Optimal Regional Planning in Solid Waste Management

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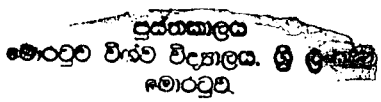

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Declaration

The candidate hereby declares that the work contained in this thesis is her own and original, except where the sources of information have been acknowledged. Also, this work has not been submitted previously, in whole or part, with respect to any other award, and the work has been carried out since the official date of commencement of the degree program.

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Abstract

This study investigates the application of linear programming and mixed integer programming techniques for the optimal allocation of waste stream and facility scheduling of a regional solid waste management system, over a fixed planning period. Waste disposal options include landfilling and waste diversion through recycling and composting. The regional system consist of multiple cities, landfills, material recovery facilities, compost facilities and transfer stations.

Mathematical models used for the optimization are formulated to minimize the present worth cost of providing waste management services, subject to mass balance and capacity limitation constraints of the facilities. A hypothetical case study is presented to illustrate the use of the models formulated.

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Contents

Tables

Figures