NOVATEUR PUBLICATIONS
JournalNX- A Multidisciplinary Peer Reviewed Journal
ISSN No: 2581 - 4230
VOLUME 11, ISSUE 3, March – 2025

STUDY AND ANALYSIS OF ZERO WASTE MANAGEMENT IN CONSTRUCTION INDUSTRY

[1]Amruta D. Kamble,
[2] Prof. Ranjeet B. Patil,
[*1]P. G. Student, Department of Civil Engineering, TKIET,
Warananagar, Maharashtra, India
[2]AssistantProfessor, Department of Civil Engineering College,
TKIET, Warananagar, Maharashtra, India

Abstract
The development of the nation's infrastructure depends heavily on the construction industry. Construction waste, however, is the issue that the industry is currently facing. Compared to other industries, the construction industry produces more waste. Waste is produced throughout the construction process at various stages such as excessive cement mix procedures, concrete materials left over after work is finished owing to design changes, rework, destruction, and subpar craftsmanship, etc. Additionally, all of the resources utilised in building operations end up being wasted, which raises the project's cost, lowers its profitability, and has a detrimental effect on the environment. Waste from construction projects is challenging to recycle. Additionally, cities lack enough area for waste disposal.Waste is a representation of resource misallocation and the inefficiencies of any modern society.

Keywords: Zero waste management, Construction Industry, C&D Waste, Causes of Waste.

INTRODUCTION

The construction industry, which is a major force behind the socioeconomic development of a nation, also produces a sizable amount of construction and demolition debris. The construction industry may become more sustainable by effectively implementing zero waste management practises. The surge in the construction sector's activity results in a significant contribution to a country's development and urban growth. India, one of the nations that is developing the fastest, depends on the construction sector to build out its infrastructure. To fulfil the exponential demand, the construction sector has begun over-exploiting natural resources. Additionally, a sizable amount of the construction and demolition waste (C&D) that is produced annually throughout the world is dumped in landfills, contributing to a host of environmental issues.

1. DEFINITION

Zero Waste Construction is a building method that aims to eliminate waste throughtout the construction process. Construction wastes are those that result from the building, remodelling, and maintenance of individual homes, businesses, and other structures. Construction waste creation can be linked to the many stages of construction, including design, material sourcing, handling, and operation. Waste from construction and demolition projects is among the highest volumes of waste in

the solid waste stream and poses a serious hazard to all nations. Its composition is not unique and is influenced by a variety of elements, including the building's kind, country, and construction methods.

2. PURPOSE

The purpose of zero waste management is to reduce the environmental impact of construction activitie. Reduce reliance on single use materials. Use prefabricated and modular construction. Implement efficient construction techniques.

3. METHODOLOGY

1. A qualitative research method was used to analyse previous studies on zero waste.
2. Applying various zero waste perceptions to better understand the zero waste concept used by professionals.
3. Designing the construction waste recycling process with the use of specialized equipments.
4. Construction material used to upgrade the slum infrastructure and building works.
5. Analysis the illegal dumping construction waste which causing risk to human health and environment.

4. NEED OF STUDY

1. Zero waste strategy developed during the recent past focuses on the principles such as reuse, reduce and recycle, recover and residual management. Construction is one of the most important and Core industries of a nation.
2. The zero waste strategy aims to increase recycling, decrease waste, decrease consumption, and make sure that things may be repaired, reused, or recycled back into the environment or the market.
3. As a result, putting the Zero waste idea into practice in the construction sector helps to maximize the use of natural resources, lessen environmental problems, and encourage sustainability.
4. A construction waste management plan's main goal is to divert construction trash, demolition waste, and land clearing debris from landfill disposal in order to reduce the volume of materials dumped during construction.

5. OBJECTIVES

1. To Study present status and determine different types of waste generated at housing Construction project.
2. To identify construction waste generated and find out quantities of construction waste accumulated on selected construction project.
3. To analyze construction waste using JIT(Just In Time) and KANBAN methods as well as an evaluation of them within the framework of zero waste management.
4. To applying zero waste concept to manage construction waste of housing construction project.

5. SCOPE OF STUDY

The study focus on the zero waste management at construction site at Houseing society.This study also by the result analysis the waste minimization, reuse and recycling will be found and the mitigation measures will be provided and to gets more information about method used in zero waste management construction.

