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A RECIPE TO REDUCE FOOD LOSS AND WASTE

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SOME PROBLEMS SEEM TOO big to tackle. Food loss and waste is one of them. Each year, 1.6 billion tons of food are lost or go to waste. That is roughly one-third of all the food produced globally. This loss and waste come with extensive environmental and social costs.

Slashing the amount of food that is lost and wasted annually, however, is far from impossible. Portuguese company Sonae took aim at the problem last year. Partnering with BCG and the World Business Council for Sustainable Development (WBCSD), Sonae piloted five initiatives to reduce fruit and vegetable loss and waste—a major contributor to the problem. Initial results show that by scaling these pilots, Sonae could cut such loss and waste across its supply chain by one-third, or roughly 12,000 tons—an achievement that could yield \$10 million per year in value for Sonae and the companies in its supply chain.

The pilots revealed concrete insights and lessons that other companies can use to cut their food loss and waste.

The Challenge

Food loss and waste, which is an issue in every country and across the value chain, is contributing to a global environmental crisis.¹ The 1.6 billion tons of food that are lost and wasted annually are estimated to account for 8% of global greenhouse gas emissions. To put it another way, if the aggregate emissions associated with food loss and waste were compared with the emissions of every country, food loss and waste would be the third-largest source of greenhouse gases.

In addition, it is hard to imagine how meaningful progress can be made to combat global hunger—some 870 million people around the world are undernourished today—if the massive amount of food that is lost and wasted is not reduced.

Companies that work across the value chain, such as Sonae, are in a good position to orchestrate a response to the crisis and have a meaningful impact—and there are significant incentives for them to do so. People are increasingly focused on sustain-

ability issues. As a result, a company's efforts to reduce food loss and waste may enhance its brand, build customer loyalty, and improve the ability to attract and retain talent. At the same time, the amount of food that is lost and wasted annually is estimated to be worth some \$1.2 trillion, a sizable opportunity for companies to improve their efficiency and boost their top line.

The situation in Portugal is essentially a microcosm of the broader problem. It is estimated that more than 1 million tons of food are lost and wasted in the country every year. Raw material production, distribution, and consumption contribute almost equally to 920,000 tons. Food processing accounts for a much smaller amount: about 80,000 tons. The majority of the loss and waste across the value chain in Portugal—as in the rest of the world—occurs in the fruits and vegetables category. The reasons: they often don't meet retail standards, and they perish rapidly.

Creating the Roadmap

With a strong commitment to sustainability, Sonae focused its efforts on the fruits and vegetables in its operations. The effort had three primary elements: identifying the best solutions deployed across the food

industry, assessing Sonae's loss and waste problem across its supply chain in particular, and then selecting the best solutions to pilot and adapt to Sonae's operation.

Identifying the Best Industry Solutions.

Food retailers around the world are innovating to slash food loss and waste, both by preventing the creation of food loss and waste across the entire supply chain and by increasing the redistribution, repurposing, and donation of waste. BCG assessed and benchmarked roughly 50 potential solutions to determine the best practices. (See Exhibit 1.)

Assessing Sonae's Loss and Waste Across Its Supply Chain.

Like many companies, Sonae lacked a clear understanding of where loss and waste were being generated in its supply chain and what steps would curtail them the most. To gain insight into both issues, the BCG-Sonae project team analyzed data about Sonae's in-store and warehouse operations and surveyed two-thirds of the company's fruit and vegetable suppliers, about 120 vendors in all. The project team supplemented that anonymized survey information with multiple visits to suppliers' warehouses to assess sources of food loss and waste in their operations.

EXHIBIT 1 | Examples of Potential Solutions to Food Loss and Waste

BEST PRACTICES FOR PREVENTION

1. Product and packaging

- Revise produce standards
- Develop meal kits
- Standardize date labels
- Remove best-before dates
- Reduce portion sizes
- Design spoilage-prevention packaging

3. Consumer education

- Produce household-waste education campaigns
- Launch food management apps
- Create social media platforms for user-generated content
- Develop creative food recipes for consumers

2. Operational efficiency

- Improve demand forecasting
- Optimize supply chain
- Enhance cold chain control
- Improve dynamic routing or pricing models, or both
- Enhance produce handling processes
- Evolve inventory management
- Improve food assortment tools

4. Regulation

- Revise produce and packaging standards
- Standardize date labels
- Extend expiration dates

BEST PRACTICES FOR REUSE

1. Alternative redistribution

- Partner with secondary resellers
- Associate with animal feed processors
- Connect with clothes fibers producers

3. Donation

- Structure donation contracts
- Potentiate tax incentives to encourage donations
- Standardize donation regulations
- Develop donation liability education for employees
- Create platforms that match supply and demand

2. Food repurposing

- Create byproducts, independently or with partner companies
- Repackage products

Sources: EU Fusions; Love Food Hate Waste; WRAP; ReFed; Food and Agriculture Organisation of the United Nations; Champions 12.3; World Resources Institute; BCG analysis.

