

# REDUCING FOOD WASTE

## HOW CAN RETAILERS HELP?



# REDUCING FOOD WASTE

*Sustainability is a high priority for most retailers, and food waste is a problem that attracts significant political and media attention. Many individual retailers have launched programmes aimed at addressing it, and some retail leaders have been particularly vocal: for example, in a 2013 article carried in the Telegraph, retail giant Tesco's CEO Philip Clarke declared "war on food waste", even if it meant reduced sales. And the industry as a whole has also responded: associations such as the Food Waste Reduction Alliance in the US, the Waste and Resource Action Programme (WRAP) in the UK, and the Retailers' Environmental Action Programme (REAP) in Europe have all been established with waste reduction as their primary goal.*

In a debate where emotions can run high, the supermarket chains have often been cast as the villains. This characterisation is unfair: over the past few decades, large retailers have achieved huge improvements in supply chain efficiency, and the proportion of food thrown away by today's supermarkets is small and getting smaller. Waste generated by retailers today is dramatically lower than it was a decade ago. Even so, there remains room for improvement, and much that can still be done. But waste at the retailer level is only part of the problem – in fact, it is the smallest part of the problem.

Food moves from "farm to fork". Broadly, it makes a journey in two steps: from the farm to the retailer, and then from the retailer to the customer. At the "farm" stage, overproduction, poor supply and demand balancing, and inefficient supply chains all contribute to significant waste. Although these losses can be large in volume terms, the fact that the product is at the beginning of the value chain means economic losses are less pronounced (although still considerable).

Upstream losses are substantial, but by far the greatest waste takes place at the "fork" stage. The fact is that the biggest wasters of food are consumers themselves. Losses in the homes and refrigerators of ordinary consumers have grown relentlessly over time, as disposable incomes have increased and lifestyles have changed. And because consumers are at the end of the value-added chain, the economic cost is enormous.

Of course, food retailers can't dictate customer behaviour – but they can still influence how much ends up in the bin. This article discusses some ways retailers can reduce not only the food waste they themselves generate but also help their suppliers and their customers to do the same.

# THE FOOD WASTE PROBLEM

Food waste is a significant problem. The United Nations Food and Agriculture Organization estimates that one third of human food production is lost or wasted globally<sup>1</sup>, around 1.3 billion tonnes per year. Waste occurs in all parts of the value chain, from post-harvest processing through supply chain to stores and consumers. Exhibit 1 highlights the leading causes.

It's important to acknowledge that not all food waste is equally costly, since a tonne of produce lost immediately after harvest has much lower value added than the same tonne of produce thrown away by consumers. **The further down the value chain that food is wasted, the more costly it becomes, both in monetary and environmental terms; the economic impact of food loss at the consumer stage is a multiple of losses that occur upstream.**

Exhibit 1: Typical causes of food waste

IMMEDIATELY POST-HARVEST	PROCESSING, PRODUCTION, DISTRIBUTION	RETAILER SUPPLY CHAIN	RETAILER STORES	HOUSEHOLDS
<ul style="list-style-type: none"> <li>Improper storage (temperature, humidity, vermin)</li> <li>Spillage</li> <li>Grading</li> </ul>	<ul style="list-style-type: none"> <li>Disposal of product not meeting quality or cosmetic standards</li> <li>Overproduction</li> <li>Malfunctions</li> <li>Spillage</li> <li>Damaged or improper packaging</li> </ul>	<ul style="list-style-type: none"> <li>Improper sales/demand forecasts</li> <li>Overstocking of ultra-fresh products</li> <li>Improper storage</li> <li>Improper handling (e.g., temperature)</li> </ul>	<ul style="list-style-type: none"> <li>Improper sales/demand forecasts</li> <li>Improper storage/presentation</li> <li>Improper handling</li> <li>Quality/cosmetic standards of products without best-before date</li> <li>Nearing of best-before date</li> <li>Visual stocking criteria (full shelves)</li> </ul>	<ul style="list-style-type: none"> <li>Overstocking</li> <li>Not consuming in first-in, first-out order</li> <li>Improper storage</li> <li>Misinterpretation of best-before dates</li> <li>Elevated quality/cosmetic standards</li> <li>Misjudged preparation volumes</li> <li>Preparation mistakes</li> </ul>



