
A Sustainable Decision-Making Model for Materials Recovery Facilities Problems in Waste Management

Haibo Wang, Texas A&M International University

EXECUTIVE SUMMARY

The issue of material recovery and recycling of non-hazardous waste products has become very important to sustainable development beyond economic growth nowadays. The installation of materials recovery facilities (MRFs) is an alternative solution to the problem of low participation of voluntary household and curbside recycling programs in many cities. This paper presents a decision-making model on solving site selection problems for MRFs within the interdependent relationship of resource requirements, infrastructure requirements, service quality and other sustainable development criteria. This model is then solved by a variable neighborhood search heuristic. Conclusions emphasize the robustness of the proposed model and solution technique.

Keywords: Nonlinear, Multiple criteria decision making, Linear programming, Site selection, Variable neighborhood search