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Food Waste Reduction Practical Guide

Collaboration with



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Shenzhen One Planet Foundation

Shenzhen One Planet Foundation is a 4A non-public raising foundation registered in Shenzhen. Its purpose is to create a bright future in which human beings live in harmony with nature by protecting biodiversity, reducing ecological footprint and ensuring the sustainable use of natural resources.

World Wide Fund for Nature

The World Wide Fund for Nature (WWF) is the world's most prestigious and largest independent non-governmental conservation organization. It has more than 5.2 million supporters and a global network active in over 100 countries and regions. WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences

The Institute of Geographic Sciences and Natural Resources Research, CAS is a multidisciplinary research institute focusing on, among other things, physical geography and global change, human geography and regional development, natural resources and the environment, geographical information systems and surface simulation, the terrestrial water cycle and water resources, ecosystem network observation and modeling, and Chinese agricultural policy. Through research in these domains, the institute aims to solve major natural resource and environmental problems related to national sustainable development and improve its own innovative capacity at the same time.

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Rare China Center for Behavior applies behavioral science to advance environmental sustainability. Our vision is to transform the environmental field by scaling the adoption of behavior-centered design principles and practices, equipping government agents, businesses and non-profit organizations with a comprehensive toolkit of behavior change strategies.

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This guide is developed with tremendous support from **China Hospitality Association**.

Main drafters:

Liu Xiaojie, Hao Xiuping, Yu Xin, Wang Hongyue, Tan Xiao, Li Shiyang, Liu Jiamei, Jia Wenli

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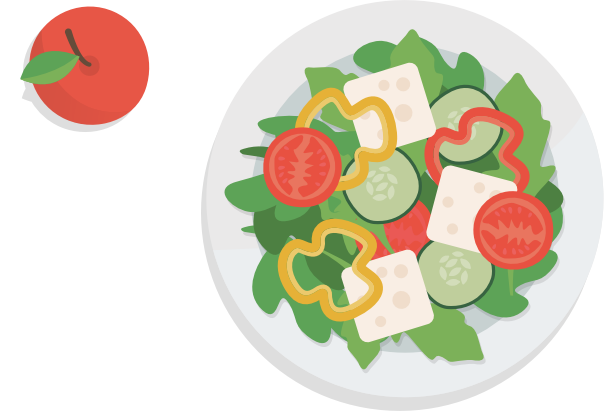
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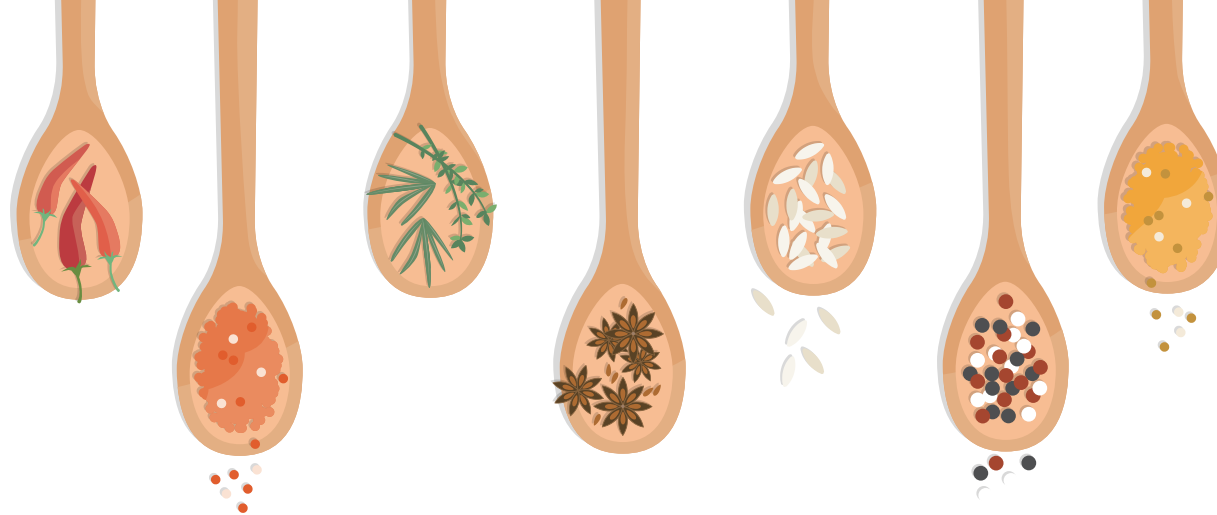
Foreword

Food waste is a social issue. General Secretary Xi Jinping has made important instructions on many occasions, stressing the need to resolutely stop food waste. Each party in the food supply chain, from farm to fork should assume its own social responsibility. Catering businesses, as catering service providers, should also actively implement the concept of stopping food waste by taking actions that can encourage green consumption decisions. The China Hospitality Association (CHA) and related industry organizations have launched multiple initiatives calling on the whole industry to stop food waste and encourage green consumption through joint efforts such as small portions of dishes, the "Clean Your Plate" campaign, individual serving, green catering, and consumption reminders. These initiatives in which catering businesses take an active part have yielded positive social results.

In order to provide guidance to catering enterprises, especially small and medium-sized ones, for reducing food waste in an efficient manner through refined management of the whole process from purchase, storage, and processing to service, Shenzhen One Planet Foundation, World Wide Fund for Nature Beijing Office, and Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences have developed the *Food Waste Reduction Practical Guide* under the guidance of CHA. These organizations collected the typical practices of many small and medium-sized catering enterprises through a literature review and a field investigation, carefully analyzed and summarized the advanced experiences, and solicited the suggestions and opinions of head chefs and general managers of catering enterprises. After several rounds of revision, discussion, argumentation and consultation, the report was drafted and finalized, with a view to providing important guidance on food waste reduction for micro, small and medium-sized catering enterprises. It also has strong practical value as a tutorial and reference for further food waste reduction publicity and training of catering enterprises.

This guide is subject to constant improvement in the practice of guiding food waste reduction in micro, small and medium-sized catering enterprises, expected to enhance the code of conduct and drive the implementation of standards in this sector.

Song Xiaoxi, Vice President and Secretary General of China Hospitality Association



The World Wide Fund for Nature (WWF) has long been committed to environmental protection, and made active efforts to build sustainable food systems and reduce food waste, while calling on all stakeholders to take action to halve food waste by 2030.