**1.3** billion tonnes of food waste per year

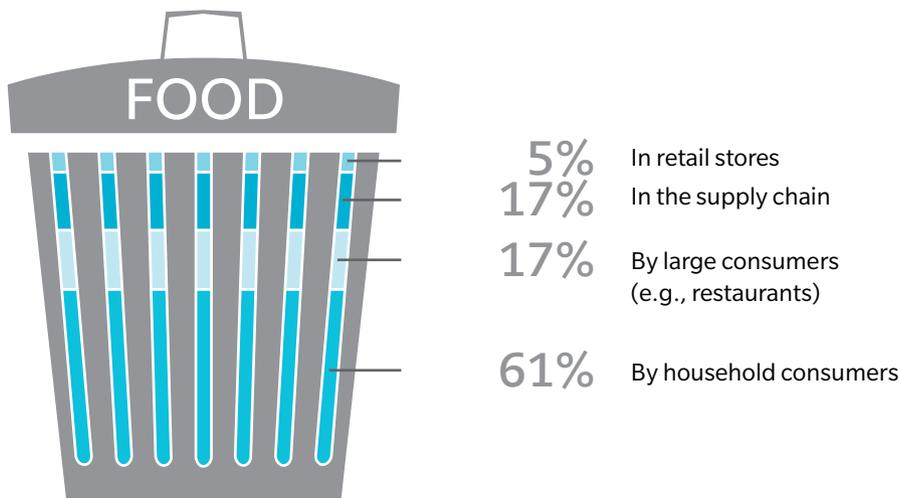
<sup>1</sup> Food loss is defined as the mass of edible product meant for human consumption that is redirected from human consumption upstream of retail in the food chain, whereas food waste is the loss occurring at retail level and downstream; for simplicity, we have subsumed both types under "food waste".

And in developed economies, the fact is that the majority of the waste (both in value and volume terms) occurs at this level. In 2012, UK households wasted 19% of all food and drink brought into the home; 60% of this waste was avoidable<sup>2</sup>. Total food waste in Germany is estimated at 11 million tonnes per year, which amounts to around 130kg per capita. As shown in Exhibit 2, 61% of this is accounted for by the end consumer, 17% originates upstream in the supply chain, and only 5% is directly attributable to retailers<sup>3</sup>.

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### Exhibit 2: The majority of food wastage in Germany is by household consumers

#### German food waste distribution by volume



Source 2012 Study by Stuttgart University, sponsored by German Federal Ministry of Food and Agriculture

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To a large degree, then, food waste is a problem caused by consumers rather than businesses. But although retailers’ direct contribution to food waste may be relatively small, they are still clearly in a position to help their customers waste less – a key point we will return to.

## DRIVING DOWN TOTAL SYSTEM WASTE

Waste is a problem for retailers, but it is not a retail problem per se: it is a system issue. Each part of the chain from “farm to fork” plays its part, for good or bad. Retailers can take a leadership role, not only by addressing their own shortcomings but also by helping other players in the system to improve. Reducing total system waste is the goal, and retailers are in a unique position to contribute towards achieving this goal – as the rest of this article will discuss.

<sup>2</sup> Wrap Report: Household Food and Drink Waste in the United Kingdom 2012).

<sup>3</sup> 2012 Study by Stuttgart University, sponsored by German Federal Ministry of Food and Agriculture.

