

#RESTwithEU

10 Pathway

**Mitigating
Food Waste in
the Restaurant
Industry:
A New
Approach to
Sustainability
and Cost
Savings**



Food waste is a major challenge in the restaurant industry from an environmental as well as financial perspective. In fact, it is estimated that the average restaurant generates thousands of euros of food waste each year, resulting in significant costs and inefficiencies. To address this pressing issue, this challenge focuses on mitigating food waste in your restaurant through sustainability practices that not only benefit the environment but also contribute to substantial cost savings.

WHAT ARE THE RECOMMENDED BEST PRACTICES FOR THIS CHALLENGE?

01

BEST PRACTICE 1:
REDUCE FOOD WASTE IN YOUR RESTAURANT

What is **RESTwithEU** Pilot Project

RESTwithEU is a European Commission Pilot Project that aims to make the restaurant sector more resilient and sustainable by 2030 through accelerated digitisation.

DIGITALISATION WITHIN RESTAURANT INDUSTRY

Digitalisation in the restaurant industry involves more than just integrating new technology or connecting to the Internet. It's the process of transitioning a company's operations into the digital realm. This guide specifically addresses digitalisation challenges faced by restaurants and provides recommendations for implementing best practices in your day-to-day operations.

WHAT IS A BEST PRACTICE

A best practice, in essence, is a method or technique consistently proven to yield superior results compared to alternatives in a specific field. It represents the most effective and efficient way of accomplishing a particular goal, typically developed through experience, research, and experimentation, enjoying widespread recognition within an industry or field. In the context of the restaurant industry, these practices aim to optimize restaurant operations for maximum effectiveness and efficiency, contributing to improved performance and heightened customer satisfaction.

RESTAURANT CHALLENGES

The most effective strategies that can significantly benefit your business have been organised and redefined as restaurant industry challenges. The aim is to make these challenges relatable to you, so you can personally connect with one or more and feel inspired to explore and implement the corresponding best practices in your business.

DIGITAL PATHWAYS

Digitalisation pathways refer to the various routes that restaurants can take to incorporate digital technologies and processes into their daily operations and overall functioning. The objective of these pathways is to guide you through digitalization processes, offering support, assistance, and recommendations to help you initiate and navigate these initiatives effectively.

****Are you in need of assistance in selecting the ideal challenge for your business?***

Delve into the Digital Pathway Tool to explore and pinpoint the most fitting best practices aligned with your current level of digitalisation. This tool has been designed to help restaurants SMEs identify and prioritise your digitalisation efforts.



Why should you embrace the best practices in this challenge?

We strongly recommend embracing these best practices for the following compelling reasons:



HOLISTIC APPROACH TO SUSTAINABILITY

Adopting best practices on food waste reduction signifies your restaurant's dedication to a complete approach to sustainability. By identifying and implementing diverse methods to tackle food waste, your establishment can actively contribute to the larger initiative promoting environmental responsibility within both the industry and the global community.



FINANCIAL IMPACT AND COST SAVINGS

Addressing food waste is not merely an ethical concern; it is also a pragmatic decision. Implementing these best practices can result in substantial cost savings by reducing the quantity of wasted ingredients. This leads to a positive influence on the financial well-being of your business, fostering increased profitability. The financial impact is derived from lower purchases on food procurement, additional revenue generated by repurposing food that would otherwise be discarded, and decreased expenses related to waste management.



REPUTATION AND CUSTOMER LOYALTY

As consumers become more aware of the environmental impact of their choices, a restaurant that proactively addresses food waste not only aligns itself with sustainability goals but also positions itself as a socially responsible entity. This commitment to ethical business practices plays a key role in establishing a positive reputation and has the potential to foster strong consumer loyalty.



REGULATORY COMPLIANCE

This practice goes beyond being merely a beneficial practice for cost reduction or a commitment to the environment and your customers. Countries within the European Union are now enacting measures and laws to minimise food waste as part of a broader initiative. Embracing these best practices can position you ahead of potential regulatory changes and ensure that you have already made significant progress.

** This challenge differs from others as it does not provide a specific recommendation for implementing a process or digital tool. Instead, it focuses on various methods to detect food waste in restaurants while also suggesting alternatives to address this problem. Therefore, in contrast to other challenges, we aim to outline effective practices for managing food waste. Rather than presenting these practices as a step-by-step implementation process, we view them as overarching principles to be embraced and integrated into daily practices. We strongly recommend implementing this practice irrespective of your digitalisation level.*

While the suggested alternatives might guide you to other closely related challenges where we provide detailed steps for implementing digital solutions, this particular best practice will not be presented in a step-by-step format. Instead, we will present a range of strategies, allowing you the flexibility to choose how to implement them at your discretion. Let's delve further into the topic.

