

ESG-Based Evaluation of Modular Rooftop Extensions: The Velux SOLTAG Concept in Sustainable Housing Development

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Abstract:

The building sector plays a key role in achieving energy efficiency and sustainability goals in Europe. This paper addresses the potential of modular rooftop extensions as a tool for sustainable housing development, with a focus on the SOLTAG concept. The main objective is to evaluate how such solutions contribute to sustainability when assessed through Environmental, Social, and Governance (ESG) criteria. The study is based on a mixed-method approach combining statistical analysis of housing development data in Slovakia, case study evaluation of the SOLTAG concept, and a qualitative comparative ESG assessment. The results indicate that the potential of rooftop extensions remains underutilized, despite their significant advantages. The ESG evaluation demonstrates that modular solutions can contribute positively to energy efficiency, reduction of environmental impacts, improvement of indoor environmental quality, and integration of advanced building management systems. The findings highlight the relevance of modular prefabricated systems in addressing current challenges in the housing sector and support their role in achieving European sustainability and decarbonization targets.

Keywords:

ESG assessment, Modular construction, Rooftop extensions, Sustainable housing.