

# Chapter 5

## An Analysis on the Benefits and Difficulties of the Circular Economy of Building and Demolition Waste for Sustainable Environmental Development

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### **ABSTRACT**

*Construction and demolition (C&D) waste was traditionally viewed as zero value material in a linear economy, leading to the majority of C&D waste materials ending up in landfills. Many nations have begun investigating new models to reduce the use of finite resources that are currently being misused, overused, or rapidly depleting in recent years due to a rise in awareness of sustainability and resource*

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*management. In this sense, implementing the 'circular economy' (CE) has become a viable model to reduce the damaging effects of C&D waste on the environment. A complete transition to CE in the building and demolition industries is, however, hampered by certain issues. As a result, the purpose of this review paper is to examine various facets of C&D waste and the ways in which CE can be included in building projects. A review of the literature indicated that there are five primary domains in which barriers to the adoption of CE in C&D waste sectors exist: legal, technical, social, behavioural, and economic aspects.*

## **INTRODUCTION**

Global warming is the biggest threat to civilization in near future and reducing our reliance on fossil fuels and other raw materials that increase greenhouse gas emissions must happen right now. There is no longer a way to put off taking this important step (D'Adamo et al., 2023). The construction industry is under tremendous pressure to lessen its effects on the environment and on materials, and governments and the research community are paying more attention to this issue as a result of the rising demand for materials and the eroding lifespans of buildings (Arora et al., 2021).

In recent times, the global urbanisation rate has skyrocketed in tandem with the expansion in human population. Consequently, there has been a greater need for material resources. Specifically, the construction sector accounts for 32% of the use of natural resources (Yehevis et al., 2013). Even though this percentage is lower than the natural resource consumption in the 1990s (~40%), more than 75% of the trash produced by the construction sector is thought to have retained value and is not being recycled or reused at the moment (Rees 1999). The absence of a coordinated waste management framework is the cause of this.

Construction and demolition wastes (C&D wastes) are defined as any waste generated during the construction, remodelling, or demolition process that is no longer useful, even though several classifications have been put out. Usually, this kind of garbage is dumped in a landfill. This definition states that construction-related C&D trash makes up 30% of all waste produced worldwide (Papargyropoulou et al., 2011), with an average of over 35% of all C&D garbage being disposed of in landfills each year (Menegaki et al., 2018). The construction business has a considerable environmental impact due to the use of natural resources, the use of huge amounts of energy, and the amount of trash generated during the building life cycle. The main cause of this is the implementation of the linear economy framework, which is based on the take, make, and dispose principle. Figure 1 describes how the linear economy is recycled.

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