References

[1]. C. Pharino Municipal Waste Management in Thailand, Challenges for Sustainable Solid Waste Management 2017 146.

[2]. Effie Papargyropoulou, Prof Dr Christopher Preece, Dr Rory Padfield, AnisAdilaBt Abdullah, (2011) "Sustainable Construction Waste Management In Malaysia: A Contractor's Perspective" Management and Innovation for a Sustainable Built Environment, ISBN: 9789052693958, PP-1-10.

[3]. Gagan and Sumit Arora,(2015), " Recycled Aggregates: A Sustainable Solution of Construction and Demolished Waste" IOSR Journal of Mechanical and Civil Engineering, e-ISSN: 2278-1684, p-ISSN: 2320-334X. PP 58-63.

[4]. Jeffrey, C. (2011) "Construction and Demolition Waste Recycling, A Literature review", Inhabitat 2011, Dalhousie University's Office of Sustainability

[5]. Mansi Jain, (2012) "Economic Aspects of Construction Waste Materials in terms of cost savings – A case of Indian construction Industry" International Journal of Scientific and Research Publications, Volume 2, Issue 10, PP -1-7

[6]. M. Hill Solid waste Understanding Environmental Pollution 2010 Cambridge University Press Cambridge 311-347

[7]. Milad Najafy1, and ErcanHoşkara, (2015), "The Evaluation of Construction Waste Management in Northern Cyprus" ISBN 978-93-84468-19-4 Proceedings of International Conference on Transportation and Civil Engineering (ICTCE'15), PP 76-82

[8]. NitishBagdi, Vipin Aggarwal and NeetuSherwal,(2013) "Management of Construction Waste in India: A Case of Green Technology" Global Journal of Management and Business Studies. ISSN 2248-9878 Volume 3, pp. 361-364.

[9]. PallaviBaitule,N. S. Futane and A. B. Ranit,(2020) "A Review paper on Construction Waste Management and its Impact on Cost of the Project" SSRG International Journal of Civil Engineering, Volume 7, Issue 7, 20-22, July 2020.

[10]. Rawshan Ara Beguma, ChamhuriSiwar a, Joy Jacqueline Pereira, Abdul Hamid Jaafar, (2007) "Implementation of waste management and minimization in the construction Sign of Student 9 Sign of Guide industry of Malaysia "Resources Conservation and Recycling, ELSEVIER,PP-190 202.

[11]. R. Yoganandam and R. Udhayasakthi,(2017) "Study of Zero Waste management in Indian Construction Industry" The Asian Review of Civil Engineering ISSN: 2249-6203 Vol. 6 No.2, PP. 31-35.

[12]. Saima Hamid, Bhat MohdSkinder and Muzaffar Ahmad Bhat,(2020) "Zero Waste: A Sustainable Approach for Waste Management" University of Kashmir Srinagar, India.

[13]. SawantSurendra B., HedaooManoj, KumthekarMadhav,(8 & 9 Jan 2016), "Impact of the Construction Waste on the Cost of the Project" International Journal of Engineering Research ISSN:2319 -6890, Volume No.5, Issue Special 1 pp : 126-128

[14]. ShreenaShankari R, D.Ambika, S.S. Kavithra,(2017) "A Review On Waste Material Minimization In Construction Industry" International Research Journal of Engineering and Technology (IRJET) e -ISSN: 2395 -0056 Volume: 04 Issue: 01,PP-1306-1309.

[15]. S.M. Elgizawy, S.M. El-Haggar, K. Nassar,(2016) "Slum development using zero waste concepts: construction waste case study" International Conference on Sustainable Design, Engineering and Construction, ELSEVIER, PP- 1306 –1313.

[16]. SwarnaSwetha K, Tezeswi T.P, Siva Kumar M.V.N, (2022) "Implementing Construction Waste Management in India: An extended theory of planned behavior approach" Environment Technology and Inovation 27(2022).

[17]. USEPA,U.S Environmental Protection Agency (1995). "Construction and demolition waste landfills Draft Report. Office of solid waste". ICF Incorporated Contract No. 68 W3-0008, May 18, 1995

[18]. V.G. Ram, S.N. Kalidindi, Estimation of construction and demolition waste using waste generation rates in Chennai, Waste Mgm. Res. 35 (2016) 610–617