

ADVANCES IN MODELING METHODOLOGY FOR SUPPORTING
ENVIRONMENTAL POLICY-MAKING

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Abstract: The paper deals with recent developments in the fields of applied mathematics and operational research triggered by the needs of effective support of environmental policy-making processes that require interdisciplinary science-based advice. Mathematical models developed for this purpose demand new modeling paradigms for an adequate integration of pertinent knowledge, and creation of knowledge needed for rational decision-making. The article first summarizes the model-based support for problem solving from the point of view of actual decision-makers. Next, it discusses the model representation of the knowledge pertinent to a given decision-making problem, and the recently developed modeling technology supporting the whole process of modeling complex problems. The last part deals with novel methods and tools for integrated management of risks related to natural catastrophes. The presented methodology is illustrated by its application to actual environmental policy-making support.