Note: Assessed and benchmarked about 50 potential solutions.

The most critical findings include the following:

- About 20% of the fruits and vegetables in Sonae’s supply chain are lost or wasted before they reach consumers; 13% is lost or wasted in suppliers’ operations and 7% in the company’s stores.
- Roughly 40% of suppliers’ loss and waste is a consequence of retailers’ strict sizing and aesthetic requirements, which lead to the rejection of produce that is edible but perhaps not visually appealing. Another 40% is due to produce ripening before it reaches the retailer.
- Only about one-third of the loss and waste is reused or redistributed to buyers in the secondary market, including animal feed producers and industrial processors, that purchase it at a discount.

Selecting Solutions to Pilot and Adapt.

Armed with a clear understanding of the problem, BCG and Food Reform for Sustainability and Health (FRSH), a WBCSD

project, conducted a workshop with a group of relevant stakeholders, including Sonae suppliers (some of which were FRSH member companies), to identify the best projects for piloting.

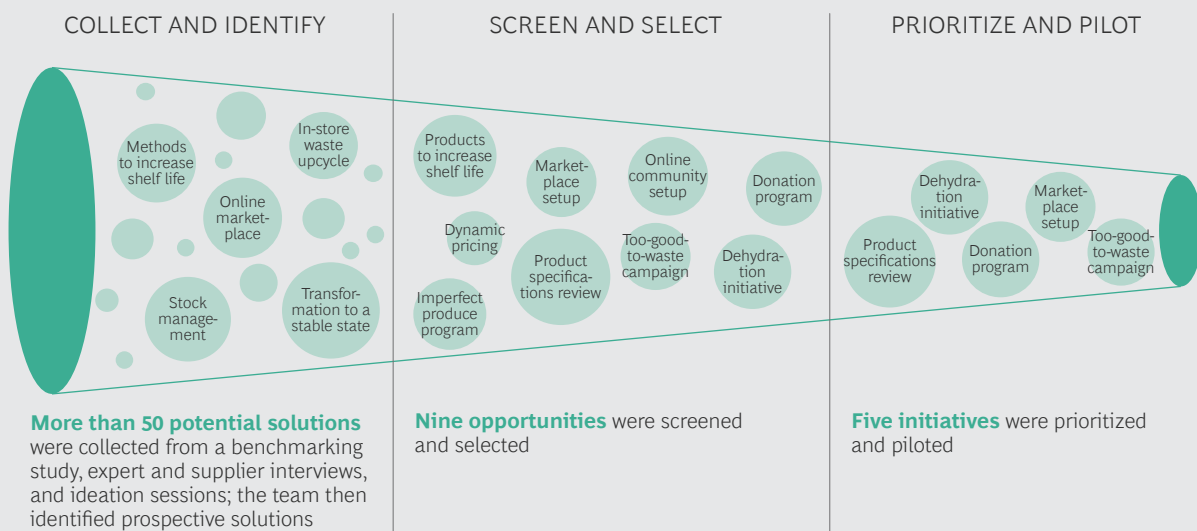
After linking the roughly 50 potential solutions to specific sources of loss and waste in the Sonae supply chain, the project team selected nine promising solutions that were both high impact and feasible. Of those nine, the team prioritized five to pilot. (See Exhibit 2.)

Insights from the Pilots

Within two months of identifying the five most promising solutions, Sonae had the pilots up and running. Each provided insights into what would make the initiative succeed—and the factors that stood in the way. BCG worked with Sonae to ensure that the right governance model for the pilots was in place, a structure that would ensure transparency and accountability for the overall effort. (See the sidebar “The Governance Model.”)

Product Specifications Review. One of the five pilots tackled a major contributor to

EXHIBIT 2 | A Broad Set of Solutions Were Narrowed Down to Five Pilots



Source: BCG analysis.

Note: Selection criteria in the screening process included implementation feasibility, investment requirements, sustainability impact, and business impact.

THE GOVERNANCE MODEL

The most well-designed projects can lose steam or go off track if companies do not establish the right governance structure. To ensure the right level of management attention to the pilots, BCG and Sonae designed a structure with three primary elements.

First, a multidisciplinary team spearheaded each pilot and had a clear assignment of responsibilities. Second, a schedule provided for regular touch

points between each team and senior management. This was critical to ensuring that people on the ground understood the importance of the entire effort and that senior management was aware of each team's progress and potential roadblocks. Third, KPIs were defined for all the pilots—and all those measures were tracked in a dashboard available to both team members and senior management.

food loss and waste: unnecessarily restrictive retail specifications for fruits and vegetables.