WWF's Food Manifesto released at the recent 27th Session of the Conference of the Parties of the UNFCCC (COP 27) clearly underlined the importance of transformation in food systems. Currently, food systems account for around 30% of all greenhouse gas emissions. A nature-positive food system will contribute to carbon reduction and sequestration. A systematic approach is needed to enable food systems to deliver on their potential in climate change mitigation. Action should be taken in the dimensions of production, consumption, and food loss and waste to ensure food system emissions in alignment with a 1.5°C future.

As a major catering country, China has both the challenge and the responsibility of promoting the sustainable transformation of its catering industry. The "Pride on our Plates" project is a key project of WWF Beijing Office to reduce food waste. We believe that the outreach and implementation of the *Food Waste Reduction Practical Guide* will provide more effective methods and tools for catering operators to boost the sustainable development of catering industry through mutual learning and continuous innovation.

Zhou Fei, Chief Program Officer, WWF Beijing Office

China has always attached great importance to food waste reduction. Highlighting food security and loss reduction, General Secretary Xi Jinping has given important instructions on many occasions to practice economy and oppose waste. On April 29, 2021, the *Anti-Food Waste Law of the People's Republic of China* was adopted at the 28th Meeting of the Standing Committee of the 13th National People's Congress (NPC), elevating thrift and frugality from a moral level to a legal norm. Micro, small, and medium-sized enterprises (MSMEs), which account for 97% of the total catering companies nationwide, have a crucial role to play in food waste reduction efforts. Better empowering MSMEs to reduce food waste is a grave challenge facing the catering industry, as well as other parties concerned.

In July 2020, with the support of the European Union Switch-Asia Program, the Shenzhen One Planet Foundation launched the "Pride on our Plates" project, together with its strategic partner WWF Beijing Office and other partners, which calls on catering MSMEs in China to join the fight against food waste. Over the past two years, the *Food Waste Reduction Casebook (Summary Report)* has been published, and pilot training and workshop for catering enterprises has been carried out in six cities across the country. This project has embraced the support and engagement of government departments, industry associations and many catering enterprises, as well as widespread public recognition.

The *Food Waste Reduction Practical Guide* not only crystallizes the wisdom and experience of industry scholars and many front-line experts, but also embodies the research results of the "Pride on our Plates" project since its launch, providing scientific and effective guidance on food waste reduction for catering enterprises and operators in a wide range from procurement, storage, processing to service. The "Pride on our Plates" project is expected to continue empowering the catering industry through the release of the Guide.

Ding Gan, Secretary General, Shenzhen One Planet Foundation

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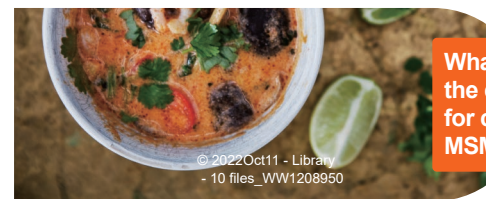
Catering Industry: Mainstay of Food Waste Reduction



Reducing food loss and waste is an important and urgent global issue for improving food security. As a major participant in the downstream of food supply chain, catering businesses can promote food waste reduction at the consumption end and at the food supply end, facilitating the achievement of United Nations Sustainable Development Goal (SDG) Target 12.3, and contributing to the global endeavor to end hunger while maintaining national food security.



This guide is designed to provide guidance on food waste reduction practices for Chinese micro, small and medium-sized catering enterprises (catering MSMEs) to help them overcome food-waste challenges and gradually establish and practice green business models and consumption patterns.

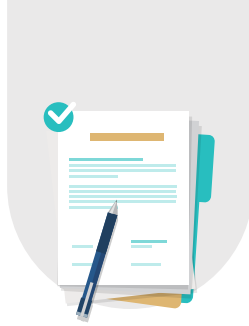
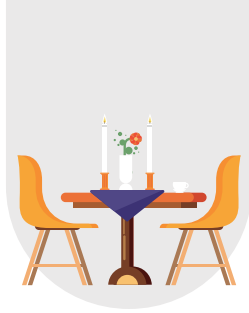


What are the criteria for catering MSMEs?

According to the *Measures for the Classification of Large, Medium, Small and Micro-Enterprises in Statistics (2017)* [2], catering enterprises with less than 300 employees or operating revenue of less than 10 million yuan are classified as MSMEs; each restaurant or store of a chain catering enterprise can be considered as an MSME where it is an independent legal entity registered by the Industrial and Commercial Administration, with a relatively independent management structure.

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What Can Catering Enterprises Benefit From Reducing Food Waste?



What Are the Principles to Follow for Reducing Food Waste?

1/ Demonstrate social responsibility

Create a favorable business environment together; Pave the cornerstone of their own long-term sustainable development.

2/ Improve brand image

Enhance the sense of worth of the brand by adding green and environmental value; Boost exchanges and interactions with environment-friendly consumer groups, and improve brand operation and reputation.

3/ Increase operating efficiency

- In restaurant operations, food waste accounts for about 8–20% of food cost^[3].
- Catering businesses save \$7 for every \$1 invested in cutting food waste^[4].

5/ Strengthen employee capability and loyalty

Enhance employees' sense of social responsibility and corporate identity through publicity and education; Improve employees' professionalism and cost-saving skills through professional skills training to help enterprises reduce cost and increase efficiency.



4/ Upgrade management capacity

Optimized menu design, scientific storage management, standardized operation, dining service improvement, and kitchen waste monitoring, The lean management will help improve:

- Catering business management;
- Operational efficiency and benefits;
- Consumer dining experience.

1/ Safety priority and green development

Strictly comply with relevant laws and regulations, such as the *Food Safety Law of the People's Republic of China*, the *Anti-Food Waste Law of the People's Republic of China*, and the *Code of Practice for Food Safety in Catering Services*;

Foster the concept of civilized, healthy and green development, advocate resource-saving and environment-friendly consumption patterns, and promote systematic resource conservation in food supply chain without compromising the quality and safety of catering products.

2/ Institutionalized guidance and regulated operation

Catering enterprises should strengthen institutionalized management, develop and improve rules, regulations and standards related to reducing food waste.

- ▶ Establish regulations with practical measures, and facilitate the implementation to promote the behavior change;
- ▶ Develop detailed measurements for all key components along the supply chain.



