

INDUSTRY UPDATE:

# HOW PACKAGING CAN HELP SOLVE OUR FOOD WASTE PROBLEM





**20% to 40%**  
of all food produced in the world goes  
**UNEATEN.**



**40%**  
is wasted  
in the U.S.

## FOOD WASTE, WHAT A WASTE.

Across the world, the problem of food waste is getting attention—and for good reason. Food waste is an issue of enormous scale, with devastating humanitarian, environmental, and economic consequences that will only become more critical as our global population continues to grow. The need to reduce food waste is especially important in developed regions of the world, where as much as half of all food waste arises from preventable losses by retailers and consumers.

As an issue, food waste is somewhat difficult to quantify, with studies using different methods to arrive at widely varying estimates. What we do know is that food waste is a massive issue, with studies indicating that 20% to 40% of all food produced in the world goes uneaten.

- The United Nations' Food and Agriculture Organization (UN FAO) estimates that wasted food accounts for **1.3 billion** of the 6 billion metric tons of edible food produced across the globe every year.<sup>1</sup>
- In the U.S. alone, **40%** of the food that reaches retailers and consumers is wasted, amounting to some **135 billion tons** of wasted food every year, according to the USDA.<sup>2</sup>
- In other developed countries, where food is readily available and relatively cheap, the figures are similar, with close to **50% of food waste** attributable to consumers and retailers.<sup>3</sup>

These figures are shockingly high, but there is plenty that we—as manufacturers, retailers, and consumers—can do to make a difference.

By better understanding the food waste problem, we can begin to explore packaging technologies as a means of reducing waste, thereby combatting the related problems of hunger, greenhouse gas emissions, and economic losses.

<sup>1</sup> Food and Agriculture Organization of the United Nations (UN FAO). "Food Wastage Footprint: Impacts on Natural Resources." 2013. <http://www.fao.org/docrep/018/i3347e/i3347e.pdf>.

<sup>2</sup> Buzby, Jean C., Hodan F. Wells, and Jeffrey Hyman. The Estimated Amount, Value, and Calories of Postharvest Food Losses at the Retail and Consumer Levels in the United States, United States Department of Agriculture (USDA) Economic Research Service Economic Information Bulletin No. EIB-121, February 2014. <https://www.ers.usda.gov/publications/pub-details/?pubid=43836>

<sup>3</sup> Sengupta, Somini. "How Much Food Do We Waste? Probably More Than You Think." The New York Times, Dec. 12, 2017 <http://www.nytimes.com/2017/12/12/climate/food-waste-emissions.html>.

## A HUNGER FOR ANSWERS.

Food waste is a problem that touches us all in some way. Increasingly, consumer purchasing decisions are influenced not just by cost, but also by more emotional factors like environmental responsibility and ethical sourcing, which prompt a more holistic look at the entire supply chain. And it will take change throughout the entire supply chain to address such a large issue.

From a humanitarian perspective, food waste is a frustrating issue in a world where hundreds of millions of people face hunger. In fact, the UN FAO estimates that saving just a quarter of the edible food that is lost or wasted across the globe would be enough to feed 870 million people.<sup>4</sup>

**20%**  
of landfill waste  
is food waste.



From an environmental perspective, food waste has a massive impact.

- According to the U.S. EPA, **20% of what goes into landfills is wasted food.**
- As food waste breaks down in landfills, it produces **3.3 billion metric tons of greenhouse gas emissions.**<sup>5</sup>
- And when food is wasted, so are all the resources that went into producing it. In the U.S. alone, **80% of all fresh water use, and 19% of fertilizer use go toward food production.**<sup>6</sup>

<sup>4</sup> UN FAO

<sup>5</sup> UN FAO

<sup>6</sup> Rethink Food Waste through Economics and Data (ReFED), 2016. <http://www.refed.com>.

The further food travels through a supply chain, the more valuable it becomes in terms of the resources consumed in growing, processing, packaging, and transporting it, meaning that food wasted by the consumer has an even greater cumulative impact on the environment than food that is lost earlier in the process.<sup>7</sup>

“Misperceptions of the environmental impact of packaging are obscuring the fact that packaging can be a key solution to our food waste problem.”

—AMERIPEN



Food waste also carries high costs from an economic perspective—not just for individual households, but for national and global economies as well. According to a recent survey by Johns Hopkins University, **52% of consumers said that discarding food bothered them “a lot,”** with more than 95% of respondents indicating that “saving money” was at least somewhat important to their motivations for reducing food waste.<sup>8</sup> On a larger scale, **wasted food costs the U.S. an estimated \$218 billion per year, a figure equivalent to 1.3% of the U.S. GDP.**<sup>9</sup>

The good news is that awareness of the food waste issue is growing, as Roni Neff, director of the Johns Hopkins study, explains: “Americans are ready to address wasted food. They are relatively aware, concerned, and want to do more.”

