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Process of Analysis, Evaluation and Verification of the 'Real' Redevelopment of the Public Open Space at the Neighborhood’s Stairs: Case Study of Serres, Greece

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Abstract : The present study is directed towards adaptation to climate change closely related to the phenomenon of the urban heat island (UHI). This issue is widespread and common to different urban realities, but particularly in Mediterranean cities that are characterized by dense urban. The attention of this work of redevelopment of the open space is focused on mitigation techniques aiming to solve local problems such as microclimatic parameters and the conditions of thermal comfort in summer, related to urban morphology. This quantitative analysis, evaluation, and verification survey involves the methodological elaboration applied in a real study case by Serres, through the experimental support of the ENVImet Pro V4.1 and BioMet software developed: i) in two phases concerning the anteoperam (phase a1 # 2013) and the post-operam (phase a2 # 2016); ii) in scenario A (+ 25% of green # 2017). The first study tends to identify the main intervention strategies, namely: the application of cool pavements, the increase of green surfaces, the creation of water surface and external fans; moreover, it obtains the minimum results achieved by the National Program 'Bioclimatic improvement project for public open space', EPPERAA (ESPA 2007-2013) related to the four environmental parameters illustrated below: the TAir = 1.5 o C, the TSurface = 6.5 o C, CDH = 30% and PET = 20%. In addition, the second study proposes a greater potential for improvement than postoperam intervention by increasing the vegetation within the district towards the SW/SE. The final objective of this in-depth design is to be transferable in homogeneous cases of urban regeneration processes with obvious effects on the efficiency of microclimatic mitigation and thermal comfort.

Keywords : cool pavements, microclimate parameters (TAir, Tsurface, Tmrt, CDH), mitigation strategies, outdoor thermal comfort (PET & UTCI)
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