

# Preface

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This important and unique volume is about the interaction between humans and their natural environment. Specifically, it concerns low probability risks with major negative consequences and focuses on environmental risks that people can control, manage or eliminate. The book is also about how to integrate behavioural and natural science perspectives on environmental hazards. Particular attention is given to the natural hazard of flooding, exemplified by flooding in Poland, and the volume represents an excellent contribution to this field.

The first chapter, by Tyszka and Zielonka who are also the editors of the volume, introduces the reader to the problem area and the natural science perspective on risk information, estimated and measured by, for example, probabilities, and the behavioural perspective describing how this information is interpreted by people. The authors also describe problems with linking subjective interpretations of information to behaviour, for example, the evacuation of an area when there is a risk of flooding.

The second chapter asks the fundamental question as to whether or not people are interested in knowing about the probabilities of natural risks and their consequences. Do, and can, people use probability information in the appropriate way? To illustrate, in an empirical study the authors investigate the effect of the presence or absence of a sense of control over a risky outcome and its severity (e.g., the possibility or otherwise of ameliorating the consequences of a hazard) on people's interest in knowing about risk probabilities.

The third chapter considers interpretations of probability information, in particular small probabilities. When is a small probability of a disaster occurring overestimated and when is it underestimated? Based on a review of earlier

research in the field, the authors list factors that can influence the interpretation of probability information and over- and underestimation. These factors include the size of a potential loss, experience, information search and the emotions elicited.

Given the problems with human interpretations of small probabilities, the authors of Chapter 4 take the next logical step and investigate how to overcome problems in communicating probabilistic information to people. Following a literature review, they investigate a new way of presenting small risk probabilities, including the use of a combination of graphical and experience-based information about small probabilities.

From a natural statistical perspective, natural risks involve both a negative event and the probability of that event. When people become aware of a risk they perceive it subjectively. This has been called risk perception and involves factors that determine the subjective size of a risk, for example, voluntariness and the controllability of consequences. The fifth chapter discusses this theme, and investigates and extends it in an empirical study comparing, for example, psychological reactions (e.g., feelings of affect, such as disgust, fear, and anger) to natural environmental risks and risks created by humans.

Even if low probability risk information has been communicated so that people understand it correctly, this does not guarantee that they will adopt adequate protective behaviours and the authors of Chapter 6 ask what determines willingness to take preventive actions in areas prone to flooding. In an empirical field study, they start with risk perceptions and link these, the presence of defences (the existence of protective levees or otherwise), residents' prior experience with flooding, and social norms, to residents' actions in mitigating or avoiding the negative effects of flooding.

Chapter 7 extends the coverage of actions taken in response to natural hazards, examining the buying of insurance to mitigate the negative consequences of a risk. In particular, the authors study the importance of cognitive, perceptual and emotional factors, such as, probabilities, experience and worry as determinants of purchasing insurance against a disaster.

Chapter 8 investigates the influence of social factors (peer decisions) on risk protection: the purchasing of insurance when participants have been exposed to, and experienced, real risks.

The authors of Chapter 9 study the illusion of safety that is often an obstacle to adopting rational protective behaviours. In a field study, they ask a number of respondents living close to the river Vistula about things including personal background factors such as experience, insurance, and their subjective judgements of the probability of a flood and worries. They describe how, for example, experience, cognitions, worry, risk perceptions and other factors are interrelated and related to protective behaviour.

Finally, Chapter 10 arrives at the crucial issue of education. How can we eliminate false feelings of safety, and how can we design and disseminate adequate risk information in forecasts and in concurrent messages to the public in the case of

a flood? How can we teach the public in advance about how to respond when they experience a flood; how can they be taught how to avoid and manage the hazards posed by a flood?

In summary, the present volume makes a significant scientific contribution to our knowledge about how to improve a society's resilience against natural hazards in general and flooding in particular. It presents results from applied and fundamental research of great importance to administrators, policymakers and politicians and also to scientists who want to decrease a society's vulnerability to natural hazards. I recommend that they all read this book as soon as possible.