<sup>7</sup> Williams, Helén, Fredrik Wikström, Tobias Otterbring, Martin Löfgren, and Anders Gustafsson. “Reasons for house hold food waste with special attention to packaging.” *Journal of Cleaner Production* 24 (2012): 141-148. [https://brage.bibsys.no/xmlui/bitstream/handle/11250/93524/Gustafsson\\_JCP\\_2012.pdf](https://brage.bibsys.no/xmlui/bitstream/handle/11250/93524/Gustafsson_JCP_2012.pdf).

<sup>8</sup> Neff RA, Spiker ML, Truant PL. “Wasted Food: U.S. Consumers’ Reported Awareness, Attitudes, and Behaviors.” *PLoS ONE* 10(6), 2015. <https://doi.org/10.1371/journal.pone.0127881>.

<sup>9</sup> NRDC

# PACKAGING IS NOT THE PROBLEM, IT'S PART OF THE SOLUTION.

Packaging plays an important role in preventing damage and spoilage at retail and at home in several ways:

- physical protection to prevent damage
- barrier protection to delay spoilage
- security features to prevent tampering
- properties to promote shelf stability
- more efficient portion control
- marketing that encourages food sales



## Protecting food safety and quality

Packaging serves an important role in physically protecting food from damage and spoilage, and providing ideal conditions for maximizing shelf life. At their simplest, packaging technologies provide physical protection against food loss due to damage, such as plastic clamshell containers that keep fragile berries from getting crushed, or lidding that seals out moisture from dairy products.

These and other packaging technologies delay food spoilage, giving consumers a wider window of time to use them. In fact, the organization Rethink Food Waste through Economics and Data (ReFED) estimates that greater adoption of food packaging technologies to prolong the shelf life of fruits and meats have the annual potential to **divert 72,000 tons of food waste from landfills in the U.S. alone**, which is equivalent to **reducing greenhouse gas emissions by 329,000 tons per year.**<sup>10</sup>



## Security and tamper evidence

When packaging is compromised, the safety and quality of the product inside are compromised as well. Tamper evident packaging options such as peelable membranes, pull tabs and tabbed lid systems instantly tell the customer whether the packaging and the product inside has maintained full integrity—and this consumer confidence results in more efficient usage.

<sup>10</sup> "Spoilage prevention packaging." Rethink Food Waste through Economics and Data (ReFED), 2016. <http://www.refed.com/solutions/spoilage-prevention-packaging>.

## Shelf stable food packaging

Shelf-stable foods are classic, and they're efficient because they are easy to store and last a long time. The science behind this extended shelf life lies primarily in the packaging and related processes, which seal out contaminants and protect the food inside. Food packaging for center-of-store products should determine the unique barrier needs of the product in various environments and maximize shelf life while minimizing unnecessary materials or overprotection.



## Portioning and storage convenience

The key to reducing food waste at later stages of the supply chain is ensuring that consumers actually use the food they purchase. And a key part of that equation is packaging.

Johns Hopkins researchers found that consumers showed significant interest in packaging designed to reduce food waste due to overbuying. When asked

to provide recommendations for retailers, the most popular responses included resealable packages (57%), more product size variety (50%), "buy one, get one later" sales (48%), and discounting foods near expiration (48%).<sup>11</sup> Packaging designs that allow for flexibility in quantity and portioning, and that make it easy to retrieve the product ensure that consumers are able to buy in the quantities they need, effectively save leftovers for future use, and retrieve as much residual product as possible, all of which serve to reduce food waste.

**57%**  
of consumers want  
resealable packages.



<sup>11</sup> Neff et al.

## CHANGING PERCEPTIONS CAN DRIVE CHANGES IN BEHAVIOR

While there is plenty of evidence to suggest that packaging can help us make significant strides in reducing food waste, there are still some significant hurdles. Perhaps the biggest of these challenges is overcoming consumers' negative perceptions of packaging and its environmental impacts.



According to one UK study, 81% of those surveyed believe that packaging is a “major environmental problem,” and 57% believe it is “wasteful and unnecessary.”<sup>12</sup> Such sentiments, as well as a growing public interest in environmental issues, has spurred retailers, packaging providers, and even some governments to take well-intentioned, but ultimately, misguided steps to reduce food packaging, some resulting in net negative environmental impacts due to increased food waste.<sup>13</sup>

<sup>12</sup> Downing, Phil, Plumb, and Parry, Andrew. “Consumer Attitudes to Food Waste and Food Packaging.” The Waste and Resources Action Programme (WRAP), March 2013. <http://www.wrap.org.uk/content/report-consumer-attitudes-food-waste-and-food-packaging>.

