ABSTRACT

SITI BADRIYAH RUSHAYATI. Green City Model of Bandung Regency West Java. Under the supervision of HADI S. ALIKODRA, ENDES N. DAHLAN, and HERRY PURNOMO.

Urban development in Bandung Regency has been responsible for the urban heat island effect and increased of air temperature due to increased CO\textsubscript{2} emissions from motor vehicles, human population and industries. Other then these, urban heat island was also caused by increasing built ups and declining green open spaces leading to decreased albedo while in turn raised the air temperature. Urban heat island should be managed through studying the related variables. The purpose of this study was to assess the heat island city and create a green city model. This green city model is expected to be the basis to make policy for green growth based development to create Bandung regency as a green city. The research was conducted by collecting secondary data (socio-economic conditions, number of vehicles, industry, population), and primary data through field’s measurements of micro climate, crowns density, quantities of motor vehicles, direct interviews with residents of Bandung Regency, and analyzing the distribution of air temperature. The results of this research, especially the study of the conditions of heat island effect, indicated that Bandung Regency has experiencing urban heat island effect, where the air temperature in urban centers (27.0 °C) were higher than in rural areas (20.0 °C). The difference between the highest and lowest air temperature was 7 °C. The research also suggested that higher percentage of land built ups would result in lower percentage of green open spaces, thus higher CO\textsubscript{2} emissions which would caused an increase of areas with high temperature. Research Area I has the highest percentage (60%) of develop area and the lowest percentage (29%) of green open space and also high CO\textsubscript{2} emissions (503,987 tons CO\textsubscript{2}/year). This causes the region has most extensive area (161.59 ha) with high temperature (air temperature > 27 °C) in comparison with Research Area II and III. Urban heat island problems can be solved by building a green open space. Based on the measurements of micro climate in several types of green open space, it can be concluded that green open spaces including urban forest are very important in overcoming urban heat island, because they can lower the air temperature. Urban forest is known to be more effective in resolving urban heat island issues than any other types of green open spaces. Based on the results of simulations model, green scenarios can be used as a tool to determine alternative policies to address urban heat island issue. Green scenario could hold back the occurrence of ≥30°C air temperature. The temperature would occur on 2054 in Research Area I, after 2058 in Research Area II, and on 2056 in Research Area III. Although the factors which influence heat island had been well managed (using green scenario), nevertheless urban areas which already had high percentage of developed area, low percentage of green open space, and high CO\textsubscript{2} emissions, would still generate a condition of ≥30°C air temperature on a faster rate (for example Research Area I).

Keywords : built up, green city, green open space, model, urban heat island