

## Handling Food Waste in the Employee Canteen of Tentrem Hotel Yogyakarta: The Role and Innovation of Waste Processing in Reducing Food Waste to Landfill

Obertus Simanullang

Sekolah Tinggi Pariwisata AMPTA Yogyakarta

roblehetsimanullang@gmail.com

---

### KEYWORDS

employee  
canteen; food  
waste; hotel;  
sustainability

---

### ABSTRACT

This research aims to analyze strategies of handling food waste in Tentrem Hotel Yogyakarta employee canteen and waste processing innovations to reduce it. The research used a mixed method with a quantitative approach to record the volume and type of waste, and a qualitative approach through interviews and observations to get an insight on employee behavior regarding food waste. The research results show that food waste occurs due to too many menu choices, excessive portions, poor food quality, and suboptimal storage. The proposed solutions include portion adjustments, individual menu rotation, food quality improvement, and education programs for employees. The application of Food Safety/HACCP based standards is also recommended to reduce food waste more efficiently. Waste processing innovation such as the use of automatic composting machines that can convert food waste into fertilizer is also proposed as a solution that contributes to reducing environmental impacts, while providing economic and social benefits. Food donation programs are also considered as an alternative for dealing with unavoidable waste through reducing, reusing, and recycling strategies. This research concludes that effective handling of food waste requires active employee participation, innovation in waste processing, and full support from hotel management. It is hoped that the implementation of this strategy can become a useful model for other hotels in reducing food waste and supporting environmental sustainability and corporate social responsibility (CSR).

---

### INTRODUCTION

The hotel industry is one sector that contributes significantly to food waste. Sources of food waste in hotels include kitchen operations, restaurants, room services, and employee canteens. In Indonesia, based on a study by the Ministry of National Development Planning (*Kementerian Perencanaan Pembangunan Nasional-Bappenas*), food waste in the 2000–2019 period reached 23–48 million tonnes per year, or the equivalent of 115–184 kilograms per capita per year (Bappenas, 2021). This figure places Indonesia as one of the largest food waste producing countries in the world. This shows that the hospitality sector has a big responsibility in managing food waste, not only to reduce environmental impacts but also to support sustainable development goals.

This high amount of food waste causes various negative impacts, especially on the environment. The decomposition of organic waste in final disposal sites or landfills produces greenhouse gas emissions, such as methane, which contribute to global warming (Kustiasih et al., 2014). Additionally, food waste also represents a waste of resources, including water, energy, and labor used in food production, processing, and distribution. Therefore, innovative and integrated food waste management strategies are an urgent need to reduce negative impacts on the environment and increase resource efficiency.

Tentrem Hotel Yogyakarta, as a five-star hotel committed to sustainable practices, faces challenges in managing food waste, especially in the employee canteen. The employee canteen often becomes a significant source of food waste due to excess production, food waste, and sub-optimal inventory management. Research done by Sayekti and Butar Butar (2024) shows that employee participation in food waste reduction programs, such as training and self-service portion systems, can reduce waste by up to 40%. In this context, the success of food waste management does not only depend on technology but also on the awareness and active participation of all stakeholders, including employees.

### **Food Waste Management in the Hospitality Sector**

Hotels as providers of food and beverage services have the potential to produce significant amounts of food waste. A research by Sari (2022) at H-Boutique Hotel Yogyakarta emphasizes the importance of employee creativity in preparing menus to minimize food waste. Strategies such as proper menu planning and utilization of leftover ingredients can reduce food waste effectively.

### **Innovation in Food Waste Processing**

Innovation in technology plays an important role in solving the food waste problem. The use of technology such as artificial intelligence (AI) and machine learning (ML) can help predict consumption patterns and optimize food supplies, thereby reducing waste. Additionally, processing methods such as composting and anaerobic digestion can convert food waste into an energy source or organic fertilizer that can reduce negative impacts on the environment.