The assessment of the loss and waste that was generated across Sonae's supply chain found that the company, like most modern retailers, could revise its size and aesthetic requirements to reduce loss and waste. Those requirements—for example, the percentage of an apple's skin that needs to be red—were leading producers and distributors to reject a significant amount of quality fruits and vegetables despite the fact that some would be acceptable (or even preferred) by consumers.

With this in mind, Sonae expanded the definition of what was acceptable in certain categories. For example, it started accepting smaller apples and found that they appealed in part to parents—smaller sizes are easier for children to hold. As that initial effort gained traction, the company expanded the pilot to include pears. Sonae's suppliers were disposing of roughly 12% of apple and pear production owing to the fruits' small size. The pilot significantly reduced that loss and waste while giving a boost to suppliers' bottom lines. The company also found that sales of these smaller produce items did not appear to cannibalize sales of the larger varieties—but rather led to an overall increase in sales.

To capitalize on such opportunities, retailers and producers must work together to

adjust their purchasing agreements to reflect the specifics of the available fruits and vegetables. That cooperation can create a win-win situation in which producers reduce the amount of product going to loss and waste and improve their revenue, while retailers strengthen ties with producers, create a strong sustainability message for consumers, and, potentially, see lower prices from suppliers.

Marketplace Setup. Although adjusting retail requirements can eliminate significant loss and waste, a sizable amount of fruits and vegetables still cannot be sold in retail stores. However, much of that can be repurposed by processors for use in products such as juices, natural flavorings, and additives. If producers are able to sell more of their output, that improves their revenue and may lead to lower prices for retailers. The problem: processors have no visibility into what material is available, and producers have no clarity on processor demand.

To address that gap, Sonae piloted a marketplace that connects producers that have excess fruits and vegetables with processors that can use it. The company opted for creating a real-world marketplace, rather than a virtual one, owing to the benefit of having face-to-face conversations that can lead to more creative, unstructured arrangements. Ultimately, the company aims to expand the marketplace to include other fresh-food categories, such as baked goods and meat products.

Sonae held a networking event in early 2020—essentially a fair for food loss and waste—to bring together more than 100 producers and processors. The event provided a forum for companies in these two groups to connect and strike ongoing agreements for the upcycling of fruits and vegetables that would otherwise be lost or wasted.

This pilot underscored the need for clarity across the supply chain. The more visibility that producers and processors have into one another’s operations, the more they can repurpose food that can’t be sold in retail stores.

Dehydration Pilot. One of the thorniest challenges in combating food loss and waste is that there is a short time window during which perishables are appropriate for sale. Compounding that issue is the fact that the loss and waste of fruits and vegetables is often dispersed across many locations in the supply chain. Tackling this challenge requires anticipating the products that may soon be lost or wasted and channeling them toward useful applications in nearby locations.

Research on Sonae’s supply chain found that a significant portion of food loss and waste is concentrated in retail distribution centers. At those centers, quality control operations sort out and dispose of supplier produce that is not suitable for sale to consumers. But while those fruits and vegetables are not appropriate for retail sale, they can be dehydrated to create a powder that is used to manufacture a variety of foods, including yogurt or snack bars.

For a dehydration facility to be economically viable, however, it must operate at scale. That means, it needs to take in large volumes. In addition, it has to be located close to the sources of loss and waste so that dehydration can be done before the fruits and vegetables spoil.

Sonae is working to bring together retailers and food processors to ensure a sufficient supply of fruits and vegetables for dehydration and a sufficient demand for the powder output. The pilot could involve the con-

struction of a new dehydration facility or an agreement with existing owners of such a facility.

This project highlights a potential application of the circular bioeconomy across the supply chain. One player’s waste can become a high-value ingredient for food processors and yield attractive margins for dehydration facility operators. Such arrangements will be critical to developing scalable initiatives to reduce food loss and waste.

Too-Good-to-Waste Campaign. Consumer preferences and shopping behavior often cause food waste. One of Sonae’s pilots aimed to alter preferences and behaviors by encouraging consumers to purchase fruits and vegetables that may otherwise end up in the trash bin.

Consider bananas. Shoppers tend to prefer buying a bunch of bananas over a group of single bananas. But many will pull a banana or two off a bunch they are purchasing, creating what becomes a sizable number of single bananas that ultimately get thrown away. Such seemingly harmless buying behaviors are also exhibited when consumers select other fruits and vegetables, resulting in the waste of perfectly good food.

Sonae took some simple—but effective—steps to change customer behavior. For example, it put all the single bananas together in one spot with a sign that said, “I’m a single banana—take me home!” That move alone reduced the number of bananas thrown out by roughly 20%.

