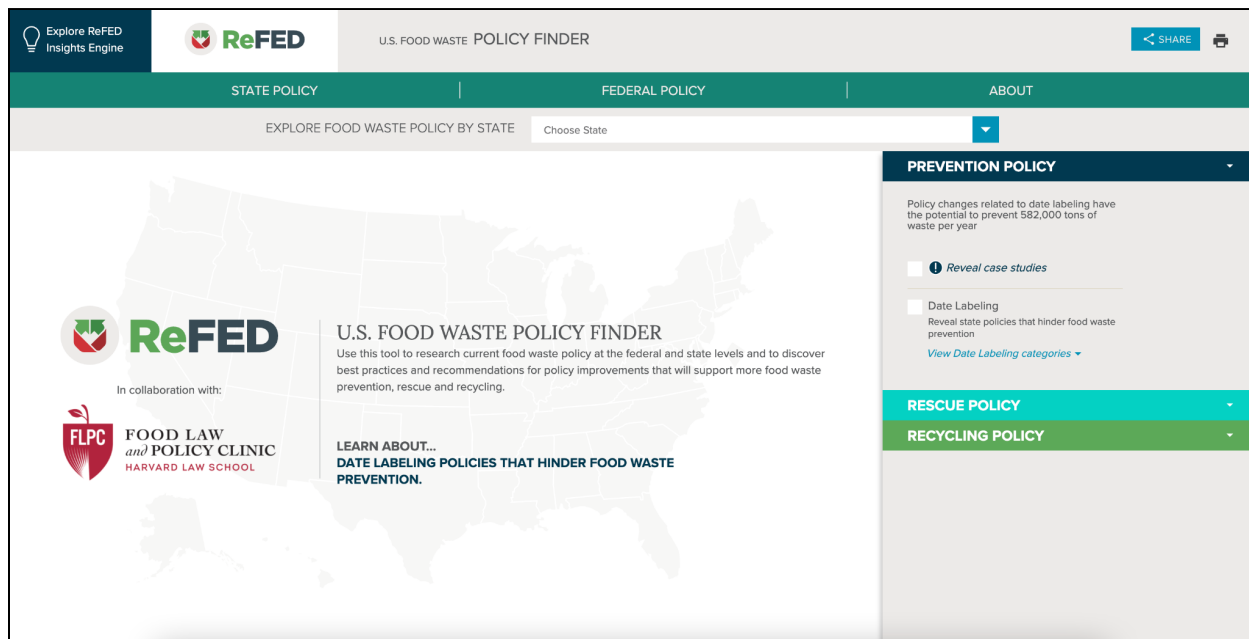




**Figure 3c.** A screenshot of the Solution Provider database from the Insights Engine.



**Figure 3d.** A screenshot of the Impact Calculator from the Insights Engine.



**Figure 3e.** A screencap of the Food Waste Policy Finder from the Insights Engine.

## Scope

ReFED collaborated with SEAS Master’s students to drive increased awareness and adoption of solutions to U.S. food waste by integrating food waste components and criteria into existing initiatives (e.g., certification programs, investor criteria, accelerator or incubator platforms, reporting and disclosure standards, etc.). Considering innumerable food waste reduction initiatives already exist and draw the attention of food businesses, capital providers, solutions providers, event organizers, and other organizations, the goal of this project involved integrating and enhancing food waste reduction into already existing initiatives. This was done instead of developing discrete food waste specific programs. In doing so, the team addressed the fundamental challenge of competing priorities faced by nearly every organization actively working on or considering food waste reduction.

The project team was responsible for identifying and working with a variety of initiatives that will increase the number and diversity of stakeholders engaging in food waste reduction strategies without requiring them to necessarily take on or participate in a separate food waste program. The project would also result in greater opportunities for data collection and monitoring of solutions adoption, a core facet of ReFED’s work.

The project was divided into the five phases listed below. These phases were mostly sequential, although there was some overlap in some phases, like the research and identification phases. Due to timing, the University of Michigan team was able to complete up to phase 4 of the project.

1. *Research:* High potential opportunities for integrating food waste reduction will be identified and segmented into different categories based on relevance and themes (e.g. certifications, events, memberships, organizations).
2. *Identification:* Key criteria for prioritizing the various opportunities will be determined along with a strategy and approach for how food waste reduction can be integrated into the different categories.
3. *Outreach:* Once opportunities have been prioritized and a strategy has been determined, outreach will begin to start exploring potential partnerships and implementation.
4. *Implementation:* After a partnership is established, ReFED will collaborate with the partner to plan, implement, and operationalize food waste reduction in their activities
5. *Monitoring and evaluation:* Time permitting, the SEAS team will move into Monitoring and Evaluation of the new partnership ventures. As the food waste reduction is implemented and launched, ReFED will check-in with and provide follow-on support to the new partner as needed. ReFED will also track and gather relevant data to assess impacts and opportunities for improvement.

