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Nomenclature

SVF	Sky View Factor
ΔT	max urban-temperature to rural temperature($^{\circ}\text{C}$)
TS	thermal sensibility
T_a	air temperature ($^{\circ}\text{C}$)
SR	solar radiation (W/m^2)
WS	wind speed (m/s)
RH	relative humidity (%)
ST	surrounding surface temperature ($^{\circ}\text{C}$)
PET	Physiologically Equivalent Temperature($^{\circ}\text{C}$)
SET	Standard Effective Temperature($^{\circ}\text{C}$)
F/R	Ratio between facade and roof

Abstract

Some Middle Eastern countries are located in the hot climate zone and are rich in natural resources particularly oil and gas. In recent years, due to the high income from oil, they have started to develop the urban fabric rapidly and in an unsustainable way and as a result a large amount of natural resources have been consumed. Sustainability can restore the balance in using energy and resources and in providing sustainable urban development. Passive cooling strategies are the first approach towards establishing a sustainable built environment in the Middle East. There are several passive solutions in this region which were introduced hundreds of years ago such as the *Badgir* (wind tower) and a number of studies have been conducted in order to investigate the performance and possibilities of using these solutions in the current built environment.

The aim of this research is to investigate the impact of shading as a selected passive solution as the first phase of sustainable design. The cities of Yazd (Iran) and Bastakya (Dubai-UAE) are introduced as case studies in order to assess the impacts of shading from thermal, visual and psychological aspects on human comfort in the local traditional built environment. The methodology combines simulation, site visits, field measurements and relevant research to analyze thoroughly the effects of shading on the urban fabric and individual building.

The results reveal the advantages of the compact urban fabric and courtyard housing in providing shading to improve human comfort in the traditional built environments in Yazd and Bastakya. The shading disadvantages are also discussed. The conclusion provides a summary of the findings and the outlook presents the results in order to integrate shading as the primary passive solution in future development in both locations or anywhere with similar climatic and cultural patterns.

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