

An Applicable Approach to Green Architecture in Egypt, Proposed Measurement Matrix Model to Assess the Use of Historic Islamic Architectural Elements and Repertoire in the Application of Green Architecture Principles and Concepts

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This research paper sheds light on how to stimulate the role of historic architectural elements and repertoire in Egypt in order to apply green architecture principles. The paper **assumes** that architectural solutions used in historic buildings constitute important elements favoring the application of green architecture principles in residential construction. A model measurement matrix intended for use in the realization of this assumption is proposed.

The paper begins with an overview of the Egyptian Green Pyramid rating system, a tool used to measure buildings' adherence to environmental standards, and their fundamental conditions and criteria. The measurement matrix proposed by the researchers (along with its major evaluation criteria) is then presented. Following a discussion of green architecture in Egypt and a review of the green architecture aspects in the repertoire of historic Islamic architecture, an explanation of the measurement method employed is provided.

The paper goes on to investigate historic residential buildings (the Al-Suheimi House and the Zeinab Khatoun House), pointing out the environmental elements and concepts featured in their architectural design.

Analytical studies of green residential buildings (projects that were awarded first prize in the Toshka Green Architecture Competition) and of eco-friendly residential buildings reveal the environmental merits of Islamic architecture (Aga Khan and Hassan Fathy award-winning projects). The above buildings are examined and assessed using both the measurement matrix and the Green Pyramid rating system as comparative references in order to corroborate the environmental suitability of Islamic architectural elements and to demonstrate how they may be assessed and applied. The paper concludes that the degree of application of the measurement matrix is directly proportional to the degree of application of Green Pyramid rating system criteria. The proposed measurement matrix model can thus realistically be considered a major approach to the application of green architecture principles.