Applications of system analysis techniques in solid waste management assessment

ABSTRACT

Solid waste management (SWM) is a global issue and has proven to be a key challenge facing many developing countries. SWM constitutes a crucial health and environmental problem. Most cities spend 20-50% of their annual budget on solid waste management, but only 20-80% of the waste is collected. Due to the diversity of different system components that need to be addressed and the inability of a single tool to assess all components, it has necessitated the need for an integrative approach to SWM issues. Recently more integrative techniques and methods are being utilized to address the different issues that arise in solid waste management as a whole. One technique or method is inefficient and cannot encompass all components of a solid waste management system. This paper looks into the different system analysis techniques that have been applied in SWM and shows system engineering tools have a wide and diverse application, require less data, and are quite cost effective when compared to the system assessment tool, which requires a wide and diverse range of data to be applicable and reliable. The system engineering tools when applied do not reflect the actual scenario for assessment and are quite difficult to implement practically. The system engineering tools are very reliable with regard to choosing options and stimulation of a scenario. System assessment tool seem more realistic, practically applicable for the decision makers and analysis/assessment using system assessment tools can easily be understood and simplified. An integration of engineering and system assessment tools seems more appropriate for obtaining a holistic assessment.

Keyword: Solid waste; Management; Assessment; Engineering; Tools