### **Participation in Reducing Food Waste**

Active participation from employees and hotel management is very important to reduce food waste. Implementing strict sanitation and hygiene standards, such as those implemented at Tentrem Hotel Yogyakarta during the COVID-19 pandemic, can improve food quality and reduce waste. In addition, education and training for employees regarding the importance of food waste management can increase awareness and commitment in daily practices.

### **Impact of Reducing Food Waste on the Environment**

Reducing food waste has a significant positive impact on the environment. Food waste that is not managed properly can produce methane gas, which contributes to global warming. By implementing food waste reduction and processing strategies, hotels can contribute to the reduction of greenhouse gas emissions and the conservation of natural resources.

## **METHOD**

This research used a qualitative descriptive method with an interactive model approach of data analysis developed by Miles and Huberman (1994). This approach was chosen to deeply understand the food waste management process in the employee canteen of the Tentrem Hotel Yogyakarta, including employee participation and waste processing innovations implemented. The research was conducted in the employee canteen of Tentrem Hotel Yogyakarta. The data were collected by using in-depth interviews with the following informants to obtain data about policies, challenges, and implementation of food waste management innovations.

- a. Operational managers: to understand food waste management policies
- b. Canteen employees: to explore food waste management practices at the operational level

- c. Hotel employees: to determine their level of awareness and participation in food waste management programs.

Furthermore, observations were carried out at the canteen to observe the food waste management process directly, including employee behavior in disposing of or processing food waste, while documentation. Was done by collecting operational reports, food waste data, and hotel policies regarding food waste management.

The data were analyzed using Miles and Huberman's interactive approach which involved three main stages, namely data reduction, data presentation, and conclusion and verification. Triangulation was carried out by comparing information from managers, canteen employees, and operational documents. In addition, technical triangulation was done by combining interviews, observation, and documentation, while time triangulation was done by collecting the data at different times to ensure consistency.

## RESULT AND DISCUSSION

### Result

#### 1. Sources and types of food waste in the employee canteen

Based on the data obtained, food waste in the employee canteen of Tentrem Hotel Yogyakarta comes from several main sources:

- a. Employee food waste: includes food taken excessively but not consumed.
- b. Overproduction of food: occurs due to inaccurate portion size estimates
- c. Unused food ingredients: comes from damaged or unused raw materials

On average, the canteen produces around 15-20 kg of food waste per day. The types of waste consist of organic waste (80%) which includes food waste and raw materials, and inorganic waste (20%) which includes food packaging, plastic, etc.

#### 2. Food waste management strategy

Tentrem Hotel has implemented various strategies to manage food waste, including:

- a. Self-service with independent portions: employees are given the freedom to determine the amount of food to reduce food waste.
- b. Organic compost: organic waste is processed into compost which is used for hotel gardens.
- c. Food donations: food is distributed to local communities in collaboration with social organizations.
- d. Biodigester: food waste is processed into biogas as alternative energy.

#### 3. Employee participation

Employee participation in the food waste management program is quite significant, especially after training and internal campaigns were held. Based on the survey, 85% of the employees are aware of the importance of food waste management, and 70% actively contribute to programs such as waste sorting.

#### 4. Effectiveness of food waste management innovation

Innovations such as the use of biodigesters and organic composters have proven effective. The data show that the volume of food waste that ends up in the final disposal site has been reduced by up to 60%. In

addition, the hotel is able to save on waste disposal costs and create new products such as compost for internal use.

## Discussion

### 1. Program contribution to reducing food waste

The results of this research indicate that the food waste management program implemented in the employee canteen of Tentrem Hotel is in line with the System Theory (Bertalanffy, 1968). Synergy between various subsystems, such as kitchen, canteen, and hotel management, supports the reduction of food waste. The implementation of a self-service system with an independent portion is also in accordance with the findings of the research by Mi'raj et al. (2023), which states that controlling food portions can reduce food waste significantly.

