

Optimising Urban Climate at Mesoscale: The Case of Floor-Area-Ratio Modelling and Energy Planning Integration

Authors : Ali Cheshmehzangi, Ayotunde Dawodu

Abstract : In urban planning, Floor Area Ratio (FAR) of the site plays a major role in the multiplicity of performances, from humane living environments to energy performance. When one considers the astounding volume of new housing that is going to be constructed across the globe during the next few decades due to growing urbanisation (e.g. particularly in developing world), it is imperative that we have an empirically grounded grasp of which building configurations are more energy efficient. As a common planning metric, it would be helpful to know exactly how managing FAR connects with energy efficiency. Hence, this study puts together a set of modelling of various FARs for a typical residential compound and address the considerations of energy planning integration in the practice of building configuration and urban planning. Such decision makings at the planning and design stage enable us to provide pathways of optimising urban climate at mesoscale of the built environment, i.e. the neighbourhood or community level. In this study, a comparative study is conducted using Eco-Tect Software, using a case study in the City of Ningbo, China. Findings of the study contribute to identifying scenarios of various FAR use and energy planning at mesoscale. The final results contribute to studies in urban climate, from the perspectives of urban planning, energy planning, and urban modelling.

Keywords : China, energy planning, FAR, floor-area-ratio, mesoscale, urban climate, urban modelling

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