



ISSUE BRIEF

# ASSESSING CORPORATE PERFORMANCE ON FOOD WASTE REDUCTION

## A STRATEGIC GUIDE FOR INVESTORS

### AUTHORS

Allan Pearce, *Trillium Asset Management*

JoAnne Berkenkamp, *Natural Resources Defense Council*

### ACKNOWLEDGMENTS

The authors would like to thank these individuals for their guidance in the development of this brief: Rob Berridge, Ceres; Noah Klein-Markman, Ceres; Marissa LaFave, Green Century Capital Management; Nadira Narine, Interfaith Center on Corporate Responsibility; Adam Rein, MissionPoint Partners; Holly Testa, First Affirmative Financial Network; and Sarah Vared, ReFED.

### ABOUT TRILLIUM ASSET MANAGEMENT

Trillium Asset Management is the oldest independent investment adviser devoted exclusively to sustainable and responsible investing, managing equity and fixed income portfolios for individuals, foundations, endowments, and religious institutions since 1982. A leader in shareholder advocacy and public policy work, Trillium aims to deliver both impact and performance to investors.

### ABOUT NRDC

The Natural Resources Defense Council is an international nonprofit environmental organization with more than 2.4 million members and online activists. Since 1970, our lawyers, scientists, and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC has offices in New York City, Washington, D.C., Los Angeles, San Francisco, Chicago, Montana, and Beijing. Visit us at [nrdc.org](http://nrdc.org).

For more information, please contact:

JoAnne Berkenkamp  
[jberkenkamp@nrdc.org](mailto:jberkenkamp@nrdc.org)

Allan Pearce  
[apearce@trilliuminvest.com](mailto:apearce@trilliuminvest.com)

[www.nrdc.org](http://www.nrdc.org)  
[www.facebook.com/nrdc.org](https://www.facebook.com/nrdc.org)  
[www.twitter.com/NRDC](https://www.twitter.com/NRDC)

[www.trilliuminvest.com](http://www.trilliuminvest.com)

## OVERVIEW

Forty percent of food in the United States is never eaten. Instead it is discarded—along with all the energy, water, labor, pesticides, fertilizer, and other resources that went into producing it. The economic cost is staggering, with the value of discarded food estimated at \$218 billion each year in the United States alone.<sup>1</sup> Further, if food waste globally were a country, it would be the third-largest emitter of greenhouse gases (GHG) on the planet, after China and the United States.<sup>2</sup>

Over the past few years, awareness of this stunning reality has exploded in the media and public consciousness. In parallel, the environmental consequences of wasted food have become more widely recognized and food insecurity has become more visible in the wake of the 2008 recession. In response, federal, state, and municipal governments have become increasingly engaged, and forward-thinking businesses are taking action to reduce the food wasted in their operations and supply chains.

It is easy to assume that food-based businesses, such as grocery retailers, restaurants, and food service providers, would assiduously manage their food waste given that it directly and significantly impacts their bottom line. Yet many companies in the food sector do not specifically track the cost, volume, or causes of the food wasted in their own operations. Even fewer acknowledge how their everyday business practices may contribute to waste—and therefore increased costs—among their suppliers and consumers. While some companies have stepped up to the plate, corporate transparency around food waste remains limited.

Investors have a direct interest in understanding the risks that food waste poses to their portfolios. They also have a role to play in spurring corporate action to more explicitly recognize and manage that risk, reduce the amount of food wasted, and increase corporate accountability and transparency around food waste issues. Indeed, assessing the risks and opportunities associated with food waste should be an important element of any environmental, social, and governance (ESG) research process.

### **This brief summarizes:**

- the consequences of wasting food;
- associated business risks that impact financial performance;
- guidance on prioritizing corporate action on food waste prevention, food donation, and food scrap recycling; and
- best-in-class examples of corporate leadership.

The appendix provides discussion questions to help investors engage corporations about their food waste performance.

## THE MANY CONSEQUENCES OF WASTING FOOD

Although the consequences of wasting food were little recognized until recently, the cost, environmental consequences and social impacts of growing, processing, transporting, refrigerating, packaging, preparing, and disposing of uneaten food are enormous. Consider these sobering facts:

- Forty percent of the U.S. food supply now goes uneaten.<sup>3</sup>
- Grocery retailers, restaurants, and food service companies alone waste roughly 25 million tons of food valued at \$57 billion per year, accounting for roughly 40 percent of U.S. food waste by tonnage.<sup>4</sup> Additional food is lost at the farm level (estimated at 16 percent of total U.S. food waste), during manufacturing (2 percent), and at the consumer level (43 percent).
- Greenhouse gases (GHGs) are generated across the food supply chain, from food production through processing, refrigeration, transportation, cooking, and disposal. In fact, the GHG emissions generated by the food wasted in the United States are equivalent to the emissions from more than 37 million cars—that's one in seven vehicles on the road.<sup>5</sup>
- One-fifth of the cropland, fertilizers, and water used by U.S. agriculture is used to grow food we don't eat.<sup>6</sup>
- More than one in eight Americans, including 13 million children, is food insecure.<sup>7</sup> However, according to the Food Waste Reduction Alliance 2016 industry survey, only 3.3 percent of the unsaleable food reported by manufacturers, restaurants, and grocery retailers was donated to people in need.<sup>8</sup>
- The amount of food waste in the United States has been on the rise for the past several decades, with per capita food loss increasing by 50 percent from 1974 to 2005.<sup>9</sup>

---

*If food waste globally were a country, it would be the third-largest source of greenhouse gas emissions after China and the United States.*

---

## BIG WASTE BRINGS BIG RISKS: WHY BUSINESSES AND INVESTORS NEED TO ACT

Food-based businesses, such as grocery retailers, restaurant chains, food service management companies, distributors, and food manufacturers, expose themselves to a variety of risks by neglecting the impact of food waste on their operations. Chief among them are financial, supply chain, reputational, and regulatory risks.

