Optimal Process Network of Municipal Solid Waste Management in Iskandar Malaysia

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Abstract

Ineffective management of waste may cause the degradation of valuable land resources, increasing of land cost, and the creation of long-term environmental and human health problems. Sustainable and more efficient waste management strategy are needed to reduce heavy reliance on landfill. This research aims to synthesis a cost-effective processing network for municipal solid waste (MSW) to value-added products while achieving economic competitiveness through the development of a mixed integer linear programming (MILP) model. This study indicates that the introduction of alternative waste treatment technologies including incineration, landfill, composting and recycling give economical benefits and renewable energy options as compared to existing municipal solid waste management (MSWM) system in IM region. The multi-period simulation and optimization model would simulate the real data and used for proposing optimal cost effective solution for the municipal solid waste management MSWM system. The model was tested in Iskandar Malaysia (IM) as a case study.

Keywords: Municipal solid waste; resource network, waste segregation, Optimization; Mixed integer linear programming (MILP).

References


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