Life Cycle Assessment Approach of Solid Waste Management: Case Study in Bogor City, West Java

Y. Aris Purwanto
Center for Environmental Research-IPB

ABSTRACT

This study evaluated the solid waste management in Bogor city based on the life cycle assessment (LCA) approach. Data was obtained from survey which carried out in several Temporary Disposal Site (TPS) in Bogor City. The most available scenarios of waste management system in Bogor city based on the existing condition were: 1) Collection - transport - landfilling (CTL), and 2) Collection – Composting (CC). To find the best scenario of waste management system in Bogor city, energy requirement of each process for each scenario was evaluated using LCA. CTL scenario was analized for four locations of Temporary Disposal Sites which was located at Merdeka Market), Nyi Raja Permas Market, Bogor Market and Jambu Dua Market. Data obtained from field observation and depth interview.

Calculation of handling and transportation cost based on the energy requirement for four locations showed in the range of Rp. 8 360 000 to Rp. 20 200 000. For the scenario of CTL, the local government must provided of Rp. 8 360 000 to Rp. 20 200 000 per month for each TPS for solid waste handling and transportation cost. For the'scenario of CC, with the income from compost of Rp. 3 600 000, there was a subsidy of Rp 3 520 000 per month for each TPS must be provided by the local government. This calculation may changes due to the capacity of composting process, total labour or other operational cost. From both scenarios, it was concluded that the scenario of CC was better than that of CTL for solid waste management system in Bogor City. This study only explored the energy use in transportation and process of organic waste as tool for Life Cycle Assessment. To obtain more comprehensive result for LCA approach of waste management system in Bogor city, the environmental and the social aspects should also be considered in the further study.

Keywords: cost analysis, composting, transportation cost, scenario of solid waste management