## Methodology

During the research phase, the first step was to start with finding around 100 target organizations that were “nodes of influence” - targets that were connected to multiple other organizations or companies and could therefore have ripple effects with changes to programming - and were also broadly related to environmental sustainability, climate change, food, and/or hunger. ReFED selected the target of around 100 so the team could cast a wide net and have a manageable list to comb through during the initial phase of the project. The team reviewed over 150 targets to find around 100 that met the criteria and, therefore, were researched more thoroughly.

The targets included entire organizations or specific programs and initiatives within a given organization. The targets generally fell into five categories:

- Memberships & networks
- Certifications, standards, & measurements
- Accelerators & Incubators
- Educational programs
- Events and conferences

Research by Student Team included collecting the following information on the targets:

Information	Selection option or description
Organization and group name	
Organization Description	
Organization Type	Nonprofit, For-Profit, Other
Program or Initiative Title	If applicable

Type of Program or Initiative	Association, Certification & Standards, Educational Program, Events, Membership, Advocacy/Campaign, Impact Investing
Description of Program or Initiative	
Description of what food waste reduction would be integrated into (e.g. a framework)	
# of members, events, stores, etc.	A relevant unit of reach, if applicable
Revision Time Frame	At what cadence (time of year, interval) might it make sense to aim for possible outreach and implementation, if applicable
Target Audience/Stakeholder Group	Capital Providers, Food Businesses (multiple types, foodservice, restaurant, manufacturing, grocery retailer, distributor), Farmer, Residential, Commercial, Solution Providers, Government Agencies, Academia, Students, Other
Website	URL
Relevant Resources	URL
Measurement Capabilities	Could measurement somehow also be integrated?
Measurement Capabilities Rationale	
Contact Information	

ReFED then provided criteria to aid in prioritization:

Criteria	Selection Option
Fit: Would food waste reduction fit well within this program?	Yes, No, Unknown
Rationale as to why food waste reduction would or would not fit well within the program	
Scale of Impact - If food waste reduction was integrated into the program or initiative, could it influence a large number of diverse,	Yes, No, Unknown

high-value stakeholders to take action and have a significant impact on cutting food waste by 50% by 2030?	
Rationale as to why or why not it would have a significant impact (e.g. provide an example of impact already gained, details on the # of members, amount of food waste that could be prevented, etc.)	
Reach: Does the program have a broad geographic reach and access to a diverse group of stakeholders?	Yes, No, Unknown
Details on reach of the program	
Ease of Implementation - How easily can food waste reduction be implemented into the program?	High = Very easy; Medium = Moderate effort required; Low = Very Difficult
Rationale for ease of implementation ranking	

The team then slotted targets into Tier 1, 2, or 3 based on the Fit, Scale, Reach, and Ease of Implementation ratings:

Tier 1	"Yes" to at least "Impact" and "Reach"
Tier 2	"Yes" to at least "Impact"
Tier 3	"Yes" to anything but "Impact" and/or Ease of Implementation is "High"

Considered for Prioritization by ReFED: These tiers and the information provided allowed ReFED to identify which targets to prioritize from the list of 95. They also considered the following:

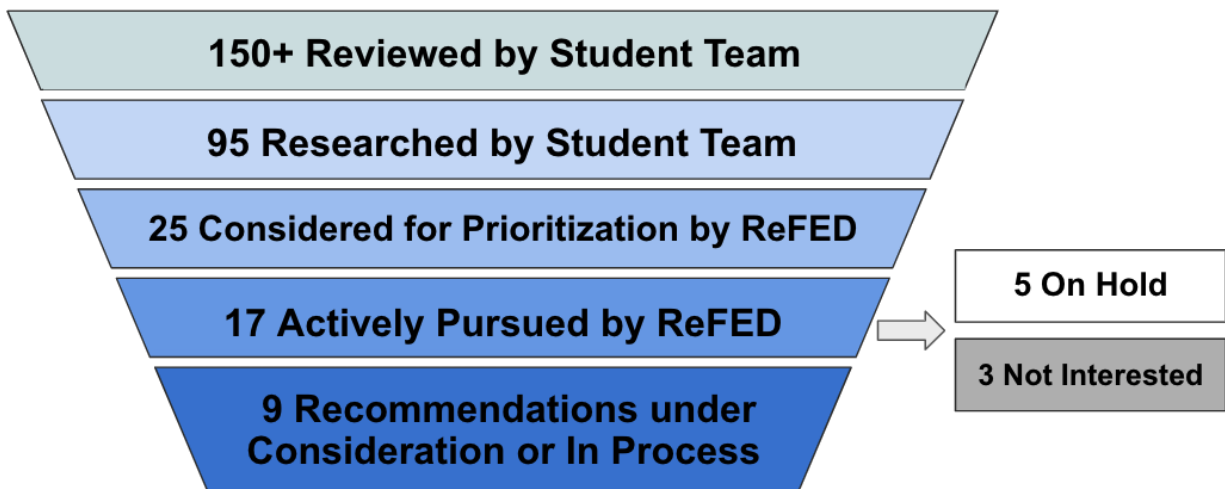
- Integration Opportunity: There is a specific and concrete opportunity in which food waste reduction can be incorporated
- Stakeholder Reach: The prospective integration partner has a large number of key stakeholders in their network that can take action in reducing food waste as well as a wide geographic reach
- Impact potential: working with the prospective partner on a specific integration opportunity can have a large impact and fills a need in the food waste space
- Prospective Partner: the prospective partner has a strong reputation as well as skills and resources that compliment ReFED’s strengths and assets

- **Resourcing & Capacity:** there is a high likelihood that ReFED (in-house or external contractor/fellow) and the prospective partner have the resources and capacity to complete a food waste integration project

Using this criteria, ReFED considered 25 targets for prioritization. These targets included 8 Memberships & Networks, 10 Certifications, Standards & Measurements, 6 Accelerators & Incubators, and 1 Educational Program.