1

BEST PRACTICE 1: REDUCE FOOD WASTE IN YOUR RESTAURANT

The restaurant industry's impact on food waste is substantial, with Eurostat's estimates placing annual generation at a staggering 5 million tons, comprising approximately 12% of the European Union's total food waste. This not only has direct environmental implications but also results in a significant loss of resources and revenue for the industry.

Addressing food waste does not only involve reducing the amount of food that goes to waste but also improving overall systems and processes. By taking a holistic approach, it is possible to reduce food waste while also increasing efficiency, saving resources, and improving profitability. Strategies such as enhancing inventory control and streamlining supply chain operations, measuring and tracking uneaten food, and finding alternative uses for surplus food through repurposing or reselling hold promise in addressing this pressing issue. **Nevertheless, food waste is not a process that can be digitised; rather, it is a goal or result to be achieved.** Therefore, any solution that aims to optimise the processes that lead to a reduction in food waste could be considered a best practice to achieve that goal.

What you should keep in mind to implement this best practice

We break down the crucial factors you need to consider when applying the recommended best practices. Utilise the provided template to verify that each recommendation is in place before commencing the implementation process.

Mark either a tick or a cross in the boxes presented on the following page.



CHOOSE THE CORRECT SOLUTION FOR YOUR RESTAURANT



EVERY CENT MATTERS

In the restaurant industry, recognising the value of every cent is paramount to financial success. This principle emphasises the importance of cost-conscious decision-making in all aspects of the business, from purchasing ingredients to managing overhead expenses. By scrutinising and optimising costs, the restaurant can achieve significant savings that collectively contribute to its overall profitability. Adopting a **mindset** where every cent counts encourages financial discipline and strategic resource allocation, ultimately ensuring the long-term financial health of the establishment.



MAKING EVERY GRAM COUNT

Extending the concept to the kitchen, the notion that every gram of food counts underscores the significance of minimising waste at the ingredient level. Precise portion control, creative use of food scraps, and efficient preparation techniques must be considered in this approach. By valuing and utilising every gram of food, the restaurant not only reduces costs but also contributes to sustainability goals. This **mindset** encourages chefs and kitchen staff to explore ways to repurpose ingredients, leading to a more efficient and environmentally conscious culinary operation. It aligns with the broader initiative to combat food waste and underscores the impact of small, mindful choices on both financial and ecological sustainability.

Food waste isn't just a local issue; it is a global crisis. In the European Union, where food waste exceeds imports, it not only undermines food security but also worsens the cost-of-living crisis. Beyond the economic impact, food waste significantly contributes to climate change, accounting for approximately 8% of global greenhouse gas emissions caused by humans. In Europe alone, it represents 15 to 16% of the total emissions impact throughout the food supply chain. Tackling food waste is not just an option; it is an urgent imperative for the environment and our collective well-being.

BEST PRACTICE 1 - MITIGATING FOOD WASTE IN THE RESTAURANT INDUSTRY: A NEW APPROACH TO SUSTAINABILITY AND COST SAVINGS - **REDUCE FOOD WASTE IN YOUR RESTAURANT**



HAVE YOU EVER CONSIDERED THE QUANTITY OF FOOD BEING DISCARDED?

Commence a food waste audit by analysing and tracking the varieties and quantities of discarded food in your restaurant. Assess whether excessive waste results from inadequate inventory forecasting and purchasing from suppliers. Examine potential waste during preparation and leftover portions from diners. Additionally, consider how your establishment currently manages leftover food. Understanding these aspects will pave the way for targeted strategies to minimise food waste and enhance overall efficiency in your restaurant.



WHAT RESOURCES DO YOU HAVE, OR WHAT INVESTMENT DO YOU PLAN TO MAKE?

Later in this guide, we will explore various strategies for reducing food waste, ranging from simple and immediately applicable approaches for your restaurant to more intricate methods that promise enhanced performance and results. The choice of which path to take hinges on the level of investment you intend to make or the financial resources available to your establishment.



CRAFTING YOUR STRATEGY; BEGIN WITH SMALL CHANGES AND SCALE UP

Initiate your approach by defining a complete strategy to tackle food waste in your restaurant. Start with small, manageable changes that can be implemented seamlessly into your current operations. As these initial adjustments take effect, observe their impact on reducing waste and improving the efficiency of your processes. With insights gained from this gradual process, you can then scale up your efforts, incorporating more complex methods and technologies to further refine your approach. This incremental strategy allows for a tailored and sustainable integration of food waste reduction practices, ensuring a smooth transition and optimising the results for your restaurant.