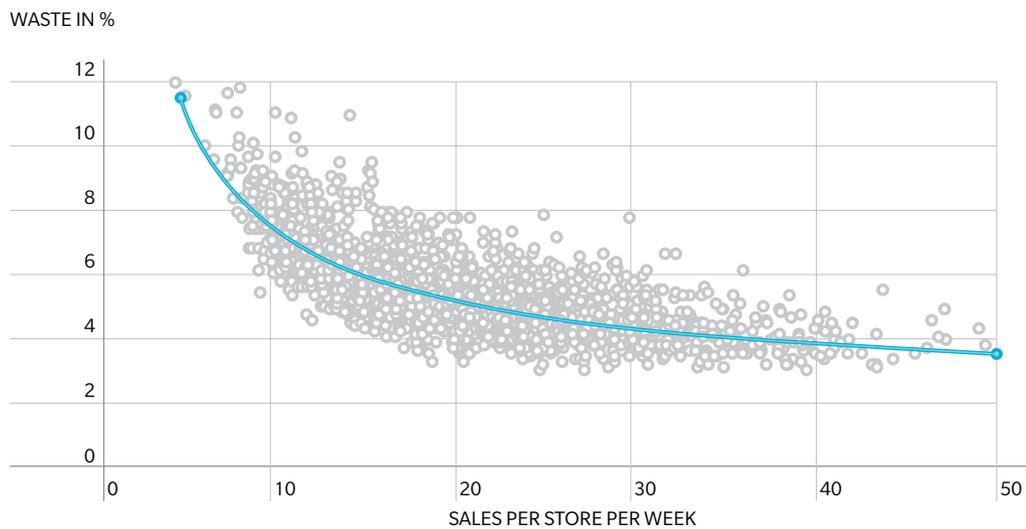
## REDUCING WASTE WITHIN THE RETAILER

As we mentioned earlier, waste at the retailer – either in the supply chain or in stores – is not the primary contributor to total food waste. One reason is that food retailers have grown to a much larger scale. As Exhibit 3 shows, perishables waste decreases dramatically as a function of sales volume: in our experience, a doubling of store sales reduces the proportion of waste by between 20% and 40% (assuming the assortment stays constant). This implies that today’s high-volume grocery stores are much more efficient than their smaller predecessors, and underlines the critical role that volume plays in the fresh food business.

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### Exhibit 3: Higher-volume grocery stores operate at lower waste levels

#### Examples of waste in fresh categories across one retailer’s store estate



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But although they achieve high levels of efficiency, most retailers still operate with significant fresh wastage levels. It is difficult to keep an accurate account of all types of waste in the system – known and unknown – and only a minority of retailers have true transparency over the real volume lost. Depending on the product category and store, waste as a percentage of sales can range from the low single digits up to the high teens. For many retailers, then, there remain significant opportunities to reduce waste, and to generate significant profit increases at the same time.

In our experience, there are three changes that can deliver big benefits:

### 1. GET THE RIGHT VOLUME INTO STORES AT THE RIGHT TIME

The closer the match between customer demand and the volume of product in the store, the lower the potential for waste. Clearly, all food retailers take forecasting and ordering seriously – but the difference between being “OK” and being “best in class” is very significant. Some retailers still rely upon relatively basic approaches, such as paper-based order books in the stores. This leaves considerable room for improvement – in some

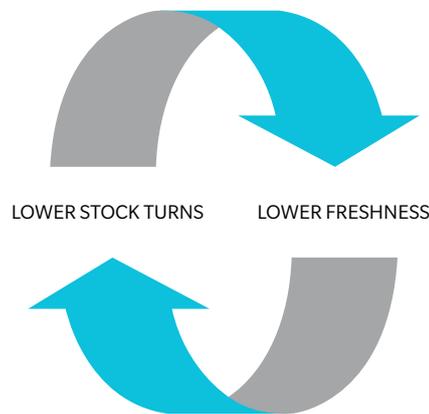
cases translating into reductions in waste of up to 35%, with corresponding benefits to earnings, both in the form of reduced losses and the avoidance of lost sales, and the difficult-to-quantify, but nonetheless real, customer perception benefits.