### FINANCIAL RISK

From an investor's perspective, the financial impact of food waste represents the most direct risk. The cost of purchasing, transporting, handling, preparing, and ultimately disposing of food is significant for any business in the food sector and directly impacts the bottom line. As noted above, retailers, restaurants, and food service companies waste food worth approximately \$57 billion per year. In the institutional food service sector, for instance, 4 to 10 percent of the food purchased is typically wasted before it can be sold and served to consumers.<sup>10</sup> In the restaurant sector, roughly 2.1 pounds of wasted food is generated for every \$100 in sales.<sup>11</sup>

In addition to the cost of the food itself, nearly 94 percent of this material is then disposed of through landfilling or incineration or via wastewater treatment, adding further cost to the bottom line.<sup>12</sup> The cost of disposing of wasted food is also on the rise as landfill disposal fees ("tipping" fees) increase across the nation; in 2013, they were more than double what they were in 1985.<sup>13</sup>

An oft-cited myth is that food waste is an inherent cost of doing business, but this is not necessarily so. There are myriad strategies for reducing food waste-related costs that can have a positive return. In fact, a recent review of 1,200 business sites across a range of sectors found that 99 percent of sites earned a positive return on their investments to reduce food loss and waste. Notably, the median return from food waste reduction efforts was found to be \$14 for every \$1 invested.<sup>14</sup> In some cases, creative utilization of otherwise wasted food can even create new revenue streams.<sup>15</sup>

The ReFED *Roadmap to Reduce U.S. Food Waste by 20 Percent* identified \$1.9 billion in annual business profit potential from the food waste reduction strategies evaluated.<sup>16</sup> The report found that waste tracking and analytics offered the highest return on investment, highlighting the significant cost savings made possible when the scale and causes of food waste are accurately measured.

ReFED also found that numerous food waste prevention strategies—like providing smaller plates and eliminating trays in food service environments, processing or selling imperfect produce, improving inventory and cold chain management, and optimizing manufacturing lines—can also have positive net returns. Furthermore, when manufacturers, grocers, restaurants, and institutional food service providers donate surplus food rather than shipping it to landfills, they benefit from significant tax breaks and reduced disposal costs.

### SUPPLY CHAIN RISK

Wasting food can compromise the resilience of companies' food supply chains. Business practices that push risk toward suppliers (such as excessively tight product specifications for fruits and vegetables and punitive contract terms) can lead to increased waste upstream.<sup>17</sup> This can increase costs for suppliers and ultimately for buyers, while also destabilizing growers and other suppliers in the distribution chain.

Prolonged droughts and increasingly volatile weather in some domestic and international growing regions have also driven up costs, made supplies of some products less reliable, and prompted some companies to diversify their supply chains and ramp up risk management efforts.<sup>18</sup> The World Economic Forum's Global Risks Report for 2016 describes how climate change may further affect agricultural production, leading to decreased yields or even crop failure—severe risks for global food companies.<sup>19</sup> Volatile supply chain conditions heighten the importance of maximizing utilization of available food supplies and the water and other resources deployed to grow them. Reducing food waste should be a key strategy for increasing supply chain resiliency and managing existing and future supply risks.

---

*Tesco, a U.K.-based grocery retailer, has sent zero food to landfill since 2009. The company has also broadened product specifications for certain fruits and vegetables to reduce waste in their produce supply chains.*

---

## REPUTATIONAL RISK

Poor food waste management practices can threaten companies' brand image, especially given the growing number of consumers who factor their perception of a company's social and environmental image into purchasing decisions. Wasteful practices like sending wholesome food to landfills instead of donating it to the hungry, for instance, can be a magnet for negative attention.

As the public becomes more aware of the tremendous environmental and social impacts of food waste, public calls for more transparency and heightened accountability in food waste management will likely increase. Petitions launched on social media calling upon Walmart and Whole Foods Market to sell cosmetically imperfect produce have garnered more than 159,000 signatures (as of February 2017) and 110,000 signatures (as of November 2016), respectively.<sup>20,21</sup> Thirty percent of Whole Foods shareholders voted in favor of a 2017 resolution calling for transparency around the company's food waste management efforts.<sup>22</sup> Investors filed similar resolutions at Costco and Target in 2016, demonstrating continued demand for transparency.<sup>23,24</sup>

## REGULATORY RISK

Federal and state government attention to food waste is mounting. For instance, California, Vermont, Massachusetts, Rhode Island, and Connecticut now mandate that large generators of organic waste (e.g., food) such as hotels, large restaurants, grocery stores, and food manufacturers divert this waste from landfills.<sup>25,26</sup>

These regulations have prompted businesses to adopt new practices to prevent food waste, ramp up the donation of appropriate foods, and shift hauling contracts to companies that recycle the balance through composting and anaerobic digestion. At the federal level, a number of initiatives have recently been implemented to reduce food waste and increase food donation:

- In September 2015, the U.S. Department of Agriculture (USDA) and U.S. Environmental Protection Agency (EPA) established the nation's first national food waste reduction goal, aiming to cut food waste by 50 percent by 2030.<sup>27</sup> Fifteen leading food companies subsequently adopted this same commitment, including Walmart, Ahold USA, PepsiCo, and Kellogg.<sup>28</sup>
- Federal legislation passed in December 2015 increased the cap on tax deductions for food donations, providing additional financial incentives for companies to donate food.<sup>29</sup>

- The Food Recovery Act of 2015 was introduced in the U.S. House of Representatives, proposing a comprehensive array of policies to reduce food waste from farm to fork, expand food donation to people in need, and build the infrastructure (such as composting and anaerobic digestion) needed to keep food scraps out of landfills.<sup>30</sup> Companion legislation was introduced in the U.S. Senate in June 2016.<sup>31</sup>
- Legislation to standardize date labels on food products (such as "best by" and "sell by" dates) was introduced in both houses of Congress in May 2016.<sup>32</sup> The current lack of consistency leads to consumer confusion that contributes to waste and can add cost for retailers.
- In 2016 a bill was introduced in the House to increase requirements for certain government food service contractors to document and report their food waste.<sup>33</sup>

---

*Darden Restaurants has begun recycling organic waste at its 41 restaurants in Massachusetts to comply with new state requirements. The company estimates that it has the potential to divert up to 50 percent of its waste through organics recycling.*

---

*Darden*, <https://darden.com/citizenship/planet/waste-reduction> (accessed February 13, 2017).

