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Postgraduate Diploma Thesis

Passive Design and LEED Certification in the Greek Context: A Survey-Based Study among Industry Professionals

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Abstract

This study explores the integration of passive design strategies—often referred to as bioclimatic strategies—into sustainable building practices, with particular emphasis on their compatibility with international certification systems, specifically LEED (Leadership in Energy and Environmental Design). In the context of rising global demand for energy-efficient construction and the widespread adoption of sustainability assessment tools, the research examines the extent to which passive strategies, rooted in local climatic and architectural traditions, are being implemented in Greece and how effectively they align with the criteria imposed by LEED.

Passive design principles, including natural ventilation, strategic building orientation, and daylight optimization, offer proven benefits in reducing energy consumption and enhancing environmental performance. However, despite their potential, these strategies are often underrepresented in LEED-certified projects. Existing literature points to a structural misalignment between LEED's standardized, technology-oriented framework and the adaptive, low-tech nature of passive design. This perceived incompatibility forms a key point of investigation in the study.

The research employs a twofold methodology: an extensive review of academic and technical literature to catalogue applicable passive strategies, and a structured questionnaire distributed to 86 professionals actively involved in certified sustainable construction projects in Greece. The survey assesses both the knowledge and perceptions of passive design strategies among practitioners and their experiences applying these strategies within LEED certified developments. It also explores how local professionals perceive LEED's adaptability, effectiveness, and its potential to support climate-specific and context-sensitive design.

The findings of the study confirm that LEED has gained notable traction in the Greek construction sector, especially for large-scale developments, where its formal structure and international recognition offer clear benefits. However, the results also reveal significant barriers to the integration of passive strategies, including limited credit allocation within LEED, a market preference for active technological solutions, and insufficient interdisciplinary collaboration. Nonetheless, the

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vast majority of professionals surveyed recognize the value of passive design and support the idea that LEED can evolve to better accommodate such approaches.

Ultimately, the research underscores the importance of aligning global certificationframeworks with local environmental conditions and bioclimatic design methodologies. LEED's structured and adaptable nature positions it as a key instrument for future sustainable development in Greece—provided it continues to evolve toward a more inclusive model that prioritizes early-stage bioclimatic design. Emphasizing passive strategies not only supports energy efficiency and cost-effectiveness but also strengthens architectural identity and long-term environmental resilience.