### 2. The role of employee participation

Employee participation in food waste management reflects the importance of behavioral factors, as explained in the Theory of Planned Behavior (Ajzen, 1991). The employees' awareness of the impact of food waste influences their behavior in supporting this program. Internal training and education also increases participation, as expressed by Herzberg (1959) in Motivation Theory.

### 3. Effects of innovation on the environment and operations

Innovations such as biodigesters and organic composters reflect the Circular Economy Principles (Ellen MacArthur Foundation, 2013). By processing food waste into energy or compost, the hotel not only reduces their environmental impact but also creates an added value. This supports the sustainability of the hotel operations and increases its positive image as a hotel that cares about the environment.

### 4. Challenges in implementation

Although many strategies have been successfully implemented, there are several challenges. First employees' discipline in sorting waste. Some employees are still inconsistent in sorting food waste. Second, the limitation of technology. The capacity of the biodigester is still limited so it cannot process all the organic waste produced. Third, operational cost. While this innovation is profitable in the future, the initial investment for technologies like biodigesters is quite high.

## REFERENCES

- Sari, A. (2022). Strategi kreativitas karyawan dalam mengelola menu untuk mengurangi food waste di H-Boutique Hotel Yogyakarta." *Repository STP AMPTA Yogyakarta*. [https://repository.ampta.ac.id/1461/?utm\\_source=chatgpt.com](https://repository.ampta.ac.id/1461/?utm_source=chatgpt.com)
- Mongabay Indonesia. (2022, Mei 20). Peran penting teknologi dalam mengatasi persoalan limbah makanan. *Mongabay.co.id*. Retrieved from <https://www.mongabay.co.id>.
- Studocu.com. (n.d.). Penerapan sanitasi dan higiene kitchen di Hotel Tentrem Yogyakarta selama pandemi COVID-19. *Studocu*. Retrieved from <https://www.studocu.com>
- Axios.id. (n.d.). Pengelolaan dan daur ulang sampah limbah makanan: Mengurangi pemborosan dan pencemaran untuk kota cerdas." *Axios.id*. Retrieved from <https://axios.id>.

Simanullang, Obertus, (2024). Handling Food Waste in the Employee Canteen of Tentrem Hotel Yogyakarta: The Role and Innovation of Waste Processing in Reducing Food Waste to Landfill. *STRUKTURAL (Seminar on Translation, Applied Linguistics, Literature, and Cultural Studies)*. 2 (01), 526–530.

---

Badan Perencanaan Pembangunan Nasional (Bappenas). (2021). *Laporan Kajian Food Loss and Waste di Indonesia: Dalam Rangka Mendukung Penerapan Ekonomi Sirkular dan Pembangunan Rendah Karbon*. Jakarta: Bappenas. <https://doi.org/10.21842/bappenas.flw.2021>

Kustiasih, N., Suryawan, I. W. K., Rahman, A., Septiariva, I. Y., Suhardono, S., & Wijaya, I. M. W. (2014). Life cycle assessment of solid waste generation during and before pandemic of COVID-19 in Bali Province. *Journal of Sustainability Science and Management*, 16(1), 11-21. <https://doi.org/10.46754/jssm.2014.01.002>

Suhartini, S., Elviliana, E., & Santoso, I. (2022). Food waste to bioenergy: Current status and role in future circular economies in Indonesia. *Energy, Ecology and Environment*, 7, 297–339. <https://doi.org/10.1007/s40974-022-00248-3>

Sayekti, C., & Butar Butar, F. (2024). Sustainable food movement: Regulating food loss and waste in Indonesia. *Journal of Interdisciplinary Law and Legal Issues*, 1(2). <https://doi.org/10.22146/jili.13535>

Alamsyah, M. N. (2023). A review of food waste management in Indonesia and best practices in various countries. *AIP Conference Proceedings*, 2683, 030070. <https://doi.org/10.1063/5.0124861>

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: SAGE Publications.