## LEADER OR LAGGARD?

As some companies make progress on food waste reduction, food donation, food waste recycling, and related public disclosure—and others don't—companies' position as either leaders or laggards is becoming more visible. Those who get ahead of this curve stand to garner numerous benefits. These include:

- increased operational efficiencies
- reduced food procurement and disposal costs
- brand enhancement
- improved employee morale
- community goodwill
- concomitant improvement in corporate water and GHG footprints that are impacted by food wastage

Investors can play a key role in ensuring that companies are cognizant of these risks and opportunities by incorporating food waste considerations into their ESG analysis and corporate dialogue.

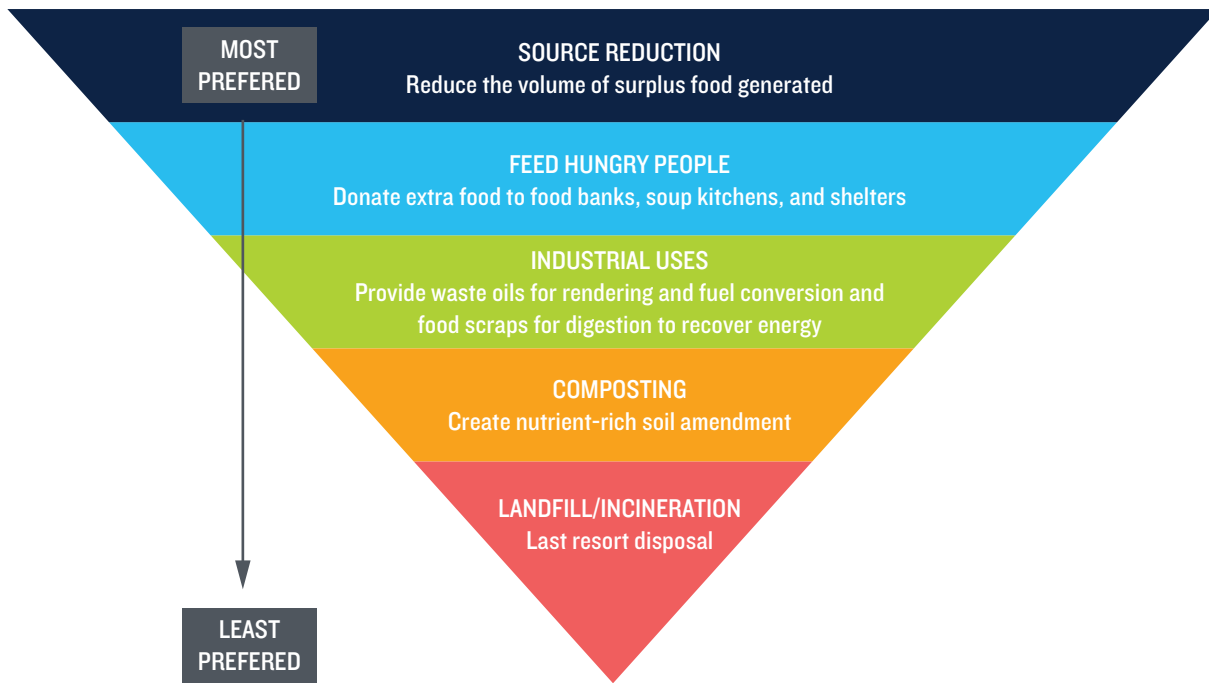
---

*Between 2010 and 2015, Walmart reduced greenhouse gas emissions in its supply chains by 7 million metric tons carbon dioxide equivalent through a variety of food waste initiatives.*

---

Walmart 2016 Global Responsibility Report. <http://corporate.walmart.com/2016gr/enhancing-sustainability/reducing-energy-intensity-and-emissions>, (accessed February 13, 2017).

# FOOD RECOVERY HIERARCHY



Source: US EPA

## PRIORITIZING ACTION ON FOOD WASTE

Food-based businesses can take many actions to reduce their risk and improve performance on food waste. That said, effective prioritization is key to maximizing impact and cutting costs. The EPA's Food Recovery Hierarchy organizes key categories of action from most to least preferred and is a widely used tool for prioritizing action on food waste.<sup>34</sup>

## PREVENTION

As shown above, the most effective actions for addressing food waste are prevention (or "source reduction") strategies. Preventing food from being wasted in the first place avoids the use of the water, agricultural chemicals, energy, and other resources for food production, processing, transportation, packaging and disposal. Prevention strategies also typically offer food companies the greatest financial benefit by reducing the cost of purchasing, handling, and ultimately disposing of food that goes unsold.

*Food waste prevention creates three times the societal net economic value of recovery (e.g., feeding people and animals) and recycling (e.g., industrial uses, composting, and anaerobic digestion) combined.*

www.refed.com.

