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Assessing Benefits of Developing a Simulation Model for Sustainable Constructions Using Life Cycle Assessment (LCA) Approach in Sri Lanka

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Abstract

Using the Life Cycle Assessment (LCA) method to create a simulation model for sustainable projects in Sri Lanka can have a number of advantages. LCA is a methodical approach that assesses the environmental effects of a process or product throughout the course of its full life cycle, from the extraction of raw materials to the disposal at the end of its useful life. LCA is a tool that assists in identifying potential environmental costs associated with construction projects and enables well-informed decision-making to lessen these effects. This employs a content analysis to conduct a comprehensive review on the national and international existing models/frameworks and data bases for modelling the sustainability of constructions and a questionnaire survey to assess the feasibility of using LCAs with the professionals of the construction industry. Results prove that there very few information on widely used models by the design professionals Furthermore results indicate that in maintaining indoor air quality and energy aspects using LCAs need to be implemented with significance in the Sri Lankan context. Findings also proved that the burden of a high-cost requirement is needed to implement LCA in Sri Lanka, therefore existing database inventory from foreign countries need to be modified to suit local data. A LCA model can help Sri Lanka's construction industry transition to more environmentally friendly and sustainable practices, so the long-term benefits outweigh the short-term drawbacks.

Keywords: *LCA, Simulation model, Sustainability*