<sup>13</sup> Creasey, Simon. “Reviewing the alternatives: Category focus: chilled and frozen food.” Packaging News, Mar. 15, 2018. <https://www.packagingnews.co.uk/features/reviewing-alternatives-category-focus-chilled-frozen-food-15-03-2018>.

Incidences like these underscore a recent Swedish study, which concluded that “we probably have a long way to go before consumers realise that food waste is a more important environmental issue than packaging waste. Although consumer attitudes and behaviour finally determines the outcome, information and better packaging can promote a change towards less food waste.”<sup>14</sup>



**As Benjamin Punched, Global Packaging Insights Director at Mintel, explains: “Plastic is a fantastic material that can provide a safe, hygienic, protective pack. Often it is the best material for the job. Let’s focus on creating a great circular economy that ensures this great material is kept in use, and out of the sea.”<sup>15</sup>**

<sup>14</sup> Williams et al.

<sup>15</sup> Creasey

## BUILDING SUSTAINABILITY INTO OUR PACKAGING

Sonoco is committed to responsibly supporting the food industry's need for sustainable packaging. Our available substrates include recycled, recyclable and renewable materials; for example:

- Our paper mills produce **100% recycled** paperboard with **85%** or more post-consumer fiber.
- We pioneered the use of post-consumer PET (rPET) in cPET thermoformed food trays.
- Sonoco manufactures PET clamshells from plastic bottles, using up to **100% recycled** resin; 1 in 5 PET bottles collected in California are processed at Sonoco facilities.
- Our rigid paper containers are made with renewable/recycled fiber.

Our plastics packaging operation supports several sustainability initiatives, including light-weighting, design optimization, bio-based plastics that are recycling-friendly, and compostable materials.

## SONOCO'S COMMITMENT TO MORE SUSTAINABLE USE OF PLASTIC PACKAGING AND RECYCLING

By 2025, Sonoco will increase, by weight, the amount we recycle, or cause to be recycled, from 75% to 85%, relative to the volume of product we put into the global market place.

Sonoco is committed to increasing the use of post-consumer recycled resins in its plastic packaging from 19% to 25% by 2025.

Sonoco will ensure that approximately 75% of its global rigid plastic packaging is capable of making the relevant on-package recyclable claim by 2025\*.

Sonoco will not utilize resin additives that purport to degrade in landfills or waterways by simply breaking up into smaller pieces.

Finally, Sonoco will ensure all of its production facilities utilizing plastic pellets have systems to prevent environmental discharge of these pellets.

\* Some of our consumer packaging—due to contents or size—are not suited for community collection programs.



## WE'RE READY.

As a packaging producer, we know we have the potential to make a great impact on issues of food waste and packaging sustainability. We've done our homework, and we're ready to go. If you share these values, reach out to learn more about how we can help support your goals and our shared vision.



## THE SONOCO FRESH INITIATIVE

Solving challenges of this scale requires the collective intellectual capital and purposeful collaboration of industry experts and thought leaders in food science, agriculture, horticulture and packaging, just to name a few. In response to this challenge, Sonoco has committed **\$2.725 million** to Clemson University to create a joint initiative called **Sonoco FRESH**. Our mission is to deliver breakthroughs to help the entire packaging industry, and ultimately to have a major impact on the reduction of food waste, while increasing access to fresh, nutritional foods for millions of people. Just for fresh produce, there is **\$15.6 billion** in spoilage at retail—improving shelf life by one day is worth **~\$1.8B**. Meeting this challenge requires a holistic look at the entire lifecycle, and working to identify opportunities to reimagine processes, science, and technologies associated with harvesting, packaging, the supply chain and consumer perception.

For more information, visit [www.sonoco.com](http://www.sonoco.com).



## FUTURE SOLUTIONS FOR FOOD WASTE

Recognizing the increasing challenges in harvesting fresh produce, Sonoco became a joint development partner and investor in the Plant City, Florida-based robotics company, **Harvest CROO Robotics**. This partnership solidly aligns with our focus on improving the supply chain for fresh produce by connecting harvesting technology with new packaging technology. Efforts to improve harvesting efficiency, decrease food waste, and extend freshness life, are key focus areas for us as we expand into fresh food packaging. A key driver in the development of this integrated packaging and harvesting technology solution is the current and projected labor shortage in agriculture. The use of robotic harvesting technology, combined with the right packaging, offers a unique solution to help alleviate labor shortages and create more cost effective in-field harvesting. As the labor market tightens in the agriculture sector, costs rise for growers and there's a growing risk of food waste due to produce spoiling in the fields before even being picked. Sonoco is developing the packaging that will support this fully automatic, fully autonomous harvester that can pick eight acres of strawberries in a single day. The automated strawberry picker will be able to work at least 20 hours per day, with the goal of being able to pick 95 percent of the fruit off of any plant.