## FEEDING HUNGRY PEOPLE

The second-most preferred strategy is donating surplus food to organizations that serve food-insecure populations. Food donation programs can benefit local communities and generate goodwill and are often highly motivating for employees. Donors also benefit from sizable federal tax breaks, federal liability protection through the 1996 Bill Emerson Good Samaritan Act, and reduced disposal costs.<sup>35,36</sup>

## FEEDING ANIMALS

When food donation isn't feasible (e.g., with postconsumer plate waste and vegetable trimmings), the next-best use for uneaten food is providing it to area farms (most commonly for hog operations) for animal feed. This strategy is most feasible when farm operations are relatively near the source of the waste. In the food manufacturing sector, a significant portion of food waste currently goes to animal feed.<sup>37</sup>

## RECYCLING

When food cannot be directly consumed by people or animals, recycling strategies such as rendering for animal products, composting, or anaerobic digestion represent the best alternatives. Composting can be used not only to dispose of food but also to return nutrients to the soil and improve its capacity to retain water. During anaerobic digestion, organic waste (such as food or yard waste) decomposes in a closed vessel without oxygen. This process generates biogas, which can be used to generate electricity, fuel, and/or heat, as well as material that can be composted and returned to the soil. While these strategies don't offer the cost savings and environmental benefits of food waste prevention, or the social and reputational benefits of food donation, they are still beneficial for deriving value and nutrients from food scraps.



## LANDFILL AND INCINERATION

Disposal through landfill and incineration are the least-preferred options from environmental and social perspectives because they generate greenhouse gas emissions and destroy organic matter and nutrients that could otherwise be repurposed into new products. Unfortunately, however, 95 percent of uneaten food in municipal solid waste streams is either landfilled or incinerated.<sup>38</sup> Only 5 percent of municipal food waste is diverted from disposal through composting, anaerobic digestion, or other recycling.

Investors should also note that the phrase “zero waste” does not mean that no waste is generated, but only that no waste is sent to landfill.<sup>39</sup> That phrase is sometimes used even when waste is still being incinerated. As a result, it is important to clarify how “zero waste” is being defined in a given context and whether incineration is still occurring.

## WHY THE FOOD RECOVERY HIERARCHY IS SO IMPORTANT

Prioritizing action at the top of the Food Recovery Hierarchy is essential, with prevention strategies offering the strongest opportunity for both cost saving and environmental benefit.

The power of food waste prevention to reduce lifecycle GHG emissions is illustrated in the table below, which shows GHG emissions avoided through various approaches.<sup>40</sup>

Wasted Food Management Method	Metric Tons of CO <sub>2</sub> e Avoided Per 100 Tons of Food Wasted
Prevention	420
Redistribution to People	43
Anaerobic Digestion	61
Composting	72
Landfill	-54

It is important to note that while composting wasted food is a notable improvement over landfilling it, food waste prevention offers the maximum GHG benefit. Food waste prevention also avoids the use of water, agricultural chemicals, packaging, and other resources throughout the food supply chain. Food waste management programs thus require a comprehensive approach, with food waste prevention as the top priority.

## STRATEGIES FOR TACKLING WASTED FOOD

### PREVENTION

- Institute food waste tracking systems to monitor the amount, causes, and costs of food waste.
- Optimize production processes and cold chain management to minimize losses during production and transport.
- Improve purchasing and inventory practices to reduce over-ordering and spoilage.
- Adjust portion sizes to reduce postconsumer waste and encourage diners to take leftovers home.
- Repurpose surplus foods in grocery delis and food service contexts for use in other prepared items.
- Utilize imperfect produce.
- Offer package sizes and bulk purchasing options for grocery items to enable customers to purchase amounts that they can actually consume.
- Educate customers about proper food storage, preparation, and freezing methods.

### DONATION/RECOVERY

- Establish corporate food donation policies and ensure that all staff are trained in them.
- Train staff on proper food handling techniques to ensure that food is donated in accord with applicable state/local health regulations.
- Establish partnerships with food rescue organizations to facilitate donation of appropriate foods.

### RECYCLING

- Reduce the amount of food sent to landfills by directing food scraps to agricultural partners, such as hog and chicken operations, that can use it as animal feed.
- Compost food scraps or use anaerobic digestion, either on- or off-site.

## CORPORATE LEADERSHIP IN ACTION

Given the staggering quantity of wasted food, its harmful impacts, and related business risks and opportunities, companies need to take action. But how should they approach it given the particular nature of their operations? And what strategies can achieve the greatest impact most cost effectively? Below are four critical areas for action and practical examples of how forward-thinking companies are addressing them.

### 1. Measure current volumes and causes of food waste.

The adage “You can’t manage what you don’t measure” very much applies here. Measuring food waste is an important foundational step; food waste audits, even on a pilot scale, can be highly illuminating.

- National retailer **Stop & Shop**, following an assessment of shrink in its perishables departments, was able to save \$100 million per year while providing produce that was, on average, three days fresher.<sup>41</sup> These savings were achieved through strategies like improved forecasting, alternative produce merchandising, and reducing the number of products offered.
- **MGM Grand Buffet**, a Las Vegas food service operation, used LeanPath food waste tracking software to cut pre-consumer food waste by 80 percent, saving an average of \$7,500 per month.<sup>42</sup>
- Following a pilot effort that resulted in a 36 percent reduction in pre-consumer food waste, **Aramark** is installing LeanPath across its 500 highest-volume food service locations in 2017.<sup>43</sup>
- U.K.-based **Tesco** measures and publishes third-party verified data on food waste in their operations annually.<sup>44</sup>

### 2. Develop and implement a food waste management strategy that emphasizes the top tiers of the EPA Food Recovery Hierarchy,

with priority given to prevention, then donation, then animal feed. Once these strategies have been fully tapped, composting and anaerobic digestion can provide an important alternative to landfill and incineration. For example:

#### *Prevention:*

- **Walmart** has used strategies like improved forecasting and packaging and alternative in-store display formats to reduce produce losses. They also discount some items approaching their sell-by date to discourage waste. The company is also shifting all of its private-label products to standardized date labels, which it expects to eliminate 660 million pounds of food waste and avoid 900,000 metric tons of GHG emissions.<sup>45</sup>

