

Investigating the Potential of Utilizing Simulation Studies to Identify UHI Mitigatory Strategies in Proposed Cities

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Rapid development of urban areas catalysed the movement of people from rural areas to urban areas. This led to the demand for more dwelling places. Urbanisation and industrialisation caused the replacement of permeable land cover into impermeable materials. More solar radiation is absorbed by impermeable materials as it has thermal bulk properties and causes for the increase of urban temperature. Change in urban microclimate causes the phenomenon to be identified as urban heat island effect, which is identified from the temperature difference between urban and rural areas. In Sri Lanka, a few researches have been conducted on UHI effect for developed and existing cities. Identifying potential UHI mitigatory steps is vital when designing urbanities. Therefore, analysing UHI effect and possible mitigatory strategies for proposed cities through simulation studies are highly beneficial in developing sustainable cities. The research focused on investigating the potential of utilising simulation studies to identify UHI mitigatory steps for proposed cities in local context. Rhino 3D simulation software was utilized for the study. The paper presents the results of initial studies conducted. Research methods and workflow developed through the study can be utilised to evaluate the UHI effect, mean radiant temperature (MRT) and universal thermal climate index (UTCI) to identify outdoor thermal comfort. This software and methodology can be used for future developments to identify the UHI effect as a result of the completion of the project and mitigation methods that can be used to negate the UHI effect and enhance human comfort.

Keywords: *urban heat island effect, outdoor thermal comfort, Rhino 3D*