TECHNOLOGY REQUIREMENTS

Reducing food waste hinges on a mindset shift in your restaurant management rather than introducing entirely new elements or strategies. While no specific tools are mandatory, we strongly recommend utilising a digital tool or repository to pinpoint areas with the highest food wastage and identify dishes with significant leftovers. In later sections, we will direct you to tools that are outlined in other challenges. Nonetheless, a computer, tablet, or smartphone can prove to be beneficial for efficient monitoring. For more intricate strategies, consider employing specialised software and hardware equipped with precise sensors and meters to achieve accuracy in your food waste reduction initiatives.



RECYCLING AND COMPOSTING FACILITIES

In your commitment to reducing food waste, establish a robust system for recycling and composting within your restaurant. Designate specific bins for recyclables and compostable materials in both kitchen and customer areas. Educate your staff on proper waste sorting procedures to ensure effective recycling. Lastly, collaborate with local recycling facilities or composting services to responsibly dispose of waste.



CULTURE AND STAFF TRAINING

Cultivate a culture of waste reduction within your restaurant by prioritising staff training. Implement training programs that educate employees on the significance of minimising food waste and the specific strategies adopted by your establishment. Encourage a proactive approach to waste reduction at all levels, from chefs and kitchen staff to servers and management. Emphasise the significance of portion control, efficient food preparation, and the creative repurposing of ingredients.



MEASURE THE EXTENT OF FOOD WASTE

Assessing the quantity of discarded food aids in understanding the scope of the issue. Merely acknowledging food waste differs from quantifying it in terms of weight or the financial loss incurred. Each discarded meal represents wasted money; hence, quantifying this aspect provides a complete view that enables you to address the problem systematically and explore opportunities for optimisation.

Three Key Principles for Food Waste Reduction

We will delve into three principles, each serving as a cornerstone in the transformative journey toward sustainable culinary practices and responsible food waste management:

PREVENTION:

This involves implementing proactive measures at various stages of the food supply chain to curb waste before it occurs. From meticulous inventory management to strategic menu planning, the emphasis is on foresight and careful consideration to prevent excess production and spoilage.

REDISTRIBUTION AND RECOVERY:

This principle focuses on the efficient use of surplus food by redirecting it to those in need rather than letting it go to waste. Collaborating with local food banks, charities, or community organisations allows restaurants to redistribute excess but still viable food items. Your kitchen and staff also have the opportunity to showcase creativity by crafting dishes beyond the regular menu. This approach allows for the utilisation of ingredients that require immediate attention due to impending expiration or spoilage. These strategies share a common goal of maximising the use of every ingredient before it is necessary to discard it.

RECYCLING:

This approach involves repurposing food by-products, such as kitchen scraps and leftovers, to minimise environmental impact. We are discussing the redirection of food waste from landfills by employing composting or other environmentally friendly disposal methods. In essence, while the food may be unusable for its original purpose, it can serve as a less detrimental alternative in some capacity.

Note that these three principles follow a linear progression or hierarchy: prevention addresses the issue before it occurs, redistribution is the real-time response when excess arises, and recycling becomes the solution when no other alternatives are available.

Take note of:

Every effort counts: Implementing strategies to minimise food waste, no matter how small, contributes to a more sustainable and responsible future. Your actions today make a meaningful impact on both your business and the planet.

Strategies to Minimise Food Waste

In this list, we present solutions and strategies aimed at minimising food waste in your restaurant. We prioritise the solutions that are the easiest to implement, considering both the level of effort and the initial financial investment required. This ranking is aligned with the potential impact of each strategy on your business. Essentially, we begin with the simplest strategies that may have a smaller impact on the overarching goal of reducing food waste.

The order of strategies aligns with your restaurant's operational process, spanning from supplier relations to the departure of diners from the premises. Initially, you will find strategies related to the reduction of food waste after it is served at the table, gradually progressing to the commencement of operations, kitchen practices, and the broader supply chain.

To enhance clarity, the order mirrors the classification of principles discussed earlier. We begin with strategies falling under the 'Recycling' category and conclude with those categorised under 'Prevention'. This systematic arrangement facilitates a holistic approach to strategies to implementing strategies for reducing food waste in your restaurant's operations.