- **Tesco** participates in the U.K.’s “Love Food, Hate Waste” consumer education campaign and has ended “Buy one, get one free” promotions on fruits and vegetables that can encourage wasteful purchasing practices.
- **Compass Group**, the largest food service management company in the United States, has purchased more than 2 million pounds of imperfect produce for use in its kitchens.<sup>46</sup> Their program has helped utilize agricultural water resources more efficiently and reduced waste of these products at the farm and fresh-cut processing levels, while also trimming purchasing costs.
- **Blue Apron’s** innovative model of providing customers with pre-portioned ingredients for specific recipes is estimated to reduce consumer food waste by nearly 70 percent, and grocery-level waste by nearly 50 percent.<sup>47</sup>
- **Sodexo** reports that 92 percent of its clients use improved meal forecasting and portion control to reduce food waste.<sup>48</sup>
- **Hilton Worldwide’s** “No Bin Day” project removes trash receptacles from employee restaurants once a week. The project was formally launched in 135 hotels in the Asia-Pacific region in 2015. By encouraging employees to take only portions they can finish, the initiative reduced food waste by up to 95 percent in a single day.<sup>49</sup>

#### *Donation:*

- **Kroger** stores donated 83 million pounds of edible, but unsellable, food to Feeding America-affiliated food banks in 2015.<sup>50</sup>
- A wide range of national full-service and quick-service restaurant chains and grocery chains have donated more than 500 million pounds of prepared and other foods via Food Donation Connection since that organization’s founding in 1992.<sup>51</sup>
- **Compass Group** is partnering with the Food Recovery Network to expand the company’s food donation efforts.<sup>52</sup>
- In 2015, **General Mills** donated nearly \$50 million worth of food worldwide.<sup>53</sup>

#### *Recycling:*

- In Massachusetts, **Stop & Shop** installed an anaerobic digester that can process 95 tons of inedible food per day and generate up to 40 percent of the energy needed for a 1.1-million-square-foot distribution center.<sup>54</sup>
- Produce processor **Baldor Specialty Foods** donates fresh produce, sells trim from its fresh-cut processing operation, diverts unusable fruit and vegetable scraps for animal feed, uses on-site waste-to-water processing, and keeps remaining food waste out of landfills through off-site composting and anaerobic digestion.<sup>55</sup>

### 3. Establish quantifiable goals, benchmarks, and key performance indicators (KPI), and make them public.

Incorporate food waste-related KPI into staff performance reviews.

- In November 2016, 15 companies became founding U.S. Food Loss and Waste 2030 Champions by committing to the national goal established by the USDA and EPA to reduce food waste by 50 percent by 2030. In doing so, the companies commit to quantify their current level of food waste, work to meet the goal in their own operations, and publish information about their progress on their websites.<sup>56</sup> The initial companies are **Ahold USA, Blue Apron, Bon Appetit Management, Campbell Soup, Conagra, Delhaize America, General Mills, Kellogg, PepsiCo, Sodexo, Walmart, Wegmans, Weis Markets, Unilever, and YUM! Brands.**
- The **Consumer Goods Forum**, of which many large food and drink companies are members, has committed to cutting food waste in half by 2025 relative to 2016 levels.<sup>57</sup>
- **Tesco** has announced it will donate all appropriate surplus food from its U.K. stores by the end of 2017 and from all Central European stores by 2020.<sup>58</sup>
- **ReFED** is collaborating with industry partners to develop food waste benchmarking tools for the grocery, restaurant, and food service sectors. The tools are expected to be released in late 2017.<sup>59</sup>

### 4. Publicly disclose information on food waste management programs and progress toward KPIs and goals on an annual basis.

This should include the amount of food unsold, the amount donated, and disposal methods for remaining material.

- **Kroger** publishes a breakdown of the quantity of discarded food donated to hungry people, as well as the food diverted to animal feed, industrial uses, and composting.<sup>60</sup>
- In 2014, **Tesco** became the first U.K. retailer to publish data about their food waste for a full financial year. It has committed to publishing annual, independently verified data going forward.<sup>61</sup>

Food waste is an issue of growing visibility and importance to corporations' bottom line and environmental performance. By incorporating food waste considerations into their ESG analysis, investors can play a pivotal role in catalyzing corporate innovation and accountability in this important field.

## HELPFUL RESOURCES

- World Resources Institute, *The Business Case for Reducing Food Loss and Waste*, March 2017, <https://champions123.org/the-business-case-for-reducing-food-loss-and-waste>
- Food Waste Reduction Alliance, *Analysis of U.S. Food Waste Among Food Manufacturers, Retailers, and Restaurants*, Fall 2016, [http://www.restaurant.org/Pressroom/Press-Releases/FWRA-report-\(1\)](http://www.restaurant.org/Pressroom/Press-Releases/FWRA-report-(1)).
- Food Waste Reduction Alliance, *Best Practices and Emerging Solutions Guide*, Fall 2015, volume 2, <http://www.foodwastealliance.org/about-our-work/solutions-best-practices>.
- ReFED, *A Roadmap to Reduce U.S. Food Waste by 20 Percent*, 2016, [www.refed.com](http://www.refed.com).
- Dana Gunders, *Wasted: How America Is Losing up to 40 Percent of Its Food from Farm to Fork to Landfill*, Natural Resources Defense Council, August 2012, <https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf>. Please check [www.nrdc.org](http://www.nrdc.org) for a second edition of the "Wasted" report to be released in mid-2017.

*Disclaimer:* The information provided is not a recommendation to buy or sell the securities mentioned. The securities were selected on an objective basis for illustrative purposes and do not represent all of the securities purchased, sold, or recommended. It should not be assumed that investments in the securities have been or will be profitable.