From there, ReFED actively pursued 17 targets, deprioritizing the 6 Accelerators & Incubators. They made this decision because ReFED’s Capital, Innovation, and Engagement team was simultaneously focused on new programming to increase the amount of funding going towards the food waste sector. Rephrased, while the 6 Accelerator & Incubator targets met the criteria for prioritization, pursuing engagements with them would be redundant.

As of October 2021, ReFED, sometimes in partnership with the student team, had contacted 15 of these targets. Nine were considering or implementing the recommendations from ReFED. Five were on hold due to timing considerations or lack of contact and three were not interested in continuing engagement.



**Figure 4.** Pipeline of researched and contacted organizations.

## Insights

### *High-level Learnings*

As a result of both research and interactions with potential partner organizations, the Master’s team and project liaison were able to identify a number of larger insights and trends. To preface, all potential partnership opportunities had previously integrated at least some food reduction into their work. Generally, organizations within the foodservice sector, like restaurants, were often less open to allocating their resources to food waste because their priorities were focused elsewhere, like on food safety, produce procurement, and energy use.

There were two main categories or groups of organizations that were analyzed. One group consisted of certifications, standards, and measurements as they were all more easily quantifiable. The other category was composed of memberships, networks, and educational programs because they were more people-centric. Rephrased, there was a clear divide between the things that were more readily tangible, like altering a standard within a certification, and those that would require greater analysis for integration, like educational programming.

### ***Lack of interest in food waste integration practices***

Of the nearly 100 organizations originally identified as potential partnerships, only nine organizations actively sought advice and feedback from the food waste experts, ReFED. Provided many of these potential partners are actively trying to address their climate commitments and the pressing need to reduce food waste, there was a surprising lack of interest in collaboration with ReFED; most of the organizations reached out to did not respond at all, so their reasons for not participating were unclear. Still, a few organizations declined to participate, and were thus able to explain their reasoning. Primarily, they felt like food waste was not as high-profile as other climate and environmental commitments. Furthermore, there was a lack of understanding on how to track food waste reduction measures in reporting.

### ***Insights by Category type***

#### Certifications, Standards, and Measurement:

- Addressing Food Waste Strategies Before Food Purchasing;  
Of the certifications and standards considered, they were most concentrated on actions such as food tracking, composting, food donation, and animal feed production. In turn, there was incredible potential for the integration of food waste prevention strategies at the stages before food purchasing.
- Right Place and Right Time;  
Determining the best point of contact for potential partnerships was difficult. Sometimes it was not apparent who to reach out to after looking up various people on multiple websites. Then, even when finding the right person to contact, it was not always clear what the best means of communication outreach actually was (i.e. email, LinkedIn, organization website, or phone). Further still, even if outreach was executed flawlessly, timing was regularly an obstacle. Indeed, the review and authorization of certifications and standards is a laborious and time intensive process. Consequently, incorporating ReFED's recommendations was often not feasible due to timeline constraints. Finally, many organizations believe they are adequately addressing food waste within their certification, standard, or measurement.
- Integration Does Not Guarantee Less Food Waste;  
Successful outreach paired with partnership collaboration does not ensure that organizations seeking a certification or reached standard are reducing food waste. Indeed, most certifications allow for participating organizations to choose from a list of activities. So, unless the weighting or points allocated to food waste reduction are increased or raised, adding food waste reduction options to a certification or standards list does not necessarily translate to lower food waste production.

### Memberships, Networks, and Educational Programs:

- Barriers to Integration;  
There are at least two major hurdles surrounding the integration of food waste reduction into previously created networks and programs. One, the importance and active practice of food waste reduction must be conveyed to all of a network's or program's members. Two, the technical competency required to integrate food waste reduction into all program content and resources can be time, resource, and energy intensive.
- Impact Remains Nebulous;  
Sustainability networks are often already proponents of food waste reduction. However, many networks do not mandate that their members take specific actions to reduce food waste. In turn, it is unclear the extent to which a given member actively reduces their food waste. More largely, it remains difficult to quantify the food waste reduction efforts of the entire network.

## **Key Examples and Best Practices**

As a result of the work, the team examined hundreds of standards to adopt and practices to implement that attempted to reduce food waste. To give a sense of general findings, the following are examples from the work.

