

Chapter 20

Waste-to-Energy Innovations: Evidence From the Tourism Industry

Mohammad Badruddoza Talukder

 <https://orcid.org/0009-0008-1662-9221>

International University of Business Agriculture and Technology, Bangladesh

Dil Afrin Swarna

 <https://orcid.org/0009-0000-9176-920X>

Independent Researcher, Bangladesh

ABSTRACT

The convergence of waste-to-energy innovations and the tourism industry presents a dynamic frontier with significant potential for sustainable development. As tourism continues to grow globally, the environmental footprint of waste generated by this sector is becoming increasingly concerning. Waste-to-Energy (WtE) technologies, with the crucial role of technology providers, offer a promising solution by converting waste into usable energy, thereby reducing environmental impact and promoting a circular economy. This paper explores future trends and opportunities in integrating WtE systems within the tourism industry. By embracing WtE innovations, the tourism industry can significantly reduce its waste burden, lower energy costs, and contribute to a more sustainable future. This chapter underscores the necessity of multidisciplinary collaboration and supportive regulatory frameworks to fully realise the potential of WtE technologies in transforming the environmental landscape of tourism.

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1. INTRODUCTION

An unparalleled boom in the tourist sector, a vital pillar of the world economy, contributes to a marked rise in waste production and heightened environmental concerns (Adeniyi et al., 2024). Conventional methods cannot manage the increasing volume of waste. Thus, creative and long-lasting solutions must be found. Technologies such as waste-to-energy (WtE) transform waste materials into valuable energy, offering a potential solution to these urgent problems (Zreik, 2024). The tourism industry may reduce its carbon footprint, modernise waste management procedures, and support a circular economy using WtE technologies (Bitok & Shirandula, 2024). Numerous causes, including stricter legal frameworks, the economic benefits of renewable energy, and growing environmental consciousness among visitors, drive this shift towards sustainability (Smolčić, 2024). Travelers are becoming more environmentally concerned, looking for locations and lodging that value environmental conservation. As a result, green practices are encouraged for tourism operators, and WtE innovations provide a workable solution to satisfy these demands (Ilieva et al., 2023). Using WtE solutions in the tourism industry involves various technologies, including biological techniques like anaerobic digestion and sophisticated thermal processes like gasification and pyrolysis. These solutions reduce operating expenses and dependency on fossil fuels by producing renewable energy that may be utilised to power tourism facilities and mitigate the environmental impact of garbage (Olshanska et al., 2021).

This chapter explores WtE innovations' potential and future developments in the travel and tourism sector. The most recent developments in waste-to-energy technologies are examined, together with the function of intelligent waste management systems and the possibility of decentralised energy production (Kariru, 2023). It also looks at the advantages of using WtE solutions, such as better economic results for tourism operators and more excellent sustainability credentials. The tourist sector can utilise WtE technology to promote a more resilient and sustainable future using a multidisciplinary strategy and a supporting regulatory framework (Kumar & Barua, 2024).

2. WASTE-TO-ENERGY (WtE) TECHNOLOGY

Waste-to-energy (WtE) technology integration is becoming increasingly popular in the tourism sector, with studies showing both the advantages and disadvantages of doing so (Chissom, 2024). This literature review examines the developments in WtE technologies, their environmental effects, and their financial ramifications for the travel and tourist industry (Haris & Ningsih, 2020). Improvements in biological

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