

# **A Review on Decision Support Models for Regional Sustainable Waste Management**

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## **Executive Summary**

Many planners and decision makers in the area of municipal solid waste, as yet lack thorough understanding of the whole chain of waste management system and its impact on environmental quality and public health. By fact, with their plans and decisions, they have role on engendering the influence on the urban population and the cityscape formation. There have been publications on the Decision Support Models (DSMs) for regional sustainable waste management to assist planners and decision makers in finding the optimum way to manage municipal solid waste.

However most of existing models are primarily focusing on cost or environmental analysis. There are few that consider other crucial factors such as the demographic condition, the characteristic of urban form and urban infrastructure, land transformation aspects due to urban development, etc. Consequently, such models suffer from deficiencies and are constrained when they meet local cultural requirements. Thus it may leads to imprecise decisions. Those factors are the critical issues from regional development points.

This paper reviews some of DSMs identified in the literature and pointing out the planner and decision makers' contribution to the DSMs development. The main objective of this paper is: 1) compare the models of developed and developing countries; 2) review the urban planner and waste managers' contribution in the development of DSMs identified in the literature; and 3) to suggest some approaches for better waste management DSM.

Findings have shown that models in developed countries have existed already for a long time. Models from developed countries seem to have a wider scope compared to the models from developing countries. But on the contrary, developing countries have more urgent needs to use DSM, mostly due to hygiene issues. Models from both developed and developing countries need to consider social aspects, particularly public involvement.

**Keywords:** municipal solid waste, urban planner, waste manager, decision support model

## **Introduction**

More than 50% of the world's total population today lives in urban areas. Solid waste management is one of the serious issues that are very close-coupled with the increasing world's population and population density. To find most suitable solutions on waste management, decision support models are frequently developed.

# Decision Support Models For Regional Sustainable Development

**Robert R. Redfield**



## **Decision Support Models For Regional Sustainable Development:**

*Decision Support Models for Regional Sustainable Development* Maria Giaoutzi, Peter Nijkamp, 1993 [Decision support models for regional sustainable development](#) Maria Giaoutzi, Peter Nijkamp, 1993 [A Decision Support System for Regional Sustainable Development: the Flag Model](#) Peter Nijkamp, 1997 **Regional Development Research in China: A**

**Roadmap to 2050** Dadao Lu, Jie Fan, 2011-12-27 As one of the eighteen field specific reports comprising the comprehensive scope of the strategic general report of the Chinese Academy of Sciences this sub report addresses long range planning for developing science and technology in the field of regional development research They each craft a roadmap for their sphere of development to 2050 In their entirety the general and sub group reports analyze the evolution and laws governing the development of science and technology describe the decisive impact of science and technology on the modernization process predict that the world is on the eve of an impending S T revolution and call for China to be fully prepared for this new round of S T advancement Based on the detailed study of the demands on S T innovation in China s modernization the reports draw a framework for eight basic and strategic systems of socio economic development with the support of science and technology work out China s S T roadmaps for the relevant eight basic and strategic systems in line with China s reality further detail S T initiatives of strategic importance to China s modernization and provide S T decision makers with comprehensive consultations for the development of S T innovation consistent with China s reality Supported by illustrations and tables of data the reports provide researchers government officials and entrepreneurs with guidance concerning research directions the planning process and investment Founded in 1949 the Chinese Academy of Sciences is the nation s highest academic institution in natural sciences Its major responsibilities are to conduct research in basic and technological sciences to undertake nationwide integrated surveys on natural resources and ecological environment to provide the country with scientific data and consultations for government s decision making to undertake government assigned projects with regard to key S T problems in the process of socio economic development to initiate personnel training and to promote China s high tech enterprises through its active engagement in these areas **A Decision Support System for Regional Sustainable**

**Development** Peter Nijkamp, Hans Ouwersloot, Johannes Ouwersloot, Tinbergen Institute, 1997 **Landscape Modelling and Decision Support** Wilfried Mirschel, Vitaly V. Terleev, Karl-Otto Wenkel, 2020-03-02 This book contributes to a deeper understanding of landscape and regional modelling in general and its broad range of facets with respect to various landscape parameters It presents model approaches for a number of ecological and socio economic landscape indicators and also describes spatial decision support systems DSS frameworks and model based tools which are prerequisites for deriving sustainable decision and solution strategies for the protection of comprehensively functioning landscapes While it mainly focuses on the latest research findings in regional modelling and DSS in Europe it also highlights the work of scientists from Russia The book is intended for landscape modellers scientists from various fields of landscape research university teaching

staff and experts in landscape planning and management landscape conservation and landscape policy

