ABSTRACT

MOHAMMAD ISROK NUGROHO. Valuation of Ecological Benefit of Trees Canopy and Greenery Open Space of Malang City Using GIS Techniques. Under supervision of BAMBANG SULISTYANTARA and ARIS MUNANDAR

Amenity and quality of urban environment influenced by the availability and existence of the urban tree canopy of the city. This study aims to identify, analyze, predict, and value the ecological benefits of tree’s canopy of Malang City, and provide possible recommendations in order to increase the capacity of its urban ecosystem. This research uses descriptive quantitative method, include valuation of ecological benefits analysis of tree canopy and recommendation development analysis. Valuation is done by spatial analysis used GIS techniques to analyze trees canopy and non trees canopy cover to predict the ecosystem capacity. CITY green 5.4 extent is used to calculate and predict its benefit based on the extend of trees canopy cover. SWOT and QSPM (Quantitative Strategic Planning Matrix) approach is used to analyze and develop a possible recommendation for increasing ecosystem capacity of Malang City. Recommendations have been prepared based on results from both types of analysis. Research result shows, the greatest benefit is the capacity of stormwater control, and concluded that pollutants removal (31.8 tons/year, with the economic value of Rp. 1,552,356,000.00) and carbon absorbance (Carbon storage capacity of 435 tons and carbon sequestration capacity is 2460 pounds/year) are less significant impact in environmental capacity. Both of these capacities failed to give significant benefits due to the lack of quantity of trees canopy cover in the city of Malang (only 4% of total city). Value of ecological benefits of Malang city ecosystem currently provides Rp.26,330,985,000 or 30.25% of total received of city revenue (Rp. 87,115,734,710). Based on the results of the SWOT and QSPM analysis known that strategic priorities of capacity development is the restructuring of poor urban ecosystems and change the orientation of development policies into ecosystem-based and community based to fulfill national standard of greenery open space requirement for Indonesian city.

Keywords: trees canopy, trees benefit, urban ecosystems valuation, greenery open space