


# Chapter 6

## Sustainability and Green Practices With Smart Technologies in Hospitality

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### ABSTRACT

*Ensuring sustainability has become a common phenomenon globally, specially in the hospitality industry. Using innovative technological tools to implement green practices and sustainability is crucial. In this chapter, sustainable practices are related to implementing smart technological systems such as energy conservation, water conservation, and waste reduction in the hotel industry. This study investigates extensive literature on smart technologies to ensure sustainability and green practices in the hotel industry. This study focuses on key sustainable technologies such as Automated HVAC, optimized energy usage, water management, and food waste reduction. The chapter proposes a range of frameworks of the key applications for efficient energy systems, energy-efficient lighting and appliances, renewable energy sources, waste reduction technology, green building technologies, eco-*

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*friendly amenities, and water conservation techniques. It also suggests a practical strategic action plan to adopt smart technologies in the hotel industry in a green and sustainable manner.*

## **1. INTRODUCTION**

The hospitality industry is at a critical point in an era of growing environmental awareness: maintaining a balance between sustainable practices and guest satisfaction. The idea of “green” or “sustainable” has become problematic for companies seeking to satisfy customers who care about the environment (Wei et al., 2013; Chen et al., 2009; Han & Kim, 2010). As the world's focus shifts to sustainable development, the hospitality industry has embraced the use of smart technology, including waste reduction, water conservation, and energy conservation, to support green practices. Several Sustainable Development Goals (SDGs) are strongly aligned with sustainability and green practices in the hotel sector through the use of smart technologies. In order to achieve SDG 7 (Affordable and Clean Energy), hotels are implementing smart technology, including IoT-enabled HVAC systems, energy-efficient lighting, and Building Management Systems (BMS) to lower energy usage, as well as renewable energy sources like solar and wind power. Smart water-saving fixtures, AI-powered inventory management systems, and waste monitoring technologies that maximize resource utilization and reduce waste are ways to achieve SDG 12 (Responsible Consumption and Production). Machine learning is used for carbon footprint tracking, energy load prediction, and smart energy analytics to reduce emissions, all of which promote SDG 13 (Climate Action). Greywater recycling, water sensors, and smart irrigation all support SDG 6 (Clean Water and Sanitation), which assures effective water management. Green building technology and smart infrastructure work together to make hotels more resilient and environmentally conscious, which advances SDG 11 (Sustainable Cities and Communities). The last goal is SDG 17 (Partnerships for the Goals), which promotes shared responsibility for sustainability through partnerships with ICT companies, local communities, and guest participation platforms. When combined, these methods not only lessen their negative effects on the environment but also improve operational effectiveness and guest satisfaction (United Nations, 2025).

This chapter examines how traditional hospitality practices are being revolutionized by the convergence of sustainability, green practices, and smart technologies. This enables hotels to enhance guest experience and operational efficiency while minimizing their environmental impact. Innovation in waste reduction, water management, energy efficiency, and automated HVAC has become practical in response to the rapid advancements in artificial intelligence (AI), the Internet of Things (IoT),

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