

APPLICABILITY OF ZERO WASTE CONCEPT TO THE SRI LANKAN CONSTRUCTION INDUSTRY

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Declaration

“I declare that this is my own work and this dissertation does not incorporate without acknowledgement any material previously submitted for a Degree or Diploma in any other University or institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgement is made in the text.

Further, I acknowledge the intellectual contribution of my research supervisors Dr. (Mrs) K.G.A.S.Waidyasekara, and Mrs. B.H.Mallawaarachchi for the successful completion of this research thesis. I affirm that I will not make any publication from this research without the names of my research supervisors as contributing authors unless otherwise I have obtained written consent from my research supervisors.

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Abstract

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The construction industry, being the largest industry, it generates massive quantities of Construction and Demolition waste (CDW). Generation of CDW leads to issues related to environmental pollution, adverse health issues, economic issues, social issues, and undesirable landfill creations. Strategies such as the 3R concept (Reduce, Reuse, Recycle), and waste hierarchy are followed in the construction industry for CDW management. Although such strategies are applied to manage the CDW, CDW management is still in a primary stage. In order to eliminate CDW, the Zero waste concept emerged as a potential solution. Although, Construction Waste Management (COWAM) project is available for manage CDW in Sri Lanka, there is a lack of studies to manage C&D waste management. Thus, this study focuses on elimination of CDW from construction industry by applying zero waste concept.

To achieve the ultimate aim of the study, comprehensive literature survey was carried out by referring to the existing findings on CDW definitions, origins and causes for CDW generation, composition of CDW, impacts of CDW, strategies, enablers, barriers and zero waste concept. Further, qualitative research approach was followed and eight case studies were used to collect data. Semi structured interviews, document review and observations were carried out in the selected eight case studies. To analyse the collected data, cross case analysis was followed.

Through the case study findings, composition of CDW, origins and causes of CDW, current CDW management procedure, strategies, enablers, barriers and suggestion to apply zero waste concept in the Sri Lankan context were identified. Finally, all the collected data was harmonized into one place and a framework was developed to apply zero waste concept in the Sri Lankan construction industry.

Key words: Applicability, Barriers, Construction and Demolition waste (CDW), Enablers, Suggestions, Zero Waste

Dedication

*To my beloved parents
and brother...*

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Abbreviation

BIM	Building Information Modelling
CDW	Construction and Demolition Waste
CIDA	Construction Industry Development Authority
CWS	Construction Waste Sorting
EMS	Environmental Management System
EPR	Extended Producer Responsibility
EU	European Union
IS	Industrial Symbiosis
LCA	Life Cycle Assessment
MT	Million Tons
MSW	Municipal Solid Waste
SW	Solid Waste
WM	Waste Management
ZW	Zero Waste