

# ELIMINATING WASTE IN OUR OPERATIONS



The world generates an average of 3.5 million tons of solid waste per day. According to the World Bank Report, daily waste will climb to 6 million tons per day by 2025. Meanwhile, 84 percent of material inputs are lost to landfill or incineration annually, representing a loss of \$2.7 trillion in potentially valuable materials.

Ten years ago, Walmart began to look at the interplay of waste and usable materials and to seriously examine our own operations, looking for ways to reduce waste of all kinds. Today we have a deeper understanding of the challenges and are engaging suppliers and customers in pursuit of what we now call the circular economy, in which products are made, consumed and recycled in a continuous loop. Of course, not everything can be recycled at the same level. In these instances we look to the Ellen McArthur Foundation approach of maintaining materials at their best and longest use. By the end of FY2017, we diverted from landfills 82 percent of unsold products and packaging in the U.S. and 77 percent\* globally in our facilities.

Today, we have even higher aspirations for zero waste. Specifically, we are aiming to:

1. Achieve Zero Waste\*\* in our own operations in the U.S., Canada, the U.K. and Japan by 2025.
2. Continue working to divert waste in all markets, moving as fast as infrastructure and best practices allow.

While we have made progress, achieving these goals will require even more from our associates and our operations. We will also continue to collaborate with customers, suppliers, other retailers, nonprofit organizations and governments to improve the broader ecosystem of waste prevention, reuse and recycling. In many places around the world, for example, there is simply not adequate recycling infrastructure and, even where it exists, recycling may not be financially viable. We aim to catalyze the development of system-level solutions for reuse and recycling across the sector and throughout our supply chains—not just at Walmart. (See Reducing environmental impacts, pg. 94.)

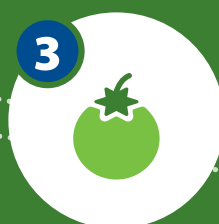
## Our strategies include:



**Measuring waste  
in our operations**



**Eliminating waste  
from non-food  
products and  
packaging**



**Eliminating  
food waste in  
our operations**



**Improving water  
stewardship in  
our operations**

\* Based on review of material handling and waste diversion processes in Argentina, Brazil, Canada, Central America, Chile, Japan, Mexico, South Africa, U.K. and U.S., as reported by waste vendors, food banks and stores. In cases where real numbers were not available due to industry challenges, they have been estimated based on industry acceptable standards.

\*\*Meeting or exceeding Zero Waste International Alliance business recognition program requirements, which include adoption of ZWIA definition of Zero Waste and achievement of 90 percent or more diversion of all discarded resources from landfills, incinerators and the environment.



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**KEEPING  
IT FRESH.**  
Every day.



## Measuring waste in our operations

To eliminate waste, the first step is to understand exactly what materials are ending up in our landfills and at what volume. Given the fragmentation of the waste and recycling industry, efficiently coordinating with vendors and obtaining reliable data is paramount. As in all our programs, we seek to improve technology and data collection to enable fact-based decision-making and to maximize impact.

