

**AN INVESTIGATION INTO THE APPLICABILITY OF
THE CIRCULAR ECONOMY CONCEPT TO
RENOVATION AND REFURBISHMENT PROJECTS IN
SRI LANKA**

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ABSTRACT

Universally, in parallel with population growth and increased income, human beings are continuously utilizing resources which could potentially lead to resource scarcity in the near future. Moreover, the linear disposal of products at the end of their life cycle is a prevailing global socio-economic trend and is considered one of the primary causes of natural resource depletion. Therefore, as a sustainable economic approach, the concept of circular economy has been recommended. In addition, Sri Lankan construction industry has also been affected by inefficient resource utilization and improper management of construction waste. Thus, the reuse and repurposing of existing buildings through retrofitting, refurbishment, renovation, face-lifting, and other methods play a crucial role in the Sri Lankan construction industry. However, there is a lack of research on the application of the circular economy concept to renovation and refurbishment projects, both locally and globally. Hence, this study aims to investigate the applicability of the circular economy concept to renovation and refurbishment projects in Sri Lanka. To achieve this aim, the study commenced with a comprehensive literature review; subsequently, the study employed a qualitative research approach which involved conducting case studies through semi-structured interviews, project observations, and document reviews. The data collected were analysed using manual content analysis method.

The findings revealed that renovation and refurbishment are crucial for achieving economic benefits, enhancing the appearance and longevity of existing buildings, preventing illegal activities in abandoned structures, addressing resource depletion, improving energy efficiency, and preserving the architectural and archaeological value of buildings. However, each renovation and refurbishment project is complex and unique in nature. The case studies applied various imperatives of the circular economy, such as “refuse, rethink, reduce, reuse, repair, refurbish, remanufacture, *and* repurpose,” but “recycle” was not utilized in an organized manner. On the one hand, the main challenges identified in applying the circular economy concept to renovation and refurbishment projects were a lack of awareness, shortage of skilled labour, difficulties in material recovery and finding high quality material, unforeseen events, the need for strengthening building structures, cost unpredictability, and a lack of pre-project planning. On the other hand, the advantages of applying the circular economy to renovation and refurbishment projects included design for adoptability, flexibility, and standardization, modularity in design, specification of recycled material, sustainable green building design, use of less hazardous material, increased lifespan of buildings, waste minimization, off-site construction, and reuse of products and components. The research proposes strategies such as creating awareness programs on the circular economy, developing guidelines and regulations for its application, enhancing skills in the careful recovery, dismantling, and sorting of secondary material, providing incentives for secondary material users, encouraging professionals to utilize secondary material, creating a market for used material, and establishing a database of secondary material markets to enhance the application of the circular economy concept to renovation and refurbishment projects in Sri Lanka.

Keywords: circular economy concept; construction industry; R imperatives; renovation and refurbishment projects; Sri Lanka.

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LIST OF ABRIVIATIONS

C&D	-	Construction and Development
CEC	-	Circular Economy Concept
CE	-	Circular Economy
LEC	-	Linear Economy Concept
LE	-	Linear Economy
CSFs	-	Critical Success Factors
EMAF	-	Ellen MacArthur Foundation
EOL	-	End of Life
FICF	-	Finland's Independence Celebration Fund
RIBA	-	Royal Institute of British Architects
UK	-	United Kingdom
USA	-	United States of America
WCED	-	World Commission on Environmental Development