3/ Collaborative deployment and refined management

Strengthen collaborative management and systemic deployment among various departments of catering enterprises.

- ▶ Coordination and mutual feedback of processes before, during and after meals;
- ▶ Collaboration with staff engaged in purchasing, distribution, cooking, service, etc.;
- ▶ Joint action with upstream and downstream suppliers, brands, consumers, etc.

4/ Targeted measures according to various conditions

The causes of catering waste vary among catering enterprises and consumer groups, and so does the degree of food waste in different links, positions, and behaviors of catering companies.

Effective measures should be taken to address sources and key links of food waste on a case-by-case basis. An innovative problem-oriented targeted approach should be applied to maximize control effectiveness and effectively stop food waste.



Three Steps to Reduce Food Waste in Restaurants



1. Preparation phase

- 1.1 Get a quick understanding of restaurant food waste with self-assessment form
- 1.2 Set up a project team comprised of key functional personnel
- 1.3 Measure, record and analyze the basic situation of food waste



2. Implementation phase

- 2.1 Set reduction targets based on basic data of restaurant food waste
- 2.2 Develop improvement measures, conduct reviews and adjustments on a regular basis, and keep data records continuously



3. Summary and outreach

- 3.1 Summarize project results and develop specification manual and internal audit mechanism
- 3.2 Promote and share this successful case with branches or in the sector



1 PREPARATION PHASE

1.1 Get a quick understanding of restaurant food waste with self-assessment form



Below are 25 common food waste scenarios in restaurants. Please give scores according to the actual situation to make clear the food waste situation in your restaurant.

Think of the typical week in your restaurant. Choose 5 if the situation happens a lot, and 1 if the situation happens infrequently (Choose 5 if this item is not applicable)

No.	Restaurant self-assessment checklist	5	4	3	2	1
1	Moderate amount of dishes without surplus variety of ingredients	5	4	3	2	1
2	Moderate portion of dishes without much surplus	5	4	3	2	1
3	Single set, half portions or small portions of dishes available	5	4	3	2	1
4	Full use of all parts of ingredients without unreasonable surplus	5	4	3	2	1
5	No wastage of prepared ingredients during menu changes	5	4	3	2	1
6	Delicious food, no bad reviews	5	4	3	2	1
7	Wastage of food due to cooking mistakes	5	4	3	2	1
8	Appropriate amount of dishes cooked on the day and all sold out	5	4	3	2	1
9	Appropriate amount of dishes prepared the day before, and all sold out on the day	5	4	3	2	1
10	Customers do not return dishes due to unmet expectations or low quality	5	4	3	2	1
11	Use misshapen or "ugly" ingredients	5	4	3	2	1
12	Reasonable preparation, without discarding trimmings that can still be used	5	4	3	2	1
13	Food cut into required shapes	5	4	3	2	1
14	Reminding customers to order in moderation	5	4	3	2	1
15	Timely feedback on customers' taboos and requests to the kitchen	5	4	3	2	1
16	Providing individual serving actively	5	4	3	2	1
17	Encouraging clean plate and reminding customers to pack leftovers to go	5	4	3	2	1
18	Daily feedback on leftovers to the kitchen	5	4	3	2	1
19	Purchase of safe and qualified ingredients with careful examination	5	4	3	2	1
20	Efficient coordination of delivery time and method to ensure the supply of ingredients	5	4	3	2	1
21	Quality of food materials up to the standard of the chef	5	4	3	2	1
22	Purchase on demand, with purchase plan developed	5	4	3	2	1
23	First-in first-out (FIFO) principle implemented for inventory management	5	4	3	2	1
24	Reasonable control of storage temperature and other conditions, no spoilage of ingredients	5	4	3	2	1
25	Proper disposal of nearly expired ingredients rather than discarding directly	5	4	3	2	1

Restaurant Evaluation Form



Total score: (excellent if getting 100–125 points; good if getting 80–100 points; necessary to work hard if below 80 points)

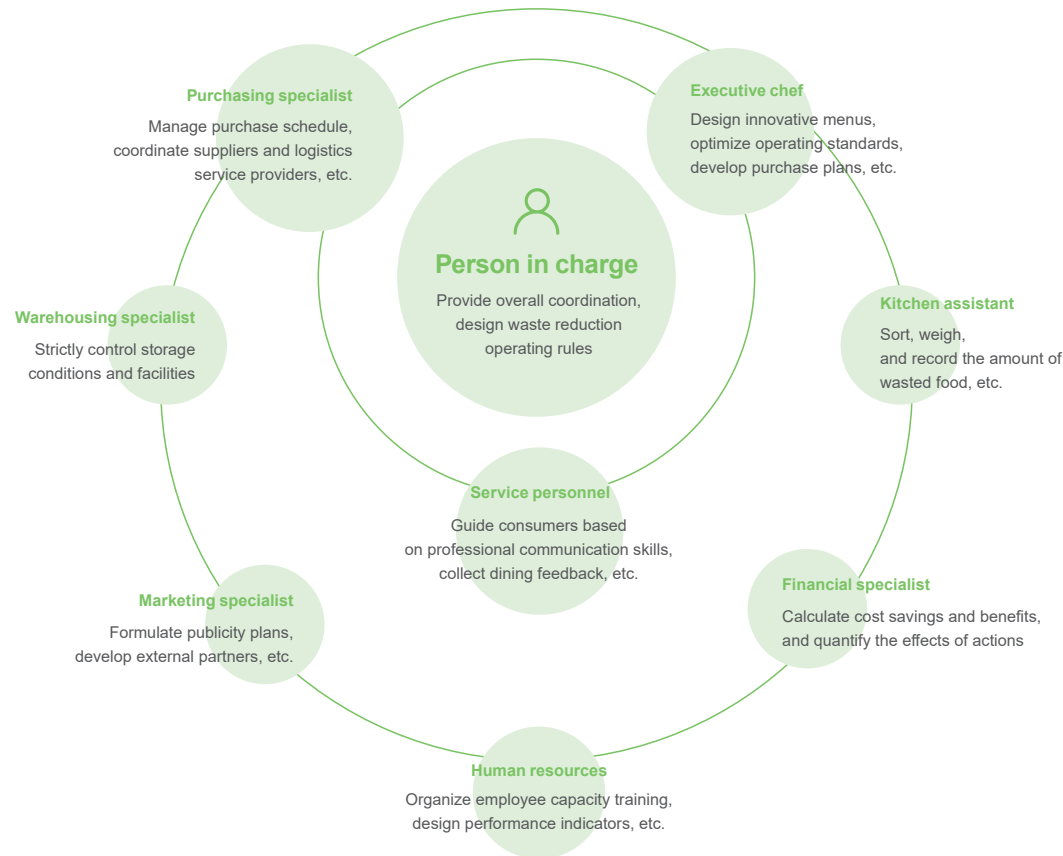
1.2 Set up a project team comprised of key functional personnel



Restaurants can set up a food waste working group comprised of employees in corresponding positions according to the number of employees and configurations of staffing. For restaurants with less than ten employees, one employee can undertake multiple responsibilities.