## APPENDIX: RECOMMENDED DISCUSSION QUESTIONS

### MEASUREMENT

1. Does COMPANY NAME measure how much food waste it generates annually?
2. Does COMPANY NAME measure this waste directly, or is it extrapolated from assessments conducted at a small percentage of locations?
3. What has COMPANY NAME learned from its measurements so far, and has this led the company to change any of its practices?
4. If COMPANY NAME is not measuring food waste, how does it ensure it is optimally managing waste and minimizing food purchasing and disposal costs?
5. Has COMPANY NAME engaged its suppliers in dialogue about food waste in its supply chains or how the company's own business practices influence food waste at the supplier level?

### GOAL SETTING AND STRATEGY IMPLEMENTATION

1. Has COMPANY NAME made a public commitment to reduce food waste, including food waste reduction goals and interim benchmarks?
2. To what degree has the EPA Food Recovery Hierarchy informed COMPANY NAME's prioritization of different approaches to reducing its food waste?
3. How is COMPANY NAME working to prevent food waste from occurring?
4. Does COMPANY NAME donate surplus foods to organizations that serve people in need?
5. What systems are in place to keep food out of landfills or incinerators, for instance by diverting food waste to animal feed, composting, or anaerobic digestion?
6. What specific steps are planned to prevent food waste, donate surplus foods, and recycle food scraps next year?

### REPORTING

1. Does COMPANY NAME report publicly on its food waste management efforts? Is the data third-party verified?
2. If so, does this reporting include quantitative data on food waste-related performance metrics as well as a qualitative description of strategies used to address food waste at all levels of the EPA Food Recovery Hierarchy?
3. If not, what barriers does COMPANY NAME face in reporting on food waste? What is the company doing to overcome any barriers?

### OTHER

1. Is there accountability for improving performance on food waste at the senior executive and board levels? Who is responsible?
2. How are food waste reductions incentivized through compensation structures at board, executive, management, and employee levels?
3. To what degree have existing or prospective state-level regulations changed COMPANY NAME's practices? How prepared is COMPANY NAME for potential regulations?
4. Is COMPANY NAME constructively supporting federal or state policy that facilitates food waste prevention, food donation, and/or development of food recycling infrastructure such as composting and anaerobic digestion?

