A STUDY ON THE MANAGEMENT OF DEMOLITION AND SUSTAINABLE CONSTRUCTION WASTE

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Abstract

This study investigates how to handle demolition trash and how it relates to environmentally friendly building techniques. The study's specific objectives are to evaluate the effectiveness of present waste management techniques, pinpoint problems, and suggest viable substitutes in order to lessen the negative environmental effects of demolition operations. Using a mixed-methods approach, the study combines qualitative and quantitative data collected from field surveys, case studies, and interviews with important stakeholders, such as legislators, waste managers, and contractors. The study's base is a thorough analysis of the literature on sustainable building and demolition waste management techniques. The study also looks at how well-functioning current laws, rules, and technology encourage recycling, reuse, and a decrease in construction and demolition (C&D) waste.

Keywords: *Construction Management, Demolition Waste.*

INTRODUCTION

However, the technologies used for environmental protection and sustainable development serve different purposes and are not interchangeable. Sustainable technologies also seek to satisfy the more general goals of achieving economic, social, and environmental development goals without going beyond the ecological recovery capability and establishing growing disparities. These are the more general goals that sustainable technologies aim to accomplish. Reduction, elimination, and compensation for environmental pollution are the key issues that environmental technologies address in terms of production, remediation, and maintenance. The main goal of environmental technology is this. The issue of reducing, eliminating, and making up for toxins emitted into the environment is another issue that sustainable technologies tackle. The technologies currently being used for sustainable development are also regarded as the best available technologies (BAT) in terms of the technical performance, economic availability, and environmental excellence that they provide for the industries involved, according to Majernik et al. (2017) and Feola (2015). This is because these technologies offer solutions that are both economically and environmentally viable. This predicament has emerged as a result of the present use of these technologies for the sake of sustainable development.

MSWM is a persistent cause of worry in India, a developing country with a population of over one billion. The 12th schedule of the Indian Constitution requires local governments to keep the areas under their jurisdiction clean. Unfortunately, there are many issues with livelihood, sanitation, the environment, and health as a result of the government' ineffective implementation of MSWM. Lack of funding, institutional instability, outdated technology, a poor transportation

system, fewer disposal choices, and a lack of civic awareness are some of the issues that have made MSWM problematic (Fagariba, C.J., & Song, S. 2016). Most cities throughout the world, including those in India, have adopted MSWM's unilateral centralized approach, which handles the collected trash in a single location (Annepu, 2012). Due to deficiencies in MSWM procedures, anaerobic degradation occurs, releasing nitrous oxide and methane into the atmosphere, both of which are very harmful to human health and the environment.

OBJECTIVES

1. To determine the efficacy of current techniques and procedures for handling building and demolition waste.
2. To look into the possibility of recycling, reusing, and minimizing construction and demolition waste.

REVIEW OF LITERATURE

Mohsen Mohammadi et al. (2024)

Destroying concrete structures, including buildings, bridges, tunnels, and pavements, has become a popular practice for a variety of reasons, including retrofitting, refurbishment, rehabilitation, and simply extending the structures' useful lives. The management of construction demolition waste (CDW) has become very difficult as a result of this increase. Conventional demolition methods often have negative effects on the environment, ineffective waste management, and safety issues.

S. Ratnasabapathy et al. (2019)

In the pursuit of social, environmental, and economic sustainability, managing construction and demolition (C&D) waste—a significant portion of solid waste—becomes an increasingly important concern. Because of their ability to facilitate the digitization, automation, and integration of Solid Waste Management (SWM) operations, innovative and intelligent technologies are starting to emerge that will undoubtedly deliver advantages. However, there has not been enough focus on using these technologies in Construction and Demolition Waste Management (CDWM).

Alireza Moghayedi (2018)

The primary objective of this study is to determine how new technology affects the environmental friendliness of commercial buildings in South Africa. The energy construction laws of South Africa, SANS 204, do not promote the development of environmentally aware commercial real estate, which is the cause of the acceptance delay. Additionally, it was discovered that buildings waste a significant amount of energy since electrical equipment is often kept on while not in use.

Muhammad Zaid Qamar (2017)

Any technology that is made with an eye on the environment from the point of manufacture to the point of usage is known as "green tech." This rapidly advancing technology aims to make natural resources less stressful since they are being depleted faster than they can be replenished. Green technology's main objectives are to lessen the adverse effects of climate change, safeguard the environment, lessen our reliance on non-renewable resources like fossil fuels, and repair environmental harm.

Wilson Nwankwo (2016)

The socioeconomic effects of climate change are diverse, highly complex, and alter throughout time and space. Innovative technology is a key solution to the realistic and practical adaptation and mitigation of the problems caused by climate change. Therefore, identifying the objectives, plans, and methods for

advancing and developing cutting-edge technology to address these inequities and/or uncertainties related to climate change is seen as a valuable task.