### ***Importance of Third Party Certifications***

Third-party certifications can have significant influence on an organization's decision making. Over the past decade, these certifications have emerged as an important tool for modifying the agrifood system.<sup>7</sup> Historically, third party certifications have been used to govern food safety or certifications like organic or non-GMO. However, ReFED believes that these same certifications can be leveraged to reduce food waste. Typically, third party certifications are private, public or hybrids of public and private organizations responsible for assessing, evaluating, and certifying safety and quality claims based on a particular set of standards and compliance methods.<sup>8</sup> A key premise of these certifications is that they provide an impartial view of the organization in question. Receiving a certification can allow a business or other organization to attract impact-driven buyers or customers. In the era of global climate change, third party certifications can also help organizations meet national or international climate change mitigation commitments. For these reasons, the team and ReFED wanted to explore how food waste was integrated into existing certifications and where there might be room for further integration.

### ***Case Studies of available Certifications***

Certifications were evaluated based on the specificity of their food waste reduction practices and the breadth of food waste specific standards they included. The team evaluated the following certifications, standards, and measurement tools as well as membership and network programs.

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<sup>7</sup> Bain, C., Hatanaka, M. (2010). The Practice of Third-Party Certification: Enhancing Environmental Sustainability and Social Justice in the Global South?. In: Higgins, V., Lerner, W. (eds) Calculating the Social. Palgrave Macmillan, London. [https://doi.org/10.1057/9780230289673\\_4](https://doi.org/10.1057/9780230289673_4)

<sup>8</sup> Hatanaka, Maki & Bain, Carmen & Busch, Lawrence. (2005). Third-Party Certification in the Global Agrifood System. Food Policy. 30. 354-369. 10.1016/j.foodpol.2005.05.006.



Certifications, standards, and measurement	Membership and network
Global Impact Investing Network (IRIS+)	Green Sports Alliance
SASB	The Council for Responsible Sport
Climate Disclosure Standards Board	Ceres
AASHE (STARS)	Cruise Lines International Association
International Integrated Reporting Council	
USGBC	

The team wishes to highlight several of the above mentioned organizations that had the most robust methodology and best track record of reducing food waste. These organizations include SASB, GIIN, and The Council of Responsible Sport.

### SASB

Within SASB, there are two categories listing specific sources of food waste along with a specific solution. SASB lists a specific definition for each industry as well as all sustainability practices that apply to it. Here are the disclosure standards for Food Retailers & Distributors<sup>9</sup> as well as the Restaurants<sup>10</sup> industry.

In the SASB Materiality Map<sup>11</sup>, “Food Waste Management” and “Food & Packaging Waste Management” (part of Food Retailers & Distributors and Restaurant industry standards) fall under the General Issue Category of “Waste & Hazardous Materials Management”. However, the supplement on GHG emissions does not mention food waste.

The Food Retailers & Distributors industry generates food waste at various stages of operation. Food waste includes edible or otherwise useful food that does not reach consumers, as well as foods that spoil or are damaged during transportation, stocking, or while on store shelves. Food loss and waste represent loss of saleable merchandise for companies in the industry and a loss of resources used in food production like land, water, labor, energy, and agricultural chemicals. Moreover, it contributes to food insecurity. Food waste also generates greenhouse gas (GHG) emissions during landfill decomposition. Effective food waste management can present financial opportunities to reduce costs associated with inventory loss, as well as help improve food security by more efficiently diverting food resources to beneficial purposes. Within Food

<sup>9</sup>Sasb.org. 2022. [online] Available at: <[https://www.sasb.org/wp-content/uploads/2018/11/Food\\_Retailers\\_Distributors\\_Standard\\_2018.pdf](https://www.sasb.org/wp-content/uploads/2018/11/Food_Retailers_Distributors_Standard_2018.pdf)> [Accessed 1 April 2022].

<sup>10</sup> Sasb.org. 2022. [online] Available at: <[https://www.sasb.org/wp-content/uploads/2018/11/Restaurants\\_Standard\\_2018.pdf](https://www.sasb.org/wp-content/uploads/2018/11/Restaurants_Standard_2018.pdf)> [Accessed 1 April 2022].

<sup>11</sup> *Exploring materiality*. SASB. (2022, February 7). Retrieved April 1, 2022, from <https://www.sasb.org/standards/materiality-map/>

Retailers & Distributors, food waste is considered diverted if it is used for animal feed or converted to biobased industrial products such as fiber, composted, or fermented material.

Restaurants produce waste in two main forms: food and packaging. Food waste is generated during the preparation process as well as by unconsumed food. Food waste results in loss of resources, such as water, energy, land, labor, and capital, and produces GHG emissions as a result of decomposition. Further still, food ingredient deliveries to restaurants are a significant source of packaging waste. Packaging waste includes packaging received from suppliers and packaging disposed by consumers in the restaurant areas. In addition, limited-service restaurants make heavy use of disposable tableware to serve customers. Municipal and federal regulations around packaging are likely to continue evolving to reduce packaging, improve recyclability, and increase the biodegradability of packaging. Companies that are able to stay ahead of regulations will not only see a positive impact on brand reputation, but will likely reduce their cost of compliance, as well. Companies that are able to reduce waste through various methods, including food recovery, diverting waste from landfills, and packaging reclamation programs can reduce waste handling costs and improve operational efficiency. Within Restaurants, SASB provides two methods of food waste diversion: composting and recycling cooking oil into energy sources.