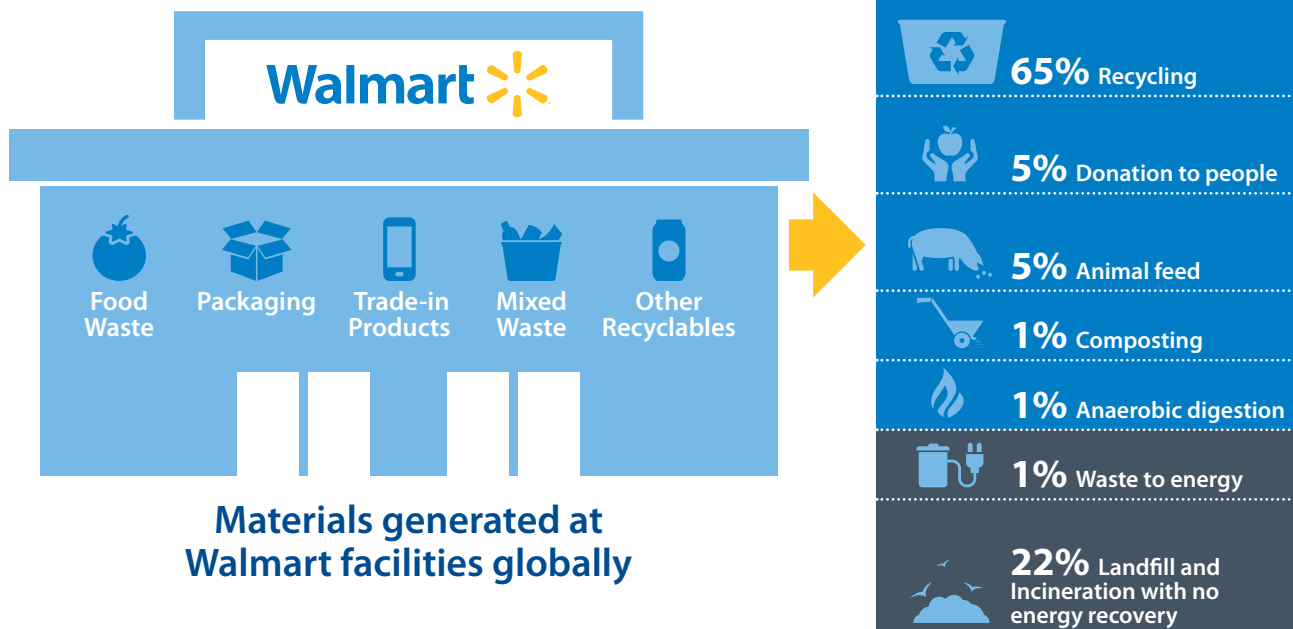
### Characterizing waste

We conduct periodic studies of waste in different markets. This year, we looked at Brazil, Canada, Central America, China and Mexico, collecting data on several categories of waste, including cardboard, plastics, metals, food waste, glass, wood, tenant waste and residual waste. We will use this data to look for diversion opportunities and to develop road maps to achieve our zero waste goal.

### Implementing a standardized waste management data system

We are creating tools to measure waste diversion performance at the country, region and store levels. In FY2017 we began the rollout of SoFi, a tool for managing waste and diversion data. The system is designed to automate and streamline data collection from hundreds of waste vendors and food banks across global markets. This year, it launched in South America and the U.S. Next year, we will expand it to Asia, Canada, South Africa and the U.K. The same system is also used to collect energy and water data.

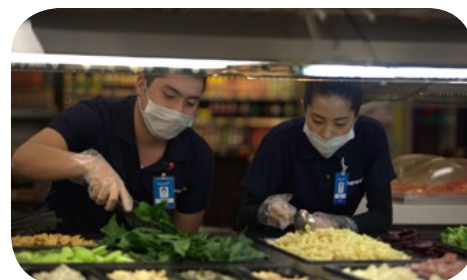
## Global waste flows



## IMPACT

### Using data to drive food waste prevention

To translate data into action, it is important to find a way to communicate it to our store associates. Walmart Mexico developed a tool called Fresh in Action that allows store associates to see numbers on how much food is thrown away in their store each day in a simple, graphical presentation. The tool also establishes monthly waste limits for each food department, including produce, deli, bakery, meat and seafood, and shows whether the store is on track to meet its goals. In FY2017, Fresh in Action was used by the associates of 1,330 stores in Mexico.





## Eliminating waste from non-food products and packaging

Waste is a complex problem, and Walmart is attacking it from multiple angles. For non-food waste, we're cutting down on materials used and donating or recycling goods that can't be sold. There's no one answer and no easy way to get to our goal of zero waste, but we believe that by operating on all these fronts we can have substantial impact.

### Reducing in-store packaging waste

In all our global markets we are looking for ways to reduce the amount of secondary packaging we use. Our efforts include the following:

- **Moving to reusable packing containers.** As we work to optimize packaging design, we aim to protect the product while reducing the materials used. In our Canada, Mexico, U.K. and U.S. markets, we are using reusable packing containers (RPCs) to replace cardboard boxes and shrinkwrap. According to a report by Franklin Associates prepared for IFCO Corporation, a leading supplier of RPCs, a shift from cardboard to RPCs in produce can lower solid waste by 85 percent and reduce greenhouse gas emissions by 31 percent, all while improving customer perception. The switch to RPCs does require some changes to operations and infrastructure. Our Asda stores in the U.K., for example, operate nine service centers for consolidating and washing the RPCs next to regional



Walmart recycles

**3 million**  
tons of fiber and  
plastic per year globally



## IMPACT

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### Rx for reducing waste

Sometimes big opportunities to reduce waste are found in surprising places. Consider the e-prescription. Previously each e-prescription had to be printed out and filed away, taking up time, storage space—and a lot of paper.