Ki-Hoon Lee (2015)

There has been uncertainty around the results of discussions about the relationship between corporate financial success and environmental performance throughout the last forty years. This is a result of inadequate theoretical underpinnings and a dearth of evidence. This study examines the effects on financial and environmental performance of investments in eco-innovation via green research and development. The resource-based view and the natural resource-based view form the foundation of this investigation.

METHODOLOGY

To get a thorough grasp of the management of demolition and sustainable building waste, this study uses a mixed-methods research design that combines quantitative and qualitative techniques. Exploring the many kinds and origins of trash from building and demolition, analyzing the state of waste management techniques, and evaluating the industry's adoption of sustainable practices are the objectives of the study. It makes use of both primary and secondary data sources. It gathers primary data by distributing structured questionnaires to waste management experts, contractors, and site engineers. Primary data were collected by the execution of a pre-defined survey in order to conduct an empirical research of the topic at hand. Three hundred respondents from construction firms who had undergone the necessary verification had to complete a specified questionnaire. Research has shown that the respondents from Haryana had ties to a wide variety of construction firms.

Table 1: Construction Companies

S. No.	Company Name	Respondents
1	Jain Construction Company	30
2	SB Constructions	30
3	Lohaar Engineering and Construction Pvt. Ltd.	30
4	Ahuja Constructions Engineers	30
5	YFC Projects Pvt. Ltd.	30
6	C & C Constructions Ltd.	30
7	AK Construction	30
8	NBCPL (Nirman Bharti Construction Pvt. Ltd.)	30
9	Richa Industries Limited	30
10	VCL Group	30
Total		**300**

RESULT AND DISCUSSIONS

Table 2: Time Set for Strategy planning for disposal of waste products

Response	Frequency	Percentage
Yes	196	65.33%
No	104	34.67%
Total	300	100%

In this table, 65.33% of respondents selected "Yes," meaning that time had been allocated to create a waste management plan, whilst 34.67% selected "No," meaning that no time had been allocated for waste management plan development.

Table 3: Choices made to minimize waste

Response	Frequency	Percentage
Yes	180	60%

No	120	40%
Total	300	100%

Of the total, 120 respondents (or 40%) said they do not make such decisions. Even if it is a lesser percentage, it is still noteworthy. There is a clear trend toward waste reduction within the questioned group, as the majority of respondents (60%) are making decisions to reduce waste.

Table 4: Disposal of water and waste water

Question	Response	Frequency	Percentage
Is there provision for water and waste water disposal?	Yes	244	81.33%
	No	56	18.67%
Total		300	100%

According to the majority of respondents (81.33%), there is a provision for the disposal of wastewater and water. A lesser percentage of respondents (18.67%) said that there is no provision for the disposal of wastewater and water.

Table 5: Used Recycled Materials

Response	Frequency	Percentage
Yes	231	77%
No	69	23%
Total	300	100%

231 (77%) of the 300 respondents said they used recycled materials, compared to 69 (23%) who didn't.

Table 6: Proper Waste management protocols applied

Response	Frequency	Percentage
Yes	273	91%
No	27	9%
Total	300	100%

According to the table, 273 respondents, or 91% of the sample, reported using appropriate waste management procedures, while 27 respondents, or 9%, did not.

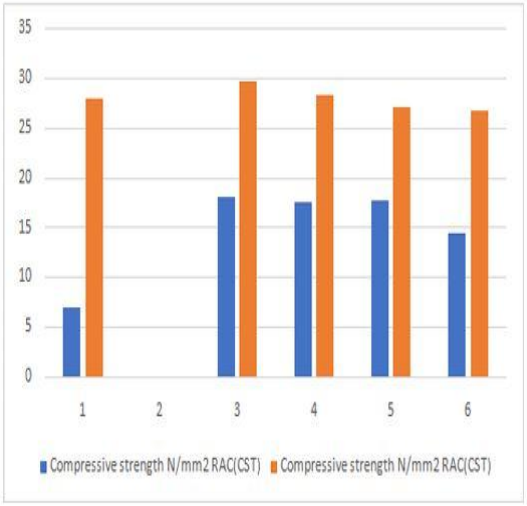

Figure 1: 10%, 20% and 30 % recycled coarse aggregates with treated and untreated

The compressive strength of all concrete mixtures using recycled materials was much greater than that of ordinary concrete manufactured with natural ingredients. The M50-concrete, which was made by substituting 50% of the fine RA in the mixing process for 30% of the coarse recycled aggregate, was the lone exception to this rule. This concrete mixture achieved a 10% reduction in strength.

CONCLUSION

India is constantly enhancing its RE implementation and establishing new benchmarks in an effort to lower the country's steadily rising carbon emissions, mainly, and combat global warming, while also improving the air flow quality index chart. Furthermore, India often plans to significantly reduce its energy use rise in

the next years as a result of the Indian government's plans to drastically reduce the manufacturing of vintage automobiles and transition to electrical motor vehicles by 2025. Even if it is not always quite dispersed equally, India has taken the majority of the steps to increase the production of alternative energy nationwide. The International Energy Organization predicted that by 2035, India will rank as the second most significant contributor to the world's energy consumption.

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