+ DEVELOPMENT OF PROCEDURES FOR THE RECYCLING OF ORGANIC WASTE, COMPOSTING, COOKING OIL RECYCLING, ANIMAL FEED, AND SIMILAR STRATEGIES

This best practice, while not directly contributing to the reduction of food waste, presents a valuable opportunity to repurpose what would otherwise end up in the landfill. Composting involves the decomposition of organic waste into nutrient-rich compost, which can subsequently be utilised to enhance soil fertility or sold to local farmers and gardening enthusiasts. Distributing surplus food as animal feed, ensuring the proper recycling of cooking oil, and exploring similar innovative strategies constitute a basic approach to sustainable waste management within your facilities. Beyond being environmentally responsible, these practices may also yield profits, considering the potential for selling opportunities.

+ ALTERNATIVE USES FOR SURPLUS FOOD AND FOOD DONATION

Finding alternative uses for surplus food can also play a significant role in reducing food waste. Food recovery programs, such as food banks and soup kitchens, can redistribute surplus food to those in need. Furthermore, food that remains safe for consumption but does not meet aesthetic standards can find a new purpose through donations to organisations dedicated to providing food assistance. Additionally, unconsumed restaurant-prepared food can be extended to new customers through intermediary solutions, actively working to minimise waste in the process.

+ **OPTIMISED QUANTITIES AND PORTION SIZES**

Precision in portioning is essential, as some dishes may feature excessive quantities that lead to uneaten leftovers, especially with items such as potatoes and side salads. This surplus can prove counterproductive, leading to inefficient ingredient utilisation and potentially overwhelming customers with oversized servings. Introducing a variety of portion choices and alternative side options can effectively address this issue. Consider offering smaller portions of standard menu items with the flexibility for guests to request refills, ensuring that diners receive precisely what they desire while concurrently helping restaurants prevent unnecessary waste.

+ **MENU DESIGN**

Considering the menu as a cohesive entity consciously crafted to share common ingredients, preparations, and processes empowers a restaurant with the mindset required to curtail waste at its source – the kitchen. Leveraging various parts of a single ingredient across multiple menu items allows establishments to optimise resource utilisation. It is crucial to impart training to all new culinary team members in the art of streamlining food preparation, adopting batch cooking or similar approaches, adhering to specific portion sizes, cross-utilising ingredients, and repurposing food trim and excess items. This strategic approach is intricately related to what we defined in Challenge 3 as menu engineering. As highlighted, menu engineering is a technique aimed at refining pricing strategies in restaurants by analysing menu items for their popularity and profitability before making adjustments accordingly. A menu designed to minimise waste and adjusted based on supply chain prices effectively achieves both of these objectives.

+ **FOOD WASTE MEASURING AND TRACKING SOLUTIONS**

Measuring and tracking uneaten food is crucial to understanding and addressing the problem. By monitoring the amount of food that is thrown away, you can identify areas where waste is occurring and implement targeted solutions. For instance, a restaurant may find that a certain dish is consistently going uneaten and can adjust portion sizes or remove it from the menu. The act of measuring can often reveal an existing problem that needs to be addressed. In many cases, this process of assessment can help to identify areas for improvement and provide direction for how to do so. By taking the time to analyse and assess a situation, it is easier to discover any underlying issues and tackle them accordingly.

Furthermore, it may prove helpful to explore waste tracking systems that record essential details such as the weight and source. You can utilise this information to improve your kitchen operations, focusing on areas such as reducing prep trim and overproduction. To maximise the insights gained from this task, quantify the results in terms of money (euros) to comprehend the financial impact of the waste, including wasted ingredients or unsold dishes. This perspective will offer a distinct and more tangible understanding of the outcomes. Smaller restaurants have the option of tracking waste using traditional methods such as pen and paper or a spreadsheet (preferred), serving as an alternative to investing in specialised software.

You can also employ various methods for tracking food waste, ranging from simpler approaches to more sophisticated systems. Visual bin observations, involving the capture of waste through photos, offer straightforward data collection. Food waste audits provide a more detailed analysis, allowing tracking based on source, dish, or weight. Specialised kitchen stations, equipped with specific hardware and sensors, facilitate a more targeted measurement of food waste in distinct categories. For a scaled system, advanced food waste monitoring provides a holistic view of the entire waste management process. These approaches cater to different levels of detail and complexity, allowing you to choose the method that best aligns with your needs and available resources.

+ **INVENTORY CONTROL AND SUPPLY CHAIN OPTIMISING SOLUTIONS**

Implementing robust inventory control and optimising supply chain solutions may be a pivotal strategy in the management of food waste within the restaurant. By maintaining meticulous control over inventory levels, you can minimise overstocking and prevent excess items from reaching their expiration dates. Simultaneously, optimising the supply chain ensures a streamlined and efficient flow of ingredients, reducing the chances of spoilage or waste due to logistical inefficiencies.