### GIIN

The GIIN investing framework focuses on a list of Themes. Current Themes include: Smallholder Agriculture, Sustainable Water Management, Climate Change Mitigation, and Quality Jobs. They have developed IRIS+ which is an accounting system for investors to use, measure, and optimize the impact of investment in each of these Themes<sup>12</sup>.

IRIS+ focuses on Five Dimensions of Impact:

1. What -- What are the outcomes and how important are they?
2. Who -- Who feels the impact?
3. How Much -- Scale, depth, duration of the outcome
4. Contribution -- What is the enterprise's contribution to the outcome?
5. Risk -- What is the risk to people and the planet if the impact does not occur?

They focus heavily on impact measurement and management and use these to attract investments. Companies also rely on these metrics for their own impact reporting. Whatever engagement comes through IRIS+, metrics must be a key part. Metrics can focus on key interests for the investor or company or, alternatively, can be linked to broader bins like the United Nations Sustainable Development Goals (UN SDGs).

Metrics can be parsed between different investment Themes. For example, GHG emissions can be included in both Climate Change Mitigation and Smallholder Agriculture. Metrics are broken down into 18 different categories including Agriculture, Climate, Land, and Health. They have a metric category for "Waste", but it does not include anything explicitly related to food waste.

The team suggested that ReFED take a dual approach to GIIN to include more food waste initiatives in IRIS+. First, the incorporation of Food Waste as an investment Theme for GIIN was explored. Food waste would share many of the same metrics that their other Themes utilize, but

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<sup>12</sup> Iris.thegiin.org. 2022. *IRIS+ and the Five Dimensions of Impact | IRIS+ System*. [online] Available at: <<https://iris.thegiin.org/document/iris-and-the-five-dimensions/>> [Accessed 1 April 2022].

it would combine these metrics in a unique way. The emphasis on social justice would be a strong argument for inclusion because they currently have very few Themes addressing social issues. Second, ReFED should provide the basis for developing one or more metrics that track food waste explicitly. As mentioned above, they have some general waste metrics already, but since food waste has unique tracking needs and unique outcomes, ReFED is well positioned to advise in developing these metrics.

### Council for Responsible Sport

The Council of Responsible Sport is event-based and geared towards predominantly races like marathons, triathlons, and other track and field events. To be included in the certification process, organizations carefully consider their available resources and pay a \$2,500-\$6,000 application fee to be a part of the two year Certify Program under the assumption that they will be certified within 6-9 months prior to the event date.<sup>13</sup> In return, organizations receive:

- 5 hours per year of direct consulting support
- Access to Council staff assists with the bulk of documentation and reporting requirements
- Paid advertising recognizing their event as Council-certified in relevant publications and media channels; also includes social media support and promotion
- A carbon footprint calculator that allows accurate offsetting of energy used for operations and travel
- Local food procurement assistance with a strong emphasis on local sustainable agriculture and produce
- Communication assistance with local vendors to ease compliance concerns

In order to reduce food waste, every event hosted by a member must have a written waste diversion plan as well as a method for tracking waste diversion from landfill. The Council encourages members to strive for “zero waste” (One point will be awarded for diverting 60% of waste from landfills and incinerators, a second point will be awarded for 75% diversion, and a third point will be awarded for diverting 90% of event waste from going to landfills and incinerators). In addition, the event must partake in one of the initiatives from the following list: diverting at least 50% of a hard-to-manage items from landfills; hosting an e-waste collection in conjunction with event; reusing or donating one non-food item; having a robust food donation program; eliminating promotional gifts and materials; educating participants and spectators on waste diversion efforts.

To help their members address food waste issues, the Council acknowledges compost, diversion, food donation, and education as potential solutions. They also have developed resources on food waste prevention and menu planning. They have partnered with Nuun Hydration and AHM Brands, too.

The team suggests the ReFED can best enhance the food waste reduction efforts of the Council for Responsible Sport by helping them focus mainly on food waste prevention, menu planning,

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<sup>13</sup> Villalobos, S. (2020, August 7). *Council for Responsible Sport Developing Responsible Sport Standard for organizations/council for responsible sport*. Council for Responsible Sport. Retrieved April 1, 2022, from <https://www.councilforresponsiblesport.org/stories/2020/council-for-responsible-sport-now-developing-responsible-sport-standard-for-organizations>

and anaerobic digestion. In particular, ReFED could provide context for how food waste reduction can save money for members, how it can impact their other disclosures, and improve their public image.