In addition, the company created attractive display boxes to promote discounted fruits and vegetables that were still good but nearing their expiration dates. The promotion was a major success: in just one-and-a-half months, the amount of produce sold by eight stores would have filled 1,100 display boxes—50% more than initial projections. Encouragingly, the program succeeded without any change to quality standards, and it did not appear to cannibalize sales of other produce.

The pilot revealed the importance and power of consumer communications—inside and outside stores. Space to communicate with customers is limited, so it was critical to bring a multidisciplinary team together—one that included people from in-store operations, quality control, and communications—to focus on creating the right messages. The pilot also showed how, despite the fact that food loss and waste is dispersed along the supply chain, targeted solutions at the store level can make a difference.

Donation Pilot. Although many companies understand the importance of reducing food waste, they often lack clarity on the value that they can create by tackling it. That uncertainty largely stems from a combination of outdated information and a failure to fully assess the potential financial impact of certain actions.

Company-sponsored donation programs can reduce food waste, and they can provide significant financial benefits, including tax deductions and reduced waste-disposal costs. (Laws and regulations differ by country, so the ultimate benefits of a donation program will vary by location.) Sonae had a food donation program, but BCG’s analysis showed that the stores could use it more.

The goal for the company’s pilot was to expand both the types of products that were donated and the overall volume in each category. BCG helped the company do a thorough review of the current program to identify the types of products that were not being donated but could be accepted. At the same time, BCG and Sonae set store-level KPIs for donations and established simplified processes for making donations. All told, the pilot expanded the value of the food that was targeted for donation by 25 percentage points.

Sonae had a couple of important insights through the pilot. First, it was critical to review and update the company’s guidelines so it was clear what types of products could be donated. For example, Sonae updated its guidelines to reflect that many organizations that take food donations now

have adequate refrigeration to take frozen products. In addition, Sonae hadn’t been taking full advantage of the financial benefits. Donations, for example, are often tax deductible. And companies in Europe are able to recover the value-added tax on products that they donate—something that they cannot do if it is thrown out.

Powerful Pilot Lessons

Sonae is now planning to scale up the five solutions identified in this project. The company’s experience offers powerful lessons for other companies looking to do their part in addressing food loss and waste.

First, to drive meaningful progress, all players across the supply chain must collaborate. Individual companies can of course make meaningful improvements on their own. But many solutions require the participation of multiple players in the food production, processing, and retail businesses. In fact, the underlying purpose of the FRESH project and WBCSD at large is to drive that sort of cross-industry collaboration.

Second, companies have a dual opportunity in addressing food loss and waste. They can help advance an important societal goal. But they also stand to reap business benefits—including ones that have the potential to positively impact their top and bottom lines.

Third, companies do not need to tackle all causes of food loss and waste at once. Rather, they should identify some solid opportunities to reduce loss and waste, pilot those initiatives, and learn and refine those efforts.

Companies that follow Sonae’s example can garner significant business benefits while helping take a bite out of a seemingly overwhelming environmental and societal problem.

NOTE

1. The Food and Agriculture Organisation (FAO) of the United Nations defines *food loss* as the decrease

in edible food mass throughout the part of the supply chain that specifically leads to edible food for human consumption. Food losses occur at the production, postharvest, and processing stages. The FAO defines *food waste* as food loss that occurs at the

end of the food chain owing to retailers' or consumers' behavior. We adopted these definitions for the purpose of this article.

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About BCG

Boston Consulting Group partners with leaders in business and society to tackle their most important challenges and capture their greatest opportunities. BCG was the pioneer in business strategy when it was founded in 1963. Today, we help clients with total transformation—inspiring complex change, enabling organizations to grow, building competitive advantage, and driving bottom-line impact.

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About WBCSD

WBCSD is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. We help make our member companies more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies. Our member companies come from all business sectors and all major economies, representing a combined revenue of more than USD \$8.5 trillion and 19 million employees. Our global network of almost 70 national business councils gives our members unparalleled reach across the globe. Since 1995, WBCSD has been uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues. Together, we are the leading voice of business for sustainability: united by our vision of a world where more than 9 billion people are all living well and within the boundaries of our planet, by 2050.

About Sonae

Sonae is a multinational company managing a diversified portfolio of businesses in retail, financial services, technology, shopping centres and telecommunications, present in 62 countries and with more than 55,000 employees. As a group we are committed to contribute to society beyond the economic value generated by our business activities. In particular, we aim to improve the communities within which we operate by working together to tackle the most fundamental environmental and social challenges of our times.

Combating food waste by reducing production needs has a huge impact in nature conservation. Sonae MC, the food retailer leader in Portugal, with more than 30 years of experience, is in a privileged position to address it.

Sonae MC has been developing a set of initiatives with its suppliers and partners to ensure the creation of a more responsible supply network—an effort that is complemented with the promotion of more sustainable consumption patterns to our customers, not only through information and awareness raising actions, but also through the provision of more products and services with a lower footprint.

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