Our Practice Compliance Team worked with state boards of pharmacy throughout the U.S. to instead retain e-prescriptions electronically. As of January 2017, we have received approval to eliminate the paper printouts in 42 of the 49 states where we operate pharmacies. The new process is faster and more efficient for our customers. In FY2017, it eliminated over 214 million printed pages in our pharmacy business, saving over 25,000 trees.

distribution centers for chilled foods, where the RPCs are used. In FY2017, Asda reused over 1.25 million trays, keeping them in the network and eliminating the need for cardboard packaging.

- **Reducing material waste in our operations.** Walmart uses a variety of items and materials in our buildings and operations that are not intended for purchase by customers. We are just as diligent in looking for ways to eliminate excess material in these areas as we are in other parts of the business. The plastic bags used to protect apparel during shipping are another example. Working with suppliers, we discovered that we could make bags thinner without sacrificing utility and are now revising our supplier guidelines to allow for lower-gauge bags—saving money and cutting down on materials used.

According to internal audits, Walmart U.S. has now achieved more than



**50 percent** reusable packing containers participation across produce.



## IMPACT

### A better bag for fresh bread



At Walmart, we purchase a variety of packaging for products that are prepared fresh in our stores and clubs. This includes bags and containers for produce, bread and deli items as well as pizza boxes, meat trays and bakery packaging. We're always on the lookout for opportunities to eliminate waste in these items and to better respond to customers' needs.

For example, we previously packaged our fresh-baked bread in a plastic bag within a kraft paper bag, with front and back stickers. In FY2017, we introduced a new pre-printed plastic bread bag that was simpler and used less material. We estimate that our new bag will save more than 5 million pounds of packaging material annually and reduce the amount of time required to package a loaf of fresh-baked bread from 37 seconds to 15 on average.

## Extending the life of products

Another part of the answer to the problem of global waste is preventing products from entering the waste stream in the first place by refurbishing and/or donating products that can't be sold.

- **Refurbishing products.** Walmart utilizes four refurbishing centers across the U.S., where we send returned and damaged phones, tablets, TVs, computers and game consoles so they can be repaired and resold at a discount. In FY2017, we sent more than 6 million electronic items for refurbishment.
- **Donating products.** Since we hate waste, we always look for the highest-value purpose for unsold goods. If they are usable, that usually means donating them for charitable purposes. In the U.S., donations of durable goods are centralized through six return centers, where they are being picked up by charities like Good 360, Harvest Time and United Way. In FY2017 we donated 13,000 tons of unsold products.

## Recycling products and secondary packaging

Some products simply can't be refurbished or donated. For these and for our secondary packaging, used fixtures and other assets we operate programs to recycle them. Stores are motivated to support the recycling programs. First, the income generated from recycling comes back to the store P&L. Second, they have the satisfaction of knowing that their operations are contributing to the achievement of our zero waste goals.

We are always looking for opportunities to innovate around materials logistics and recovery. Here are few of them:

- **Reverse logistics of recyclables.** In Central America, Mexico and the U.K., we use reverse logistics to enable recycling. Stores collect cardboard, plastics and metals and send them back to distribution centers—in trucks that would otherwise return empty—where they are picked up by recycling vendors. Reverse logistics allows us to use trucks more efficiently, to recycle materials from remote stores that don't have recycling infrastructure nearby and to include difficult-to-recycle materials like glass. Overall in FY2017 we recycled 200 tons of cardboard, 20 tons of plastics and 20 tons of food waste globally through reverse logistics.

- **We also support processes in which waste materials are recycled into new products.** For example, in the U.S., we work with Petoskey Plastics, which uses up to 200 tons per month of Walmart post-consumer plastic to manufacture new plastic bags as part of a unique closed loop system. The bags produced are both for in-store use, as well as for sale on our shelves, and include 40-70 percent post-consumer recycled content.