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A complete working group should include the following roles:



1.3 Measure, record and analyze the basic situation of food waste



Daily measurement and record of food waste is essential for reducing food waste as it helps restaurants understand the link, degree and changing trend of waste for developing targets and improvement measures. Records for at least two weeks are recommended, in order to obtain more indicative data.

FOOD SPOILAGE



Discard of ingredients due to properness before meal preparation.
e.g. wilted leaves.

KITCHEN TRIMMINGS



Food loss during meal preparation in restaurants.
e.g. trimmings such as vegetable roots, leaves, skins, etc.; vegetables discarded due to cooking mistakes, etc.

UNSOLD PREPARED FOOD



Discard of dishes that have been prepared and met serving requirements, but not sold due to various reasons.
e.g. surplus caused by meal over-preparation; customers return behavior.

PLATE WASTE



Leftovers on the table from consumers, with oil and water filtered out.

This guide divides food waste into four types for measurement and record

*Where possible, restaurants can weigh vegetables and meat separately, and calculate the ecological footprint through the WeChat mini-program "Pride on our Plates" developed by Shenzhen One Planet Foundation.

01 Material Preparation



02 Measurement

Classify and put food waste into corresponding trash cans -> Weigh and record the total daily weight of the four types of food waste

03 Result Analysis

The main categories and sources of food waste can be identified by analyzing data of nearly one month.

Food waste measurement and assessment is of great importance. The most direct method is weighing food waste and analyzing food waste reduction trend or food waste composition. Data obtained by weighing can also be used to evaluate the impact of food waste on greenhouse gas emissions, water footprint, land application, etc., and analyze food cost and operating revenue [5].

TIPS:



Case

In 2019, WWF Beijing Office measured and analyzed food waste reduction of five hotels in Changxing County, Zhejiang Province. The effects of food waste reduction in one of the hotels are described as follows:

Hotel D

Total amount and cumulative reduction of food waste: The measured three-month food waste was about 70 kg, worth RMB 943, equivalent to 372 kg of carbon dioxide emissions. The three-month cumulative reduction of food waste reached 286 kg, worth RMB 3778, equivalent to 1,228 kg of carbon dioxide emission reductions. The weekly comparison reveals that overall food waste has a downward trend.



Hotel D
Prepares meals according to the number of hotel guests and makes reasonable arrangements for reworked leftovers.

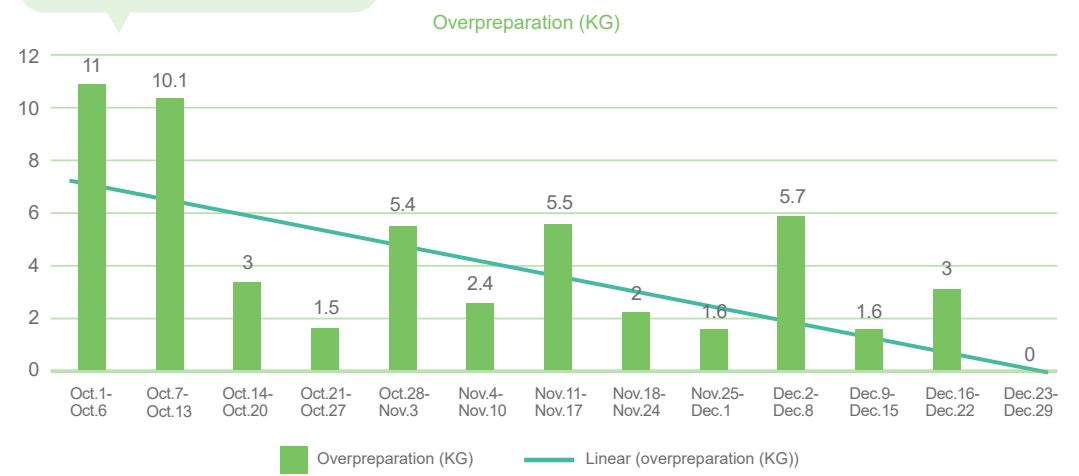


Overpreparation analysis: Overpreparation is the primary cause of food waste in Hotel D, accounting for 75%. The graph indicates that overpreparation decreased as compared with the benchmark week. Such gradual reduction of weekly excess is attributed to measures adopted after the benchmark week, such as rational use of reworked food and menu re-examination according to the amount of waste food. From the perspective of stalls, the top three overproduction stalls are Chinese food, noodles, bakery and pastry. The top three cuisines in the Chinese stalls are Chinese beef dishes, other Chinese breakfast dishes, and Chinese vegetable dishes.



Food waste reduction actions: The hotel provides small breakfast buffet, and receives a few diners daily, about 20 from Monday to Friday and 50 to 60 in the weekend. According to the number of diners provided by the room department, the kitchen can better prepare meals and control portions with minimum food waste. Therefore, the person in charge of the kitchen thinks that Winnow data has limited help. In terms of reducing waste food, the hotel can rework waste food relatively efficiently. For example, bacon can be chopped and used as fillings, and milk can be reused for hot dishes.

Overproduction Weekly(KG)



2 IMPLEMENTATION PHASE

2.1 Set reduction targets based on basic data of restaurant food waste



Restaurants set food waste reduction targets through discussion with various departments, based on data records and analysis results in the preparatory stage while taking into account their actual situation.



Examples

Knowledge point:

SDG Target 12.3: By 2030, halve the per capita global food waste at the retail and consumer levels, and reduce food losses along production and supply chains, including post-harvest losses.

2.2 Develop improvement measures, conduct reviews and adjustments on a regular basis, and keep data records continuously



Food waste occurs in all aspects of organizational management, preparation of ingredients, dining hall service, and food waste disposal. Reducing food waste requires the participation and contribution of every employee.

