A7 Developing Best Practices for Circular Economy Integration in Built Environment Supply Chains

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The Built Environment (BE) sector, traditionally characterised by linear supply chains, faces escalating costs and mounting pressure to minimise environmental impacts, highlighting a need for more efficient procurement and logistics strategies. Integrating Circular Economy (CE) principles into BE supply chains (SC) is key for sustainable development, offering resource recovery and waste minimisation (McMeel et al., 2023). However, a gap exists in academic literature covering the intersection of Supply Chain Management (SCM), BE, and CE, particularly within the Aotearoa New Zealand (NZ) context, alongside fragmented policy alignment and a lack of standardised circularity metrics.

This research examines the optimisation of SC within BE projects by bridging this gap through a mixed-methods approach, combining systematic literature reviews, international benchmark case studies, and thematic analyses. Using a pragmatist philosophy and abductive approach, the study draws on peer-reviewed articles, industry reports, policy documents, and will include semi-structured expert interviews.

Preliminary findings reveal a continuing reliance on linear SC practices, with limited integration of digital tools and circular principles. However, successful case studies demonstrate the potential of integrated digital-physical systems, waste minimisation in design, and collaborative governance models in reducing waste, e.g., 25% for concrete, 15% for wood in circular construction (Firoozi & Firoozi, 2022) and decreasing life-cycle cost, e.g., Homestar dwellings saving $62,000-$98,000 over 30 years (Brunsdon et al., 2025). Systemic barriers include regulatory fragmentation, economic disincentives, and behavioural resistance.

The study underscores the need for interdisciplinary research and policy coordination to overcome these barriers, driving decarbonisation and equitable growth. Audiences will gain real-world insights into international best practices, including waste minimisation strategies, such as designing out waste, and recommendations for NZ academic and industry stakeholders, as well as policymakers, to foster a transition from linear to circular systems in the BE sector.

Keywords
Best Practices, Circular Economy, Built Environment, Supply Chain

References

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