In FY2017, we decreased the amount of total annual waste generated from our Walmart operations globally by **2 percent**, compared to FY2016.



## IMPACT

### Project coconut

The standard clay-based materials traditionally used to clean up fuel spills at gas stations produce cleanup waste that must be carefully discarded. This is typically sent to either hazardous-waste incinerators or special landfills, both of which are costly and wasteful from an environmental perspective.

We thought there had to be a better way. In FY2017, our environmental and fuel operations teams worked to source a new coconut-based natural absorbent to replace the standard clay-based materials. The new absorbent qualifies as a fuel instead of hazardous waste under federal law, meaning it can be used to power cement kilns and other industrial facilities. Although the process is cost-neutral, we consider it an important win. Thanks to Project Coconut, we anticipate turning 275,000 pounds of absorbent into usable fuels.



## Eliminating food waste in our operations

According to the U.N.'s Food and Agriculture Organization, one third of the food produced in the world for human consumption every year gets lost or wasted. That's 1.3 billion tons of food. As the world's largest grocer, we are committed to reducing food waste from farm to fork, including eliminating food waste within our operations. (To read more about reducing food and product waste upstream and downstream, see pg. 108).

Walmart supports the Consumer Goods Forum's (CGF) resolution on food waste that focuses on preventing food waste, then maximizing its recovery toward the goal of halving food waste within the retail and manufacturing operations of CGF members by 2025, versus a 2016 baseline.

This year Walmart is working to establish a food waste baseline utilizing the World Resources Institute (WRI) Food Loss and Waste Protocol. We will use this baseline to inform our food waste programs globally.

We use the EPA food recovery hierarchy to guide us in these efforts. The hierarchy ranks strategies for preventing and diverting food waste by the benefits they create for the environment, society and the economy. The five tiers are source reduction, feeding hungry people, feeding animals, industrial uses and composting.

We are also part of a broader industry food-waste-reduction initiative through the Consumer Goods Forum, created to share best practices and report progress.

## Selling the food we carry

The primary way we seek to reduce food waste in our operations is by selling the food we carry. We have improved our forecasting and ordering tools to improve inventory, adjusted store fixtures to increase turnover and consumer appeal, and provided our store associates tools and education on how to better care for food and manage it at the end of shelf life. To better reflect product's shelf life, we have also changed date labeling on all private-brand products to "Best if Used by" unless a food safety or regulatory reason might prevent us from doing so.

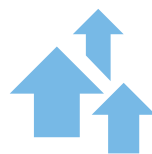
## RECOVERING FOOD: A HIERARCHY OF PRIORITIES

The U.S. Environmental Protection Agency (EPA) created the Food Recovery Hierarchy to help organizations prioritize steps they can take to prevent waste and divert unused food. Each tier of the Food Recovery Hierarchy focuses on different management strategies. The top levels of the hierarchy generate the most benefits for the environment, society and the economy. Walmart uses this hierarchy as a guide in our efforts to put food that might otherwise go to a landfill to its highest and best use.

## HOW WALMART TACKLES FOOD WASTE GLOBALLY



Measure food waste  
to landfill baseline  
in 2017



Accelerate sell-  
through / prevent  
food waste



Donate unsold  
food to feed  
hungry people



Recover inedible  
food through animal  
feed, composting  
and anaerobic  
digestions



Walmart stores,  
clubs and distribution  
centers have donated

**3.3 billion+**  
**pounds**

of food since 2005  
to Feeding America



## Donating unsold food to the charitable system

When food goes unpurchased by consumers, Walmart works to maximize its use by getting it to people and places that need it. Since 2005, our stores, clubs and distribution centers have donated 3.3 billion pounds of food to organizations that distribute it to people in need in the U.S., including more than 600 million pounds in FY2017. Because we aspire to system-level change, we have also donated funds to purchase equipment, such as refrigerated trucks to increase the capacity of the charitable meal system to absorb fresh food, whether it comes from Walmart or elsewhere. This helps people in need, but also strengthens the broader waste management ecosystem by reducing the amount of food that is sent to landfills. (See Relieving hunger, pg. 140.)