## Conclusions for ReFED

As a result of this work, ReFED was provided with a clearer picture of how their tools and resources can be integrated into a variety of other settings. The Master's Project team examined hundreds of certifications, businesses, and other organizations who can impact food waste and determined the extent to which ReFED could make a difference in their work. Their main take-aways were the following:

1. All sustainability certifications and standards pursued had some sort of food waste reduction criteria; primarily focused on activities including tracking, food donation, composting, and animal feed.
2. The main opportunity identified to enhance food waste reduction activities through certifications and standards is to include food waste prevention actions that can have an impact not only in participating companies' operations, but also along its value chain in the criteria and guidelines.
3. Of the certifications and standards pursued, none of them included activities that enhance product distribution as a way to earn points or credits.
4. Many certifications and standards also have an opportunity to include (1) procurement and sourcing of imperfect and surplus produce and upcycled products and (2) purchasing from vendors that engage in food waste reduction efforts as a way to earn points or credits, which can help drive food waste reduction further upstream.
5. Additionally, certifications and standards could expand activities, as it pertains to reshaping consumer environments as a way to earn points and credits, like food waste awareness campaigns and customizable menus or smaller portion sizes.
6. There is also an opportunity to explicitly highlight full-product utilization of food items, whether it be improved recipe planning or partnering with another company to transform byproducts and surplus food into a new food product.
7. For member-based organizations, there is an opportunity to include resources as it pertains to food waste reduction and to include food waste reduction education in its regular events, webinars, and larger programming.

From these insights, the Master's team set forth a roadmap for how to incorporate these insights into their future work. As a result, they came up with the following as a call to action:

1. For certifications and standards, prevention activities could be worth more "points" or "credits" to emphasize the importance of prevention. Prevention activities that could be included are those related to procurement and sourcing of imperfect and surplus produce and upcycled products, enhancing product distribution, maximizing product utilization, and reshaping consumer environments.
2. Include a visual to help demonstrate the opportunity
3. For member-based organizations, include food waste reduction resources
4. Direct interested party to ReFED's Insights Engine and ReFED's Roadmap to 2030

5. For tailored recommendations on how to enhance food waste reduction into a certification or standard and or a presentation on food waste reduction to certified companies or member organizations, contact ReFED directly.

## **Personal Reflections:**

A big part of the SEAS masters project experience is to work on teamwork and collaboration within a group project. With this larger team goal in mind, we took several steps to ensure that we maximized respect and effectiveness for our teammates. We began the project with a Team Charter, an internal document in which your team describes the project goals and how the team will work together to achieve these goals (roles, responsibilities, and work processes). We also set forth some personal and team learning goals. In this section, we will reflect on each and how well we adhered to the goals we set early on.

### **Team Charter**

A document encompassing project objectives and scope, team goals, individual goals, team roles and responsibilities, team process and norms, and a signed commitment.

### **Personal learning goals**

#### **Connor**

1. *Practice being more collaborative, not leading everything (often “on the fly”), practice listening and organizational skills to help team succeed: Leading from Behind*

In both high school and undergrad, I was told to regularly speak my mind when communicating amongst my peers. In those environments, this method of conveying information was both desirable and a well-honed ability. However, once I began working in the nonprofit and government sectors, I was sometimes told that I was too direct and maybe spoke too much. In turn, some of my peers admitted that they felt intimidated and even grew annoyed by my method of communication. I recognized upon entering graduate school that working alongside business and sustainability students may largely differ from my experience working alongside peers in education. Still, I wanted to remain cognizant of the space I took up in meetings and improve my listening skills. The phrase I had learned while applying to graduate school that encompassed this very sentiment was “leading from behind”; I wanted to work on my supportive leadership skills.

As a consequence of intentionally leading from behind, I learned several important skills and fully realized a few larger lessons. One, I now completely appreciate the power of listening. Indeed, the number of details I was able to recall increased astronomically when I was not preparing my response to either confirm my knowledge of what was just shared or ask a question that would likely soon be answered. Two, I found creative ways to stay engaged even if I was not the main point-person of communication including preparing documents for the main communicator and synthesizing information in real time. Three, I improved my organizational skills because much of my focus was no longer on myself and to confirm my understanding, but rather how best to support my teammates and their success – our success was driven by no individual alone, but the

larger team's efforts.

## *2. Eager for interaction with clients*

I came into this project incredibly eager to work with potential partnerships. This was not just to be able to point towards a newly formed and meaningful relationship, which would provide something tangible to this project, but also to sharpen and round out my leadership skills. Rephrased, I still wanted to have the space to flex my human skills, form my own personal relationships across different organizations, and get more practice asking better questions in addition to building my “leading from behind” toolkit.

I did not have as many opportunities to interact with possible clients as I would have liked when entering the project; during the handful of occasions I did get to talk directly with organizations, I also did not have as much autonomy over the interaction as I would have liked. This was largely because of the constraints of my role – I was a Student Consultant and not a full-time employee. COVID-19 certainly contributed to the complexity of our team's situation and likely played a role in how much I could actually execute with regards to outreach, as well. While I wish I had just a few more chances to communicate with future clients and a little more opportunity to spearhead the discussion and follow-up questions, I remain incredibly grateful for the experiences I had this summer doing outreach.