Of course, improving forecasting and ordering isn't easy, and presents some real systems challenges. But it is often possible to make material gains without undergoing radical surgery: for example, by giving stores more accurate forecasts, and better information and guidance when placing orders, or by improving operational practices within the store. Please see the Oliver Wyman article "A Retailer's Recipe: Fresher Food and Far Less Shrink" for more detail on this topic.

## 2. CONSOLIDATE RANGE WHERE THIS WILL IMPROVE FRESHNESS AND REDUCE WASTE

Retailers always want to offer customers the best choice but, before adding a new stock-keeping unit (SKU), it's vital to consider the freshness and shrink implications for the range as a whole. For a given level of store traffic, there is a limit to the breadth of the perishables range that can be on sale without producing massive increases in waste: the key is to avoid offering so much choice that the rate of sale of slower-selling products drops below a critical level. Getting this wrong initiates a vicious circle, as shown in Exhibit 4, in which lower stock turn translates into worse freshness, and worse freshness translates into even lower stock turn, with disastrous implications both for sales and for the level of waste.

Exhibit 4: Low rates of sale on fresh items initiate a vicious circle



In particular, **adding products that are duplicative with existing choice, products which the consumer sees as interchangeable, is a sure-fire way of reducing overall stock turn and increasing waste.** In retailers with significant waste problems, then, re-examining the range and deleting slow-moving tail products that are highly substitutable will normally drive a significant improvement as sales are consolidated onto remaining lines, driving increased turn, reduced wastage, and increased freshness for customers.

## 3. OPTIMISE HANDLING OF BEST-BEFORE DATES

Another source of retailer waste is allowing multiple "best-before" or "use-by" dates on the shelf, which leads to "date sorting" by consumers and an inevitable trip to the bin for the product with the shortest life. This presents a dilemma when it comes to reducing food waste: some of the strategies available might be profitable for the retailer, but effectively just shift the problem onto the consumer and ultimately generate even more waste downstream.

Dealing with forecasting and assortment is a prerequisite for solving the "best-before" conundrum. Better forecasts and a "right-sized" assortment mean that lower levels of safety stock can be held, which means less product and fewer date codes on the shelf. Beyond this, better operational discipline is the key: strict stock rotation, and tight

replenishment practices, which ensure that the product is only taken from the back room to the shelf when existing stock has almost sold through.

Another option for managing waste can be in-store production. Where the operating model allows, perishables nearing the end of their life can be transformed into a ready-to-eat product in store, for example through a salad bar or as part of a store-produced convenience range. Of course, in-store production is complex and labour-intensive, and can generate even more waste if poorly implemented but, for some stores, it may offer a significant opportunity.

## HELPING SUPPLIERS WASTE LESS

Retailers have only an indirect influence on how much food is wasted by their suppliers but, because the absolute level of waste is usually greater, it can nonetheless be a big opportunity. And, since retailers' choices can have a strong effect on many of the drivers of waste, they can make a good claim to a share of the cost savings that can be achieved.

In our experience, two initiatives that do not require significant capital investment, but which often produce significant gains, are collaborating on demand planning, and better management of grading requirements and quality control.

### 1. COLLABORATE ON DEMAND PLANNING

When it comes to demand planning, suppliers and retailers sometimes operate at arm's length. While not always easy to achieve, closer collaboration can help reduce waste by helping suppliers cope with the volatility of and uncertainty in demand for their products.

There are three reasons that fresh food categories present particular challenges for suppliers. Firstly, underlying demand, and sometimes supply, tends to be extremely volatile – for example in produce, where the weather has a strong effect on both harvests (and therefore product supply) and customer demand.

Secondly, promotions generate demand spikes that create a “ripple effect” throughout the supply chain and cause inventory build-ups, overages, and, ultimately, waste.