In FY2017 we expanded our program to be able to donate produce from Sam's Club locations in the U.S., and in Walmart Canada by pairing each of our Canadian locations with a food bank, significantly increased the number of Walmart Canada stores that participate in food donation. (See Strengthening the charitable meal system, pg. 142.)

## Repurposing inedible food

If food is no longer edible, we strive to convert it into animal feed, compost or energy.

- **Recovering food waste in the U.S.** In 2008, estimating that food accounted for more than a third of our total compactor waste in the U.S., we began to look for a recycling solution. Back then, there was little food-waste recycling infrastructure in the U.S. In response, we launched an organics program to recycle non-donatable food into a beneficial product that could be used to feed livestock, generate compost or create energy through anaerobic digestion. When that's not possible, we turn to composting or anaerobic digestion.
- **Creating animal feed from food waste.** In Mexico, we piloted a program for collecting inedible fruits, vegetables and bakery goods for feeding directly to animals, diverting 303 tons of waste in our supercenter stores and Sam's Club locations. We anticipate expansion of this program to other formats in the next few years.
- **Turning food waste into fuel and fertilizer.** Our Asda stores in the U.K. are recycling food into energy, by taking inedible unsold food to anaerobic digestion plants, where it is broken down into gases that can be used as fuel and fertilizers.

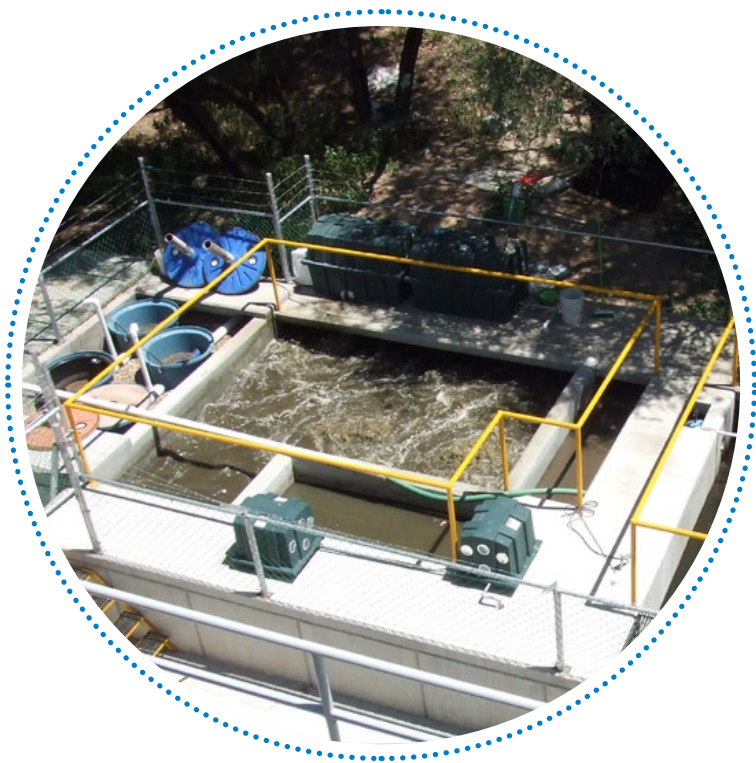


## Improving water stewardship in our operations

Compared with other industries, such as mining, manufacturing and agribusiness, retail uses relatively little water directly. Nevertheless, we estimate that more than 20 percent of our operations around the world are, or will be by 2025, located in regions facing high levels of water stress. We are working to preserve the quality and quantity of water available by improving efficient water use in our operations.

In addition to doing our part to conserve water in our own operations, we also support water conservation in our product supply chains because the food we sell can require significant water to produce. According to the United Nations, nearly 70 percent of the world's consumption of fresh water goes to agriculture.