Before ingredients even reach the kitchen, consumption forecasts need to be studied to understand the popularity of specific dishes, which can lead to more accurate order predictions for suppliers. As previously discussed in Challenge 3, the implementation of a digital inventory management system not only reduces errors but also optimises resources. This system aids in identifying ingredients that should be prioritised for use to prevent unnecessary disposal. Furthermore, as highlighted in Challenge 5, the integration of a point-of-sale system allows for the identification and collection of data on dish consumption. Both these tools serve as invaluable assets, providing insights that empower restaurants to proactively address and minimise food waste right from the outset. It is essential to remember that any information that enhances your ability to make better forecasts and plans, such as reservations (as explored in challenge 2), directly influences the issue addressed in this challenge.

Finally, we strongly recommend fostering close collaboration with your suppliers and striving for increased flexibility in your ordering process. Emphasise partnerships with local suppliers, cultivating relationships that enable negotiation and the ability to place orders promptly as required, thereby avoiding risks associated with excessive inventory. This strategy ensures a more agile and responsive supply chain tailored to the unique needs of your restaurant.

Take note of:

Given that the problem of food waste may have potential solutions in various aspects and processes of a restaurant, it can be inferred that any solution aimed at optimising these processes can be beneficial in reducing food waste.

Other SME restaurants have already proved the best practice

Restaurant Pedro Ferreira da Costa Unip. Lda (from Portugal) implementing the product Waste Busters (special prize winners in the Hackathon)

The pilot phase of this challenge has not been tested with an established solution. During the Hackathon conducted in Madrid in June 2023, various innovators, developers, and restaurant experts collaborated to create new digital products that eventually led to a solution for addressing this challenge. To validate this solution, a pilot was implemented in collaboration with a restaurant, providing an opportunity to verify the hypotheses of the winning team and test the solution in real restaurant settings.

The pilot for this challenge involved testing the award-winning hackathon project at a special price during its initial development phase, in collaboration with a restaurant.

Initial proposition of the solution

A software solution designed to assist restaurants in minimising food waste, ensuring compliance with EU regulations on the matter. The solution encompasses a user-friendly stock management tool, streamlining the management of restaurant inventory. Additionally, it helps restaurants in cost reduction by optimising their stock and offering recommendations for efficient utilisation of all ingredients. It particularly makes suggestions for ingredients nearing expiration, utilising an Artificial Intelligence model for this purpose.

Pilot hypotheses

The pilot project established clear validation objectives with the intent of evaluating the efficacy of the proposed solution through the development and testing of a functional prototype. The primary focus was on two key components: the stock management tool and the recipe builder, which examined the potential usefulness of AI in regularly offering recipe recommendations to the restaurant. The evaluation delved into assessing the practical utility of the solution for restaurants, with a specific emphasis on identifying the modules that contribute the most value to their operational efficiency. Furthermore, the user-friendliness of the tool underwent careful scrutiny, evaluating both design and interface elements to ensure an intuitive and efficient user experience.

WHAT WAS DONE DURING THE PILOT

The pilot project encompassed a two-fold approach. In the initial research phase, the hackathon winner team conducted a study to comprehend the customer journey and evaluate the practical value of the proposed features for restaurants – this involved testing and data collection without the development of a complete software solution. Subsequently, the validation process for both hypotheses was initiated, where the solution provider administered a questionnaire to the restaurant. This questionnaire aimed to assess which pieces of information would be most beneficial to display in the stock management tool, providing valuable insights into the preferences and needs of the end-users.

CONCLUSIONS

The questionnaire proved instrumental in validating hypotheses during the pilot, leading to the development of a minimal viable product (MVP) for a stock management tool with a visual dashboard. Key features included an ingredients section with a traffic light system based on expiry dates. Although this system is currently reliant on manual input, there are future considerations for implementing barcode scanning or optical character recognition. Notably, the importance of including lot numbers and producer information for security reasons emerged. The dashboard encompasses tabs for ingredient names, categories, quantities, expiry dates, and a traffic light system. Although the leftovers tab is manually inputted, the next step involves automating this process through the traffic light system.

The current version of the project includes the integration of AI, specifically ChatGPT, within the “replateAI” tab. This feature was thought to allow users to manually input leftovers and ingredients while adding prompts in various languages. The hackathon winner team preferred ChatGPT over other tools at this stage, citing its readiness and usefulness. However, they acknowledged the necessity of training the AI tool to enhance its value for restaurants by offering creative options and optimising stock. The process involves continuous learning, especially from early adopters who can provide valuable insights. Notably, the next development step includes automating the input of leftovers from the manual process to be derived automatically from the traffic light system, contributing to a more streamlined and efficient user experience.