

# Chapter 18

## Innovative Technologies for Sustainable Food Waste Disposal in Hospitality Operations

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### **ABSTRACT**

*The hospitality industry is undergoing a transformative shift toward sustainability, driven by a growing awareness of environmental responsibilities and cost-effectiveness. A significant component of this transformation is the management of food waste, which is not only an ethical concern but also a pressing global issue. This chapter explores innovative technologies for sustainable food waste disposal in hospitality operations, shedding light on the cutting-edge solutions that are revolutionizing the way hotels, restaurants, and other hospitality establishments manage and reduce their food waste. In this chapter, the authors delve into a multifaceted exploration of various technological advancements and strategies designed to minimize food waste generation and enhance the sustainable disposal of food waste in the hospitality sector.*

### **1. INTRODUCTION**

The hospitality industry is undergoing a transformative shift toward sustainability, driven by a growing awareness of environmental responsibilities and cost-effectiveness. A significant component of this

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transformation is the management of food waste, which is not only an ethical concern but also a pressing global issue, with one-third of all food produced for human consumption being wasted each year (FAO, 2022). The hospitality industry is a significant contributor to food waste, generating between 10% and 30% of all food waste (WRAP, 2020). Food waste has a number of negative environmental and financial impacts. It contributes to climate change by releasing methane, a greenhouse gas that is 25 times more potent than carbon dioxide (EPA, 2022). Food waste also consumes valuable resources such as land, water, and energy (FAO, 2022). In addition, food waste costs the global hospitality industry billions of dollars each year (WRAP, 2020).

Innovative technologies offer a number of promising solutions for reducing and sustainably disposing of food waste in hospitality operations. This chapter will provide an overview of innovative technologies for sustainable food waste disposal in hospitality operations, with a focus on the different types of food waste generated in hospitality operations; the environmental and financial impacts of food waste; the different types of innovative technologies for sustainable food waste disposal; case studies of hospitality businesses that are using innovative technologies to reduce food waste; and challenges and opportunities for implementing innovative food waste disposal technologies in hospitality operations. The types of food waste generated in hospitality operations vary depending on the type of business. However, some of the most common types of food waste include prepared but uneaten food, spoiled food, food scraps and trimmings, and leftovers from plates.

Food waste has a number of negative environmental impacts. It contributes to climate change by releasing methane, a greenhouse gas that is 25 times more potent than carbon dioxide. Food waste also consumes valuable resources such as land, water, and energy.

In addition, food waste costs the global hospitality industry billions of dollars each year. This is because businesses have to pay to purchase food that is then wasted, as well as to dispose of the waste.

There are a number of innovative technologies that can be used to reduce and sustainably dispose of food waste in hospitality operations. Anaerobic digestion is a process that breaks down organic matter in the absence of oxygen to produce biogas and bio fertilizer. Biogas can be used to generate electricity or heat, while bio fertilizer can be used to fertilize crops. In-vessel composting is a controlled composting process that can be used to convert food waste into compost in a matter of weeks. Compost can be used to fertilize crops or improve soil quality. Bioconversion is a process that uses enzymes or microorganisms to convert organic matter into other products, such as biofuels, animal feed, or fertilizer. Bioconversion can be used to convert food waste into a variety of products that can be used or sold.

In addition to these technologies, there are a number of other innovative technologies that are being developed to help the hospitality industry reduce and sustainably dispose of its food waste. Smart waste bins can use sensors to identify different types of waste and sort them accordingly. This can help to reduce the amount of food waste that is sent to landfills. AI-powered food waste tracking systems can use data to track food waste throughout the hospitality operation. This data can be used to identify areas where food waste is being generated and to implement interventions to reduce waste. Food waste-to-energy systems can convert food waste into energy that can be used to power hospitality operations. This can help to reduce the reliance on fossil fuels and create a more sustainable operation.

A number of hospitality businesses are beginning to adopt innovative technologies to reduce food waste. Hilton Hotels & Resorts is using a variety of innovative technologies to reduce food waste, including anaerobic digestion systems, in-vessel composting systems, and bioconversion systems. Hilton has also implemented a number of operational changes to reduce food waste, such as training staff on food waste prevention and donating surplus food to food banks. Hyatt Hotels Corporation is using a company

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