This affects not only the promoted items themselves but also other products that are “cannibalised” and suffer an unexpected drop in demand as customers switch to the product on promotion.

Thirdly, trading events such as range changes, or changes in which products are distributed to which stores, occur frequently in fresh categories. These often impact on the demand mix of the entire category.

Suppliers therefore face a lot of uncertainty about how much product they will need to provide. To avoid being caught out by changes in volume and to maintain a high service level for the retailer, producers feel the need to keep safety stock on hand, or require long lead times. Both have a detrimental impact on freshness and, ultimately, on food waste.

Reducing this uncertainty can create benefits for suppliers, retailers, and consumers alike. For the supplier, it means lower inventory costs and a better ability to plan production. For the retailer, it means fresher product, less waste, and better in-stock position, resulting in higher margin and more sales. And for the consumer, the product is fresher and keeps longer.

Better collaboration and information sharing is the key to achieving this. Most retailers use forecasting to drive their replenishment: sharing these forecasts in advance with suppliers will take guesswork out for them. And at the same time, systematically measuring cannibalisation during promotions gives both retailers and their suppliers a better idea of which products are likely to be affected, further reducing uncertainty about levels of demand.

## 2. MANAGE GRADING REQUIREMENTS AND QUALITY CONTROL

Stringent grading requirements are a significant contributor to waste in the supply chain, although they aren't as disastrously wasteful as is popularly believed: manufacturers of processed foods themselves demand massive quantities of fresh products, so it clearly isn't the case that every apple or potato rejected by a supermarket on cosmetic grounds gets thrown away. Nonetheless, by loosening such rules, retailers can help their agricultural suppliers sell more of their products, and hence reduce waste.

Managing grading rules to allow more variation has been on the agenda for some time, but there are also opportunities to address genuine quality differences. A tiered range architecture – with entry-range, own-label, branded, and premium products – has long been in place for many product categories. In fact, some retailers already offer different grades of produce, with lower-quality options selling at a considerably lower price point than the premium offer while keeping the overall margin mix of the category attractive.

However, stringent grading requirements are not the only reason that produce gets rejected by retailers. Often, product is sent back at the receiving dock because of process failures. Standards are sometimes not sufficiently clearly defined or communicated. Sometimes changes to quality standards are agreed throughout the season between buyers and suppliers but may not filter through the retailer's internal communication channels. And in some cases, stores and depots use different criteria when deciding whether to accept or reject a batch.

A best-practice quality control process is key to ensuring that product is never rejected without good reason, whilst maintaining the highest standards of quality and food safety. This requires clearly defined and transparent standards, consistently communicated and applied throughout the entire value chain, from producer via distribution channels to stores and, ultimately, consumers.

## HELPING CUSTOMERS WASTE LESS

Most food waste happens at the consumer end of the value chain. But it's important to acknowledge that much of it is the result of deliberate choices rather than simple negligence.

Where this is the case, it may be very difficult, inconvenient, or costly to reduce. For example, shopping for groceries every day would reduce waste but would be a lot less convenient than buying food for several days at a time, even though some of it might then spoil.

It's therefore important to distinguish between "structural" waste, where customers' lifestyles and choices make some level of waste inevitable, and "preventable" waste, such as throwing away food after forgetting it was in the fridge and buying something else instead. As retailers look to help their customers reduce waste, it makes sense to focus on the latter – and to recognise that, precisely for the reason that most food waste occurs in the home, there are likely to be real constraints on how far it can be reduced.

Grocery chains are sometimes accused of having a strong vested interest in consumers wasting food. We fundamentally disagree with this view, and see reducing waste as more of an opportunity than a threat for retailers. Any risk of lost sales is small: helping customers waste less will only ever be a slow and gradual process, which will need to be achieved in spite of rising incomes and more diverse lifestyles.