**We are working to conserve water in our own operations by improving efficient water use.**



In FY2017, we increased our number of onsite water treatment plants in Mexico to

**760**



## Managing water in our operations

In watersheds that face scarcity or other stresses, we work to reduce unnecessary water usage in our operations by using efficient fixtures and technologies in the design of our facilities, redesigning processes to require less water, monitoring usage to identify and repair leaks and in some areas even treating and recycling water. Our initiatives include the following:

- **Onsite water treatment and reuse.** Walmart de Mexico, one of our largest operations, plays a leading role in water stewardship in our company, especially when it comes to water reuse. In FY2017, we increased our number of onsite water treatment plants in Mexico to 760.
- **Rainwater harvesting.** Although our Massmart business in South Africa uses modest amounts of water in its operations, the group is nevertheless taking proactive steps to further reduce its water footprint. For example, Massmart harvests rainwater in its Massbuild division and captures condensate water from many of Makro's refrigeration plants.
- **Reducing water usage.** We break our water usage down into a series of processes and look at each step of each process for ways to use less. For example, each day, Walmart washes thousands of tractor-trailers. Previously, each wash consumed up to 550 gallons of water and used harsh detergents to scrub off the dirt, debris and road salt. By reengineering the equipment, we were able to cut the water used to as little as 195 gallons per wash and to reclaim and reuse up to 86 percent of the water. We also switched to less harsh yet still effective cleaners, such as citrus-based soaps, and lowered the energy used by up to 76 percent.
- **Constructing and maintaining wetlands.** With water resources stretched, it is increasingly important to protect wetlands, which provide a natural water filtration system and crucial element in a complex and dynamic water ecosystem. In the U.S., Walmart has created, monitors and maintains nearly 150 wetlands on its properties. In some cases we partner with nongovernmental organizations, nonprofits and the public sector to donate wetlands to entities that specialize in maintaining and preserving them.



## IMPACT

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### Working with communities to preserve wetlands



In October 2016, we donated a 3.21-acre wetland to the city of Logan, Utah, that was constructed in the course of building a supercenter. The wetland was built to mitigate the impact to small streams on the property and provides an excellent buffer and habitat for local plants and wildlife. Through a collaboration with the City of Logan, the wetland will be maintained by local volunteers and professionals.

With water resources stretched worldwide, the need to protect our ground and drinking water resources is becoming even more acute, and we

realize the importance of wetlands as a natural water filtration system. We are working with NGOs, nonprofits, land banks and the public sector to donate other wetlands on our properties to entities that will maintain and preserve them for public and environmental benefit. By establishing these relationships, donating wetlands to experts within the environmental field and opening accessibility to these resources, we are striving to be a good neighbor and to help provide cleaner groundwater and drinking water for future generations.



## CHALLENGES

### Eliminating waste in our operations

#### **Behavior change in company operations**

Optimal waste management is dependent on tens of thousands of associates in stores, clubs and distribution centers around the world following protocols. This requires focused efforts on education and training to create an anti-waste culture. At the same time, retail store operations are complex and dynamic environments with competing priorities for associates, ranging from customer service to inventory management. Associate turnover, which last year was in the range of 60 percent for the retail industry, requires repeatedly educating new groups of associates, which adds to the complexity.

#### **Lack of the recycling infrastructure globally**

When rolling out zero waste programs across our global operations, we frequently face insufficient recycling infrastructure and fragmented markets. Even when steady demand for recycled commodities exists, it can be difficult to distribute those materials to buyers. Another common problem is inadequate technology. Better data management systems, for example, could provide more accurate, targeted assessments and solutions at the local level. We are leveraging our own operations, partnerships with suppliers and philanthropy to solve infrastructure needs that will lead to better outcomes.

#### **Volatility of commodity markets**

Commodity prices fluctuate continually and this can have an adverse effect on the business value of our zero waste programs. Over the past several years for example, prices for several commodities have dropped significantly, driven in part by low oil prices. These price drops have had a dramatic effect on the worldwide market for recyclables and have led many suppliers to turn instead to less expensive virgin materials. This makes it difficult for municipalities to justify the cost of efficient recycling infrastructure that could make recycled feedstock more price competitive.

#### **Policy fragmentation**

Public policies and regulations in the waste and recycling industry often act as barriers to zero-waste strategies. In countries with stricter regulations, we frequently see more robust infrastructure and more effective financial incentives for materials segregation and collection. Waste and recycling regulations around the world vary widely, which increases the complexity for global companies. Developing markets, in particular, where we continue to grow retail operations, often lack effective regulation.