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Review on A Comprehensive Study on Various Roofs for Thermal Comfort

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Abstract: *Green roofs have gained attention as sustainable solutions to urban environmental challenges. This comprehensive study delves into the multifaceted aspects of green roofs, including their environmental, economic, and social impacts. The research design incorporated data collection from diverse sites and rigorous analysis to provide a holistic perspective. The study reveals that green roofs exhibit promising benefits in terms of temperature regulation, energy efficiency, stormwater management, and biodiversity promotion. Economic analysis indicates long-term cost savings and ecological advantages, while the social and cultural dimensions shed light on the positive influence on human well-being. This research also delves into policy and regulation aspects, highlighting the importance of supportive measures for wider green roof adoption. Through case studies, practical insights are shared, emphasizing the real-world potential of green roofs. In conclusion, this study recommends the integration of green roofs in urban planning, emphasizing the need for informed decision-making and policy frameworks to unlock the full potential of green roofs in creating sustainable and resilient cities Green roofs have been heralded as a "sustainable building practice" in cities throughout the world as one response to mounting environmental stresses. A range of stressors plus erosion of aesthet-ics and human well being in urban areas have initiated policies and practices often with incentives to develop green infrastructure such as green roofs. They provide a suite of public and private benefits most of which map onto services generally provided by the ecosys-tem. Green roof development imbeds in environmental design pro-cesses and is constrained by both human and environmental factors. As relatively small, simple, anthropogenic ecosystems, green roofs relate to several existing conceptual and applied ecological ideas. Understanding and applying from ecology and ecosystem studies, ecological engineering, managed ecosystems, construction ecology, urban ecology, landscape ecology, restoration ecology, reconcilia-tion ecology, soil ecology and community ecology show green roof ecosystems can be created to cycle energy and nutrients. Further-more, green roofs can be constructed to model an ecosystem and may provide a setting for testing ecological concepts. This book takes an ecosystems approach to describing a large number of inter-actions on green roofs placing them in the total human ecosystem.*

Keywords: Green roofs

REFERENCES

[1]. Ahmed KS. Comfort in urban spaces defining the boundaries of outdoor thermal comfort for the tropical urban environments. Energy and Buildings 2003; 35: 103-110.
[2]. Al-Rabghi OM, Al-Ghamdi AS, Kalantan MM. Thermal Comfort Around the Holy Mosques. Arabian Journal for Science and Engineering 2017; 42: 2125-2139
[3]. Aljawabra F, Nikolopoulou M. Thermal comfort in urban spaces: a cross-cultural study in the hot arid climate. Int J Biometeorol 2018; 62: 1901-1909
[4]. Andrade H, Alcoforado MJ, Oliveira S. Perception of temperature and wind by users of public outdoor spaces: relationships with weather parameters and personal characteristics. Int J Biometeorol 2011; 55: 665-80.
[5]. Becker S, Potchter O, Yaakov Y. Calculated and observed human thermal sensation in an extremely hot and dry climate. Energy and Buildings 2003; 35: 747-756

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[6]. Brode P, Fiala D, Blazejczyk K, Holmer I, Jendritzky G, Kampmann B, et al. Deriving the operational procedure for the Universal Thermal Climate Index (UTCI). Int J Biometeorol 2012a; 56: 481-94.

[7]. Brown RD, Gillespie TJ. Estimating outdoor thermal comfort using a cylindrical radiation thermometer and an energy budget model. International Journal of Biometeorology 1986; 30: 43-52.

[8]. Chan SY, Chau CK, Leung TM. On the study of thermal comfort and perceptions of environmental features in urban parks: A structural equation modeling approach. Building and Environment 2017; 122: 171-183

[9]. Cheung PK, Jim CY. Global pattern of human thermal adaptation and limit of thermal neutrality: Systematic analysis of outdoor neutral temperature. International Journal of Climatology 2018a; 38: 5037-5049

[10]. de Area Leao Borges VC, Callejas IJA, Durante LC. Thermal sensation in outdoor urban spaces: a study in a Tropical Savannah climate, Brazil. Int J Biometeorol 2020; 64: 533-545.

[11]. Fiala D, Havenith G, Brode P, Kampmann B, Jendritzky G. UTCI-Fiala multi-node model of human heat transfer and temperature regulation. Int J Biometeorol 2012; 56: 429-41.

[12]. Giannakis E, Bruggeman A, Poulou D, Zoumides C, Eliades M. Linear Parks along Urban Rivers: Perceptions of Thermal Comfort and Climate Change Adaptation in Cyprus. Sustainability 2016; 8: 1023.

[13]. Hadianpour M, Mahdavinejad M, Bemanian M, Haghshenas M, Kordjamshidi M. Effects of windward and leeward wind directions on outdoor thermal and wind sensation in Tehran. Building and Environment 2019; 150: 164-180.

[14]. Hirashima SQdS, Assis ESd, Nikolopoulou M. Daytime thermal comfort in urban spaces: A field study in Brazil. Building and Environment 2016; 107: 245-253