

Measuring the Influence of Functional Proximity on Environmental Urban Performance via IMM: Four Study Cases in Milan

Authors : Massimo Tadi, M. Hadi Mohammad Zadeh, Ozge Ogut

Abstract : Although how cities' forms are structured is studied, more efforts are needed on systemic comprehensions and evaluations of the urban morphology through quantitative metrics that are able to describe the performance of a city in relation to its formal properties. More research is required in this direction in order to better describe the urban form characteristics and their impact on the environmental performance of cities and to increase their sustainability stewardship. With the aim of developing a better understanding of the built environment's systemic structure, the intention of this paper is to present a holistic methodology for studying the behavior of the built environment and investigate the methods for measuring the effect of urban structure to the environmental performance. This goal will be pursued through an inquiry into the morphological components of the urban systems and the complex relationships between them. Particularly, this paper focuses on proximity, referring to the proximity of different land-uses, is a concept with which Integrated Modification Methodology (IMM) explains how land-use allocation might affect the choice of mobility in neighborhoods, and especially, encourage or discourage non-motivated mobility. This paper uses proximity to demonstrate that the structure attributes can quantifiably relate to the performing behavior in the city. The target is to devise a mathematical pattern from the structural elements and correlate it directly with urban performance indicators concerned with environmental sustainability. The paper presents some results of this rigorous investigation of urban proximity and its correlation with performance indicators in four different areas in the city of Milan, each of them characterized by different morphological features.

Keywords : built environment, ecology, sustainable indicators, sustainability, urban morphology

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