

High-performance sustainable solutions for the refurbishment of commercial buildings

Summary

Commercial buildings have a major impact on energy consumption. Nonetheless, the largest retailers are open to sustainability and to a business shift in paradigm, from bottom line (profit) to the triple bottom line (people, planet, profit). The life cycle of the commercial building is greatly influenced by its economic cycle and in the analysis of sustainable solutions for the renewal of commercial areas, too much importance is given to cost and payback. There is a lack of decision-making support tools applicable to commercial buildings, which combines sustainability, cost and a short life cycle – this is the hiatus that the present Doctoral Thesis intends to respond, through the development of LiderA sustainability assessment tool for retail buildings. For that purpose, the main research question of this thesis was the following: “Do commercial areas have an environmental performance that can be structurally improved in times of renewal? If yes, how and when to intervene?”.

The pursuit of this objective will lead to the development of the following research axes: (i) development of LiderA for retail buildings, with a corresponding evaluation test through its application on case studies; (ii) identification of potentials and opportunities for environmental building improvement; (iii) development of a correlation matrix between the existing situation and environmental improvement potential after intervention; (iv) proposal of high-performance sustainable solutions for the renewal / refurbishment of the analysed commercial areas; and (v) confirmation of the feasibility of the model developed (LiderA retail) through the evaluation of the performance of the analysed commercial areas.

Keywords

Retail buildings, high performance sustainable solutions, energy-efficient building solutions, energy and carbon intensity, CO₂ emissions, refurbishment of commercial buildings, sustainability assessment, benchmarks, LiderA.



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