Meanwhile, the demand for fresher, higher-quality food continues to increase, and providing it becomes an ever stronger source of competitive advantage. Exhibit 5 shows how important access to the best-quality fresh products is when customers are choosing where to shop. And although consumers might struggle to waste less food, this doesn't mean they don't acknowledge or appreciate retailers' efforts to help them.

At a simple level, there are two ways in which retailers can help customers reduce waste:

## 1. HAVE FRESHER PRODUCTS WITH LONGER LIFE ON SALE IN STORES

Consumers often plan meals in advance but their plans can change. As a result, a lot of consumer wastage is driven by insufficient freshness upon time of purchase, not giving customers long enough in which to consume the product and so building inflexibility into their meal planning.

Improving freshness on the shelf usually requires improving product velocity and handling through the supply chain. In fact, **developing a faster, more sensitive supply chain reduces waste not only for customers but also for retailers and their suppliers.** Why? Because there are two fundamental drivers of food waste in the supply chain.

The first driver is the time spent between production and the product getting to the shelf: every hour and every day spent in the chain reduces the life of the product and makes it more likely to end up being thrown away. The second is how the product is treated: many fresh products are highly sensitive to poor handling, so quality can suffer as a consequence of improper treatment in the supply chain. These fundamental drivers have a powerful effect on how much food ends up being thrown away by customers, as well as how much is wasted by retailers and their suppliers.

Fresh product can spend too much time in the supply chain for a number of reasons. Too much inventory in the supply chain will mean that product doesn't turn fast enough. The number of distribution tiers in the supply chain also affects its speed: bundling distribution platforms can help consolidate inventory at a single point and reduce it in total. Receiving, picking, and delivery are organised on a recurring schedule, and this can mean time is lost by product sitting and waiting for the next process cycle to start.

Better synchronisation can speed things up and improve freshness: for example, optimising delivery frequency to stores or synchronising warehouse receiving times with suppliers' operating schedules. In an ideal world, a strawberry can be picked from the field in the early morning hours, arrive at a retailer's depot before midday, be delivered to the store in the afternoon, and be purchased by a customer that same evening.

### Exhibit 5: Importance of access to quality fresh food

Proportion of consumers that say access to the best quality fresh products is the most important consideration when choosing where to shop

COUNTRY	PROPORTION
United States	70%
United Kingdom	60%
France	52%
Germany	43%

Source: Oliver Wyman Fresh Survey and Analysis

How product is treated in the supply chain is a second key driver of waste. Fresh product can often be very sensitive and when handled improperly, the quality suffers. This can lead to the product ending up as waste either directly, because it becomes unfit for sale, or indirectly, because its life is reduced. Right treatment starts with the right packaging.

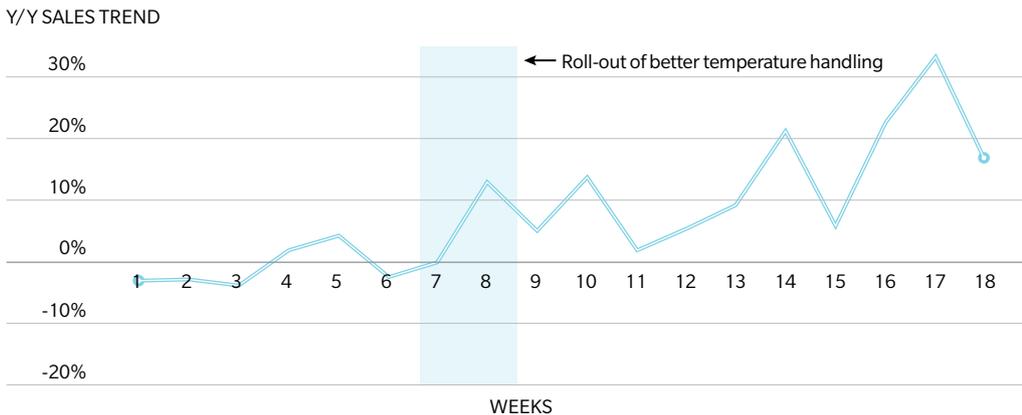
Many fresh products have specific temperature requirements: for certain products, such as meat, maintaining a continuous cold chain is legally mandatory and essential from a health and safety perspective. No retailer would risk any compromises here. For items such as produce, however, there are no legally binding requirements in most countries, and retailers often strike a compromise between quality and cost. Often this trade-off is made giving insufficient consideration to quality implications: for example, bananas sustaining damage while being transported or stored too cold, or bread being exposed to moisture condensation as it moves between two temperature zones.