## ENDNOTES

- 1 ReFED, *A Roadmap to Reduce U.S. Food Waste by 20 Percent*, March, 2016, <http://www.refed.com/?sort=economic-value-per-ton>. Dana Gunders, “Wasted: How America Is Losing up to 40 Percent of Its Food from Farm to Fork to Landfill,” August 2012, <https://www.nrdc.org/sites/default/files/wasted-food-IP.pdf>.
- 2 Food and Agriculture Organization of the United Nations, *Food Waste Footprint: Impacts on Natural Resources*, 2013, [www.fao.org/docrep/018/i3347e/i3347e.pdf](http://www.fao.org/docrep/018/i3347e/i3347e.pdf).
- 3 Dana Gunders, “Wasted.”
- 4 ReFED, *A Roadmap to Reduce U.S. Food Waste*.
- 5 M. Heller and G. Keoleian, “Greenhouse Gas Emission Estimates of U.S. Dietary Choices and Food Loss,” *Journal of Industrial Ecology*, Vol 19 issue 3, June 2015, p 391-401. DOI 10.1111/jiec.12174. This study finds that the production of food lost at the retail and consumer levels in the United States in 2010 contributed an additional 160 million metric tons (MMT) CO<sub>2</sub>e of GHG emissions. This estimate does not include GHG emissions from disposal, which we conservatively estimate to add another 16 MMT CO<sub>2</sub>e by applying 2014 U.S. EPA estimates of food waste in landfills to the EPA Waste Reduction Model (WARM). Together, these add up to 176 MMT CO<sub>2</sub>e, which equates to 2.6 percent of the total EPA GHG Inventory of 6,873 MMT CO<sub>2</sub>e.
- 6 ReFED, *A Roadmap to Reduce U.S. Food Waste*. ReFED’s estimates are 21 percent of all freshwater use, 19 percent of cropland, and 18 percent of fertilizer use.
- 7 USDA Economic Research Service, “Household Food Security in the United States in 2015,” September 2016, <http://www.ers.usda.gov/media/2137663/err215.pdf>.
- 8 Food Waste Reduction Alliance, “Analysis of U.S. Food Waste Among Food Manufacturers, Retailers, and Restaurants,” Fall 2016, [www.foodwastealliance.org/wp-content/uploads/2013/05/FWRA-Food-Waste-Survey-2016-Report\\_Final.pdf](http://www.foodwastealliance.org/wp-content/uploads/2013/05/FWRA-Food-Waste-Survey-2016-Report_Final.pdf).
- 9 K.D. Hall, et al., “The Progressive Increase of Food Waste in America and Its Environmental Impact,” *PLoS ONE* 4, no. 11 (2009):e7940, <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0007940#pone-0007940-g001>.
- 10 LeanPath, [www.leanpath.com](http://www.leanpath.com) (accessed January 10, 2017).
- 11 Natural Resources Defense Council calculation based on Food Waste Reduction Alliance, “Analysis of U.S. Food Waste.”
- 12 Food Waste Reduction Alliance, “Analysis of U.S. Food Waste.”
- 13 U.S. Environmental Protection Agency (hereinafter EPA), Office of Resource Conservation and Recovery, “Advancing Sustainable Materials Management: Facts and Figures 2013,” June 2015, p. 15, <https://www.epa.gov/smm/advancing-sustainable-materials-management-facts-and-figures>.
- 14 Hanson, Craig and Mitchell, Peter. On Behalf of Champions 12.3. “The Business Case for Reducing Food Loss and Waste.” March 2017, <https://champions123.org/the-business-case-for-reducing-food-loss-and-waste>.
- 15 For example, see Baldor Specialty Foods’ SparCs program, in “Baldor Specialty Foods Takes Innovative Approach to Combatting Food Waste,” *BusinessWire*, December 2015, [www.businesswire.com/news/home/20151201005438/en/Baldor-Specialty-Foods-Takes-Innovative-Approach-Combatting](http://www.businesswire.com/news/home/20151201005438/en/Baldor-Specialty-Foods-Takes-Innovative-Approach-Combatting).
- 16 ReFED, *A Roadmap to Reduce U.S. Food Waste*.
- 17 Feedback Global, “Food Waste in Kenya: Uncovering Food Waste in the Horticultural Export Supply Chain,” 2015, [http://feedbackglobal.org/wp-content/uploads/2015/07/Food-Waste-in-Kenya\\_report-by-Feedback.pdf](http://feedbackglobal.org/wp-content/uploads/2015/07/Food-Waste-in-Kenya_report-by-Feedback.pdf).
- 18 J. Berkenkamp, “When Weather Becomes the ‘Single Biggest Factor,’” Institute for Agriculture and Trade Policy, April 29, 2013, <http://www.iatp.org/blog/201304/when-weather-becomes-the-single-biggest-factor>.
- 19 World Economic Forum, “Climate Change and Risks to Security,” <http://reports.weforum.org/global-risks-2016/climate-change-and-risks-to-food-security/> (accessed January 10, 2017).
- 20 J. Figueiredo, “What the Fork Are You Doing with Your Produce, Walmart?” petition on Change.org website, <https://www.change.org/p/walmart-what-the-fork-are-you-doing-with-your-produce-walmart> (accessed February 1, 2017).
- 21 “Stop Contributing to Massive Food Waste in the U.S.,” petition on Change.org website, <https://www.change.org/p/whole-foods-and-walmart-stop-contributing-to-massive-food-waste-in-the-us-31>.
- 22 Trillium Asset Management, “Whole Foods—Food Waste (2017),” <http://www.trilliuminvest.com/shareholder-proposal/whole-foods-market-food-waste-2017> (accessed January 9, 2017).
- 23 Trillium Asset Management, “Costco—Food Waste (2017),” [www.trilliuminvest.com/shareholder-proposal/costco-food-waste-2017/](http://www.trilliuminvest.com/shareholder-proposal/costco-food-waste-2017/) (accessed January 26, 2017).
- 24 Trillium Asset Management, “Target—Food Waste Report (2017),” [www.trilliuminvest.com/shareholder-proposal/target-food-waste-report-2017/](http://www.trilliuminvest.com/shareholder-proposal/target-food-waste-report-2017/) (accessed January 26, 2017).
- 25 CalRecycle, “Mandatory Commercial Organics Recycling (MORE),” [www.calrecycle.ca.gov/Recycle/Commercial/Organics/](http://www.calrecycle.ca.gov/Recycle/Commercial/Organics/) (accessed February 13, 2017).
- 26 Mass.gov, “Commercial Food Waste Disposal Ban,” [www.mass.gov/eea/agencies/massdep/recycle/reduce/food-waste-ban.html](http://www.mass.gov/eea/agencies/massdep/recycle/reduce/food-waste-ban.html) (accessed February 13, 2017).
- 27 EPA, “EPA and USDA Join Private Sector, Charitable Organizations to Set Nation’s First Goals to Reduce Wasted Food,” press release, September 16, 2015, [www.epa.gov/newsreleases/epa-and-usda-join-private-sector-charitable-organizations-set-nations-first-goals](http://www.epa.gov/newsreleases/epa-and-usda-join-private-sector-charitable-organizations-set-nations-first-goals).
- 28 EPA, “USDA, EPA Announce U.S. Food Loss and Waste 2030 Champions,” press release, November 17, 2016, [www.epa.gov/newsreleases/usda-epa-announce-us-food-loss-and-waste-2030-champions?mc\\_cid=eee21e9384&mc\\_eid=38292e3e72](http://www.epa.gov/newsreleases/usda-epa-announce-us-food-loss-and-waste-2030-champions?mc_cid=eee21e9384&mc_eid=38292e3e72).
- 29 Protecting Americans from Tax Hikes Act of 2015, Section 113, “Extension and Modification of Charitable Deduction for Contributions of Food Inventory,” [http://docs.house.gov/billsthisweek/20151214/121515.250\\_xml.pdf](http://docs.house.gov/billsthisweek/20151214/121515.250_xml.pdf).