## *3. Interest in Food Industry*

One of the primary reasons I joined a three-year graduate program is because I felt that my understanding of the climate crisis and its corresponding solutions was too high-level. Indeed, I could speak to several topics surrounding the climate emergency such as renewable energy, carbon sequestration, and water, but I could not speak to the more nuanced matters like LCA, regenerative farming, and food waste. Specific to food waste, I had zero experience coming into this project outside of my own personal accounts of composting food at home and school. I saw this as an incredible opportunity to learn more on the subject. After more than one year of work, I can say I gained a lot of knowledge on food waste including, but not limited to: different points of impact along the supply chain, key players, the most important points of impact, the feasibility of addressing different points of impact, a systems approach, available resources and technology, and more generally the critical role food waste plays in climate change.

## *4. Other takeaways*

Moving forward, I want to be able to ask my clients better questions, practice my leadership skills from both behind and the forefront, and maintain more realistic expectations for myself. Sarah Cole consistently asked great clarifying questions in an articulate and professional manner. I recognize asking questions with intentionality will take more practice and preparation, but I frequently witnessed an expert communicator and now know what to aspire to. Maham Zafar always walked the delicate tightrope between leading from behind and leading from the forefront with seeming ease. While I have not yet found my perfect balance between listening and leading, I know with more practice it will become all the more easy to navigate between these two complimentary skills. Kyle Kasten regularly set expectations in a healthy and direct way both at an

individual and team level throughout this project. I need to balance my own expectations and priorities from the very beginning of a new task not just for others, but for myself.

I am so thankful to have been a part of this team that taught me so much and made this Master's Project experience worthwhile.

### Kyle

1. *Network expansion: talking to potential clients, as many as possible*

To some extent I was able to realize this goal. ReFED is an incredible organization with a lot of brand recognition. Just having them on my resume/LinkedIn has certainly opened doors for me. However, before starting this project, I was expecting client outreach to be a bigger part of the project. Unfortunately for me and my learning goals, much of our work was internet research rather than conversations with clients or potential clients. I did have one opportunity to participate on a call with the AASHE STARS program. This call was more what I was looking for and I was glad to participate.

2. *I am new to the food and ag industries so this is an incredible opportunity to learn more about the industry, the major players and where I might fit in*

Going into this project, I was particularly excited about how many aspects of the food industry are involved in food waste. I viewed this project as a good vessel for learning more about each step of the food production process, and what big players exist at each stage. One benefit of our primarily online-based research was that I got the opportunity to learn about many different actors in the industry. For example, as part of my research I had to create a summary of the top 50 grocery-store chains in the United States and their current commitments to reducing food waste. Since I have a long-term interest in working with grocery, this section of research was extremely interesting to me. Another example was learning about different sustainability standards and metrics tracking methodologies such as SASB and GIIN. My lessons from this research have been very valuable as I have progressed as a student in sustainability.

### Maham

1. *Improve on communication with clients, partners, teammates*

Prior to this project I felt like I was lacking in communication with delayed responses to messages, not voicing my needs or concerns, and letting my anxiety become a roadblock to my success. Throughout my time as a student consultant I grew to be communicative towards my teammates, advisor, and partner. Since there was little opportunity to interact with clients I was not able to note if my communication improved with clients, but I am glad for the ability to grow.

2. *Learn how to lead (comfortably)*

Learning how to lead stemmed out of my desire to improve on my communication skills. I had little experience facilitating and leading conversations with clients and partners, so I was hesitant how to structure the conversations. I was intimidated working with a large

organization like ReFED and I took a step back to observe how my teammates lead the conversation. Watching my teammates lead taught me how to facilitate conversations and it helped me facilitate one on one conversations with our partner. Although I cannot recall a time when I primarily led a group conversation I saw improvement in my involvement in conversations and was able to identify a structure on how I could lead a conversation. This project allowed me to nurture and develop that skill at my own pace, and now I feel more confident and comfortable with leading a different project moving forward, and I am glad I had the opportunity to learn from my peers.

3. *Interested in Food industry*

I had multiple interests within the environmental sector when starting out as a student at SEAS such as plastic waste, fast fashion, and renewable energy. When viewing the masters projects, I came across the ReFED project, and I was very intrigued by the food waste issue and the solutions that can be implemented throughout the supply chain. Throughout the research phase of the project I discovered many environmental organizations that are lacking in food waste reduction strategies or organizations that have a thorough food waste reduction plan, and how there is so much room for improvement. The more I learned about ReFED and food waste the more I considered entering the industry for my professional career. Once I have entered the professional environmental space and gained a better understanding of the space I do see myself working somewhere where I am a solution provider for food waste.

4. *Experience working with a team and clients/partners*

This was my first experience as a consultant for a nonprofit organization. Even though I had envisioned the project to be more engaging in terms of outreach I am still glad I was able to learn with a great and supportive team.

Sarah

1. *Lead and follow: being ok not taking charge of everything/Create an environment that is very collaborative*

I was able to make progress on this goal because of my teammates. We set the norm from the beginning that we would rotate responsibilities like taking notes, setting up meetings, leading calls with sponsors, reaching out to stakeholders, etc. One tool that also helped me was our project management software Meistertask. I researched online tools, selected Meistertask, and championed its use for our team. This gave us clear visuals on the workload and responsibilities for each person and helped us hold each other accountable. The experience in our Masters Project has aided me in group work since.

