

## Advancing Circular Economy Principles: Integrating AI Technology in Street Sanitation for Sustainable Urban Development

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**Abstract :** The concept of circular economy is interdisciplinary, intersecting environmental engineering, information technology, business, and social science domains. Over the course of its 15-year tenure in the sanitation industry, Jinkai has concentrated its efforts in the past five years on integrating artificial intelligence (AI) technology with street sanitation apparatus and systems. This endeavor has led to the development of various innovations, including the Intelligent Identification Sweeper Truck (Intelligent Waste Recognition and Energy-saving Control System), the Intelligent Identification Water Truck (Intelligent Flushing Control System), the intelligent food waste treatment machine, and the Intelligent City Road Sanitation Surveillance Platform. This study will commence with an examination of prevalent global challenges, elucidating how Jinkai effectively addresses each within the framework of circular economy principles. Utilizing a review and analysis of pertinent environmental management data, we will elucidate Jinkai's strategic approach. Following this, we will investigate how Jinkai utilizes the advantages of circular economy principles to guide the design of street sanitation machinery, with a focus on digitalization integration. Moreover, we will scrutinize Jinkai's sustainable practices throughout the invention and operation phases of street sanitation machinery, aligning with the triple bottom line theory. Finally, we will delve into the significance and enduring impact of corporate social responsibility (CSR) and environmental, social, and governance (ESG) initiatives. Special emphasis will be placed on Jinkai's contributions to community stakeholders, with a particular emphasis on human rights. Despite the widespread adoption of circular economy principles across various industries, achieving a harmonious equilibrium between environmental justice and social justice remains a formidable task. Jinkai acknowledges that the mere development of energy-saving technologies is insufficient for authentic circular economy implementation; rather, they serve as instrumental tools. To earnestly promote and embody circular economy principles, companies must consistently prioritize the UN Sustainable Development Goals and adapt their technologies to address the evolving exigencies of our world.

**Keywords :** circular economy, core principles, benefits, the tripple bottom line, CSR, ESG, social justice, human rights, Jinkai

**Conference Title :** ICCENBM 2025 : International Conference on Circular Economy and New Business Models

**Conference Location :** New York, United States

**Conference Dates :** April 22-23, 2025