- 30 Congresswoman Chellie Pingree, “Summary: Food Recovery Act,” blog post, December 8, 2015, <https://pingree.house.gov/foodwaste/billssummary>.
- 31 Senator Richard Blumenthal, “Blumenthal, Schatz, Wyden, Merkley, Booker Introduction Comprehensive Legislation to Reduce Food Waste,” press release, June 30, 2016, [www.blumenthal.senate.gov/newsroom/press/release/blumenthal-schatz-wyden-merkley-booker-introduce-comprehensive-legislation-to-reduce-food-waste](http://www.blumenthal.senate.gov/newsroom/press/release/blumenthal-schatz-wyden-merkley-booker-introduce-comprehensive-legislation-to-reduce-food-waste).
- 32 Congresswoman Chellie Pingree, “Introducing Commonsense Bill to Standardize Food Date Labeling,” press release, May 13, 2016, <https://pingree.house.gov/media-center/press-releases/introducing-commonsense-bill-standardize-food-date-labeling>.
- 33 Congressman Jerry McNERney, “Rep. McNERney Seeks to Improve Federal Contract Oversight and Address Food Waste,” press release, January 28, 2016, <https://mcnerney.house.gov/media-center/press-releases/rep-mcnerney-seeks-to-improve-federal-contract-oversight-and-address>.
- 34 EPA, “Food Recovery Hierarchy,” <https://www.epa.gov/sustainable-management-food/food-recovery-hierarchy> (accessed January 10, 2017).
- 35 Public Law 104-210, 104th Congress, October 1, 1996, <https://www.gpo.gov/fdsys/pkg/PLAW-104publ210/pdf/PLAW-104publ210.pdf>.
- 36 Harvard Food Law and Policy Clinic, “America Can Finally Give More: Congress Passes Permanent Extension of Enhanced Tax Deductions for Food Donations,” Center for Health Law and Policy Innovation, December 22, 2015, <http://www.chlpi.org/america-can-finally-give-more-congress-passes-permanent-extension-of-enhanced-tax-deductions-for-food-donations/>.
- 37 Food Waste Reduction Alliance, “Analysis of U.S. Food Waste.”
- 38 EPA, “Advancing Sustainable Materials Management,” 2014 Fact Sheet.
- 39 See U.S. Zero Waste Business Council for additional information on zero waste and the Council’s Zero Waste Certification program, <https://uszwb.org/>.
- 40 EPA, “Versions of the Waste Reduction Model (WARM),” Version 14, <https://www.epa.gov/warm/versions-waste-reduction-model-warm#WARM> (accessed January 10, 2017).
- 41 Dana Gunders, “Wasted.”
- 42 LeanPath, “Food Waste Prevention Case Study: MGM Grand Buffet,” May 1, 2014, [http://www.leanpath.com/docs/LeanPath\\_MGM\\_Grand\\_Buffet\\_Case\\_Study.pdf](http://www.leanpath.com/docs/LeanPath_MGM_Grand_Buffet_Case_Study.pdf).
- 43 PR Newswire, “Aramark Enhances its Green Thread Environmental Sustainability Platform,” [www.prnewswire.com/news-releases/aramark-enhances-its-green-thread-environmental-sustainability-platform-300372274.html?utm\\_source=hs\\_email&utm\\_medium=email&utm\\_content=41453986&\\_hsenc=p2ANqtz-9Pe8AegtURswNoapcHHDCtVQyEAhOYJVAfseZRoKV6NswUbXZEwkFX13UulNpOqYoL5BfusqnTrQJkU3VaktyNwKw&\\_hsmi=41453986](http://www.prnewswire.com/news-releases/aramark-enhances-its-green-thread-environmental-sustainability-platform-300372274.html?utm_source=hs_email&utm_medium=email&utm_content=41453986&_hsenc=p2ANqtz-9Pe8AegtURswNoapcHHDCtVQyEAhOYJVAfseZRoKV6NswUbXZEwkFX13UulNpOqYoL5BfusqnTrQJkU3VaktyNwKw&_hsmi=41453986) (accessed February 13, 2017).
- 44 Tesco PLC, “How We Calculate the Food Waste Figure,” [www.tescopl.com/tesco-and-society/reports-policies-and-disclosure/how-we-calculate-the-food-waste-figure/](http://www.tescopl.com/tesco-and-society/reports-policies-and-disclosure/how-we-calculate-the-food-waste-figure/) (accessed January 10, 2017).
- 45 Walmart, “Reducing Energy Intensity and Emissions,” in *2016 Global Responsibility Report*, <http://corporate.walmart.com/2016grr/enhancing-sustainability/reducing-energy-intensity-and-emissions> (accessed January 10, 2017).
- 46 Claire Cummings, Bon Appetit Management Company, personal communication with the author, December 9, 2016.
- 47 Blue Apron, <http://blog.blueapron.com/join-the-conversation-food-waste-in-america/> (accessed February 13, 2017).
- 48 Sodexo USA, “Sodexo Commits to Zero Food Waste to Landfills,” press release, April 18, 2016, <http://www.sodexousa.com/sites/sdxcom-us/home/media/news-releases/newsListArea/news-releases/zero-food-waste.html>.
- 49 Hilton Worldwide, “Waste,” [http://cr.hiltonworldwide.com/download/Hilton\\_CRReport\\_Waste.pdf](http://cr.hiltonworldwide.com/download/Hilton_CRReport_Waste.pdf) (accessed February 13, 2017).
- 50 Kroger, “Fighting Hunger,” <http://sustainability.kroger.com/social-fighting-hunger.html> (accessed January 10, 2017).
- 51 Jim Larson, Food Donation Connection, personal communication with the author, December 16, 2016.
- 52 Becky Green, Compass Group USA, personal communication with the author, January 10, 2017.
- 53 General Mills, *Global Responsibility 2016*, [https://globalresponsibility.generalmills.com/images/General\\_Mills-Global\\_Responsibility\\_2016.pdf](https://globalresponsibility.generalmills.com/images/General_Mills-Global_Responsibility_2016.pdf).
- 54 Stop & Shop, “Stop & Shop Opens State-of-the-Art Green Energy Facility,” press release, April 19, 2016, <https://stopandshop.com/news-and-media/article-4-19-16/>.
- 55 Thomas McQuillan, Baldor Specialty Foods, personal communication with the author, December 29, 2016.
- 56 EPA, “USDA, EPA Announce U.S. Food Loss and Waste 2030 Champions.”
- 57 J.L. Hardcastle, “Food, Drink Giants Pledge to Halve Food Waste,” *Environmental Leader*, June 29, 2015, <http://www.environmentalleader.com/2015/06/29/food-drink-giants-pledge-to-halve-food-waste/#ixzz3m1QwyC00> (accessed January 10, 2017).
- 58 Tesco PLC, “Reducing Food Waste,” <https://www.tescopl.com/tesco-and-society/reducing-food-waste/> (accessed January 9, 2017).
- 59 Sarah Vared, ReFED, personal communication with the author, February 1, 2017.
- 60 Kroger, <http://sustainability.kroger.com/environment-zero-waste.html> (accessed January 10, 2017).
- 61 Tesco PLC, “Reducing Food Waste.”