

URBAN SUSTAINABLE COOLING APPROACH TO FORMULATE SPATIAL PLANNING POLICIES IN REDUCING URBAN HEAT ISLAND IN THE CITY OF YOGYAKARTA

ABSTRACT

UHIs are one of the challenges that has arisen from urbanization in Yogyakarta. They have changed the landuse proportion to be dominated by built-up areas rather than vegetated areas. This research offers the Urban Sustainable Cooling Approach as a means to reduce the impact of the UHI. This approach is formed from three concepts: UHI, Sustainable Cooling Capacity (SCC), and Spatial Planning. It is expected that this approach can create comprehensive understanding of the condition in Yogyakarta allowing for the formulation of the spatial planning policies solution. The methods used combine quantitative and qualitative analysis. Quantitative analysis was conducted through the analysis of information on UHI distribution and SCC, while qualitative analysis was conducted through the analysis of the data from interviews on spatial planning policies. The UHI identification (first component) explains the surface temperature and UHI intensity distribution. The UHI distribution in Yogyakarta is dominated by high UHI intensity. SCC measurement (second component) utilizes green urban infrastructure to cool the environment. The result of this measurement shows that Yogyakarta is predominantly of low cooling capacity. However, there are still areas that have potential for cooling capacity. The last component of USCA is the spatial planning policies solution which uses the concepts of urban sustainability and sustainable cooling. This component is divided in three solutions: technical policies, strategic policies, and partnership. The best spatial planning policies solution, as determined from the interviews, is from technical policies and should be implemented by expanding green areas and forming living labs.

Keywords: UHI, Sustainability, Sustainable Cooling, Green Urban Infrastructure, Spatial Planning