

BOOK REVIEW

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



Risk Analysis as a Decision Tool (in German)

<i>Authors</i>	G. Yadigaroglu and S. Chakraborty
<i>Publisher</i>	TÜV Rheinland, Köln, Federal Republic of Germany (1985)
<i>Pages</i>	391
<i>Price</i>	84.00 DM (\$19.32)
<i>Reviewer</i>	Peter-Jörg Jansen

The proceedings from the Risk-Benefit Analysis colloquium at the Eidgenössische Technische Hochschule, Zürich, contain, like most proceedings, both interesting and less interesting articles. Nevertheless, I recommend this book, since it suggests numerous ideas for the extension and discussion of problems of risk evaluation of modern technologies like transport (air), nuclear power plants, etc. The preface, written by G. Yadigaroglu, provides a concise classification of risk analysis to societal problems.

H. A. Munera's contribution, "A Theory for Technological Risk Comparison," alone justifies the expense of this book. This paper describes important and fundamental problems of risk assessment, although there is still some lack in systematic reasoning. The author discusses the controversial axiom(s) of Neumann/Morgenstern's expected utility model and suggests a more complex (linearized moments) approach. Although some of his proposals are controversial, the achievement of this investigation is to question the methods of technocratic risk assessment and to point out the interface between scientific analysis and sociopolitical value systems. This may stimulate fruitful discussions.

The remaining papers document the need for an extension of the methodology of risk analysis into the direction recommended by Munera, partly because some of the authors still apply the conventional, technocratic approach, which demonstrates the need for advanced methods, and partly

because of suggestions of developing risk assessments methodologies that support Munera's aspects.

These topics range from macabre, monetary assessment of human life (H. W. Gottinger and P. Shapiro, "Application of Decision-Making Methodology to Certificate-of-Need Applications for CT Scanners") to more general risk-benefit considerations (Th. Schneider, "A Quantitative Decision Model for Safety Problems in Non-Nuclear Areas," and J. Lombard, "Comparisons of Safety Measures with a Multi-criteria Decisions Aiding Technique"). These latter papers show important aspects of optimal resource allocation to minimize risk in a broader and social context, while J. Lochard et al. limit their analysis to redesigning a plant. The article by H. Bohnenblust on risk models for (railway) tunnels is also methodologically interesting.

Some of the above-mentioned articles also consider problems that occur prior to risk analysis, such as proper quantification of the problem (see P. Bützer for a chemical plant and S. Chakraborty in the connection of known catastrophes).

Other articles provide information on particular risks such as dams (F. Grütter) and nuclear power plants (A. Bayer). The latter work contains excellent material to apply Munera's concept in practical circumstances, in particular to investigate the aspects of low probability/high consequence cases and expected risks. E. Siddall's analysis on life expectation and the standard of living and W. Burkart's paper on the Radon load should be also mentioned. Although the style is partly uncritical and technocratic, the information contained in these articles is valuable for discussions of the highly complex interdependencies of risk assessment.

Peter-Jörg Jansen has worked at the Nuclear Research Center in Karlsruhe, Federal Republic of Germany, on energy policy and environmental analysis under K. Wirtz and W. Häfele. He is deeply involved in methodological questions of technology assessment and public acceptance of risk. He spent a year on modeling exercises at Stanford University with G. B. Dantzig and is now professor and head of the Institute for Energy and Economy at the Technical University in Vienna.