

SPATIAL MODEL OF CITY ENERGY BASED ON REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEM

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ABSTRACT

The urban energy problem becomes important because environmental problems are caused by energy consumption which is basically to meet human needs and sustain economic growth. Population growth continues to increase which continues to fuel demand for the city's energy needs. The geographical conditions of the city also have a significant effect on people's energy consumption. Climate, vegetation and topography factors are indicators to determine the hot temperature of an area. People's behavior in energy consumption is also influenced by the comfort of a residential area. On the other hand, the current source of energy comes mostly from fossil energy which will continue to shrink over time. So it is necessary to study energy from a geographic perspective to produce a city energy policy that considers environmental balance.

This study aims to create a spatial model of Yogyakarta city energy based on remote sensing data and geographic information systems as well as to analyze the energy system of the city of Yogyakarta and the geographical factors that influence it.

Urban energy analysis in this study uses a regional energy metabolism approach, namely by utilizing physical data as a geographic area. Remote sensing data used is Landsat 8 OLI imagery for land use interpretation, vegetation index analysis and land surface temperature. The results of the model are presented in the form of a map, so that the spatial distribution patterns of Yogyakarta city surface temperature and energy use patterns can be seen. City temperature analysis is calculated by utilizing thermal channels in Landsat imagery. The results of this study can be used by decision makers in urban planning and urban energy policy.

Kata Kunci: model, energy, urban energy, remote sensing, geographic information system