Retailers who have focused on treating product the right way have often found that increased sales (see Exhibit 6 for an example) and reduced waste have outweighed any investment in supply chain cost, at the same time as conferring a significant competitive advantage. And the product is much less likely to be thrown away once in the possession of the consumer.

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### Exhibit 6: Better temperature handling of bananas can dramatically increase sales

#### Year-on-year sales trends for bananas at one retailer



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## 2. HELP CUSTOMERS BUY ONLY WHAT THEY WILL EAT

Wastage by customers can be reduced if customers only buy the products they will need. Today this is not always straightforward. Large pack sizes and multi-buy promotions on perishable products can mean customers have little choice but to buy more than they need or, at the very least, arguably can make it so cheap that customers buy food on the off-chance that it might get eaten.

As well as offering smaller packs and reducing multi-buy promotions, retailers can also offer more in-store food counters and loose (rather than pre-packaged) produce, so that consumers can select the quantity they need. Another approach is to construct a product range that explicitly offers different levels of ripeness, for example both a “ready to eat” SKU and a “ripen at home” SKU.

Beyond this, technology may provide additional opportunities to help customers avoid buying more than they need. Smartphones are one example: their widespread use can offer new ways of helping customers reduce waste. Menu planning and shopping apps are still at a relatively early stage of development but, in the near future, they will be much more widely used, especially by customers keen to waste less food.

Many retailers already offer such apps but there remains scope to innovate, perhaps by designing sets of recipes that “plan for leftovers” and suggest flexible ways of using them. Apps that can remind customers about food that will soon need using are another possibility – and not as far-fetched as it might sound, considering the role that smartphones can play in self-scanning and online shopping.

## CONCLUDING REMARKS

Food waste is already a hot topic, and its importance is only likely to grow. Jürg Peritz, former member of the Executive Committee of Coop in Switzerland and fervent champion of sustainable grocery retailing, said in a recent interview: “Customers care [about sustainability] today, and will care even more tomorrow. The chance for retailers to differentiate themselves and their brand is enormous.”

Retailers have made great strides in reducing the amount of food that is wasted in their stores and distribution networks but there is still more that they can do: better forecasting, more careful assortment decisions, and more discipline around best-before dates can deliver significant reductions in waste. At the same time, retailers can help suppliers reduce waste through closer collaboration on demand planning, and tighter management of grading and quality control decisions.

More importantly still, retailers are uniquely placed to help customers reduce the amount of food wasted in the home: the key here is to improve freshness and quality by increasing speed through the supply chain and by ensuring that food is properly handled at each stage. Retailers can also help customers avoid buying too much food by offering a more carefully tailored assortment and smaller pack sizes, and cutting back multi-buy promotions on perishable items. And in future, menu planning and shopping apps are likely to offer further opportunities to help waste-conscious consumers.

The good news for retailers is that reducing waste in stores and the supply chain usually means lower costs, and can often be achieved with very little investment. Meanwhile, helping customers reduce waste by increasing product freshness and shelf life represents a significant improvement in the customer proposition. Ultimately, then, reducing food waste isn't just the right thing to do – it's often the profitable thing to do as well.

## ABOUT OLIVER WYMAN

Oliver Wyman is a global leader in management consulting that combines deep industry knowledge with specialised expertise in strategy, operations, risk management, and organisation transformation.

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