

Estimating Future Solar Potential in Evolving High-Density Urban Areas for the Mid-Latitude City of Mendoza, Argentina

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Abstract : The main goal of the project is to explore the evolution possibilities of the morphological indicators of the built environment, including those resulting from progressive soil occupation, due to the relentless growth of the city's population and subsequent increase in building density and solar access reduction per built unit. Two alternative normative proposals, Conventional Proposal (CP) and Alternative Proposal (AP), are compared. In addition, temporal scenarios of the city's evolution process are analyzed, starting from the reference situation of existing, high-density built-up areas, and simulating their possible morphological outcomes on theoretical medium (30 yr.) and long (60 yr.) terms, as a result of the massive implementation of either regulation in the long run. The results obtained demonstrate that the Alternative Proposal (AP) presents higher mean values of predicted solar potential expressed by the Volumetric Insolation Factor total (VIF_{tot}) for both time periods and services. Regarding environmental aspects, the different impacts of either alternative on the urban landscape quality seem to favor the AP proposal. Its deserved detailed assessment is also presently being developed through a quantitative methodology.

Keywords : building morphology, environmental quality, solar energy, urban sustainability

Conference Title : ICSUD 2018 : International Conference on Sustainable Urban Development

Conference Location : Copenhagen, Denmark

Conference Dates : June 11-12, 2018