This guide gives action recommendation and guidance in eight aspects of four modules to help enterprises achieve cost savings and efficiency improvements for sustainable development.

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Module 1 Organizational Management

1) Develop a cost saving plan

- Set phased targets
- Conduct routine data record and analysis
- Adjust the strategy on a regular basis



2) Organize employee training

- Understand the relationship between food and nature
- Raise the awareness of food waste reduction
- Boost the sense of responsibility
- Improve professional operation skills



4) Enrich marketing and promotion

- Promote the "Clean Your Plate" campaign
- Provide discounts and coupons to clean-plate customers
- Strengthen external coordination

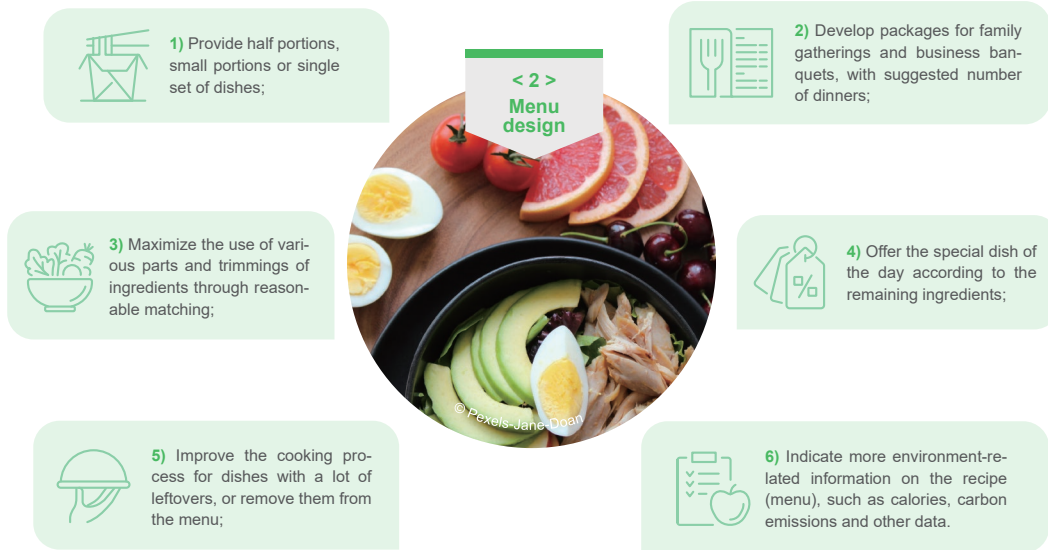


5) Establish an audit system

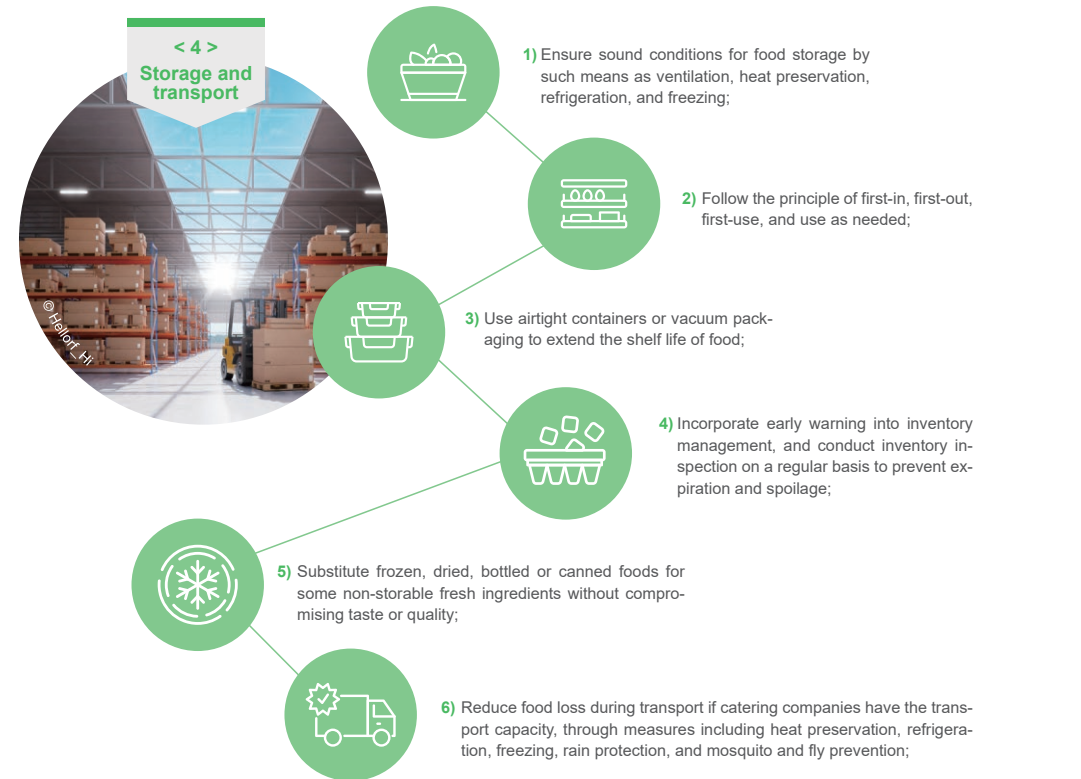
- Incorporate relevant indicators into the performance system
- Give rewards to well-performing employees or outlets

3) Optimize operating standards

- Build a digital management system to improve operational efficiency
- Strengthen the standardized operation and management of cutting and cooking processes
- Apply higher requirements to ensure timely and appropriate purchase and storage of ingredients
- Standardize the communication skills and mechanisms for waiters/waitress to reduce plate waste



**Module 2
Preparation of
Ingredients**



Module 3 Dining Hall Service



1) Set up food waste reduction signs, posters or table signs in prominent places;

2) Encourage customers to participate in relevant discounts and incentives related to the "Clean Your Plate" campaign;

3) Inform customers of the portion size, taste and other information of dishes when customers order food;

4) Remind customers to order on demand, and recommend dishes according to the number of dinners based on the dining purpose (business banquets, family gatherings, etc.) ;

5) Help customers with meal portioning, confirm that customers have finished eating when cleaning dishes, and record the leftovers;

6) Proactively remind customers to pack the leftovers at the end of dining, provide packaging services, and inform them of the second consumption time and method of the leftovers;

7) Carry out post-meal survey, actively inform consumers of the restaurant food waste reduction campaign, collect their opinions on dishes and services through questionnaires, message boards, etc., and conduct internal reviews.

