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Citizens' Choice and Public Policy

A System Dynamics Model for Recycling Management
at the Local Level

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Summary

In this study, the management of local human-nature interactions that are globally relevant were under focus. The problem focus was specified within a case-study on solid waste management at the local level. Concrete, the book presents a Solid Waste Management simulation-model that is based in a feedback perspective on human behavior and public policy. It is a result of a two step research process using Integrative System Methodology and computer assisted theory building of System Dynamics. This research strategy supported the development of an encompassing problem-oriented analytic frame that may serve as a computer based learning environment informing the strategy-building process in solid waste management.

The framework incorporates a continuous household-choice structure that highlights the dynamic interactions of personal (flexible preferences) and contextual factors. The overall model structure is suited to address the following request: What local policies increase recycling, and help to establish / ensure a solid waste management system that fosters competitive recycling markets? Subsequently, the model was used as a policy laboratory in which various policy experiments addressing 'what-if-questions' under controlled conditions could be conducted. Consequently, the impact and outcome of recycling initiatives and strategies at the local level were analyzed under different scenarios. The policy experiments showed that combinations of interventions altering personal and contextual factors are crucial for policy compliance and for designing robust recycling initiatives especially under uncertain and adverse conditions in the system. The study gives evidence that the management of the dynamical complex solid waste and recycling system could be improved with the help of a systemic control model including control variables of different logical levels: the levels of operative, strategic and normative management.