**Evaluation in Planning** E.R. Alexander, 2016-04-22 Evaluation is a critical stage in urban and regional planning and development with the consideration of alternative proposals essential for informed debate and decision Evaluation in planning has become even more important with the new paradigm attempting to integrate economic efficiency with equity sustainability and social responsibility The craft of pre development evaluation has long been influenced by Nathaniel Lichfield and in his honour this book brings together prominent researchers and practitioners to discuss evaluation in planning its conceptual foundations and subsequent development its strengths and persisting dilemmas and its best practices and their potential for improving future planning and development The chapters trace evaluation in planning from its historical origin to current applications Part one reviews the evolution of evaluation theory and practice and part two contains a selection of best practice application The final integrating chapter notes key problems and offers directions for future development in evaluation research and practice *Environmental Systems and Economics* Alexander Karmann, 1994

**A Dynamic Simulation Model of Sustainable Land Resources** Olukayode O. Nejo, 1999 *System Dynamics '96* George P. Richardson, John D. Sterman, 1996 *Project Appraisal*, 1994 *The Cumulative Book Index*, 1995 A world list of books in the English language *Contents of Recent Economics Journals*, 1994-12-30

**Ecological Economics and Sustainable Development** Jeroen C. J. M. van den Bergh, 1996 The effectiveness and scope of operational analysis of sustainable development is explored in this major new book Ecological Economics and Sustainable Development offers an integrated treatment of theory methods and applications for economic ecological analysis taking into consideration all the relevant interactions between economic development and physical and biological processes An overview of different theoretical perspectives based on insights from economics ecology and thermodynamics is followed by discussion of the dimensions of sustainable development including ethics and intergenerational equity sustainable and multiple use and spatial sustainability The second part of the book discusses methods for analysis covering the choice of indicators natural resource accounting and integrated static dynamic and spatial modelling and evaluation including multi criteria and cost benefit analysis Attention is also given to decision support and the choice of policy instruments Combinations of the various methods are applied in the final part of the book using case studies which cover a range of ecosystems and regions as well as a variety of issues and problems These studies clearly show the potential of policy oriented integrated economic ecological analysis for sustainable development

**Environment & Planning A.**, 1994-07 *Environment & Planning*, 1994

**Comparative Environmental Economic Assessment** R. J. G. M. Florax, Peter Nijkamp, Kenneth George Willis, 2002 Since the 1990s economists have recognized the role of meta analysis and value transfer in synthesizing knowledge and exploiting the existing pool of knowledge This volume explores the potential significance of using these techniques **Bibliographic Index**, 1994 *Cahiers Vilfredo Pareto*, 1993

**Mechatronics and Intelligent Materials** Ran Chen, 2011-02-21 Selected peer reviewed papers from the 2011

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### **Table of Contents Decision Support Models For Regional Sustainable Development**

1. Understanding the eBook Decision Support Models For Regional Sustainable Development
  - The Rise of Digital Reading Decision Support Models For Regional Sustainable Development
  - Advantages of eBooks Over Traditional Books
2. Identifying Decision Support Models For Regional Sustainable Development
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Decision Support Models For Regional Sustainable Development
  - User-Friendly Interface
4. Exploring eBook Recommendations from Decision Support Models For Regional Sustainable Development
  - Personalized Recommendations
  - Decision Support Models For Regional Sustainable Development User Reviews and Ratings
  - Decision Support Models For Regional Sustainable Development and Bestseller Lists

5. Accessing Decision Support Models For Regional Sustainable Development Free and Paid eBooks
  - Decision Support Models For Regional Sustainable Development Public Domain eBooks
  - Decision Support Models For Regional Sustainable Development eBook Subscription Services
  - Decision Support Models For Regional Sustainable Development Budget-Friendly Options
6. Navigating Decision Support Models For Regional Sustainable Development eBook Formats
  - ePub, PDF, MOBI, and More
  - Decision Support Models For Regional Sustainable Development Compatibility with Devices
  - Decision Support Models For Regional Sustainable Development Enhanced eBook Features
7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Decision Support Models For Regional Sustainable Development
  - Highlighting and Note-Taking Decision Support Models For Regional Sustainable Development
  - Interactive Elements Decision Support Models For Regional Sustainable Development
8. Staying Engaged with Decision Support Models For Regional Sustainable Development
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Decision Support Models For Regional Sustainable Development
9. Balancing eBooks and Physical Books Decision Support Models For Regional Sustainable Development
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Decision Support Models For Regional Sustainable Development
10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
11. Cultivating a Reading Routine Decision Support Models For Regional Sustainable Development
  - Setting Reading Goals Decision Support Models For Regional Sustainable Development
  - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Decision Support Models For Regional Sustainable Development
  - Fact-Checking eBook Content of Decision Support Models For Regional Sustainable Development
  - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
  - Exploring Educational eBooks
14. Embracing eBook Trends
- Integration of Multimedia Elements
  - Interactive and Gamified eBooks

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