< 6 > Catering service



1) Indicate the processing and production time and expiration date on meal containers or packages, and remind consumers to eat as soon as possible;



2) Recommend sealing liquid meals in food boxes with plastic wrap or buckle or by using the plastic sealer;



4) Recommend packing solids and liquids separately for mixed meals;



3) Recommend sealing solid meals by applying seals and cable ties on the outer packaging;



5) Check the sealing state, and repack if poor sealing due to leaking package.

< 7 > Takeaway service



Module 4 Kitchen Waste Disposal



1) Classify, weigh and monitor non-edible kitchen waste, establish waste disposal records, and transfer waste to local kitchen waste recycling department for centralized treatment;



2) Restaurants may also build their own food waste composting facilities where possible.

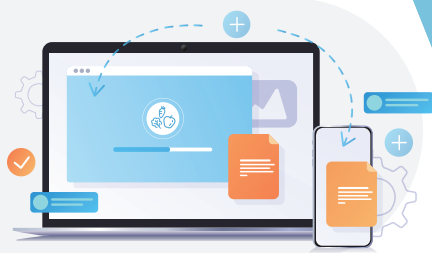


1. Suppliers

1.3 Purchase of ingredients



1.2 Central kitchen



1.1 Food market



Purchase list
Celery: 5kg
Lettuce: 4kg
Meat: 10kg
.....

2. Kitchen

2.1 Warehousing and storage



Classified storage
First in, first out
Regular stocktaking
Stock warning

Bad and expired food



Preparation standards
Coarse shred for stir-fry, 6mm
Fine shred for braising, 2mm
Cube: diamond-shaped, 3mm
Minimum loss

Kitchen trimmings



2.2 Processing and cooking



Preparation according to cooking standards
Full use of materials
Fish body: Fragrant fish fillets
Fish skin: Shredded fish skin
Fish scales: Fried golden scales
Fish tail: Fish Offering Flowers
.....

Restaurant Food Waste Journey

Costs ↓

Food waste management and monitoring
Employee training on new ways to handle and store ingredients
Design of new menus

Benefits ↑

Reduced cost of ingredients
Benefits from new menus
Improved efficiencies and greener operations

3. Dining hall

Moderate order to avoid waste
Half portions of dishes available



Plate waste

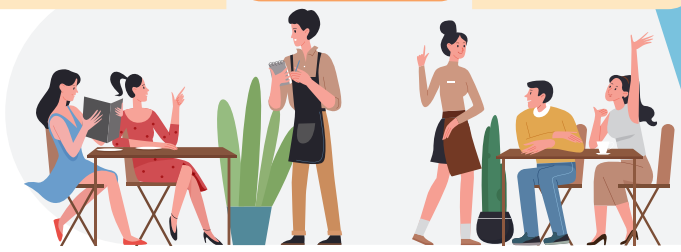


3.1 Service and consumption

Join the "Clean Your Plate" Campaign
Fruits are provided as a reward

"Clean Your Plate" Campaign Says No to Waste

Pack leftovers for free
What do you need to pack?

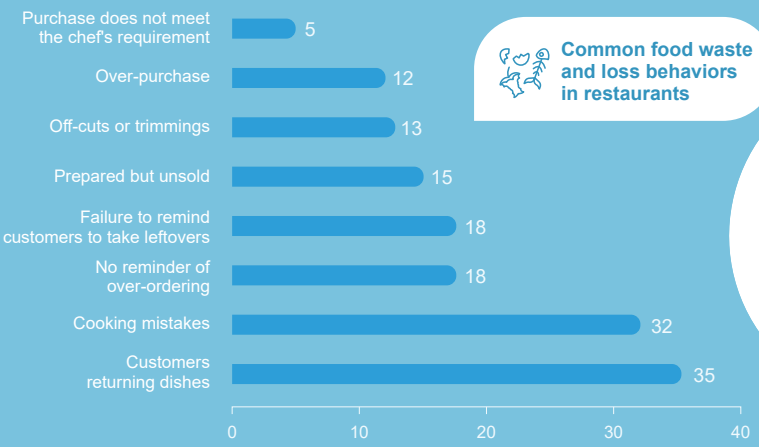
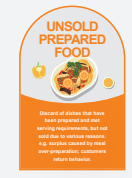


Best enjoyed upon delivery

Takeout



Unsold prepared food



Kitchen Dining hall

Kitchen waste disposal

- Sort
- Drain
- Weigh
- Record



3 SUMMARY AND OUTREACH

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3.1 Summarize project results and develop specification manual and internal audit mechanism

Develop the *Operational Manual for Food Waste Reduction (For Trial Implementation)* that incorporates the best action plan after three to six months of improvement, and establish an internal regular review mechanism.

3.2 Promote and share this successful case with branches or in the sector

Catering enterprises running food waste reduction pilots in "Pride on our Plates" project will have the opportunity to see their practice reflected in the pilot project report, and use the project platform to conduct industry exchanges and share cases at home and abroad.



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1. Food Waste Monitoring Checklist

PRIDE ON OUR PLATES 14-day Food Waste Weighing Checklist



* Unit:KG/L

Start date: YY MM DD

Please tick in the box ✓: kg/ L



Monday Tuesday Wednesday Thursday Friday Saturday Sunday

FOOD SPOILAGE	KITCHEN TRIMMINGS								
UNSOLD PREPARED FOOD	PLATE WASTE								



Monday Tuesday Wednesday Thursday Friday Saturday Sunday

FOOD SPOILAGE

Discard of ingredients due to propeness before meal preparation.
e.g. wilted leaves.

KITCHEN TRIMMINGS

Food loss during meal preparation in restaurants.
e.g. trimmings such as vegetable roots, leaves, skins, etc.; vegetables discarded due to cooking mistakes, etc.

UNSOLD PREPARED FOOD

Discard of dishes that have been prepared and met serving requirements, but not sold due to various reasons.
e.g. surplus caused by meal over-preparation; customers return behavior.

PLATE WASTE

Leftovers on the table from consumers, with oil and water filtered out.