2. *Opportunities to articulate sustainability*

This project provided me with several opportunities to articulate sustainability goals. Notably, I joined ReFED for a conversation with a potential target. I also had practice articulating about the project with our “Super Team” (group of several Masters Project groups with a unified focus on food and agriculture) and in several internship interviews over the course of the year. Food waste is a very tangible and accessible issue to discuss



with friends and family as well, so more exposure to food waste reduction goals and benefits has given me opportunities to discuss with many people in my life.

3. *Improve approach to research*

I did not make much progress on this goal given the nature of our project. It involved less library or quantitative research than other masters projects. I improved somewhat in how to apply creative thinking on top of basic internet research. Our main target spreadsheet, developed by ReFED, also gave me a framework for how to keep track of information. I have used similar frameworks since.

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**Appendix:**



**Reference A2:** The 2016 Roadmap to reduce food waste by 20% was the first report generated by ReFED to tackle and address the food waste problem. It outlines why food waste occurs; analysis of economic benefits from enacting food waste solutions; prevention, recovery, and recycling solutions; and actions required to reach a 50% food waste reduction goal. The link to the 2016 Roadmap to reduce food waste by 20% report, which is available to the public on the ReFED website: <https://refed.org/downloads/the-roadmap-to-reduce-u-s--food-waste/>

**Reference A3.** The Roadmap to 2030: Reducing US Food Waste by 50% report which includes the launch of the Insights Engine. It is built off of the 2016 Roadmap report and offers more metrics and opportunities for action. The report is available for the public to download on ReFED’s website: <https://refed.org/food-waste/resources-and-guides/#roadmap-2030>



## Glossary of General Terms

**Consumer-Facing Businesses (CFB)** - Category of food businesses that includes retail grocers, restaurants, foodservice providers, healthcare, assisted living, military, and correctional facilities.

**Diversion Rate** - The fraction of the specified waste stream that can be diverted from “food waste” to a higher value, such as prevention, recovery, animal feed, or composting. In ReFED’s analysis, diversion rates are only applied to the portions of food waste where a solution could logically be applied, not all food.

**Donated Food** - Unsold food that is donated to people via food banks or pantries, food distribution services, etc.; includes food captured through “Strengthen Food Rescue” solutions and Gleaning

**Eaten Food** - Food that is produced and consumed by people as intended or consumed as a donation.

**GHG Footprint (Food Disposal)** - The greenhouse gas emissions associated with the disposal process of food, such as fugitive landfill emissions, measured in carbon dioxide equivalent (CO<sub>2</sub>e); greenhouse gas emission varies by the destination and can be negative or positive depending on if the disposal process creates or absorbs greenhouse gases. See environmental methodology for full description.

**GHG Footprint (Supply Chain Activities)** - The cumulative greenhouse gas (GHG) emissions generated and released into the atmosphere by the food as it travels along the supply chain, measured in carbon dioxide equivalent (CO<sub>2</sub>e); includes emissions from the production, transportation, cooling, and cooking. See environmental methodology for full description.

**Meal Equivalent** - A standardized unit (approximately 1.2lbs of food) that reflects the potential meals created from surplus, edible, fresh or preserved food.

**Produce Packhouse** - A facility where fruits and vegetables are cleaned, graded, wrapped, and packaged for transit or storage.

**Recycled Food** - Food that is not consumed by people but sent to be used for either industrial uses, animal feed, anaerobic digestion, or compost.

**Remaining Opportunity** - The amount of food surplus and related impacts that ReFED estimates could be addressed by additional solutions after all proposed solutions have been implemented.

**Solution** - Tech-enabled tools and infrastructure, procedural changes, collaborative relationships, and other practices that can lead to a reduction in food waste.

**Solution Provider** - A vendor, service provider, or value-added reseller who provides solutions to food waste to businesses or consumers.

**Stakeholder** - An individual, group, or organization who has interest in the business or industry and can either affect or be affected by changes.

**Surplus Food** - All food that goes unsold or unused by a business or that goes uneaten at home – including food and inedible parts (e.g., peels, pits, bones) that are donated, fed to animals, repurposed to produce other products, composted, anaerobically digested, or wasted.

**Uneaten Food** - Food that is produced but never eaten by people; includes food that is wasted or recycled

**Wasted Food** - Uneaten food and inedible parts that end up being landfilled, incinerated, disposed of down the sewer, dumped, spread onto land, or simply not harvested.

**Figure A5.** Partial Glossary of general terms used in ReFED reports, Insights Engine, and website. Full document of the glossary is available to the public:

[https://insights.refed.org/uploads/documents/refed-insights-engine-glossary-vfinal-2021.2.2.pdf?\\_cchid=7d0e044d61127907795816d134af4e67](https://insights.refed.org/uploads/documents/refed-insights-engine-glossary-vfinal-2021.2.2.pdf?_cchid=7d0e044d61127907795816d134af4e67)



**Figure A6.** A screenshot of the homepage for the Insights Engine, which is available on ReFED’s website: <https://insights.refed.org/>