

A Review Paper on Waste Management in Building Construction

Nawsin Nasia Promi

Rajshahi University of Engineering & Technology (RUET), Rajshahi, Bangladesh

Abu Saleh Ibne Saieef

Rajshahi University of Engineering & Technology (RUET), Rajshahi, Bangladesh

Abstract

Construction waste in Building Construction is a significant global concern, with the industry accounting for over 30% of total waste production worldwide. Rapid urbanization, infrastructure development, and resource-intensive construction practices have led to escalating waste generation, posing challenges to environmental sustainability.

Improperly managed construction

waste contaminates soil, water, and air, contributes to greenhouse gas emissions, and depletes finite resources such as sand and gravel. Addressing this issue aligns with global sustainability goals, such as the United Nations Sustainable Development Goals (SDGs) and the Paris Agreement, which emphasize waste reduction, resource efficiency, and transitioning to a circular economy.

Research on construction waste management is crucial for exploring innovative strategies, technologies, and policies that reduce environmental and economic impacts. Advances such as Building Information Modeling (BIM), have the potential to optimize waste tracking, recycling, and material recovery processes, promoting sustainable practices. By leveraging these technologies, the industry can move towards a closed-loop system, minimizing waste sent to landfills and creating economic opportunities through material reuse and recycling. Regulatory frameworks like the European Union's Waste Framework Directive and the U.S. Resource Conservation and Recovery Act highlight the growing policy pressures to adopt sustainable waste management practices.

Selecting this topic for research addresses pressing challenges, including the safe handling of hazardous materials, mitigating climate change impacts, and reducing public health risks associated with construction waste. It also offers opportunities to bridge knowledge gaps, such as improving the recycling of mixed waste streams and scaling up sustainable practices globally. By focusing on construction waste management, research can contribute to a greener, more efficient industry, ensuring long-term environmental protection, resource conservation, and economic benefits.

Keywords

Construction Waste Management, Building Construction, Sustainable Construction, Waste Reduction, Environmental Sustainability, Building Information Modeling (BIM), Circular Economy.