Instructions for use

- 1 Please weigh or record the volume of kitchen waste according to classification instructions. Where waste is measured by liters (L), please continue using liters;
- 2 Record only solid leftovers, excluding packages, liquids, etc.;
- 3 Fill in 0 for zero waste options;
- 4 Keep one digit after the decimal point, e.g. 7.8L
- 5 Recommend archiving weighing pictures at the same time to ensure data accuracy;
- 6 Record the number of diners, which is the key to understanding and optimizing the cost of ingredients.

* This tool was developed by the Rare Center for Behavior with the support of the EU Switch-Asia Program, and is intended for corporate reference only and not as research, commercial or legal advice.

2. Service Expressions Reference

Before the meal:

Hello, we have small portions/half portions of dishes, as well as platters for your choice, so that you can taste more dishes without waste.

Hello, we have economical and affordable single, double, or triple set menu for your choice.

Hello, you may try the 'N-1' ordering mode, that is to order dishes according to the 'minus one' number of diners, and add more at any time if they are not enough. This will reduce waste.

Hello, the menu shows the portion size of ingredients and recommended number of diners for your reference.

Hello, we have incentives for customers who clean their plates, in order to save food and reduce waste. Here are the specific rewards (reward points/parking discounts/fruit plates).



During the meal:

Hello, you are recommended to take the food in small quantities, multiple times, and on demand to keep the taste without waste.

Hello, this dish is a bit cold. Can I help you heat it up?

Hello, can I help you separate the dishes for your convenience.



After the meal:

Hello, the base materials of this dish can be made into chili sauce for you for free, please wait a moment.

Hello, we provide packing service for free. Do you need to pack the leftovers? (After packing, hand it to the customer with both hands, and inform the customer of the expiration date and consumption method or notification label.) Wish you a happy meal!



3. Gamified Training Tools



In order to raise employees' awareness of and attention to food loss and waste, and turn awareness into attitude and motivation, employee training is necessary on top of food waste reduction working group. Gamified training tools create a relaxed atmosphere to stimulate employee enthusiasm and initiative and facilitate employee understanding of business principles by turning employees into players. This helps small and medium-sized catering enterprises reduce food waste and food cost, optimize operating processes, and enhance team loyalty and staff pride.

Game Example: Cookery Werewolves

Rare Center for Behavior, one of the implementing agency of the "Pride on our Plates" project, has developed a series of gamified training toolkits for catering enterprises, including recommended games with varying difficulty levels such as "Cookery Werewolves" and "Who Is Undercover in the Restaurant". These games create a scenario that allows employees to comprehend and digest knowledge and cultivate the problem-solving capability. By applying what they have learned, employees can transform knowledge into performance. Catering enterprises can find details and download materials of the "Pride on our Plates" gamified training toolkits on the WeChat official account of the Rare Center for Behavior.

Game background

The God of Cookery Tournament brought together all kinds of cooks with unique skills. After rounds of competition, the strongest cooks came out and jointly established a restaurant featuring the God of Cookery. One day, very destructive, well disguised werewolves blended into the cook clan, and secretly murdered the cooks. The various characters of the cook clan need to unite to defend the restaurant and drive away the werewolves.

Necessary materials

Game cards and game instructions *

Intended gamers

5 to 11 employees of catering enterprises

Game time

10 to 20 minutes

Exemplary game cards



*Please download the electronic version of the game from the WeChat official account of "Rare Center for Behavior"

4. Storage and Management of Ingredients



In actual operation, catering enterprises can store ingredients by category, and divide storage areas according to the optimal storage temperature of ingredients. The two methods can be combined to achieve more refined classification and storage of ingredients.

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1) Store by category in different areas

Fresh food is stored by category, which should follow the principle of centralized storage of same categories and differentiated storage of different categories.

For example, the warehouse can be divided into zones for vegetables, meat, grain and oil, etc. The vegetable zone can be further divided to store melons, fruits, roots, etc. Zoning for storing commodities can be designed according to the warehouse layout.



2) Store according to preservation requirements

> Temperature

According to the temperature requirements for keeping food fresh, the warehouse can be divided into freezer space, chill space and room temperature space. The frozen area (below -18°C) is used for meat and seafood storage; the chill space(0-4°C) is used for keeping fruits and vegetables fresh; and the room temperature space (15-18°C) is used to ensure the quality of grains, oil, rice, noodles and other commodities.

> Meat

It is not appropriate to pile meat up or place it close to the wall, and it is strictly forbidden to place meat on the ground, in order to avoid affecting meat quality. It can be refrigerated if it is all used the same day. If not, it is necessary to divide the meat according to cooking needs and pack into food-storage bags for freezing. Before cooking, it should be thawed slowly in the refrigerator in advance.

> Dried seafood products

Dried seafood products, such as dried fish, dried small shrimp, etc. should be refrigerated in sealed bags.



> Cooked foods and pastries

Cooked staple foods such as steamed buns, sesame cakes and bread can be refrigerated, and those that have been refrigerated for more than two days should be packaged and sealed for storage in the freezer.



> Vegetables and fruits

Vegetables and fruits are wearable, spoilable and perishable, and need to be handled with care. Leafy vegetables should be wrapped in soft paper and put in food-storage bags for refrigeration. It is better to cover them with damp cloth to maintain moisture and freshness during summer higher temperatures. Root vegetables should be wrapped in soft paper and put in food-storage bags. Citrus fruits and tropical fruits such as bananas, mangoes should not be refrigerated, and should be stored in a cool place indoors. Strawberries, blueberries, grapes and other berries should be refrigerated. Check is necessary during the storage process, so as to timely pick out moldy and rotten ones to avoid more contamination.



> Rice, flour, and coarse food grains

Rice, flour, and coarse food grains are highly hygroscopic, likely to go mouldy, and prone to insects and rodents, so they should be stored in a clean, dry and insect-free place.



> Frozen and refrigerated ingredients

Raw and cooked foods, and meat and vegetables should be stored separately. They should also be packaged separately to avoid cross-contamination. Ingredients should be kept away from the inner walls of refrigerators. Refrigerated leftovers should be free from spoilage and thoroughly reheated before eating. Ready-to-eat foods should be properly stored and used as soon as possible once opened.

3) Place largely ordered foodstuffs close to the aisle

High-daily-demand ingredients can be stored near the aisle, so that they can be loaded and distributed quickly and processed nearby, reducing the frequency of movement and the workload of employees.



Notes

- ▲ Leave a small passage between the main channel and the stored goods to facilitate picking-up and sorting;
- ▲ Do not place ingredients that are not resistant to wind at the air outlet;
- ▲ Avoid sunlight and rainfall where ingredients are stored.

5. Survey on food loss and waste reduction behaviors in catering enterprises



In 2021, the Rare Center for Behavior conducted an in-depth research on food loss and waste of catering enterprises through 35 in-depth interviews and focus interviews and 136 questionnaires on 11 common key positions in catering enterprises. The research found that in actual operation, employees of catering enterprises encounter the following obstacles:

Catering business proprietors

Catering business proprietors do not know how to further reduce cost as their companies have implemented tight cost control

Catering managers

Catering managers hope very much to reduce food loss, but fail to do so under great pressure during the peak meal period

Catering staff

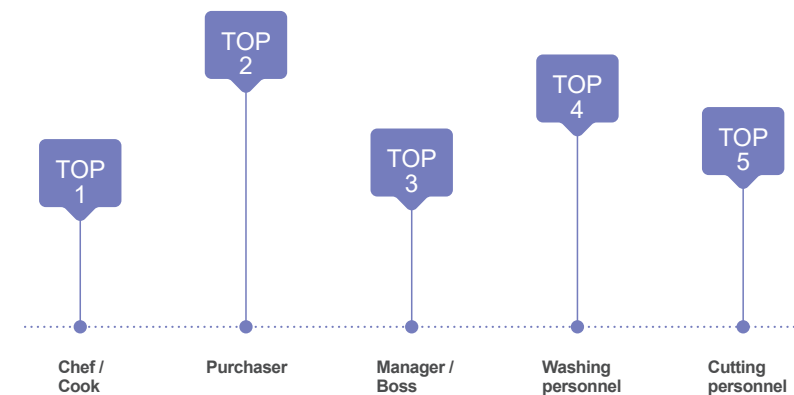
Catering staff lack motivation to reduce food loss and waste as food loss and waste are not the main indicators of daily management

Catering service personnel

Catering service personnel believe that food waste is mainly caused by plate waste as sometimes reminder is ineffective for customers

The research also found that food loss and waste behaviors vary among positions, and management and employees in different positions play different roles in reducing food loss and waste.

1. In food loss and waste reduction of micro, small, medium-sized catering enterprises, employees in different positions all play an important role, among which the important positions include:

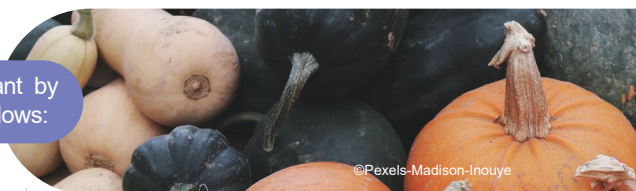




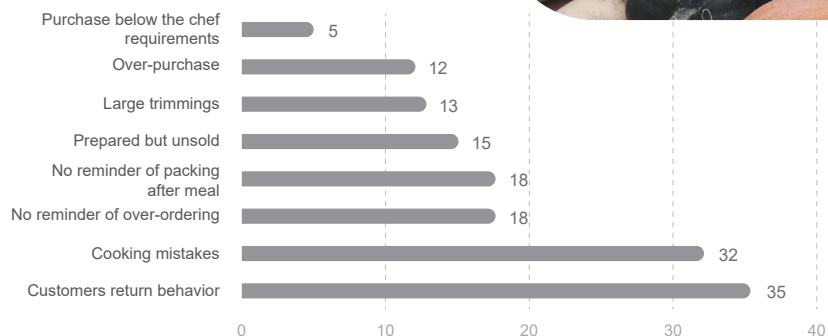
2. Employees in different positions within the same catering enterprise perceive restaurant food waste to different degrees:

- 60% of primary-level employees think that their restaurant has less food waste than other restaurants
- Up to 87% of management believe that their restaurant has less food waste than other restaurants
- Those upholding that their restaurant waste more than other restaurants are all from the primary level

Management of catering enterprises judge restaurant food loss and waste mainly by operating process inspection and restaurant revenue data. This hinders them from access to more specific information about food loss and waste observed by primary-level employees in their daily work.

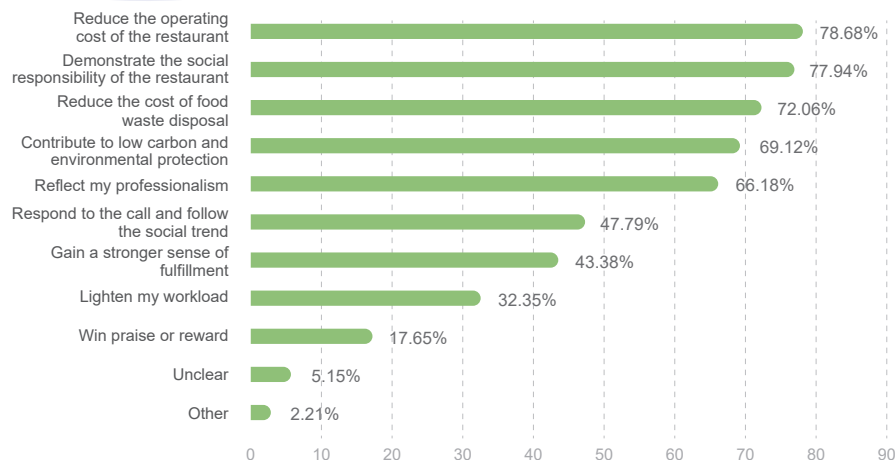


3. Food loss behaviors considered important by employees of catering enterprises rank as follows:



It is worth noting that employees are rarely rewarded and praised for reducing food loss and waste. However, behavioral research has revealed that praise and encouragement are more effective in motivating employees to reduce food waste than punishments or fines. It is recommended that catering companies develop effective employee stimulation approaches and measures according to their own actual conditions.

4. In the opinions of catering practitioners, the benefits of reducing food loss and waste include:



[1] FAO, IFAD, UNICEF, WFP and WHO. 2021. The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all. Rome, FAO. <https://doi.org/10.4060/cb4474en>

[2] National Bureau of Statistics

[3] Report on Food Waste in China' Urban Restaurants. 2018

[4] The Food Wastage Footprint

[5] The Business Case for Reducing Food Loss and Waste: Restaurants



Safeguard Civilization on Our Plates

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